ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA (ESCWA)

FOSTERING INNOVATION IN THE
PUBLIC SECTOR OF THE ARAB REGION

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Beirut

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Contents

* Accompanying annexes to the draft of the study is only available on line at https://www.unescwa.org/sub-site/97611/resources for easier access

I.   INTRODUCTION

A.   OBJECTIVES OF THE STUDY

Theguideline focuses on public sector innovation and supports the targets of SDG 16. The 2030 Agenda for Sustainable Development underscores the necessity of innovation in the public sector. The objective of SDG 16 is to "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels". The public sector, through the self-development of innovative solutions, whether services, processes, policies, programmes or products, can achieve SDG 16 and its targets, such as the development of effective, accountable and transparent institutions (16.6), responsive, inclusive participatory and representative decision-making (16.7), and public access to information (16.10). Innovation could also provide the Government and its institutions with the means to achieve the other SDGs. Examples of other SDGs where public sector innovation can make a difference include:

- SDG 10 "Reduce inequality within and among countries", especially target 10.2 that requires the empowerment and social, economic and political inclusion of all;
- SDG 5 "Achieve gender equality and empower all women and girls", especially target 5.5 with its focus on full and effective participation of women in decision-making as well as equal opportunities for leadership, and target 5.B which calls for the use of technology to support empowerment; and
- SDG 9 "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation", especially target 9.1 that focus on the development of infrastructure that supports economic development and human well-being and provides affordable and equitable access for all, and 9.4 that calls for upgraded and resource-efficient infrastructure using clean and environmentally sound technologies.[1]

In this document, innovation is understood as the implementation of a new way of achieving a result and/or performing work. It can be completely new, a change in to a current system, or something that already exists elsewhere implemented for the first time. This idea can be a product, service, policy and programme, or a process.[2] It can have as its focus new or adapted technologies, or technology for supporting other forms of public sector innovation. Innovation in the public sector differs from the private sector in that the focus is not monetary gain or greater economic success for a few. The objective of public sector innovation is to enhance the social welfare and economic growth of a country for a better sustainable future.

The main objectives of the research were to:
- Define the concept of public sector innovation and identify the challenges that governments face in fostering such innovations and enablers and drivers that can aid in overcoming these challenges;
- Identify types and tools that exist that can help to overcome the barriers to effective and efficient public sector's innovation in Arab countries;
- Provide case studies on public innovation types, tools and methods from the international and/or regional arenas; and
- Propose some recommendations, built on best practices from developed and/or developing countries, which could be adapted and adopted to further public sector's innovation in the Arab region.

The result of the research is a guideline with a variety of models related to different aspects of public sector innovation. It can be used by Governments and other public sector entities in the Arab region to intiate and foster suchinnovations.

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[1]   United Nations, 2015.
[2]   ECOSOC, 2006.

<center>**B.   SCOPE AND APPROACH OF THE STUDY**</center>

The geographical scope of the study covers all member countries of ESCWA.

The thematic scope of the study, at the same time, has been approached as follows:
- The scope of this study does not encompass public sector actions to foster innovation in a broader sense, e.g. actions to foster R&D innovation, private sector innovation, and national innovation policies. These are covered in other studies.
- The scope of this study is to encompass innovation in specific domains of public sector intervention beyond administrative services, e.g. innovation in education, health, energy, transport and possibly others.

The scope of the study is to include:
(a) local government services, such as city and regional local administration services;
(b) government services that help local communities at the level of social solidarity, social economy and social innovation; as well as
(c) government services for democratic participation and governance.

Additionally, the focus of the study is placed on:
(a) *the innovation of processes* in the public sector, that make these and other services possible; and
(b) *the process of innovation* in the public sector, i.e. the establishment of innovation as a regularly occurring activity that can be structured with process characteristics.

At the same time, the overall approach of the study considers the following points:
- In exploring the different types of innovation models for the public sector, attention is better placed on models of smooth (taken to mean less disruptive) innovation, which call for more consensus building in the initial phases of the innovation life cycle but at the same time bear a more important promise for successful implementation and sustainability of change, due to lower levels of disruptiveness.
- In approaching the current public sector innovation practices and sought innovation potential of countries in the Arab region, it is necessary to consider the realities of these countries. At the time of writing, several ESCWA member countries are undergoing crises, and this is an important factor to consider in exploring the potential of these countries to engage in public sector innovation efforts according to examples from countries much less suffering from such crises.
- At the same time, countries of the Arab region clearly need to be approached beyond the negative stereotypes that may currently prevail in many western world media and public discourse. Countries of the Arab region have their own cultural identities and heritage to contribute to the world, and this should be kept in mind throughout the discussion for innovation of their public sectors. If innovation is practically treated as modernization, then modernization should not be taken as a synonym for westernization.

<center>**C.   STRATEGY FOR IMPLEMENTATION OF THE STUDY**</center>

The strategy for implementation of the research is enhanced with some additional components, including a questionnaire on examples of public sector innovations in the Arab region. This was circulated to Arab region public sectors personnel and serves as a data collection instrument that allowed forthe better integration of this study with the realities of the settings (Arab region countries) that it is in fact addressing.

At the same time, implementation of this research is also enhanced with readings, knowledge and tool resources catalogues that are included in the final document, allowing for the accommodation of an adequate subset of sources and literature available for the topics of this study. These annotated and referenced sources highlight the pertinence of resources to specific topics discussed within the study, and thus comprise an additional learning resource for the readership of this document.

D.   ADDITIONAL METHODOLOGY PROVISIONS FOR IMPLEMENTING THE STUDY

The methodology adopted for implementing the docuoment is based on the objectives, timeline and other provisions commissioned for this study, as well as on the additional scoping, approach and strategy for realization of the document described above. At the same time, the overall approach is complemented with some additional methodological choices.

1.   Exploring different approaches to innovation

Available literature offers a variety of different approaches to innovation (e.g. continuous, incremental, open and others) that are considered in the study, taking effort to present and compare the various types of innovation practices available and feed the findings into the next steps of the study.

At the same time, given that the investigation of different types of innovation practices (policy-driven, bottom-up, collaborative and others) is an expressed objective of the study, as far as the types of innovation to explore are concerned preference is allocated towards smooth, evolutionary, less disruptive types of innovation practices.

2.   Extending the questionnaire instrument with a perceptions part

Bearing in mind that an expressed important objective of this study is the discussion and specialization of findings against the characteristics and circumstances of Arab region countries, the opportunity to prepare and circulate a questionnaire on public sector innovation examples to respondents from these countries that comprise the most authentic source of information in this respect, is an important one.

At the same time, moving the above rationale one step forward, it is particularly helpful to extend this questionnaire with an additional part for gathering information about the perceptions of the respondents with regards to public sector innovation efforts. This part can be completed even by respondents who may not be able to report on specific efforts, which greatly broadens its potential audience. At the same time, the responses on perceptions with respect to public sector innovation efforts clearly serve to gain particularly useful insight into the realities and practicalities of the countries studied, which are very difficult to be reported/identified otherwise. A special annex was prepared that includes all the collected case studies from the Arab countries.[3]

3.   Exploring the potential for involvement of external stakeholders

In the understanding that the main intended focus of the study is at innovating internal public sector processes, which may then make new external services possible, it should nevertheless be noted that improvement of internal public sector features is not necessarily a closed introvert effort. The contemporary ideas of opening government and involving citizens in the policy-making lifecycle may well find their counterparts even in internal process improvement efforts of public sectors, where the ideas contributed by citizens can be of great help in identifying improvements, simplifications and innovation potential yet untapped by internal stakeholders.

In this line of thought, and without overlooking the fact that the involvement of external stakeholders is a challenging task, and thus cannot be taken to comprise a hard pre-requisite for public sector innovation efforts, this option should not be left unexplored. In this respect, the findings of the study are fed into a discussion for the means available for involving external stakeholders in the planning, and possibly into the implementation (at least in the testing/evaluation phase) of public sector innovation efforts. This methodological choice is in fact reflected in appropriate parts of the study, especially in chapters discussing a number of different processes and formats for involving external stakeholders (citizens, researchers, and others) into the ideation, planning and possibly subsequent phases of public sector innovations.

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[3] Accompanying annexes to the draft of the study is only available on line at https://www.unescwa.org/sub-site/97611/resources for easier access

II. INNOVATION PROCESS EMPIRICAL GUIDE (IPEG) TO INNOVATION PROCESS TYPES AND ASSOCIATED EXAMPLES

A. PURPOSE AND OBJECTIVE OF THE IPEG GUIDE

This chapter presents Innovation Process Empirical Guide (IPEG), an examples-based empirical guide to different process types for innovation that can be applicable to public sector innovation efforts. The innovation process types currently included in this version of IPEG are, in alphabetical order:
- bottom-up innovation;
- collaborative innovation;
- continuous innovation;
- disruptive innovation;
- frugal innovation;
- incremental innovation;
- local innovation;
- open innovation; and
- sustainable innovation.

The IPEG guide, is not an exhaustive list of all the process types, neither does it provide full details of the process types, as this is provided in available literature. The objective of this chapter, and the IPEG guide that follows, is to bring forward some basic information for each innovation process type, of practical value for public sectors interested in applying it, and complement this information with a rich set of indicative examples as well as with selected literature for further reading.

In this respect, the presentation structure of each innovation process type included in the IPEG guide is as follows:
- A working definition for this process type, deliberately kept simple, open, and focused on the characteristics that distinguish this process type from others;
- A rationale, in the form of one or more major arguments, for selecting this process type as the one to follow;
- Critical success factors (CSFs) for making innovation efforts along this process type bear fruit;[4]
- Risks associated to poor implementation or unwanted lateral effects of innovation efforts along this process type;
- Promises that implementation of innovation efforts along this process type brings along;
- Indicative examples of existing innovation efforts that may qualify under this process type; and
- Sources for further reading.

The examples[5] were drawn from:
- selected examples of public sector innovation from third countries presented in the corresponding chapters and appendices of the study, as well as discussed during the ESCWA-organized public sector innovation workshop (Cairo, October 2017)[6] in association with the study;
- selected examples from third-party collections such as the OECD Observatory for Public Sector Innovation[7];

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[4] From the many factors involved in the success of innovation efforts, the factors identified herein for each process type as critical, are selected to fulfil two conditions: (a) their importance and subtleties may often go unnoticed; whereas (b) their absence or poor management may indeed lead an innovation effort away from success.

[5] The current version of the IPEG guide lists a total of 120 examples from the given sources, in line with its conception as an examples-based guide to innovation process types. These examples come from Arab Region public sectors and from countries all over the world in an approx.1:1 proportion, in order to keep a balance with enough examples from third countries, on the one hand, and allowing Arab Region public sectors to reflect on how their own work falls within different innovation process types, on the other.

[6] Workshop materials available from https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region.

[7] More information is available from https://www.oecd.org/governance/observatory-public-sector-innovation/.

- the cases of innovation efforts sampled from ESCWA member country public sectors during the study as a response to a corresponding questionnaire; and
- selected cases of recent (2015 on wards) Arab Region public sector innovation efforts harvested in the context of the study from the Knowledge Base of UN Public Service Awards Initiatives[8].

As a last point in this introductory discussion, it is interesting to bring forward the fact that, the question about the reasons behind the existence of many different innovation process types in the literature. Indeed, if we ask ourselves why are there many suggestions about different process types to follow when trying to innovate, instead of having the literature and practice converge in a single way to go, some possible answers are as follows:

An answer on the elusiveness of creativity
- innovation is a creative process; still, it is not easy to explain creativity, let alone to model the way it works, as we would have liked to.

An answer on the difficulty of empathy
- innovation is a process to make better things that can be useful to others, beyond ourselves; still, it is not easy to know what others want, neither is it easy to have on our own better ideas as to how achieving what others want, than the latter have themselves.

An answer on the fear of errors
- innovation is a process of trial and error; still, it is not easy to pay the costs of errors, and thus we feel the need for methods that will avoid errors and associated costs.

An answer on the self-gratification of helping others
- innovation promises a moment of happiness, once our ideas work, and this moment brings intense self-gratification which make us like it to happen again; thus, we are fond of abstracting our successful ways of work to models that others may uptake.

Each of these answers may explain, from a different aspect and to a different extent, the reasons that have led, and continue to lead, to the emergence of different process types for innovation. At the same time, all these answers are also denoting important psychological and social factors that appear in innovation efforts, no matter along which process type, in the form of felt challenges, drivers, barriers or enablers depending on our own standpoint and attitude. It is interesting to feed these answers, therefore, into a broader discussion of the different types of roles that various factors, and especially attitude and perception factors, play within innovation efforts.

B. GUIDANCE AND EXAMPLES ON BOTTOM-UP INNOVATION

1. Description

Bottom-up innovation efforts can be considered as efforts that are conceived at lower responsibility and authority levels of an organizational structure and communicated upwards along organizational layers for approval.

Table 1: Rationale, critical success factors, risks and promises of bottom-up innovation

Rationale	• people at the field level know better
Critical success factors	• people at lower organizational levels need to commit beyond formal responsibility • people at lower organizational levels need to embrace the big picture
Risks	• the process may end up with ideas egocentric or otherwise fragmented
Promises	• innovations better suited to field-level realities

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

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8 Available from https://publicadministration.un.org/en/Research/Case-Studies/unpsacases.

a.   Solar Sister – Eradicating energy poverty through social enterprise
(Country: International; Website: http://www.solarsister.org/)

LIGHT. HOPE.

Solar Sister is a social entrepreneurship project which is focused on a simple idea: allow women under poverty to operate as sellers of simple everyday-life solar photovoltaic equipment, such as solar lamps and solar mobile phone chargers, paying back for their merchandise after the latter is sold. The project builds on the MicroConsignment Model (MCM), originally developed by Greg Van Kirk (later Ashoka Fellow) and George Bucky Glickley during their work as Peace Corps Volunteers in Guatemala during 2001-2003[9]. The basic idea of this model is to (a) engage rural poor people (mostly women) as entrepreneurs, in order to (b) deliver products and services of essential value, to (c) rural poor populations short of access to mainstream commerce, at (d) affordable prices, with the entrepreneurs themselves (e) not having to pay for their inventory before the latter is sold (thus avoiding an inherent need for credit and loans) and (f) earning a commission for each product sold[10].

The Solar Sister project implemented the MCM approach for PV equipment starting with a pilot implementation in Uganda, in early 2010, and then developing in the broader East Africa region. At the same time, Solar Sister professionalized this approach by providing women entrepreneurs with training, promotional materials, simple record-keeping tools, as well as supporting product showcasing events. The current project team includes more than 50 people staffing central management as well as country teams in Uganda, Tanzania and Nigeria. According to the project's own impact data, some 2,500 people are currently engaged as entrepreneurs and some 700,000 people are benefiting, directly or indirectly, from project outcomes. At the same time, the project has a very systematic online presence, gathering some 24.5K followers on Twitter and 7.5K followers on Facebook, and being present on all major social platforms. Last but not least, Solar Sister takes a very active approach to fundraising, both through traditional donations and through disseminating fundraiser kits[11].

The Solar Sister project combines in a well-thought way a number of good ideas, and clearly addresses at the same time more than one important global challenges, from poverty and gender equality to clean energy and social development. At the same time, the project idea and deployment has been based on approaches carefully selected for scalability and replicability, such as (a) the MCM model itself; (b) the think big-start small initial pilot implementation; (c)the thinking of under-privileged populations (rural poor people, women) not only as consumers but also as sellers of some essential products; and (d)the commodification of the latter, as allowed by maturing technology, into packaged affordable-cost PV products in this case. The real leapfrogging aspect of this project has not been at the investment/deployment scale, but rather at the conceptual paradigm shift towards the above approaches.

At the same time, this project qualifies as a bottom-up innovation effort due to the fact that it is based on, and to an extent driven by, people in many ways: people as entrepreneurs, people as consumers, people as fundraisers and, eventually, people as supporters and as multipliers. In this respect, the Solar Sister project

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[9]   Van Kirk, 2008.
[10]   Misra, 2011.
[11]   Solar Sister, 2017.

offers important innovation patterns that have the potential to be uptaken by public sectors along different levels. A public sector could consider supporting this project not only (or even not at all) financially, but through public structures and networks for energy, transport, education, health and other domains, to help it expand in scale and example reach, thus fostering social entrepreneurship overall, and showcasing the idea that part of a public sector's innovation vision also has to do with helping social innovation happen and scale up. Secondly, a public sector could uptake not the Solar Sister project itself, but rather the principles underpinning it. The MCM model, for instance, could be used to drive public-people (or public-women) partnerships for delivering basic public goods (e.g. essential medications) or services (e.g. basic training) to areas and populations that central administrations have difficulty to address.

b. Project Isizwe – Free Wifi for South Africa
(Country: South Africa; Website: http://www.projectisizwe.org/)

Project Isizwe, launched in 2013, is a South Africa-based non-profit initiative to empower local communities with internet access. The project advocates for free wi-fi access in public places all over Africa, and has achieved a partnership with the City of Tshwane (Pretoria) in Gauteng Province. The City of Tshwane, with a population of some 2.9 million residents (2011 census data[12]) and a surface area of approx. 6,300 sq.km has deployed an online site[13] rich with information and services, as well as the e-Tschwane portal[14] for payment and transactional services. In this context, Project Isizwe reports creating in the City of Tshwane area some 1,070 free internet zones (FIZs) near high-visibility public places of education (schools, universities, libraries) and community interest (community centers, parks), allocating users with a free daily access volume of 500MB per device, at a minimum bandwidth of 15Mbps download and 1Mbps upload speed, currently serving some 600,000 unique monthly users, and having overall served more that 6,000TB of download and 600TB of upload data volume[15].

Project Isizwe, based on a collaboration with the City of Tshwane and commercial mobile operators, explicitly prioritizes low-income regions and communities, and focuses on providing the capability to access educational content online. At the same time, the project has developed plans for a pilot installation in Cape Town (Khaye-fi project plan[16]), and an expansion in other regions over the country (Afri-fi project plan[17]), whereas it actively supports the World Wi-Fi Day initiative[18].

Project Isizwe comprises an interesting example of clear objectives, clear model and a lot of belief and enthousiasm to provide free wi-fi access to underprivileged people, and especially so for allowing them access to education and development opportunities. In this sense, Project Isizwe is indirectly, yet clearly, addressing SDGs on education, socio-economic development, reduction of poverty, as well as equality. At the same time, and given the fact that free access to the internet, as simple and self-evident as it may sound, still remains an innovative idea, that can fuel in its turn many more consequent bottom-up innovation efforts, Project Isizwe is itself presented here as an example of bottom-up innovation enabler and bottom-up

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[12] Statistics South Africa, 2011.
[13] See http://www.tshwane.gov.za/Pages/default.aspx.
[14] See https://www.e-tshwane.co.za/eTshwane/.
[15] Project Isiszwe, 2017
[16] More information available from http://www.projectisizwe.org/khaye-fi/.
[17] More information available from http://www.projectisizwe.org/afri-fi/.
[18] More ifnormation available from http://worldwifiday.com/.

innovation in its own right. Public sectors may clearly consider joining such efforts, where these are launched by the third sector, working together with the third sector to launch and sustain them, as well as use their own online content and services to bring more added value to free wifi-enabled internet users.

Table 2. Other Examples of bottom-up innovation efforts

Example	Country	Further information pointers
Develop Business Audit Division	Jordan	• chapters/appendices on contributed ESCWA member country examples[19]
PACI GIS	Kuwait	Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3326
Project Isizwe	South Africa	• website http://www.projectisizwe.org/

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

3.   Selected book sources for further reading

Cronin, M.J. (2014). *Top Down Innovation*. Cham, Switzerland: Springer International Publishing AG. Høyrup, S. and others, eds. (2012). *Employee-Driven Innovation A New Approach*. Basingstoke, UK: Palgrave Macmillan.

Robinson, A.G. and Schroeder, D.M. (2014). *The Idea-Driven Organization Unlocking the Power in Bottom-Up Ideas*. Oakland, CA: Berrett-Koehler Publishers.

C.   GUIDANCE AND EXAMPLES ON COLLABORATIVE INNOVATION

1.   Description

Collaborative innovation efforts can be considered as efforts in which people source and evaluate ideas that are prescribed on a broader organizational role/layer basis, and selected later on during the process, the latter being communicated to them in terms of importance to participate.

Table 3. Rationale, critical success factors, risks and promises of collaborative innovation

Rationale	• the issues to tackle cross organizational levels and specializations
Critical success factors	• participants need to work jointly rather than in parallel • leadership needs to drive collaboration in a rigorous way
Risks	• ideas may sum up partial interests, rather than synthesize them
Promises	• innovations with all aspects worked out, backed up with consensus

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

2.   Examples
a.   TAXISnet services (Country: Greece; Website: http://www.gsis.gr/)

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[19]   https://www.unescwa.org/sub-site/97611/resources

The TAXISnet project in Greece comprises the country's national single-window project for electronic citizens and business taxation services, including information about tax obligations, electronic filing and archiving of tax forms. Over the years, TAXISnet has deployed some 20 electronic services of interest to citizens and some 10 electronic services of interest to businesses[20], ranging from some essential services pertinent to all taxpayers, such as filing of income tax and VAT return forms, to more specialized audience-specific services such as reimbursement of election commission members and contract-making related services for accredited notaries.

At the same time, TAXISnet interoperates with a number of financially-related electronic services of other sectors, such as health subsidies, unemployment benefits and fiscal transparency declarations, given that the data register of TAXISnet is one of the more complete and updated across the Greek public sector, which allows to use TAXISnet logon credentials as a single sign-on instrument for other services as well. Initially deployed by the General Secretariat of Information Systems and Administrative Support of the Greek Ministry of Finance[21] during 1999-2001, as of 2017 TAXISnet is available under the operational responsibility of the Greek Independent Authority for Public Revenue.[22]

More information about the development and evolution of this domain-specific public sector innovation effort can be found on the reference website as well as in the further information sources below. At the same time, the main interest of this effort that allows it to qualify as a collaborative innovation example has been its deployment along a number of public-private partnerships (e.g. between the Greek Ministry of Finance, professional accountants associations and the banking system), as well as public-public partnerships, between different branches of the Greek public sector. This is an aspect inherent in innovation efforts in the taxation and fiscal policy domains in many countries, and TAXISnet in this respect represents a typical example.

b.   The Humanitarian Data Exchange (HDX)
(Country: International; Website: https://data.humdata.org/)

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[20]   More information is available from http://www.gsis.gr/gsis/info/gsis_site/Services (in Greek).
[21]   More information is available from http://www.minfin.gr/web/guest/portal-g.g.4.
[22]   More informaton is available from http://www.aade.gr/.

Table 4. Other Examples of collaborative innovation efforts

Example	Country	Furtherinformation pointers
Anti-Violence & Addiction Program	Bahrain	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3905
Sijilat (Business Licensing System)	Bahrain	• chapters/appendices on contributed ESCWA member country examples
Egypt National Grid Reference	Egypt	• chapters/appendices on contributed ESCWA member country examples
Humanitarian Data Exchange (HDX)	international	• website https://data.humdata.org/
Green Building Practices	Jordan	• chapters/appendices on contributed ESCWA member country examples
RAMED Medical Assistance Plan	Morocco	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3890
Wage Protection System (WPS)	Oman	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3270
Identification of Child Abuse Cases	Saudi Arabia	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3169
Abu Dhabi Social Housing	UAE	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/5214

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

3.   Selected book sources for further reading

Bryson, J.M. and others, eds. (2015). *Creating Public Value in Practice Advancing the Common Good in a Multi-Sector, Shared-Power, No-One-Wholly-in-Charge World*. Boca Raton, FL: CRC Press.

Ehls, D. (2014). *Joining Decisions in Open Collaborative Innovation Communities A Discrete Choice Study*. Wiesbaden, Germany: Springer Gabler.

Torfing, J. (2016). *Collaborative Innovation in the Public Sector*. Washington, D.C.: Georgetown University Press.

D.   GUIDANCE AND EXAMPLES ON CONTINUOUS INNOVATION

1.   Description

Continuous innovation efforts can be considered as efforts that Effectively deploy a specific innovation and, in order to keep it enhanced with innovative aspects, establish permanent processes for evolution.

Table 5. Rationale, critical success factors, risks and promises of continuous innovation.

Rationale	• needs are changing continuously, and a continuous evolution is needed beyond the needs currently known
Criticalsuccess factors	• the notion of continuous evolution needs to be effectively communicated and operationalized • evolution needs to move on even at times of no pressing needs

Risks	• considering success as an excuse for slowing down, rather than a reason for keeping up
Promises	• time will become a friend that makes things better, rather than a foe that imposes deadlines

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

2.   Examples

a.   City of Boston Citizen Connect Apps
(Country: USA; Website: https://www.boston.gov/departments/innovation-and-technology/apps)

See description in I.2.a

Table 6. Other Examples of continuous innovation efforts

Example	Country	Further information pointers
Secondary Vocational Education Project (SVEP)	Bahrain	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3424
Government of Jordan 7x7x7 Strategy	Jordan	• chapters/appendices on contributed ESCWA member country examples
Multichannel Home National Social Insurance Scheme	Morocco	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3825
eClearance System	Oman	• chapters/appendices on contributed ESCWA member country examples
Government eService Platform	Qatar	• chapters/appendices on contributed ESCWA member country examples
Tawafuq Program	Saudi Arabia	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/4962
Government Service Insurance System (GSIS)	Philippines	• website: http://www.gsis.gov.ph/)

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

3.   Selected book sources for further reading

Ahlstrom, J. (2014). *How to Succeed with Continuous Improvement A Primer for Becoming the Best in the World*. New York City, NY: McGraw-Hill Education.

