

STUDY

Requested by the IMCO committee



The Digital Single Market and the digitalisation of the public sector

GovTech and other innovations in public procurement



Policy Department for Economic, Scientific and Quality of Life Policies
Directorate-General for Internal Policies

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The Digital Single Market and the digitalisation of the public sector

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Abstract

This research paper provides insight into GovTech and innovation in the context of public procurement. It examines the possibilities for developing an EU GovTech Platform with the aim of supporting the modernisation of the public sector; the further development of the European GovTech market; and engagement with citizens and businesses.

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
API	Application Programming Interface
DIGIT	Directorate-General for Informatics
DESI	Digital Economy and Society Index
EC	European Commission
EP	European Parliament
EU	European Union
GaaP	Government-as-a-Platform
GDP	Gross Domestic Product
ICT	Information and communication technology
IP	Intellectual Property
IT	Information Technology
NGO	Non-governmental organisation
OECD	Organisation for Economic Cooperation and Development
OJEU	Official Journal of the European Union
R&D	Research and Development
SBIR	Small Business Innovation Research
SME	Small to medium-sized enterprise
UK	United Kingdom
US	United States

EXECUTIVE SUMMARY

This research paper was commissioned to consider "GovTech and other innovations in public procurement". The paper examines:

- the **concept of "GovTech"**, including GovTech ecosystems and some best practices using GovTech in Member State countries;
- the concept of **innovation in the context of public procurement**;
- the proposal for a **European GovTech platform**; and
- **risks and benefits** of these concepts and proposal, particularly for SMEs and citizens.

The use of GovTech is connected with three strategic EU objectives. These objectives provide the backdrop to this paper. The first is a renewed focus on **digital transformation of public services**. A second objective concerns the **opportunity to develop the market in GovTech**, with a strong focus on SMEs. A third objective concerns a **desire for broader citizen engagement**.

GovTech

GovTech is a term that is used to describe **technology products developed to support governments**. This is done through supporting either delivery of public services or the operations of government itself. The technology may be developed by public sector employees; by citizens or non-profit organisations; or by the private sector. In this analysis, our focus is the last category. Examples might include apps to request e.g. social services; an AI-driven system to identify suspected fraud or error; or use of drones to inspect for maintenance needs¹.

The developing **GovTech market in the EU** presents an opportunity both to **transform public services across Member States** and to **support the development of the sector** itself. Although GovTech is young, the EU is in a relatively strong position, with several Member States identified as taking a leading position. Estimates of the EU private sector market range from EUR 22 billion² to EUR 116 billion³.

Individual countries are launching their own **GovTech initiatives**, e.g., **GovTech Lab Lithuania** and **Digicampus** in the Netherlands. These initiatives focus on understanding and defining problems that could be solved with GovTech; supporting the development and acceleration of businesses; and growing the overall ecosystem. For example, Digicampus focuses on building innovation coalitions to experiment and learn about prototype GovTech solutions. A successful example is the collective experimentation with eIDAS based trust services. After two years of standards development, prototyping, experimentation and evaluation, the Dutch Tax Office, ING Bank and the Dutch Association of Real Estate Agents and Appraisers have decided to move from experimentation to production (i.e., citizens and entrepreneurs can use eIDAS high level of assurance eIDs for multiple use cases in 2023). This also allows the six GovTech service providers involved to more precisely plan their business, organisational and technical scaling. There was no tendering performed and the main result of this form of co-creation is a trust framework – an evolving set of agreements on the governance and technical standardisation for the use of eIDAS trust services in the Netherlands. Note that this example is more an exception than the norm.

¹ Bharosa, N., 2022, The rise of GovTech: Trojan horse or blessing in disguise? A research agenda. Government Information Quarterly.

² Accenture and Public, 2018, GovTech: Europe's next opportunity. Available at: https://www.accenture.com/_acnmedia/pdf-90/accenture-govtech-pov.pdf.

³ Public, 2021, The state of European GovTech. Available at: <https://view.publitas.com/public-1/the-state-of-european-govtech-report/>.

Partly because of its novelty, **challenges** are experienced by actors seeking to use GovTech, relating to: **procurement**; the difficulties posed by **legacy infrastructure, interoperability/ standards**; and the **skills** required to implement. GovTech initiatives like Digicampus are typically addressing these challenges through shared lessons learned, for example on the use of methods such as design contests and hackathons, or the co-creation of trust frameworks.

We identified the **absence of an institution at EU level** to support the wider development of GovTech, whether a new institution or through the extension of mandates of existing bodies. It is clear that both EU-level and Member State level institutions need to be aligned in order to accelerate policy development. There is a further opportunity to harmonise regulated access to components for the GovTech solution (e.g. digital identities, wallets, APIs, data specifications etc) at EU level. **We recommend that attention to these questions forms part of the remit for the forthcoming pilot project, drawing on the practical feedback from the GovTech platform.**

The benefits of support for the GovTech market include **overcoming a classic market failure** where suppliers wait for demonstrated demand of a product while buyers wait for demonstrated applicability. For SMEs in particular, pre-commercial procurement approaches seem particularly suitable. GovTech also presents an opportunity to transform how users (citizens and businesses) interact with public bodies, including creating **space for them to influence requirements** or review possible solutions. The interaction with citizens allows for a form of 'ethification' of GovTech, since citizens can voice their values and concerns, allowing public agencies and GovTech providers to make values trade-offs (e.g., ease of use vs. transparency) early on.

Risks for government include promoting new monopolies (winner takes all), betting on the wrong (proprietary) technical standards, becoming too dependent on GovTech providers and the risk of failure which may be greater for an SME. A well-developed preparatory phase will be crucial to anticipating possible problems.

Innovation in the context of public procurement

The terms "innovation" and "public procurement" can be combined to refer to several different things. In this analysis, we focus primarily on "**public procurement of innovation**" (purchasing of, e.g., GovTech) but also touch upon "**public procurement for innovation**" and "**innovative public procurement**". In reality, successful procurement and implementation requires approaches that consider all three. This is not least because an approach to procurement that creates more opportunity downstream for unforeseen changes also creates the potential for further innovation to be triggered.

Public procurement offers opportunities directly to support innovations like GovTech by using **demand from the public sector to shape markets** and to support businesses that otherwise struggle. However, using public funds to support innovation presents **risks to the public sector** that require addressing at political and bureaucratic levels.

It makes sense to **diversify the group of suppliers** a public body contracts with, typically by involving more SMEs. This is not because SMEs are by nature more innovative, but because the most cost-effective innovations are produced through competition among potential suppliers.

It's also the case that an environment like that created by GovTech changes the way in which public procurement operates in terms of **participation and relations between stakeholders**. In a more flexible system, innovative small firms can interact directly with public sector clients or serve as primes, and these developing relationships (as seen in the best practice examples such as **GovTech Lithuania** or **Digicampus**) allow a dialogue about how procurement takes place.

Public procurement demonstrates a range of **difficulties in being used to develop innovation**. These relate to, amongst others: a relatively **rigid process**; a tendency towards **large contracts** which are attractive to fewer suppliers; and few incentives to engage in **extended dialogue**.

However, experimentation within different countries on how to tackle these challenges has led to approaches that can be used to **enable innovation**. There is no consensus on what approach to use because the answer depends on multiple factors, including the characteristics of the procurement organisation and their available resources in terms of time, budget, and staff.

Approaches may include the **design contest approach** used in the best practice example **AI4Cities**, but success requires, in particular, skill in **structuring the process** and a strong **understanding of the market**, as seen in the **Lean** example. Using procurement of GovTech to change relationships between client and suppliers also creates opportunities for innovation and transformation of public services.

Benefits from stimulating procurement of innovation accrue to SMEs in particular where the approach **strengthens the SME ecosystem** and supports those SMEs in developing competitive advantage for the future. Benefits are considered to outweigh risks, although care should be taken that "safe space" programmes do not take too long and unintentionally prohibit smaller companies from building relationships with stronger market players.

European GovTech platform

It is very early to judge the value of the development of a **digital platform for GovTech in the EU**. That said, such a platform could generate benefits for governments in terms of **innovations, standardisation, efficiency** and **effectiveness**, and **cross-border collaboration**, as well as for **citizens** and **SMEs**. Depending on the functionality of the platform (it is not clear to us whether the platform will ultimately have a procurement function) it could combine the potential of **procurement as a tool to shape the market** with the **innovation potential of the private and public sectors**, and with the **potential of platforms as multi-sided markets**.

Platforms can create places for collective innovation by providing **tools, standards, shared information** and **access to wider markets**. They can facilitate collaboration, by identifying and spreading good practice, and encouraging innovation and sandboxing, especially in areas where risks are easier to control and alternative solutions well-understood and available.

A platform combining GovTech and procurement of innovation could support a more inclusive and deliberative approach to public spending, and could also support lower entry thresholds for SMEs and faster, more efficient and more effective public procurement. As currently described, the European GovTech platform creates a space for people to **learn from successes and failures** (if they are willing to share). Moreover, a European GovTech platform can act as an example for other member state governments looking to experiment with GovTech.

However, platforms are not "silver bullets": they **require careful implementation as well as adaptivity**. Potential market failures include incumbent advantage; lock-in; contractor control of IP; and the deterrent effect of 'unfair' contractual terms. In certain situations, where a superior or widely-adopted solution depends on proprietary knowledge or practices, the platform may support a tipping equilibrium, with dominance by few firms or solutions.

There may also be **reduced incentive** for public administrations to **maintain knowledge** about how to evaluate new technologies and develop in-house GovTech solutions. There may be challenges for governance, and ownership of data and IP given the multitude of actors.

The analysis explores a number of options for the platform, including the potential for this to be a **Government-as-a-Platform (GaaP) approach**. This approach would explore a transformational way of rebuilding public services based on building blocks such as secure online authentication. This would be, we believe, a first, as other platforms for procurement within the EU are purely functional (discussion forums, resource centres or databases, such as TED).

If this is the intention, particular attention will need to be given as to how the platform will directly support increased efficiency and effectiveness of public services via a GaaP approach, and how it will support public sector transformation other than through sharing of lessons.

For SMEs and citizens, the benefits of a platform build upon the benefits for GovTech and innovation in the context of public procurement. One key question would concern how to ensure that a **diverse range of EU citizens** (and Member States) are engaged.

Conclusions

Given the discussion points and considerations raised in the analysis, we make the following recommendations concerning the pilot project:

- develop a platform that is **driven by user requirements**, instead of by technology;
- incorporate **below-threshold procurement**, because these make up the majority of contracts and apply **lighter contract award regimes**;
- conscious navigation of **challenges regarding public platformisation** will be required, in particular tendencies towards market dominance and anticompetitive behaviour, or arising from the multiple roles assumed by the public sector;
- engage a **diverse population of citizens**;
- procuring through the EU GovTech platform will require careful thought;
- consider use of procedures which **enable negotiation** with potential suppliers;
- ensure that processes, specifications and requirements are made **as simple as possible**;
- consider potential challenges related to **international procurement**; and
- finally, engage with **businesses of all sizes in the market** to gain their feedback.

1. INTRODUCTION

1.1. Background

Digital technologies have the potential to help Member State governments (at all levels) to shape and deliver better, more efficient and effective public services⁴ able to address the complex challenges of the 21st century⁵. Significant progress and investments have been made in the use of digital technologies in government over the past two decades. However, challenges and problems with the digitalisation of the public sector remain. These include not only the transformation of public services as used by citizens and businesses, but also the transformation of underlying and 'back-end' processes of public administrations, including public procurement.

The wider use of digital technologies is connected with three strategic objectives within the EU, which provide the backdrop to this research paper. The first consists of a **renewed focus on digital transformation of public services**, with particular interest in "GovTech". GovTech refers to technological (mostly digital) products developed to support the internal operations of public administrations or the delivery of public services to citizens and businesses (see Chapter 2). A second objective concerns the opportunity to **develop the European market in GovTech**, with a strong focus on small to medium-sized enterprises (SMEs) and start-ups. A third objective concerns a desire for **broader citizen (and business) engagement**, as seen in the statement that the proposed EU GovTech platform (see Chapter 4) being "an important tool **to engage EU citizens**"⁶.

1.1.1. Objective 1: Digital transformation of public services

Digital transformation of public services continues to be one of the EU's priorities. The EU 2030 Digital Compass formulates the EC's vision of **Government as a Platform**, which will provide "a holistic and easy access to public services with a seamless interplay of advanced capabilities, such as data processing, AI and virtual reality"⁷. It could also contribute to "stimulating productivity gains by European businesses, thanks to **more efficient services that are digital by default** as well as a role model incentivising businesses, in particular SMEs, towards greater digitalisation"⁸.

Digital technologies have potential as stated above, but their adoption and use have lagged behind, and there is wide variation across Member States⁹. At the same time, user expectations and demand (e.g., for cross-border availability of public services, user friendliness, etc.) continue to change and, arguably, increase.

⁴ Throughout this document, the terms "efficient" and "effective" are used as follows: "efficient" refers to the use of inputs and resources in a way that delivers value for money (not limited to the lowest price); "effective" refers to achieving the desired outcomes.

⁵ Mergel, I., Ulrich, P., Kuziemski, M., and Martinez, A., 2022, Scoping GovTech dynamics in the EU, EUR 30979 EN, JRC128093, Publications Office of the European Union, Luxembourg. Available at: <https://op.europa.eu/en/publication-detail/-/publication/0057edb3-a021-11ec-83e1-01aa75ed71a1/language-en>.

⁶ Larrourou, P., and Chastel, O., (rapporteurs), 2020, 2021 Budgetary Procedure. Amendments adopted by the Committee on Budgets. Available at: <https://www.europarl.europa.eu/cmsdata/214277/budg2021-doc6-txt-2-en.pdf>.

⁷ European Commission, 2021, 2030 Digital Compass - The European way for the Digital Decade, Document 52021DC0118. Available at: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52021DC0118>.

⁸ European Commission, 2021, 2030 Digital Compass - The European way for the Digital Decade, Document 52021DC0118. Available at: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52021DC0118>.

