InnoCook:
An innovation model to enhance the operations and services of Arab public institutions

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An innovation model to enhance the operations and services of Arab public institutions

UNITED NATIONS
Beirut

United Nations publication issued by ESCWA, United Nations House,
Riad El Solh Square, P.O. Box: 11-8575, Beirut, Lebanon.

Website: www.unescwa.org.

2400310E

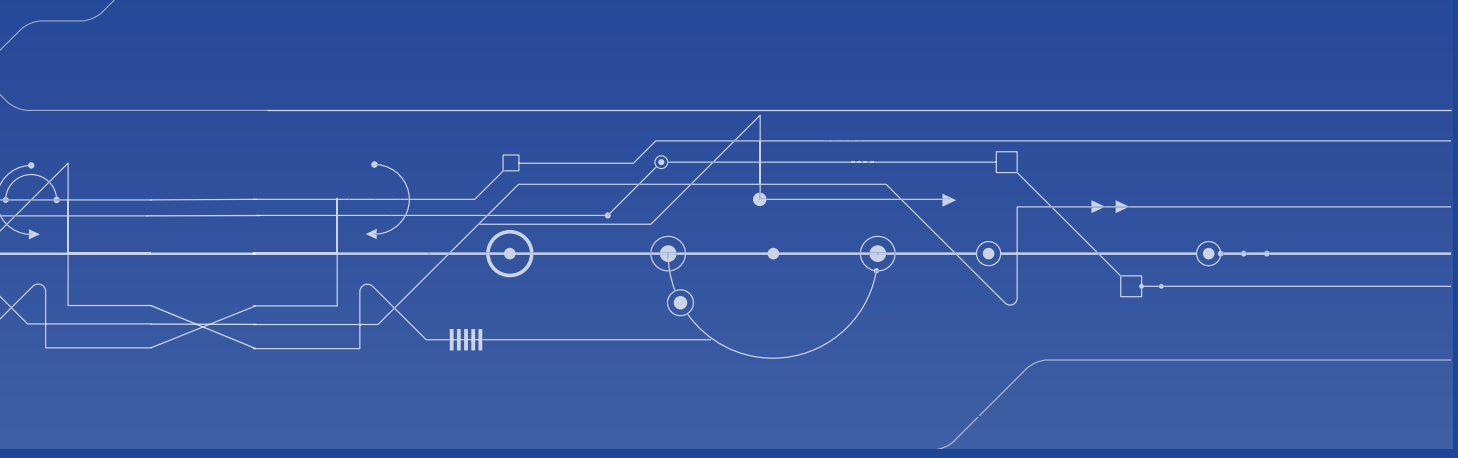
Acknowledgements

The technical document entitled “InnoCook: an innovation model to enhance the operations and services of Arab public institutions”[1] prepared by Dimitris Gouscos, Assistant Professor at the National and Kapodistrian University of Athens, Greece and a consultant in knowledge economy and science, technology and innovation (STI) for sustainable development. The report was drawn up in the framework of the project “Expediting the use of technology and innovation for enhanced operation in Arab Public institutions (ENACT)”, under the guidance and supervision of Nibal Idlebi, Acting Director of Statistics, Information Society and Technology Cluster, ESCWA. ENACT team members Lize Denner and Haitham Tibni reviewed, summarized and finalized the report, while Federico Cocchioni and Zahr Bou-Ghanem contributed to the review process.

Executive summary

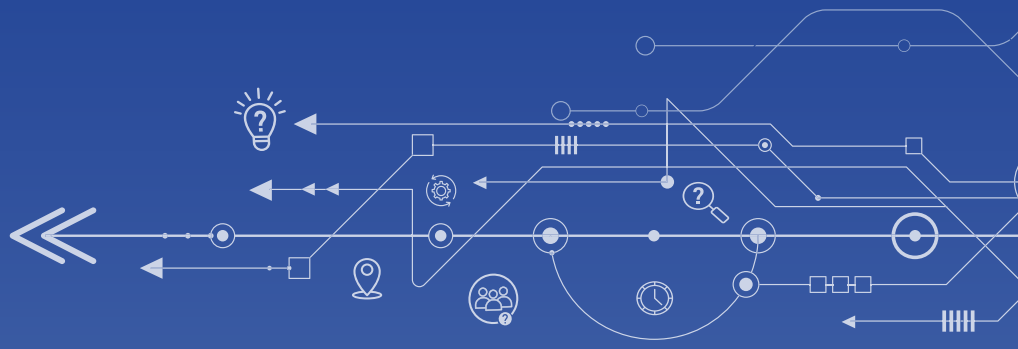
This technical document presents InnoCook, a process model to be used by Arab public institutions to produce technology- and process-based innovations that can help meet the SDGs, as well as RITE objectives. The InnoCook model is an attempt to strike a balance between a descriptive and a prescriptive approach to innovation work. It therefore does not put forward a single process to be followed when seeking to bring about innovation. Instead, it describes different pathways to innovation, taking into account existing examples, practices, methods and tools and accommodating them within a uniform framework. Thus, the model provides a structure for the processes to be followed for innovation work, at the same time seeking to leave room for freedom and creativity at various points in the course of this work.[2]

The model follows a cooking metaphor, building on the inherently familiar, social, creative and taste-based aspects of cooking. It comprises several ingredients (27 in total), each analysed into different flavours. All of these are drawn upon to cover different aspects of an innovation process. These ingredients are grouped into the “who”, “what”, “why”, “where”, “when” and “how” dimensions of innovation, to allow public institutions to make and enact their own plans for innovating. Then, the model provides an overall guideline in the form of basic steps for preparing a full meal, that corresponds to an innovation effort overall, from inception and planning all the way to enactment and evaluation. In the full report, the model itself is presented in chapter 2, whereas the different elements from which its ingredients are drawn, as well as different scenarios and advice for its use by Arab public institutions, are presented in surrounding chapters 1, 3 and 4.



The InnoCook model is technology-agnostic: is not bound to any specific emerging technology. That said, it builds on the role of emerging technologies as an enabler for innovation by accommodating corresponding ingredients and process advice.

The final recommendations call for technology to be used in an innovative, rather than routine, way. They call for innovation to be made part of the day-to-day work of government, rather than an exceptional activity, and for innovation to be approached in a spirit of co-creation, rather than being seen as standalone work. It is hoped that these recommendations, together with the InnoCook model itself, can help Arab public institutions to find new and more effective and engaging pathways to innovation.



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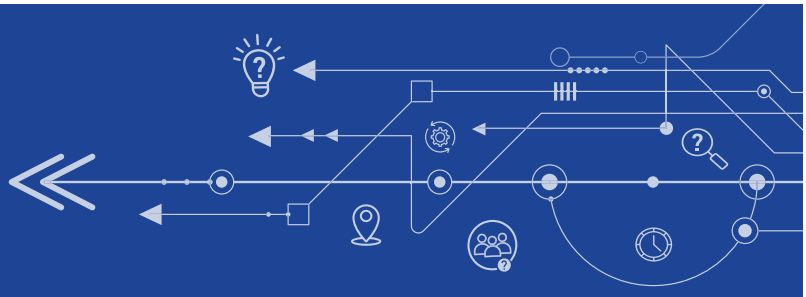

Introduction

A. The concept of innovation adopted in this report

Innovation has long been perceived as a positive a term. Novelty always provokes curiosity, the will to gain an understanding of its implications, and the hope of using its potential to solve existing issues. Curiosity and hope can become enchantment when innovation alleviates existing problems, but it can also turn into disenchantment if the innovation fails to deliver or creates new problems. Ultimately, the meaningfulness of innovation hinges on its ability to produce real-world improvements, not just on the fact of something being new.

In this respect, the report is based on a definition of innovation used by a United Nations body: "a creative idea and implementation, which is different from invention. It is the act of conceiving and implementing a new way of achieving a result [or] performing work. An innovation may involve the incorporation of new elements, a new combination of existing elements or a significant change or a departure from traditional ways of doing things. It refers to new products, new policies and programmes, new approaches and new processes. Public sector management innovation may also be defined as the development of new policy designs and new standard operating procedures by public organizations to address public policy problems".[3]

In public institutions, the importance of innovation is even greater. First, the volume of assets and resources that public institutions manage – essentially everything not in the private sector – is massive. Second, they oversee critical domains, encompassing the services vital to the safety and well-being of people, especially under the current conditions of accelerating changes and worldwide crises. Third, unlike private institutions, public institutions have an obligation to serve all of society and not a particular market segment. Finally, unlike private entities which can choose their partners, public institutions collaborate by necessity. These factors render any operational or service issues even more critical, and make the role innovation can play in allowing them to respond to current and new needs more crucial.

Innovation initiatives include activities of public institutions, both in the Arab region and worldwide, aimed at improving processes for government-to-government (G2G), government-to-citizens (G2C), and government-to-business (G2B) products and services. Public administrations, with inspiration from technology, can imagine practical new ways of doing things with tangible improvements using technology as an enabler. Therefore, considering all the aspects, the concept of innovation used in this report is:


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> *the realization and use of new practical methods that tangibly improve a public institution's processes, services, and products which address current and new needs of citizens, businesses, and other public institutions, using technology as an enabler.*

B. Objectives of this report

Innovation has been described by the Organization for Economic Cooperation and Development (OECD) as "a many-splendoured thing".[4] The variety of innovation processes that exist in the literature (e.g. top-down and bottom-up, incremental and disruptive, and local and sustainable innovation) and the multitude of theoretical approaches[5] often overwhelm public institutions, making innovation seem like an unsolvable puzzle which hinders action. Further confusion often arises when it is perceived that innovation can only occur through cutting-edge technology. The absence of such technology is seen as a barrier to innovation, rather than as an enabler of innovative technology use. This understanding is exemplified in sources such as the recent Technology and Innovation Report issued by the United Nations Conference on Trade and Development (UNCTAD) (UNCTAD 2023) and the OECD Data Innovation and Technology topical webpage (OECD data, n.d.).

To overcome these challenges, public institutions, like all other innovation actors, need an innovation model. This report proposes a model that acknowledges the complexity of innovation thinking and practice. The model is not conceived as a normative or prescriptive guideline to specify how things should be, but rather serves as a descriptive guideline to accommodate how things are, and how they could be. The model's overall purpose and usefulness is to help Arab public institutions turn the new into the normal.

This model is aimed at improving the final services and products public institutions deliver, as well as their internal operations. If the internal processes of a public institution are not tangibly improved by the realization and use of new practical methods using technology as an enabler, it is difficult to see how end products and services can benefit, or how innovation can become the new normal.

The spirit of enhancing both the operations and the services of public institutions stems from the premise that the final goal of public sector innovation becomes meaningful when it visibly helps to accomplish some objectives, and these comprise both public-facing (Op.) and internal-facing (Oi.) objectives (table 1).

Table 1. Public-facing and internal-facing objectives of innovation in Arab public institutions

Nr.	Name	The objective is met when
Public-facing objectives		
Op.1	Innovation for responsiveness	Better responsiveness to citizen and business needs can be demonstrated because of innovation. Responsiveness, in this context, is meant in the dictionary sense of the term: "the quality of reacting quickly and positively".
Op.2	Innovation for inclusiveness	Better inclusiveness of citizens, businesses, civil society organizations and academia in the service design process of public institutions can be demonstrated because of innovation. Inclusiveness, in this context, is meant in the dictionary sense of the term: "the practice or policy of providing equal access to opportunities and resources for people who might otherwise be excluded or marginalized, such as those having physical or intellectual disabilities or belonging to other minority groups".
Op.3	Innovation for transparency	Increased transparency of government[a] decisions (e.g. spending decisions) and processes (e.g. service delivery workflows) to all of society can be demonstrated because of innovation. Transparency, in this context, is meant in the sense of the Open Government Partnership's[b] value of access to information and its conceptualization of transparency in general.
Op.4	Innovation for accountability	Better mechanisms for accountability of government work to all of society can be demonstrated because of innovation. Accountability, in this context, is meant in the sense of the OGP value of public accountability and the Open Government Partnership's conceptualization of public accountability in general.
Internal-facing objectives		
Oi.1	Innovation for effectiveness	Better effectiveness of government work can be demonstrated because of innovation. Effectiveness, in this context, is meant in the sense of achieving a larger proportion of set internal goals.
Oi.2	Innovation for efficiency	Better efficiency of government work can be demonstrated because of innovation. Efficiency, in this context, is meant in the sense of improving internal result/cost ratios, not necessarily by cutting down costs, but also, and perhaps more importantly, by bringing about more results with the same costs.

Source: Compiled by the author.

a The term "government", for simplicity, is considered as a collective reference to Governments in the strict sense, public administrations, as well as public institutions in general.

b Open Government Partnership information was sourced from OGP (2019) and OGP (2023).

All these objectives contribute to innovation having a positive impact on public institutions and on society at large, which stands to benefit from public institutions' service and product offerings, as well as from their more effective and efficient use of resources. These objectives also take into account several contextual factors, including the changing needs of citizens and businesses, changes and crises at regional and global level, and the emergence of new technologies as innovation enablers that bring forward new capabilities.

C. Relationship with the SDGs

Innovation is connected to all of the United Nations Sustainable Development Goals (SDGs). Several United Nations reports support this conclusion, such as reports by the United Nations Development Programme (UNDP) (2017) and UNCTAD (2017), as well as more recent reports by the UN Inter-Agency Task Team on Science, Technology and Innovation for the SDGs (IATT) and UNIDO (2022).

This report focuses primarily on the relationship of innovation in the Arab public institutions with the following SDGs.

- SDG 11 on Sustainable Cities and Communities
- SDG 16 on Peace, Justice, and Strong Institutions, with special emphasis on two targets:
  - Target 16.6 on developing effective, accountable, and transparent institutions at all levels.
  - Target 16.7 on ensuring responsive, inclusive, participatory, and representative decision-making at all levels.
- SDG 17 on Partnerships for the Goals, with special emphasis on one target:
  - Target 17.7 on promoting the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.

Based on the relationship of innovation with specific SDGs and underlying targets, the report considers an additional set of societal objectives (Os.) for the innovation work of Arab public institutions (table 2).

Table 2. Societal objectives for innovation in Arab public institutions

Nr.	Name	The objective is met when
Public-facing objectives		
Os.1	Innovation for peace	Living in peace is promoted for all of society. Living in peace, in this context, is considered both through peacebuilding and through peacekeeping.
Os.2	Innovation for justice	All of society has better access to justice.
Os.3	Innovation for safety	People are protected against crime and violence.
Os.4	Innovation for disaster resilience	Cities and settlements are made more resilient to hazards. Disaster resilience, in this context, is primarily considered through disaster risk reduction
Os.5	Innovation for climate resilience	Cities and settlements are made more climate resilient. Climate resilience, in this context, is primarily considered through improved environmental footprint and climate change mitigation and adaptation.
Os.6	Innovation for green technology adoption	Innovative green technologies are adopted by cities and settlements. Green technology adoption, in this context, is meant in the sense of openness to the adoption of environmentally sound technologies at both city/settlement and business/household/individual level.
Os.7	Innovation for cities deciding openly	Cities are more open to responsive, inclusive, participatory, and representative decision-making as a demonstrated result of innovation.

Source: Compiled by the author.

Table 3. Examples of innovation and societal objectives[a]

Name	Os.#	Innovative aspects	Practical aspects	Tangible improvements	Technological enabler
Public-facing objectives					
People for Peace	**Os.1**	Highlights individual contributors to peace within the United Nations and beyond, allowing them to speak for themselves	Disseminates stories using easily accessible text-photo webpages	Recognition and example-setting for peace work, which could serve as a multiplier for future work	Standard webpage technologies
Plain language and style guide[b] (Argentina)	**Os.2**	Focuses on outcomes, rather than the processes of the work; documents solutions as a guide	Provides publicly available examples of plain language and textual presentations for written court decisions, as well as templates for social media posts to inform the public	Citizens can easily understand court decisions without the help of lawyers	Online collaboration technologies
Dubai smart police stations (United Arab Emirates)	**Os.3**	Allows police personnel to interact with citizens remotely	24/7 accessibility in several locations offering a range of services from community support to traffic and crime reporting through a multi-lingual interface	Citizens enjoy increased accessibility to police services and have the certainty that reports filed online will be properly considered	Audio/video and remote communication technologies
Urban Resilience.AI Lab research[c]	**Os.4**	Uses analytic capabilities based on big data from several types of social and technical sensors	Uses existing data sources to analyse resilience before, during and after disasters	Improved abilities to mitigate the impact of hazards on communities, especially the most vulnerable areas	Artificial intelligence, big data, satellite and sensor technologies
Solar power microgrids (Puerto Rico)	**Os.5**	Moves the energy grid idea down to a micro-scale	Uses a renewable energy source that ensures supply during climate disasters and mitigates the acceleration of climate change. Deploys autonomous micro-grids not affected by backbone energy network failures	Energy resilience during and after disasters	Renewable energy technologies

Digital Water City	**Os.6**	Employs a spectrum of digital technologies to modernize water and sewage infrastructure	Develops an inventory of solutions that cover the entire cycle of drinking water, wastewater and groundwater	Improved abilities to monitor and safeguard the quality and quantity of all water resources	Sensors, unmanned aerial vehicles, artificial intelligence, cloud computing, augmented reality and mobile technologies
Nonconformist approach to city planning	**Os.7**	Involve city planning stakeholders in an adaptable and easy participation process	Includes numerous stakeholders and uses physical presence and models for interaction and co-creation	An accessible format for citizens to voice their views, and inclusive and sustainable planning decisions for cities	Large facilities for photos/ posters, meeting space and the physical modelling of space plans

Sources: Compiled by the author from United Nations Peacekeeping (n.d.); Head (2021); Heller (2021); OGP (2021); Udawatte (2023); United Arab Emirates Dubai Police (2023a) and (2023b); Chapman (2023); Moloney (2023); Casa Pueblo (n.d.); Digital Water City (n.d.) and Harby (2021).

a Further innovation examples of the societal objectives are given in annex A.1, while examples corresponding to SDG goals and targets can be accessed at https://publicadministration.un.org/unpsa/database/UNPSA-Initiatives-and-the-SDGs.

b Guide available at https://juzgado10pcyf.github.io/#/en/lenguaje-claro. For additional information on open justice https://www.opengovpartnership.org/policy-area/justice/.

c For additional information https://www.urbanresilience.ai/research.

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Innovation in the public sector

Innovation in the public sector

A. Current trends and practices related to innovation in public institutions

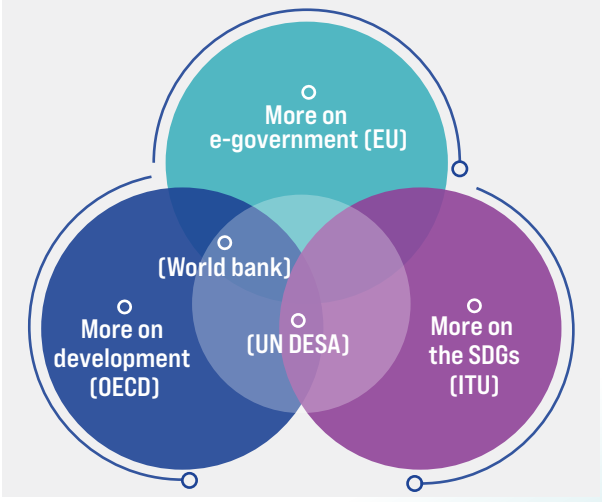
This section of the report analyses current trends and practices in public sector innovation. The analysis is based on leading international reports on e-government advancement, government innovation, and the digital transformation of public services. A total of 21 reports[6] published between 2020 and 2023 were reviewed (figure 1).