Celi, M., ed. (2015). *Advanced Design Cultures Long-Term Perspective and Continuous Innovation*. Cham, Switzerland: Springer International Publishing AG.

Kanti Agustiady, T. (2014). *Communication for Continuous Improvement Projects*. Boca Raton, FL: CRC Press.

E.   GUIDANCE AND EXAMPLES ON DISRUPTIVE INNOVATION

1.   Description

Disruptive innovation efforts can be considered as efforts that meet two or more of the following characteristics: (a) bring forward large changes and/or changes with large lateral effects, (b) do so at a fast (with respect to the size of changes) pace over time, and (c) establish new ways of work in replacement of existing ones, setting a fixed and possibly pressing for the latter to become abandoned.

Table 7. Rationale, critical success factors, risks and promises of disruptive innovation

Rationale	• problems are too interlinked to solve one at a time, the Gordian knot needs cutting • too much time has passed unused, everything needs to change now
Criticalsuccess factors	• change towards the environment needs to be managed smoothly during uptime, without creating chaos • people inside and outside need to be helped to disrupt their own culture and habits
Risks	• too many / too fast changes with unexplored consequences may create problems that defame innovation
Promises	• everything will be better, before the past has time to resist

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

2.   Examples

a.   Diavgeia Transparency Portal (Country: Greece; Website: https://diavgeia.gov.gr/)
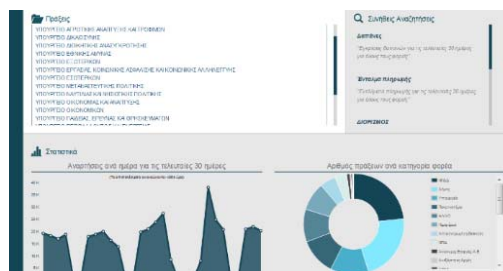
The Greek Diavgeia Tranparency Portal was launched in July 2010[23] as a central instrument for the Tranparency Program initiative of the Greek Government. According to the legislative measures supporting this initiative, all Greek Government institutions, as of October 2010, are obliged to upload their acts and decisions online on the Diavgeia portal, with attention paid to special cases of data of sensitive personal and national security nature. As a second step, 3 years later, in 2013, all administrative acts and decisions not published online have ceased being valid. By March 2011, within 5 months of its launch, ministries, public sector bodies and independent authorities', as well regional and local authorities, phased in the Diavgeia framework and transparency obligation.[24]

Today it concerns all legal entities under public law including universities and other institutions. A total of 26.3 million administrative acts and decisions have been published on Diavgeia portal within 7 years, whereas the average publication rate during 2017 amounts to some 345,000 acts and decisions monthly[25]. The Diavgeia and the Greek Transparency Program initiative have comprised one of the country's national commitments to the Open Government Partnership, which Greece joined in 2011[26].

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[23]   Institute of Computer Science, 2017.
[24]   Informatics Development Agency, 2013.
[25]   Informatics Development Agency, 2013.
[26]   More information available from https://www.opengovpartnership.org/countries/greece.

The Diavgeia initiative is directly addressing goals of transparent access to information and citizens' right to know about government decisions and acts. At the same time, it comprises an example of forced transparency, in the sense that it has been decided and planned at the top-level of government, with all ministries called in to contribute. This forced aspect of the Diavgeia initiative, coupled with the 2013 turning-point disruption of acts and decisions not published on Diavgeia declared invalid, has been the source of criticisms and frustrations on the side of public sectors that have been faced with the obligation to comply with this new way of work, and allocate human resources dedicated to the task of uploading acts and decisions on the Diavgeia portal. An additional factor for this is the large number of acts and decisions produced by Greek public bodies, which currently amounts to more than 15,000 acts/decisions per working day, a number rather elevated for a country of approx. 11 million residents (49 per cent male and 51 per cent female) according to 2014Q1 census revision data[27].

At the same time, the large number of documents uploaded on the Diavgeia portal, coupled with the complicated legal form of administrative acts and decisions, has resulted in negative criticisms on the side of citizens as well, who lack services to make meaningful analyses of this information, beyond simple document retrieval and aggregate document uploading statistics. This has given rise to third-party efforts for deploying added value services over the Diavgeia OpenData API[28], such as UltraCl@rity[29] and others. It needs to be noted, however, that despite these practical criticisms, which certainly have grounds, the Diavgeia portal and the Transparency Initiative program have spearheaded a series of reforms to establish an anti-secrecy and anti-corruption culture shift in the workings of the Greek public sector.

The interest of this example, which qualifies as one of disruptive innovation for better governance, lies exactly in the contradictions described above. As the Diavgeia case shows, simple forms of transparency, in the sense of raw information disclosure, are not technically complicated to achieve, and transliterating this simplicity at the level of political will can well lead to decisions for disruptive innovation, especially in contexts where it is felt that public sectors carry on burdens of shortcomings and deficiencies from the past. Still, for such disruptive decisions and forced policies to stand the test of time, it is important to back them up with substantial support for the people that will be called to enact them in everyday life public sector practice, as well as for the citizens who will seek to find the added value that has been promised. In the absence of such support, the main driver that remains to sustain such disruptive innovations is legal enforcement, which is an obligation- rather than motivation-based instrument and can not always be guaranteed to bring forward the best possible outcomes on the long term.

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[27] Hellenic Statistical Authority, 2014.
[28] More information available from https://diavgeia.gov.gr/api/help.
[29] More information available from https://yperdiavgeia.gr/.

Table 8. Other Examples of dirsuptive innovation efforts

Example		Country	Furthernformation pointers
Improving Financial Support Program		Bahrain	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3435
Open Government Data Policy		Jordan	• chapters/appendices on contributed ESCWA member country examples
Tasdeed		Kuwait	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3347
USSD Application		Tunisia	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3745
Emirates ID BPR Initiative		UAE	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3660
vTaiwan		Taiwan	• website: https://vtaiwan.tw/

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

3.   Selected book sources for further reading

Dru, J.-M. (2015). *The Ways to New 15 Paths to Disruptive Innovation*. Hoboken, NJ: John Wiley & Sons, Inc.

Ramdorai, A. and Herstatt, C. (2015). *Frugal Innovation in Healthcare How Targeting Low-Income Markets Leads to Disruptive Innovation*. Cham, Switzerland: Springer International Publishing AG.

Snow, S. (2016). *Smartcuts The Breakthrough Power of Lateral Thinking*. New York City, NY: Harper Business.

F.   GUIDANCE AND EXAMPLES ON FRUGAL INNOVATION

1.   Description

Frugal innovation efforts can be considered as efforts that Bring forward small-sized and low-cost changes that may have a multiplier effect and/or desirable impacts positively disproportionate to the budget and resource consumptions that they demand; and/or remove non-essential features to make something more accessible or affordable.

Table 9. Rationale, critical success factors, risks and promises of frugal innovation efforts.

Rationale	• instead of trying to entirely change something complicated, start by identifying small isolated changes that accumulate to a meaningful improvement • to improve does not only mean to add something new, but also to remove something that adds complexity but not real value
Critical success factors	• the changes to effect, although small and simple, need to be meaningful • the changes to effect need to have no undesirable lateral effects
Risks	• considering frugal as a synonym to cheap, and making low cost a priority over real value
Promises	• if we are ingenious enough and understand something well enough, we can find small changes that can make a big difference

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

2.   Examples

a. Twitter account of the Disaster Management Unit of Municipal Corporation of Greater Mumbai
(Country: India; Website: https://twitter.com/disastermgmtmum?lang=en)

Mumbai, capital of the state of Maharashtra, India, has an estimated metropolitan population of more than 21 million people (2016 data), which makes it the most populous city in India (after Delhi) and one of the most populous urban areas in the world (ranking 4th according to 2016 UN data)[30]. The population density of the City of Mumbai is one of the highest in the world, currently estimated to more than 30,000 people per square kilometre[31]. At the same time, India is one of the countries of the world particularly affected by natural disasters. Of the latter, floods are the most frequent (at more than 50 per cent) and damaging, accounting for some 30 per cent of life losses and more than 65 per cent of economic issues[32]. In this context, disaster management at the city level is clearly critical.

At the same time, internet penetration in India is growing fast. According to CIA Factbook data[33], mobile subscriptions have surpassed 1.1 billion; according to India government data urban internet subscribers in the state of Maharashtra exceeded 19 million as of January 2016[34], whereas according to third sources the total number of internet subscribers in the state exceeded 29 million as of March 2016, becoming the highest in the country[35]. Regarding social media penetration, Facebook subscribers are estimated to 241 million as of June 2017[36], whereas the number of Twitter subscribers was estimated at 22 to 23 million during 2016[37]. Still, according to more recent (May 2017) third sources, during 2017Q1 India has become the fastest growing market for Twitter worldwide in terms of daily active users[38].

The Municipal Corporation of Greater Mumbai, responsible for managing the City of Mumbai and offering public services, has gone online since June 2003 and is currently offering a number of transactional e-government services through the mcgm.gov.in portal, including some single-window offerings such as film shooting (Mumbay being a major pole for India's film industry) and outdoor event permissions[39]. MCGM has established a Disaster Management Unit, set up in 1999 at the level of the Municipal Head Office with a core mission to handle disasters and emergency situations. This is also reflected in DMU's main functions and objectives, of which an important part has to do with preparedness, alerting and communication. Flood incidents comprise the major type of disasters to be handled.

In this context, the MCGM Disaster Management Unit has set up and operates two social media accounts, on Facebook[40] and Twitter[41]. Both accounts host daily updates (mirrored for the most part) for weather forecasts

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[30]   DESA, 2016.
[31]   The Hindu Business Line, 2017.
[32]   PreventionWeb, 2014.
[33]   Central Intelligence Agency, 2017.
[34]   Government of India, 2016.
[35]   The Hindu Business Line, 2017.
[36]   Miniwatts Marketing Group, 2017.
[37]   HuffPost, 2016.
[38]   Chaturvedi, 2017.
[39]   Municipal Corporation of Greater Mumbai, 2017.
[40]   For more innovation visit https://www.facebook.com/DisasterManagementUnitMumbai/.

and tide levels, as well as heavy rain alerts. At the same time, the Twitter account is additionally used to update the public about handling of eventual violent incidents that may result in injuries and life losses. The DMU Facebook account has currently acquired some 400 likes and an equal number of followers, whereas data on the total number of posts and launch date are not available. The DMU Twitter account, on the other hand, has acquired more than 36,000 followers and published some 4,600 tweets since February 2013 when it was launched, at an average tweeting rate of 2.65 tweets per day. The difference in the followership of these two accounts, which is disproportional (even inverse) to the penetration of the corresponding social platforms indicated by the data provided above, may be explained by a number of factors. The most important of these is considered to be the appropriateness and immediacy of Twitter on mobile devices as an instant and handy information outlet in case of emergencies.

The main interest of the DMU Twitter account as a case of public sector innovation lies in the shift of thinking which leads a public sector to open up its practice to using new media as a disaster management and crisis communication tool. Indeed, Twitter as a medium is ideal for that purpose, due to the fact that it is at the same time (a)social, in the sense of supporting networking and instrant rediffusion of messages to contacts; (b) accessible through mobile devices and thus allowing to reach users on the move, unlike other mass media such as television, radio and even the internet that are more or less addressing stationed users; and (c)tailored to short messaging, which facilitates first-message and brief information diffusion. Consequently, in contexts where Twitter has achieved an important user base, it can be considered as a very convenient instrument for public sectors to innovate their message diffusion practices. At the same time, this example qualifies as one of frugal innovation, mainly because of its simplicity to implement. In fact, given that client-side infrastructure (internet coverage, internet-enabled mobile phones and Twitter app) is already in place, the only costs and complexity that remain for a public sector to handle are to setup an appropriate communication strategy and staff a small group of operators to run and monitor this channel.

Table 10. Other Examples of frugal innovation efforts

Example	Country	Furtherinformation pointers
SmartHalo	Canada	• webpage https://www.smarthalo.bike • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
COBWeb Citizen Observatory Project	EU	• webpage https://cobwebproject.eu/ • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
Government Account on Apple & Google Stores	Jordan	• chapters/appendices on contributed ESCWA member country examples
Ushahidi	Kenya & international	• webpage https://github.com/ushahidi • ESCWA PSI workshop presentations,
Amazon Mechanical Turk	USA	• webpage https://www.mturk.com • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
DebateGraph	UK	• webpage https://debategraph.org • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
Volunteering Queensland	Australia	• Webpage: https://volunteeringqld.org.au/

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

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[41] For more innovation visit https://twitter.com/DisasterMgmtMum.

3.   Selected book sources for further reading

Blokdyk, G. (2017). *Frugal Innovation Complete Self-Assessment Guide*. North Charleston, SC: CreateSpace Independent Publishing Platform.

Leadbeater, C. (2014). *The Frugal Innovator Creating Change on a Shoestring Budget*. Basingstoke, UK: Palgrave Macmillan.

Radjou, N. and Prabhu, J. (2015). *Frugal Innovation How to do more with less*. Gurgaon, India: Hachette India.

G.   GUIDANCE AND EXAMPLES ON INCREMENTAL INNOVATION

1.   Description

Incremental innovation efforts can be considered as efforts that focus on effecting a series of small innovative improvements, one at a time, using the achievement of some set objectives as concept of success.

Table 11. Rationale, critical success factors, risks and promises of incremental innovation

Rationale	• innovation costs need to be proportionate to some set objectives • not too many innovations need to be effected at the same time
Criticalsuccess factors	• out of many innovation increments possible at some point, the right one needs to be chosen for realization
Risks	• keeping increments proportionate to set objectives may not allow some nice and bigger-scale ideas to find their way to realization
Promises	• innovation, wisely used, can achieve objectives without wasting resources

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

2.   Examples

a.   Resilient City Strategy of the City of Byblos
(Country: Lebanon; Website: http://www.resilientbyblos.org/)

Byblos is a small Mediterranean city in north-western Lebanon, with a population estimate of approx. 27,000 urban residents going up to some 100,000 metropolitan inhabitants, and a surface area of 10 sq.km for the core urban zone, expanding to 17 sq.km for the metropolitan area[42]. The Byblos port is considered one of the

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[42]   Resilient Byblos, 2016; 100 Resilient Cities, 2016.

oldest ones in the world, given that the history of the City of Byblos goes back to prehistorical times, with the first inhabitants believed to have arrived at least by the Neolithic Period (c.8000-c.4000BC) and an important settlement developed during the 4th millennium BC[43]. Due to its outstanding universal value, the City of Byblos was designated as a UNESCO World Heritage Site in 1984.[44] Emergency safeguarding actions were taken in 2006 and 2010, following the Lebanon war crisis and due to ecological damage[45]. At the same time, the city has undergone further crises such as the Zina winter storm hit in January 2015, as well as the need to accommodate a number of Syrian refugees (some 5,500 refugees registered as of December 2014)[46].

The City of Byblos has collaborated with the 100 Resilient Cities project and joined the 100RC network in December 2013, in order to develop and implement a strategy for improving its current infrastructures and withstand future crises. The 100 Resilient Cities project, funded by The Rockefeller Foundation, provides cities with support to become resilient in the face of natural disasters as well as endemic problems and stresses, from water-food-energy nexus security issues to unemployment and public service inefficiency problems. In this respect, cities joining the 100RC network are provided with support for establishing resilience responsibility within their city governance structure in the form of a Chief Resilience Officer position (CRO), develop a resilience strategy and access potential public, private and NGO partners who can help with implementation, as well as network and exchange expertise with other 100RC cities. The current 100RC Network encompasses 98 cities, dispersed around in more than 50 countries worldwide.[47]

In this respect, the ResilientByblos.org website has been set up[48], and the 2-year City of Byblos Resilience Strategy was announced in April 2016. According to this strategy (100 Resilient Cities 2016), Byblos sets out to become a connected, resource efficient, peaceful, cultural and thriving city, through innovative and inclusive solutions for urban and ecosystem services, social cohesion, cultural diversity, local identity as well as diversified economic development. To this end, 13 goals have been identified and translated into 33 specific actions, most of which are owned by the Byblos Municipality. At the same time, a Facebook account for Byblos Resilient City has been created on September 2014 and had 230 followers at the time of writing.[49]

This example presents an interesting case of how a small municipality, under-resourced in a number of ways with respect to the challenges faced, still arrives at thinking about ways of making things better for its citizens and residents. Two important factors can be identified in this effort: firstly, the contact with a network, which can support with methodology and implementation knowhow, as well as with further networking with peers; and secondly, the focus on innovation and inclusion, as two pillars for making things better for all. Inclusion, in particular, plays a critical role in this case, given the multinational and multicultural origins of the City of Byblos citizens and newly-settled residents.

At the same time, this example qualifies as one of incremental innovation, due to the fact that the strategy developed is not based on a big-bang approach to deploy one-off large-scale projects, but rather at small increments (embodied in actions, which contribute to goals) to bring positive change in small chunks, one at a time. It can be noted that this approach is also reflected in the development process and the final formulation of the city resilience strategy itself, which has evolved through successive steps of controlled ambition. This example, therefore, offers a number of interesting principles for public sectors to uptake, whether concerned with resilience at city level or broader, or with incremental innovation in more general contexts.

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[43]   Wikipedia, 2017; Encyclopædia Britannica (eds.), 2007.
[44]   UNESCO, 2017.
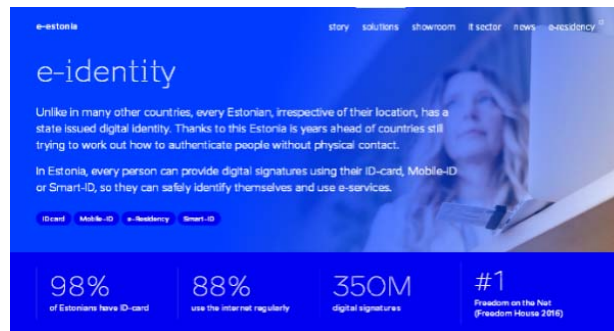[45]   UNESCO, 2010.
[46]   100 Recilient Cities, 2016.
[47]   100 Resilient Cities, 2017.
[48]   100 Recilient Cities, 2016.
[49]   See https://www.facebook.com/Byblosresilientcity/.

Estonia, with a population of some 1.3 million residents[50] and a surface area of approx. 45,000 sq.km[51], represents one of the newest and smallest countries of Europe. Still, Estonia has achieved an advancement in e-government and e-participation services positively disproportionate to its small geographical size, setting an example at a global scale. In the 2016 UN E-Government Survey, Estonia is globally ranked 22nd in the best e-participation performers for 2016, and 13th in terms of Online Service Index (OSI) and E-Government Development Index (EGDI) levels.[52]

The Digital ID Card represents a flagship project of Estonian Government to drive the country onwards to a new generation of electronic services and digital transformation and has resulted in 3 distinct products, available to all Estonian citizens irrespective of their location: a conventional ID card equipped with a digital chip containing 2048-bit public key encrypted holder identifying information and personal data files; a Mobile-ID SIM card, available from commercial mobile operators, which allows the holder to use her/his mobile phone as identification instrument; and a Smart-ID mobile app which allows a mobile phone to be used as identification instrument even in the absence of a SIM card[53].

These solutions to secure identification, perhaps the single most important issue for the advancement of e-government services, are not devoid of problems. There are incidents, for instance, where the Estonian state has decided to block the certificates of a great number of ID cards asking their holders to renew them, for fear of identify theft[54]. Still, these problems come along with unprecedented opportunities for innovative service offerings, such as the e-residency service[55]. The latter allows citizens and business from all over the world to acquire a valid Estonian digital ID to allow them transact with the Estonian state and thus set up companies registered under Estonian law and tax regime, thus moving towards the deterritorialization of citizenship.

More information on the above developments and their different aspects and implications may be found in the e-Estonia e-identity website and the sources provided below. At the same time, what makes this example interesting and qualifying as a case of incremental innovation, is the capability, once a digital identification infrastructure is in place, to increment digital IDs with new service offerings, one offering at a time, in a simple and essential way. This in fact could be considered as one of the major strengths of this example, which can be uptaken in public sector innovation efforts. At the same time, the cross-border interoperability and service potential that such an identification solution brings along should not go unnoticed, especially in cases of countries that already share, beyond common borders, also common languages and cultures, such as the Arab Region countries.

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[50] Available from https://www.stat.ee/population.
[51] The World Bank, 2017b.
[52] Division for Public Administration and Development Management, 2016.
[53] e-Estonia, 2017.
[54] ID.ee, 2017.
[55] e-Estonia, 2017.

Table 12. Other Examples of incremental innovation efforts

Example	Country	Further information pointers
Applying ISSA Guidelines	Jordan	• chapters/appendices on contributed ESCWA member country examples
School Oral Health Program	Kuwait	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/2747
Invest Easy Initiative	Oman	• chapters/appendices on contributed ESCWA member country examples
Hemodialysis Center	Saudi Arabia	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3911
Transparency of Laws Initiative	UAE	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3615

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

3.   Selected book sources for further reading

Bell, Michael (2016). *Incremental Software Architecture: A Method for Saving Failing IT Implementations*. Hoboken, NJ: John Wiley & Sons, Inc.

Boehm, Barry and others (2014). *The Incremental Commitment Spiral Model: Principles and Practices for Successful Systems and Software*. Boston, Massachusetts: Addison-Wesley Professional.

Trauffler, Gaston and Tschirky, Hugo P. (2007). *Sustained Innovation Management. Assimilating Radical and Incremental Innovation Management*. Basingstoke, UK: Palgrave Macmillan.

H.   GUIDANCE AND EXAMPLES ON LOCAL INNOVATION

1.   Description

Local innovation efforts can be considered as efforts that are explicitly focused on improving a specific local aspect (service, product, way of work), taking stock of elements unique to the corresponding local geography and context.

Table 13. Rationale, critical success factors, risks and promises of local innovation

Rationale	• local problems can best be solved by considering the local context
Criticalsuccess factors	• the local context needs to be considered selectively, needs are different than interests • local factors need to be considered creatively, and taken up as opportunities rather than shortcomings for innovation
Risks	• local solutions may lack broader value in terms of generality and scalability • local solutions may jeopardize shared resources with tragegy of commons effects
Promises	• innovative solutions readily adapted to uptake by local communities

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

2. *Examples*

a. City of Boston Citizen Connect Apps
(Country: USA; Website: https://www.boston.gov/departments/innovation-and-technology/apps)
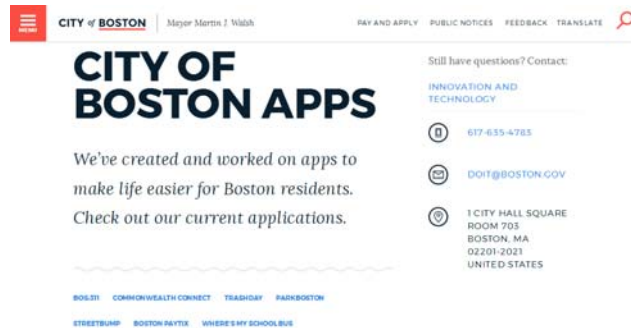
The City of Boston, capital and largest city of Massachusetts, USA, has a core population of 660,000 (2016) inhabitants.[56] At the same time, the city is central to the Greater Boston urban agglomeration, with an estimated population of more than 4 million[57], and more than 8 million when commuters are considered.[58] In this respect, the City of Boston represents a dynamic example of USA cities that strive to manage their current state of needs and offerings, as well as improve their services and prospects to current and would-be residents.

The City of Boston Innovation and Technology Department (CoB I&TD) focuses on maintaining and improving the City's communication infrastructure with equity for all residents, tracking project progress and service needs through data analytics, as well as providing enterprise applications for CoB departments and digital engagement services for Boston residents. In this respect, the CoB I&TD has deployed a series of mobile apps, under the central motto of "making life easier". These include apps for reporting non-emergency issues (BOS:311), having problems reported by commuters who may not know who to contact in local administrations (Commonwealth Connect), reminding of trash collection schedules and recyclable materials (Trashday), make mobile payments for parking (ParkBoston, Boston PayTix), collect real-time data about poor road conditions (StreetBump), as well as tracking school buses (Where's my school bus). All these are available as cross-platform smartphone apps, or in online versions. The CoB I&TD has developed these through insourcing, and publicly invites ideas for new apps that should be offered.[59]

What makes this example interesting is the fact this effort is focused on controlled-scale practical services, for everyday life needs well beyond the high politics agenda, which may still be quite important for the service recipients. An online application to track school buses, for instance, is not only a matter of saving time and avoiding waiting outdoors under bad weather but, even more importantly, a matter of students' safety as well.