⁹ See for example OECD, 2019, Digital Government Index: 2019 results, p. 37. Available at: https://www.oecd-ilibrary.org/governance/digital-government-index_4de9f5bb-en.

1.1.2. Objective 2: Developing the European GovTech Market

A second objective concerns the opportunity to **develop the European market in GovTech**, in part **through public procurement**. The intention is to stimulate the growth of the supply-side of the GovTech market, by supporting and accelerating the development of businesses that serve European public sector bodies. The aim of the planned EU GovTech platform (See Box 7) as described during the 2021 Budgetary Procedure is to "help to **develop the European GovTech market and support the public sector** to access **tailor-made digital solutions** quickly and efficiently"¹⁰. The platform is expected to support SMEs and start-ups in particular.

Given the size of the public sector across the EU, it has the **potential to impact and shape markets**. There are around 250,000 public bodies with the potential to act as buyers. In 2019, **government purchases of goods and services** represented about 12% of government expenditure in the EU-27, or EUR 774 billion¹¹. In the wake of the COVID-19 pandemic, the **importance of public procurement is only expected to increase**. The EUR 2.018 trillion budget allocated to the EU stimulus package^{12;13} - including EUR 14.9 billion for security and defence, and EUR 161 billion for the single market, innovation and digital - will be implemented to a significant degree through public procurement.

1.1.3. Objective 3: Engagement with citizens and businesses

An addition made during the 2021 budgetary procedure also makes reference to the EU GovTech platform being "an important tool **to engage EU citizens**"¹⁴. The platform is envisaged as a hub where public administrations, participating businesses and citizens will be able to collaborate and exchange ideas. "Innovative service design methods" will be used to include the views of citizens, for example on new opportunities offered by digital solutions¹⁵.

It is clear that **closer engagement with and participation by citizens** in particular are core objectives of current policy and political thinking in the EU. A range of activities are underway that promote **engagement and participation**, for example Citizens' Panels at the Conference on the future of Europe¹⁶, inclusion in EU Missions and other activities.

In the context of the 2021 budgetary procedure statement, it is less clear whether engagement with citizens will be matched by **engagement with businesses as users of public services**, and not solely with GovTech businesses as potential providers of products to the public sector.

¹⁰ Larroutourou, P., and Chastel, O., (rapporteurs), 2020, 2021 Budgetary Procedure. Amendments adopted by the Committee on Budgets. Available at: <https://www.europarl.europa.eu/cmsdata/214277/budg2021-doc6-txt-2-en.pdf>.

¹¹ Eurostat, 2022, Government expenditure by function – COFOG: General overview. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Government_expenditure_by_function_%E2%80%93_COFOG#General_overview.

¹² European Commission, Directorate-General for Budget, 2021, The EU's 2021-2027 long-term budget and NextGenerationEU: Facts and figures, Publications Office, 2021. Available at: <https://op.europa.eu/en/publication-detail/-/publication/d3e77637-a963-11eb-9585-01aa75ed71a1/language-en>.

¹³ European Commission, n.d., Recovery plan for Europe: Next steps. Available at: https://ec.europa.eu/info/strategy/recovery-plan-europe_en#next-steps.

¹⁴ European Parliament, 2021 Budgetary Procedure, Parliament's Position, Amendments adopted by the Committee on Budgets. Available at: <https://www.europarl.europa.eu/cmsdata/214277/budg2021-doc6-txt-2-en.pdf>.

¹⁵ Larroutourou, P., and Chastel, O., (rapporteurs), 2020, 2021 Budgetary Procedure. Amendments adopted by the Committee on Budgets. Available at: <https://www.europarl.europa.eu/cmsdata/214277/budg2021-doc6-txt-2-en.pdf>.

¹⁶ Conference on the Future of Europe, n.d., European Citizens' Panels. Available at: <https://futureu.europa.eu/pages/european-citizens-panels>.

1.2. Scope of the research paper

The previous paragraphs provide the **backdrop**, as we perceive it, to this research paper. The **scope of the research paper** is three-fold. First we consider the **GovTech concept** including GovTech ecosystems, and procurement, including best practices of GovTech in frontrunner countries. Second we consider **innovation in the context of public procurement**, with particular reference to purchasing GovTech. Finally we consider the **role of platforms for GovTech and public procurement**. Throughout we also identify **risks and benefits, in particular** for SMEs and citizens.

We use a small number of "**good practice**" examples to explore some of the points made in the text. The following table gives an overview of these examples and their geographical locations.

Table 1: Selected "real-life" examples

"Good practice" examples organised by national/ international level						
National (EU Member State)		National (Outside EU)	Cross-border initiative		EU-wide	
GovTech Lab Lithuania (LT)	Digicampus (NL)	Lean & Agile procurement (UK)	AI4Cities (FIN, NL, DK, FR, NO, EST)	Jerome (RO, BU)	GovTech incubator	GovTech European Parliament Pilot Platform

Source: Authors' own elaboration.

1.3. Methodological approach

The methodological approach adopted for this research paper was a combination of desk research, expert interviews, and internal workshops. The desk research was used for the conceptualisation of GovTech and its ecosystem, innovation in the context of public procurement, the role of the digital platform, the investigation of best practices, and the identification of risks and benefits. Within this phase, open sources were consulted, including academic literature, market reports, blogs, and policy initiatives.

We conducted a small number of expert interviews to explore specific examples of good or interesting practices¹⁷. The consortium used a series of internal workshops to develop ideas and concepts for the different tasks and to bring together input from the different experts.

¹⁷ See Annex 1.

2. GOVTECH AND ITS ECOSYSTEM IN THE EU

KEY FINDINGS

- The developing GovTech ecosystem in the EU presents an opportunity both to transform public services across Member States and to support the development of the GovTech sector in the European economy.
- Businesses within the ecosystem and public sectors seeking to use GovTech are presented with a range of challenges to taking full advantage of this opportunity, relating in particular to procurement approaches, legacy infrastructure, interoperability and a lack of common standards, and skills in the public sector.
- Various national and EU wide initiatives, such as GovTech accelerators (e.g. GovTech incubator) and public private partnerships (e.g. Digicampus) have been launched in order to support the development of the ecosystem, and are aimed at overcoming these challenges.
- There is an opportunity to support development and experimentation on addressing these challenges through sharing knowledge and lessons learned, for example about innovative procurement methods such as design contests and hackathons.
- There is a further opportunity to address the harmonisation of regulated access to components for the GovTech solution (digital identities, identifiers APIs for data access, data specifications etc.).

2.1. Introduction

In this chapter we will focus on the **use and characteristics of GovTech** and the **developing GovTech ecosystem in the EU**. First, we provide a **conceptualisation of GovTech**. Subsequently, we discuss the **GovTech ecosystem**, and a number of best practices in working with GovTech. The chapter concludes with an overview of **challenges and problems experienced in digitalisation of the public sector**, specifically with regards to GovTech, and an overview of **risks and benefits** for SMEs, citizens and government regarding GovTech.

2.2. Definition and characteristics of GovTech

GovTech is a term that is used to refer to technological (mostly digital) products developed to support the delivery of public services to citizens and businesses or the internal operations of public administrations. Although more recently GovTech have been associated with solutions developed by the private sector, they **also include initiatives of non-governmental organisations (NGOs), non-profit organisations and citizens**¹⁸. GovTech are also increasingly created by the public sector itself¹⁹. In this research paper we address all categories of GovTech with a specific focus on GovTech solutions developed by the private sector.

¹⁸ For example: the work of www.mysociety.org, originating in the UK but now used in more than 40 countries worldwide.

¹⁹ Bodea, G., Timan, T., van Veenstra, A.F., forthcoming, AI in the public sector – towards a methodology to assess social and economic impacts of artificial intelligence, a study for the European Commission/Joint Research Centre.

Governments can take two stances towards GovTech²⁰:

- A **proactive** stance, in which public administrations act as partners, co-designers or co-creators in GovTech development.
- A **reactive** stance, where public administrations regulate GovTech implementation and use in society, looking to correct for unwanted consequences such as a winner-takes-all monopoly/ lack of level playing field.

In addition, the use of GovTech in the public sector can be conceptually divided into two broad and non-mutually exclusive categories. The first category focusses on the use of GovTech for **user-centric public service provision**. This includes GovTech for public service consumption, in which either citizens or entrepreneurs are the end-users (for example by using an app to request social services), as well as GovTech for public service delivery, in which the public professional is the end-user of GovTech (for example the use of an AI-driven decision support system for public officials to identify suspected fraud or error). The second category focusses on the use of GovTech to **support the development of data-driven government with automated processes**. This includes GovTech for business-to-government interactions²¹ (e.g., financial reporting and supervision), GovTech for data-driven policymaking, and GovTech for intelligence gathering, monitoring and supervision (e.g. the use of drones for inspection of bridges or dikes²²). The first category of user-centric public service delivery GovTech is focussed on improving the delivery of public services, whereas the GovTech to support the development of data-driven government is focussed on making governmental processes more efficient and effective. These goals, while discrete, may also overlap.

²⁰ Bharosa, N., 2022, The rise of GovTech: Trojan horse or blessing in disguise? A research agenda, Government Information Quarterly.

²¹ The reason for including this category of GovTech under data driven Government and not public service delivery is that when you ask companies, they often consider these examples as red tap, administrative burdens and compliance cost, instead of service delivery to businesses. Therefore, these examples do not fit in the category of public service provision. On the other hand, these GovTech solutions do help governments to automate their administrative processes, and become more data driven.

²² Bharosa, N., 2022, The rise of GovTech.

Table 2: Categories of GovTech

Type of GovTech		Examples
User-centric public service provision	GovTech for public service consumption (citizens and businesses/entrepreneurs are the end users)	Use of eIDs, data wallets, apps and specialized portals to prepare and request social services, permits etc.
	GovTech for public service delivery (public administrators are the end users)	Use of an AI-driven decision support system for public officials to identify suspected fraud or error
Support the development of data-driven government	GovTech for data-driven business-to-government interactions	Tools for business to government reporting, compliance monitoring and audit analytics
	GovTech for data-driven policymaking	Policy simulation tools
	GovTech for intelligence, monitoring and supervision	Use of drones for inspection of bridges

Source: Adapted from Bharosa, N. (2022). The rise of GovTech: Trojan horse or blessing in disguise? A research agenda. *Government Information Quarterly*.

2.3. Characteristics of the European Union GovTech ecosystem

GovTech ecosystems refer to networks of citizens, public and private actors (including SMEs and start-ups), academia, and (venture) capital involved in the development of technological solutions to address public challenges. While such GovTech ecosystems are relatively new and largely experimental, **the EU appears to be well positioned**, some EU Member States more so than others. For example, the World Bank GovTech Maturity Index²³ identifies the following EU Member States as taking a leading position: Austria, Belgium, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovenia, Spain, and Sweden²⁴.

A number of **National GovTech initiatives** exist including for example *GovTech Poland*²⁵, *GovTech Lab Lithuania*²⁶, *Accelerate Estonia*²⁷, the *Entrepreneurs d'intérêt general*²⁸ programme in France, the Austrian platform for innovation procurement²⁹ and DigiCampus in the Netherlands³⁰. Similar activities and services offered by these programmes are **open competitions and challenges** to solve problems that at the moment do not yet have a solution, **hackathons, acceleration programmes, pilots, research**

²³ The GovTech Maturity Index measures for the following aspects of GovTech: a) supporting core government systems, b) enhancing service delivery, c) mainstreaming citizen engagement, and d) fostering GovTech enablers. The aim of the GovTech Maturity Index is to measure digital transformation in the public sector.

²⁴ World Bank, 2021, GovTech Maturity Index. The State of Public Sector Digital Transformation. Available at: <https://openknowledge.worldbank.org/handle/10986/36233>.

²⁵ See the GovTech Poland website. Available at: <https://www.gov.pl/web/govtech-en>.

²⁶ See the GovTech Lab Lithuania website. Available at: <https://govtechlab.lt/>.

²⁷ See the Accelerate Estonia website. Available at: <https://accelerateestonia.ee/>.

²⁸ See the Entrepreneurs d'intérêt general website. Available at: <https://eig.etalab.gouv.fr/>.

²⁹ See the Austrian platform for innovation procurement website. Available at: <https://www.ioeb-innovationsplattform.at/>.

³⁰ See the DigiCampus website. Available at: <https://dagicampus.tech/>.

and development grants, design contests, pre-commercial procurement, exchanges of good practices, and ecosystem building³¹.

Within and outside the EU there are various initiatives to support the development of the **global GovTech ecosystem**. An example of such an initiative is CivTech Alliance, a global network of public, private and third sector organisations that cooperate and exchange knowledge aimed at supporting the GovTech (and CivTech ecosystem)^{32,33}.

Attempts have been made to identify the value of the GovTech market in the EU, although these are not independent data. For example, estimates of the EU GovTech private sector market range from EUR 22 billion (a 2018 estimate³⁴ by Accenture and Public) to EUR 116 billion (a 2021 estimate by Public³⁵).

2.4. Opportunity for Government

Governments benefit from using GovTech because it provides access to innovations supporting both the delivery of services and opportunities for cost efficiency gains.

One risk for government is that the risk (or perceived risk) of failure to deliver may be greater for an SME or a start-up. This implies that the public contracting authority has to be prepared to invest in a certain amount of redundancy: extra measures for experimenting and process innovation in its services; and for learning and training of public servants to resolve issues. In many parts of public IT-infrastructure good practices have been developed to meet these requirements. Similar provisions must be taken when GovTech is made part of core infrastructure. To that end, a well-developed preparatory phase is crucial.

³¹ Mergel, I., Ulrich, P., Kuziemski, M., and Martinez, A., 2022, Scoping GovTech dynamics in the EU, EUR 30979 EN, JRC128093, Publications Office of the European Union, Luxembourg. Available at: <https://op.europa.eu/en/publication-detail/-/publication/0057edb3-a021-11ec-83e1-01aa75ed71a1/language-en>.