The focus areas of these reports vary. The European Union's eGovernment Benchmark reports concentrate on e-government innovation. The OECD Observatory for Public Sector Innovation (OPSI) and Mohammed Bin Rashid Centre for Government Innovation (MBRCGI) reports prioritized innovation for development, while the International Telecommunication Union World Summit on the Information Society (ITU WSIS) Stocktaking reports focus on innovation for the SDGs. The World Bank GovTech Maturity Index reports cover both e-government and development, and the United Nations Department of Economic and Social Affairs (DESA) E-Government Survey reports offer a balanced perspective across all three areas.

Even more significant than these distinctions are the complementary nature of these reports. They combine to create a comprehensive picture of global trends in public sector innovation. The reports identify 171 trends and practices, and give 288 specific examples of innovative work by public institutions around the world (annex A.2). These examples illustrate how Governments are using innovation to advance e-government, development, and progress toward the SDGs.

The analysis of trends and practices reveals several general patterns in public sector innovation work. These patterns is categorized according to focus level, envisaged beneficiaries, and co-creation actors.

Figure 1. Varying tendencies in innovation focus



Source: Formulated by the author based on an analysis of the EU eGovernment Benchmark, OECD OPSI and MBRCGI Government Innovation, ITU WSIS Stocktaking, World Bank GovTech Maturity Index and UN DESA E-Government Survey report series.

- Focus level (Fl.) (annex B.8) includes using technology to enhance service capabilities and quality, restructuring operations and service delivery, regulating new technologies for citizen rights protection, setting innovation as a core policy with dedicated entities working to further it, and fostering a culture that embraces new technologies through skill development. The key question to identify these focus areas is: "What are we doing with our work?".

- Envisaged beneficiaries (Be.) (annex B.2) are Governments themselves seeking improved operational efficiency, national citizens and businesses, incoming citizens and businesses, or society at large, with a specific focus on disadvantaged and crisis-affected individuals. Broader cross-border regions can also be a target beneficiary. To identify the envisaged beneficiary, the question is: "For whom are we doing this work?".

- Co-creation actors (Ca.) (annex B.3) that work together in innovation work, such as different branches within the same Government, multiple Governments collaborating across borders, cooperation among the private sector, academia, civil society, and the media, or even society at large, through citizen participation. The guiding question to identify these co-creation actors is: "With whom are we doing this work?".

An analysis of Government innovation trends, based on Deloitte's Government Trends 2023, further identified a total of five cross-cutting and four domain-focused[7] trends for the workings of overnment. An analysis of the Global Government Services Handbook 2023 identifies a total of nine trends for the delivery of government services, alongside a spectrum of transformative technologies that can be used for improving various aspects of service quality.[8] It also offers a perspective on the Arab region. An analysis of reports focused on the Arab region[9] confirms that the global trends apply to the region, but also identifies three more Arab-specific innovation patterns.

- A total of 20 Arab-region-specific innovation themes (Ar.) relevant to government operations and services in Arab countries and answering the guiding question: "Which Arab-region-specific government innovation theme are we addressing?" The themes identified include implementing or improving various forms of services, formulating digital standards, open collaboration, sharing expertise, new talent strategies encompassing new skills, collaboration with private sector and emerging enterprises, and cross-border collaboration between Governments (annex B.1).

- A total of 24 performance indicators for innovation (Kp.) to determine the effectiveness of government service innovation by answering the guiding question: "What are we measuring for performance?" There are three main key performance indicator (KPI) groups: (1) service availability and sophistication KPIs, (2) service usage and user satisfaction KPIs, and (3) public outreach KPIs. Each group was subdivided into more specific indicators (annex B.12).

- A total of 19 key technologies for Government work (Te.) identifying technologies which have an impact on Arab Governments and improving service delivery. These include technologies such as artificial intelligence, big data, blockchain, cybersecurity, cloud computing and 5G and 6G cellular networks (annex B.27).

Cross-border government innovation, identified in two patterns (i.e. the envisaged beneficiaries in the broader cross-border region and actors across borders in the sense of multiple Governments coming together), may not be fully developed in Arab countries. However, exploring this approach in select regional domains could be a valuable first step towards broader collaboration.

B. Challenges and pitfalls of innovation in public institutions

The challenges for and pitfalls of public sector innovation are examined in a broader global context that considers innovation trends within and beyond the public sector, along with the risks that all countries face. Focusing on the 2020-2023 period and considering the ripple effects of the COVID-19 pandemic, challenges were identified using data from five report series: the European Innovation Scoreboard (IES) report[10], the Global Innovation Index (GII),[11] the SDGs Report,[12] the Global Risks Report (GRR)[13] and the World Development Report (WDR).[14]

The importance and added value the IES and the GII indicators afford public institutions' innovation work is the possibility to build upon and advance the state of innovation enablers. Through innovation, for example, public institutions' can take stock of and advance the skills of their own personnel, as well as those of academic experts and private sector and civil society stakeholders. Meaningful innovation processes and policies therefore build on existing intellectual capital.

The indicators set out in the IES report and the and GII can be considered as process-level challenges (Ci.) for the innovation work carried out by public institutions, identified under the question: "Which innovation indicators are we improving in the process of our innovation work?" (annex B.6) Pitfalls would be innovation work that consumes resources without improving innovation enablers and therefore hinders the long-term sustainability of public sector innovation efforts.

The SDG Report, the GRR and the WDR present outcome-level challenges (Cg.) defined by the guiding question: "Which global challenges or risks are we helping to address locally through the outcomes of our innovation work?" (annex B.5) Public institutions' innovation work can be more meaningful if it shows that its specific innovation objectives will also contribute to regional and global objectives. Addressing only local objectives could result in outcomes of limited broader value.

C. Examples of innovation in public institutions in the region and beyond

A study of public sector innovation efforts and practices identified 288 examples (annex A.2) across the innovation trends discussed in chapter I.A. Twenty-nine examples stemmed from national efforts within Arab countries. Table 4 presents a selection of innovation efforts specific to Arab countries, including associated innovation trends and practices they exemplify.

Table 4. Examples of innovation initiatives of public institutions in Arab countries

Country	Featured initiative	Featured trends and practices	Trend Id
Bahrain	Tawasul complaint and suggestions system	E-participation: rising of multi-function platforms, new policy consultations, e-petitions, opinion surveys, complaint filing, corruption reporting, idea/innovation generation	UND6
Egypt	Digital Egypt	GovTech Enablers: digital skills strategy	WB35
Morocco	Casablanca Casa Store	Local e-government development: limited or no e-services, but all city portals are accessible from mobile devices, confirming awareness of the importance of multichannel service delivery	UND4
Oman	Early diagnosis of breast cancer using artificial intelligence	E-health applications	ITU10, ITU28, ITU46
Qatar	SafeSpace platform	Building confidence and security in the use of information and communication technology	ITU5, ITU23, ITU41
Saudi Arabia	Attaa initiative	Cultural diversity and identity, linguistic diversity and local content	ITU15, ITU33, ITU51
Tunisia	Startup Tunisia	Enabling environment	ITU6, ITU24, ITU42
United Arab Emirates	Government experience exchange programme	Delivering and enabling impactful cross-border solutions theme 3: adding a cross-border dimension to upskilling and capacity-building	OOM23
United Arab Emirates	Digital Dubai	Artificial intelligence, chatbots, blockchain, internet of things and drones are used to reduce administrative burden, strengthen oversight and improve service quality	WB10

Source: Author's analysis based on Dener and others (2021); ITU (2020a), (2020b), (2021), (2022a), (2022b); OECD OPSI and MBRCGI, (2020b), (2021-2022c); United Nations Department of Economic and Social Affairs (2020); World Bank (2022).

Public sector innovation efforts from around the world are documented in repositories maintained by various governmental, international, civil and private entities. Examples include the Digital Governance Projects Database (World Bank), IIPI Showroom: Best practice in politics (Innovation in Politics Institute), Creative Bureaucracy Content Library and the European Institute of Public Administration's European Public Sector Awards database.[15]

D. The role of emerging technologies in innovation practices of public institutions

It is generally accepted that technologies evolve according to three significant principles. First, any given technology matures for use over time. Second, the adoption of technology is accompanied by opportunities for benefits (when sufficiently matured) and by threats or risk (when not fully matured). Thus, an assessment of technology maturity attained at a given point is key to accurate adoption decisions. Third, technologies do not live productively forever, and the end of their life cycle will likely compare poorly to new alternative technologies.

These principles are reflected in established maturity-assessment methods such as Gartner's hype cycle methodology[16] – a type of future-oriented technology analysis[17] which charts a technology's journey through five stages: technology trigger, peak of inflated expectations, trough of disillusionment, slope of enlightenment, and plateau of productivity. Gartner[18] presents various new technologies, such as generative AI, at different levels of maturity, indicating to potential users that it is the right time to adopt them. The technology readiness levels (TRLs), which were developed by NASA for managing space mission technology development, consist of nine stages that a technology progresses through, undergoing testing and refinement at each level. These stages range from TRL1 ("Basic principles observed and reported") to TRL9 ("System ready for full-scale deployment").[19]

The idea of readiness also refers to acceptance by real world users, in the form of societal readiness for technology, under the broader field of responsible research and innovation (RRI). The RRI perspective focuses on ways to conduct research and innovate which remain compatible with various fundamental dimensions of public engagement, open access, science education, gender and ethics.

A key point is that the emerging nature of a technology does not automatically imply its readiness for use. A maturation process needs to take place. This is pertinent to public institutions which have an institutional obligation to serve all of society, and the public interest. They cannot exclude people who do not have access to an emerging technology as a result of availability, cost or interoperability, and they cannot tolerate the use of potentially malfunctioning or unsafe technologies that can disrupt critical services.

However, even technologies which are "not ready for use" can be used to a certain degree. The novelty of these technologies encourages users to explore new ways of doing things. While this is not a guaranteed path to innovation, exploring potential applications of new technologies can lead to new ways being found to incorporate them into existing practices, especially by combining different emerging technologies.

The emergence of a technology leads to innovation. This leads on to experience, which contributes the maturation of the technology, culminating in its readiness for use. Once the technology is considered mature, the focus shifts to using it to improve things at a larger scale. This approach also opens a more specific domain for innovation: using emerging technologies for good. This includes various applications for social good, public good and humanitarian action. Annex A.8 lists academic articles on using innovative applications for good.

E. Structural patterns in innovation practices of public institutions

Structural patterns – encountered in contemporary digital transformation, process re-engineering, performance improvement and innovation efforts – have a direct or indirect influence on the planning of innovation processes and the practices of public institutions. These patterns relate to people and values. The relationships between these are both important for successful innovation. Four distinct clusters of patterns are identified, each subdivided into further patterns.

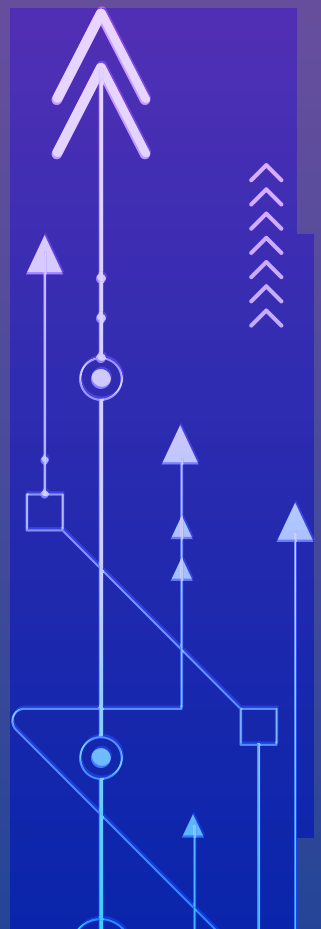
- **Co-creation** involves collaboration between stakeholders from different backgrounds to share ideas, solve problems, and develop solutions. The three subcategories are:
  - Routine co-creation for ongoing service design and improvement.
  - Humanitarian co-creation for emergency response and rebuilding essential services.
  - Co-creation involving the public, private, academic, and civil society sectors.
- **Incubation** involves creating supportive environments for early-stage innovation projects. The three subcategories are:
  - Internal incubation structures such as government-backed tech incubators and innovation centres.
  - Public-facing incubation structures such as hackathons and innovation awards.
  - Joined-up national innovation initiatives that connect different regional and sectoral innovation efforts.
- **Culture** refers to the overall values and guiding principles that shape decision-making and behaviour within an organization. The five cultural patterns identified are:
  - A culture for accomplishment, focused on measuring results and impact.
  - A culture for well-being, prioritizing employee well-being alongside performance.
  - A culture for granting, emphasizing stewardship and responsible sharing of public resources.
  - A culture for change, embracing change as an opportunity for growth and adaptation.
  - A culture for expanded possibilities, actively seeking better ways of doing things.
- **Openness** refers to transparency, accountability, and collaboration with others. Four types of openness are identified:
  - Intra-organizational openness, encouraging information-sharing within the organization.
  - Inter-organizational openness, fostering collaboration between different organizations.
  - Partial public-facing openness, allowing public input on existing innovation ideas.

- Full public-facing openness, co-creating innovation ideas with the public.

These structural patterns are applicable both to specific innovation projects and to broader processes and practices. Essentially, these patterns answer the question: “How do we want to structure our innovation work across relationships between people and values?” Annex B.20 summarizes these structural patterns, highlighting the connection between the guiding question and the identified patterns.

2

Innovation model for Arab public institutions



Innovation model for Arab public institutions

A. The need for a model

Models function as informative representations, simplifying complex entities such as objects, people, and systems. This simplification aids comprehension by focusing on key characteristics, as the inherent complexity of the original can hinder complete understanding.

The General Model Theory[20] outlines core properties of models. First, models invariably represent something else – they act as maps or simplified versions of originals. Second, rather than capturing every detail, they focus on attributes deemed relevant by the model's creator or user. Finally, the efficacy of a model is not absolute. It serves a purpose for specific users within a defined timeframe and limited to particular tasks. The concept extends to conceptual models,[21] which are essentially models constructed after a process of generalization and concept formation. These models are abstractions of real-world phenomena, encompassing both physical and social domains. The value of a conceptual model is directly proportional to its ability to reflect reality, encompassing past, present, or even potential states.

Innovation is a multifaceted and intricate process, characterized by the interplay of numerous factors and an absence of a singular, guaranteed path to success. This inherent complexity makes it necessary to use models and conceptual models. In innovation, models are used to represent existing innovation processes and to foster the creation of novel approaches that can lead to successful innovation. This is the foundation for proposing an innovation model tailored to Arab public institutions. The rationale for such a model is further bolstered by the four context-specific factors described in table 5.

Table 5. Context-specific needs driving development of the innovation model

Context-specific needs	Detailed aspects
Needs that stem from the complexity of conceiving public innovation	Multiple dimensions of publicness in the public innovation concept: innovation, produced by public institutions, in a public manner, with a public purpose
	Multiplicity of connected factors that affect the feasibility and quality of innovation: information systems factors (procedures, data, and others), political, economic, social, and technological factors, and human factors (attitudes, knowledge, motives, fears, etc.)
	Multiplicity of synergies between these factors
	Multiplicity and complexity of relations between innovation and technology
	Intensification of this complexity when referring to emerging technology
Needs that stem from the complexity of managing public innovation	Managing multiple factors individually and collectively, at the same time
	Managing public innovation efforts as projects, with time, budget, quality and people-satisfaction objectives which, although mutually conflicting, must still be met at the same time
	Managing risks (i.e. reduce and mitigate them to the extent possible) that are inherent in an innovation effort
	Provide structure and guidance to the people involved in an innovation effort to help them handle the multiplicity of factors
	Allow freedom of choice to these people due to the creative nature of innovation
	Facilitate the separation of concerns to avoid the risk that innovation work may stagnate as a result of attempts to cope with too many different concerns at the same time
Needs that stem from the specific context of the Arab region in terms of public innovation	Desire to take stock of lessons learned and experience gained from other countries
	Diligence required to avoid importing into the region ready-made solutions from other countries which might not suit the regional characteristics
	Differences in innovation culture and technology maturity between countries in the region
	Differences between levels of resources available to different countries in the region
	"Tailorability" of solutions as a result of these differences
Need to provide a standardized aid for innovation to Arab region public institutions	Need to provide a model with a closed description, to place limits on the time and effort required for communicating it
	Need to provide a model which eventually leads to uninterrupted productivity
	Need for a standard format for presentation and storage of the results of the model
	Need for these results to have a clear versioning history and management
	Reduce need for clarification, and free up time for essential work
	Make innovation work an everyday organizational function

Source: Developed by the author.

The proposed model is intended to address these specific needs and challenges, fostering a more effective and regionally relevant approach to public sector innovation. The overall design goal of the model is to map and represent the different elements found in public sector innovation efforts in a manner that is informative, offers structure, and provides Arab public institutions with an array of pathways to innovation, together with guidance and freedom for selecting their preferred path, according to their own contexts and priorities at each point in time.

B. Method used to develop the model

All design objectives set for this model are considered of equal value. They are also separate: achievement of any one design objective does not automatically imply the achievement of another. Consequently, the model's development process is intended to address each objective individually and simultaneously. Table 6 categorizes and describes the first part of the design objectives, namely needs-analysis-based design objectives (NDOs).

Table 6. Needs-analysis-based design objectives for the proposed innovation model

Needs-analysis-based design objectives (NDOs)	Description of the objectives
NDO.1	Keep the model short, focusing only on what is essential
NDO.2	Avoid technical terminology to keep the model understandable without specialized prior knowledge
NDO.3	Accommodate the "what" as well as the "how" aspects of an innovation effort
NDO.4	Strike a good balance between innovation process structure and freedom
NDO.5	Keep the model modular, so that it allows innovation teams to work on different issues one-by-one, and manage their progress accordingly
NDO.6	Support use process versatility
NDO.7	Have tolerance for irregularities in stakeholder contributions
NDO.8	As far as possible, simplify innovation efforts so that all members of a public institution can play a role
NDO.9	Help with quantifying progress of innovation efforts
NDO.10	Ensure conceptual clarity of the elements used
NDO.11	Provide visual representations of the elements used
NDO.12	Provide support for visionary thinking
NDO.13	Have potential to convey a positive experience for participating in an innovation effort
NDO.14	Have potential to convey a positive experience for coordinating an innovation effort

Source: Developed by the author.

The second part of the model's design objective builds on the understanding that innovation, although not synonymous with change, inherently involves implementing new practical methods. An effective innovation model must therefore provide support for managing the changes that innovations bring about.

Effective public institutions require a systematic approach to managing change, regardless of sector or formal recognition. Change management, as defined by Lawton and Pratt (2022), involves a structured process for guiding an organization through transitions in goals, processes, or technologies. Its purpose is to implement and control these changes while facilitating employee adaptation.