At the same time, what makes this example qualify as a continuous innovation effort is the fact that these services comprise a series of new improved offerings to city residents which the City of Boston develops over time, disproving the view that grand one-off innovation projects are the only way to go. Clearly, the more this effort stands the test of time the more it helps an innovation culture to install itself, thus fostering continuity of the innovation process.

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[56] Wikipedia, 2017.
[57] DESA, 2016.
[58] World Population Review, 2017.
[59] City of Boston, 2017

Table 14. Other Examples of local innovation efforts

Example	Country	Furtherinformation pointers
Fix2Go	Bahrain	• chapters/appendices on contributed ESCWA member country examples
City Studio Vankouver	Canada	• webpage http://www.citystudiovancouver.com/ • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
Support for Female Entrepreneurship	Morocco	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3932
Baladiyeti Mobile Application	Oman	• chapters/appendices on contributed ESCWA member country examples
Collideoscope	UK	• webpage http://collideosco.pe/
Houston Solve Civic Issues Hackathon	USA	• webpage http://houstonhackathon.com/ • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

3.   Selected book sources for further reading

Eichler, G. and others, eds. (2017). *Innovations for Community Services – Proceedings I4CS 2017*. Cham, Switzerland: Springer International Publishing AG.

Ferretti, M. and Parmentola, A. (2015). *The Creation of Local Innovation Systems in Emerging Countries The Role of Governments, Firms and Universities*. Cham, Switzerland: Springer International Publishing AG.

Motoyama, Y. (2012). *Global Companies, Local Innovations Why the Engineering Aspects of Innovation Making Require Co-location*. Farnham, UK: Ashgate.

I.   GUIDANCE AND EXAMPLES ON OPEN INNOVATION

1.   Description

Open innovation efforts can be considered as efforts in which the people to source and evaluate ideas are prescribed in terms of minimum profiles that are also met beyond organizational boundaries by external contributors, to present themselves without formal commitments at any stage during the process, the latter being communicated to them in terms of opportunity to shape solutions.

Table 15. Rationale, critical success factors, risks and promises of open innovation

Rationale	• conventional wisdom cannot solve original problems • we only want what our beneficiaries want
Criticalsuccess factors	• participants need to be attracted and engaged throughout the process • the process needs to have rigorous and time-effective leadership
Risks	• an open process may fail to include all stakeholder groups in a fair way
Promises	• innovations really innovative and really unbiased

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

2.   *Examples*

a.   eCitizen ideas! Your Gateway to All Government Services
(Country: Singapore; Website: https://ideas.ecitizen.gov.sg/)

Singapore represents a globally unique case of a vibrant city-state and island country have achieved to rank high along a number of development indices. With a population of some 5.6 million (2016 data)[60], and a surface area of approx. 720 sq.km.[61] Singapore has one of the highest population densities in the world (some 7,800 residents per sq.km.), ranking 3rd after Macau and Monaco and before Hong Kong. At the same time, with an age median of 40.0 years old, an annual output of some 40,000 university and polytechnic graduates, a mobile penetration rate of approx. 150 per cent[62] and 4.4 million internet users currently[63] (some 78 per cent of total residents, as compared to approx. 47 per cent for Asia and approx. 52 per cent globally[64]), Singapore has built up ideal conditions for development. The country is steadily one of the best performers in the UN E-Government Survey, ranking among the 10 best performers in e-government and e-participation in 2012, 2014 and 2016[65].

In this context, the eCitizen portal of the Singapore government has been one of the pioneering examples for offering government services in an electronic and single-window manner, as well as for facilitating citizen participation with ideas for making the country, of which a major part is the City of Singapore itself, a better place. Indeed, with the eCitizen.gov.sg portal going online as of February 1999, the current e-service offering of the Singaporean Government entails more than 680 services from more than 120 agencies, with agencies like the Agri-Food & Veterinary Authority of Singapore; the Agency for Integrated Care; the Housing & Development Board; the Land Transport Authority; the Ministry of Defence; the Ministry of Manpower; the National Environment Agency; and the Singapore Police Force offering more than 20 different services each online, the champion being the Singaporean Ministry of Manpower offering an array of 47 online services.[66]

At the same time, the top-popular services offered include both services related to important life events and decisions (such as housing, retirement), services related to recurring citizen obligations (including tax and loan payments, as well as renewal of licenses and permits), down to services on everyday life facilities like renewal of season parking tickets and payment of fines[67]. At the time of writing (November 2017), the eCitizen.gov.sg portal is undergoing re-construction due to an overall migration effort of the Gov.sg website, but uninterrupted service level has been assured by reconfiguring the portal's home as an interim information page, and redirecting citizens to the CitizenConnect directory of government agency and service listings.

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[60]   The World Bank. 2017a.
[61]   The World Bank. 2017b.
[62]   Singapore Department of Statistics, 2017.
[63]   Statista, 2017.
[64]   Miniwatts Marketing Group, 2017a.
[65]   For more information visit https://publicadministration.un.org/egovkb/en-us/Global-Survey.
[66]   Government of Singapore, 2017a.
[67]   Ibid.

It is clear that all of this aggregare government service offering online, one of the best in the world, substantiates the image of a government responsive to citizen needs, and innovating to open up its services to the citizens. At the same time this e-service offering constitutes important value, thus serves as proof of the idea that there is value online, and thus fosters a culture of considering valuable to interact with government online. These shifts, in turn, create a climate extremely favourable for extending government-to-citizen interaction with one more major shift: that of government which, after having *innovated in order to open up* its services to citizens, is now *opening up to citizens in order to further innovate*. This is exactly the idea underlying the eCitizen Ideas! portal, which invites citizens to contribute ideas for making Singapore a better place through the work of Government as well as through their own entrepreneurial activity. The process is driven by challenges set by government agencies, to which people are invited to submit their best possible ideas, and the best of the ideas submitted are rewarded with financial prizes ranging from some hundreds[68] to some thousands USDollars.[69] At the time of writing, the portal reports more than 900 ideas submitted by more than 6,400 contributors in response to a number of challenges of which more than 60 have been completed, with more than 80 prizes won. On top of that, the eCitizen Ideas! website includes a publicly visible leaderboard, to gamify the process of idea contribution with points and badges awarded for active participation, as well as a a funding page, listing seven different government funding programs where idea contributors may wish to apply for support, not just for one-off implementation of their ideas, but also for launching entrepreneurial undertakings in the form of start-ups and public-private co-innovation partnerships.[70]

Table 16. Other Examples of open innovation efforts

Example	Country	Furtherinformation pointers
InnoCarnival	Hong Kong	• webpage https://itm.gov.hk/activityinnoc • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
Dutch Open Hackathon	Netherlands	• webpage https://dutchopenhackathon.com/ • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
Road Safety Initiatives	Oman	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/2400
Governmental Mobile Apps Competition	Palestine	• chapters/appendices on contributed ESCWA member country examples
Innovation Fund and Innovation Awards Program	Pakistan	• OECD Observatory for Public Sector Innovation webpage: https://www.oecd.org/governance/observatory-public-sector-innovation/innovations/page/innovationfundandinnovationawardsprogram.htm
SingHealth Hackathon 2017	Singapore	• webpage http://www.singhealthresidency.com.sg/Pages/msc_45_ff.aspx • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
Porto Alegre Prefecture Participatory Budgeting	Brazil	• website: http://www2.portoalegre.rs.gov.br/op/)

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

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[68] For instance, $600 for the Digital Shopfront Challenge organized by Govtech, more information available from https://ideas.ecitizen.gov.sg/egp/process/EGOV/EideasChallenge/?challengeId=20065.

[69] For instance, $15,000 for the Spark Challenge organized by URA and REDAS, more information available from https://ideas.ecitizen.gov.sg/egp/process/EGOV/EideasChallenge/?challengeId=20066.

[70] Government of Singapore, 2017b.

3.   Selected book sources for further reading

Chesbrough, H., and others, eds. (2017). *New Frontiers in Open Innovation.* Oxford, UK: Oxford University Press.

De Pablos Heredero, C. and López Berzosa, D. (2012). *Open Innovation in Firms and Public Administrations Technologies for Value Creation*. Hershey, PA: IGI Global.

Hjalmarsson, A. and others (2017). *Open Digital Innovation A Contest Driven Approach*. Cham, Switzerland: Springer International Publishing AG.

Sigismund, A. and others, eds. (2013). *Leading Open Innovation*. Cambridge, MA:The MIT Press.

J.   GUIDANCE AND EXAMPLES ON SUSTAINABLE INNOVATION

1.   Description

Sustainable innovation efforts can be considered as efforts that beyond deploying a specific innovation, establish material and immaterial conditions necessary and sufficient in order to create an innovation process without foreseen end, that will generate innovations and inform, motivate, improve and re-fuel itself through the innovations produced already, in order to advance by regenerating the resources that it consumes.

Table 17. Rationale, critical success factors, risks and promises of sustainable innovation efforts.

Rationale	• if nature needs to remain diverse and productive to support our needs, so does innovation
Critical success factors	• all stakeholders need to be continually committed, in order to make innovation sustainable • the process needs to remain diverse, all ideas need to be given room to flourish • the process needs to remain productive, innovations need to be assessed in terms of the room for more innovations that they open up
Risks	• thinking big, without starting small • sustainable innovation cannot be guaranteed via planning and investments, it can only be achieved in practice
Promises	• a better future lies ahead, for all of us

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

2.   Examples

a.   Participation Cymru
(Country: United Kingdom, Wales; Website: https://participation.cymru/en/)

Wales, as a country of the United Kingdom, has an estimated population of 3.1 million residents (mid-2016 data), accounting for approximately 4.7 per cent of UK's population.[71] At the same time, with its approx. 20,000 km^2 surface area[72] (some 8.5 per cent of the UK surface area[73]), its mountainous landscape and its distinctive language and culture, Wales represents an interesting case of a country with particular contexts and needs.

Participation Cymru (Cymru standing for Wales in Welsh) is an effort hosted by the Wales Council for Voluntary Action (WCVA), as an instrument for working with public service organizations towards better engagement of the public for the deployment of public services. On the premise that services for the public need to be designed, developed and delivered in a way that incorporates requirements and choices expressed by the public itself, Participation Cypru is addressing all organizations that develop public services, whether these come from the public, private or third sectors, to help them with methods and know-how for better engaging citizens. In this respect, Participation Cymru currently offers a list of more than 20 tailorable training courses for public service organizations, alongside offerings for bespoke training, facilitation and practical engagement work.[74] On top of that, WCVA has developed a discrete advice and guidance offering especially targeted at third sector organizations, acknowledging the important role that civil society can play for helping the public (just as public services aspire to), and focused on practical advice for managing and running charities and other TSOs.[75]

The interest of this example stems from multiple reasons. Firstly, Wales, forming part of the United Kingdom which has traditionally been on the forefront of e-government and e-participation globally, is clearly exposed to state-of-the-art thinking in these domains. Secondly, the smaller size of Welsh population, coupled with the country specificities mentioned above, creates particular opportunities for fostering voluntary public engagement through learning and support instruments such as Participation Cymru and WCVA itself. It should not go unnoticed, in this respect, that Participation Cymru operates within an organization addressed to foster voluntary action, in general. Thirdly, the audience design of Participation Cymru makes a very interesting paradigm shift, from public sector to public service organizations, the latter comprising organizations of any legal status that offer services to the public, acknowledging the fact that the public nature of the services offered is more important to consider than the public legal status of provider organizations. Fourthly, the training themes currently developed include not only inclusion –focused themes (young people, communities seldom heard) but also forward-thinking themes such as practical co-production and picture-based engagement.[76]

At the same time, this effort qualifies as a sustainable innovation one, due to the fact that is meets two basic conditions for sustainability. Firstly, it acknowledges diversity along the legal status of public service organizations addressed, the different groups of public to help engage, as well as the broad spectrum of methods to help create engagement. Secondly, it pursues reproducibility, based on the ethos of "working with people and organisations and not for them". This allows learning individuals and organizations to find their own way of applying what they have learnt, and thus operate as multipliers by example and, ultimately, as next-generation trainers and facilitators.

Table 18. Other Examples of sustainable innovation efforts

Example	Country	Furtherinformation pointers
Establishing the Labor	Bahrain	• Knowledge Base of UN Public Service Awards webpage:

[71] Office of National Statistics, 2017.
[72] Welsh Government, 2017.
[73] The World Bank, 2017b.
[74] Welsh Council for Voluntary Action, 2017.
[75] More information available from https://www.wcva.org.uk/advice-guidance.
[76] More information available from https://www.wcva.org.uk/training-and-events/bespoke-training/courses/engaging-through-pictures.

Fund (Tamkeen)		• https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3904
Technology Innovation and Entrepreneurship Centre (TIEC)	Egypt	• chapters/appendices on contributed ESCWA member country examples
Medicines Patent Pool	international	• webpage https://medicinespatentpool.org/ • ESCWA PSI workshop presentations.
Center of Excellence for Innovative Projects	Jordan	• chapters/appendices on contributed ESCWA member country examples
GIFT-MENA	Lebanon	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3607
Innovation Park Muscat	Oman	• chapters/appendices on contributed ESCWA member country examples
Palestine Public Finance Institute	Palestine	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/5165
The Hunger Project: Empowering Women and Men to End Their Own Hunger	International	• website: http://www.thp.org/

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

3. Selected book sources for further reading

Gatignon, H. and others (2016). *Making Innovation Last Sustainable Strategies for Long Term Growth (Vol.1 and Vol.2)*. Basingstoke, UK: Palgrave Macmillan.

Leal-Millan, A. and others, eds. (2017). *Sustainability in Innovation and Entrepreneurship Policies and Practices for a World with Finite Resources*. Cham, Switzerland: Springer International Publishing AG.

MacGregor, S.P. and Carleton, T., eds. (2012). *Sustaining Innovation Collaboration Models for a Complex World*. Berlin, Germany: Springer Science+Business Media B.V.

K. CONCLUDING NOTES: AN 8X8 QUEENS MATRIX OF EXAMPLES FOR PUBLIC SECTOR INNOVATION

The selection process of the examples in the above sections has proceeded along the following principles:
- bring forward examples considering the cases already included in existing databases and repositories of the United Nations and other international organizations (e.g. The World Bank) but also going beyond them, in order to enrich the sources already available for interested public sectors;
- bring forward examples of innovation efforts implemented by public sectors in the strict sense, as well as examples of innovation implemented by third party stakeholders (e.g. international organizations as well as civil society organizations) that public sectors could consider to embrace as is as well as adapt or use as sources of inspiration in their own contexts; and
- selected examples that provide an appropriate coverage along three important dimensions: (a) aims and scope of innovation; (b) types of processes for innovation; and (c) diversity across different geographies and socio-economic contexts all over the world.

The outcome of this effort is presented in Table 19 below, as an 8x8 queen's matrix of examples for public sector innovation. This matrix is structured along two dimensions, a WHAT dimension for different aims and scope and a HOW dimension for different process types of innovation efforts. A set of 8 characteristic cases has been identified for each dimension as follows:

- cases identified for the WHAT dimension (different aims & scope of innovation efforts): innovation in local government; innovation to help communities; innovation for better governance; innovation in specific domains; innovation for gender equality; innovation in small countries; innovation under crisis; and innovation for SDGs;
- cases identified for the HOW dimension (different process types of innovation efforts): bottom-up innovation; collaborative innovation; continuous innovation; disruptive innovation; frugal innovation; incremental innovation; open innovation; and sustainable innovation.

Examples included in this matrix have been selected so as to have two examples available for each case of different aims and scope, two examples available for each case of different process type, the overall set of examples dispersed along different geographies, and no any two examples coinciding in terms of contents (i.e. each example referring to a different case of innovation). In this respect, all 16 examples included in this matrix are not antagonistic to each other, in the sense that a public sector could in theory consider uptaking all of them, without any two of them coinciding by referring to practically similar cases. In this sense all of these examples are not attacking, so to say, each other, thus the wording used to refer to the matrix below as an 8x8 queens matrix, since its construction logic is reminiscent of solutions to the 8x8 queen's problem in chess.

Table 19. An 8x8 queen's matrix of examples for public sector innovation.

WHAT & HOW dimensions	HOW: innovation process types							
WHAT: innovation aims & scope	bottom-up innovation	collaborative innovation	continuous innovation	disruptive innovation	frugal innovation	incremental innovation	open innovation	sustainable innovation
innovation in local government			City of Boston Apps				Porto Alegre PB	
innovation to help communities					Volunteering QLD			Participation Cymru
innovation for better governance				Diavgeia			eCitizen ideas!	
innovation in specific domains		TAXISnet	GSIS.ph					
innovation for gender equality	Solar Sister							The Hunger Project
innovation in small countries				vTaiwan		e-Estonia ID Card		
innovation under crisis		HDX			DMU Mumbai			
innovation for SDGs	Project Isizwe					Resilient Byblos		

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

The examples included in this matrix are documented in the previous sections with basic information, including innovation aims & scope, innovation process type, full name, country, online presence URL and website snapshot.

III.   THE IDEA LIFECYCLE FOR PUBLIC SECTOR INNOVATION

A.   INTRODUCTORY NOTES

This chapter presents the IDEA lifecycle, which has been developed in the context of this study as a proposal at the level of a methodology instrument for developing and, most importantly, sustaining, innovations in public sectors. At the same time, care has been taken to substantiate this proposal by systematic liaising it to ICT tools that allow implementing the way of work prescribed. The detailed correspondence of the IDEA lifecycle to different categories of ICT tools, as well as the methodology according to which best-in-class tools for each one of these categories have been located and catalogued, are documented in corresponding annexes of the study[77].

The IDEA lifecycle for public sector innovation is based on the premise that innovation efforts in public sectors have three important characteristics:
- (a) they comprise a multi-step, rather than monolithic, process;
- (b) they are complex in nature and involve stakeholders both internal and external to the public sectors; and
- (c) they are not linear in nature, but necessitate iterations at specific stages as well as in their overall implementation frame.

These characteristics, which may be found in innovation efforts in many different domains, are especially applicable to such efforts within public sectors, given the institutional orientation of the latter to operate in extrovert terms, by providing products and services that aim to serve citizens and businesses whose needs are diversified at any point in time, as well as dynamically evolving over time.

At the same time, these characteristics become even more crucial when the need for sustainability, rather than one-off implementation, of public sector innovations comes into the picture. Sustainability of innovations, just like sustainability of any change in the current state of affairs, implies that these innovations need to
- actually provide improvements and added value with respect to previous ways of work;
- allow all stakeholders to perceive this, and therefore provide their active consensus for keeping these innovations alive in the course of time;
- actually provide more efficient use of resources (doing the same with less, doing more with the same);
- allow public sectors to perceive this, and therefore provide their active support against abandoning these innovations in the course of time; and, last but not least,
- be open to further revisions and improvements or, in other words, do not promote themselves as the solution to avoid any further innovation, but rather than the opposite;
- encourage all internal and external stakeholders to adopt this mindset and actively contribute further ideas for improvements.

In this respect, the IDEA lifecycle which is described below for implementing and sustaining public sector innovation, encompasses provisions for building consensus, support as well as further improvements around innovations in the public sector, in order to help not only their initial implementation but their sustained operation as well.

## B.   OVERALL STRUCTURE OF THE IDEA LIFECYCLE

This IDEA lifecycle encompasses, at the top-level, four discrete phases for generating ideas for innovation (Ideation Phase), deliberating over these together with external stakeholders (Deliberation Phase), implementing them in an circular evolutionary process (Evolution Phase), and monitoring how they are

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[77] https://www.unescwa.org/sub-site/97611/resources

adopted by all stakeholders involved (Assimilation Phase). Figure 1 provides a simple representation of the top-level structure of this lifecycle.

Figure 1. Top-level structure of the IDEA lifecycle
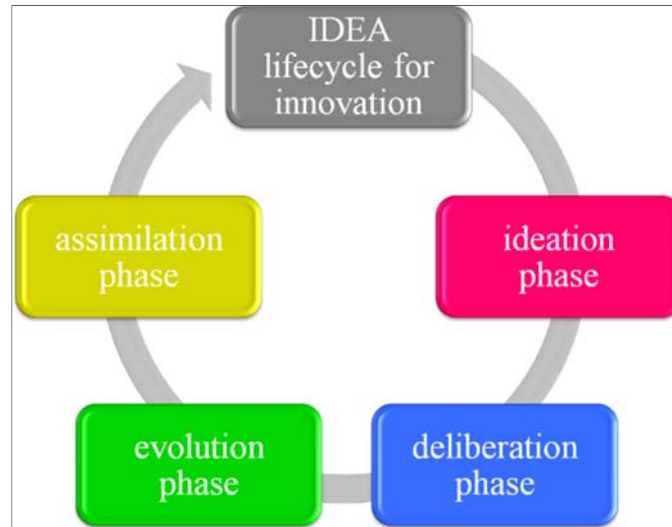
Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

Every one of these phases is circular in itself, namely in practice it may need to be iterated for a number of times in order to arrive at more mature results that will stand the test of time. This need for phase-level iterations further depends on contextual factors such as
- the complexity of the problems to be solved;
- the diversity of the stakeholders and resources involved;
- organizational and social readiness and maturity for change; as well as
- legacy, continuity and interoperability constraints that need to be respected in each case.

At the same time, the IDEA model is circular at the top-level, meaning that the entire lifecycle may need to be iterated for a number of times, in two different cases:
- in the case of first implementation, due to the contextual factors aforementioned that may bring forward new issues that had not been identified in the first walk though of the process; and
- following first implementation, at points in time when it is felt that new potential and/or new needs for improvements are presenting themselves, in order to sustain the innovations that have been implemented.

As a final note, it needs to be kept in mind that the phases prescribed in this lifecycle model, although conceptually discrete, may well not be strictly discrete in practice. The contextual factors mentioned above, as well as the complex nature of innovation in its own right, may result in overlaps between successive phases, or even in by-passing some phase in order to move on directly with the next one. Such instances can only be managed on the experience and judgment of the actors involved. Still, the conceptual differentiation of these phases in the presentation of the model herein, can facilitate the task of planning the innovation effort in such cases as well.

The sections that follow describe the discrete phases of the IDEA lifecycle in more details.

C. IDEA LIFECYCLE: IDEATION PHASE

The top-level purpose of the IDEA lifecycle Ideation Phase is to have the internal stakeholders of the public sector generate ideas for innovation, grounded not just on the potential to innovate, but on actual needs of the public sector for bringing forward positive change.

To this end, the Ideation Phase comprises the activities depicted in Figure 2.

Figure 2. Detailed structure of the IDEA lifecycle Ideation Phase
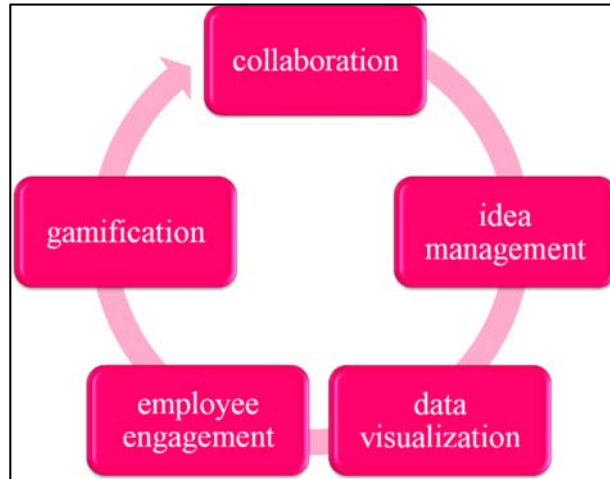
Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

These activities are meant to take place in the following manner:
- All activities need to be enacted in a first full implementation of this phase, and in every subsequent iteration that needs to bring forward significant new outcomes, whereas some of the activities may be omitted in iterations taken for minor improvements only.
- The strict serial order of activities that follows from reading Figure 2 clockwise is not the only option; indeed, there may be cases where these activities can be put in place in a strict linear way with waterfall characteristics (not allowing the next activity to commence before the previous one has completed), and cases where these activities may be enacted in parallel, more or less throughout the implementation of this phase. The final choice depends on the objectives of the specific implementation instance of this phase (cf. previous point), as well as on the time-horizontal vs. time-vertical nature of each activity with respect to the objectives of this phase (cf. points below).
- The Collaboration, Employee Engagement and Gamification activities should best be perceived as more time-horizontal in nature, i.e. as activities that can best be enacted throughout the duration of a full implementation of this phase. The Idea Management and Data Visualization activities, on the other hand, should better be perceived as more time-vertical in nature, i.e. as activities that can best be enacted at appropriate stages during implementation of this phase, and deliver concrete outcomes that will be used by the time-horizontal activities.
- That said, the central positioning of the Collaboration activity in the initiation of the Ideation Phase is meant to convey the idea that every iteration of this phase, whether for full or for partial implementation, should include the enactment of at least this activity.