³² Their mission statement is: "to empower global GovTech and Civic Tech innovation programmes to deliver better outcomes for people and communities, helping navigate, promote challenge-based methodologies and give governments confidence to adopt new methods of engagement, procurement and technology adoption" CivTech Alliance, 2022, CivTech alliance website. Available at: <https://www.civtechalliance.org/>. Members of the CivTech alliance include Accelerate Estonia, Bundesbeschaffung in Austria, CivTech Scotland, CIRB-CIBG in Brussels, GovTech Lab Lithuania, GovTech Poland, Innolab in Germany, Sandbox Vlaanderen in Belgium, StartOff in Norway, the Technical University of Denmark and the Western Development Commission in Ireland. Members from outside Europe are from the USA 10x and Civic Software Foundation, from Brazil BrazilLAB, Ideiagov and InvestSP, from the UAE the UAE Government, and from Australia CivVic Labs and Go2Gov.

³³ CivTech or Civic Tech is not explored in this paper, and does not have a widely agreed definition. Civic Tech and GovTech are neither mutually exclusive nor overlapping. One useful definition is given by the US-based non-profit Knight Foundation as "technology used to inform, engage and connect residents with government and one another to advance civic outcomes." Scaling Civic Tech: Paths to a sustainable future, Knight Foundation. Authors and date of publication not provided. Available at: <https://knightfoundation.org/features/civictchbiz/>.

³⁴ Accenture and Public, 2018, GovTech: Europe's next opportunity. Available at: https://www.accenture.com/_acnmedia/pdf-90/accenture-govtech-pov.pdf.

³⁵ Public, 2021, The state of European GovTech. Available at: <https://view.publitas.com/public-1/the-state-of-european-govtech-report/>.

2.5. GovTech Incubator

The EC recently launched a call for a Framework Partnership Agreement to set up a **GovTech Incubator** with the aim of further stimulating the development of the EU GovTech ecosystem (see Box 1). The GovTech incubator will bring together various GovTech initiatives throughout the EU. Objectives of the GovTech incubator are:

- to support the deployment of cross-border collaboration between actors that are part of the GovTech ecosystem;
- to support the deployment of human-centric digital public services;
- (to) promote innovation in digital and reusable (open-source) solutions; and
- to ensure interoperability by default, support collaborations through pilot activities, and encouraging participation of SMEs and start-ups³⁶.

The GovTech incubator aims to realise better citizen-centric public services, more digital strategic autonomy, implement a formal cross-border cooperation framework, support a thriving GovTech ecosystem, and to provide future building blocks³⁷.

Box 1: GovTech Incubator: initiative from the EC to support the GovTech ecosystem

Scope of the GovTech incubator:	
<ul style="list-style-type: none"> • Development of horizontal incubator functions including providing advice, organising challenges, pitching exercises, engagements with stakeholders etc; • Support the design, formulation and execution of pilots that use emerging digital technologies; • Based on the pilots, assess and identify possible reusable solutions that can support existing or new public services; • Continuous road mapping of the activities of the GovTech incubator and its sustainability throughout the Digital Europe programme; • Provide coherence and active engagements with national GovTech actors and programmes. 	
The deadline for the call for proposals was 17 May 2022.	
At a glance: GovTech incubator – a framework partnership agreement	
Countries: open to EU Member States and associated countries	Time span: 4 years
Targeted stakeholders: GovTech Labs, Innovation Labs from EU and associated countries, start-ups and SMEs from the GovTech sector, CivicTech associations	Budget: € 6 million

Source: European Commission, 2022³⁸.

³⁶ European Commission, 2022, Digital Europe Programme – Call for proposals, GovTech Incubator DIGITAL-2022-GOVTECH-02-FPA. Available at: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/digital/wp-call/2022/call-fiche_digital-2022-govtech-02-fpa_en.pdf and European Commission, 2022, GovTech Incubator – First information Session. Available at: <https://joinup.ec.europa.eu/collection/innovative-public-services/event/govtech-incubator-first-information-session>.

³⁷ Ibid.

³⁸ European Commission, 2022, Digital Europe Programme – Call for proposals, GovTech Incubator DIGITAL-2022-GOVTECH-02-FPA. Available at: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/digital/wp-call/2022/call-fiche_digital-2022-govtech-02-fpa_en.pdf and European Commission, 2022, GovTech Incubator – First information Session. Available at: <https://joinup.ec.europa.eu/collection/innovative-public-services/event/govtech-incubator-first-information-session>.

The following two sections provide more insight into two GovTech initiatives in the EU: **GovTech Lab Lithuania** and **DigiCampus** in the Netherlands.

2.5.1. GovTech Lab Lithuania

GovTech Lab Lithuania is part of the Lithuanian Agency of Science, Innovation and Technology and was officially launched at the end of 2019. The overarching theme of the GovTech Lab is connecting public sector challenges with actors in the private sector and academia that can build solutions to solve these challenges. Three core objectives and activities of the GovTech Lab are:

- Working with the public sector and help them to **understand and define challenges** and to write methods to solve them;
- **Accelerating GovTech teams** in the private sector: helping innovative businesses and start-ups to build these GovTech solutions and help them cooperate with the public sector; and
- **Building and growing GovTech Communities**³⁹.

The core procurement process used is the GovTech Challenge series which is a **design contest**. A design contest is a type of procurement approach that offers companies, academia and individuals the opportunity to **solve a public sector challenge** within a certain timeframe (in this case six months), without needing to offer a concrete solution. A design contest is a suitable approach **if the solution to a problem is not clear**. Participants submit their ideas anonymously, which contributes to creating an equal and impartial level playing field. Any public sector body can organise a challenge⁴⁰.

Some of these challenges are organised **outside the public procurement framework** because, in some respects, the public sector in Lithuania is not mature enough to experiment within public procurement and because there is not always sufficient funding available. For these reasons many of the challenges are organised in the form of **market consultations**. However, in 2021, the Lithuanian government provided funding to the GovTech Lab to support public sector projects⁴¹. Box 2 presents an example of a challenge that GovTech Lab Lithuania organised to find a solution for the optimisation of low-value public procurement.

³⁹ Interview with manager GovTech Lab Lithuania and GovTech Lab Lithuania, 2022, GovTech Lithuania 2021: Overview of Challenges and Solutions. Available at: <https://govtechlab.lt/wp-content/uploads/2022/01/GovTech-Lab-apzvalga-2021-EN.pdf>.

⁴⁰ Ibid.

⁴¹ Interview with GovTech Lab Lithuania and GovTech Lab Lithuania, 2022, GovTech Lithuania 2021: Overview of Challenges and Solutions. Available at: <https://govtechlab.lt/wp-content/uploads/2022/01/GovTech-Lab-apzvalga-2021-EN.pdf>.

Box 2: GovTech Lab Lithuania Challenge Series

Challenge: optimisation of low-value public procurement in a local public procurement process

A 2021 challenge was the optimisation of low-value public procurement in the processes of Kaunas District Municipality Administration. The following goal was set: "there is a need for an electronic tool to digitise the process of low-value procurement via unpublished procedures, with the possibility to promote the use of price and quality criteria in unrestricted procurement and the inclusion of green criteria in the list of quality criteria. There is also a need for an option to automate the collection of procurement data from unpublished procedures by introducing an electronic online data analysis tool for the evaluation of procurement information and preventive data control."

Via the design contest method, the municipality was offered the use of a public procurement Process Administration tool. This tool contributes to digitisation of the process and helps gain insight on procurements via low-value procedures.

Other examples of challenges organised are: legislative digital transformation tools for the Ministry of Justice; identification of different grassland types using Sentinel satellite data for the National Paying Agency under the Ministry of Agriculture; and how to automate the declaration and verification of an SME status for the Lithuanian Business Support Agency.

At a glance: GovTech Lab Lithuania Challenge Series
Country: Lithuania
Stage: Beginning of the procurement cycle
Year established: 2019
Budget: €1.3 million for three years from EU structural funds for GovTech Lab activities and in 2021 €1.8 million for funding procurement of the pilot GovTech solutions from Lithuanian national budget.
Procurement method: Design contest

Source: Interview with GovTech Lab Lithuania and GovTech Lab Lithuania, 2022⁴².

2.5.2. Digicampus

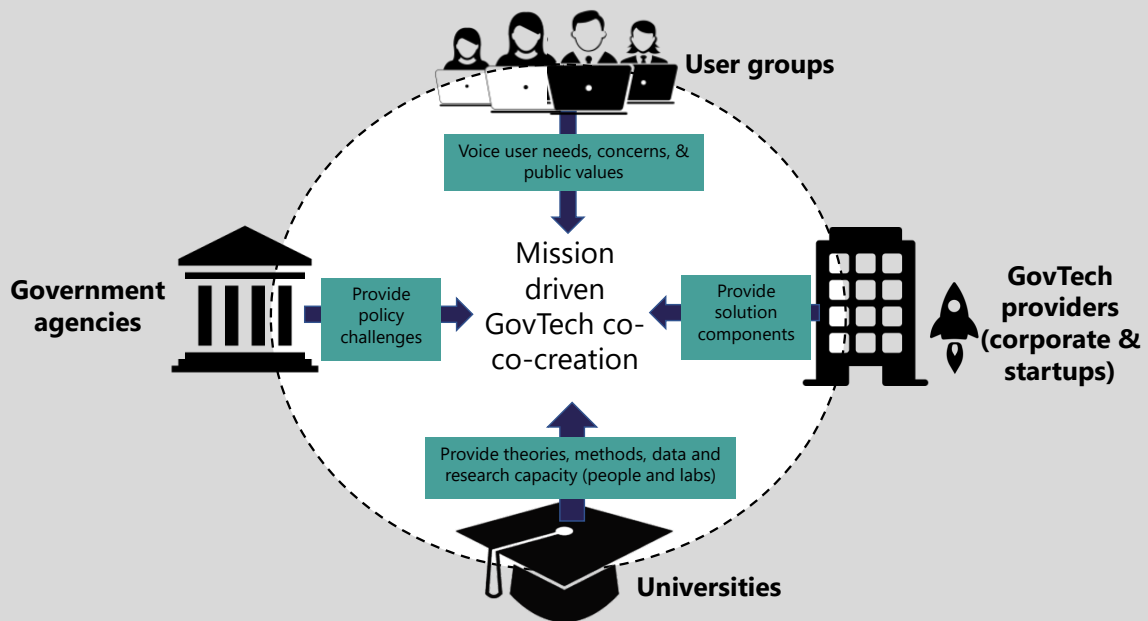
Digicampus is a quadruple helix innovation partnership⁴³ in the Netherlands focussing on **public service innovation**. Five parties founded Digicampus in 2019: the Dutch Ministry of the Interior; two executive agencies for ICT from the Dutch public sector (Logius and ICTU); a digital industry association (NL Digital, interest group of Dutch technology companies); and one academic partner, Delft University of Technology. The public-private partnership expanded, and it now also includes the Dutch Tax Office, YesDelft (a GovTech incubator) and collaborations with the World Start-up Organisation and the Association of Dutch Municipalities. While the Ministry has provided seed funding to launch Digicampus, all partners are contributing in-kind to running costs. The expected contributions from each founding partner are laid down in bi-annual commitment letters. Box 3 gives more insight into how via quadruple-helix based co-creation, Digicampus aims to **develop human centric public services**.

⁴² GovTech Lab Lithuania, 2022, GovTech Lithuania 2021.

⁴³ The quadruple helix innovation framework is a framework which describes the interactions between science, policy, industry and society in developing innovation.

Box 3: Digicampus – quadruple helix-based GovTech co-creation

The main goal of Digicampus is to develop human centric public services. GovTech is one of the key drivers for realising this goal, with additional benefits that can be gained for society (e.g. creation of a competitive GovTech market and choice options for users). Digicampus builds and guides innovation coalitions between public agencies, GovTech providers, citizen groups and researchers. The coalition building approach employed by Digicampus centres around the vision to maximise the potential and minimise the risks of new GovTech solutions by means of research, prototyping, experimentation and collective learning. These coalitions are guided by a set of 'rules of the game' that, for instance, describe how IP rights are protected and how open source, open data and knowledge sharing are safeguarded at Digicampus. There is no financial compensation provided to participating parties. Instead, Digicampus covers the cost of common resources (e.g. working spaces, digital collaboration platform, SSI Modeller, Metaverse) and activities (e.g. workshops, design sprints, knowledge retention and dissemination).



At a glance: Digicampus	
Country:	Netherlands
Stage:	Beginning of the procurement cycle, with emphasis on collective learning from prototyping and experimentation
Year established:	July 2019
Budget:	€4.5 million seed funding + in kind funding from partners

Source: Digicampus website. Available at: www.digicampus.tech.

2.6. Challenges and problems experienced with use of GovTech in the public sector

There are various challenges experienced by actors in the GovTech ecosystem, ranging from technical challenges such as **data quality, interoperability and a lack of common standards**, to legal and ethical challenges, as growing concerns about the impact of GovTech on **privacy, security, fairness and other ethical issues** emerge⁴⁴.

Procurement of GovTech demonstrates similar challenges to procurement of other innovative technologies, which will be further discussed in Chapter 3. These challenges suggest that the current procurement process is in need of revision⁴⁵. For this reason, in an effort to overcome these challenges, public sector organisations are experimenting with new procurement instruments such as **civic hackathons, start-up incubation, acceleration labs⁴⁶, pre-commercial procurement solutions⁴⁷**, and **design contests**, as presented in Box 2⁴⁸. Nevertheless, there are still steps to take to fine-tune these instruments in order to be able to fully support the characteristics of the various GovTech solutions⁴⁹.