Change management is increasingly associated with "soft" management elements such as communication, collaboration, and commitment. Achieving sustainable change requires a people-centric approach, emphasizing leadership and change agents. This shift prioritizes human aspects such as emotions and behaviour over "hard" management's focus on plans, structures, and performance. This trend is showcased in the McKinsey 7-S Model, which balances hard elements such as strategy, structure, and systems with soft elements such as style, staff, and skills, placing "shared values" at the centre.[22]

This analysis identifies two more design goals designated as change-management-based design objectives (CDOs):

- Provide support for the components of well-established change-management models and the role these play in innovation work (CDO.1).
- Facilitate structuring of innovation work and management of changes resulting from innovation around people-centred soft strategy elements, besides planning-centred hard strategy elements (CDO.2).

Given the creative and people-intensive nature of innovation as a process, soft strategy elements are critical for innovation work. Support for soft strategy elements is therefore a design goal of the innovation model.

With these design goals in mind, the method used to develop the innovation model follows a structured approach, with eight key steps.

1. Understanding the current landscape involves understanding the current state of public sector innovation in the Arab region and beyond, including existing objectives, trends, practices, challenges, successful examples, the role of emerging technologies, and common organizational structures for innovation work (chapter 1).

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Effective public institutions require a systematic approach to managing change, regardless of sector or formal recognition.

2. Envisioning the future focuses on a future vision for public sector innovation. It explores potential steps for triggering innovation, strategies to address implementation challenges, and methods to incorporate innovation into daily government operations (chapters 3 and 4). It also identifies issues solvable through innovation and provides guidance for building practical innovation applications.

3. Building the model draws on insights from current and future state analyses and identifies key components for the innovation model (chapter 2). These components bridge the gap between the current state and a desired future state, acting as a roadmap for transforming public sector innovation practices. Special emphasis is placed on incorporating "soft strategy" concepts critical for fostering innovation.

4. Ensuring comprehensiveness verifies that the model components address all design goals identified through needs analysis and change-management considerations, focusing particularly on concepts related to soft strategies.

5. Structuring the model to guide Arab public institutions in both conceiving and managing innovation efforts. This structure aligns with the overall design goals, particularly guided by the design goal of supporting versatile innovation processes.

6. A familiar metaphor for versatility promotes process versatility. The model is presented through a common and relatable cognitive metaphor: an innovation cookbook. This metaphor reflects the existence of various pathways to success, in the same way that different recipes can lead to delicious and nutritious meals.

7. A prescriptive, not normative approach. By adopting a prescriptive approach, suggesting "recipes" for successful innovation processes and positive user experiences. However, it avoids a normative stance, recognizing that a "one-size-fits-all" approach is ineffective. The concept of "tailorability" remains a core principle throughout model development.

8. Integration with existing resources, incorporating relevant approaches and results from ESCWA's Guideline on fostering innovation in the public sector of the Arab region,[23] including the IDEA lifecycle model and other valuable resources.

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C. Detailed description and explanation of the model

The proposed innovation model, in the analogy of an innovation cookbook, comprises a total of 27 elements ("ingredients") (table 7) and 253 different nuances[24] of these elements ("flavours") that can be used for public sector innovation work, whether for ad hoc innovation efforts, day-to-day innovation work, or as an organizational function of Arab public institutions.

Table 7. Ingredients of the proposed innovation model

Ingredient	Symbol	Guiding question	Further discussed in	Number of flavours
Public-facing objectives of innovation	Op	What objective, in terms of publicly recognizable improvements, do we want to accomplish with innovation?	Introduction	4
Internal-facing objectives of innovation	Oi	What objective, in terms of improvements to internal operations, do we want to accomplish with innovation?	Introduction	2
Societal objectives of innovation	Os	What objective, in terms of societal needs, do we want to accomplish with innovation?	Introduction	7
Focus level	Fl	What are we doing with our work?	Chapter 1 section A	5
Envisaged beneficiaries	Be	For whom are we doing this work?	Chapter 1 section A	5
Co-creation actors	Ca	With whom are we doing this work?	Chapter 1 section A	4
Arab-region-specific government innovation themes	Ar	Which Arab-region-specific government innovation theme are we addressing?	Chapter 1 section A	20
Key performance indicators	Kp	What are we measuring for performance?	Chapter 1 section A	24
Technologies for innovating	Te	Which key technology are we taking stock of to innovate?	Chapter 1 section A	14
Indicator-level challenges	Ci	Which innovation indicators are we improving in the process of our innovation work?	Chapter 1 section B	11
Global-level challenges	Cg	Which global challenges or risks are we locally helping to address through the outcomes of our innovation work?	Chapter 1 section B	26
Structural patterns	Pa	How do we want to structure our innovation work across relationships between people and values?	Chapter 1 section E	15
Organizational elements	Oe	Which organizational elements do we want to incorporate into the innovation function of our institution?	Chapter 3 section A	7
Options for generating ideas	Id	Which options for generating ideas do we want to consider for the innovation function of our institution?	Chapter 3 section A	3

Options for public participation methods	Pp	Which options for public participation methods do we want to consider for the innovation function of our institution?	Chapter 3 section A	5
Options for co-creation and innovation toolkits	Cc	Which options for co-creation and innovation toolkits do we want to consider for the innovation function of our institution?	Chapter 3 section A	4
Options for participatory design methods	Pd	Which options for participatory design methods do we want to consider for the innovation function of our institution?	Chapter 3 section A	5
Options for serious play methods	Sp	Which options for serious play methods do we want to consider for the innovation function of our institution?	Chapter 3 section A	3
Options for gamification elements	Ge	Which options for gamification elements do we want to consider for the innovation function of our institution?	Chapter 3 section A	3
Options for flat organizational designs	Fd	Which options for flat organizational designs do we want to consider for the innovation function of our institution?	Chapter 3 section A	3
Innovation team dynamics	Td	What are the individual and team dynamics that we need to manage to help the innovation team deliver successfully?	Chapter 3 section B	10
Innovation process types	Pt	Which process type can we best choose for further structuring our innovation work?	Chapter 3 section B	9
Innovation life cycle activities	Lc	Which idea-generation, deliberation, evolution and assimilation activities for the innovations to be developed should we choose for further structuring our innovation work?	Chapter 3 section B	25
Nurturing day-to-day innovation tactics	Nu	What can we do to nurture innovation as an integral part of the day-to-day activity of the workplace?	Chapter 3 section D	9
Issues for success	Is	What issues for the success of innovation work are we identifying within our institutions and for external beneficiaries/ adopters of our innovations?	Chapter 4 introduction and section A	7
Suggestions for success	Su	What suggestions for the success of innovation work are we considering, with respect to priorities and application domains of our innovation planning?	Chapter 4 introduction and section A	11
Local use-case innovation guidelines	Lg	With what guidelines can we build local use-cases of innovation to share with others?	Chapter 4 introduction and section B	12

Source: Developed by the author.

Some of the ingredients come from an analysis of the current state of play in the public sector innovation work of Arab public institutions and worldwide; these are discussed in the Introduction (Op, Oi and Os) and chapter 1 (Fl, Be, Ca, Ar, Kp, Te, Ci, Cg and Pa). The remaining ingredients come from an analysis of a future state of play for public sector innovation work in Arab public institutions and worldwide, and are discussed in chapter 3 (Oe, Id, Pp, Cc, Pd, Sp, Ge, Fd, Td, Pt, Lc and Nu) and in chapter 4 (Is, Su and Lg). Chapter 2 loops back and forth into the different parts of the report. The study can be read either in a linear manner, following the order of the study parts as they appear in the study text, or in a non-linear manner, starting with the Introduction and chapter 1, then moving on to chapter 3 and chapter 4 and finally ending up in chapter 2.

The innovation model prioritizes versatility in its structure and application tactics. This focus on adaptability acknowledges the multifaceted, complex, and creative nature of innovation and the two design objectives, NDOs and CDOs. There is no single, algorithmic approach that guarantees success. To reflect this, cognitive metaphors that depict innovation as a creative human endeavour with uncertain outcomes, such as cooking, writing, or even chemistry, could be used for the model. For this model, a cooking metaphor has been used. The model is presented as an innovation "cookbook", with the people engaged in innovation work being described as "innovation chefs".[25] This metaphor has been used for the following reasons.

- Universality: cooking transcends cultures and civilizations, with a long history predating writing and chemistry. This metaphor resonates broadly across different backgrounds.
- Balancing act: cooking embodies the practical need for sustenance alongside creativity, aesthetics, and aspects of health and love for those being fed. This parallels the innovation process, which requires balance between functionality and elements such as user care and satisfaction. It highlights the analogy between "cooking with love" and "innovating with care".
- Modern relevance: a cookbook is a common metaphor for how-to guides, especially in the realm of technology and digital transformation.

The model will use mostly cooking terminology as a metaphor. One exception is the use of a "periodic table of innovation elements" instead of an "innovation pantry" to represent the model's ingredients. This choice exploits the periodic table's inherent clarity and its use in similar modelling contexts. Additionally, the potentially infinite nature of a periodic table better reflects the dynamic and open-ended nature of innovation elements, compared to the finite and sequential structure of an alphabet.

The proposed innovation model can be understood through two key lenses. The first perspective focuses on how the model's ingredients, their characteristics, and usage strategies contribute to achieving the established design objectives (table 8). This analysis demonstrates that the model effectively covers all design objectives. Every objective is addressed by at least one combination of ingredients, their properties, and how they are used.

Table 8. Contribution of the ingredients to the design objectives of an innovation modelling effort

Design objectives for the innovation modelling effort	Meeting these objectives through the innovation model proposed
NDO.1 Keep the model short in template size and textual descriptions, explicitly focusing on what is essential	All model ingredients are introduced by short guiding questions, focusing on essential aspects.
NDO.2 Avoid technical terminology to keep the model understandable without specialized prior knowledge	All model ingredients are explained in non-technical terminology.
NDO.3 Accommodate the "what" as well as the "how" aspects of an innovation effort	Specific model ingredients correspond, directly or indirectly, to the "what" (for instance, the Op, Oi, Os, Fl, Be, Ar, Cg ingredients) and to the "how" (for instance, the Ca, Te, Is, Su, Lg ingredients) aspects of an innovation effort, as further elaborated in the innovation pantry/periodic table of innovation elements view provided below.
NDO.4 Strike a good balance between innovation process structure and freedom	Ingredients such as the Pt ingredient on innovation process types and the Lc ingredient for innovation life cycle activities explicitly address this design objective.
NDO.5 Keep the model modular, so that it allows innovation teams to work on different issues one by one, and manage their progress accordingly	The breakdown of different and intertwined aspects of innovation work to atomic ingredients helps separate concerns and focus on using one model ingredient at a time.
NDO.6 Support process versatility	Ingredients such as the Pt ingredient on innovation process types and the Lc ingredient for Innovation life cycle activities, coupled with the overall model use tactics described below, explicitly address this design objective.
NDO.7 Have tolerance for stakeholder contribution irregularities	Ingredients such as the Td ingredient for innovation team dyamics and the Fd ingredient for flat organizational design options explicitly address this design objective.
NDO.8 As much as possible, simplify innovation efforts so that all members of a public institution can play a role	Ingredients such as Oe for the organizational elements to include in an innovation function explicitly addresses this design objective.
NDO.9 Help with quantifying progress of innovation efforts	Ingredients such as the Kp ingredient for key performance indicators and the Ci ingredient for indicator-level challenges explicitly address this design objective.
NDO.10 Ensure conceptual clarity of the elements used	All ingredients and their associated flavours are discussed in the corresponding parts of the study by means of textual explanations (as an example, the Td ingredient), images (as an example, the Nu ingredient), innovation examples (as an example, the Os ingredient), references to sources (as an example, the Pp ingredient) or combinations thereof, whereas guiding questions serve to keep the scope of each ingredient clear and apart from the scope of other ingredients.
NDO.11 Provide visual representations of the elements used	The innovation pantry/periodic table of innovation elements view provided below addresses this design objective.

NDO.12 Provide support for visionary thinking	Ingredients such as the Id ingredient for options for idea-generation methods, the Pp ingredient for options for public participation methods, the Cc ingredient for options for co-creation and innovation toolkits and the Pd ingredient for options for participatory design methods explicitly address this design objective.
NDO.13 Have potential to convey a positive experience for participating in an innovation effort	Ingredients such as the Sp ingredient for options for serious play methods and the Ge ingredient for options for gamification elements explicitly address this design objective.
NDO.14 Have potential to convey a positive experience for coordinating an innovation effort	Ingredients such as the Pa ingredient for different structural patterns to connect people and values, as well as the Nu ingredient for nurturing day-to-day innovation tactics, explicitly address this design objective.
CDO.1 Provide support for the components of well-established change management models and the role these play in innovation work	Ingredients such as Fl for the focus level of innovation work, Pa for structural patterns connecting people and values, Oe for the organizational elements to integrate in an innovation function, Td for innovation team dynamics, Pt for innovation process types and Lc for innovation life cycle activities, combined, address this design objective.
CDO.2 Facilitate structuring of innovation work and management of changes incurred from innovation around people-centred soft strategy elements, besides planning-centred hard strategy elements	Ingredients such as Td for innovation team dynamics, Fd for flat organizational design options, and Nu for nurturing day-to-day innovation tactics, combined, address this design objective.

Source: Developed by the author.

Table 9. Guiding questions for storifying an innovation effort across the 5W1H storytelling format

Guiding questions	Explanations
Who is innovating?	Who are we, inclusively thinking? Who else is involved in this effort in any way?
Where are we innovating?	Within which organizational or cross-organizational context (structure, function) are we innovating?
When are we innovating?	How does our innovation work relate, in terms of time, to our organization's day-to-day operations?
What are we innovating?	What are we changing for the better through this innovation?
Why are we innovating?	What are the objectives or challenges to be met through this innovation?
How are we innovating?	What processes, tactics, methods, and tools are we using in our innovation work?

Source: Developed by the author.

The second viewpoint explores the model's potential for "storification". This perspective examines how the model can be used to structure, design, and communicate an innovation effort as a story.[26] The model aligns well with the traditional 5W1H storytelling format (who, what, where, when, why, and how). This format is commonly used in various fields, including innovation, as illustrated in table 9. In context of the innovation model, every question can be addressed by multiple ingredients, and each ingredient can contribute to answering at least one (often more) question. This strong fit between the model and the 5W1H format suggests its effectiveness for a storytelling approach to innovation conception, communication, and management.

Building on the correlation between the 5W1H format and the ingredients, the model arranges its ingredients into a comprehensive "innovation pantry" with groupings based on the 5W1H questions they answer collectively. Since the "where" and "when" questions share corresponding ingredients, they are merged into a single group. The final structure resembles a periodic table (figure 2), with elements organized into thematic groups and colour-coded according to the specific question they address in an innovation story. Some ingredients appear in multiple groups because they contribute to answering more than one question within an innovation story. In simpler terms, some ingredients can be found on multiple "shelves" (thematic groups) of the metaphorical "innovation pantry".

To complete the cooking metaphor, the model itself is named InnoCook, suggesting a model conceived to allow an innovation effort to be considered and managed like a cooking task. All the usual cooking concepts of recipes, cookware, stoves, meals and dishes, starters and desserts, and of course the ingredients and flavours already discussed, play a role in the model.

Figure 2. Innovation pantry: a periodic model of innovation ingredients

Who	What	where and when	Why	How
				Te Technologies for innovating
				Pa Structural patterns
Be Envisaged beneficiaries				Oe Organizational elements
Ca Co-creation actors				Id Idea generation methods
Pa Structural patterns	Fl Focus level		Op Public-facing objectives	Pp Public participation
Oe Organizational elements	Ar Arab region themes		Oi Internal-facing objectives	Cc Co-creation and
Pp Public participation methods	Kp Key performance indicators		Os Societal objectives	Pd Participatory design elements
Cc Co-creation and innovation toolkits	Te Technologies for innovating		Be Envisaged beneficiaries	Sp Serious play methods
Pd Participatory design elements	Ci Indicator-level challenges	Pa Structural patterns	Ar Arab region themes	Ge Gamification elements
Fd Flat organizational designs	Cg Global-level challenges	Oe Organizational elements	Kp Key performance indicators	Fd Flat organizational designs
Td Innovation team dynamics	Sp Serious play methods	Fd Flat organizational designs	Ci Indicator-level challenges	Td Innovation team dynamics
Pt Innovation process types	Ge Gamification elements	Td Innovation team dynamics	Cg Global-level challenges	Pt Innovation process types
Lc Innovation life-cycle activities	Is Issues for success	Pt Innovation process types	Is Issues for success	Lc Innovation life-cycle activities
Nu Nurturing day-to-day innovation	Su Suggestions for success	Nu Nurturing day-to-day innovation	Su Suggestions for success	Nu Nurturing day-to-day innovation
Lg Local use case guidelines	Lg Local use case guidelines	Lg Local use case guidelines	Lg Local use case guidelines	Lg Local use case guidelines

Source: Developed by the author.
Note: The colours assigned to each category are consistent throughout the model and any tools devised, serving as a mnemonic device.

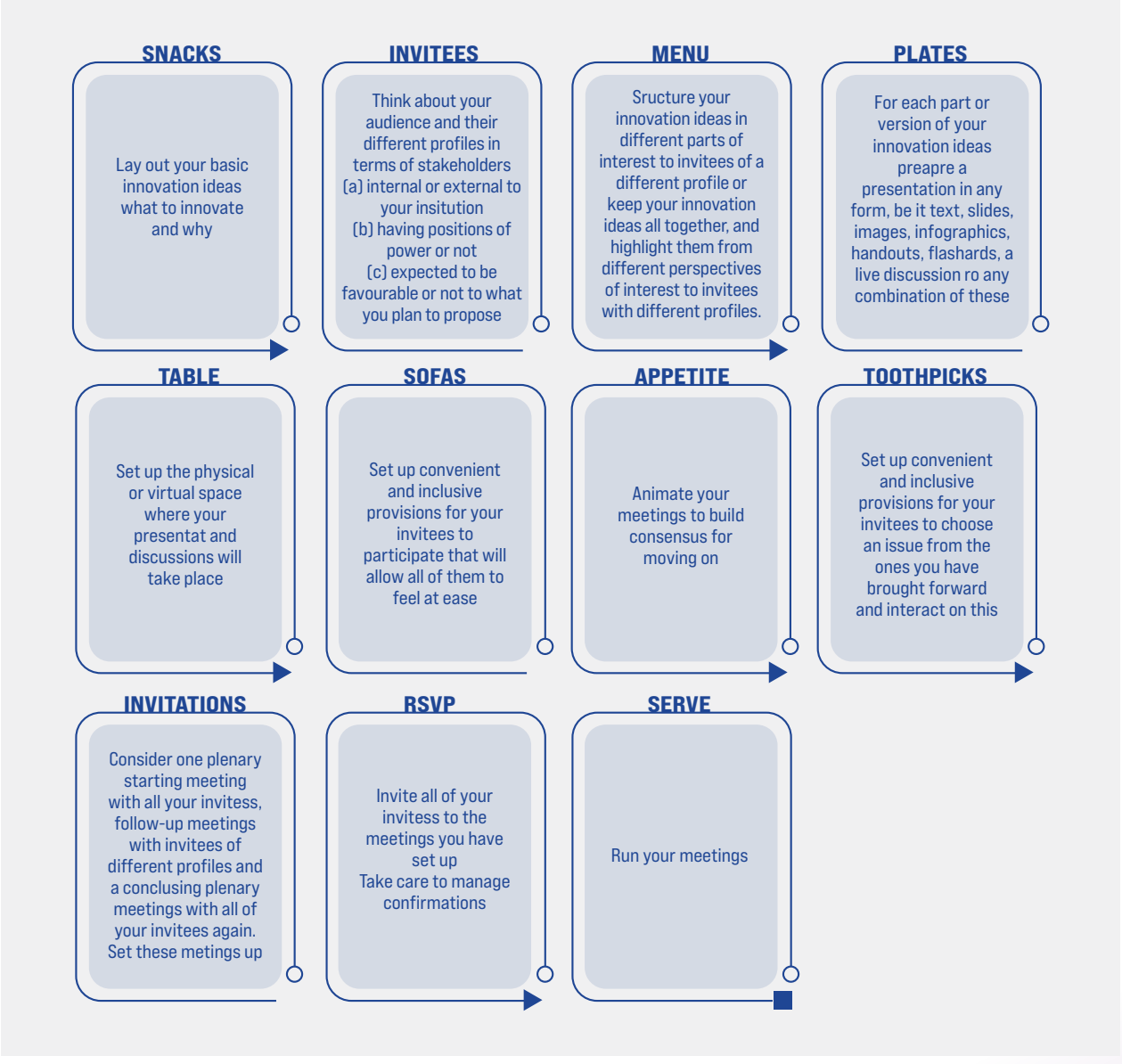
At the top level, an innovation effort is viewed as a complete meal that contains all menu options: starter, main course and dessert. Each top-level element can be further divided into specific activities that make use of the ingredients and flavours.