The activities of the IDEA lifecycle Ideation Phase are described in the following in terms of the core objective of each activity, as well as its contents and aspects of particular importance. Implementation details for each activity in each specific case are left to the public sectors involved, who can best identify the more appropriate ways to implement it considering their own contextual and case-specific factors, whereas

software tools and platforms that may be used for each activity have been located and catalogued in the corresponding appendices of the study.

The Collaboration activity is meant to encourage internal stakeholders of the public sector to collaborate, taken in this context to mean actually work with one another, rather than cooperate, taken in this context to mean simply work in the presence of one another. Practically speaking, the goal of this activity is to make sure that ways of work are put in place which make sure that internal stakeholders work together on joint agendas and co-delivered outcomes, rather than just share information and exchange outcomes of their individual work.

The Idea Management activity is meant to encourage the stakeholders involved to generate ideas for innovations, share these ideas within their internal community, be open to seeking peer review and feedback and co-produce final proposals. At the same time, it is meant to allow decision makers plan and enact internal processes in which the above will take place in a systematic way. It should be noted that this activity is by definition cross-boundary, in the sense that it traverses organizational and expertise boundaries, and can best be enacted by joint teams mixed across hierarchy levels and specializations.

The Data Visualization activity is meant to provide the stakeholders involved with the ability to inspect available data on the public sector's internal work and contextual realities, identify important information that these data deliver, and ground and/or inform their innovation proposals with such hard evidence. This activity clearly entails a sustained level of proper management of the underlying data assets, and is closely related to the Data Governance activity described in the Evolution Phase of the IDEA lifecycle further below.

The Employee Engagement activity is meant to provide public sector managers with instruments to promote and monitor the active involvement and fruitful engagement of personnel in the activities taking place within the Ideation Phase. This activity is particularly important in this context, given that the concept of generating ideas for positive change may more often than not be perceived as additional, unnecessary and/or copious work by the exact people that have the tacit knowledge and facts to contribute the best such ideas.

The Gamification activity is meant to apply meaningful gamification mechanics to the implementation of the Ideation Phase. This builds on the concept that generating new ideas is by definition a creative process, which among others has to do with testing the truth of our own assumptions, beliefs and inspirations in a playful way. This can be explicitly acknowledged through the deployment of game-like processes for generation of ideas in a more systematic way by teams and communities, and the challenges and rewards involved should best be defined in a way meaningful for each specific case.

### D. IDEA LIFECYCLE: DELIBERATION PHASE

The top-level purpose of the IDEA lifecycle Deliberation Phase is to have the internal stakeholders of the public sector reach out to external stakeholders pertinent to the innovation proposals that have been generated, and encourage them to deliberate over the latter. The concept of external stakeholders, in this respect, should be taken as a collective loosely-defined term that may encompass citizens, businesses, interest groups, civil society organizations, as well as other public sectors and international organizations that have an interest in the innovations proposed. In this sense, and given that each one of these actors have their own needs and agendas, it should be expected that external stakeholders beyond deliberating over the agenda set by the public sector initiating this process, may tend to bring forward more issues of interest, or priority, to themselves. In such a case this exercise, which may have been initiated by a public sector as a consultation over a fixed agenda with specific issues and closed-choice questions, may turn into a real deliberation exercise with new issues defined by the stakeholders.

This should not be perceived as an a priori problem, but managed as an opportunity for enriching the engagement of external stakeholders as well as the outcomes of this exercise overall. In this line of thought, it can be noted that the Deliberation Phase of the IDEA lifecycle may be used for idea generation for public

sector innovations from scratch, so that the major innovation ideas-creative stage of the IDEA lifecycle may be moved from internal ideation to cross-boundary deliberation over innovation proposals.

To this end, the Deliberation Phase comprises the activities depicted in Figure 3.

Figure 3. Detailed structure of the IDEA lifecycle Deliberation Phase
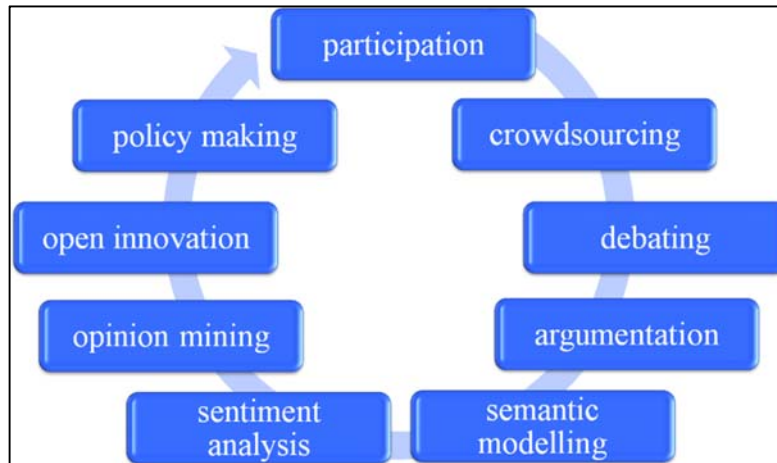
Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

These activities are meant to take place in the following manner:
- All activities need to be enacted in a first full implementation of this phase, and in every subsequent iteration that needs to bring forward significant new outcomes, whereas some of the activities may be omitted in iterations taken for minor improvements only.
- The strict serial order of activities that follows from reading Figure 3 clockwise is not the only option; indeed, there may be cases where these activities can be put in place in a strict linear way with waterfall characteristics (not allowing the next activity to commence before the previous one has completed), and cases where these activities may be enacted in parallel, more or less throughout the implementation of this phase. The final choice depends on the objectives of the specific implementation instance of this phase (cf. previous point), as well as on the time-horizontal vs. time-vertical nature of each activity with respect to the objectives of this phase (cf. points below).
- The Participation, Crowdsourcing, Debating, Argumentation and Open Innovation activities should best be perceived as more time-horizontal in nature, i.e. as activities that can best be enacted throughout the duration of a full implementation of this phase. The Semantic Modelling, Sentiment Analysis, Opinion Mining and Policy Making activities, on the other hand, should better be perceived as more time-vertical in nature, i.e. as activities that can best be enacted at appropriate stages during implementation of this phase, and deliver concrete outcomes that will be used by the time-horizontal activities.
- That said, the central positioning of the Participation activity in the initiation of the Deliberation Phase is meant to convey the idea that every iteration of this phase, whether for full or for partial implementation, should include the enactment of at least this activity.

The activities of the IDEA lifecycle Deliberation Phase are described in the following in terms of the core objective of each activity, as well as its contents and aspects of particular importance. Implementation details for each activity in each specific case are left to the public sectors involved, who can best identify the more appropriate ways to implement it considering their own contextual and case-specific factors, whereas software tools and platforms that may be used for each activity have been located and catalogued in the corresponding appendices of the study.

The Participation activity is meant to encourage stakeholders external to the public sector as discussed above to participate in this deliberation exercise. The primary objective of this activity has to do with the process, rather than the actual outcomes, of participation. In this respect, it needs to be enacted in a way that will ensure an open, inclusive and meaningful process that will deliver rich and focused feedback.

The Crowdsourcing activity is meant to encourage stakeholders external to the public sector operate as information providers, in case where the innovation proposals discussed are in need of information currently not available to the public sector in order to further substantiate their importance and aspects, and/or as problem solvers, in case where the innovation proposals discussed have been formulated in terms of problems to solve or issues to ameliorate, but remain open-ended in terms of the alternative solutions that may be possible.

The Debating activity is meant to encourage external stakeholders to debate over the issues put forward in this overall exercise. The notion of debating, in this respect, has to do with a process in which each stakeholder involved has a protected right and a practical way to voice her or his views, with as few restrictions on structure and volume as possible, in a multi-modal manner allowing for text, voice, video, comments, storytelling and any other similar format as may be appropriate in each context. In all cases, the goal of this activity is to provide rich feedback that may be further explored to identify opinions and new issues.

The Argumentation activity is meant to encourage external stakeholders to react to some issues in a more structured way, formulating their own concrete arguments anew, providing counter-arguments or corroborating arguments to arguments already formulated by others, as well as voting for or against the latter. The goal of this activity is to end up with conceptual maps of arguments over the issues that lay the grounds for innovations, and/or over themselves the innovations proposed, so that the latter are substantiated with a concrete rationale which has gathered public consensus.

The Semantic Modelling activity is meant to allow stakeholders internal to the public sector to explore the (potentially voluminous) corpora of debates and arguments that have been formed at some point in time, in order to identify which issues have been discussed or most discussed, which views are prevalent, which concerns recur most often in the external stakeholders' feedback, and other similar.

In a similar way, the Sentiment Analysis and Opinion Mining activities are meant to allow internal stakeholders of the public sector to explore the aforementioned corpora of arguments and debates, in order to identify positive, neutral and negative reactions with respect to specific proposals (in the case of Sentiment Analysis), as well as codify the different opinions expressed with respect to the issues discussed (in the case of Opinion Mining). It should be noted that the value of these activities, as well as of the Semantic Modelling activity above, is grounded on the fact that different stakeholders generally use different wordings and expression styles to express meanings that may be quite similar, as well as on the fact that, in a successful deliberation exercise, the volume of the resulting debating and argumentation corpora may be such that it will render human inspection and exploration impractical.

The Open Innovation activity is meant to encourage external stakeholders to explicitly engage in an open innovation exercise, with a focus on being creative, thinking in terms of what is possible rather than in terms of what is allowed; being daring in terms of ideas, coming up with proposals that have some solid value even if they seem strange at first glance; and being open in terms of interaction, accepting the right of their peers to criticize and/or build on their own proposals, and accepting the fact that results of this exercise are to be openly shared and owned.

The Policy Making activity, last but not least, is meant to engage stakeholders in an effort to turn their innovation ideas, or their views on the innovation proposals of others, into concrete scenarios for policies that the public sector may adopt. This activity has essentially to do with the need and responsibility of deliberating not for the sake of deliberating, but for the sake of delivering some solutions that can be put into

action and, to this end, need to be expressed in terms of policies and become embedded into new or existing policies of the public sector.

<h3 style="text-align:center">E. IDEA LIFECYCLE: EVOLUTION PHASE</h3>

The top-level purpose of the IDEA lifecycle Evolution Phase is to allow public sectors to implement, along a circular evolutionary process, the innovation proposals that have been formulated. Given that these proposals, as a general rule, will take the use of ICT infrastructures and services for granted, this phase is in fact reminiscent of various approaches that may be found in the literature for implementation of IT and organizational change, and is pertinent to all the issues that arise in the discussion about organizational alignment of information technology.

Along these lines, the Evolution Phase of the IDEA lifecycle comprises the activities depicted in Figure 4.

<p style="text-align:center">Figure 4. Detailed structure of the IDEA lifecycle Evolution Phase</p>
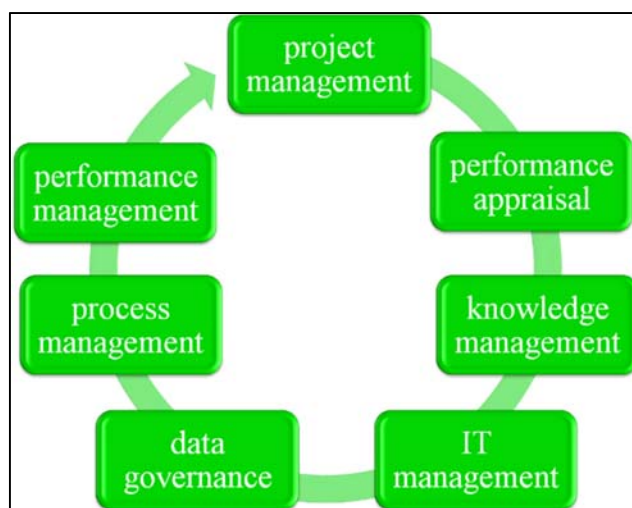
Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

These activities are meant to take place in the following manner:
- All activities need to be enacted in a first full implementation of this phase, and in every subsequent iteration that needs to bring forward significant new outcomes, whereas some of the activities may be omitted in iterations taken for minor improvements only.
- The strict serial order of activities that follows from reading Figure 4 clockwise is not the only option; indeed, there may be cases where these activities can be put in place in a strict linear way with waterfall characteristics (not allowing the next activity to commence before the previous one has completed), and cases where these activities may be enacted in parallel, more or less throughout the implementation of this phase. The final choice depends on the objectives of the specific implementation instance of this phase (cf. previous point), as well as on the time-horizontal vs. time-vertical nature of each activity with respect to the objectives of this phase (cf. points below).
- The Project Management, Performance Appraisal and Performance Management activities should best be perceived as more time-horizontal in nature, i.e. as activities that can best be enacted throughout the duration of a full implementation of this phase. The Knowledge Management, IT Management, Data Governance and Process Management activities, on the other hand, should better be perceived as more time-vertical in nature, i.e. as activities that can best be enacted at appropriate stages during implementation of this phase, and deliver concrete outcomes that will be used by the time-horizontal activities.

- That said, the central positioning of the Project Management activity in the initiation of the Evolution Phase is meant to convey the idea that every iteration of this phase, whether for full or for partial implementation, should include the enactment of at least this activity.

The activities of the IDEA lifecycle Evolution Phase are described in the following in terms of the core objective of each activity, as well as its contents and aspects of particular importance. Implementation details for each activity in each specific case are left to the public sectors involved, who can best identify the more appropriate ways to implement it considering their own contextual and case-specific factors, whereas software tools and platforms that may be used for each activity have been located and catalogued in the corresponding appendices of the study.

The Project Management activity is meant to include all the standard tasks for managing projects, according to the methodologies used by public sectors in this respect. Still, the underlying rationale for explicitly including such an activity in the IDEA lifecycle Evolution Phase, is that the implementation of innovation proposals, if it is to bear fruit, should be explicitly considered as a project in its own right, with its own allocated resources, timelines, work plans and objectives. That said, and in the understanding that it would be more straightforward to implement this activity with the methodologies and tools that the public sectors involved are already using, the option of using more agile project management methodologies and tools for the special case of innovation projects is worth considering, due to the complex nature of these projects and the character of the solutions sought, which are original by definition.

The Performance Appraisal activity is meant to provide public sector managers with instruments to monitor and, more importantly, recognize and appraise, good performance of public sector personnel during the implementation of innovation proposals. The particular importance of this activity in the case of innovation projects stems from the fact that such projects inevitable entail changes to current internal ways of work and external outcomes, with multiple lateral effects that risk to get out of control if not properly managed. In this respect, human factors and good personnel performance comprise maybe the most important critical success factor at least for the back office part of such projects, and the better way to care for this factor would be to monitor and practically appraise good performance, rather than just impose objectives and penalize shortcomings.

The Knowledge Management activity is meant to allow all internal stakeholders to share and manage the knowledge that currently exists within public sectors and is pertinent to the innovation efforts undertaken. It should be noted that, beyond formal organizational knowledge (official procedures, regulatory frameworks and similar) that is already documented and can thus be updated as required, the most important types of knowledge to subject to explicit management in the context of this activity are the tacit knowledge of mid-/low-management and front-line personnel, as to the problems and exceptions which internal processes may have and how to best solve them, as well as concerning undocumented problems and issues that the citizens or businesses served are having and how to best respond to them.

The IT Management activity is meant to allow public sectors systematically manage their IT properties (taken to mean installed infrastructures, managed services as well as new assets acquired) in an effective and efficient way throughout the change waves that the implementation of innovation efforts will inevitably cause. Although the technology investments of public sectors are more and more moving from the technology as an installed product to the technology as a managed service approach, it should not be overlooked that many public sector still have the major part of their IT properties physically installed in their premises. In such and all cases, the success goal for this activity is to ensure that mission-critical IT properties will operate uninterruptedly, and that all newly acquired IT properties will be confirmed for full interoperability with existing ones prior to bringing them into operational use.

The Data Governance activity is meant to provide to public sectors instruments for managing their data throughout the implementation of innovation efforts and resulting changes. Given the importance of data as an asset which is by definition proprietary, and thus irreplaceable and most critical, the single most important concern of this activity is to ensure that the master data of public sectors are safeguarded and maintained for

integrity and updates as required throughout innovation projects. At the same time, given that data are often the basis driving such projects, a similarly important concern of this activity is to have data assets curated, available and explorable as appropriate in order to serve as information base for innovation, as this may be required in each case.

The Process Management activity is meant to ensure that process of innovating public sectors are managed as appropriate throughout the innovation effort. This is particularly important for innovation efforts focused on, or in direct ways pertinent to, the process level, and it entails all static and dynamic aspects of public sector processes. In terms of static aspects, process descriptions, metadata and knowledge (cf. the Knowledge Management activity above) need to be documented and gradually versioned and updated, close together with the introduction of changes. In terms of dynamic aspects, the enactment of processes needs to be managed for operational continuity, as well as for security, in all cases of process changes that have not yet passed the test of time.

Last but not least, the Performance Management activity is meant to provide public sector with instruments for monitoring their operational performance levels, as well as the changes of the latter throughout innovation efforts. This clearly entails internal performance aspects, in terms of resource utilization and resource effectiveness, external performance aspects, in terms of satisfaction of external stakeholders, as well as organizational performance aspects, in terms of accomplishment of the mission of the public sectors. All these should be sustained and improved, as evidence for the value of innovation efforts and rationale for their sustainability.

F.   IDEA LIFECYCLE: ASSIMILATION PHASE

The top-level purpose of the IDEA lifecycle Assimilation Phase is to monitor how the innovations effected by public sectors are adopted by all stakeholders involved, those internal to the public sector and, most importantly, those external. To this end, this phase is based on the rationale that public sectors, in order to gather real evidence about the value and sustainability of their innovations, need here again to reach out to their external stakeholders and actively seek the latter's feedback.

In this respect, the Assimilation Phase of the IDEA lifecycle comprises the activities depicted in Figure 5.

Figure 5. Detailed structure of the IDEA lifecycle Assimilation Phase.

Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

These activities are meant to take place in the following manner:

- All activities need to be enacted in a first full implementation of this phase, and in every subsequent iteration that needs to bring forward significant new outcomes, whereas some of the activities may be omitted in iterations taken for minor improvements only.
- The strict serial order of activities that follows from reading Figure 5 clockwise is not the only option; indeed, there may be cases where these activities can be put in place in a strict linear way with waterfall characteristics (not allowing the next activity to commence before the previous one has completed), and cases where these activities may be enacted in parallel, more or less throughout the implementation of this phase. The final choice depends on the objectives of the specific implementation instance of this phase (cf. previous point), as well as on the time-horizontal vs. time-vertical nature of each activity with respect to the objectives of this phase (cf. points below).
- The Online Community and Social Media Management activities should best be perceived as more time-horizontal in nature, i.e. as activities that can best be enacted throughout the duration of a full implementation of this phase. The Advocacy and Feedback Management activities, on the other hand, should better be perceived as more time-vertical in nature, i.e. as activities that can best be enacted at appropriate stages during implementation of this phase, and deliver concrete outcomes that will be used by the time-horizontal activities.
- That said, the central positioning of the Online Community activity in the initiation of the Assimilation Phase is meant to convey the idea that every iteration of this phase, whether for full or for partial implementation, should include the enactment of at least this activity.

The activities of the IDEA lifecycle Assimilation Phase are described in the following in terms of the core objective of each activity, as well as its contents and aspects of particular importance. Implementation details for each activity in each specific case are left to the public sectors involved, who can best identify the more appropriate ways to implement it considering their own contextual and case-specific factors, whereas software tools and platforms that may be used for each activity have been located and catalogued in the corresponding appendices of the study.

The Online Community activity is meant to encompass the work required for innovating public sectors in order to build up an online virtual community of stakeholders that will serve as sources of feedback for the value and sustainability of the innovations effected. Such a community will typically need to extend beyond the innovating public sector's organizational and physical boundaries, in order to provide independent feedback by third sources that would not be possible otherwise. Still, this type of community differs from the one discussed in the Deliberation phase of the IDEA lifecycle along two important aspects:
- Firstly, the online community needed at this stage is more selective, in the sense that it should comprise members of diversified provenance (citizens, businesses, interested groups, civil society organizations as well as other public sectors and international organizations, just like the community discussed for the Deliberation Phase), who are nevertheless sharing not just an interest in but also an informed, critical and at the same time unbiased opinion on the innovations implemented.
- Secondly, the online community needed at this stage is less porous, in the sense that it should comprise members that are committed to participate for a meaningful timeframe, and can commit to the purpose of providing their constructive feedback, in the understanding that this is the central raison d'être of this community, which actually renders it a community around this common goal.

The Social Media Management activity, at the same time, is meant to allow public sectors to reach out and communicate their innovation efforts on selected social media, the latter being at this stage the prevalent platform for addressing a broader public. Social media exposure clearly being a delicate exercise for public sectors, this activity encompasses all the work and objectives involved in deploying a systematically managed social media presence on the platforms appropriate for each case. At the same time, this activity can serve as a recruitment instrument for bringing external stakeholders into the online community discussed above.

The Advocacy activity is meant to provide public sectors with the opportunity and instruments for collecting, beyond feedback and comments, selected real cases and stories that can serve as advocacy for the actual value that their innovation efforts bring forward in practice. The main goal of this activity is to build up an

authentic and diversified advocacy corpus for the innovation efforts that have been implemented, that can serve a twofold purpose: in an extrovert manner, serve as an instrument for further communicating these efforts and gathering more advocacy; and in an introvert manner, serve as a testimony towards management for the actual value achieved through these efforts and the need to sustain them.

Finally, the Feedback Management activity is targeted at deploying instruments for systematically accepting and handling the feedback received for the innovation efforts implemented. It should be expected that this entails positive feedback, which can be screened and fed into advocacy corpora and other supporting evidence for the value of these efforts, as well as neutral feedback, which can be used to signal cases where more needs to be done, as well as negative feedback. The latter may be due either to actual shortcomings of the innovation efforts or to the time needed for external stakeholders to follow the learning curve required in order to follow the new ways of work of public sectors and take benefit of them. In both cases, this feedback can be used to drive amelioration efforts for the corresponding issues, and it is equally important that it is systematically monitored and handled.

G.   CONCLUDING NOTES

The IDEA lifecycle for innovation efforts of public sectors aims to accommodate in a holistic (in terms of conceptual approach) and systematic (in terms of methodological guidance) way the issues brought forward in the course of such efforts.

Figure 6 below depicts the detailed structure of this lifecycle, together with the 4 phases and total of 25 activities prescribed.

Figure 6. Detailed structure of the IDEA lifecycle phases and activities
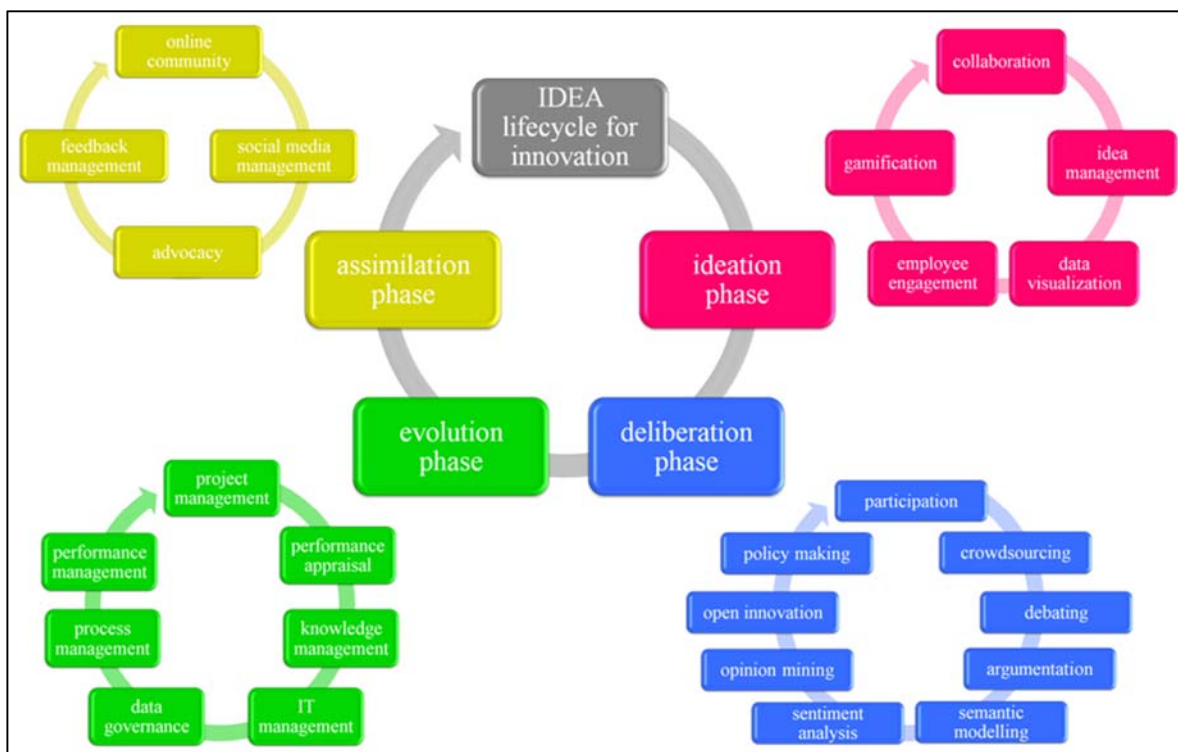
Source: Consultant, original work for the study on Fostering Innovation in the Public Sectors of the Arab Region.