There are some challenges which are more specific to GovTech. GovTech is a recent concept and novel EU policy field, which has resulted in an **institutional void**, as the EU GovTech ecosystem lacks governing organisations that are adapted to the characteristics of GovTech⁵⁰. On the one hand, the GovTech supply chain is dominated by the large multinationals with a track record in the public sector as well as experience with the classical tendering systems. These companies offer both tailor-made IT solutions as well as off the shelf solutions. On the other hand, many start-ups and scale-ups with more innovative product and service offerings are looking to enter the GovTech market, sometimes bringing in new business models⁵¹. These start-ups and scaleups often find it difficult to enter the market or establish a new market. Complication factors include **entry barriers⁵², dependency on venture capital growth expectations** and classical public tendering requirements (e.g., financial insurance and track record in the public sector) that do not cater for new business models (e.g., pay per use by citizens). Furthermore, the public sector is often **dependent on legacy software**. This is a barrier for innovation, because if a GovTech provider must implement a solution, it takes a lot of time and effort to make sure that GovTech solution is compliant with existing systems⁵³.

⁴⁴ Bharosa, N., 2022, The rise of GovTech.

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ Mergel, et al., 2022, Scoping GovTech dynamics in the EU.

⁴⁸ GovTech Lab Lithuania, 2022, GovTech Lab Lithuania – 2021.

⁴⁹ Bharosa, N., 2022, The rise of GovTech.

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Mergel, et al., 2022, Scoping GovTech dynamics in the EU.

⁵³ Ibid. and Kuziemski, M., Mergel, I., Ulrich, P. and Martinez, A., 2022, GovTech Practices in the EU. Available at: <https://publications.jrc.ec.europa.eu/repository/handle/JRC128247>.

2.7. Risks and benefits of wider use of GovTech

2.7.1. SMEs

Procurement of private sector developed GovTech can help innovative companies, in particular **SMEs**, overcome a **classic market failure**, by finding initial customers for their products and services. Suppliers often wait until there is a demonstrated demand before they develop new solutions, while at the same time potential buyers are waiting to see a new product or service enjoying market success instead of coinvesting in the development of an innovative solution or even taking the risk of being an early adopter that is among the first buyers. For SMEs, **GovTech can be a good starting point**, where other businesses do not want to take risks, or do not have money to invest in new products, but governments are willing to step in. This provides an opportunity for businesses to develop their products with a customer and to help the business grow.

Where subsidised R&D programmes offer **early market entrance opportunities** but also bear risks – as will be discussed in the next chapter – **pre-commercial procurement** might serve as an interesting alternative. Pre-commercial procurement in particular appeals to SMEs and start-ups. Larger or well-established companies sometimes consider the available R&D budgets to be too limited, but for an SME this is usually not an issue, where the size of the budget fits their capabilities better⁵⁴.

2.7.2. Citizens

GovTech solutions provide opportunities to **transform the way citizens interact with public bodies**, making public services **more accessible** and allowing for **simple, efficient and transparent** government services. In order to create well-functioning government systems that allow for **better citizen engagement** and accessible public service delivery, a **user-centric approach** has to be at its core.

If this is not the case, there is a risk of GovTech making things even more complicated or increasing the **digital divide**: a lack of access to internet and digital literacy affects the ability of a person to understand and benefit from new technologies such as GovTech. Consequences can be a lack of communication and isolation, barriers to studies and knowledge and discrimination. **User-centric design rather than tech-centric design** and **engagement of users in the design phase** is therefore key.

Interestingly, **pre-commercial procurement of GovTech** also allows for public sector parties such as municipalities to **engage multi-partner consortia for societal challenges** that are too hard or too far in the future to tackle with conventional procurement approaches and tools⁵⁵. In these public-private multi-partner consortia, municipalities could invite **citizens** to conduct different roles, varying from concerned citizen groups that **articulate the need for specific services**; **civil expert groups** that set requirements; **user based expert panels** that scrutinise prototypes; or **consumer panels** that review possible solutions. While engaging a broader diversity of citizens, pre-commercial procurement becomes extra interesting for smaller companies who seek real life testbeds that have added value to more or less simulative field labs.

⁵⁴ Kubinec, J., and Kostolny, M., 2020, Joint cross-border public procurement in Europe: Analysis of the iProcureNet survey and case studies. Available at: http://www.iprocurenet.eu/wp-content/uploads/iProcureNet_JCBPP-survey_Feb21.pdf.

⁵⁵ Ibid.

3. INNOVATION IN THE CONTEXT OF PUBLIC PROCUREMENT

3.1. Introduction

KEY FINDINGS

- Public procurement offers opportunities directly to support innovation by using public sector demand to create and shape new markets and to support businesses that otherwise struggle to develop the best innovations.
- An approach to procurement that creates more opportunity for unforeseen changes also creates the potential for further innovation to be triggered during later phases.
- Using procurement of GovTech to promote changing relationships between client and supplier/s also creates opportunities for innovation and transformation of public services.
- However, using public funds to support development of innovation presents risks to the public sector that require addressing at political and bureaucratic levels, for example by sandboxing or creating backstop contracts, in which delivery of a risky solution is underwritten by a 'business as usual' partner.
- A range of approaches can be taken to support procurement of innovation and innovation in procurement, such as the design contest approach used in AI4Cities, but success requires, in particular, skill in structuring the process and a strong understanding of the market, as seen in the Lean example.
- For strategic procurement of innovation and procurement of Research and Development services there are additional challenges. These may include understanding what is required in terms of outcomes, and exploring options, for example through incubators or a challenge process.
- There is, again, an opportunity to support development and experimentation across the EU on addressing these challenges through sharing knowledge and lessons learned.

In Chapter 2, we discussed the concept of GovTech and gave examples of how public sector bodies in Europe are exploring its application. We considered some of the challenges that these applications present, of which a significant one is procurement. Delivering digital transformation **through** GovTech cannot be separated from the **purchasing** of GovTech (assuming it is not being developed fully in-house).

In this chapter, we will explore in more depth why public procurement is an important aspect of using an innovative approach/ innovative technologies such as GovTech. We consider **different types of innovation in the context of procurement**, explore why it may be helpful to encourage a more inclusive process; identify **examples in practice**, and consider some of the **challenges** faced in undertaking it.

3.2. Definitions

Public procurement refers to the process by which public authorities purchase work or products (goods and services) from external organisations. Within the EU, these processes are harmonised via a legal framework designed to create a level playing field in support of the internal market, and to avoid risk of fraud. This creates a closely regulated approach, but there are also efforts to ensure that the process does not stifle transformation of public services. In the 2017 EC *Communication on Public Procurement*, the EC emphasised six priorities: 1) **wider uptake** of strategic public procurement; 2) **professionalising** buyers; 3) improving **access** to markets; 4) increasing **transparency**; 5) boosting **digital transformation**; and 6) **cooperating** to procure better cross-border or via central purchasing bodies⁵⁶.

Innovation in the context of public procurement according to Directive 2014/24/EU of the European Parliament and of the Council refers to "the implementation of a **new or significantly improved product, service or process**, (...) with the purpose of helping to **solve societal challenges or to support the Europe 2020 strategy** for smart, sustainable and inclusive growth"⁵⁷. There is a strong focus in many countries on supporting innovation through public procurement⁵⁸. 81% of OECD countries have **strategies or policies in place** to support this, but under 40% are measuring the **results** of their support, indicating a lack of focus in governments in understanding what actually works⁵⁹. Researchers have observed that **it remains difficult for public organisations to decide how to stimulate innovation in the private sector through public procurement**⁶⁰. Digital innovation of public procurement itself in the EU is currently slow, with room for improvement. A 2016 survey identified that only four Member States rely on digital technologies for all steps of the procurement process⁶¹.

A range of taxonomies have been developed to distinguish between different kinds of innovation in the context of public procurement. Obwegeser and Müller (2018) (See Figure 1) set out a division between an object/ product level and a process level: on the one hand **driving or buying** innovation and on the other developing innovation in the **procurement process itself**. A further subdivision at the object/ product level defines using **public procurement as part of innovation policy** (public procurement *for* innovation) and **using procurement of innovation in support of public policy** (public procurement *of* innovation).

⁵⁶ European Commission, 2017, *Communication from the Commission to the Institutions: Making Public Procurement work in and for Europe*, European Commission, Strasbourg. Available at: <https://ec.europa.eu/docsroom/documents/25612>.

⁵⁷ Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC, Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02014L0024-20200101>.

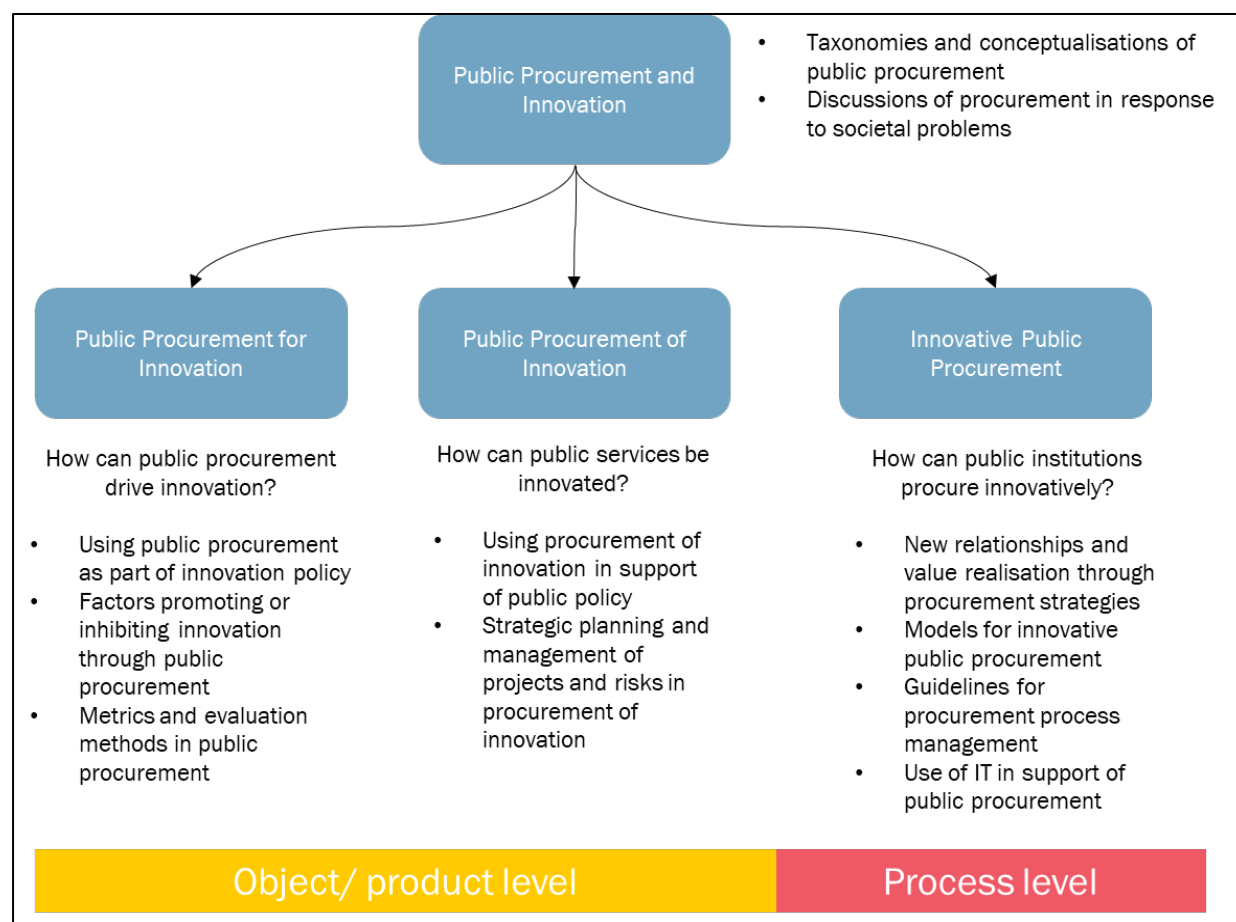
⁵⁸ Lember, V., Kattel, R., Kalvet, T., eds., 2014, *Public Procurement, Innovation and Policy: International Perspectives*. Heidelberg, DE: Springer. Available at: <https://link.springer.com/book/10.1007/978-3-642-40258-6>.

⁵⁹ OECD, n.d., *Public procurement for innovation: In figures*. Available at: <https://www.oecd.org/gov/public-procurement/innovation/>.

⁶⁰ Lenderink, B., Halman, J.I.M., and Voordijk, H., 2019, *Innovation and public procurement: From fragmentation to synthesis on concepts, rationales and approaches*, *Innovation: The European Journal of Social Science Research*. Available at: <https://www.tandfonline.com/doi/pdf/10.1080/13511610.2019.1700101>.

⁶¹ European Commission, 2017, *Communication from the Commission to the Institutions*. The states are not named.

Figure 1: Obwegeser's and Müller's Innovation in Procurement Taxonomy



Source: N. Obwegeser, S. D. Müller, Innovation and public procurement⁶².

An OECD categorisation describes another way of categorising procurement of innovation: 1) **Regular and 'innovation-friendly' procurement**, to improve value-for-money of procured products and services now and in the future and to support the competitiveness of suppliers; 2) **Strategic procurement of innovations**, and 3) **Procurement of Research and Development services**⁶³. If the aim is to address a specific need which cannot be met by current solutions, it may be more appropriate to opt for either a **strategic procurement approach**, or a procurement of R&D services approach to develop new solutions. If the aim is to buy something that is more developed and more widely used, then an **innovation-friendly approach** within standard procurement processes is advised. It is notable that many of the approaches discussed in Section 3.6 below are dependent more on process design, skills, and culture change, than they are on technology.

The two previous paragraphs illustrate the different ways in which innovation can take place in the context of public procurement and the absence of a single definition. In reality, successful procurement of something like GovTech requires approaches that embrace both the object/ product and process levels of the Obwegeser and Müller model. It requires at least 'regular and innovation-friendly' approaches, and potentially strategic procurement of innovations (OECD). For the purposes of this report, in this chapter we will focus mainly on using **public procurement of innovation** (Obwegeser

62 Obwegeser, N., Müller, S.D., 2018, Innovation and public procurement: Terminology, concepts, and applications, Technovation 74–75, <https://doi.org/10.1016/j.technovation.2018.02.015>.