1. Starter stage

At the starter stage, the focus falls on activities that prepare the groundwork for innovation and spark enthusiasm and appetite for the innovation.

Figure 3 illustrates the activities that are is considered as part of the starter stage of an innovation effort.

Figure 3. "Starter" stage



Source: Developed by the author.
Note: The figures should be read from left to right and from the top down.

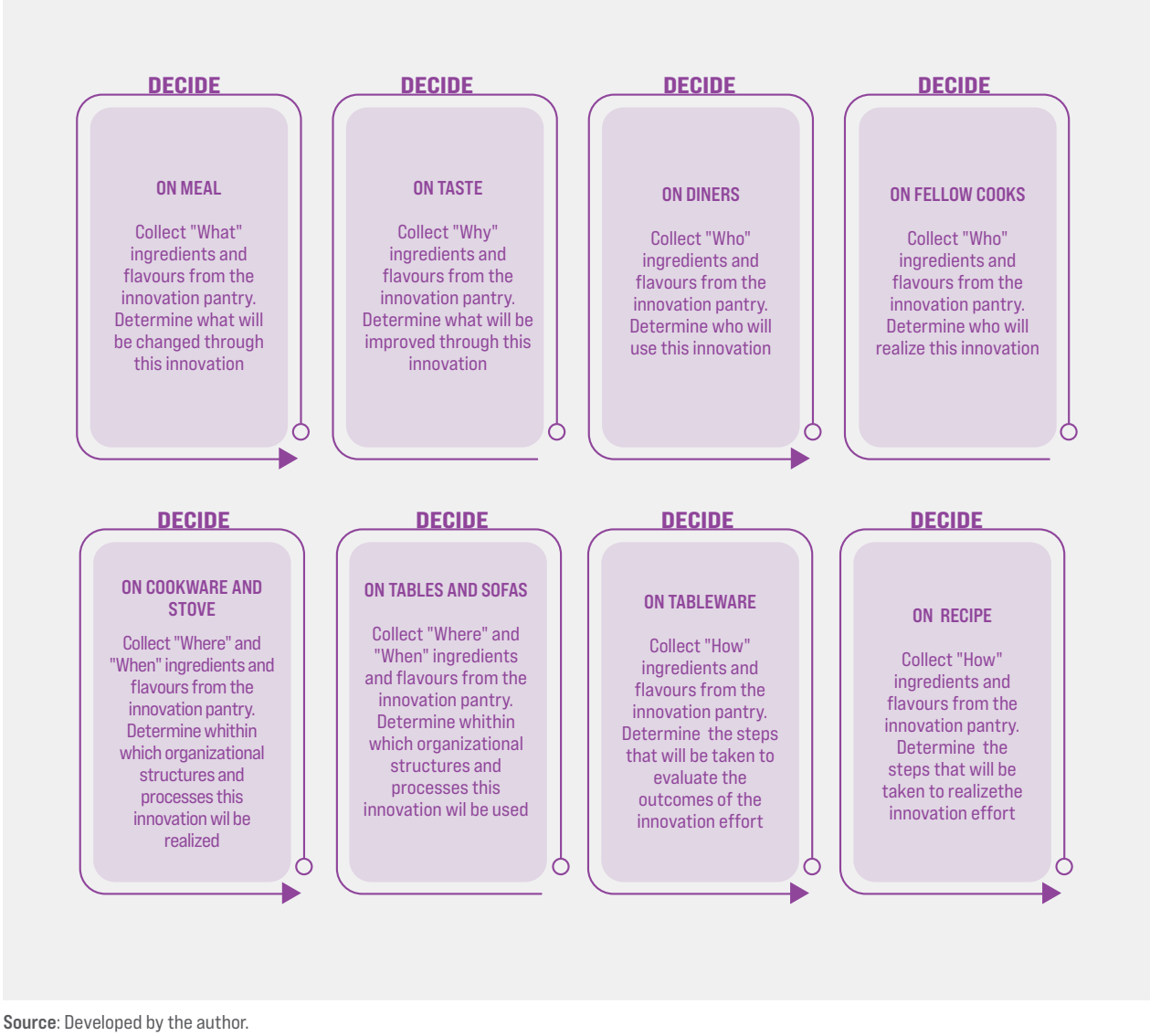
2. “Main course” stage

The main course comprises the activities associated with planning, setting up, realizing and evaluating an innovation effort. It is divided into four sub-stages.

- Decide to plan the innovation across all aspects by deciding on its ingredients, like we decide all the ingredients of a meal.
- Prepare to set up the innovation in practical terms, like we prepare our materials for cooking.
- Cook to realize the innovation, like we cook a meal.
- Serve this innovation to its intended users for evaluation, like we have our invitees assess the taste of the meal that we have cooked and served to them.

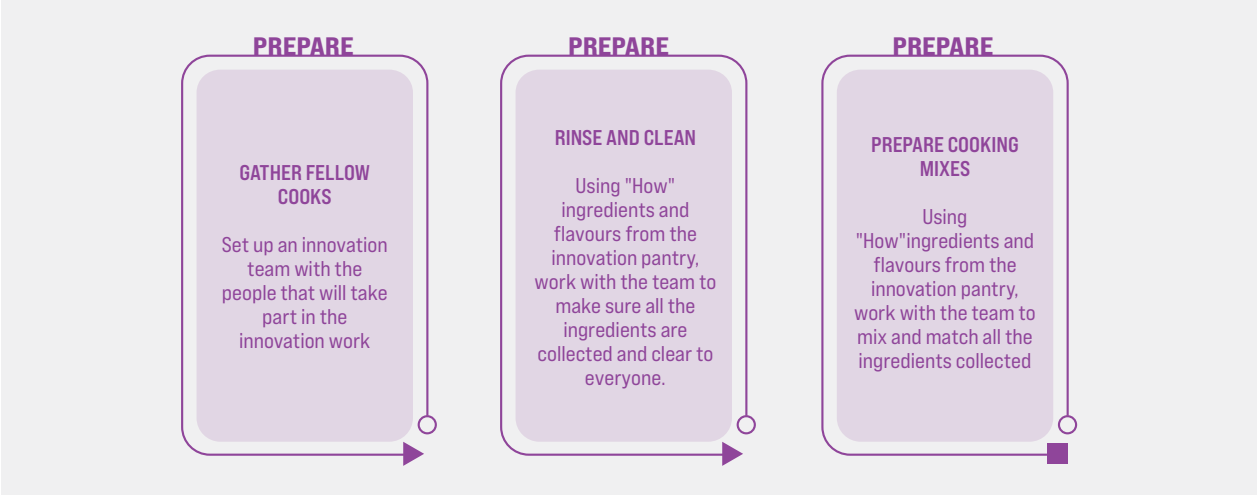
Each of the sub-stages has specific associated activities. Figures 4 to 7 analyse the activities of each sub-stage.

Figure 4. “Decide” sub-stage



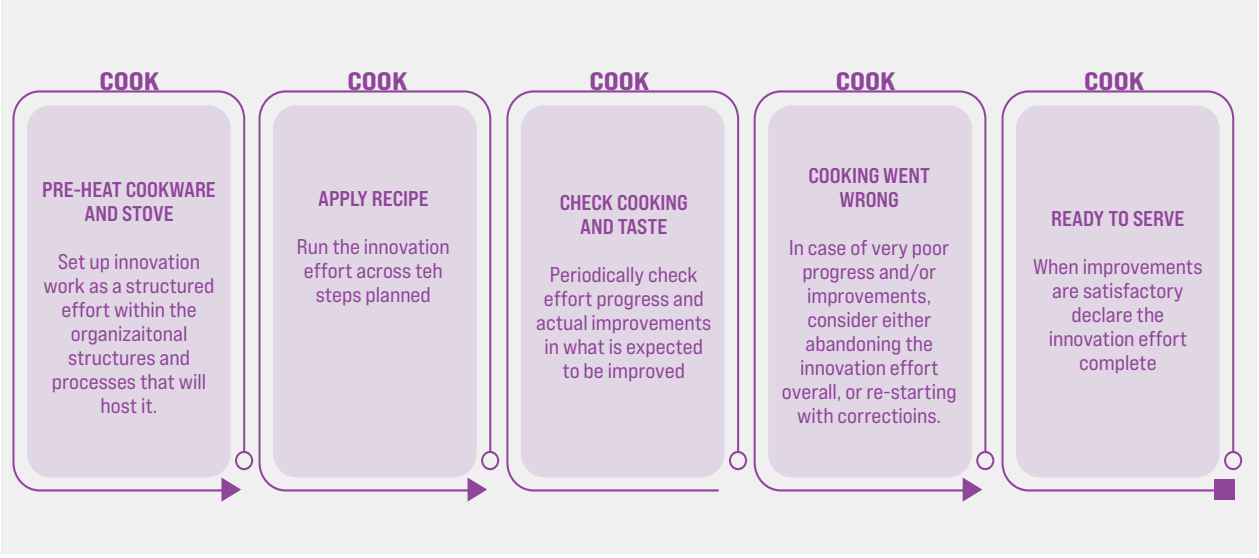
Source: Developed by the author.
Note: The figure should be read from left to right and from the top down.

Figure 5. "Prepare" sub-stage



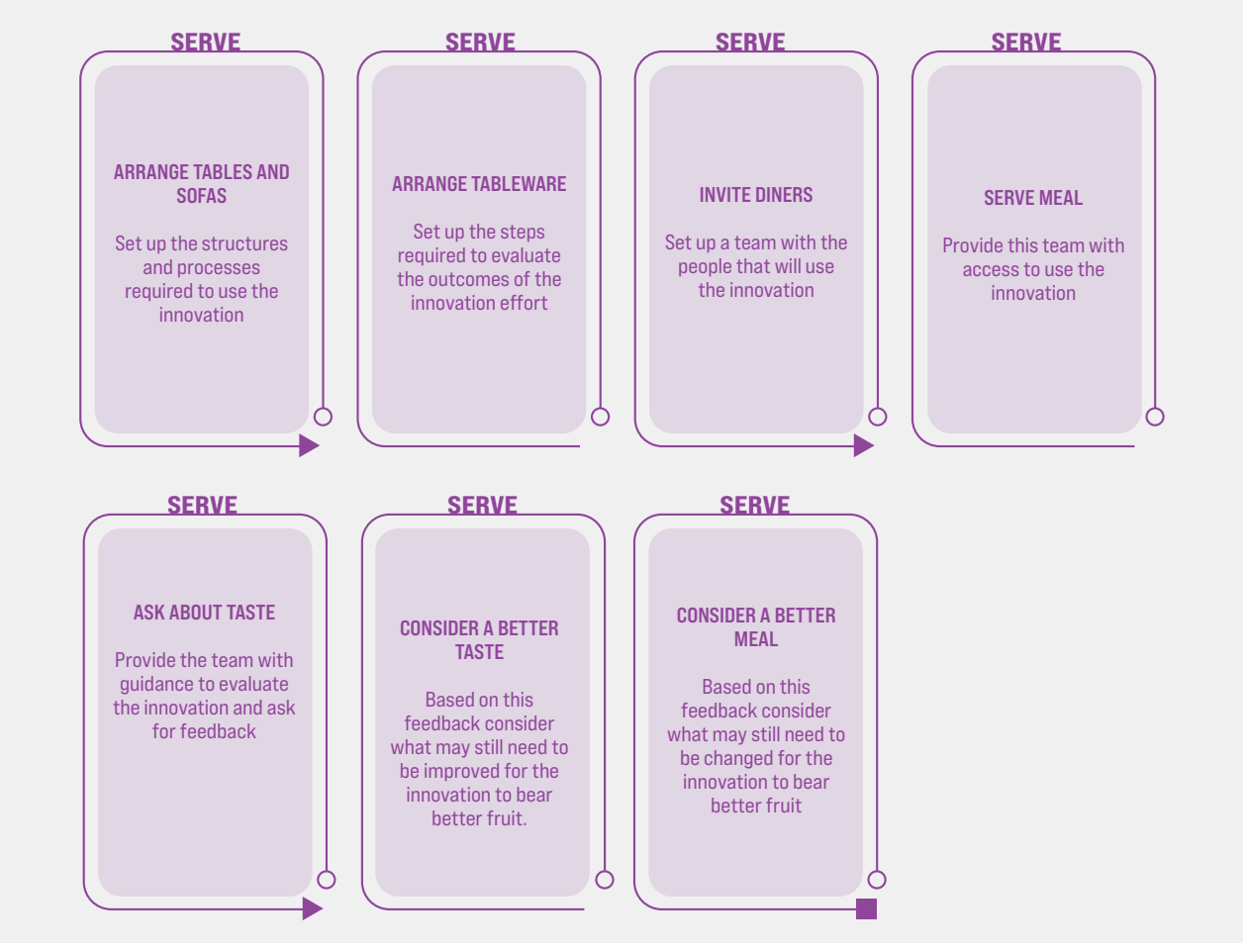
Source: Developed by the author.

Figure 6. "Cook" sub-stage



Source: Developed by the author.

Figure 7. "Serve" sub-stage



Source: Developed by the author.
Note: The figure should be read from left to right and from the top down.

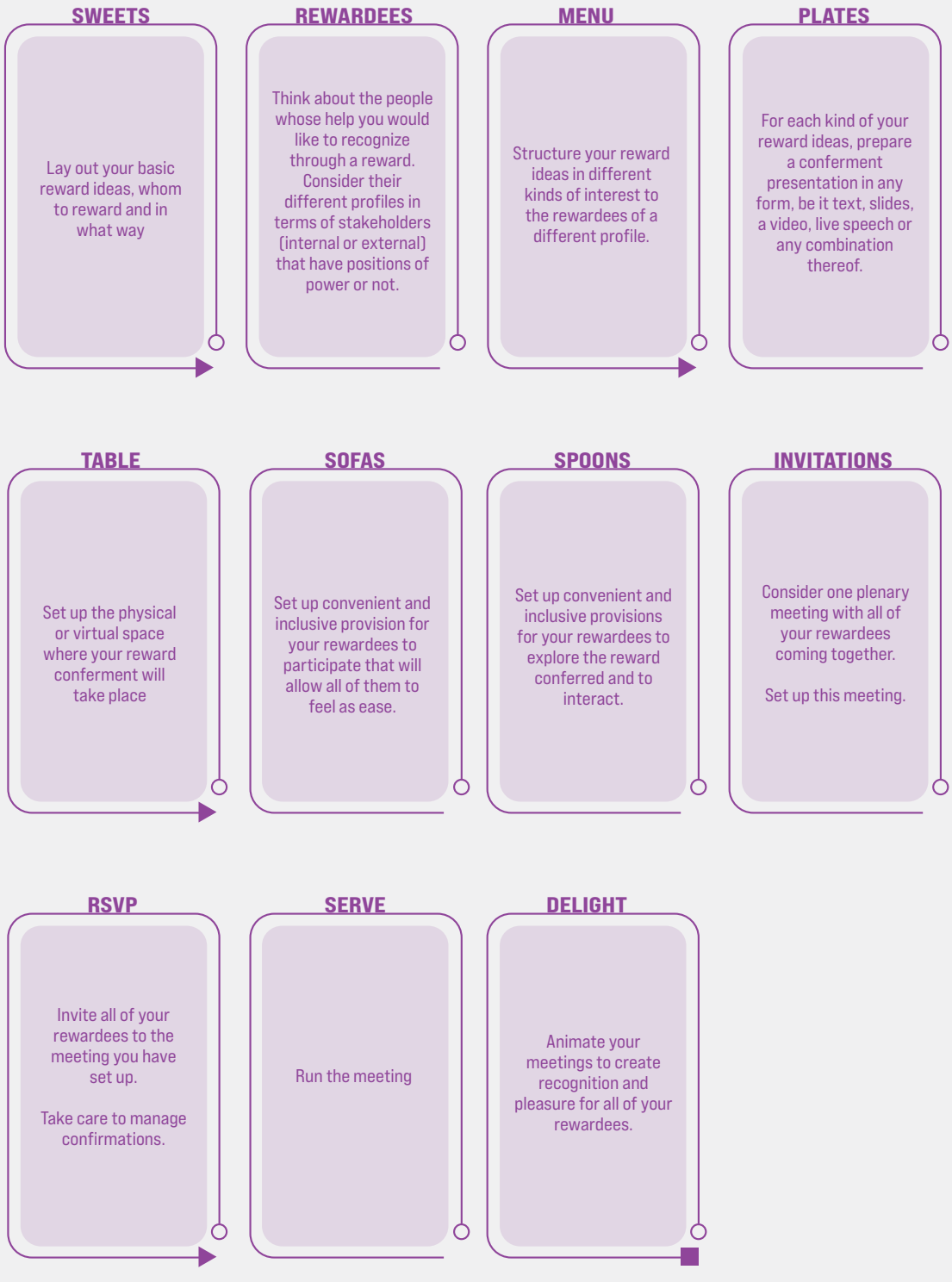
3. "Dessert" stage

At the dessert stage, the focus is on activities that recognize and reward the help that was given by colleagues and other stakeholders throughout the innovation effort. Figure 8 analyses the activities that are considered to be part of the dessert stage of an innovation effort.

The InnoCook ingredients and flavours are most heavily used during the main course stage, encompassing planning, preparation, execution, and evaluation of the innovation. Selecting these ingredients (like choosing ingredients for a meal) occurs in the "Decide" sub-stage. The following section in this chapter provides a discussion on selection tactics.

Due to the social aspects – collaboration and team building – of innovation work, the metaphor of InnoCook can be taken one step further by innovation teams, as part of their socializing activities and side breaks: they can engage in real cooking and dining together. In other words, innovation teams, as part of their team building activities, could effectively prepare food together, be it starters, main dishes or desserts, and dine together, serving and eating the food that they have collectively prepared. Culinary team-building activities have the potential to foster a valuable atmosphere and mindset for multi-sectoral innovation.