The number of different phases and activities included in this model should not be taken as grounds for considering it with reluctance on the basis of complexity. Indeed, this overall model encompasses steps and activities which are already known to public sectors, but still often siloed in different mission-critical

operations, and prescribes that they be brought together in order to implement successful and sustainable innovations.

Moreover, the methodological provisions provided in the above for the different ways in which the phases of the lifecycle and the activities of each phase may be enacted and iterated, create degrees of freedom necessary for this model to lend itself for adaptation to diversified needs and cases. This exact flexibility, at the same time, creates the need to actively explore and determine how this model can best fit and serve in each different case of public sector innovation effort.

IV.   I-UNLOC: A LIST OF CHALLENGES FOR PUBLIC SECTOR INNOVATION

A.   INTRODUCTORY NOTES

This chapter presents I-unLoC, a proposed list of challenges for unlocking the potential for Public Sector Innovation in the public sectors of Arab Region countries. The challenges included in this list have been identified in the context of the study from the literature and the examples of public sector innovation that have been researched. At the same time, this list includes challenges identified from presentations as well as discussions that have taken place during the *Workshop on Fostering Innovation in the Public Sectors of Arab Countries*, organized by UN ESCWA in Cairo, Egypt, on October 30-31, 2017[78].

The working definition of the concept of *challenge* undertaken for developing the I-unLoC list of challenges and used in the following is a rather simple one, based on the current/established use and meaning of this term. Indeed, in established dictionary sources like Oxford Living Dictionaries[79], Cambridge Dictionary[80] and Merriam-Webster[81], a challenge is defined (among other meanings) as something that
- a call to someone to participate in a competitive situation or fight to decide who is superior in terms of ability or strength; a task or situation that tests someone's abilities;
- (the situation of being faced with) something that needs great mental or physical effort in order to be done successfully and therefore tests a person's ability; and
- a stimulating task or problem.

In this respect, a challenge to public sector innovation herein is defined as
(a) an objective, meaningfully pertinent to public sector innovation, that has three different characteristics at the same time:
(b) it is important, because of its pertinence to public sector innovation and the potential that it brings along for fostering the latter, once achieved;
(c) it is difficult, though clearly not impossible, to achieve, due to the material/immaterial conditions, resource consumptions and/or physical effort that it demands; and
(d) it is stimulating, due to the fact that it also demands a mental effort, forward/disruptive thinking, as well as ingenuity and persistence to achieve.

In this line of thought, 27 challenges pertinent to public sector innovation efforts in Arab Region countries are listed below. These challenges are organized in three thematic groupings, structured under the following core themes:
- Core theme A: challenges related to the 5W's of innovation
- Core theme B: challenges related to the 1H of innovation
- cCore theme C: challenges related to bringing in more stakeholders.

Identifying any of these core themes or challenges as more important than others is an exercise that can best be based on the fundamental or more higher-level role that they may play in the quest to innovate in public sectors. Still, and even more importantly, such an exercice can best be based (and operationalized) on deliberation and consensus building with multiple and diverse stakeholders, rather than on the sole opinion of one or a few experts. In this respect, the meta-challenge of identifying a relative importance of the challenge core themes and individual challenges below, which may also imply an order in which they might be faced, is better left as a final recommendation of the study for further work, rather than as a closed study outcome already available at this point.

As a final point, it should be noted that the challenges discussed below for public sector innovation efforts are closely related to factors that are usually discussed as enablers for, and as barriers to, such efforts. Indeed, considering as an *enabler* a factor that fulfils a necessary precondition for, and/or facilitates

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[78] https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
[79] Online searchable from https://en.oxforddictionaries.com/.
[80] Online searchable from https://dictionary.cambridge.org/.
[81] Online searchable from https://www.merriam-webster.com/.

realization of, an effort, and as a *barrier* a factor that works in the opposite way, for all the challenges that follow success to meet them can be considered as an enabler, and failure to meet them can be considered as a barrier, for public sector innovation efforts.

B.   CORE THEME A. CHALLENGES RELATED TO THE 5W'S OF INNOVATION

The challenges grouped under this core theme are challenges related to the basic 5Ws of discussing public sector innovation as a process, namely on the thinking and decisions of public sector stakeholders as to *where*, *when*, *by whom*, *with whom*, *why* (in other words, *for whom*) to innovate, as well as to *what* innovation means and *what* important innovation is.

The perhaps most critical aspect of these challenges, which although important often goes unnoticed, or noticed but unfocused on, has to to with the fact that the end objective here is not to have some expert- or literature-based answers. The latter can best serve as a starting point for a discussion and thinking process for which, the only way to arrive at answers more inclusive and more mature to uptake and operationalize in everyday practice, is to involve multiple and diverse stakeholders of real public sector innovation processes, and creatively synthesize their viewpoints into the final outcomes.

1.   *Challenge A1. Establishing a system of empirical Where-to-Innovate signals*

It would be important, in order to foster innovation in public sectors, to have in place a system of empirical indicators that would act as whistle-blowers for (a) the need, (b) the ability and/or (c) the advisability to innovate in specific contexts, signaling that there are, in the current state of operations, things that can be done better.

One such set of signals has to do with the presence of papers, chairs, files and signatures all around public sector premises and processes. Figures 1(a) to 1(c) below are coming from the period prior and parallel to introduction of the TAXIS information system and TAXISnet services in the Greek Ministry of Economy and Finance (cf. the corresponding chapter of the study for a discussion of TAXISnet as an example of collaborative innovation).

Figure 7. Real examples from (a) income tax forms, (b) legacy taxation data files and (c) a decision on changing the format of VAT numbers from the Greek Ministry of Economy and Finance, during the late 1990s period.
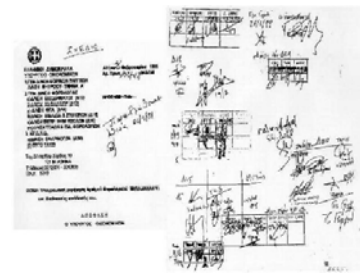
(a)   **(b)**   **(c)**

Source: Courtesy Prof. Panagiotis Georgiadis, former Secretary General for Information Systems, Greek Ministry of Economy and Finance.

In the typical case, papers, chairs, files and signatures exist within public sectors in large amounts, and they are everywhere, in Government, municipalities and public entities alike. A perception that there are too many of them can be an empirical signal that innovation is needed, in order to
  • better organize them;
  • handle them more efficiently;
  • make them disappear from citizens; and/or
  • make them disappear at all, by simplifying processes and rules.

These can all be objectives of innovation and, although they may seem humble as innovation objectives, they may still prove to make a difference to be proud of. It should be noted, on top of that, that as far as chairs, used in this discussion to signify personnel, are concerned, making these disappear does not imply that an objective of innovation would be to cut down public sector posts and jobs. The objectives to be considered, in this case, have to do with (a) policies for workplace virtualization, as well as (b) improvements for better utilizing the capacity of public sector personnel, using innovation to free up human resources from routine processes that can be automated without damage and allocating personnel to processes which really stand to gain from human intelligence.

One more set of such empirical signals calling for innovation has to do with work contexts too much reminiscent of an impersonal Weberian implementation of the bureaucratic paradigm, exaggerated in terms of regulation-governed processes and not allowing enough room for interpersonal relationships, satisfaction and thus productivity and creativity of public sector personnel. The "happy bureaucracy" metaphor depicted in figure 2(b) may be difficult, or even not really desirable to achieve, for a number of reasons. Still, allowing pure objectives- and rules-based public sector management systems to become more blended with relations-based systems of everyday work can certainly facilitate the work of public sector personnel and allow the latter to better serve both citizens and businesses as well as the public sectors themselves, which makes this worthy as an innovation goal.

Figure 8. (a) Weberian bureaucracy and (b) "happy bureaucracy" paradigms, as alternatives for organizing the everyday work of public sectors.

(a)   **(b)**

Sources: (a) https://www.google.com/search?q=weberian+bureaucracy&tbm=isch (b) http://www.orangescape.com/images/first.svg.

The challenge herein discussed, therefore, has to do with establishing in a more systematic way a set of everyday work signals that can serve as whisteblowers for the need to innovate and as alerts for public sector managers and lower-level frontline personnel alike.

> 2.   *Challenge A2. Establishing a system of empirical When-to-Innovate signals*

It would be equally important, in order to foster innovation in public sectors, to have in place a system of empirical indicators that would act as whistle-blowers for (a) the need, (b) the ability and/or (c) the advisability to innovate at specific moments, signaling that there are, in the current state of operations, things that can be done better. Such empirical indicators may include, for instance:
- observed cases of unmet needs of citizens and businesses, with a focus on presently recurring ones;
- observed cases of unmet needs of citizens and businesses, with a focus on new and upcoming ones;
- recurring problems with rules and procedures, the latter becoming more and more complicated;
- recurring problems with rules and procedures, the latter making operations more and more slow;
- recurring problems with rules and procedures, with compliance to the latter made more and more costly.

At the same time, corresponding indicators for the need to innovate in front of crises, are obviously
- emergencies that have arrived already;
- emergencies that we see coming;
- humanitarian crises that have arrived already;

- humanitarian crises that we see coming;
- technical disasters that have happened or are feared to happen;
- natural disasters that have happened or are feared to happen.

Further indicators for innovation may be drawn from the results of simple operational analyses, such as
- SWOT strengths, which allow innovation;
- SWOT weaknesses, which need innovation to overcome;
- SWOT opportunities, which need innovation to become ready for uptaking;
- SWOT threats, which need innovation to prepare for facing.

The objective of this challenge, therefore, has to do with building and creating consensus over a set of signals as the above that would activate at specific moments organizational alerts for innovation.

3.   Challenge A3. Coping with paraprocedurality and a-procedurality as sources of micro-innovation

The everyday work of public sectors abounds with cases in which public sector personnel are faced with the need to handle cases and needs not covered by existing rules and procedures; as well as solve problems that rules and procedures may themselves create.

These instances call for what could be termed *para-procedurality*, i.e. finding some solutions and repetitively employing them, thus establishing in practice alongside formal rules and procedures some semi-formal ways of work, as well as for what could be termed *a-procedurality*, i.e. finding one-off ad hoc ways of solving special and rare cases of exceptions.

Para-procedurality and a-procedurality can not be readily recognized as legitimate principles of work, as this could create grounds for using them in unfair ways. Still, when used fairly, they have the potential to innovate, i.e. to lead to ways of making some processes and services better suited to special cases and exceptional needs. What is more, such *micro-innovations* may at times be based on really good ideas, that could be generalized to many other non-special cases as well, and lead to more general and substantial improvements. In this way, para-procedurality and a-procedurality can best not be considered a priori as something to accept or to reject in all cases, but rather as something that can only be evaluated on a case by case basis, and so much so as a potential source of micro-innovation, and possibly of broader innovation.

At the same time, para-procedurality and a-procedurality can be considered as outcomes of a more general condition, which has to do with the ways of work explicitly allowed and explicitly prohibited in public sectors. What about potential solutions that current rules and procedures neither explicitly allow nor explicitly prohibit? Should they be considered as allowed (given that they are not explicitly prohibited), or prohibited (given that they are not explicitly allowed)? An answer to this question may significantly affect the potential for para-procedurality, a-procedurality and thus micro-innovation in the everyday work of a public sector.

The objective of the challenge herein, in light of the above, would be to establish practical ways for monitoring instances of para-prodecurality and a-procedurality in the everyday work of public sectors, evaluating their legitimacy in a fair way, and creatively consider them as potential sources of micro-innovations that could be generalized to broader cases and needs.

4.   Challenge A4. Establishing practical principles on selecting the stakeholders to drive innovation

In the everyday work of public sectors, personnel are ultimately finding themselves managing relationships and objectives. Objectives, at the same time, are communicated, negotiated and managed through relationships, which leads to managing relationships as the perhaps most essential aspect of everyday work.

More strategic work, as that of innovation, is not an exception to this. Indeed, innovations like all other objectives need to be communicated, negotiated and managed through relationships, and their effective

progress is thus dependent on the existence of a critical mass of stakeholders and relationships in favour of them.

Figure 3 depicts this idea of critical mass. For any case of innovation, at any point in time, it can be expected that there will be stakeholders at different organizational levels (from high- to middle- to low-management) within the organization with views in favour of it (upper left quadrant), stakeholders at different organizational levels within the organization with views neutral or even negative towards it (lower left quadrant), as well as external stakeholders with views for, or neutral/against this innovation (upper right and lower right quadrants, respectively).

Figure 9. A schematic view of stakeholders in favour of (upper quadrants) or neutral/against (lower quadrants) an innovation, internally within (left quadrants) and externally to (right quadrants) an organization at any point in time.
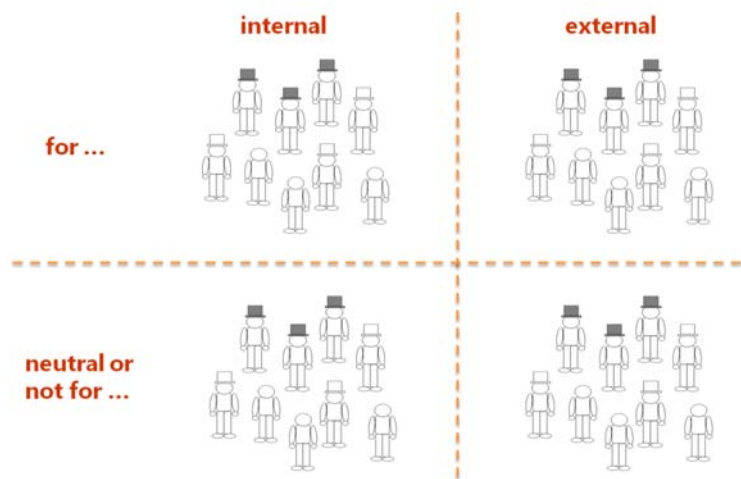
A first objective of the challenge herein, therefore, would be to establish practical ways of communicating, negotiating and managing innovations so that the stakeholders for them in the upper quadrants of Figure 3 can comprise a critical mass when compared to the set of stakeholders neutral/against them in the lower quadrants.

A second objective, at the same time, would be to establish a way of communication and negotiation of innovation ideas within the organization, which would explicitly acknowledge the following set of principles:

- it may be unrealistic to expect everyone to be a real innovator;
- it may be unjustified to pre-conceive someone as unable to become a real innovator;
- real innovators may come from different backgrounds and walks of life, and who can be a real innovator is hard to tell in advance;
- she or he who will really innovate can be anyone, so everyone needs to be given the chance to innovate.

Such systems of innovation management are often facing barriers of a priori pessimistic views, having to do with conceptions of apathy, untrustworthiness and ineffectiveness for fellow workers, especially for fellow workers at the lower-management and front-line levels of the organizational pyramid. Still, it should be mentioned that such conceptions often operate as self-fulfilling prophecies and create vicious circles, which can only be broken by undertaking an optimistic approach from the very beginning of the process, based on the following principles:

- it is worth to build processes for listening to and invite ideas, because they shall arrive;
- it is worth to trust the ideas that arrive, because then we shall also be trusted by their contributors;

- it is worth to take up these ideas, because then more such ideas shall arrive.

The challenge involved herein is to find simple ways for applying these principles in a fair and monitored manner, and thus create a virtuous circle for innovation ideas to be contributed, for potential innovators to come forward, and for the critical mass needed to support any innovation to become formed.

5. *Challenge A5. Establishing practical rationale on the costs and pays of innovation and non-innovation*

This challenge is based on the idea that any decision for action (in the sense of doing something immediately after the decision is taken) or inaction (in the sense of postponing the decision for action further in the future) is always a two-sided one, with a good side of gains and a bad side of losses.

This applies to innovation decisions as well, and the challenge herein has to do with (a) recognizing that innovation pays but also costs, non-innovation costs but may also pay, and (b) establishing ways practical and easy to apply in the context of public sectors' everyday work for deliberating on the associated costs and pays.
In this context, a cost structure that can be considered for innovation decisions as a departure point comprises
- procurement costs;
- implementation costs;
- training costs; as well as
- costs incurred by the management of lateral effects;

whereas the corresponding payback structure comprises
- savings;
- satisfaction;
- compliance;
- productivity;
- prosperity; and, perhaps the most important payback of all
- gaining citizens on the side of the innovating organization, and giving them hope for a better future.

At the same time, the cost structure of a non-innovation decision comprises
- losing all the paybacks of the innovation decision that has not been taken; and
- exposing current ways of work to dangers of entropy and obsolescence.

Still, a payback structure of non-innovation decisions exists as well, and it comprises avoiding the risks and costs of:
- innovation, overall;
- innovating too early, before the real needs have shown up or before the solutions to apply have acquired maturity;
- innovating in a fragmented way, without being able to harmonize this innovation with the needs and innovations of other branches of the public sector;
- innovating in the wrong direction, not really meeting the needs addressed, or inadvertently creating more problems than the ones solved, or taking away resources from other more important innovation decisions.

It should be noted, therefore, that the payback structure of non-innovation is not a trivial one, and non-innovation may not be attributed only to inertia, ignorance or indifference, but also on the need to wait until more informed and wise decisions are possible.

It is especially this last point which makes the objective of establishing a practical rationale on the costs and pays of innovation and non-innovation a real challenge, due to its multi-faceted nature that does not easily allow for simple answers.

6.   *Challenge A6. Thinking critically about the differences of innovation from other affine processes*

According to the approach taken in the present study,[82]

> *"In general, innovation is the implementation of a new way of achieving a result and/or performing work. It can be completely new, a change in to a current system, or something that already exists elsewhere implemented for the first time. This idea can be a product, service, policy and programme, or a process.[83] It can have as its focus new or adapted technologies, or technology for supporting other forms of public sector innovation. Innovation in the public sector differs from the private sector in that the focus is not monetary gain or greater economic success for a few. The objective of public sector innovation is to enhance the social welfare and economic growth of a country for a better sustainable future."*

Still, in the realities of public sectors' everyday work and strategic management, innovation if often discussed alongside a number of other affine terms, with which it relates without coinciding. This fact, beyond a theoretical interest, has practical implications as well, as it risks to blur the rationale and decisions related to innovation. The objective of the challenge herein, therefore, is to arrive at identifying the relationship of innovation to these terms in some simple way, that can be operationalized in everyday work as well as in the innovation work and decisions of public sector personnel, and allow for a more critical and clear thinking for innovation. The departing points proposed for such an effort are as follows.

innovation as invention
- innovation, like invention, has to do with finding a new way to make things better;
- innovation, like invention, has to do with reading the reality in ways that others do not;
- still, invention has to do with conceiving something (a product, a process) that did not exist before;
- innovation, more often than not, has to do with taking things that exist and improving them, bringing them to new users, or maybe bringing them to new uses;

innovation as change
- innovation is not possible without change;
- yet, changes may be forced by constraints to do more with less, or policies to do things differently, whereas innovation is driven by improvement objectives;
- innovation is trying to maximize positive change and impacts;
- innovation is trying to keep unwanted side effects down to zero;
- innovation is trying to minimize necessary lateral changes;

innovation as change management
- innovation is one more source of changes to manage;
- when we think as change managers, we are not friendly to that;
- effective change management can help an innovation take off;
- poor change management may defame an innovation;

innovation as process improvement
- improving a process may mean making it more effective, more efficient;
- improving a process may mean making it more documented, standardized and mature;
- innovating a process may mean changing this process to meet these internal goals, or to better serve external stakeholders;
- any process may lend itself to innovation;

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[82] ESCWA (2017). Terms of Reference for a study on fostering innovation in the public sector of the Arab region. Beirut: United Nations Economic and Social Commission for Western Asia.

[83] ECOSOC (2006). *Definition of basic concepts and terminologies in governance and public administration (E/C.16/2006/4).* Prepared for the Fifth Session of the Committee of Experts on Public Administration, 27-31 March, New York.

- improved and mature processes provide more safe grounds for innovation, without fear of internal process problems;
- innovation implies process improvement in this sense;

innovation as reform
- reforms have to do with macro-level efforts to re-engineer systems towards new objectives;
- there are reforms that target innovation, as there are others that target policy changes and budget cuts;
- innovations can be made at the macro-, meso- or micro-level;
- innovations, when they require legally-binding changes in rules and processes, need these changes to get revamped in reforms;
- innovations that find room to happen within existing rules and processes, do not need reforms.

7. Challenge A7. Thinking critically about the differences of innovation from technology uptake

In a similar way to the previous challenge, the objective of this challenge is to to arrive at identifying the relationship of innovation to technology uptake (and Information and Communication Technology uptake in particular) in some simple way, that can be operationalized in everyday work as well as in the innovation work and decisions of public sector personnel, and allow for a more critical and clear thinking for innovation. The departing points proposed for such an effort are as follows.
- innovation is possible without new technology;
- technology can offer means for innovation, if we have an idea and an opportunity;
- technology can offer opportunities for innovation, if we have an idea;
- technology can offer ideas for innovation, to make itself useful;
- innovation finds itself linked to new technology;
- often, the biggest hope that technology brings along is innovation;
- innovation finds itself driving public sector technology procurement.

8. Challenge A8. Establishing practical understanding of what an important innovation is

The fact that innovation decisions, even if taken at the level of higher management, are eventually enacted at the level of lower management and front-line personnel, implies that public sector stakeholders at these lower levels of management and responsibility, who may by definition lack the entire big picture of organizational objectives and priorities, still need to have a clear understanding of the importance of the innovations that they are called to enact, as this can be an essential motivating factor.

At the same time, such a clear understanding is equally essential at the level of middle and higher management, whose decisions and responsibility have effects at a greater scale.

The objective of this challenge, therefore, is being able to deploy an organization-wide common and simple understanding of the factors that make an innovation important to enact, or more important to decide than others that may be possible at any given point.

For providing a basis for such a framework of critically thinking about the importance of an innovation, it is proposed here in that innovations which
- affect the lives of many people;
- affect the lives of fragile people;
- affect the lives of underprivileged people;
- enable these people to do things that are very important to them, and were not possible before;
- help these people to do things that are very important to society, and were not possible before;
- convince these people to do things that are very important to the environment, and were not possible before;

can be considered as more important than innovations which
- are focused more on bringing forward changes, rather than on achieving real results;
- achieve very little results;
- achieve results for very few people;
- realize their achievements to the detriment of economy, society and nature.

At the same time, two exceptions to this general line of thought need to be noted. Innovations that
- even for just one person in the world, protect the single most invaluable thing, life;
- even at a micro-scale, set an example for innovativeness, and convey the idea that the only thing that constrains us, at the end of the day, is our own ingenuity and courage;

although not falling under the general criteria above, can still be considered as equally important ones.

C. CORE THEME B. CHALLENGES RELATED TO THE 1H OF INNOVATION

The challenges grouped under this core theme are challenges related to the basic *how* dimension of discussing public sector innovation as a process, namely on (a) the resources and (b) the steps needed to effectively design and realize successful public sector innovation efforts.

1. Challenge B1. Having access to different process types for innovation processes

The objective of this challenge is to come up with practical instruments that allow public stakeholders access to different process types for innovation processes, in the form of guidance for each process type and its applicability under different assumptions and expectations.

It should be noted that, for a number of reasons discussed in the corresponding chapter of this study, a large number of different process types have already been proposed in theory and practice. Each of these process types comes along with promises for (a) bringing forward better innovation and/or (b) bringing forward innovation in better ways, claiming innovation that makes better-targeted and more sustainable improvements, innovation that is closer to the real needs of stakeholders, innovation that takes up fewer resources and less time to effect.

The sheer number of these process types (approx. 10 different process types have been recognized and discussed in the context of this study), as well as the volume of the literature, including book sources, academic papers, practitioner reports and websites that exist for most of them, render the objective of gaining practical understanding to all of them not trivial to achieve.

At the same time, the need for these process types to be understood not just by the innovation team within an public sector organization but also, at least to some working extent, by all the stakeholders called in to enact the innovations decided, makes this objective a real challenge, i.e. a difficult, important and at the same time stimulating one.
In the context of the study, this challenge has been faced by deploying an empirical guide (IPEG) for the process types recognized, and providing simple practical guidance for the applicability scope of each process type, examples of innovation efforts that qualify under this process type, as well as selected references for further study. Still, it is clear that such an instrument alone does not suffice to meet this challenge in its entirety.

The effort needed beyond deploying innovation process type guides such as the one proposed in this study has to do with (a) revising and improving such guides on a regular basis, involving in this process not only experts to ensure quality but also intended audience members to ensure usability, as well as (b) providing training and capacity building on the use of specific process types for public sector innovation, with the help of selected cases and examples.

2.   *Challenge B2. Thinking critically about the process types practically needed*

Following up from the previous challenge, a discrete challenge has to do with been able to critically think about the different innovation process types practically needed to a public sector organization.