63 Lenderink et al., 2019, Innovation and public procurement. Further detail on typologies can be found in Lember, et al., 2014, Public Procurement, Innovation and Policy.

and Müller) and on regular and innovation-friendly procurement (OECD) approaches. In Chapter 2 some references were made to forms of innovative procurement, such as design contests. In Chapter 4, we will make some further observations on using a **digital platform for innovative procurement**.

3.3. Public procurement as a tool to create and shape markets: the innovative potential of public procurement

Public procurement (as noted) offers opportunities directly to **support promising technologies or innovations** that suffer from a lack of investment or low numbers of initial adopters, by **using public sector demand to create and shape new markets**. In the case of GovTech, the public sector *is* the primary market. To support the development of a European GovTech ecosystem therefore **requires public sector bodies to purchase GovTech effectively**⁶⁴.

Procurement of innovation opens the possibility of changes (beneficial or damaging) unforeseen by either side. The standard expectation of innovative 'solutions' for a procurement with pre-specified options is that these innovations will deliver what is required in ways that are **faster, cheaper and better**. However, they can also trigger further innovations during the delivery and later phases. These can entail:

- **changing demand** (changing workflows, evolving public services etc. on the client side);
- **changing supply** (new products, in-service data to allow continual improvement, reusable IP, changing production chains, etc. on the supplier side);
- **changing relationships** between supplier and client (evolving strategic relationship, IP and risk transfer); and
- **changing the whole public service ecosystem** among **all potential stakeholders** downstream (e.g. users of public services), within layers (e.g. agency service delivery models) and upstream (e.g., supply ecosystem).

Public procurement is **tightly regulated**, which presents challenges when developing new solutions. **There is also a broader challenge** in gearing public procurement towards innovation, given the risks that investing in innovative goods and services necessarily present. The public sector is spending public money and **public sector bodies are usually constrained to consider some explicit form of 'value for money'** which must be capable of being demonstrated and audited. This tends to encourage **risk aversion** at both an institutional and an individual level (people are not rewarded for making risky investments). Public procurement can support the development of new markets and help reshape existing sectors⁶⁵ but it is a tool that requires thoughtful and skilful use, and support at political and bureaucratic levels.

The tricky part is to optimise the potential for unforeseen change **within the framework of public procurement**. The uncertainties⁶⁶ created require **option-based thinking** and may also may require change in the procurement approach (e.g. in requirements, bid evaluation, and shifting from sales to

⁶⁴ See for example Mergel, I., Ulrich, P., Kuziemski, M., and Martinez, A., 2022, Scoping GovTech dynamics in the EU, EUR 30979 EN, JRC128093, Publications Office of the European Union, Luxembourg. Available at: <https://op.europa.eu/en/publication-detail/-/publication/0057edb3-a021-11ec-83e1-01aa75ed71a1/language-en>.

⁶⁵ Mazzucato, M., 2020, Mission-oriented public procurement: lessons from international examples. UCL Institute for Innovation and Public Purpose, Policy Report, Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/wp2020-20>.

⁶⁶ This means that decisions (from requirements specification to bid evaluation) should take into account as far as possible both exogenous uncertainties (e.g. demand for services or available technologies) and subsequent decisions to which the procurement will give rise (and discounting them in a way that reflects how those subsequent decisions change the underlying risks).

licensing or partnership arrangements). These changes in turn open further possibilities, creating a feedback loop between **procurement of innovation** and **innovative procurement**.

3.4. Using procurement to open up markets

Both the development of new markets and the reshaping of existing sectors requires almost by definition an **inclusive approach to attracting additional suppliers**, many of whom may be SMEs or start-ups. In public sector markets, public procurement can support businesses that may otherwise 1) face greater difficulties in obtaining **venture capital**, 2) become embedded in dependent positions in **supply chains**, 3) **lack the resources or risk tolerance** needed to develop the best innovations, or 4) accept **inefficient contractual conditions**.

However, it is important to note that **contracting with SMEs is not automatically the best way to innovate**. There is a general belief, based initially on examples from the US, that SMEs are inherently more innovative than larger counterparts. A range of public policy actions have consequently been developed to **avoid disadvantaging SMEs in procurement**⁶⁷. However, although there may be benefits in ensuring a level playing field to avoid disadvantage, it is not clear that size always determines the capacity of a supplier to develop innovative solutions to public sector needs. In particular, there are wide variations in innovation appetite and potential throughout the size distribution of firms, and the inherent uncertainty of innovation makes it hard to balance these against other procurement and public policy objectives. The most cost-effective innovations are produced through **competition among potential suppliers**.

The GovTech environment changes the way public procurement operates, not just in terms of **how things are procured** (processes) and **what (products or services) are procured**, but in terms of **participation** and **relations** between the various stakeholders. The first shift, which is not unique to GovTech, is from **sales** (e.g. products or specified services), initially to **relationships** (e.g. service arrangements) and then to **partnerships** – and possibly even to a **systemic relationship** that mixes all three forms in an interface between the client-side and supply-side ecosystems. In this perspective, the relationships shift from a traditional model where a prime contractor effectively controls a production/ value chain, allowing it to manage the upstream parts of the system, locking in SMEs or playing them off against each other as required and potentially to 'capture' the downstream (client) side.

In a more flexible system, **innovative small firms could interact directly with public sector clients or serve as primes**. A single government client (or the virtual client perspective provided by a shared, interoperable and standardised GovTech digital platform) might prefer a robust and competitive supply side, which would provide innovation, low prices and depth/resilience. However, the structure of public procurement tends to favour **big supply volumes, client-specified standardisation and long-term contracts**, and thus **fewer and larger prime suppliers**. Existing procurement rules do not prevent this; as they concentrate on limiting the losses due to collusion and monopoly power on the part of suppliers.

The concepts underlying the status given to SMEs in procurements of large-scale systems or those intended for wide deployment are: first, that **a balance of cooperation and competition is required to develop and employ useful innovations**; second, that **collusion, foreclosure and capture should**

⁶⁷ For a useful framework and summary of SME-orientated policies, see Table 1 in Georghiou, L., Edler, J., Uyarra, E., and Yeow, J., 2014 Policy instruments for public procurement of innovation: Choice, design and assessment, Technological Forecasting and Social Change. Available at: <https://www.sciencedirect.com/science/article/pii/S0040162513002552>.

be avoided; and third that the **encouragement, development and exploitation of innovations is fundamentally an evolutionary process**. Competing SMEs provide a reasonably **low-risk and low-cost laboratory** for testing ideas, and their small size and dependence on prime contractors, provide a **collegial basis for cooperation** in both the short and long run.

There is an evolutionary argument that "better" ideas, people and business models will be **more viable or fit in a market sense**. Therefore, "better" SMEs will expand and eventually become large successful firms. This depends on three evolutionary forces: **variation** (amongst small firms seeking to overcome incumbent advantage or to penetrate existing markets); **selection** (the assumed profitability of better SMEs); and **heredity** (the licensing, copying and improvement of innovations that survive).

However, this is subject to some limitations in the public procurement context:

- **The evolutionary struggle is risky** – not only do small and large firms differ in terms of risk tolerance, but their dependence on financial markets and supply chain partners (including primes) for capital may distort their incentives.
- The long terms and large volumes of many public procurement contracts (necessary to achieve critical mass) mean that **competition should be maintained within as well as for contracts**. This is the basis of the idea of GovTech as a platform for a more flexible relationship outlined above.
- **Public and private perspectives and objectives differ** – in particular, public-sector clients may dislike the level of business failure (and the risk of wasted public funds) that accompanies a vigorous innovation ecosystem and (especially large) firms may value the profits from use of innovations in different ways compared to their public sector clients.

The net result is that all three evolutionary forces may be dampened – small firms may not have sufficient incentives to invest in innovation or to share it, market 'winners' may not be the best ideas from the perspective of Europe as a whole and struggles to control IP may impair innovation.

Policy formulation should be elevated from the **individual contract level to the (GovTech) platform level and beyond**, to take into account the factors described above, including: **spill overs** (impacts on the innovation ecosystem and the demographics of the population of potential bidders); **competition impacts**; the **potential for strategic long-term partnerships**; **IP sharing** and other factors. This can also reflect the feedback loops between innovation procurement and procurement of innovation.

The transition to a more flexible system could be facilitated by **creating a GovTech membership platform** in which incumbent primes can be made to compete in a way that lowers entry barriers and rewards innovation by providing space for **underwriting innovative proposals** with less-risky backstop approaches provided by a large incumbent. A **balance in risks and benefits** could be aimed for while creating cross border innovation ecosystems that cater for GovTech services and products, and serving as a **learning environment for public bodies and for new suppliers** that are hesitant to embark on a wider European market.

In any case, innovative approaches in public procurement of GovTech will have to cope with, and wherever possible overcome, standard risks such as **culture clashes** between buyers and suppliers, in particular if different national backgrounds are at stake, or **delays** or even **failure in delivery**, including the failure of an SME as a going concern while acting as a supplier in particular in areas where services are essential, but also where ongoing updates in software are required. As previously stated, specific challenges facing procurement of GovTech are at stake but specific benefits also come with enhanced transparency and findability via standardisation and reducing bureaucracy.

3.5. Challenges in undertaking public procurement of innovation

A number of factors can either support or stifle introducing public procurement of innovation within the process itself. These factors may arise at different points in the process, but particularly in the early phases in which the structure and "rules" of the procurement are established and communication takes place with potential suppliers. Before contract award, the success of the arrangements depends on **participation**, attracting the best selection of bidders and bids, and in being able to **evaluate** bids in relation to both how the solution will be used and how public service delivery might change as a result.

Success requires **skill in structuring the process** and a strong **understanding of the market** (which in the case of innovative products is by definition continuously developing). In some projects and sectors, there may be challenges for public sector organisations to work with GovTech providers **to co-create contracts rather than outsourcing them**⁶⁸. Where these skills to structure the process do not exist, the lack of in-house capacity on the side of the government can potentially give larger contractors the leverage to give input on technical specifications and lock smaller suppliers out⁶⁹. In addition, there may be **differences in the working culture** between businesses and the public sector, leading to problems in implementation⁷⁰.

Size of contract may also present challenges. Large and multi-annual tenders for public services require significant resources to run and to respond to. The desire of public procurement staff to reduce contract risks may lead them to develop contract specifications and qualification criteria which can be difficult to meet for smaller businesses (for example specific credentials or certifications and turnover above a specific threshold). **Cross-border harmonisation** of implementing public procurement processes also remains a challenge⁷¹.

After contract award, the situation changes. The contract will typically allocate **financial and legal risk**, but often cannot transfer the **delivery and policy risks** associated with the public services that the contract is intended to support. There is a good practice in contracting with small and innovative firms to manage the risks of business or technical failure by including in the contract a 'backstop provider' capable of supplying the necessary services using an available approach such as commercial off-the-shelf software. If the contract is a vehicle for transferring and structuring risk to capitalise on the different competences and incentives of the parties, it makes sense to include "**novation**" clauses (See Annex 2) allowing a silent partner to step in under defined conditions. Options to allow **ownership and compensation for Intellectual Property (IP)** developed during the contract to be negotiated after the innovations have been developed, rather than in advance, are recommended.

Where the idea is to stimulate a new approach, it is sensible to 1) '**sandbox**' the new method, by withholding it from deployment until proven; 2) use a **design contest** approach, as is the case in the US Department of Defence or in GovTech Lab Lithuania, in which two or more contractors are selected to develop their solutions with client-side teams as a 'natural experiment', with a downselect at the end of an evaluation period; or 3) create **backstop contracts**, in which delivery of a risky solution (especially one linked to legacy IP of the bidder) is underwritten by inclusion of a 'business as usual' partner who can step in as needed.

The challenges noted above hold for most kinds of technology procurement, but certainly for approaches towards innovation-friendly procurement and for strategic procurement of innovations.

⁶⁸ Based on interview with GovTech Lab Lithuania.

⁶⁹ Mergel, et al., 2022, Scoping GovTech dynamics in the EU.

⁷⁰ Ibid.

⁷¹ Ibid.

For **strategic procurement of innovation and procurement of Research and Development (R&D)** services there are additional challenges. These may include creating the space and time to build relationships, understand what is required by the public sector in terms of outcomes, and to explore options. If uncertainties and information asymmetries are too great at the time of the initial procurement, and cannot be wholly resolved by standard innovation procurement tools such as technical and competitive dialogue, there may be scope for further collective investigation. In the much imitated **US Small Business Innovation Research (SBIR) programme**, this took the form of staged procurement, with initial exploratory funding of multiple solutions followed by initial market development and then full procurement⁷².

3.6. Tackling challenges in undertaking public procurement of innovation

Different practical approaches have been taken to enable innovation in the context of public procurement, ranging from technology missions, to R&D capabilities, to a focus on procedures and skills. There is no consensus on what approach to use under particular circumstances because the answer depends on multiple factors, including the characteristics of the procurement organisation and their available resources in terms of time, budget, and staff. Maturity of the organisation, with respect to public procurement and procurement of innovation, are particularly important⁷³. Finally, the characteristics of what is to be procured and the current maturity of solutions that may be offered by suppliers are also key. That said, a variety of approaches are suggested:

Process aspects:

- **dialogue between procurement and policy professionals about desired outcomes.** Establishment of a cadre of professionals able to act as 'intelligent customers' & engagement between policy, procurement and project staff;
- **market consultation, analysis and engagement.** An understanding of the market from which the purchasing organisation is buying is essential if what is being bought is pushing the boundaries of innovation. This ensures that both buyers and suppliers understand the requirement, supports the development of specifications and award criteria, and ensures that interested parties in the market are made aware of the opportunity. This last point reduces the risk that only the 'usual suspects' are able to bid;
- **specification of functional requirements.** A move from technical to functional requirements enables potential suppliers to respond to an invitation to tender with more creativity⁷⁴;
- **acceptance of room for failure.** Constraints around how to account for the use of public funds in procurements of goods or services that are novel contributes to risk aversion, both in individuals and across organisations. Acceptance of room for failure by politicians, finance ministries and senior leaders is therefore important in creating the possibility for experimentation. To ensure ongoing delivery of public services, novation clauses and backstop contracts are also recommended (see above);

⁷² This initial funding can take various forms: 1) Grants; 2) public participation in IP; 3) initial R&D investment followed by tapered payment terms (including a government share in private-market deployment where relevant). For the US SBIR, see www.sbir.gov. Similar programmes have been developed in the UK and the Netherlands.