Figure 8. "Dessert" stage



Source: Developed by the author.
Note: The figure should be read from left to right and from the top down.

D. Guidance for collecting ingredients and flavours to use in an innovation effort

The InnoCook model does not prescribe a rigid method for selecting ingredients (building blocks) for innovation efforts. This aligns with the model's overall flexibility. Innovation teams should choose ingredients from the innovation pantry (Figure 2) that best suit their specific situation, considering factors such as team member profiles, the innovation project itself, and overall goals. To select ingredients and flavours, four rough guidelines are provided for innovation teams' consideration.

- **Option 1:** Select one ingredient and one of its flavours from each category of the innovation pantry to ensure a well-rounded innovation effort that tells a complete story.

- **Option 2:** Select several ingredients and flavours based on the outcome of a top-level assessment. In their selection, the innovation team should consider:
  - Minimal variety: one ingredient and one flavour per category.
  - Controlled variety: a few ingredients (1-3) and flavours (1-2) per category.
  - Rich variety: many ingredients (half or more) and flavours (3 or more) per category.
  - Maximal variety: all ingredients and flavours.
  - It is worth noting that while increased variety in the chosen ingredients and flavours can lead to a more comprehensive innovation effort, it also introduces greater complexity. Striking the right balance, where the advantages of increased completeness outweigh the disadvantages of increased complexity, is crucial. To ensure balance, it may help to:
    - Identify specific aspects considered the most important for a well-rounded innovation effort.
    - Evaluate ingredients and flavours of particular interest or direct relevance to the problem being solved or op opportunity being pursued.
    - Consider any specific requirements outlined in the innovation team's mandate, along with any time and resource constraints the team may face.
    - Consider the perceived familiarity, or lack of familiarity, that team members have with the ingredients and flavours offered by the innovation model.

- **Option 3:** Select ingredients and flavours after deliberation
  - Examine and discuss every ingredient and flavour one by one before making decisions.
  - Ask the questions "Why choose this ingredient (or flavour) for our innovation effort?" and "Why not choose this ingredient (or flavour) for our innovation effort?" about every ingredient and flavour.
  - Decide based on the reasons/arguments for choosing and not choosing.

- Consider further scrutinizing and re-assessing ties or near-ties based on given reasons/ arguments presented by each side to arrive at a clearer basis for the decision.
- Use a practical representation of each ingredient that the team is focusing on or discussing collectively. Annex C provides printable flashcards, each presenting an ingredient and its flavours colour-coded to the 5W1H categories of the innovation pantry (figure 2), that can be used during physical and virtual meetings to debate the inclusion of ingredients and flavours.

Option 4: Select the discussion order of ingredients and flavours under each innovation pantry category. While the model provides a sequential order for tackling the innovation pantry categories, starting from "what" through "why", "who", "where", "when" to "how", the decision on the order of discussing the ingredients and flavours of each category is left to the innovation team. Three main approaches are suggested for team to consider:

- Approach 1: Follow the top-to-bottom order ingredients are given in the periodic "innovation pantry" model. This is a straightforward approach which ensures consistency, but which does not consider contextual factors. It also risks not prioritizing the most relevant aspects for a specific innovation project if those elements are lower on the list.
- Approach 2: Ask team members which ingredient of the category they want to discuss next. This can be an engaging way to brainstorm and prioritize the most relevant aspects for a specific innovation effort. However, it risks neglecting less popular ingredients or those that some team members might not readily consider.
- Approach 3: Select ingredients and flavours randomly. This approach can introduce playfulness that can help with teambuilding, and the randomness can spark creativity and lead to more insightful discussions as team members grapple with unexpected ingredients. However, the randomness can mean that the order will not necessarily align with team preferences. Polyhedral five-coloured dice can be used as a playful instrument, using the colours from the innovation pantry to represent each category with ingredient symbols inscribed on their sides.
- Building on the game idea, simple board games based on dice – such as snakes and ladders – can be developed, with ingredients arranged on the board. This is a playful tactic that could even be used for learning the model prior to using it.

> ***At the top level, an innovation effort is viewed as a complete meal that contains all menu options: starter, main course and dessert.***

E. Demonstration of the use of the model through the development of a use case

Two scenarios are offered for building InnoCook use cases to demonstrate the model. One scenario is to demonstrate how an existing case of innovation could have been developed using the innovation model. Another scenario is to demonstrate how the innovation model could be used to help an Arab public institution to develop a new case of public sector innovation.

The first scenario – demonstrating the innovation model by applying it to an existing innovation case – can be based on three steps illustrated in table 10.

A limitation of this approach is that relying solely on documentation might not capture the full picture. Ideally, collaboration with the people behind the innovation case to explain choices and rationale delivers a more credible outcome.[27]

The second scenario demonstrates the use of the innovation model to help an Arab public institution develop a completely new case of public sector innovation based on the two steps explained in table 11.

Table 10. Demonstrating the use of InnoCook with an existing innovation case

Phase	Contents
I. Identify real case of public sector innovation	I.1. Select a case of innovation from an Arab region public institution. The innovation should concern a G2C service which is well known and which exists in many different Arab countries. The documentation of the design and implementation of the innovation, and of the way in which it currently works, should be as complete as possible.
	I.2. Identify the institution involved.
	I.3. Identify the innovation case realizers, whether internal or external to the institution.
II. Analyse the case Analyses the use of the model to develop the innovation project	II.1. Organize a series of consultations and focus groups with the participation of the innovation case realizers.
	II.2. Through these consultations and focus groups, gradually reverse engineer the way in which this case has been developed in practice and map this way to the use of specific ingredients, flavours and use tactics of the innovation model proposed.
III. Redevelop the case Identifies potential improvements or different directions for the project	III.1. Organize a series of consultations and focus groups with the participation of the innovation case realizers.
	III.2. Through these consultations and focus groups, gradually explore how this public sector innovation could be developed in alternative ways, using additional flavours of the given ingredients, additional ingredients, and additional tactics of the model proposed.

Source: Developed by the author.

Table 11. Steps to develop a new case to demonstrate the use of the InnoCook innovation model

Phase	Contents
I. Identify the case	I.1. Recognize a need for innovation which is of interest for more than one country or public administration in the Arab region.
	I.2. Show that innovations that meet this need do not currently exist.
	I.3. Recognize the Arab public institutions that may be interested in developing and using this innovation.
	I.4. Within these institutions, recognize specific people who may be interested in developing and using this innovation.
	I.5. Recognize any external stakeholders whose viewpoints and ideas may be useful.
II. Develop the case	II.1. Bring together all the people that have been recognized and form an innovation team.
	II.2. Organize a series of consultations and focus groups with the participation of the innovation team members as case developers and future users.
	II.3. Through these consultations and focus groups, gradually develop this case using specific ingredients, flavours and tactics of the innovation model proposed.

Source: Developed by the author.

3

Realizing **innovation** in Arab public institutions

Realizing innovation in Arab public institutions

A. Suggested steps to trigger innovation and the use of the model in Arab public institutions

For innovation to happen and bear fruit, it should be systematically incorporated into the standard operations of public institutions. It should not be a fragmented, occasional, crisis-driven or command-driven activity. It is necessary to focus the steps suggested to trigger innovation and the use of the model in Arab public institutions on organizational elements that could be introduced to add an innovation function to institution functions. The following organizational elements (Oe.) (annex B.16), identified by the guiding question: "Which organizational elements do we want to integrate in the innovation function of our institution?", should be the focus.

1. Oe. 1: People involved in innovation work

People, in this context, are not necessarily new people in the organization with an innovation mandate. While creating a dedicated innovation unit with a sole mandate for innovation holds some appeal, it could backfire. A misconception could arise that members of this team are the only ones permitted to pursue innovation, potentially discouraging efforts from the rest of the staff. A preferable option would be to include existing staff when innovation teams are built. They will keep their regular roles, as well as being empowered with innovation skills and encouraged to think creatively.

2. Oe. 2: Structures undertaking innovation work

An organizational structure undertaking innovation work is not necessarily a new structure whose mandate is restricted to innovation. Like the previous concern (Oe. 1), this option could be misinterpreted as being the only structure in the organization permitted to pursue innovation. A preferable option is to conceive an innovation organizational structure as a structure which is:

- An addition to the existing structures within the organizational chart, without replacing any.
- Horizontal, in that it traverses intraorganizational boundaries and has a flatter internal hierarchy.

- Porous and fluid, adjusting its membership overtime based on innovation needs.

Communicates with all hierarchy levels and organizational branches as needed.

3. Oe. 3: A recruitment policy for staffing innovation work

To achieve a truly dynamic and adaptable innovation structure, consider a recruitment policy with the following characteristics.

- Dynamic staffing: by exploiting the "porous and fluid" nature of the innovation structure, staff can join for specific innovation projects and then leave, perhaps returning in future.
- Mission-based recruitment: the structure's staffing dynamically adapts to project needs. Recruitment focuses on finding the necessary skills for each specific mission, maximizing the effectiveness of each innovation effort.
- Hybrid staffing model: a completely dynamic approach is not feasible, but a hybrid model optimizes both flexibility and stability. A small permanent team with clerical staff to handle logistics and managers to offer leadership and maintain institutional memory during project transitions. This permanent core team should be minimized to maximize resources available for dynamic project-based recruitment.

4. Oe. 4: Process paradigms for carrying out innovation work

Process paradigms – such as bottom-up, top-down, collaborative, open and disruptive innovation – help innovation structures in conducting their work.

It would be preferable not to have a specific innovation paradigm established as part of an innovation structure's mandate. All different innovation paradigms could be made available for the innovation structure, allowing freedom to choose the most suitable paradigm for each mission it undertakes. This autonomy empowers the structure, fostering its self-determination and increasing its accountability for the success of its projects.

For innovation to happen and bear fruit, it should be systematically incorporated into the standard operations of public institutions.

5. Oe. 5: Motives for carrying out innovation work

These are the various rewards that would be offered to people serving in an innovation structure for a specific innovation project at a specific point in time. The rewards could be based on performance, outputs and results.

The types of rewards offered could encompass a range of options:

- Immediate rewards upon work completion.
- Longer-term rewards based on an accumulated contribution record.
- Material rewards such as cash bonuses, paid leave days, covered participation in international schools and events.
- Quasi-material rewards such as accumulated points considered in promotion decisions.
- Non-material rewards such as honourable mentions and public recognition of achievement.

It is preferable to consider only positive motives, and not negative counter-motives, to ensure that innovation work is promoted among the institution's staff as something from which they only stand to gain.

6. Oe. 6: A power and responsibility balance for innovation work

Those involved in innovation work should ideally possess a balanced combination of three key attributes.

- Power commensurate with responsibility: this allows them to access necessary resources from colleagues and the institution to develop their ideas and test prototypes.
- Responsibility commensurate with power: successes are acknowledged with appropriate rewards, while individuals are held accountable for failures.
- Awareness of this power-responsibility balance: individuals understand the importance of responsible innovation as they develop their ideas, and have the power to pursue it effectively.

7. Oe. 7: Rules and shared values for innovation work

Rules and shared values are necessary to govern the delivery of innovation. These rules and values share a foundation, from an abstract set of founding principles to a specific internal regulation document developed for realizing innovation. In all cases, the rules and values should be stated alongside practical implications for the day-to-day work of the institution, making them a useful guide for everyday action.

One example of such a value is the notion that innovation is beneficial and that time should therefore be allocated for it, but that time devoted to innovation should be clearly linked to specific goals such as improving outcomes or employee well-being. An associated rule could be a requirement for a clear statement of purpose for any top-down or bottom-up innovation effort. Another important value is the need to strike a balance between innovation and regular operations – these can inspire and support each other. A corresponding rule could be that dedicated innovation time is counted as regular work hours, but with clear limits on the number of hours allowed.

8. Use of organizational elements

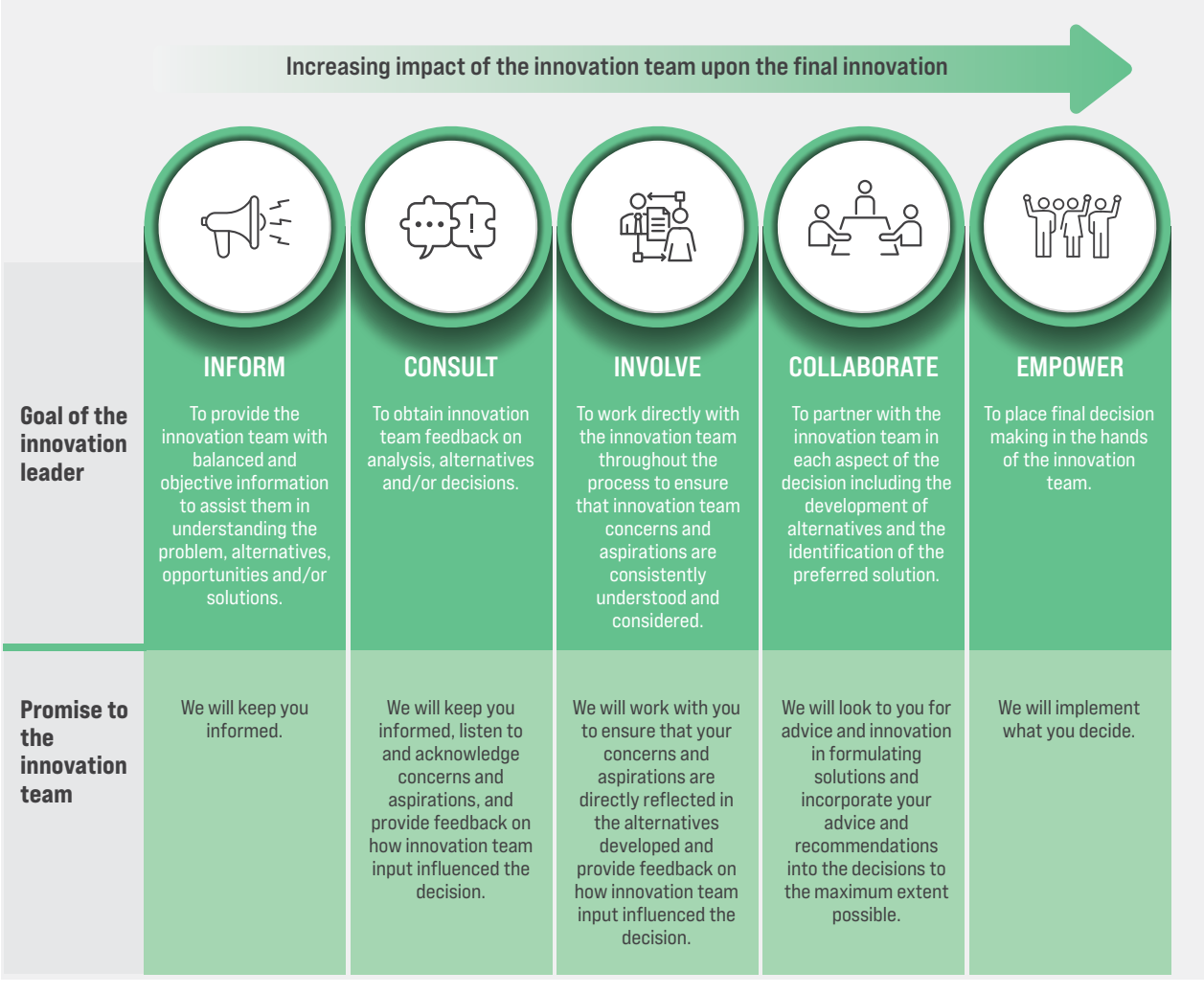
Organizational elements can be used within an institution to establish and trigger an innovation function that becomes part of the institution's core business. This approach is considered constructive,

allowing for ongoing operations while innovation efforts develop. However, if innovation disrupts core business activities and halts regular work, it becomes destructive. Therefore, a balance between risk and functioning must be maintained when the decision is made to implement an innovation function.

Several methods, toolkits, and organizational designs exist to mitigate risk and ensure that innovation leads to improvements. These options are based on the idea that an institution's innovation function is a form of public participation, even if it only involves internal staff. The innovation team itself becomes the "public" called upon to give its opinion on ideas, goals, and solutions. Team members voice concerns, aspirations, assessments, and suggestions for improvement, playing the role of the participating public in consultation and co-creation processes.

Therefore, existing tools and concepts from public participation can be used for internal innovation efforts. The International Association for Public Participation's Spectrum of Public Participation (IAP2) is the most renowned such tool. IAP2 organizes public participation efforts into five categories according to the public's role in each. These five categories are arranged in increasing order of the impact of public on the final decision. The categories are "inform", "consult", "involve", "collaborate" and "empower".

Figure 9. Increasing impact of innovation team members on innovation outputs



Source: Developed by author, based upon International Association for Public Participation, n.d.

An analogy can be made between the IAP2 Public Participation Spectrum and the way innovation team members participate in the innovation function of a public institution, especially if innovation team leaders carry out the role of process owner and the innovation team members carry out the role of the public. This analogy, which is depicted in figure 9, highlights the increasing impact innovation team members can have on the final innovation delivered.

The concept of innovation team members acting as a "public" participating in the development process necessitates a flat organizational design, and informs the selection of methods and toolkits. Here, there are six options: idea generation methods (Id.) (annex B.10), public participation methods (Pp.) (annex B.22), co-creation and innovation toolkits (Cc.) (annex B.4), participatory design methods (Pd.) (annex B.21), serious play methods (Sp.) (annex B.24), gamification elements (Ge.) (annex B.9) and flat organization design methods (Fd.) (annex B.7). These various options all help to address the central question "Which of these options do we want to consider for the innovation function of our institution?".

Table 12. Contribution of methods and toolkits to innovation function integration

	Organizational elements						
Options for methods and toolkits	Oe. 1. People involved in innovation work	Oe. 2. Structures undertaking innovation work	Oe. 3. A recruitment policy for staffing innovation work	Oe. 4. Process paradigms for carrying out innovation work	Oe. 5. Motives for carrying out innovation work	Oe. 6. A power and responsibility balance for innovation work	Oe. 7. Rules and shared values for innovation work
Options for idea generation methods	Direct	Indirect	Direct	Direct	Indirect	Direct	Direct
Options for public participation methods	Direct	Indirect	Direct	Direct	Indirect	Direct	Direct
Options for co-creation and innovation toolkits	Direct	Indirect	Direct	Direct	Indirect	Direct	Direct
Options for participatory design methods	Direct	Indirect	Direct	Direct	Indirect	Direct	Direct
Options for serious play methods	Direct	Direct	Direct	Direct	Direct	Direct	Direct
Options for gamification elements	Indirect	Direct	Indirect	Indirect	Direct	Indirect	Direct
Options for flat organizational designs	Indirect	Direct	Indirect	Indirect	Indirect	Indirect	Direct

Source: Developed by the author.

All organizational elements can have direct contributions from one or more methods and toolkits integrated into the innovation function. Also, all methods and toolkits contribute to the effective and efficient integration of one or more organizational elements into the innovation function. Table 12 demonstrates the direct and indirect contributions of the methods and toolkits if activated in a public institution across the organizational elements.