This challenge is based on the idea that public sector organizations may neither have the full resources, nor the real need to invest in all of the innovation process types available in the literature, as also discussed during the *Workshop on Fostering Innovation in the Public Sectors of Arab Countries*, organized by UN ESCWA in Cairo, Egypt, on October 30-31, 2017[84]. In this respect, a challenging task for a public sector organization would be to think critically about the innovation process types that seem more important than others for this organization's needs, and place its priorities on investing on the more important process types identified.

From a somewhat different perspective, this challenge might take the form of a problem of finding the minimum number of innovation process types that can meed the needs of a public sector organization, along some simple dimensions. For instance:
- a process type for simple cases of more or less expected innovation needs, and a process type for some more complicated cases of more original needs;
- a process type for innovating in the small, and a process type for innovating in the large,

and so on.

In all cases, ths challenge can best be handled by public sector organizations themselves. The best way for a public sector organization to handle this challenge would be based on building up its understanding on the different process types available, and then running a study on identifying a small number of process types best fitting its needs, according to some practical rationale.

At the same time, meeting this challenge can also be facilitated by instruments that enable public sector innovation workers to identify the process types better suited to their needs through simple dialogic protocols, based on question-and-answer guides. Such an instrument (EIPwiz) has been developed in the context of this study, together with guidance on its potential use cases.

3.   *Challenge B3. Having access to diverse examples for public sector innovation*

This challenge has to do with providing public sector organizations with access to a rich set of examples for public sector innovation, and at the same time curating this access along the following aspects:
- make sure that examples are available that cover different process types of innovation, as well as different aims and scope of innovation efforts;
- make sure that enough information is available for each example, considering not only the official example description but also additional third sources discussing this example, its details and implications;
- take care to annotate examples in a standard way, so that they can be made as much as possible comparable to each other, and help identify areas in which further examples are needed;
- document, alongside the examples themselves, also the repositories from which they have been harvested, allowing interested public sector organizations to revisit these repositories in search of more examples;
- curate an overall ongoing collection of selected examples, which needs to be regularly updated with new entries and kept organized for usability.

These needs have been confronted, in the context of the present study, by providing an extended set of examples for public sector innovation from different sources and repositories, cataloguing the latter in the

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[84] The consultant is thankful to Dr. Nibal Idlebi, Chief of Innovation Section at the Technology for Development Division (TDD) of UN ESCWA, for bringing forward this subject during the discussions following session Session III –Public Sector Innovation: types, steps and suitability.

form of knowledge resource collections, as well as developing a conceptual model (IPTTM) that allows to annotate innovation examples with metadata along a number of different dimensions.

4.   *Challenge B4. Monitoring and embracing innovation from diverse sources*

One more challenge also referring to examples but discrete from the previous one has to do with the need for public sector organizations, just like any other organizations interested in innovating, to monitor and embrace innovation from diverse sources.

The basic idea underlying this challenge is that, examples of innovation interesting for public sectors, do not necessarily come solely from the work of peer public sectors in other countries. Indeed, such examples may come from technological innovation, social innovation, enterpreunership innovation, innovation resulting from academic research, international civil society innovation, as well as international organizations and networks.

In this respect, public sectors interested in innovation need to monitor innovation examples and developments from these diverse sources. At the same time, beyond monitoring, public sectors need to open up the thinking and process required in order to embrace innovation examples coming from such diverse sources. The important idea here is not than any example, coming from any source, would be readily tailor-made to the needs of a public sector. This may not be the case at all, but still such an example may be really helpful as a source of inspiration for new ways of ameliorating processes, products and services; the critical capability, in this respect, on the side of public sectors, would be to recognize and abstract the essential traits of innovation examples coming from different domains, and be able to transliterate these into ideas for their own innovation needs and efforts.

5.   *Challenge B5. Having access to knowledge resources for public sector innovation*

The number of themes that may be pertinent to public sector innovation efforts is large, and the number of knowledge resources that are available for these themes is even larger.

It is clear that, the more that these knowledge resources can be made available to public sector innovation workers, the more the innovation work of the latter can be expected to be better informed and better oriented to successful results.

Still, it is also clear that innovation workers within public sectors are faced with amounts of ongoing work and deadlines that impose pressure and make their time fragmented, which certainly does not help with the need for accessing large amounts of resources.

The challenge, therefore, is to build up collections of knowledge resources of good quality for public sector innovation workers and at the same time allow the latter with time for accessing these resources.

Regarding the first part of this challenge, in the context of the study the IKRx methodological exercise has been realized which has resulted in cataloguing approx. 290 book sources, organized around 33 core themes; approx. 100 academic journals, organized around 5 core themes; approx. 90 websites and topical webpages, organized around 4 core themes; approx. 70 background reports by international organizations, organized around 6 core themes; approx. 160 recent (2015 onwards) insight reports by management and IT consultants; approx. 190 online resource webpages by management and IT consultants; approx. 310 recent (2012 onwards) academic papers on public sector innovation; and approx. 40 recent (2015 onwards) academic papers on deliberation tools and platforms. All these resources are included in the study results, together with documentation of the methods and sources that have been used for finding them.

At the same time, the challenge with knowledge resource collections as this one, is (a) to make them available in non-linear ways (searchable by keywords and other means) to public sector innovation workers with fragmented time; and, of course, (b) to keep them updated with future developments.

6.   *Challenge B6. Not bypassing the potential of frugal innovation and nudging*

Frugal innovation is a process type of innovation which, according to the working definition adopted in this study, is focused on

- bringing forward small-sized and low-cost changes that may have a multiplier effect and/or desirable impacts positively disproportionate to the budget and resource consumptions that they demand; and/or removing non-essential features to make something more accessible or affordable.

Frugal innovation, in this sense, may at times be one of the simplest and less costly, in terms of financial costs and lateral changes, process types for innovation. Still, it should not go unnoticed that, being accustomed in everyday life to paying for valuable products and services that more often than not come at a cost, we are subject to a cultural bias for considering price as consequence of value, or even as a synonym for value, and thus reversing this relationship to consider something of low price as something of low value as well. Due to this bias, despite the potential value of frugal innovation, it is not easy to exclude the possibility of looking down on this approach to innovation as one of low value and low quality in its outcomes.

The first part of the challenge discussed herein, therefore, has to do with the need to examine frugal innovation in a fair way, just like all other possible innovation process types could be examined for a case in which innovation is needed. In fact, an even more important challenge could be to create a positive preference towards frugal innovation, in the sense of prioritizing it as the first possible innovation process type to examine, and moving on to considering other process types only afterwards.

One of the tactics nicely suited to frugal innovation is that of nudging. The term comes from nudge theory, a term in behavioural science which, according to the relevant article on Wikipedia, "*... proposes positive reinforcement and indirect suggestions to try to achieve non-forced compliance to influence the motives, incentives and decision making of groups and individuals. The claim is that nudges are at least as effective, if not more effective, than direct instruction, legislation, or enforcement.*"[85]

The nudge theory has been uptaken by a number of scientists as well as public sectors around the world, and applied in cases where the objective was to achieve positive reinforcement of citizen / business beneficiaries to comply to the law, without recurring to enforcement or fines. The Wikipedia article on the Behavioural Insights Team[86], one of the first research groups globally to uptake nudge theory and apply it in real-world examples and needs, reports a number of such examples, where positive results were attained with sending out on time simple personalized notifications to the people concerned[87].

In this context, the second part of the challenge discussed herein has to do with not overlooking the potential of simple tactics, such as nudging, as implementations of a frugal approach to innovation that can still bring forward effective outcomes.

7.   *Challenge B7. Clarifying the double relation between innovation and sustainability*

Adopting as a working definition for sustainability the one provided in the corresponding Wikipedia "good article"-rated[88] lemma, *"In ecology, sustainability ... is the property of biological systems to remain diverse and productive indefinitely"[89]*. This definition is closely related to the meaning many times attributed to the

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[85] Source: https://en.wikipedia.org/wiki/Nudge_theory.

[86]   Source: https://en.wikipedia.org/wiki/Behavioural_Insights_Team,   Behavioural   Insights   Team   website http://www.behaviouralinsights.co.uk/.

[87] The consultant is thankful to Mr. Jeremy Millard, Senior Consultant, Danish Technological Institute, participating in the *Workshop on Fostering Innovation in the Public Sectors of Arab Countries*, organized by UN ESCWA in Cairo, Egypt, on October 30-31, 2017 as an expert speaker, for bringing forward the pointer to Behavioural Insights Team during the workshop discussions.

[88] More information available from https://en.wikipedia.org/wiki/Wikipedia:Good_articles.

[89] Source: https://en.wikipedia.org/wiki/Sustainability.

concept of sustainable innovation, taken to refer to innovation that contributes to sustainability and/or to sustainable development.

As important as this goal is, it should be kept aside from a more literal sense of sustainable innovation, taken to mean the application of sustainability principles to innovation processes. In this line of thought, the working definition of sustainable innovation considered in this study is as follows:

> beyond deploying a specific innovation, establish material and immaterial conditions necessary and sufficient in order to create an innovation process without foreseen end, that will generate innovations and inform, motivate, improve and re-fuel itself through the innovations produced already, in order to advance by regenerating the resources that it consumes.

This definition, therefore, considers sustainable innovation as an innovation process type that results from applying sustainability principles to innovation, rather than from the opposite, i.e. applying innovation principles to sustainability.

The need to clarify this double use of the term sustainable innovation is recurring in the discussion and literature about innovation process types. At the same time, this double use is also reflected in the thinking and practice of public sector innovation workers. Although both meanings of the terms (innovating for sustainability, and sustaining innovation) are equally important as goals of innovation processes, the challenge to clarify their difference has practical implications, when there is a need to communicate the idea that a process type of innovation is sought which could (a) allow diversity, and (b) reproduce itself, just as sustainable biological systems do.

8.   *Challenge B8. Practically identifying IT providers and tools for public sector innovation*

In a way similar to the above challenge, the spectrum of IT solutions to consider as possible tools enabling public sector innovation is large. Emerging paradigms of technology to consider include
- zero infrastructure and hardware as a service;
- application platformization and software as a service;
- data management and workplace virtualization;
- digital transformation and cognitive management;
- user experience and citizen journey;
- digital trust, digital innovation and digital disruption;

whereas different paradigms of tools to consider include
- closed source, software as a product tools;
- open source, software as a shared good tools; and
- no source, software as a service tools.

For all these paradigms there are pros and cons, in terms of IT management benefits and risks, as well as obvious gains and hidden costs, in terms of IT budgets. At the same time, different sources for identifying tools comprise
- competitive intelligence metasources;
- competitive intelligence sources;
- liveness, activity and influence assessments;
- software peer reviews providers;
- software comparison reports providers;
- OSS directory providers;
- OSS-focus provider assessments; and
- academic literature review papers.

In this context, the objective of the challenge herein is to have access to effective ways of identifying the IT solution providers and tools needed for public sector innovation efforts, and so much so in a manner practical for this task under conditions of limited resources.

In order to face this challenge, a systematic way of work in the form of a methodological exercise (ITOCIx) has been applied in the context of the study with a view to identifying software tools through the open competitive intelligence offerings of peer review reports, expert comparison report, open source software as well as academic providers. As an outcome of this exercise, approx. 470 SaaP / SaaS and 170 OSS tools tools have been selected for the IDEA/Ideation, Evolution and Assimilation phases, together with approx. 180 tools and platforms for the IDEA/Deliberation phase. All these resources are included in the study results, together with documentation of the methods and sources that have been used for finding them.

At the same time, the challenge with tool resource collections as this one, is (a) to make them available in non-linear ways (searchable by keywords and other means) to public sector innovation workers with fragmented time; (b) to keep them updated with future developments; and (c) to further develop empirically defined ways of work for identifying IT solution providers and tools for public sector innovation efforts into well formed open source methodologies, that can be applied in low resource settings just as well as in normally sourced ones.

9. Challenge B9. Integrating Innovation Processes with IT/IS lifecycles

Innovation processes, along any of the process types currently defined in the literature, all have in common some steps for idea generation and selection based on contextual information about the needs and situation of the innovating organization and its stakeholders. At the same time, depending on their degree of openness, varying along process types of closed, to collaborative to open innovation, innovation processes may also encompass steps for the involvement of external stakeholders, as idea contributors and evaluators. Last but not least, innovation processes end up with ideas that, once implemented, inevitably need time to bring forward positive results, have their lateral effects managed and ultimately show their merits.

On top of these requirements, innovation in nowadays organizations, and public sectors alike, is more often than not implemented through IT technologies, and it typically incurs direct or lateral changes to existing IT-based systems, services and infrastructures.

In this respect, there is a need to integrate innovation processes with IT/IS processes, in ways that ensure smooth reflection of innovation change ripples to IT/IS systems and applications, management of the lateral effects on the latter as well as use of the latter to help innovations bring forward their benefits. This need is indeed a challenge, given that innovation processes may touch upon assumptions which lie at the foundations of IT-based existing systems of work, and rightly so as the need to avoid lateral effects on IT systems should not operate as a barrier to innovation.

In the context of the study, this challenged has been faced by developing the IDEA lifecycle, an overall lifecycle comprising ideation, deliberation, evolution and assimilation phases for innovation, with the IT/IS development and changes necessary accommodated in the evolution phase. Beyond that, in each of these phases the lifecycle recognizes the need to use different categories of IT tools, which have been identified using the methodological approach discussed in the corresponding challenge above, and the overall IDEA model accommodates guidance for varying numbers of repetitions of each phase and the overall lifecycle, depending on the needs of each case.

The IDEA lifecycle, therefore, has been proposed as a way to overcome the challenge herein. Still, this lifecycle model is open to improvements, as the challenge for integrating innovation processes and IT/IS lifecycles remains and is a complex one.

The importance of bringing in more stakeholders, both internal and external to innovating organizations, to public sector innovation efforts, stems from the following premises:
- more stakeholders can contribute more ideas, and thus allow choosing from a richer set of alternatives;
- more stakeholders can raise more issues, and thus allow to better explore the universe of design choice implications and lateral effects;
- more stakeholders can raise more diverse needs, and thus allow the final innovations designed to be more inclusive;
- involvement of more in number, and more diverse, stakeholders means that consensus is built across a larger and more representative set of actors, which in turn increases the probability of acceptance of the final innovations in their broader context;
- consensus building with more stakeholders means that, at the end of the process, there will be more actors motivated to operate as multipliers for communicating this innovation to their broader contacts and networks.

At the same time, bringing in an innovation process an overly large number of stakeholders is not exempt from problems, as it may make the process disorganized, progress difficult to achieve, and final consensus difficult to reach. Still, it should be noted that these problems are not necessarily attributed to the personal characteristics of the stakeholders themselves, but also to poor models of communication of objectives, motivation of participants and synthesis of views. The challenges involved herein, therefore, essentially have to do with identifying effective, balanced and problem-proof models that allow, at the same time, to achieve two contradictory objectives: (a) involved many stakeholders; and (b) keep the process controlled and creative.

In this respect, the challenges listed below under the present core theme, each refer to a different one of a number of emerging paradigms for bringing in more stakeholders to innovation efforts, and especially stakeholders external to the innovating organization. The latter typically remains the innovation process owner, although there are paradigms, or variations of some paradigms that follow, in which the innovation process is not owned solely by the initiating organization, but eventually co-owned by this organization together with the stakeholders involved.

The objective of each one of the following challenges is for public sector organizations to open up their thinking and innovation work to the paradigm presented in each challenge, and arrive at deploying balanced ways for integrating this paradigm into their innovation efforts. The paradigm mentioned in each challenge is further documented with some selected examples and/or sources for further reading.

1.   Challenge C1. Linking public sector innovation to participatory design

Some basic premises for participatory design efforts are as follows:
- the way things work, or fail to work, is heavily influenced by their design;
- together, we can make choices more inclusive and better for all.

Indicative examples of such efforts may be found in sources such as
- *Co-design for Public Interest Services*, a recent book (2017) authored by D.Selloni[90];
- the agenda and proceedings of the Participatory Design (PDC) conference series[91];
- emerging efforts on applying participatory design principles to democratic participation processes, such as constitutional participatory design[92].

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[90] More information available at http://www.desisnetwork.org/2017/07/17/codesign-for-public-interest-services-a-new-book-born-at-polimi-desis-lab-2/.
[91] Cf. https://pdc2018.org/ for the current edition of this conference.
[92] As an example, cf. Participatory Constitutional Design: A Grassroots Experiment for (Re)Designing the Constitution in Greece, online available from https://link.springer.com/chapter/10.1007/978-3-319-54142-6_10/fulltext.html.

2.   *Challenge C2. Linking public sector innovation to crowdsourcing*

Some basic premises for crowdsourcing efforts are as follows:
- crowds are not inevitably destructive; they can be constructive as well;
- the many, summing up the information and knowledge that they provide, create more wisdom than the few;
- the many, summing up the work and resources that they provide, create more strength that the few.

Indicative examples of such efforts may be found in sources such as
- the COBWeb Citizen Observatory Project[93];
- the Natural History Museum Citizen Science Program[94];
- WeSenseIt Citizen Water Observatories[95]and many others.

3.   *Challenge C3. Linking public sector innovation to pervasive participation*

Some basic premises for pervasive participation efforts are as follows:
- the public sphere is not restricted to formal politics; many things in everyday life are political in nature and call for citizen choices and feedback;
- people can contribute as active citizens, if we make this meaningful.

Indicative examples of such efforts may be found in sources such as
- the b-Part: Building Pervasive Participation project[96];
- *The Ludic City: Exploring the Potential of Public Spaces*, a book authored by Q.Stevens[97].

4.   *Challenge C4. Linking public sector innovation to playful brainstorming*

Some basic premises for playful brainstorming efforts are as follows:
- if we feel well in a brainstorming process, we will contribute more and better ideas;
- a process, to make us feel well, has to be felt less like work and more like play.

Indicative examples of such efforts may be found in sources such as:
- *Gamestorming for Innovators, Rulebreakers, and Changemakers*, a book authored by D.Gray and others[98].

5.   *Challenge C5. Linking public sector innovation to playful democratic participation*

Some basic premises for playful democratic participation efforts are as follows:
- disengagement from and apathy towards politics also have to do, among other factors, with the gravity and formality of participation processes;
- combining participation with fun, will be more inclusive and mobilizing.

Indicative examples of such efforts may be found in sources such as:
- *Making Democracy Fun. How Game Design Can Empower Citizens and Transform Politics*, a book authored by J.Lerner[99].

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[93] URL: https://cobwebproject.eu/.
[94] URL: http://www.nhm.ac.uk/take-part/citizen-science.html.
[95] URL: http://www.wesenseit.com/.
[96] URL:http://www.b-part.eu/.
[97] More information available from https://www.goodreads.com/book/show/1889786.The_Ludic_City.
[98] More information available from http://shop.oreilly.com/product/9780596804183.do.

6.   *Challenge C6. Linking public sector innovation to DIY and DIWO citizenship*

Some basic premises for DIY (do-it-yourself) and DIWO (do-it-with-others) efforts are as follows:
*   we take pride in doing things ourselves, for the sake of them, and we like to find others that feel the same;
*   what we feel we have to do as active citizens, including solving our problems, we can do it ourselves.

Indicative examples of such efforts may be found in sources such as:
*   *DIY Citizenship. Critical Making and Social Media*, a book edited by M.Ratto and M.Boler[100].

7.   *Challenge C7. Linking public sector innovation to visual thinking and visual storytelling*

Some basic premises for visual thinking and visual storytelling efforts are as follows:
*   write for me a report, and I promise to read it; prepare for me a presentation, and I promise to attend; tell me a story, and I'll start to empathize; show me a story, and I'll start to understand;
*   as human beings, we can put more of our truths in stories and pictures, than in any other format.

Indicative examples of such efforts may be found in sources such as:
*   visual thinking topical webpages[101];
*   *The Back of the Napkin*, and *Blah Blah Blah. What to do When Words Don't Work*, two books by D.Roam, one of the basic proponents of visual storytelling[102]; and
*   storytelling and storyboarding tools, such as Scenes[103].

8.   *Challenge C8. Exploring the potential of innovation hackathons*

Innovation marathons comprise an idea which exists for some years now. One of the early examples of is *24 Hours of Innovation 2009*, an innovation marathon organized by the Board of Innovators in May 2009, in Belgium, asking a number of innovation-focused organizations to showcase their offerings in a 24-hour timeframe[104]. Recent examples include:
*   the SingHealth Hackathon 2017 (Singapore, January 2017)[105], focused on health applications and services;
*   the Houston Hackathon 2017 (USA, May 2017)[106], focused on solving civic issues and resulting in more than 100 open source software projects initiated on GitHub[107];
*   the Sofia Innovation Hackathon 2017 (Bulgaria, May 2017)[108], focused on urban services and improvements; as well as
*   the Dutch Open Hackathon (Netherlands, December 2017)[109], focused on mobile applications.

It can be noted that there are several non-trivial ways in which an innovation effort is similar to a marathon course:

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[99] More information available from https://mitpress.mit.edu/fun.
[100] More information available from https://mitpress.mit.edu/books/diy-citizenship.
[101] An example is available from http://www.xplaner.com/visual-thinking-school.
[102] More information available from http://www.danroam.com/the-back-of-the-napkin/ http://www.danroam.com/blah-blah-blah-in-a-nutshell/, respectively.
[103] More information available from http://www.legaltechdesign.com/LegalDesignToolbox/2017/03/17/scenes-a-storytelling-and-boarding-tool/.
[104] More information available from https://www.boardofinnovation.com/blog/2009/05/20/what-happened-during-the-24-hours-of-innovation-2009.
[105] More information available from http://www.singhealthresidency.com.sg/Pages/msc_45_ff.aspx.
[106] More information available from http://houstonhackathon.com.
[107] More information available from https://github.com/sketch-city/project-ideas/issues.
[108] More information available from http://investsofia.com/en/ideas-for-a-better-sofia-sofia-innovation-hackathon-2017.
[109] More information available from https://dutchopenhackathon.com/p/faq.

- it is open to everyone;
- preparation, endurance, persistence are all necessary to win, but not to participate;
- not a brute force process, strategies and methods can help;
- there is value in the process;

as well as ways in which an innovation effort differs:
- there is value for others in the outcome, other than setting an example;
- it is competitive but not antagonistic, there is room for many winners, yet winners are not always awarded grand prizes.

Still, based on the similarities between innovation efforts and marathons, hackathons have been developed as an event format that delivers value by:
- building on the idea that anyone may be able to innovate;
- providing an opportunity to freely choose and commit to, rather than a forced obligation;
- providing a clear challenge on what to achieve, specified at a meaningful level of detail;
- providing freedom on what to do, thus challenging creativity, collaboration and effectiveness;
- has time limits that make participant teams focus on the essential;
- pursues proofs of concepts and paradigm shifts by solving a core problem in a scalable way;
- imposes no need for participants to go down the full deployment scale.

On top of that, as it has been remarked some time now, *"Hackathons are no longer just for coders. Companies far outside the tech world are using these intense brainstorming and development sessions to stir up new ideas on everything from culture change to supply chain management."*[110]

9.   Challenge C9. Exploring the potential of innovation awards

Innovation awards comprise one more idea which exists for many years now, with a view to bringing in more stakeholders into innovation challenges, as well as bringing forward talented innovators. Some recent examples of such awards with diversity in their focus include

- the EU Prize for Women Innovators[111], focused on the gender aspect of innovators;
- the ISPIM Innovation Management Dissertation Award[112], focused on new innovators;
- the AIF Innovation Prize for Africa[113], geographically focused; as well as
- the challenge-focused Blue Bag Water Innovation Award Challenge, organized in 2015 by Lund University, Sweden, for the City of Jakarta, Indonesia[114].

It can be noted, at this point, that innovation hackathons and innovation awards have some basic similarities, given that they can both motivate innovation, and communicate innovativeness at the same time. Still, beyond these similarities, these two formats of events have a number of differences, on the basis that

- hackathons call for good results in a set (very short) deadline, whereas awards evaluate end results independently of the time needed, come with a deadline well ahead, and recur on some regular basis to allow a "next time" concept;
- hackathons are typically addressing ingenious teams, whereas awards are typically addressing talented individuals

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[110] Spaulding, E. and Caimi, G. (2016). Hackathons Aren't Just for Coders. *Harvard Business Review*, 1 April 2016. Available from https://hbr.org/2016/04/hackathons-arent-just-for-coders.
[111] More information on the current edition available from http://ec.europa.eu/research/prizes/women-innovators/index.cfm?pg=home.
[112] More information on the current edition available from https://www.ispim-innovation.com/dissertation-award.
[113] More information available from http://innovationprizeforafrica.org.
[114] More information available from http://www.bluebagaward.com.

- hackathons may best serve for creating interest, awareness and a culture for innovativeness, whereas awards may best serve for establishing a tradition, examples and a culture of excellence.