⁷³ Lember, V., 2015, Public procurement of innovation: The policy logics behind the strategic use of procurements. Available at: http://eafip.eu/wp-content/uploads/2015/12/2_V.Lember.pdf.

⁷⁴ Mazzucato, M., 2020, Mission-oriented public procurement.

- **explicit acceptance of alternative solutions proposed by would-be suppliers;**
- **change award criteria.** Award approaches that don't focus on the lowest bid, but rather on either performance-based tendering or full life-cycle costings, or even on assessing the innovative quality of bids;
- **bundling or division of demand.** Decisions on whether to aggregate or disaggregate procurements (either to create accessible procurements to attract smaller players or to justify larger investment in R&D) including across borders; and
- **wider engagement of SMEs**, through:
 - simplification of application processes (using technology or Lean/ Agile processes);
 - a reduction in pre-tender requirements for e.g. security certifications; and
 - improved visibility of opportunities, including those below OJEU threshold e.g. via national portals.

The above approaches require that the people working on the procurement have **sufficient capability to set the tender and manage the process**. Specific technical skills will be needed to understand the market, write the tender and undertake the selection process⁷⁵.

For strategic procurement of innovations:

- **use of procedures which provide possibilities to negotiate with potential suppliers** (e.g. Competitive Dialogue); and
- consideration of the **contractual regime** and assignment of **IP rights**.

For procurement of R&D services:

- **pre-commercial procurement approaches**, up to the point of field testing, for example use of **incubators or challenge processes**.

Three examples follow which demonstrate some of these processes in action. The **AI4Cities** project (Box 4) is an example of **cross-border pre-commercial procurement of innovation**, in which six European cities worked together to procure artificial intelligence (AI) solutions to accelerate carbon neutrality. The buying authorities defined the **needs and requirements** of solutions in the mobility and energy fields they wanted to see developed. Start-ups, SMEs, bigger companies and other relevant stakeholders were challenged "to design innovative solutions applying the use of AI and related enabling technologies, such as big data applications, 5G, edge computing and (Internet of Things). The pre-commercial procurement process (was) used to steer the development of new solutions (not market-ready) directly towards its needs"⁷⁶.

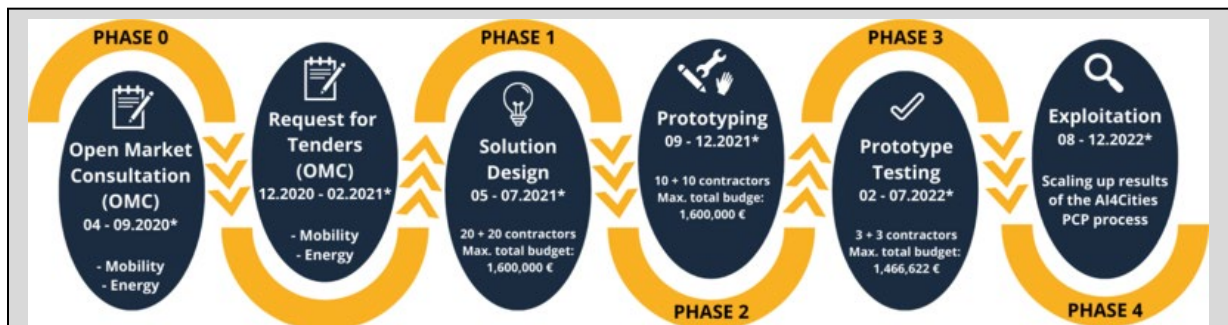
⁷⁵ Mazzucato, M., 2020, Mission-oriented public procurement.

⁷⁶ Text cited from AI4Cities website. Available at: <https://ai4cities.eu/about/project>.

In AI4Cities, the project explicitly states that the public buyer is acting as an **early adopter or launch customer of innovative solutions** new to the market. Their literature makes explicit reference to the value or the opportunity for both public sector and businesses:

- **For businesses:**
 - a first customer reference that enables companies to create competitive advantage in the market in future;
 - a focus on the core tasks of R&D with the public sector supporting the creation of a new market; and
 - R&D providers generating results will own the attached IP rights.
- **For the public sector:**
 - a focus on the critical R&D phase before actual commercialisation;
 - input from different suppliers who compete using grants for different phases of development; and
 - risks and benefits are shared between procurers and suppliers under market conditions.

Box 4: AI4Cities



This method rethinks the complete public procurement process: in particular the pre-award stages, but also post-award. It was designed as a competition, where at each stage fewer contractors were involved. In phase 1, forty contractors were selected, twenty of these contractors designed their prototypes in phase 2, six prototypes were tested in phase 3, and finally the winning idea was selected and implemented in phase 4. Cities benefitted from this process as they could 1) steer the development of solutions towards concrete public sector needs, 2) focus on the R&D phase before actual commercialisation, 3) get input from different suppliers, 4) share the risks and benefits between procurers and suppliers under market conditions. Suppliers benefit from investment in ideas at an early stage of development.

At a glance: AI4CITIES – Cross-border pre-commercial procurement	
Countries: Finland, Netherlands, Denmark, France, Norway, Estonia	Time span: Three years (January 2020 to December 2022)
Stage: Full procurement cycle, with emphasis on planning/business case and market engagement	Budget: €4.6 million

Source: AI4Cities website. Available at: <http://ai4cities.eu/>.

Box 5 outlines some of the uses to which Lean and Agile methodologies have been put in the UK, but in particular in **redesigning contracts** and the **contracting process**. In these cases the intention has been to increase the ease and simplicity of contracting with a wider range of businesses, and particularly SMEs. A strong emphasis on **market engagement** meant that once the invitation to tender stage was reached, both market and purchaser had a clearer idea of what was being sought and what was available (and the risks involved). A simpler, shorter process was more appealing to businesses, and simpler contracts meant that suppliers of all kinds were able to understand the contract terms.

Box 5: Using Lean and Agile methods to transform procurement processes

Lean methods have long been used in manufacturing to identify opportunities to improve process flow. Lean thinking, exemplified in the development of **Lean Sourcing guidelines** in the UK from 2011 onwards emphasises extensive pre-procurement market engagement to test and refine requirements. Engaging in early market dialogue can help to identify innovative solutions available and being developed.

Agile is a well-known methodology in software development. Both approaches have been used in adapting procurement processes in the UK over the past 10 years. An agile approach was used in designing the **G-Cloud** frameworks that lie behind the successful and well known **Digital Marketplace**, which created a route to find cloud technology and specialist services for digital projects for the UK public sector. Agile was also used in developing the new **Model Contract**, a simplified contract for buying goods and services across the public sector, with a particular focus on encouraging more SMEs to supply the public sector.

The Digital Marketplace is a UK government platform built to support two framework procurement contracts (**G-Cloud** (cloud hosting, support and software) and **Digital Outcomes** (services including user research)). End-to-end, the Marketplace has been designed to be SME- and user-friendly, from the design of the framework contract, through to the language and design of the platform.

The results from these approaches are still being assessed, but feedback is positive. TechUK (an industry representation body) noted that 65% of respondents to a survey in 2021 of tech sector SMEs agreed that the "Digital Marketplace has made opportunities in the public sector more open and visible."

At a glance: Lean and Agile methods to transform procurement processes	
Countries: UK	Time span: Varied according to project.
Stage: Full procurement cycle, with emphasis on planning/business case, market engagement and contracting.	Budget: Not known.

Source: Waterman & McCue, 2012; Pianoo, n.d.; Crown Commercial Service, 2012, GDS Blog 2017; Digital Marketplace⁷⁷.

⁷⁷ Waterman, J., and McCue, C., 2012, Lean thinking within public sector purchasing department: the case of the U.K public service, Journal of Public Procurement. Available at: http://ippa.org/jopp/download/vol12/issue-4/Symp%20Art%202020Waterman_McCue.pdf. Pianoo, n.d., Aan de slag met innovatie. Available at: <https://www.pianoo.nl/nl/themas/innovatie/aan-de-slag-met-innovatie>. Crown Commercial Service, 2012, The LEAN sourcing approach: Briefing and self-starter pack for procurement staff. Available at: <https://www.gov.uk/government/publications/lean-sourcing-guidance-for-public-sector-buyers>. GDS blog, 2 November 2017. Available at: <https://gds.blog.gov.uk/2017/11/02/bringing-policy-and-digital-together-to-deliver-contracts/>. Digital Marketplace. Available at: www.digitalmarketplace.service.gov.uk.

Finally, the JEROME case (Box 6) articulates the **benefits of cross-border procurement** where this leads to **greater standardisation and interoperability**. JEROME is a joint tender set up by the Romanian and Bulgarian police authorities. The aim of the project is to procure a rapid reaction system to emergencies (chemical, nuclear etc) for both sides of the Bulgarian-Romanian border.

Box 6: JEROME - Joint cross-border public procurement tender

Here an approach to standardisation, interoperability and harmonisation led to a range of advantages in delivery:

- Both sides of the border end up with identical equipment, which eliminates the risk of future costs for harmonization and coordination between both countries;
- Immediate full interoperability, fostering exchange of data and information;
- Efficient use of project resources, as there was only one public procurement officer at the project level;
- Economies of scale;
- Standardisation of technical specifications;
- Collaboration, sharing knowledge and exchange of good practices in the procurement process;
- Development of common and standardised practices from a variety of perspectives (technical, legal and financial).

The project did not report any disadvantages.

At a glance: JEROME

Countries: Romania and Bulgaria	Timespan: 2017 – 2018 (Implementation period)
Stage: full procurement cycle	Budget: €5,999,095

Source: Kubinec, J., and Kostolny, M., 2020; JEROME website⁷⁸.

⁷⁸ Kubinec, J., and Kostolny, M., 2020, Joint cross-border public procurement in Europe: Analysis of the iProcureNet survey and case studies. Available at: http://www.iprocurenet.eu/wp-content/uploads/iProcureNet_JCBPP-survey_Feb21.pdf. See the JEROME website. Available at: <http://www.jerome-robg.eu/>.

3.7. Risks and benefits of public procurement of innovation for SMEs

In previous sections we focussed on approaches to stimulate procurement of innovation, including actions to create a more inclusive market. In this section, we will consider the risks and benefits of these approaches, primarily for SMEs themselves.

3.7.1. SMEs

SMEs tend to be proportionately less active in public-sector markets, especially cross-border, compared to their larger counterparts⁷⁹. By encouraging public procurement of innovation, both the **participation** of SMEs in public procurement and the **innovation-intensity** of SMEs could be stimulated. SME-oriented strategies for public procurement of innovation can offer a range of benefits, which include:

- **strengthening the SME ecosystem**, with attendant economic and societal benefits;
- **supporting SMEs at developing competitive advantage** for the future;
- **enhancing competitive pressure on larger firms**, during the procurement and contract management process;
- **minimising risks of lock-in and foreclosure**; and
- **access to solutions more adapted to specific client needs** than those typically available from larger suppliers.

Evidence from studies of technology-intensive public contracting arrangements shows that many standard contracts include terms (e.g. regarding contractor liabilities) that are disproportionately onerous for firms that are small, non-local, and innovative. Opening a wider range of contractual terms for negotiation or replacing them with forms better adapted to the needs of SMEs would help to address this selection bias⁸⁰.

As mentioned above, strategies to increase the attractiveness and innovation-friendliness of public procurement includes the use of **preferential bidding arrangements**, adapting **contractual terms** better to suit innovative and small bidders, and the inclusion of **strategic 'step-in' partners** who can fulfil the contract in case the innovative solution (or its provider) fails. If scale, budgets, standardisation and interoperability requirements allow, it may also be useful to coordinate procurements to facilitate 'virtual enterprise'⁸¹ participation and to make provision for options and sharing of IP developed during the life of the contract (in order to avoid strategic distortion of innovation incentives or subsequent market failures).

Public procurement of innovation, such as through **the Lean approach**, benefits SMEs. In fact, the Lean sourcing approach that was introduced by the UK was set out in part to ensure that more SMEs win government contracts⁸². Earlier **engagement with the market** is beneficial as buyers get to hear what potential suppliers can offer and suppliers are aware of buyers' requirements, which encourages innovation. SMEs can form **consortia** in case they cannot carry investment costs or provide all required

⁷⁹ Brown, N., Simmonds, P., Blind, K., and Culver, J., 2018, Final evaluation of public procurement of innovation in the context of the CIP. Available at: <https://op.europa.eu/en/publication-detail/-/publication/84aa2fc3-358c-11e9-8d04-01aa75ed71a1/language-en>.

⁸⁰ Waterman et al., 2012, Lean thinking.

⁸¹ A virtual enterprise is a temporary alliance of businesses (a collaborative network) that often share resources, skills or competencies with the aim to respond better to business opportunities.

⁸² Ibid.

services on their own, or to deselect themselves for opportunities they know they are not suitable for. Earlier engagement with the market may save time and costs.

The Lean philosophy also emphasises **addressing customer issues** and **meeting customer needs**, because buyers can test the market's response to their high-level requirements⁸³. Testing whether requirements can be met is particularly valuable since it is inherent to the public procurement process that often a broad range of stakeholders with conflicting interests needs to be satisfied.

The establishment of a procurement *cum* learning environment might allow smaller companies to **engage on lower or less market-based risks**, enabling and stimulating them to develop well-thought-out **market entry strategies**. These improved strategies might result in better conditions for obtaining **finance** – since the conditionality and costs are more favourable when contracted demand is assured and when competition is organised and transparent.