B. Guidelines on how to address the challenges of implementing innovation in public institutions

In this section, the dynamics of teams engaged in innovation work within public institutions are considered through various cases. The team dynamics described here are considered irregular; if they are not properly managed, they could impede the innovation team's pace, delivery, quality of work and collaboration. All dynamics considered are identified through the guiding question: "What are the individual and team dynamics that we need to manage to help the innovation team deliver successfully?".[28]

1. Innovation team dynamic Td.1 – Td.5: Irregular individual contributions

The ultimate challenge in implementing innovation relates to managing human relations. The first set of team-dynamics challenges concern irregular individual contributions and coping strategies.

- Td. 1. Disengagement: Minimal effort made in contributions, providing feedback without details or substantiation.
- Td. 2. Lack of seriousness: Impractical or irrational ideas proposed in contributions.
- Td. 3. Lack of commitment: Fluctuating stakeholder feedback, such as reduced meeting participation and delayed or absent-minded responses.
- Td. 4. Overbearing attitude: Stakeholder feedback is delivered in closed-form statements, leaving insufficient room for discussion of alternatives or justification of claims. Disagreement can lead to tension and disengagement.
- Td. 5. Messiness: Disorganized stakeholder feedback, especially when time needs to be sacrificed from other obligations, taking the form of mixing issues or introducing irrelevant points.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Each of these irregularities can be countered by social and cognitive tactics, the aim of which is not to try to change people's attitudes and habits, but rather to attempt to overcome irregularities constructively. The goal is to retain the added value of each person's contribution and incorporate it into already completed work. Social tactics that could be applied include:

- Qualities and skills of leadership in general.[29]
- High emotional intelligence skills in leadership.[30]
- Empathy-building activities and games, empathy-building activities and empathy-building games.[31]

Although leadership and emotional intelligence tactics equip team leaders to manage these dynamics, empathy-building activities target the entire team, particularly those with irregular contributions. An example can be made in a role-playing game designed to build empathy. The team member with irregular contributions (disengaged, unserious, uncommitted, overbearing, or messy) takes on the role of team leader, while the actual leader becomes a team member. They then act out a scenario where an irregular contribution is delivered. By experiencing the situation from each other's viewpoints, the team member can see how their actions impact the leader and team, while the leader gains understanding of the reasons behind the irregularities and the potential value the team member still offers.

2. Innovation team dynamics Td. 6: Pareto effects

Innovation teams, like many others, can fall victim to the Pareto principle (the 80/20 rule). Initially, work may be evenly distributed, but over time, some members may begin to make irregular contributions. To deliver on schedule, other team members compensate by over-delivering. Left to evolve, this could lead to a situation where most of the results is delivered by a small part of team.

The Pareto principle states that "for many outcomes, roughly 80 per cent of consequences come from 20 per cent of causes" ("the vital few"), with the remaining 20 per cent of consequences coming from the remaining 80 per cent of causes ("the trivial many").[32]

A Pareto effect appearing in the work of an innovation team could be due to irregularities in the contributions of 80 per cent "trivial many" team members (e.g. disengaged, uncommitted or messy contributions as defined above). It can also be the outcome of irregularities in the contributions of the "vital few" team members (unserious or overbearing contributions) which team members find hard to deal with.

Pareto effects in the work of an innovation team could be a problem for team leaders, as they could compromise the positive experience of team members (the "vital few" team members may complain of overwork while the "trivial many" team members may become disengaged). In turn, the shared values and the quality of end results are placed at risk since success could depend upon knowledge and skills which the "trivial many" team members may possess, but which are not applied due to their disengagement. Social and cognitive tactics can be used to manage the Pareto effect.

3. Innovation team dynamics Td. 7: Uneven learning curves

A learning curve shows how the proficiency of individuals in performing a process is improved over time as experience accumulates, or how a process itself improves over time as learning and proficiency accumulate. Therefore, working on something over time leads to learning, which leads to experience, proficiency, and high-quality end results. Depending on the rate at which learning accumulates over time, curves can be characterized as steep, when increasing at a faster pace, or shallow, when increasing at a slower pace.

Innovation teams are inherently diverse in learning styles and prior knowledge. Some members may start with greater expertise in the domain of innovation, while others may be more adept at collaborating daily, accumulating experience over time. Individual learning rates also vary. This diversity is an advantage, allowing team members to contribute from different perspectives. The challenge lies in the uneven learning curves. The team risks dividing into two subgroups: a faster-learning "vital few" who tackle advanced aspects of the innovation, and a slower-learning "trivial many" who focus on basic elements, which can lead to a Pareto effect.

Uneven learning curves is a challenge that team leaders should manage to ensure that the entire team continues to deliver regularly, and that each team member continues to contribute regularly. This challenge is more cognitive in nature, and harder to meet through social tactics, even though the latter can help by relieving tensions between faster and slower learners, and by bridging the cognitive distance between faster and slower learners by means of team cohesion facilitation and intra-team social learning processes.

4. Innovation team dynamics Td. 8: Fluctuating attention curves

Attention, a term in cognitive psychology, is the process of focusing awareness on a specific element while filtering out distractions. James (1890)[33] described it as follows: "Everyone knows what attention is. It's when the mind takes hold of a single object or train of thought, making it clear and vivid, even though there may be other possibilities vying for our attention at the same time. The essence of attention is focusing and concentrating our consciousness, withdrawing from some things to deal effectively with others".

The process of paying attention to one thing implies withdrawing our attention from other things. Attention is thus an antagonistic process by nature. Attention levels naturally fluctuate over time, leading to the concepts of (a) attention span, referring to the amount of time someone can concentrate on a task before becoming distracted, which has been found to vary by age; and (b) time-fluctuating attention curve.

Early discussions on attention curves were made by Philpott (1934) and later by Gibbs (1992), who proposed a visual representation of the attention span curve suggesting that an audience's attention drops significantly after around 15 minutes. Downs (1972) further expanded the concept of attention curves to a broader societal level. He introduced the idea of an "issue attention curve" concerning the attention of the public to an issue of importance to society. It typically starts with a surge of interest upon initial discovery, followed by a period of enthusiasm. However, as the realities of implementation set in, such as the realization of costs of significant progress, public attention wanes gradually if the solution fails to meet expectations, ultimately fading into a state of declining interest.

Innovation teams in public institutions, like anyone else, struggle with fluctuating attention. Team members juggle competing demands – their regular work, the perceived importance of the innovation project, and the potential for solutions to outweigh associated costs. This mirrored attention curve reflects both Gibbs's (1992) concept dealing with individual meetings and discussions, and Downs's (1972) issue attention curve affecting the overall innovation project timeframe.

Consequently, attention levels fluctuate within individual meetings and across the entire innovation project lifecycle. Public institution innovation teams face a double threat: fluctuating attention within the team leading to irregular contributions, and potential "issue attention curve" dips when communicating progress to leadership.

While managing fluctuating attention is a cognitive challenge best addressed by cognitive tactics, social tactics can be a valuable complement. Improved team communication and a shared sense of purpose, fostered through social tactics, can motivate team members to overcome attention dips and stay focused on developing high-impact solutions that deliver significant progress.

5. Innovation team dynamics Td. 9: Lack of team cohesion

Members of innovation teams may feel a sense of otherness towards each other. This could be caused by differences in career background (members from the same public institution and external stakeholders from civil society, academia, or the private sector), demography (such as differences in gender, age, socio-economic status, and education levels), and differences in personal traits (such as different learning styles, different behavioural styles, and different expressions). This feeling can lead to three specific trust deficits: (a) the doubt that others value our contributions as we believe they should; (b) questioning whether others follow the same ethical guidelines and work standards as we do; and (c) worrying that others do not fully grasp the reasoning and logic behind our ideas.

Low levels of trust lead to irregularities in team dynamics, such as poor communication and collaboration. Team cohesion is therefore needed at the level of institutional membership. All members of a team are bound by the institution's mandate and bylaws, sharing the same rights and obligations. This creates a perception of commonality and equality between team members. Belonging to this institution provides a safe space for culturally different team members to express their ideas and contribute regularly.

Team success requires more than just institutional membership, which fosters a basic level of teamwork. Even though team members are institutionally aligned, their individual interests and visions for the team's innovation goals could clash. This can lead to "win/lose" situations when raising problems or proposing solutions. Members become focused on potential outcomes that favour their preferred causes, creating unmanageable disagreements. To overcome this hurdle, rational partnerships that craft "win-win" scenarios encompassing everyone's goals are crucial, and can strengthen team cohesion.

However, this level of cooperation can still fall short. Defining success solely on outcomes and collaboration style can overlook emotional well-being. Working as rational partners does not guarantee emotional connection, which can be hampered by cultural differences, overly formal work environments, and a lack of casual interaction (greetings, breaks, and small talk). This emotional connection is key to fostering positivity in daily tasks. It represents the emotional basis for team cohesion.

The emotional journey towards team cohesion is time critical and composed of cultural, institutional, rational, and emotional parts. If too much time elapses before the journey is initiated, or if the journey is initiated but slows down so that emotional cohesion is achieved late, the journey will not deliver its full potential. Emotional commitment holds value for all teams, regardless of their specific mandate. It serves as a fundamental driver for team cohesion. Notably, for innovation teams where creativity thrives, ensuring individual and overall creative energy is critical.

Leading a cohesive team is not a one-step process. Social tactics bridge cultural gaps and foster emotional connection, while cognitive tactics help members see their value within the team. By strategically applying both, effective leaders guide teams through the emotional journey towards team cohesion for optimal performance.

6. Innovation team dynamics Td. 10: From time as foe to time as friend

An important aspect of dynamics for innovation teams (and teams in general) is their relationship with time. Each innovation team has a timeframe for delivery of output. During their work, two concurrent trends evolve: a trend for effectiveness, pointing toward doing rather than discussing, and a trend of consensus, pointing toward discussing rather than to doing. Both trends require time, and time invested can bring about an antagonistic win-lose relationship between these two trends. As time elapses and a team's focus shifts to effectiveness, there is less time available to seek consensus. Time, therefore, does not allow the team to achieve the two things it wants most, namely effectiveness and consensus, making it a foe.

Viewing time as a foe constitutes a fundamental irregularity in the work life of an innovation team, risking stress that can paralyse creativity, and frustration that can spoil team cohesion across all levels. The most effective way to relieve this stress is to make good decisions on the amount of time needed to deliver innovation. If traditional planning methods (such as breakdown structures[34], programme evaluation review technique (PERT) diagrams[35], and critical path analysis[36]) ignore team discussions, the actual amount of time needed could be significantly different.

To account for consensus, the timeframe allocated could be set to C*T time units, where T denotes time units and C is an adjustment factor calculated based on parameters such as originality, the need for creativity, the knowledgeability of team members, and the size and heterogeneity of the team. Some typical values for C could range from 1.1 (simple consensus needs) to 2 or higher (demanding consensus needs). Therefore, if the time needed to deliver on innovation (without consensus) is 6 months, and the consensus adjustment factor is then assessed at 1.5, the timeframe allocated to the innovation team would be 6 months x 1.5, thus 9 months. Provided that the time assessment is correct, the team has sufficient time to build stronger consensus and increase quality while reducing the possibility of non-acceptance of the final innovation. Time, in this context, is no longer a foe, but regarded as a friend that brings consensus and quality.

When external constraints limit available innovation time, traditional calculations might fall short. Such constraints can be addressed by (a) downsizing the innovation effort, therefore if only 4.5 months are available for an innovation that requires 9, the effort should be reduced by 50 per cent, and by (b) continuing the innovation effort in the future, beyond the time constraints.

To keep innovation efforts embarked upon at different time periods connected in a meaningful manner, a number of innovation patterns can be considered.

- Innovation waves represent successive, broad innovation efforts that address multiple issues or needs within a specific domain, albeit in limited depth. Each wave builds upon the previous one, gradually progressing through the domain.
- Innovation spirals represent focused innovation efforts tackling a single issue or need in greater depth. Each spiral delves deeper into the chosen issue before moving on to the next, creating a continuous spiral of knowledge and progress.

7. Cognitive tactics for managing irregular innovation team dynamics

Irregular innovation team dynamics can pose challenges. Two cognitive tactics can be employed to address these issues. The first tactic involves the Innovation Process Empirical Guide (IPEG) Model and its accompanying EIPwizard tool. The second tactic uses the IDEA Lifecycle for Public Sector Innovation model.

IPEG[37] is an examples-based guide to different innovation process types applicable to public sector innovation efforts. The innovation process types it currently includes are bottom-up innovation, collaborative innovation, continuous innovation, disruptive innovation, frugal innovation, incremental innovation, local innovation, open innovation, and sustainable innovation. Supporting the model is the EIPwizard[38] tool, which public sector personnel and stakeholders can use to identify the most suitable innovation process for their specific situation. This tool assists them in understanding the different process types offered by the IPEG model.

The IPEG model categorizes various innovation process types (Pt), which can be chosen based on the guiding question "Which process type can we best choose for further structuring our innovation work?" (annex B.23) The IPEG model helps teams navigate the challenges associated with the dynamic and unpredictable nature of innovation work. This structure can streamline the allocation of tasks, responsibilities, and contributions among team members. As a result, the work process becomes more transparent and accountable. On a cognitive level, the IPEG model and EIPwizard tool empower innovation teams to analyse types and choose the best option. This collaborative selection process fosters a sense of autonomy, responsibility, and accountability among team members. It can also increase their commitment to the innovation project and promote consistency in individual contributions and team dynamics.

The IDEA Lifecycle for Public Sector Innovation[39] is a structured approach for developing and maintaining public sector innovations. It uses information and communication technologies to guide the work process, and recognizes three key characteristics of successful public sector innovation: (1) it comprises a multi-step process, (2) it is complex and involves internal and external stakeholders, and (3) it is not linear and necessitates iterations at specific stages and in the overall implementation frame.

The IDEA lifecycle incorporates steps for building consensus, securing support, and refining innovations beyond their initial launch. Like the IPEG model for process types, the IDEA lifecycle offers a guiding question to identify innovation lifecycle activities (Lc.) (annex B.13): "Which activities for idea generation, deliberation, evolution, and assimilation can we best choose to structure our innovation work?"

By providing structure, the IDEA lifecycle helps innovation teams address the challenges of dynamic and unpredictable work. This shared understanding of the work process streamlines the allocation of tasks, responsibilities, and contributions among team members. As a result, the work becomes more transparent and accountable to everyone involved.

Furthermore, the IDEA model empowers innovation teams to choose the specific idea generation, deliberation, evolution, and assimilation activities that best suit their needs. This collaborative selection fosters a sense of autonomy, responsibility, and accountability among team members. It can also increase their commitment to the innovation project and promote consistency in individual contributions and team dynamics. Table 13 summarizes the direct and indirect ways that social and cognitive tactics can help address the challenges posed by an irregular team dynamic.

Table 13. Direct and indirect contributions of social and cognitive tactics in addressing the challenges stemming from irregular innovation team dynamics

	Social tactics	Cognitive tactics
Potentially irregular innovation team dynamics	Applying leadership/social leadership skills, emotional intelligence skills, empathy-building activities/games	Using the IPEG/EIPwizard process type models and the IDEA lifecycle model
Td.1. Contribution disengagement	Direct	Indirect
Td.2. Contribution lack of seriousness	Direct	Indirect
Td.3. Contribution lack of commitment	Direct	Indirect
Td.4. Contribution overbearingness	Direct	Indirect
Td.5. Contribution messiness	Direct	Indirect
Td.6: Pareto effects	Direct	Indirect
Td.7: Uneven learning curves	Indirect	Direct
Td.8: Fluctuating attention curves	Indirect	Direct
Td.9: Lack of team cohesion	Direct	Direct
Td.10: From time as foe to time as friend	Indirect	Direct

Source: Compiled by the author.

C. Ideas on tailoring the model to specific needs

While the proposed innovation model targets Governments and public institutions, it acknowledges the importance of civil society and NGOs in co-creating public sector innovations. NGOs can tailor the model to their specific needs, further supporting collaborative innovation efforts. This approach can also empower Arab NGOs to experiment and develop their own public-interest innovations, strengthening the region's innovation ecosystem.

The adaptation or tailoring of the model must be grounded and based on results of interactions with Arab organizations. Using the innovation model discussed in chapter 2, a consultation with stakeholder organizations can be held where the model, ingredients and flavours are examined. Participating stakeholders should express their views, including criticism for omissions, difficulties to apply in practice and any other eventual weaknesses. This grounded approach ensures that the tailored model reflects the realities of Arab organizations. The planned consultation exercises should include the dimensions of "who", "when", "where", and "how".

1. Consultation planning (I): who could be consulted?

Each stakeholder organization that participates should send one or two participants with at least three years of experience within their institution. Representatives will take stock of their perceptions regarding their institution's realities, and their own experience within their institution. The outcome is used to assess what should be discussed. The sample of stakeholder institutions and participants could be balanced as follows.

- Composition: Aim for a total of six stakeholder institutions, with equal representation from three categories: two public institutions, two local administrations, and two NGOs. To capture a range of experiences, half of the institutions from each category (public institutions, local administrations, NGOs) should have a higher level of innovational maturity and technological dynamism, while the other half should have a lower level. This will foster the gathering of insights from both established and emerging innovators.
- Geographic diversity: Select institutions from different Arab countries to prevent the consultation findings from being skewed towards specific countries, and to ensure that the tailored model reflects the broader regional context.
- Gender balance: Strive for a gender-balanced group with participation from 40-60 per cent male and 40-60 per cent female participants. Furthermore, within each maturity/dynamism category (higher or lower), both females and males should be represented. This prevents biases based on gender stereotypes.

2. Consultation planning (II): How would the consultation be driven by underlying conceptual models?

There are several ways to understand how participants from user communities feel about proposed solutions like the innovation model.

- Information system approaches, such as the design-reality gap model, consider factors such as information access, workflows, organizational goals, staff skills, management structures, technology availability, and resource limitations. These approaches have been used to understand information systems in developing countries, e-government initiatives, and barriers to big data for development. In a consultation, they can identify gaps between the model and user realities, allowing for targeted adjustments to bridge those gaps.
- Technology acceptance approaches, using models such as TAM (technology acceptance model), UTAUT (unified theory of acceptance and use of technology), LUM (lifeboat utility model), and MAPS (model of acceptance with peer support), focus on why users accept or reject new technologies or models. In a consultation, these models can help identify user perceptions of the innovation model's usefulness and ease of use, and the reasons behind those perceptions.

Table 14 explains the use of the TAM model and materials of the innovation model to structure a consultation exercise in a series of successive rounds.