10.   Challenge C10. Linking public sector innovation and interest groups

A final challenge included in this thematic group has to do with finding practical and balanced ways of linking public sector innovation efforts to interest groups. The online edition of Encyclopaedia Britannica defines an interest or pressure group, as a political science term, as : *"… any association of individuals or organizations, usually formally organized, that, on the basis of one or more shared concerns, attempts to influence public policy in its favour. All interest groups share a desire to affect government policy to benefit themselves or their causes. Their goal could be a policy that exclusively benefits group members or one segment of society (e.g., government subsidies for farmers) or a policy that advances a broader public purpose (e.g., improving air quality). They attempt to achieve their goals by lobbying—that is, by attempting to bring pressure to bear on policy makers to gain policy outcomes in their favour."*[115]

As can be seen from this definition, interest groups are not necessarily to be considered as ego-centric formations focused entirely on their own benefits and profits. There can be private interest groups that press for policies in favour of profit-making practices, as there can be civil society interest groups that press for SDG-related goals.

In this respect, and given that interest groups are formally organized and have their own structured internal processes for synthesizing member views, whereas they voice the interests and/or concerns of a specific type of stakeholders, their participation in public sector innovation processes may be meaningful, in order to help with the inclusiveness of an innovation process and the consensus built around it. The challenge, then, on the side of the public sector, would be to develop a balanced way of including interest groups in innovation processes, without nevertheless jeopardizing the public sector's freedom to make the final decisions.

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[115] Source: https://www.britannica.com/topic/interest-group.

V.   OVERALL RECOMMENDATIONS

A.   INTRODUCTORY NOTES

The study on Fostering Innovation in the Public Sectors of the Arab Region has attempted to explore the issue of public sector innovation in a holistic manner, and bring forward resources, instruments, examples and discussion that may effectively help the public sectors of ESCWA member countries in the Arab Region to further develop the capacities required for pursuing their innovation efforts.

At the same time, in the context of work for this study it has become clear that there are Arab Region member countries of ESCWA who find themselves able to have advanced in public sector innovation more than others. This can be attributed to a number of reasons, and so much so to reasons that, beyond public sectors, have to do with the broader realities faced by many ESCWA member countries.

B.   RECOMMENDATION ONE: KEEPING THE PUBLIC SECTORS OF ESCWA MEMBER COUNTRIES TOGETHER

A first recommendation of this study would be to continue working with all possible instruments towards the goal of bringing the public sectors of ESCWA member countries together, in the context of regular events and lasting frameworks that encourage exchange of experience, sharing and uptake of innovation achievements. This is considered of paramount importance in order to help countries less advanced in public sector innovation gain from the experience of fellow countries, as well as countries more advanced in public sector innovation appreciate the difficulties of fellow countries, which may be faced by parts of their own constituencies as well.

C.   RECOMMENDATION TWO: JOINT WORK ON PUBLIC SECTOR INNOVATION

A second recommendation, in this same line of thought, would be to explore and foster possibilities of joint work on innovation between public sectors of ESCWA member countries across different stages of advancement. Such efforts could initially be envisaged in the form of targeted small-scale pilots, that would allow to demonstrate feasibility and showcase how the difficulties encountered can be resolved, with a view to leading up to joint projects of greater ambition.

D.   RECOMMENDATION THREE: MONITORING EXAMPLES AND PERCEPTIONS

A third recommendation has to do with the importance of monitoring public sector innovation advancements in ESCWA member countries, as well as having in place a diagnostic instrument for the evolution of perceptions related to public sector innovation. These two goals can be served by workshops and other events regularly organized by ESCWA. At the same time, the corresponding questionnaire instruments that have been developed in the context of this study could be used as complementary means. The information collected through these instruments could help build up a permanent online repository, as a sharing and diffusion platform available to the public sectors of ESCWA's member countries.

E.   RECOMMENDATION FOUR: CONSULTATION AND TRAINING ON METHODOLOGICAL INSTRUMENTS

A fourth recommendation concerns the methodological instruments developed as capacity-building tools in the context of the study. The IDEA lifecycle for public sector innovation efforts, the IPTTM conceptual model for studying the different dimensions of such efforts, the IPEG empirical guide to the characteristics and applicability of different innovation process types in different contexts, as well as the EIPwiz tool for identifying preferred innovation processes, all comprise methodological work undertaken in this study with outcomes open to improvement. In this line of thought, the possibility of inviting expert-based and public sector-wide consultations on these tools could have important added value for helping them reach increased

levels of maturity and user acceptance. Alongside such consultation exercises, the possibility of organizing training workshops based on these instruments could greatly help in their uptake, as tools for gaining better practical understanding and capacities for innovation.

F.   RECOMMENDATION FIVE: CATALOGUES AND METHODOLOGY FOR KNOWLEDGE AND TOOL RESOURCES

One more recommendation has to do with the knowledge and information resources catalogued in the context of this study. Making these resource catalogues online available to public sectors of ESCWA member countries, and browsable/searchable in non-linear ways that would allow running queries targeted at specific needs, could result in a practical and valuable information asset for innovation work. At the same time, the IKRx and ITOCIx exercises through which these resources have been developed in the context of the study, which are themselves documented in the study in a descriptive form, could also feed consultation and training actions, with the twofold purpose of maturing into corresponding methodologies on the one hand, and fostering the capacity of public sectors to identify the knowledge and tool resources that they need in the context of their innovation work on the other.

G.   RECOMMENDATION SIX: INTERACTIVE TRAINING BY EXAMPLES

An additional recommendation concerns the examples for public sector innovation that have been identified and discussed in this study, with a double association to different aims and scope, as well as different process types. This corpus of examples could be used to feed training workshops explicitly targeted at innovation with specific aims, or at innovation along specific process types, that would allow participants to gain important insights and practical knowledge readily applicable to their innovation work.

H.   RECOMMENDATION SEVEN: A FOCUS ON BRINGING IN MORE STAKEHOLDERS

As the results of this study have shown, on top of the multiple process types recognized in the literature for innovation efforts, a whole spectrum of process modalities is emerging with a view to bringing in more stakeholders in innovation building processes. It is recommended therefore that these new modalities, which in terms of the study are mentioned as challenges for linking innovation to new ways of pervasive, playful and other forms of participation, be further explored. This could be envisaged along a mixed-methods approach, encompassing study, workshop, training, consultation, as well as innovation prize and hackathon components, both at Arab Region-wide and at national level, involving expert, public sector as well as private sector, academia and civil society stakeholders.

I.   RECOMMENDATION EIGHT: A SPECIAL FOCUS ON BRINGING IN WOMEN

As this and other studies show, examples of public sector innovation explicitly bringing women into the picture certainly exist, but are not proportionate to the fact that women represent half the capacity of the population and have many needs for new services, better services and better access to existing services. It is recommended, therefore, that public sector innovation efforts place a special focus on bringing in women into the innovation process. This could mean innovating by women, with women and, most importantly, for women, and can be pursued with a variety of actions. Like for the previous recommendation, this could be envisaged along a mixed-methods approach, encompassing study, workshop, training, consultation, as well as innovation prize and hackathon components, both at Arab Region-wide and at national level, involving expert, public sector as well as private sector, academia and civil society women stakeholders.

J.   RECOMMENDATION NINE: FOCUSING FURTHER WORK ON SPECIFIC CHALLENGES

Two last recommendations are made with reference to the I-unLoC list of challenges for public sector innovation which has been developed in the context of this study. This list of challenges, which covers a number of aspects and issues for public sector innovation, could be used in order to identify priorities and select specific challenges of public sector innovation as a focus for further work.

K.   RECOMMENDATION TEN: CHALLENGE-SPECIFIC STUDIES, WORKSHOPS, AWARDS AND HACKATHONS

Studies could be used as instruments for working further on selected challenges to public sector innovation. At the same time, as complementary means for opening up this work to public sector and additional contributors, coming from academia and research, the private sector and/or the civil society, three more instruments could be envisaged: training workshops, innovation awards and innovation hackathons. These could be targeted to specific challenges selected from the I-unLoC list, and they could be Arab Region-wide in scope, or launched by specific countries for their own constituencies. In all cases such instruments targeted at specific challenges, rather than on public sector innovation overall, could prove of essential value as a means for mobilizing contributors and getting back original ideas and proposals.

VI.   ADDITIONAL ADVANCED CHAPTER

EMPIRICAL WIZARD TOOL FOR THE IDENTIFICATION OF PREFERRED INNOVATION PROCESS TYPES

A.   INTRODUCTORY NOTES

This chapter presents EIPwiz, an empirical wizard tool to help identify preferred innovation processes in a variety of contexts.[116] The EIPwiz tool is meant as an aid for public sector personnel, managers as well as any other external stakeholders involved in specific innovation efforts, or faced with the need for innovation work in general, to better understand how some innovation process types may better fit their context than others, and why.

In order to provide this sort of understanding, the EIP wizard
- is based on the various aspects (rationale, critical success factors, risks and promise) of different innovation processes types that have been identified in the IPEG empirical guide;
- brings these in front of respondents in the form of questions to answer; and
- translates the feedback gathered into weighted diagnostics for the fit of each different process type, and therefore produces algebraic fit sums which can eventually show that some process types (with greater or positive fit sum) are more preferred than others (with smaller or negative fit sum).

At the same time, the primary diagnostics data and analysis prior to final results can also be used as feedback to the respondents, in order to help understand where some process types gained and some other ones lost diagnostic points during the procedure, and therefore why the former ones are considered preferred over the latter.

Clearly, the use of this wizard tool is subject to a number of constraints, and therefore it should not be intended as a tool to guide final decisions as to the innovation process types that will eventually be uptaken. The latter might coincide completely, in part or not at all with the wizard diagnostics. Still, in any such case, the use of the wizard will have helped all participants to better reflect on some important aspects of innovation efforts and specific process types, which is a clear gain in terms of understanding and can lead to more informed views and choices.

It should be noted, additionally, that the entire EIPwiz question-response process is one in which respondents are presented with some generic clauses and asked to reflect on the importance/validity of these in their own specific contexts. In this respect, the quality of an EIPwiz exercise is clearly dependent on two factors:
  (a) the understanding and experience that respondents have been able to acquire for their context at that point in time; as well as
  (b) the extent to which the respondents find themselves able to interact with this wizard in an open, spontaneous and thoughtful manner, and respond to the various questions accordingly.

The following sections present the contents of the EIPwiz tool, which in fact consists of four templates corresponding to the rationale, critical success factors, risks and promises identified in the IPEG guide for different innovation process types, plus a fifth template for performing a simple analysis on the primary data gathered through the previous ones.The chapter is concludes with a section discussing different scenarios along which the EIP wizard can be used, as well as different options and formats for implementing this tool in practice.

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[116] The EIPwiz tool is by no means conceived as a magic wand- or silver bullet-type instrument that would somehow be able to infer the innovation process type best suited for some specific case. Indeed, such an instrument may well be impossible to develop, firstly due to the multi-faceted and complex nature of innovation itself, and secondly, and even more importantly, due to the fact that no single process type may in fact be best suited for any specific case where innovation is needed. Different process types may have equally interesting fits, and produce different, yet equally interesting, outcomes.

B.   NOTES ON USING AND IMPLEMENTING THE EIP WIZARD

The EIP wizard is a tool of simple ambition, to help public sector and other stakeholders involved in innovation work gain understanding of the different innovation process types and their subtleties. As such, its structure has been deliberately kept equally simple, and it is certainly open to revisions and improvements under the only constraint that its simplicity should not be compromised. At the same time, the use scenarios of this tool should best be kept equally simple as well, in order to avoid overcharging it with expectations that it would inherently be unusable.

Therefore, the main scenarios in which the EIPwiz tool may be used are envisaged as follows:
(a) a public sector stakeholder working on a specific innovation effort could use this tool to run an exercise that would allow her/him to gain a better understanding of the innovation types preferred, according to her/his own feedback, and check the fit of her/his prior views to what this feedback shows;
(b) a group of stakeholders (of public sector and possibly broader provenance) working together on a specific innovation effort could use this tool individually, to run an exercise that would show to each respondent the innovation process types preferred according to her/his feedback, and then convene in group to discuss whether their views converge or diverge, why so, and how to reconcile them;
(c) a public sector stakeholder involved in innovation in general could use this tool individually, answer the questions having in mind her/his general innovation work, rather than any specific case, and gain understanding on the innovation process types that she/he is tending, in general, to prefer;
(d) a group of public sector stakeholders involved in innovation in general could run exercise;

In all of these cases, the EIPwiz exercise could best be operated by a third facilitator who would act as facilitator of the process, help the respondent(s) go through it, produce the results, provide the latter to the respondents, and help with interpretation of these results in the follow-up discussion.

Templates 1 to 4 each consists of
(a) A question (with two variations, depending on whether the EIPwiz exercise is run having in mind a specific innovation effort, or the respondent's innovation work in general)[117],
(b) Some instructions and
(c) Some items to rate which comes from the *rationale* items identified in IPEG for the various innovation process types, and their rating as important or not so important contributes with positive points to the fit of the corresponding process types.

Template 5 consist of the rating matrix for the different process types that shoud be completed by the respondents based on the answers to the questions in templates 1 to 4 and the intiative that they are planning.

The provenance and diagnostic weight of the items to rate should not be made visible to respondents during the rating process, in order to avoid bias. Following the rating process this information can be made visible to respondents or not, depending on the overall scenario in which this wizard is. For respondents engaged in one-off exercises, it may be wiser to keep this information opaque, with disclosure exceptions in order to help them interpret their results correctly. For respondents engaging in repetitive EIPwiz exercises, on the other hand, this information may at some point need to be disclosed (as in any case after enough experience with this tool it will start to become apparent); still, in such a case respondents will need to consciously keep this knowledge apart from their ratings, so that the rating process remains unbiased and thus meaningful.

As a last point, it should be noted that in all the cases above the EIPwiz tool and exercise may be implemented in either physical or digital format. Paper-based templates are obviously possible, and it is equally possible to implement these templates in simple spreadsheet files or online forms. Independently of that, the EIPwiz exercises might best be run by physical presence, in order to enable direct exchanges, although implementation of this wizard as online forms may also allow to envisage self-use scenarios.

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[117] Template 4 only have one question that is used for both types of exercises

C.   E<small>IP</small>WIZ TEMPLATE O<small>NE</small>: IMPORTANT THINGS

1.   Two Question

Question (for a case-specific exercise)
- How much do you feel that each one of the following is important for the innovation effort you are thinking of?

Question (for a case-agnostic exercise)
- How much do you feel that each one of the following is important for your innovation efforts in general?

2.   Instructions (for both types of exercise)

- Please provide your answer in the form of a single rating, from 1 (not really important) to 5 (very important), for each one of the items listed below.
- Please try to answer as openly, spontaneously and thoughtfully as you can, without being occupied with how your answers may be interpreted. Please bear in mind that all answers are equally helpful.

Items to rate (alphabetically listed for randomness)	Provenance	Diagnosticweight
• conventional wisdom cannot solve original problems	OP rationale	respondent rating $\times$ (+1) $\times$ OP
• ideas need to remain diverse and productive of new ideas	SU rationale	respondent rating $\times$ (+1) $\times$ SU
• innovation costs need to be proportionate to objectives	NC rationale	respondent rating $\times$ (+1) $\times$ NC
• needs are changing all the time	CN rationale	respondent rating $\times$ (+1) $\times$ CN
• not too many innovations need to be effected at the same time	NC rationale	respondent rating $\times$ (+1) $\times$ NC
• people at the field level know better	BT rationale	respondent rating $\times$ (+1) $\times$ BT
• problems are too interlinked to solve one at a time, the Gordian knot needs cutting	DS rationale	respondent rating $\times$ (+1) $\times$ DS
• problems can best be solved by considering their specific local context	LO rationale	respondent rating $\times$ (+1) $\times$ LO
• removing something that adds complexity but not real value is also an improvement	FR rationale	respondent rating $\times$ (+1) $\times$ FR
• small changes can accumulate to a meaningful improvement	FR rationale	respondent rating $\times$ (+1) $\times$ FR
• the issues to tackle cross organizational levels and specializations	CL rationale	respondent rating $\times$ (+1) $\times$ CL
• too much time has passed unused, everything needs to change now	DS rationale	respondent rating $\times$ (+1) $\times$ DS
• we only want what our beneficiaries want	OP rationale	respondent rating $\times$ (+1) $\times$ OP

D.   E<small>IP</small>WIZ TEMPLATE T<small>WO</small>: THINGS DIFFICULT TO ACHIEVE

1.   Two Questions

Question (for a case-specific exercise)
- How much do you feel that each one of the following is difficult to achieve for the innovation effort you are thinking of?

Question (for a case-agnostic exercise)
- How much do you feel that each one of the following is difficult to achieve for your innovation efforts in general?

- Please provide your answer in the form of a single rating, from 1 (not really difficult to achieve) to 5 (very difficult to achieve), for each one of the items listed below.
- Please try to answer as openly, spontaneously and thoughtfully as you can, without being occupied with how your answers may be interpreted. Please bear in mind that all answers are equally helpful.

Items to rate (alphabetically listed for randomness)	Provenance	Diagnostic weight
• all ideas are given room to flourish	SU critical success factors	respondent rating × (−1) × SU
• all stakeholders are continually committed	SU critical success factors	respondent rating × (−1) × SU
• change of services towards the beneficiaries is managed smoothly during uptime, without creating chaos	DS critical success factors	respondent rating × (−1) × DS
• changes can have no undesirable lateral effects	FR critical success factors	respondent rating × (−1) × FR
• evolution moves on even at times of no pressing needs	CN critical success factors	respondent rating × (−1) × CN
• innovations are assessed in terms of the room for more innovations that they open up	SU critical success factors	respondent rating × (−1) × SU
• leadership drives collaboration in a rigorous way	CL critical success factors	respondent rating × (−1) × CL
• local factors are taken up as opportunities rather than shortcomings	LO critical success factors	respondent rating × (−1) × LO
• out of many small changes possible at some point, the right one is chosen for realization	NC critical success factors	respondent rating × (−1) × NC
• participants are attracted and engaged throughout the process	OP critical success factors	respondent rating × (−1) × OP
• participants work jointly rather than in parallel	CL critical success factors	respondent rating × (−1) × CL
• people at lower organizational levels commit to broader, beyond formal, responsibility	BT critical success factors	respondent rating × (−1) × BT
• people at lower organizational levels embrace the big picture	BT critical success factors	respondent rating × (−1) × BT
• people effectively understand and operationalize the notion of continuous evolution	CN critical success factors	respondent rating × (−1) × CN
• people inside and outside the organization are helped to change their own culture and habits	DS critical success factors	respondent rating × (−1) × DS
• small and simple changes can be made meaningful	FR critical success factors	respondent rating × (−1) × FR
• the local context is considered selectively, bearing in mind that needs are different than interests	LO critical success factors	respondent rating × (−1) × LO
• the process has rigorous and time-effective leadership	OP critical success factors	respondent rating × (−1) × OP

E. EIPWIZ TEMPLATE THREE: THINGS THAT MAY HAPPEN

1. *Two Question*

Question (for a case-specific exercise)

- *How much do you feel that each one of the following may happen in the innovation effort you are thinking of?*

Question (for a case-agnostic exercise)

- *How much do you feel that each one of the following may happen in your innovation efforts in general?*

2. Instructions (for both types of exercise)

- Please provide your answer in the form of a single rating, from 1 (not really probable to happen) to 5 (very probable to happen), for each one of the items listed below.
- Please try to answer as openly, spontaneously and thoughtfully as you can, without being occupied with how your answers may be interpreted. Please bear in mind that all answers are equally helpful.

Items to rate (alphabetically listed for randomness)	Provenance	Diagnostic weight
• ideas may sum up partial interests, rather than synthesize them	CL risks	respondent rating × (–1) × CL
• keeping changes proportionate to step-by-step objectives may not allow some nice and bigger-scale ideas to find their way to realization	NC risks	respondent rating × (–1) × NC
• local solutions may jeopardize shared resources and consume too much of them	LO risks	respondent rating × (–1) × LO
• local solutions may lack broader value in terms of generality and scalability	LO risks	respondent rating × (–1) × LO
• low cost may be made a priority over real value	FR risks	respondent rating × (–1) × FR
• planning and investments may fail to bring results, this may only be able to be achieved in practice	SU risks	respondent rating × (–1) × SU
• success may be considered as an excuse for slowing down, rather than a reason for keeping up	CN risks	respondent rating × (–1) × CN
• the process may end up with ideas egocentric or otherwise fragmented	BT risks	respondent rating × (–1) × BT
• the process may fail to include all stakeholder groups in a fair way	OP risks	respondent rating × (–1) × OP
• thinking big may fail to start small	SU risks	respondent rating × (–1) × SU
• too many / too fast changes with unexplored consequences may create problems that will defame an effort	DS risks	respondent rating × (–1) × DS

F. EIPWIZ TEMPLATE FOUR: THINGS IMPORTANT TO ACHIEVE

1. Question for both types of exercises:

- How much do you feel that each one of the following is important to achieve in your innovation work?

2. Instructions (for both types of exercise)

- Please provide your answer in the form of a single rating, from 1 (not really probable to happen) to 5 (very probable to happen), for each one of the items listed below.
- Please try to answer as openly, spontaneously and thoughtfully as you can, without being occupied with how your answers may be interpreted. Please bear in mind that all answers are equally helpful.

Itemsto rate (alphabetically listed for randomness)	Provenance	Diagnosticweight
• a better future lies ahead, for all of us	SU promises	respondent rating × (+1) × SU
• everything will be better, before the past has time to resist	DS promises	respondent rating × (+1) × DS

• if we are ingenious enough and understand something well enough, we can find small changes that can make a big difference	FR promises	respondent rating × (+1) × FR				
• innovation, wisely used, can achieve objectives without wasting resources	NC promises	respondent rating × (+1) × NC				
• innovations better suited to field-level realities	BT promises	respondent rating × (+1) × BT				
• innovations really innovative and really unbiased	OP promises	respondent rating × (+1) × OP				
• innovations with all aspects worked out, backed up with consensus	CL promises	respondent rating × (+1) × CL				
• innovative solutions readily adapted to uptake by local communities	LO promises	respondent rating × (+1) × LO				
• time will become a friend that makes things better, rather than a foe that imposes deadlines	CN promises	respondent rating × (+1) × CN				

G.   EIPWIZ TEMPLATE FIVE: ALGEBRAIC SUMS OF FIT POINTS

Template Five consists of a simple table which helps the operator of the EIPwiz exercise collect the diagnostic points for the different innovation process types, draw the algebraic fit sums, order the innovation process types by descending fit sum and, eventually, identify (a) which types are more preferred than others (by inspecting their ranking higher in the final order), and (b) why (by inspecting their main gains and losses of fit points across the columns of templates One to Four.

The contents of this template are as follows:

innovation process type	template One points	template Two points	template Three points	template Four points	algebraic fit sum	final rank
bottom-up innovation (BT)	+…	−…	−…	+…	Σ(One..Four) = …	1 2 3 4 5 6 7 8 9
collaborative innovation (CL)	+…	−…	−…	+…	Σ(One..Four) = …	1 2 3 4 5 6 7 8 9
continuous innovation (CN)	+…	−…	−…	+…	Σ(One..Four) = …	1 2 3 4 5 6 7 8 9
disruptive innovation (DS)	+…	−…	−…	+…	Σ(One..Four) = …	1 2 3 4 5 6 7 8 9
frugal innovation (FR)	+…	−…	−…	+…	Σ(One..Four) = …	1 2 3 4 5 6 7 8 9
incremental innovation (NC)	+…	−…	−…	+…	Σ(One..Four) = …	1 2 3 4 5 6 7 8 9
local innovation (LO)	+…	−…	−…	+…	Σ(One..Four) = …	1 2 3 4 5 6 7 8 9
open innovation (OP)	+…	−…	−…	+…	Σ(One..Four) = …	1 2 3 4 5 6 7 8 9
sustainable innovation (SU)	+…	−…	−…	+…	Σ(One..Four) = …	1 2 3 4 5 6 7 8 9

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http://worldpopulationreview.com/.

Annex-1

Detailed Information and References related to the provided examples in the report

A.   BOTTOM-UP INNOVATION

Solar Sister – Eradicating energy poverty through social enterprise

1. Liveness information (for solarsister.org website)

    - Google Search 1y.o. content from website [1], [4]: within 100 results

    - Alexa traffic rank [2], [3], [4]: within 6,189K globally academic reference information

    - Google Scholar reference search [4]: within 100 results

2. Further Sources

    - Misra, Neha (2011). Solar Sister: Bringing a market based, gender inclusive, bottom up clean energy revolution to Africa. *The World Bank Social Enterprise Innovations*. 17 June. Available from http://blogs.worldbank.org/dmblog/solar-sister-bringing-a-market-based-gender-inclusive-bottom-up-clean-energy-revolution-to-africa.

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Project Isizwe – Free Wifi for South Africa

1. Liveness information (for projectisizwe.org website)

    - Google Search 1y.o. content from website[1], [4]: within 100 results

    - Alexa traffic rank[2], [3], [4]: within 97K globally, within 1K in South Africaacademic reference information

    - Google Scholar reference search[4]: within 100 results

2. Further Sources

    - Chigona, Wallace and others (2016). Domestication of Free Wi-Fi Amongst People Living in Disadvantaged Communities in the Western Cape Province of South Africa. In *Proceedings SAICSIT '16 Proceedings of the Annual Conference of the South African Institute of Computer Scientists and Information Technologists*, Johannesburg, South Africa, 26-28 September 2016. DOI: 10.1145/2987491.2987500.