Risks to consider for public procurement of innovation are that **smaller companies could be excluded when overly stringent qualification criteria are set as a first pass of evaluation**. For this reason a restricted procedure might be preferred over an open procedure⁸⁴. Other risks are related to subsidy programmes that aim to serve innovative smaller companies, but might have an adverse impact on early market engagement. These and similar safe space programmes bear the risk of **taking too long while improving products or services in close contact with envisaged customers, without embarking on a wider market**. This situation is in particular suboptimal, whereas public sector partners that cooperate in subsidy programmes have a limited spending capacity and unintendedly prohibit smaller companies from building relationships with stronger market players. Similarly, **procurement assessment procedures** identify that these smaller companies have not yet built a track record in delivering and cooperating in a wider market, while their subsidised cooperation with public sector partners might even be seen as **trading with insider knowledge**. Not only public bodies may take this position, investors also hold an adverse stance towards subsidised innovative products or services.

⁸³ Crown Commercial Service, 2012, The LEAN sourcing approach.

⁸⁴ Waterman et al., 2012, Lean thinking.

4. ROLE OF DIGITAL PLATFORM FOR GOVTECH AND PUBLIC PROCUREMENT

KEY FINDINGS

- A digital platform for GovTech and public procurement could potentially generate benefits for governments in terms of innovations, efficiency and effectiveness, and cross-border collaboration, as well as for citizens and SMEs in terms of innovation of public procurement.
- If the platform is intended to be established on a "Government-as-a-Platform" basis, it will be important to understand how building blocks will be developed that could support public sector transformation; wider citizen engagement; and improved efficiency and effectiveness.
- Risks and challenges include that the platform may lead to a reduced incentive for individual public administrations to develop their in-house GovTech solutions.
- There may be reduced knowledge and ability of public sector procurers to evaluate new technologies as a result of their reliance on centralised expertise and delegated responsibility
- There may be unfair and/ or inefficient competition between SMEs and large companies providing GovTech solutions on digital platforms.

4.1. Introduction

The aim of this chapter is to provide an analysis of the **proposed European GovTech platform**⁸⁵. We first explore the opportunities (and risks) that the proposed European GovTech platform presents. We highlight two possible approaches that can be taken towards building such a platform in the public sector. We then consider the proposed platform when compared with other existing EU platforms focussed on procurement and innovation.

The intersection of public procurement, GovTech and a digital platform brings together both **procurement of innovation and innovation in procurement**. The proposed **European GovTech platform** could combine the potential of **public procurement as a powerful tool to shape the market** for digital public services with the **innovation potential** of the private and public sectors as producers of new government technologies (GovTech), and with the **potential of digital platforms** as multi-sided markets where supply (of GovTech) and demand (of digital public services) come together more efficiently and transparently.

⁸⁵ At the time of writing, the details for the proposed platform remain at a strategic level. What follows combines what we know from interviews, desk research and speculation about what could be possible.

4.2. Opportunities that the proposed European GovTech platform presents

A platform provides access to a set of tools and a repository of shared information. Together these serve as a place for **collective innovation** by providing innovators with access to wider potential markets. They also facilitate collaboration, by identifying and spreading good practice, and encouraging innovation and sandboxing, especially in areas where risks are easier to control and alternative solutions well-understood and available. This in turn suggests that **the digital platform can be viewed as a two-sided market**, where clients (public authorities) and suppliers can interact to their mutual benefit. In such markets, the interests of each side are furthered by increased numbers and variety on the other side (giving them a wider choice of proven alternatives) and on their own side (where they benefit from competitive pressure, shared learning, interoperability and induced innovation)⁸⁶.

The tools that can be developed and shared via a digital platform can include adaptations to existing approaches to difficult tasks of formulating requirements, designing procurement methods and suitable contract forms, assessing innovative or strategic bids across varying value-for-money dimensions and integrating multiple objectives into the procurement function. Again, these challenges are not unique to the public sector, but are perhaps more visible and more effectively managed there. Their diffusion outwards as they are adopted by private firms will provide direct economic benefits and further refine our understanding of the contributions of procurement and the optimisation of purchasing policy.

However, **this approach is not without risk**. As with any procurement, and especially one leading to innovative solutions where, by definition, **search and switching costs** may be very high: potential market failures include **incumbent advantage, lock-in, contractor control of IP** and the deterrent effect of **'unfair' contractual terms**. In certain situations, where a superior or widely-adopted solution depends on proprietary knowledge or practices, the platform may support a **tipping equilibrium**, with dominance by a very few firms or solutions. The power of **first-mover advantage** and the **power of strategic suppliers** to influence rebidding can lead both to suboptimal solutions and leveraged market power. This is a known impact of two-sided markets, if the gains from complementarity are captured by the platform provider (as is the case with the Google and Amazon platforms). Competing platforms can sometimes limit the damage, but in both empirical and theoretical settings this remains a risk.

At a basic level, combining public procurement innovation, GovTech, and digital platforms makes possible a range of **potential advantages** not directly available from their separate components. These include the following:

- a more **inclusive** (of all stakeholders) **and deliberative approach** to public spending where the platform includes an engagement function;
- **lower entry thresholds for SMEs** and other innovative GovTech solution providers;
- faster, more efficient and more effective **public service procurement**;
- an improved **ability to tailor public services** to the needs of specific constituencies (citizens and businesses, or cities and regions), while retaining the benefits of interoperability, transparency and economies of scale. As a consequence, more **usable, targeted, proportionate and accepted public services**;

⁸⁶ Belleflamme, P., and Peitz, M., 2015, Lectures on Competition and Regulation in Two-Sided Markets. Available at: https://www.academia.edu/27355965/Lectures_on_Competition_and_Regulation_in_Two_Sided_Markets.

- improved **interoperability** and **cross-border cooperation**. Joint cross-border public procurement brings benefits to regional and local public authorities, for example the reduction of administrative burdens on themselves as well as on tenderers. Because contracting authorities can share costs, work, deployment of staff, knowledge and expertise, procedures can also be more efficient. An example is the JEROME project (see Box 6), where authorities from different countries received identical equipment, eliminating the risk of future costs for harmonisation and fostering the exchange of data and information;
- an increased capacity to develop, implement, monitor and enforce baseline **security, privacy, environmental and ethical criteria** for GovTech procurement; and
- an increased capacity also to implement **open contracting data standards**, with the consequent potential to improve **transparency**.

These benefits are neither automatic consequences nor without risks of their own.

The **risks** at the same operational level include the following:

- a reduced incentive for individual public administrations to develop **in-house GovTech solutions**, which may limit the ability to localise them appropriately and to nurture cultures of innovation and evaluation in public service delivery;
- a further **reduced knowledge and ability of public sector procurers** to evaluate new technologies as a result of their reliance on centralised (but often high-level) expertise and delegated responsibility;
- **governance challenges** arising from the multitude of actors involved, with potentially conflicting or collusive interests;
- challenges relating to **product and service delivery liabilities**, again given the multitude of actors involved, and **ownership of data and other IP**; and
- **unfair and/or inefficient competition** between SMEs and large companies providing GovTech solutions on digital/algorithmic platforms.

The platform could also support the implementation of **procurement innovations**. These might include e.g. broader interpretations of requirements' specification, bid evaluation, award and acceptance, and contract management. Procurement innovations can offer a range of benefits including the following:

- **ways to ensure benefits** traditionally secured by local provider preferences, e.g. rapid repairs and minimum distortion to existing government systems, without descending into regional favouritism;
- the **ability to form strategic partnerships**, which can respond to changing public service requirements and technological possibilities by overseeing future innovative procurement. If structured properly, the strategic partner will even ensure that other firms and solutions are selected for successor or complementary procurements;
- **supply chain and innovative capacity maintenance** can be enhanced if procurement innovations allow the client(s) to take account of the potential for awards to facilitate durable and/or flexible relations among suppliers. Well-studied examples include 'virtual enterprise' systems that allow SMEs to come together on a temporary basis to bid for large public contracts, or 'step-in' contracts in which the bidder or the client can nominate an alternative

provider (if necessary, using a conventional solution) to minimise risks of invention, innovation or business failure; and

- the capacity to include in the scoring and negotiation process considerations of **supply base sustainability, competitiveness, innovative health and security and the capacity to address future requirements** while remaining compliant with the level playing field requirements of procurement law (and thus retaining the competitive vigour of the supplier ecosystem).

A platform provides an opportunity for the development of (GovTech) **tools and services** that are of specific use to the public sector, but which can be adapted to a wide range of private-market contexts. For instance, the relationship often created through GovTech can provide new ways for clients and suppliers jointly to explore the potential of technology to improve public services and by triggering further changes in how those services are organised and delivered. This kind of co-innovation is generally much harder in the private sector.

Another opportunity is provided by the potential of procurements to accumulate reputational information which can be shared and analysed more securely among public authorities than between commercial enterprises and without creating the risk of informational dominance leading to market failure. Indeed, regular procurements have also led to the creation of long-term data repositories that serve as an organising "backbone" for public sector supply capabilities, facilitating long-term learning (both design and in-service) and controlling the accumulation of market power. Implementing an approach to use reputational information would require changes to current EU procurement regulations to allow past performance data to be used in both selection and evaluation stages.

But these approaches are not without **risk**. These include the following risks (pertaining to establishing a GovTech platform but also to other similar markets):

- as noted, the broadening of procurement arrangements can expose public sector clients to **manipulation** and these arrangements are sometimes vulnerable to **collusion**;
- the network externalities associated with a common platform (the economies of scale created by aggregated public sector demand) can lead to **tipping** (capture by a single solution, even when not optimal) and to a **pace of innovation that is too fast or too slow**⁸⁷;
- **kickbacks, foreclosure and hold-up** and other **market-rigging** arrangements, facilitated by a possible loss of transparency;
- **spatial market distortions**, as seen with public service outsourcing by 'compulsory competitive tender' which favoured incumbent (ex-public) providers and 'spilled out' to neighbouring areas⁸⁸;

⁸⁷ Katz, M.L., and Shapiro, C., 1985, Network externalities, competition, and compatibility, The American Economic Review. Available at: <https://www.jstor.org/stable/1814809>.

⁸⁸ Gómez-Lobo, A. and Szymanski, S., 2001, A law of large numbers: bidding and compulsory competitive tendering for refuse collection contracts, Review of Industrial Organization. Available at: <https://www.jstor.org/stable/41798984> (Paywall).

- the hosting on the platform of **technologies and standards to control entry** to public markets or **collusive in-market behaviour**, which could limit interoperability or the feasibility of policies like the European Interoperability Framework or the Once-Only Policy^{89,90};
- **tie-in arrangements** to leverage advantage in parallel private markets, or gain private market cost advantages by 'low-balling' bids⁹¹; and
- **problems of assessing and managing risks** in dealing with large, dominant suppliers of cloud, data analytics, complementary (transactions, payments, accounting) services, when those entities might be regulated elsewhere, have 'third-party' interests in e.g. data monetisation or exert control over critical systems.

4.3. Possible approaches for the platform

A distinction can be made between various types of platform approaches, covering **local, national and EU-wide initiatives; sectoral initiatives**, such as platforms for mobility⁹², health^{93, 94}, or education; **cross-border initiatives**; and **issue-specific initiatives**, such as platforms for civic deliberation and social inclusion. Some of these approaches can also overlap. In defining the scope of a platform for GovTech and public procurement, a distinction between the two predominant approaches to the use of digital platforms in the context of public services can be made: **the utilitarian or functional approach** and the **whole-of-government**, or the **Government-as-a-Platform (GaaP) approach**⁹⁵.

4.3.1. Functional approach

The first approach is the **utilitarian or functional approach** in which governments harness the innovation potential of technologies in order to improve their own operations and public services to citizens and businesses (in other words, promoting digital technologies as a tool rather than a purpose in itself). In these cases, digitisation often consists of creating a digital version of existing processes and services, with perhaps some underlying transformation of how those services may be automated or made more efficient.

Electronic procurement platforms such as TED, and TenderNed are examples of platforms implementing this approach.

⁸⁹ Marsden, C.T., 2008, Beyond Europe: The Internet, regulation, and multistakeholder governance - representing the consumer interest?, Journal of Consumer Policy. Available at: <https://link.springer.com/article/10.1007/s10603-007-9056-z>.

⁹⁰ Cave, J., 2009, Prisoners of our own Device—an evolutionary perspective on lock-in, technology clusters and telecom regulation, TPRC. Available at: https://www.researchgate.net/publication/228249460_Prisoners_of_Our_Own_Device_-_An_Evolutionary_Perspective_on_Lock-In_Technology_Clusters_and_Telecom_Regulation.

⁹¹ Roberts, P.S. and Schmid, J., 2022, Government-led innovation acceleration: Case studies of US federal government innovation and technology acceleration organizations, Review of Policy Research. Available at: <https://onlinelibrary.wiley.com/doi/10.1111/ropr.12474>.

⁹² Cordis, 2022, Procurements of innovative, advanced systems to support security in public transport – Pre-Commercial Procurement. Available at: <https://cordis.europa.eu/project/id/101020374>.

⁹³ Cordis, 2021, Pre-Commercial Procurement of Innovative Triage Management Systems Strengthening Resilience and Interoperability of Emergency Medical Services. Available at: <https://cordis.europa.eu/project/id/101022061>.

⁹⁴ Cordis, 2021, Periodic Reporting for period 1 - eCARE (Digital solutions supporting continuum of care for frailty prevention in old adults). Available at: <https://cordis.europa.eu/project/id/856960/reporting>.

⁹⁵ Government as a platform is a term coined by Tim O'Reilly. It presents a vision of "government as the manager of a marketplace". O'Reilly, T., 2011, Government as a platform, Innovations: Technology, Governance, Globalization. Available at: https://www.mitpressjournals.org/doi/pdf/10.1162/INOV_a_00056.

4.3.2. Government-as-a-Platform approach (GaaP)

The other approach is the **whole-of-government, or the GaaP approach** which aims to transform governments on the principles of digital platforms⁹⁶, common building blocks (such as secure online authentication or secure payment) and the use of advanced digital technology products, which may include more service provision by the private sector or via public-private partnerships.