Table 14. Successive rounds of a consultation exercise for tailoring the innovation model

Consultation round	Topics to be explored
Round 1. Model ingredients The topics in this round will be explored with all participants at the same time.	How much useful is each ingredient of the model felt to be? Are any ingredients particularly useful, and why? Are any ingredients not particularly useful, and why? How easy to use is each ingredient of the model felt to be? Are there ingredients particularly easy to use, and why? Are there ingredients particularly difficult to use, and why?
Round 2. Flavours of model ingredients The topics in this round will be explored with all participants at the same time.	Are there some specific flavours of model ingredients which are particularly useful, and why? Are there some specific flavours of model ingredients which are not particularly useful, and why? Are there some specific flavours of model ingredients which are particularly easy to use, and why? Are there some specific flavours of model ingredients which are particularly difficult to use, and why?
Round 3. Guidelines for using the model The topics in this round will be explored with all participants at the same time.	How useful is each guideline for using the model felt to be? Are any guidelines particularly useful, and why? Are any guidelines not particularly useful, and why? How easy to use is each guideline felt to be? Are any guidelines particularly easy to use, and why? Are any guidelines not particularly to use, and why?
Round 4. Tailoring to specific needs The topics in this round will be explored independently for each participant.	Which model ingredients, flavours, and guidelines are felt to be the most useful? (up to 5 answers) Which model ingredients, flavours, and guidelines are felt to be the least useful? (up to 5 answers) Which model ingredients, flavours, and guidelines are felt to be the easiest to use? (up to 5 answers) Which model ingredients, flavours, and guidelines are felt to be the least easy to use? (up to 5 answers) To what extent would each participant intend to use the model? (on a five-point scale, from 1=not at all to 5=certainly)

Source: Compiled by the author.

Focus groups are recommended for the consultation process. Focus groups offer valuable insights into how participants think, behave, and make decisions related to the model. The data collected on specific topics can then be analysed in greater detail. Each focus group session is expected to last approximately 90 minutes and incorporate playful methods to initiate, explore, and conclude brainstorming discussions (details on these methods are provided in chapter III.D).

3. Consultation planning (III): When and where could the consultation exercise take place?

To implement the planned consultation exercise, three alternative versions could be considered.

a. The first option involves an intensive in-person approach. All four focus groups are held in a single workday, with two sessions each in the morning and afternoon. Participants would be physically present. This format could be ideal as a satellite activity alongside another event;

b. The second option uses online platforms for an intensive remote exercise. The four focus groups are conducted on consecutive days, potentially at the same time each day in the same virtual meeting space. This approach would be best suited for periods with lighter workloads for participating institutions and individuals;

c. A third option uses online platforms for a non-intensive remote exercise. Like the intensive remote option, the four focus groups would be spread out over a month, potentially held on the same weekday and time in the same virtual meeting space. This version would be ideal for periods with lighter workloads for participating institutions and individuals.

Each approach presents its own set of advantages and disadvantages. Participant fatigue is a concern with the in-person option due to the proximity of sessions. All versions require dedicated time for reflection and processing of findings from previous sessions by participants, organizers, and facilitators. The intensive remote version might offer the best balance in this regard. However, the non-intensive remote version carries the risk of participants losing focus due to the longer gaps between sessions. While the intensive remote version might seem most suitable, all three options deserve further exploration before a final decision is made.

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Focus groups are recommended for the consultation process. Focus groups offer valuable insights into how participants think, behave, and make decisions related to the model.

D. Ideas on nurturing and integrating innovation in the day-to-day work of public institutions

Nurturing and integrating innovation should be driven by the day-to day government workplace realities and be based on the following premises.

1. Premise 1: Human relations need to be managed in a way that is compatible with a day-to-day innovation culture

Successful innovation hinges on smooth relationships throughout the organization. It is vital to acknowledge and encourage both the engagement of colleagues directly involved in innovation initiatives and the contributions of other colleagues who perform essential day-to-day tasks, even if they are not directly involved in innovation.

Innovative thinking transcends boundaries. It flourishes through the exchange of ideas across departments, hierarchies, and specializations. Consequently, effective human-relations management within the organization should also be boundary-crossing. This means fostering an environment where any employee feels empowered to connect and collaborate with anyone else in the organization, regardless of their specific role or department.

2. Premise 2: Innovation needs to be considered normal

Innovative solutions can appear at any moment, so it is important to be receptive to new ideas and to encourage employees to voice them as soon as they arise, regardless of the specific time. Physical space should not limit innovation. Ideas can emerge from anywhere in the workplace, from the front office to break rooms. A culture where the origin of an idea is no hindrance to its expression is therefore essential. Innovation is not limited by position; anyone in the organization, from entry-level staff to higher management, can have a valuable idea. It is important foster a culture where everyone is empowered and comfortable to contribute and share their thoughts.

3. Premise 3: Innovation needs to be shared openly

Publicly sharing innovation ideas in the workplace offers several benefits. First, it raises awareness and allows everyone to learn from each other's ideas. This cross-fertilization of ideas can spark even more innovation. Second, public sharing creates momentum. When people see others contributing, it can motivate them to get involved and share their own ideas.

While implementing a structured process for submitting and evaluating innovative ideas can be valuable, it is important to avoid secrecy and rigid limitations. Open communication is key. Employees should be encouraged to react to innovation ideas just as they react to social media posts: expressing likes, dislikes, adding comments, and sharing them with others within the organization. This fosters a more collaborative and dynamic innovation environment.

4. Premise 4: Innovation can best be fostered through collective thinking

Informal innovation can be significantly bolstered by encouraging reflection and brainstorming. This reinforces the importance of fostering positive, innovation-friendly relationships within the workplace. Public institutions aiming to cultivate everyday innovation should establish formal procedures for discussing innovative ideas while also facilitating informal communication among employees. This implies that staff should be able to schedule time both for completing their daily tasks and for meeting to discuss innovative ideas.

5. Tactics for use on a day-to-day basis

There are several practical tactics, based on these premises, to nurture everyday innovation in public institutions (Nu. ingredient) (annex B.15). All of these tactics are possible answers to the guiding question: "How can we nurture innovation as an integral part of day-to-day workplace activity?".

a. Nu.1. Innovation whistle. This tactic involves creating a system allowing anyone with an innovative idea to easily bring it to the attention of colleagues. The mechanism should be simple, promoting face-to-face interaction and emotional connection rather than relying solely on digital communication. Even a physical whistle could be considered, adding a fun element to the process;

b. Nu.2. Innovation wall. Like a social media wall, an innovation wall can be created using a physical space with blank walls or a digital platform. Each employee is able to share their ideas, comment on others' ideas, and "like" or "share" them. This wall would serve as a permanent repository of the organization's collective innovative thinking and could be refreshed periodically based on consensus;

c. Nu.3. Innovation workbench and space. This tactic involves establishing dedicated workspaces for public institution employees to meet, collaborate, and develop innovative ideas. Once an idea emerges, it can be formally transferred to an innovation workbench – a large meeting table with necessary supplies – located in a space where innovation teams can gather and work on the idea. Transferring the idea to the innovation workbench should be a visible and public process, signifying recognition of the new concept;

d. Nu.4. Innovation blueprint and canvas. These tools offer visual and textual frameworks for representing developing innovation ideas within an organization. An innovation blueprint could be devised to outline the core elements required to demonstrate an idea's potential. Once a blueprint is established, the idea can be transferred to a more comprehensive "innovation canvas" for further development. These conceptual tools can draw inspiration from existing resources such as the Board of Innovation (Collins 2012);

e. Nu.5. Innovation gamestorming. This method combines brainstorming activities, which are inherent to innovation, with playful methods to enhance creativity and engagement. Playful brainstorming methods such as empathy maps, dot voting, fishbowl discussions, and "five whys" analysis can be used to open discussions, identify problems, and to explore and evaluate solutions;[40]

f. Nu.6. Innovation points. Under this tactic, employees receive points for engaging in innovation-related activities. Custom elements can be added to the points system to incentivize participation. It is crucial to implement this tactic meaningfully, fostering a genuine interest in innovative thinking among employees;

g. Nu.7. Technology innovation. This tactic involves encouraging employees to identify innovative applications for existing or emerging technologies to improve processes, products, or services. It requires shifting the mindset from simply using technology to finding new and meaningful ways to use it within the specific context and needs of the organization. Technology innovation can be framed as a day-to-day task, attempting to answer the guiding question: "How can we use technology in new ways to better serve our needs?" This can apply to any technology, traditional, new, or emerging, potentially involving repurposing technology for different uses. Encouraging employees to search for innovative ideas involving technology can help to cultivate a new mindset and reward those who participate;

h. Nu.8. Innovation ventures, missions, and projects. This tactic provides a structured management framework for nurturing innovative ideas. Innovation ventures, missions, and projects represent the different stages of maturity of an innovation effort;

- Innovation venture: Initially, an idea might be loosely defined with many unknown factors, not yet resembling a structured plan. At this stage, it can be considered an innovation venture. The focus is on exploration and experimentation to refine the idea and assess its feasibility. This stage might involve activities such as brainstorming, prototyping and user testing.
- Innovation mission: As the idea matures and a purpose and potential solutions are formulated, it can be promoted to an innovation mission. The mission stage involves defining a clear goal and outlining a roadmap for achieving it. This stage might involve activities such as developing a business plan, securing resources, and building a team.
- Innovation project: Once an innovation becomes more organized, with a defined workplan and expected outcomes, it can be considered an innovation project. The project stage focuses on implementation and delivery. This stage may involve activities such as project management, resource allocation, and performance monitoring.

This hierarchy provides context and organization to the work and offers a reward system for contributors. The prospect of an idea progressing in status from "venture" to "mission" to "project" can motivate the staff member who proposed it. These three concepts can be incorporated into a public institution's specific innovation management structures, activated as innovation efforts inspired by daily workplace realities gradually mature. Each structure should provide appropriate support and resources to nurture innovation work and help it to mature and move to the next level in the hierarchy.

i. Nu.9. Innovation badges. This tactic recognizes achievements in day-to-day innovation work, rewarding creativity and engagement. "Innovation badges" can be awarded to people for innovation accomplishments, and for innovation work done independently of outcomes. Multiple types of badges can be created for different contributions and work. Badges could be used to reward all innovation behaviours that an organization nurtures daily, and could include the following:

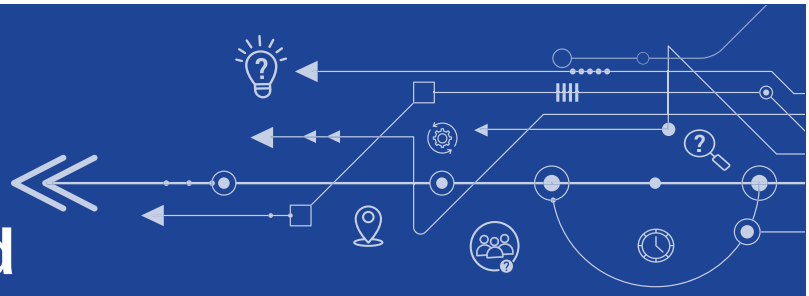
- Success-related badges: These badges acknowledge successful innovation efforts and the quality of innovation outcomes.
- Effort-related badges: These badges recognize positive collaboration during innovation efforts and creating a positive experience.
- Failure-related badges: These badges acknowledge employees who are not afraid to test risky ideas, who are not discouraged by failure, and who can learn from it. Failure-related badges are an important inclusion, as they normalize the possibility of failure in innovation work, if it is managed constructively. This allows for a less stressful environment for innovative thinking and encourages experimentation with more unorthodox ideas.

The best way to define a badge system for innovation efforts would be to create it with the involvement of all workers in the organization. Workers will have an opportunity to articulate their concerns, build shared understanding, and establish shared values on innovation. A co-created badge system will better integrate collective values, be better accepted by the community, and not seem biased towards a management mindset.

Such a system could be implemented simply, with clearly defined rules. Alternatively, it could be made more complex. Badges could become fully recognized performance credentials within the organization, potentially playing a role in promotion decisions and being recognized by other organizations. An example of a complex badge management system is Open Badges, which originated from work carried out by the Mozilla Foundation and is now managed by the 1EdTech Consortium. Open badges create opportunities to digitally recognize and validate achievements; they have already been recognized in the education sector by the Open University in the United Kingdom and the European Union's Erasmus+ Virtual Exchange Initiative.

4 Conclusions and recommendations

Conclusions and recommendations



This chapter lays the foundations for using the innovation model. Section A identifies challenges that can be addressed through the model, and section B offers practical guidelines for building local use cases for different scenarios. These use cases can be shared as examples for public institutions. Importantly, the issues (Is.),[41] suggestions (Su.), and guidelines (Lg.) are all ingredients of the innovation model. Table 15 summarizes the seven main issues that can affect the success of public sector innovation.

Table 15. Important issues to consider for successful innovation work in public institutions

Guiding question: What issues for the success of innovation work can we identify within our institutions and for external beneficiaries/adopters of our innovations?	
Common theme	**Issues for success (Is)**
Preference of public-facing over internal-facing innovations as a starting point	Is.1. Pressing public needs that can be met with innovation in the delivery of public sector products and services
	Is.2. Limited or no public trust in the potential of public institutions to innovate
	Is.3. Public sector innovation plans facing severe technological and implementation risks because of the need to amend existing systems
Preference of local use case-based over global use case-based innovations as a starting point	Is.4. Local contexts in need of innovation, with specific needs very deeply rooted in local factors that are hard for non-locals to understand
	Is.5. Global contexts in need of innovation, encompassing local contexts of high heterogeneity
	Is.6. Centrally based innovation efforts that face difficulties in acceptance and adoption
	Is.7. Centrally based innovation efforts that face difficulties in acceptance and adoption by external stakeholders

Source: Compiled by the author.

A. Issues and challenges that the innovation model can address

Two key suggestions (Su.)[42] are presented for tackling the seven core public sector innovation issues. Additionally, this section offers a series of suggestions for addressing nine specific application-domain challenges. These suggestions are primarily aimed at institutions which are new to public sector innovation. However, considering the existing experience within the Arab region, from newcomers to more mature institutions, the suggestions can broadly be applied, with the necessary adjustments, to all public institutions.

1. Su.1. Seek to start with public-facing innovation

This suggestion addresses the following issues affecting the success of public sector innovation.

- Issue (Is.1.) There are pressing public needs that can be met with innovation in the delivery of public sector products and services.
- Issue (Is.2.). There is limited or no public trust in the potential of public institutions to innovate.
- Issue (Is.3.) Public sector innovation plans face severe technological and implementation risks because of the need to amend existing systems.

The suggestion prioritizes public-facing innovation both for new institutions venturing into public sector innovation and for experienced institutions planning to invest in new ways of work. This means focusing on public-facing innovation that directly benefits the public; for example, enhancing online service delivery channels or user interfaces. These changes are directly visible to users. This approach is particularly suitable for newcomers because it provides quicker wins and fosters a sense of accomplishment. While internal-facing innovation can improve the quality or efficiency of organizational processes such as service-delivery workflows, they often have a more indirect and less tangible impact on the public.

Public-facing innovations can be built on top of what already exists, offering a quicker and less risky path for public institutions, especially those which are new to public sector innovation. They also have a clearer and faster impact on the public, thus leading to greater attention and support and avoiding the long time periods needed to implement internal changes. However, public sector innovation requires both internal- and public-facing changes. While internal improvements are crucial, they often face technical hurdles, organizational resistance, and delayed public recognition. Prioritizing public-facing innovations therefore creates momentum and builds trust, ultimately making internal-facing changes more successful when implemented later.

2. Su.2. Prefer to start with building local use cases that can be easily shared

This suggestion addresses the following issues affecting the success of public sector innovation.

- Issue (Is.4.) Local contexts are in need of innovation, with specific needs deeply rooted in local factors that are hard for non-locals to understand.
- Issue (Is.5.) Global contexts are in need of innovation, encompassing local contexts of high heterogeneity.
- Issue (Is.6.) Centrally based innovation efforts face difficulties in acceptance and adoption; and
- Issue (Is.7.) Centrally based innovation efforts face difficulties in acceptance and adoption by external stakeholders.

These issues indicate that a public institution could start its innovation work through local use cases

that only consider the specific needs of a particular local context. In turn, the result would be apparent improvements ready for upscaling in other local contexts. On the other hand, there are also global use cases. These are pre-built solutions based on a general understanding of user needs, and they are intended to be implemented "as is" in various local contexts. This approach can miss the mark because it fails to consider the specific needs and circumstances of each location.

Local use cases offer specificity, tailored solutions, and stakeholder engagement. They therefore offer advantages both in understanding needs and in implementing solutions. It is worth noting that a successful case of local innovation cannot necessarily be shared across all local contexts. This lays the ground for unleashing creativity and further innovation work for each new local context, fostering tailored innovation in each local context. Global use cases are the total opposite. Needs are less specific, solutions need to adhere to a "one-size-fits-all" spirit, and stakeholders who might express needs and evaluate solutions are harder to identify and involve.

Presenting global use cases "as is" stifles local ownership and innovation by ignoring local expertise and motivation, removing local ownership of the innovation and potentially jeopardizing the scope for future innovation work. Starting with local use cases and progressing to global use cases is less risky and more beneficial.

These suggestions focus on priorities that could be adopted in new plans for public sector innovation and complement local use case guidelines, creating a combined approach that could be distributed to other public institutions as guiding examples.

The proposed innovation model focuses on tackling public sector innovation challenges within specific areas of application, rather than on addressing broader organizational or process issues. In this respect, the suggestions that follow highlight the potential for public institutions to use the application-level challenges presented to identify areas where their mandate can be applied, thus generating innovative solutions.

3. Su.3. Innovate in support of the Good Life Goals

The proposed innovation model could be applied in support of the Good Life Goals (GLGs),[43] popularized by the United Nations Environment Programme (UNEP) and its partner organizations. The GLGs are "personal actions that everyone around the world can take to help support the Sustainable Development Goals". Resources for the GLGs are provided by the SDG Business Hub of the World Business Council for Sustainable Development[44]. An institution newly venturing into public innovation can start by building a service (G2C/G2B) that supports citizens, businesses or young people in achieving the GLGs. Later, the institution can expand this service internally (G2E) for its staff and externally (G2G) for collaborating institutions.

4. Su.4. Innovate in support of the "Leaving No One Behind" universal value

The proposed innovation model could also be applied to the Leaving No One Behind universal value of the United Nations, translated into practical policies by United Nations entities such as the United Nations Development Programme (UNDP) (2018), the United

Nations Sustainable Development Group (UNSDG) (2022), and the United Nations Children's Fund (UNICEF) (2021). Public innovation can make G2C/G2B services more responsive to citizens and businesses that are usually left behind because of factors such as discrimination, shocks and vulnerability, socio-economic status and geography.[45] They can also bring about improvements to G2G processes, ensuring that citizens and businesses that are usually left behind are more effectively included in service design[46] using tactics such as the ones proposed by the UNSDG (2022) and UNICEF (2021).

5. Su.5. Innovate in support of the "One Planet One Health" approach

Public sector innovation presents an opportunity for institutions with all levels of experience to apply the "One Planet One Health" approach.[47] Public institutions can innovate with G2C/G2B services for animal, plant, food, and water health, and by developing G2G processes for sharing "One Planet One Health" data across institutions, potentially even fostering cross-border G2G innovation.

6. Su.6. Innovate in support of Our Common Agenda

Institutions at any level of maturity can consider applying the proposed innovation model to support innovation across the "Our Common Agenda"[48] initiative of the United Nations, with its 12 key commitments and associated proposals across sectors, as well as societal objectives.