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B. COLLABORATIVE INNOVATION

TAXISnet services

1. liveness information (for solarsister.org website)

   - Google Search 1y.o. content from website[1], [4]: within 300 results

   - Alexa traffic rank[2], [3], [4]: within 5K globally, within 1K in Greece academic reference information

   - Google Scholar reference search[4]: within 200 results

2. Further Resources

   - Floropoulos, Jordan and others (2010). Measuring the success of the Greek Taxation Information System. *International Journal of Information Management*, vol.30, No.1 (February), pp.47-56. DOI: 10.1016/j.ijinfomgt.2009.03.013.

   - Gouscos, Dimitris and others (2000). From Introvert IT Systems to Extrovert e-Services: e-Government as an enabler for e-Citizens and e-Business A Framework of Principles. In *Proceedings Electronic Business and Electronic Work Conference (EBEW)*, Madrid, Spain, 18-20 October 2000, IOS Press, pp.866-872. Available from http://www.cheshirehenbury.com/ebew/virtulahtml/gouscos.html.

   - Skordoulis, Michalis and others (2017). E-government services quality and citizens' satisfaction: a multi-criteria satisfaction analysis of TAXISnet information system in Greece. *International Journal of Productivity and Quality Management*, vol.22, No.1, pp.82-100. DOI: 10.1504/IJPQM.2017.085848.

   - Stamoulis, D. and others (2001). Revisiting public information management for effective e-government services. *Information Management & Computer Security*, vol.9, No.4, pp.146-153. DOI: 10.1108/09685220110400327.

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   - Tsiavos, Prodromos and others (2002). A Path of Discontinuity: The TAXIS Case as a Transition from e-Government to e-Regulation. In Bench-Capon, T.J.M. and others (Eds.), *Legal Knowledge and Information Systems. Jurix 2002: The Fifteenth Annual Conference*. Amsterdam: IOS Press, pp. 53-62. Available from http://jurix.nl/pdf/j02-06.pdf.

The Humanitarian Data Exchange (HDX)

1. liveness information (for humdata.org website)

   - Google Search 1y.o. content from website[1], [4] : within 500 results

   - Alexa traffic rank[2], [3], [4] :within 290K globally, within 71K in the United Kingdomacademic reference information

   - Google Scholar reference search[4] :within 100 results

2. Further Resources

   - Caniato, Marco and others (2017). Challenges and opportunities of new energy schemes for food security in humanitarian contexts: A selective review. Sustainable Energy Technologies and Assessments, vol.22 (August), pp.208-219. DOI: 10.1016/j.seta.2017.02.006.

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   - Feeny, Emma (2017). From Early Warning to Early Action in Somalia: What can we learn to support early action to mitigate humanitarian crises? *Oxfam Discussion Papers*, 2 October 2017. Available from http://hdl.handle.net/10546/620345.

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C.   CONTINUOUS INNOVATION

Government Service Insurance System

1. liveness information (for solarsister.org website)

   - Google Search 1y.o. content from website[1], [4]: within 500 results

   - Alexa traffic rank[2], [3], [4]: within 115K globally, within 1K in Philippines academic reference information

   - Google Scholar reference search[4]: within 100 results

2. Further Resources

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- Villacin, Deanna T. (2017). A Review of Philippine Government Disaster Financing for Recovery and Reconstruction. *Philippine Institute for Development Studies Discussion Paper Series*, No.2017-21 (June). Available from https://think-asia.org/bitstream/handle/11540/7149/pidsdps1721.pdf?sequence=1.

D.   DISRUPTIVE INNOVATION

Diavgeia Transparency Portal

1. liveness information (for diavgeia.gov.gr website)

   - Google Search 1y.o. content from website[1], [4] : within 4,500 results

   - Alexa traffic rank[2], [3], [4]: within 31K globally, within 1K in Greece academic reference information

   - Google Scholar reference search[4]: within 400 results

2. Further Resources

   - Karamagioli, Evika and others (2014). Government spending transparency on the Internet. An assessment of Greek bottom-up initiatives over the Diavgeia project. In Reddick, C. (Ed.), Special Inaugural Issue on "Public Administration and Information Technology: Emerging Issues and Innovations", *International Journal of Public Administration in the Digital Age*, vol.1, No.1, pp.39-55. DOI: 10.4018/ijpada.2014010103.

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vTaiwan

1. liveness information (for vtaiwan.tw website)

   - Google Search 1y.o. content from website[1], [4] : within 100 results

   - Alexa traffic rank[2], [3], [4] :within 2,612K globally academic reference information

   - Google Scholar reference search[4] :within 100 results

2. Further Resources

- apolitical (2017). *Taiwan is using social media to crowdsource legislation*. Case study, 1 June 2017. Available from https://apolitical.co/solution_article/taiwan-using-social-media-crowdsource-legislation/.

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- Megill, Colin (2016). *pol.is in Taiwan*. pol.is blog, 25 May 2016. Available from https://blog.pol.is/pol-is-in-taiwan-da7570d372b5.

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E.   FRUGAL INNOVATION

Volunteering Queensland

1. liveness information (for volunteeringqld.org.au website)

   - Google Search 1y.o. content from website[1], [4] : within 800 results

   - Alexa traffic rank[2], [3], [4] :within 1,293K globally, within 38K in Australia academic reference information

   - Google Scholar reference search[4] :within 100 results

2. Further Resources

   - Chan, Vincent and others (2015). Is there a role for pharmacists in multidisciplinary health-care teams at community outreach events for the homeless? *Australian Journal of Primary Health*, vol.21, pp.379-383. DOI: 10.1071/PY14158.

   - Fitzpatrick, Tal and Molloy, Julie (2014). The role of NGOs in building sustainable community resilience. *International Journal of Disaster Resilience in the Built Environment*, vol.5, No.3, pp.292-304. DOI: 10.1108/IJDRBE-01-2014-0008.

   - McFadden, Amanda & Smeaton, Kathleen (2016). Amplifying student learning through volunteering: The experiences of students volunteering in a community literature festival. In *STARS: Students, Transitions, Achievements, Retention and Success*, 29 June - 2 July 2016, Perth, WA. Available from http://unistars.org/proceedings/.

   - Volunteering Qld (2010 onwards). @*Volunteering Qld Twitter account*. Available from https://twitter.com/volunteeringqld?lang=en.

   - Volunteering Qld (2010). *Youth leading Youth: a look at organisations led by young people*. Available from https://www.volunteeringqld.org.au/docs/Publication_Youth_Leading_Youth.pdf.

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Twitter account of the Disaster Management Unit of Municipal Corporation of Greater Mumbai

1. liveness information (for mcgm.gov.in website)

   - Google Search 1y.o. content from website[1], [4] : within 1,000 results

   - Alexa traffic rank[2], [3], [4] :within 69K globally, within 5K in India academic reference information

   - Google Scholar reference search[4] :within 100 results

2. Further Resources

   - Disaster Management Unit of Municipal Corporation of Greater Mumbai (2017). *About Disaster Management*. Available from http://dm.mcgm.gov.in/aboutdm.

   - Singh P.D. and Kambekar A.R. (2017) Assessing Impact of Sea Level Rise Along the Coastline of Mumbai City Using Geographic Information System. In: Seta F. and others (Eds) *Understanding Built Environment*. Springer Transactions in Civil and Environmental Engineering. Springer, Singapore. DOI: 10.1007/978-981-10-2138-1_9.

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F.   INCREMENTAL INNOVATION

Resilient City Strategy of the City of Byblos

1. liveness information(for 100 resilientcities.org website)

   - Google Search 1y.o. content from website[1], [4] : within 400 results

   - Alexa traffic rank[2], [3], [4] :within 333K globally, within 135K in USA academic reference information

   - Google Scholar reference search[4] :within 100 results

2. Further Resources

   - ResilientByblos.org   (2016).   *Byblos   City   Profile*.   Available   from http://www.resilientbyblos.org/pdf/Byblos_City_Profile.pdf.

   - 100 Resilient Cities (2016). *Resilient Byblos – Connecting With our Past, Creating our Future*. Available from http://100resilientcities.org/strategies/byblos/.

   - Makhoul, N. and others (2016). Assessment of seismic damage to buildings in resilient Byblos City. *International Journal of Disaster Risk Reduction*, vol.18 (September), pp.12-22. DOI: 10.1016/j.ijdrr.2016.05.007.

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Estonia Digital ID Card

1. liveness information (for e-estonia.com website)

   - Google Search 1y.o. content from website[1], [4] : within 200 results

   - Alexa traffic rank[2], [3], [4]: within 292K globally, within 334K in the United States academic reference information

- [Google Scholar reference search](#)[4]: within 200 results

2. Further Resources

- Björklund, Fredrika (2016). E-government and moral citizenship: the case of Estonia. Citizenship Studies, vol.20, No.6-7, pp. 914-931. DOI: 10.1080/13621025.2016.1213222.

- Hammersley, Ben (2017). *Concerned about Brexit? Why not become an e-resident of Estonia.* WIRED UK – Future Science, Culture and Technology News and Reviews. 27 March. Available from http://www.wired.co.uk/article/estonia-e-resident.

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- Margetts, H. and Naumann, A. (2017). *Government as a Platform: What can Estonia show the world?* Oxford Internet Institute, University of Oxford. Publication funded by the European Social Fund and the Estonian Government. Available from https://www.politics.ox.ac.uk/materials/publications/16061/government-as-a-platform.pdf.

- Särav, Sandra and Kerikmäe, Tanel (2016). E-Residency: A Cyberdream Embodied in a Digital Identity Card? In Kerikmäe, T. and Rull, A. (Eds.), *The Future of Law and eTechnologies*. Springer International Publishing, Switzerland. DOI: 10.1007/978-3-319-26896-5_4.

- Sullivan, Clare (2016). Digital citizenship and the right to digital identity under international law. *Computer Law & Security Review*, vol.32, No.3 (June), pp.474-481. DOI: 10.1016/j.clsr.2016.02.001.

G.   LOCAL INNOVATION

City of Boston Citizen Connect Apps

1. liveness information(for boston.gov website)

- [Google Search 1y.o. content from website](#)[1], [4]: within 3,000 results

- [Alexa traffic rank](#)[2], [3], [4] :within 50K globally, within 10K in USAacademic reference information

- [Google Scholar reference search](#)[4] :within 100 results

2. Further Resources

- Ayre, Lori Bowen and Craner, Jim (2017). Open Data: What It Is and Why You Should Care. *Public Library Quarterly*, vol.36, No.2, pp.173-184. DOI: 10.1080/01616846.2017.1313045.

- Hartmann, S. and others (2017). Citizen Relationship Management in Local Governments: The Potential of 311 for Public Service Delivery. In: Paulin, A. and others (Eds) *Beyond Bureaucracy. Public Administration and Information Technology*, vol 25. Springer, Cham. DOI: 10.1007/978-3-319-54142-6_18.

- Nesti, Giorgia (2017). Co-production for innovation: the urban living lab experience. *Policy and Society*, published online 08 Sep 2017. Available from http://www.tandfonline.com/doi/abs/10.1080/14494035.2017.1374692.

Porto Alegre Prefecture Participatory

1. liveness information (for portoalegre.rs.gov.br website)

   - Google Search 1y.o. content from website[1], [4] : within 3,400 results

   - Alexa traffic rank[2], [3], [4] :not available academic reference information

   - Google Scholar reference search[4] :within 300 results

2. Further Resources

   - Goldfrank, Benjamin and Schneider, Aaron (2006). Competitive Institution Building: The PT and Participatory Budgeting in Rio Grande do Sul. *Latin American Politics and Society*, vol.48, No.3 (September), pp.1-31. DOI: 10.1111/j.1548-2456.2006.tb00354.x.

   - Maciel, C. and others (2016). Technologies for popular participation: a research agenda. In *dg.o'16 Proceedings of the 17th International Digital Government Research Conference on Digital Government Research*, Shanghai, China, June 08-10, 2016. DOI: 10.1145/2912160.2912191.

   - Novy, Andreas and Leubolt, Bernhard (2005). Participatory Budgeting in Porto Alegre: Social Innovation and the Dialectical Relationship of State and Civil Society. *Urban Studies*, vol.42, No.11 (October), pp. 2023-2036. DOI: 10.1080/00420980500279828.

   - Participatory Budgeting Project (n.d.). *PB Map & Process List*. Available from https://www.participatorybudgeting.org/pb-map/.

   - Souza, Celina (2001). Participatory budgeting in Brazilian cities: limits and possibilities in building democratic institutions. *Environment & Urbanization*, vol.13, No.1 (April), pp.159-184. DOI: 10.1177/095624780101300112.

   - Spada, P. and others (2016). Effects of the internet on participation: Study of a public policy referendum in Brazil. *Journal of Information Technology & Politics*, vol.13, No.3, pp.187-207. DOI: 10.1080/19331681.2016.1162250.

eCitizen ideas! Your Gateway to All Government Services

1. liveness information (for ecitizen.gov.sg website)

   - Google Search 1y.o. content from website[1], [4] : within 200 results

   - Alexa traffic rank[2], [3], [4]: within 234K globally, within 2K in Singaporeacademic reference information

   - Google Scholar reference search[4]: within 300 results

2. Further Resources

   - Ben Abdrabbah, Sabrine and others (2016). A Dynamic Community-Based Personalization for e-Government Services. In Bertot, John and others (Eds.), *ICEGOV '15-16 Proceedings of the 9th International Conference on Theory and Practice of Electronic Governance*, Montevideo, Uruguay, 01-03 March 2016, pp.258-265. DOI: 10.1145/2910019.2910050.

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- Lim, Siew Siew and Low, Yin Leng (2003). E-Government in Action. Singapore Case Study. *Journal of Political Marketing*, vol.2, No.3-4, pp.18-30. DOI: 10.1300/J199v02n03_02.

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- Martins, T.C.M. and others (2015). Open Innovation for Citizen Coproduction. In: Kő, A. and Francesconi, E. (Eds.), *Electronic Government and the Information Systems Perspective. EGOVIS 2015*. Lecture Notes in Computer Science, vol.9265. Springer, Cham. DOI: 10.1007/978-3-319-22389-6_13.

- Munoo, Rajen and Narayanan, Rakunathan (2008). The challenge of creating and sustaining a socially inclusive e-citizenry: the proactive advocacy role of the National Library Board, Singapore. In Lynden, Irina and Wu, Jane (Eds.) *Best Practices in Government Information: A Global Perspective*. K.G.Saur, Munich, pp.215-228.

I. SUSTAINABLE INNOVATION

Participation Cymru

1. liveness information (for participation.cymru website)

   - Google Search 1y.o. content from website[1], [4]: within 100 results

   - Alexa_traffic_rank[2], [3], [4]: within 16,046K globally (supporting website wcva.org.uk: within 2,207K globally, 116K in the United Kingdom) academic reference information

   - Google Scholar reference search[4]: within 100 results

2. Further Resources

   - Participation Cymru (2011 onwards). @*PartCymru Twitter account*. Available from https://twitter.com/partcymru?lang=en.

   - Participation Cymru (2011). *National Principles of Public Engagement in Wales*. March. Available from http://www.velindre-tr.wales.nhs.uk/sitesplus/documents/1137/Guidance per cent5Fnotes per cent5Ffor per cent5FNational per cent5FPrinciples per cent5Ffor per cent5FPublic per cent5FEngagement.pdf.

   - Wales Council for Voluntary Action (n.d.). *Participation Cymru*. Available from https://www.wcva.org.uk/what-we-do/participation-cymru.

The Hunger Project: Empowering Women and Men to End Their Own Hunger

1. liveness information (for thp.org website)

   - Google Search 1y.o. content from website[1], [4]: within 200 results

   - Alexa_traffic_rank[2], [3], [4]: within 273K globally, within 53K in India academic reference information

   - Google Scholar reference search[4]: within 400 results

2. Further Resources

   - Babbie, Earl (2004). Sociology: An Idea Whose Time Has Come. Sociological Perspectives, vol.47, No.4 (December), pp.331-338. DOI: 10.1525/sop.2004.47.4.331.

- Charity Navigator (2017). *The Hunger Project rating sheet*. 1 May. Available from https://www.charitynavigator.org/index.cfm?bay=search.summary&orgid=6427.

- Hoebink, Paul (2012). *The Hunger Project in Benin. A Firsft Review and Recommendations for Evaluation*. External Research Report, Radboud Repository of the Radboud University Nijmegen. Available from http://hdl.handle.net/2066/102959.

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- Lukhele-Olorunju, Phindile (2013). Examining the role of women in alleviating poverty. In Muchie, Mammo and others (Eds.), *The African Union Ten Years After. Solving African Problems with Pan-Africanism and the African Renaissance*. Africa Institute of South Africa, South Africa. pp.201-213.

- Moussa, M. and others (2011). Impact Assessment of Women Farmer Activity on Poverty Reduction and Food Security: A Case of Kindia Region/Guinea. *Journal of Agricultural Science*, vol. 3, No. 4 (December 2011), pp.141-150. Available from http://www.ccsenet.org/journal/index.php/jas/article/view/9342.

Annex-2

Additional Examples on various models of innovation

1-   Collaborative Innovation

Example	Country	Further information pointers
Child Protection Center	Bahrain	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/2917
Silah Gulf (National Contact Center)	Bahrain	• chapters/appendices on contributed ESCWA member country examples
Multidisciplinary team for patients with HIV	Bahrain	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/5154
Egyptian Women's Citizenship Initiative	Egypt	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/2958
TAXISnet Services	Greece	• website http://www.gsis.gr/
JORISS	Jordan	• chapters/appendices on contributed ESCWA member country examples
Mitigate the Impact of Syria Crisis on Jordan	Jordan	• chapters/appendices on contributed ESCWA member country examples
Proactive Registration of Non-Saudis	Saudi Arabia	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3205

2-   Continuous Innovation

Example	Country	Further information pointers
Vocational Provider Improvement Strategy (VPIS)	Bahrain	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3427
Innovation Incubator	Jordan	• chapters/appendices on contributed ESCWA member country examples
Consumer Rights Protection Initiative	Oman	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3323
Parent Mobile Application	Oman	• chapters/appendices on contributed ESCWA member country examples
Government Service Insurance System (GSIS)	Philippines	• website http://www.gsis.gov.ph/ • chapter on examples of public sector innovation
City of Boston Apps	USA	• website https://www.boston.gov/departments/innovation-and-technology/apps

3- Disruptive Innovation

Example	Country	Furthernformation pointers
Diavgeia Transparency Portal	Greece	• website https://diavgeia.gov.gr/
E-Services Customers Journey Standards	Jordan	• chapters/appendices on contributed ESCWA member country examples
Jordan Breast Cancer Program Mobile Mammography Unit	Jordan	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/2415
National Immigration and Asylum Policy	Morocco	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/4915
Transparent Access in Moroccan Public Service (TranSA-FP)	Morocco	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/5231
Agricultural Aid and Subsidy System (SABA)	Morocco	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3024
Tele-Intensive Care Unit (Tele-ICU)	Saudi Arabia	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3158
vTaiwan	Taiwan	• website https://vtaiwan.tw/

4- Frugal Innovation

Example	Country	Furtherinformation pointers
Volunteering Queensland	Australia	• website https://volunteeringqld.org.au/
Discharge planning for in-patients in secondary care hospitals	Bahrain	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3403
WeSenseIt Citizen Water Observatories	EU	• webpage http://www.wesenseit.com/ • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
Twitter Account of Disaster Management Unit Mumbai	India	• website https://twitter.com/disastermgmtmum?lang=en
Digital Humanitarian Network (DHN)	international	• website http://digitalhumanitarians.com/
Social Media in Media Centre Campaigns	Jordan	• chapters/appendices on contributed ESCWA member country examples
Care Opinion	UK	• website https://www.careopinion.org.uk/
Natural History Museum Citizen Science Program	UK	• webpage http://www.nhm.ac.uk/take-part/citizen-science.html • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region

WriteInPublic	UK	• webpage https://www.mysociety.org/democracy/writeinpublic/ • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
WriteToThem	UK	• webpage https://www.mysociety.org/democracy/writetothem-for-campaigners/ • ESCWA PSI workshop presentations.
Quora	USA	• webpage https://www.quora.com • ESCWA PSI workshop presentations.
The Fiscal Ship	USA	• webpage http://fiscalship.org • ESCWA PSI workshop presentations.
Women Also Know Stuff	USA	• webpage http://womenalsoknowstuff.com/ • ESCWA PSI workshop presentations

5-   Incremental Innovation

Example	Country	Further information pointers
Center of Excellence for Technical and Vocational Education	Bahrain	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3422
Estonia Digital ID Card	Estonia	• website https://e-estonia.com/solutions/e-identity/id-card/
Byblos Resilient City Strategy	Lebanon	• website http://www.resilientbyblos.org/
Family Care Unit	Oman	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3327
KSA Housing Program	Saudi Arabia	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3644

6-   Local Innovation

Example	Country	Furtherinformation pointers
Porto Alegre Participatory Budgeting	Brazil	• website http://www2.portoalegre.rs.gov.br/op/
Sofia Innovation Hackathon 2017	Bulgaria	• webpage http://investsofia.com/en/ideas-for-a-better-sofia-sofia-innovation-hackathon-2017/ • ESCWA PSI workshop presentations,
Mapatón	Mexico	• OECD Observatory for Public Sector Innovation webpage: https://www.oecd.org/governance/observatory-public-sector-innovation/innovations/page/mapaton.htm
Virtual Warsaw	Poland	• OECD Observatory for Public Sector Innovation webpage: https://www.oecd.org/governance/observatory-public-sector-innovation/innovations/page/virtualwarsaw-urbaninformationsystemforvisuallyimpaired.htm

FixMyStreet	UK	• webpage https://www.mysociety.org/better-cities/fixmystreet-in-the-uk/
Mapumental	UK	• webpage https://mapumental.com/
Music for a Generation	UK	• OECD Observatory for Public Sector Innovation webpage: https://www.oecd.org/governance/observatory-public-sector-innovation/innovations/page/musicforagenerationinhertfordshire.htm
Seasonal Health Interventions Network (SHINE)	UK	• OECD Observatory for Public Sector Innovation webpage: https://www.oecd.org/governance/observatory-public-sector-innovation/innovations/page/seasonalhealthinterventionsnetworkshine.htm
City of Boston Apps	USA	• website https://www.boston.gov/departments/innovation-and-technology/apps

7- Open Innovation

Example	Country	Furtherinformation pointers
Porto Alegre Participaroty Budgeting	Brazil	• website http://www2.portoalegre.rs.gov.br/op/
EU Prize for Women Innovators	EU	• webpage http://ec.europa.eu/research/prizes/women-innovators/index.cfm?pg=home • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
b-Part Building Pervasive Participation	EU	• webpage http://www.b-part.eu/ • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
ServiceLab Innovative Service Laboratory	Georgia	• OECD Observatory for Public Sector Innovation webpage: https://www.oecd.org/governance/observatory-public-sector-innovation/innovations/page/servicelabinnovativeservicelaboratory.htm
Syntagma 2.0 Participatory Constitutional Design	Greece	• webpage https://syntagma.politeia2.org/ • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
Blue Bag Water Innovation Award Challenge	Indonesia & Sweden	• webpage http://www.bluebagaward.com/ • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
AIF Innovation Prize for Africa	international	• webpage http://innovationprizeforafrica.org/ • ESCWA PSI workshop presentations, https://www.unescwa.org/events/fostering-public-sector-innovation-arab-region
Planning and Decision Making Through Citizen Counseling	Oman	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3324
eCitizen ideas!	Singapore	• website https://ideas.ecitizen.gov.sg/

8-   Sustainable Innovation

Example	Country	Furtherinformation pointers
Integration of Women's Needs in Development	Bahrain	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3483
Youth City 2030	Bahrain	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/3921
The Hunger Project	International	• website http://www.thp.org/ • chapter on examples of public sector innovation
National Center for Innovation	Jordan	• chapters/appendices on contributed ESCWA member country examples
Queen Rania Center for Entrepreneurship	Jordan	• chapters/appendices on contributed ESCWA member country examples
The National Innovation Strategy 2013-2017	Jordan	• chapters/appendices on contributed ESCWA member country examples
UJ Innovation and Entrepreneurship Centre (UJIEC)	Jordan	• chapters/appendices on contributed ESCWA member country examples
Support to RTD and Innovation in Jordan	Jordan	• chapters/appendices on contributed ESCWA member country examples
Universal Service Fund	Saudi Arabia	• Knowledge Base of UN Public Service Awards webpage: https://publicadministration.un.org/en/Research/Case-Studies/unpsacases/ctl/NominationProfilev2014/mid/1170/id/5409
Participation Cymru	United Kingdom	• website https://participation.cymru/en/