7. Su.7. Innovate in support of topics of work by the Envoy on Technology

Institutions at any level of maturity can consider applying the proposed innovation model to support innovation pertaining to topics dealt with by the United Nations Office of the Secretary-General's Envoy on Technology, namely the 8 key actions of the Secretary-General's Roadmap for Digital Cooperation and digital environmental sustainability. The Action Plan for Sustainable Planet in the Digital Age calls for collaboration across both existing (nine originally proposed) and new initiatives, creating opportunities to use emerging technologies in support of environmental goals.[49]

8. Su.8. Innovate for the innovation ecosystem: innovation services procurement and innovative players

The model could also be used to support experienced public innovators in procuring technology and services. Regulations usually demand proven experience from bidders, which often prevents innovative start-ups from offering new solutions. The innovation model could be particularly useful in inspiring improvements at the level of regulatory frameworks, which could be instrumental in providing any institution (new and established) with experience in innovation projects.

9. Su.9. Innovate for government-to-employee and government-to-government services

Suggestion Su.8 is one which established institutions are better poised to benefit from. The innovation model could provide them with options to improve their internal processes and services. First, the model can target government-to-employee services by developing innovative tools and methods to better

support and empower public employees. Second, innovation can target government-to-government services by streamlining data sharing, document exchange, and technical support across agencies. This improves overall collaboration and policymaking processes that require inter-agency cooperation.

10. Su.10. Innovate through multi-stakeholder dialogues and co-creation of innovation with a public purpose

The potential of multi-stakeholder dialogues and co-creation of public innovation can be exploited by any institution regardless of its maturity. Two pillars that could support both Arab public institutions and local administrations in working closely with the Arab region are available. Possible partners include the academic sector, research centres, innovation hubs, start-ups, and NGOs.

To support public-purpose innovation, guidelines and examples by the Open Government Partnership (2016), the Center for International Forestry Research (n.d.), and Stakeholder Forum (n.d.) on multi-stakeholder forums demonstrate how co-creation can be achieved in domains beyond open government reforms. Additionally, literature by Aggarwal and Sindakis (2022), Schütz and others (2019), and Riconfigure (2021) on managing "multiple-helix" innovation models, especially "quadruple-helix" models, provide guidance on incorporating contributions from the public, private, academic, and civil society sectors into innovation efforts.

Public-purpose innovation can involve both citizens and experts (multi-stakeholder) or combine public, private, and academic sectors (multiple-helix) to improve services for everyone. This even includes opening internal government processes to outsiders for ideas, despite the challenge this may pose. Ultimately, these approaches encourage public institutions to embrace external input for better services across the board.

11. Su.11. Explore technology-specific and technology-intensive innovation challenges

Two challenges specific to technology are present when pursuing the proposed innovation model. First, technology-specific innovation challenges are innovations stemming from a specific emerging technology selected to achieve a specific goal. Second, technology-intensive innovation challenges are efforts to use the innovation model to develop an innovation that relies on a combination of one or more technologies, which can be emerging or not.

The key success factor is not simply finding applications for existing technologies, but instead articulating pressing challenges that can be addressed by these technologies. This means avoiding a "solution-seeking" mindset that treats technology as a pre-determined answer. Instead, the focus should be on identifying unmet needs or opportunities, then exploring how technology can be creatively applied to address them. Examples of how these two types of emerging technology-reliant innovations materialize are given below.

- Example 1: Technology-specific innovation for improved public participation in the renovation of a public space.
  - Imagine a public space, such as an abandoned public park, with no particular use or added value.
  - Various options are available for citizens to express their opinions about renovating the park, including surveys and assemblies. Information would be limited, mainly involving pamphlets, brochures, or visual representations about possible renovation plans. This form of representation limits the active engagement of the public in the proposals and design of the future park.
  - Innovation could bring engagement through virtual reality technology. Participating citizens can navigate the virtual future park space and add virtual comments.
  - Therefore, in this case, virtual reality is a technology-specific innovation effort, as it constitutes a specific technology solution being used to address existing needs.
- Example 2: Technology-intensive innovation for improved participatory management of clean water resources
  - Imagine a rural setting where clean water resources for drinking, sanitation, livestock farming, and irrigation are becoming scarce. Inhabits need to adapt to shortages and use clean water usage fairly, through systematic preservation and monitoring and informed collective decisions.
  - An innovation effort can capitalize on different options of technologies such as water treatment technologies, sensors for monitoring clean water quantity, quality and consumption, data processing for insight generation, smart app technologies for large-scale data dissemination, smart irrigation tools, and participatory budgeting tools.
  - Therefore, the innovation effort is a technology-intensive innovation effort as it uses a variety of different technologies to address an existing need.

B. Guidelines for building local use cases

The local use case innovation guidelines (Lg.)[50] offer ideas for different scenarios that can be distributed within public institutions as examples. They are grouped into two main themes: framing guidelines and formatting guidelines. Framing guidelines (guidelines 1-9) refer to choices and tactics that public institutions can consider as an overall innovation framework. Formatting guidelines (guidelines 10-12) refer to alternatives for defining a specific format that will structure the way in which innovation work will occur within the chosen framework.

1. Lg.1. Bringing a small group of stakeholders together

Identify and bring together a small working group of no more than 10 members internal to the organization. The group can be extended with a few (2 or 3) external stakeholders that embrace innovation as a need, rather than an option, and understand the benefits of innovation in terms of public-facing objectives Op.1 and Op.2.

2. Lg.2. Formulating a mission for supporting and sharing a local use case innovation across its life cycle

Assign the stakeholder group described in Lg. 1 the task of designing a new service.

- Performance of innovation by the working group.
- Documentation of the innovation.
- Publication through an appropriate avenue.
- Distribution of this innovation to other public institutions as a guiding example.
- Promotion of this innovation in the new institutions by assigning the working group a mentoring role, in which they help the staff of the new institution to adopt their innovation as is, or by helping them to adapt it to their own local context.

3. Lg.3. Taking a “think big/start small” and a “dolphins not whales” approach

Instruct the working group to undertake a “think big/start small”[51] and a “dolphins not whales”[52] approach to come up with a single innovation (within a 4- to 6-month time frame) that can show an impact.

4. Lg.4. Prefer technologies with fast availability and a rapid learning curve

Permit the working group to use emerging or more mature technologies. They should select technologies that the group members consider to be available quickly and have an acceptable learning curve for all involved in the innovation process (i.e. the designers and the users of the innovation).

5. Lg.5. Prefer to build upon, rather than amend, what exists already

To minimize organizational ripple effects and associated delays, and to maximize the portability of the innovation sought, public institutions should require their working groups to think in terms of

building something. The envisaged output should fall under the institution's mandate by coming on top of existing products and services rather than trying to change what already exists.

6. Lg.6. Identifying a proper publication venue for the innovation

Local use cases for innovation developed along the guidelines should be documented and published in a venue appropriate for the innovation ecosystem, accessible to relevant public institutions. A possible online venue is the Arab Open and Innovative Government Portal (AOIGP)[53], managed by ESCWA, which acts as a "subject-driven portal" supporting open and innovative government in the Arab region.

7. Lg.7. Considering broader publication avenues

Beyond the proposed AOIGP avenue, additional publication avenues related to academia and the research community are promising options. This opens the landscape of research data repositories, platforms which host data sets and documents from scientific research, and which could be expanded to contain information from public sector innovation efforts. Examples of such repositories include Harvard Dataverse[54], Zenodo[55], and repositories provided by the Vanderbilt Libraries Digital Lab.[56] These repositories offer established documentation formats such as strategy markup language (StratML) which can support the documentation of innovation use cases.

8. Lg.8. Consider submitting documented innovation efforts for recognition as digital public goods

Formulating innovation efforts as digital public goods could be of value to all public institutions in the Arab region. A digital public good can be understood as software, data sets, AI models, standards or other content which contributes to sustainable national and international digital development.

Such an effort could be based on the relevant requirements put forward by the Digital Public Goods Alliance standard and the Digital Impact Alliance's Principles for Digital Development.[57] Digital public goods serve three purposes: (1) they enhance local use cases with aspects that might otherwise have gone unnoticed, such as scalability, privacy and security; (2) they provide local use case developers with broader recognition of their work and achievements, and (3) they communicate the idea that a good piece of innovative thinking and practice deserves to be promoted to the status of a public good.

9. Lg.9. Using the innovation model in a lean manner

The model should be used in a lean manner to remain compatible with the rest of the choices made in connection with the innovation effort. This approach prioritizes successful outcomes over an exhaustive application of the innovation model. If simpler, less risky methods within the model framework lead to success, they should be the preferred approach. The degrees of freedom and flexibility of the model are provided in chapter 2.

Use some, not all, of the model's ingredients.

Instead of focusing on "flavours" for each element used in the innovation process, identify the specific characteristics or qualities that best align with the current innovation context and the desired outcomes/needs.

Use the parts from the innovation process that have most value for the case in hand.

10. Lg.10. Consider organizing the innovation effort in a workshop format

Innovation based on local use cases can be organized as a workshop. Workshops are most effective when the critical success factor for the envisaged innovation is its structure. This could be the case, for instance, when there are lots of different issues to discuss at different levels, and it is necessary to find some way to separate concerns. As such, different workshops could be planned, with each one addressing a different concern. Workshops, whether face-to-face, online, or hybrid, can use digital platforms and resources:

- SessionLab Platform[58] offers tools and guides for organizing, managing, and facilitating workshops.
- Miro,[59] Mural[60] and other visual collaboration platforms provide tools and guides to represent ideas visually and digitally.
- Involve Platform[61] offers tools and guides for creating public participation and deliberation exercises.
- Decidim,[62] Consul Democracy[63] and other citizen engagement platforms can be used to drive public participation for structuring innovation work.

11. Lg.11. Considering organizing the innovation effort in a "hackathon" format

An innovation effort can also be organized as a "hackathon" – an event where people engage in rapid and collaborative engineering in a relatively short period of time. Such a format would imply planning the main part of innovation work to take place during a hackathon, perhaps with a preparatory workshop leading up to the hackathon and a stocktaking workshop following it to conclude the process.

This format could best serve in cases where the most critical factor for success of innovation work is creativity: for example, when there are issues which have never been dealt with before and where original thinking is needed to arrive at original solutions. A hackathon could be planned, with the key message that the outcomes sought are creative solutions not constrained by traditional thinking and practice. Hackathons, whether in-person, online, or hybrid, can use digital platforms and resources such as:

- Chan (2020) and other commercial or independent tools used during a hackathon.
- Guides and tool listings for organizing hackathons from platforms such as TAIKAI (n.d.) and HackerEarth (2017).
- Good practices such as the International Hackathon for Social Good in the Arab World, the 12th annual edition of which took place in April 2024.[64]

12. Lg.12. Considering organizing the innovation effort in a gamified format

A gamified approach can stand alone or be combined with Lg.10 and Lg.11. Gamification, in this respect, is understood as an attempt to enhance services, organizations, and activities with elements borrowed from game design.

This approach can use various elements of gamification, including challenges, points, levels, badges, trophies, and leader boards. This format could best serve in cases where the critical success factor is engagement: for example, when there are stakeholders who are insufficiently informed about or interested in the innovation work to take place. The whole innovation effort could be planned as a gamified process to yield successful outcomes and positive experience.

Gamification, whether in person, online, or hybrid, as a standalone activity or part of a workshop or hackathon, can use digital platforms and resources:

- Growth Engineering Impact Suite platform[65] offers tools and guides for gamifying learning processes.
- Gamified collaboration platforms such as Gametize[66] and GooseChase[67] provide tools and guides to develop gamified missions and rewards.

Endnotes

1 The original final draft of the technical document is available at https://www.unescwa.org/sites/default/files/event/materials/ESCWA_ENACT_TechnicalReport_InnovationModel_FinDraft.pdf. The annexes of the document are available at https://www.unescwa.org/sites/default/files/event/materials/ESCWA_ENACT_TechnicalReport_InnovationModel_Annexes_FinDraft.pdf.

2 National and Kapodistrian University of Athens (2024). Announcements: Participation of Assistant Professor Dimitris Gouscos of the National and Kapodistrian University of Athens in the UN ESCWA presentation/study. Available at https://hub.uoa.gr/en/participation-of-assistant-professor-dimitris-gouscos-of-nkua-in-the-un-escwa-presentation-study/.

3 United Nations Economic and Social Council, Committee of Experts on Public Administration (2006).

4 Roberts & Tõnurist (2018).

5 Examples of approaches include Kondratiev's waves of innovation (https://en.wikipedia.org/w/index.php?title=Kondratiev_wave&oldid=1176880484), Schumpeter's gale of creative destruction (https://en.wikipedia.org/w/index.php?title=Creative_destruction&oldid=1176881411), and more recent works by Etzkowitz and Leydesdorff on the triple helix model of innovation (https://www.goodreads.com/book/show/10205282-the-triple-helix) and Caragiannis and Campbell's quadruple and quintuple helix innovation (https://www.goodreads.com/book/show/53297501-smart-quintuple-helix-innovation-systems).

6 Reports covered are the European Union eGovernment Benchmark (DG CONNECT (2020), (2021) and (2022), the World Bank GovTech Maturity Index (Dener and others (2021); World Bank (2022))), OECD and MBRCGI Government Innovation (OECD OPSI and MBRCGI (2020a-e), (2021-2022a-c), (2023)), the DESA E-Government Survey (United Nations Department of Economic and Social Affairs (2020), (2022)) and the ITU WSIS Stocktaking report series (ITU (2020a-b), (2021), (2022a, b)).

7 For details on the cross-cutting and domain-focused trends see Deloitte (2023).

8 World Government Summit (2023a).

9 The reports used to identify the Arab-focused trends and practices are ESCWA (2023); OECD (2022); World Government Summit (2023b).

10 DG GROW (2020); DG GROW (2021); DG RTD and others (2022); DG RTD and Hollanders (2023). Annex A.3 for details.

11 Cornell University, INSEAD and WIPO (2020); WIPO (2021), (2022) and (2023. Annex A.4 for details.

12 United Nations Statistics Division (2020), (2021), (2022) and (2023). Annex A.5 for details.

13 World Economic Forum (2020), (2021), (2022) and (2023). Annex A.6 for details.

14 World Bank (2020), (2021), (2022b) and (2023). Annex A.7 for details.

15 https://datacatalog.worldbank.org/search/dataset/0038056, https://innovationinpolitics.eu/showroom/, https://creativebureaucracy.org/library/ and https://www.eipa.eu/epsa/ respectively.

16 Gartner (2023a); Gartner hype cycle (2023); Terrell and Wigmore (2023).

17 Future-oriented technology analysis is a branch of Future Studies focused on analysing emerging technologies and their potential impacts.

18 Gartner (2023b); Perri (2023).

19 Innovation for Sustainable Development Network (2019); Technology readiness level (2023); TWI (2023).

20 Modelpractice (2012).

21 Conceptual model (2023).

22 Malik (2023).

23 ESCWA (2017).

24 See annexes B.1 through B.27 for detail on the different nuances (or "flavours") for each innovation element identified, in alphabetical order of the bigrams used in table 7.

25 As innovation remains a process that can only succeed when we come to feel part of it, different audiences may feel better fit with a different cognitive metaphor, such as the writing metaphor (seeing themselves as innovation writers), or the chemistry metaphor (seeing themselves as innovation chemists). They are free to adopt the most suitable metaphor for their context.

26 For more information on the 5W1H storytelling format see Five Ws (2024) and Creative Minds (©2015).

27 Options for planning the tailoring of the model presented in chapter 3, section C can also be of use in analysing and redeveloping existing innovation initiatives.

28 Annex B.26 offers a summary of the innovation team dynamic (Td.) ingredient.

29 For more information on leadership skills https://changecreator.com/qualities-and-skills-of-leader/ and https://www.ccl.org/articles/leading-effectively-articles/characteristics-good-leader/.

30 For more information on emotional intelligence and leadership https://online.hbs.edu/blog/post/emotional-intelligence-in-leadership and https://www.forbes.com/sites/forbesbusinesscouncil/2023/07/25/why-emotional-intelligence-is-crucial-for-effective-leadership/.

31 Abramson (2021); Carpenter (2020); Filler (2023); Porath and Boissy (2023).

32 Named by Quality Management consultant Joseph Juran after Italian economist Vilfredo Pareto who, based on a series of observations, posited that "in any group of things that contribute to a common effect, a relatively few contributors account for the majority of the effect" (https://www.cec.health.nsw.gov.au/CEC-Academy/quality-improvement-tools/pareto-charts).

33 Source is adapted from work by Cheyne W. McCallum. https://www.britannica.com/science/attention.

34 For more information on breakdown structures http://www.netmba.com/operations/project/wbs/.

35 For more information on PERT diagrams http://www.netmba.com/operations/project/pert/.

36 For more information on critical path analysis http://www.netmba.com/operations/project/cpm/.

37 For a detailed explanation of the Innovation Process Empirical Guide see ESCWA (2017) (chapter II) and Gouscos (2019).

38 For a detailed explanation of EIPwiz see ESCWA (2017) (chapter IV).

39 For a detailed explanation of the IDEA life cycle see ESCWA (2017) (chapter III) and Gouscos (2019).

40 For more information on playful methods https://gamestorming.com/.

41 Annex B.11 for a summary of all issues (Is.).

42 Annex B.25 for a summary of the suggestions (Su.).

43 One Planet Network (2022).

44 For more information https://sdghub.com/.

45 UNDP (2018).

46 Lessa and others (2016).

47 FAO (n.d.); WOAH (n.d.); WHO (n.d.); UNEP (n.d.); Quadripartite (2022).

48 United Nations (2020).

49 United Nations Office of the Secretary-General's Envoy on Technology (2020).

50 Annex B.14 for a summary of all guidelines.

51 For more information and practical advice on the "think big/start small" approach see Mui (2016), Sopheon (n.d.), Turrecha (2020) and Carroll (2010).

52 For information and practical advice about the "dolphins, not whales" approach see Silver (2014), Dibartolomeo (2020) and Pastore (2015).

53 https://opengov.unescwa.org/.

54 https://dataverse.harvard.edu/.

55 https://zenodo.org/.

56 https://heardlibrary.github.io/digital-scholarship/manage/repository/.

57 For more information on the Standard https://digitalpublicgoods.net/standard/. For the principles, https://digitalprinciples.org/principles/.

58 https://www.sessionlab.com/.

59 https://miro.com/.

60 https://www.mural.co/.

61 https://www.involve.org.uk/.

62 https://decidim.org/.

63 https://consuldemocracy.org/en/.

64 For more information https://sites.nyuad.nyu.edu/hackathon/.

65 https://www.growthengineering.co.uk/gamification/.

66 https://gametize.com/.

67 https://www.goosechase.com/.

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Complex challenges and diverse needs across sectors, along with rapid technological development, demand meaningful and actionable solutions, policies and services, based on input from external and internal experts, decision-makers, technicians and the public. All stakeholders have their own points of view, ideals, vision and targets. The puzzle is how to consider all these aspects before arriving at a useful solution. This report offers a possible solution in the form of InnoCook, an adaptable innovation process model that offers guidance and an overall structure for processes, while promoting creativity in execution and methods, making it possible to apply it in most environments.

The analysis of trends and examples in chapter 1 serves as an introduction to innovation in the public sector. Chapter 2 describes the model using a cooking metaphor, with flavours, ingredients, and meals used to illustrate processes, freedom of expression and the need to provide for others. Chapter 3 provides advice on how to adapt the model to a local context and offers suggestions on how to kickstart innovation and handle challenges specific to the public sector. Chapter 4 provides ideas on the issues public institutions can address through the innovation process model. It also offers guidelines on building local own-use cases that can be distributed among institutions as examples and guides.

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