The EC states in the 2030 Digital Compass: "(GaaP), as a new way of building digital public services, will provide a holistic and easy access to public services with a seamless interplay of advanced capabilities, such as data processing, AI and virtual reality. It will also contribute to stimulating productivity gains by European business, thanks to more efficient services that are digital by default as well as a role model incentivising businesses, in particular SMEs, towards greater digitalisation"⁹⁷.

The **UK, Singapore, and South Korea** are amongst the **frontrunners** in the development of the GaaP approach⁹⁸. **Singapore**, for example, has set up a GovTech government agency aimed at accelerating the digital transformation of its public sector. The Singapore Government Tech Stack provides government agencies with shared infrastructure and common tools and services⁹⁹.

The EC's **GovTech European Parliament Pilot project** (Box 7) may represent a move towards a GaaP approach, intended to foster the digitisation of the public sector in Europe through the use of the **European GovTech platform** and an **incubator** (see Box 1). However, how far this approach goes remains to be seen. With the platform the EC wants to connect the public sectors in the EU to the GovTech ecosystem "with a view to supporting public administrations in adopting efficient and flexible digital solutions"¹⁰⁰. The objectives of the platform are to: "help to **develop the GovTech market**; create a **hub for GovTech to collaborate**, exchange ideas, to **enhance interoperability and cross-border cooperation**; gain **recognitions from businesses** offering environmentally friendly, cutting-edge technologies or innovative solutions, as **trusted partners** in the delivery of **modern digital solutions for public services**; support **co-creation with citizens**; and complementarity with the GovTech Incubator"¹⁰¹.

GaaP represents a more fundamental transformational approach to public services than the functional approach. The aims behind a GaaP approach are articulated as concerning both efficiency and effectiveness, and also incorporating greater user satisfaction¹⁰². However, ethical questions may be raised concerning for example use or reuse of data which need careful exploration before implementation.

⁹⁶ See for example the Singapore Government Tech Stack. Available at: <https://www.tech.gov.sg/products-and-services/singapore-government-tech-stack/>. Including the Open Innovation Platform initiative, Available at: <https://www.developer.tech.gov.sg/guidelines/procurement/open-innovation-platform.html>.

⁹⁷ European Commission, 2021, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Region, 2030 Digital Compass: the European way for the Digital Decade, pp. 10-11. Available at: https://eur-lex.europa.eu/resource.html?uri=cellar:12e835e2-81af-11eb-9ac9-01aa75ed71a1.0001.02/DOC_1&format=PDF.

⁹⁸ OECD, 2019, Digital Government Index: 2019 results, p. 37. Available at: <https://www.oecd-ilibrary.org/docserver/4de9f5bb-en.pdf?expires=1646218393&id=id&accname=quest&checksum=C24FE603EFC17B2859F3D2CE128949E2>.

⁹⁹ GovTech Singapore, n.d., Whole of Government (WOG) platforms and tools. Available at: <https://www.tech.gov.sg/singapore-digital-government-journey/wog-platforms-and-tools>.

¹⁰⁰ Zekovic, G., 2021, EP Pilot Project: Fostering digitisation of public sector and green transition in Europe through the use of an innovative European GovTech platform, Presentation at first GovTech workshop on 2021 EP Pilot Project. Available at: <https://joinup.ec.europa.eu/sites/default/files/event/attachment/2021-12/4.%20EP%20PP%20GovTech%20Presentation.pdf>.

¹⁰¹ Ibid.

¹⁰² Cushion, B., and Enzerink, S., 2020, Three Perspectives on Government as a Platform, CapGemini. Available at: <https://www.capgemini.com/2020/03/three-perspectives-on-government-as-a-platform/>.

Box 7: Planned activities of the GovTech European Parliament Pilot Project

Planned **top down activities** include: engaging with public administration in a foresight exercise to promote the alignment of their strategies and implementation roadmaps of digital solutions; use of a scenario building approach to reveal the dynamics of a fast-evolving ecosystem; conducting analyses to support efforts to use digital solutions in public administration for the fight against climate change and promoting the digital transition.

Planned **bottom up activities** include engaging with the GovTech ecosystem to harvest ideas that help public administrations in adopting digital solutions and to support the development or use of one common platform to gather challenges.

In addition, the pilot will also conduct **direct research with citizens**: e.g. they will use service design methods to include the views of citizens in the above streams of work and they want to unveil the perception of citizens towards new opportunities offered by digital solutions in streamlining communication between administrations and citizens.

At a glance: GovTech European Parliament Pilot Project	
Time span: expected to start in Q3 2022, duration 24 months	Countries: EU level

Source: European Commission¹⁰³.

4.4. Comparing the proposed platform with existing EU-wide digital platform initiatives

The proposed European GovTech platform is intended to facilitate:

- **solutions sharing** by the EU and national institutions, in particular **innovative solutions in public procurement**;
- **efficiency and effectiveness, reduction of administrative burden, and shortening of response times**;
- **public service transformation**, particularly for areas that are lagging behind; and
- **inter-operability and cross-border cooperation**.

A few **current examples of EU-wide digital platform initiatives** are provided in **Error! Reference source not found.**³, mapped against the platform approach taken, and noting whether they directly address some of the intended functionalities already identified for the proposed GovTech platform (indirect spill over effects are not taken into account).

With the exception of TED, all the platforms considered are initiatives of ICLEI – Local Governments for Sustainability, founded in 1990 as the International Council for Local Environmental Initiatives, which is "the world's leading network of local and regional governments committed to sustainable development"¹⁰⁴. Again with the exception of TED, these platforms are all intended to support procurement professionals in procuring innovation or solutions for sustainability. These platforms therefore represent digital tools supporting the functioning of a network, bringing together forum functionalities; resources; case studies; and advice.

¹⁰³ Zekovic, 2021, EP Pilot Project.

¹⁰⁴ ICLEI Europe • Who we are (iclei-europe.org).

The functionality of **innovative solutions sharing** by the EU and national institutions, in particular solutions in public procurement, is primarily addressed by the examples presented here. In addition, some of these examples aim to support **cross-border procurement**, whereas **efficiency and effectiveness**, and **public service transformation** receive less direct attention, although they may develop as a consequence of activity on the platforms.

TED itself is a site listing information on current and past above-threshold European Union tenders and contracts. It is a portal for finding opportunities and contracts in public procurement and therefore at most supports the aim of delivering **efficiency and effectiveness**.

No examples of extant EU-wide GaaP platforms were found. The GovTech European Parliament Pilot Project will therefore be a significant development if it follows this approach, breaking new ground for public sector, businesses and citizens in Europe. Particular attention will therefore need to be given to addressing the desired functionalities that are not yet seen in other platforms. At this stage of development it was not possible for us to identify in detail how the platform will directly support increased efficiency and effectiveness of public services, nor how it will support public sector transformation other than through sharing of use cases, best practice and know-how. Whether and how the platform will deliver through a GaaP approach is also still to be developed.

Table 3: EU-wide platforms mapped against functionalities for the EU GovTech platform

Platform Name	Type of approach	Functionalities			
	GaaP or functional	Solutions sharing	Cross-border cooperation	Efficiency/ effectiveness	Public service transformation
TED	Functional			Present	
Innovation Procurement Platform ¹⁰⁵	Functional	Present	Present	Present	-
The Procurement Forum ¹⁰⁶	Functional	Present	Present	-	-
Big Buyers Initiative ¹⁰⁷	Functional	Present	Present	Present	-
Procura+ ¹⁰⁸	Functional	Present	Present	-	-
Sustainable Procurement Platform ¹⁰⁹	Functional	Present	Present	-	-
GovTech European Parliament Pilot Project	Potentially GaaP	Mentioned in proposal	Mentioned in proposal	Mentioned in proposal	Mentioned in proposal

Source: Authors' elaboration.

¹⁰⁵ <https://innovation-procurement.org/>.

¹⁰⁶ <https://procurement-forum.eu/about>.

¹⁰⁷ <https://bigbuyers.eu/>.

¹⁰⁸ <https://procuraplus.org/home/>.

¹⁰⁹ <https://sustainable-procurement.org/sustainable-procurement/>.

4.5. Risks and benefits regarding a European GovTech platform

4.5.1. SMEs

When establishing a European GovTech platform that is accessible to SMEs, it will be important that it is **free and simple for SMEs to use, and requires minimal information to register**¹¹⁰. A platform can also enable early communication about the project and the future tender with the market, which in particular helps SMEs to be ready at tender publication.

For SMEs, **publication of smaller lots** is often preferred. Breaking down large contracts into smaller lots enables them to make the necessary upfront investment (which is more realistic for an SME) and increases the likelihood of winning the contract¹¹¹.

A small number of procurement initiatives launched places a limit on the extent to which a significant number of smaller firms might be able to go to scale as a result. A platform could aid smaller firms by offering a marketplace for SMEs to present (for free) their offer and services.

A digital platform for GovTech and public procurement can provide **information, training and support** and enable SMEs to submit tenders electronically and can avoid repeated provision of background information through centralised registration systems¹¹². Further, a standardised proposal procedure makes it easier for SMEs to respond and for response analysis.

An issue would emerge for both SMEs and public bodies when it comes to joint cross-border public procurement through a digital platform where national jurisdictions prohibit joint purchasing by public bodies. Defining common technical requirements and agreeing on the assessment process may also prove difficult. Finally, there may be increased paperwork requirements which can create further barriers for SMEs¹¹³.

4.5.2. Citizens

When a public procurement concerns citizens as end-users, it is critical to start with a needs assessment and involve end-users to ensure the use of the product once purchased¹¹⁴. The digital platform presents opportunities, as outlined above, to involve citizens in the design of services.

One risk that could emerge, however, is that the population of citizens involved with a digital platform is not representative of the general population or of the group of people using the services that are being developed. Implementation of the digital platform will need to incorporate approaches to involve a diverse range of users (geography, ethnicity, gender, socio-economic group etc.).

¹¹⁰ Brown, N., Simmonds, P., Blind, K., and Culver, J., 2018, Final evaluation of public procurement of innovation in the context of the CIP. Available at: <https://op.europa.eu/en/publication-detail/-/publication/84aa2fc3-358c-11e9-8d04-01aa75ed71a1/language-en>.

¹¹¹ GHK and Technopolis, 2014, Evaluation of SMEs' access to public procurement markets in the EU. Available at: <https://op.europa.eu/en/publication-detail/-/publication/3cfe7be5-0b1b-4452-81d6-3d578ffcca97/language-en/format-PDF>.

¹¹² Ibid.

¹¹³ Brown et al., Final evaluation.

¹¹⁴ Brown et al., Final evaluation.

5. CONCLUSIONS

In this section, we summarise our conclusions and the recommendations we would make to lawmakers and civil servants with regard to the proposed EU GovTech platform.

This research paper focussed on **GovTech and public procurement of innovation, combined with the use of digital platforms**. The research paper examined the first two concepts individually, and then combined as a potential European GovTech platform. We explored the risks and benefits accruing to each. Finally we asked whether this would bring about the wider objectives desired.

Developing and supporting the GovTech ecosystem and market

GovTech is a recent concept and novel EU policy field. Current procurement and governmental process poses specific challenges for SMEs developing GovTech such as **entry barriers** and a **dependency on legacy software**. There is also an absence of **governing organisations** that are adapted to the characteristics of GovTech. In some EU countries, one Ministry is responsible for digital government policies, another Ministry for economic and market development, while all public agencies have a high level of autonomy in digitalisation and procurement. In such cases, GovTech providers face unclear and agency specific policies and procedures for experimentation with new solutions.

Current procurement processes are in need of revision in order to meet the characteristics of GovTech. The **adoption of new approaches**, such as civic hackathons, start-up incubation, acceleration labs, pre-commercial procurement solutions and design contests can provide a solution to this.

Some observations and recommendations:

- Where governments are experimenting with GovTech, they should consider **risk of failure** and invest in a certain amount of **redundancy**: extra measures for experimenting and process innovation in services; a well-developed **preparatory phase**; and for **training of public servants** to resolve issues. Similar provisions must be taken when GovTech is made part of core infrastructure.
- There is much to be learned from **collaboration and sharing lessons**, already seen in place in the national initiatives mentioned, for example about procurement methods such as design contests and hackathons or in developing the understanding and skills sets to apply the technology.
- There is an opportunity to address the current **institutional void** identified, either through widening the responsibilities of an existing body or establishing a new one. The relevant body could provide consistency across the EU in approaches to technical challenges such as **interoperability** and **common standards**; the harmonisation of regulated access to components; and responses to **legal and ethical challenges**.

Public procurement of innovation

Innovation in the context of procurement may concern one or all of the three questions: **how to procure innovatively; how to buy innovation; and how to innovate public services through procurement**. Goals, opportunities and challenges depend on the characteristics of the procurement itself.

Some observations and recommendations:

- Using public funds to support development of innovation presents **risks to the public sector** that require addressing at **political and administrative levels**, for example by **sandboxing, design contests** or creating **backstop contracts**.

- Approaches to support the procurement of innovation are summarised in section 3.4, which include:

- consideration of the **qualities of the existing market**, including **engagement** with suppliers;
- creating as level a playing field as possible through careful definition of specifications, and **reducing barriers to SME bids**, for example through the use of **Lean and Agile** methodologies;
- in cases where what is being bought is at a low stage of development and in need of further R&D, **pre-commercial procurement** and use of procedures which provide possibilities to negotiate with potential suppliers (e.g. Competitive Dialogue) are suggested, as is consideration of the contractual regime and assignment of IP rights; and
- for strategic procurement of innovation and procurement of R&D services there are additional challenges. These may include understanding what is required in terms of outcomes, and exploring options, for example through incubators or a challenge process.

- In all cases, access to skilled procurement professionals is essential. There is, again, an opportunity to support **development and experimentation** across the EU on addressing these challenges through sharing knowledge and lessons learned.

Recommendations for developing an EU GovTech Platform

We find that there are **different types of GovTech or procurement platforms**. We can distinguish between two types of approaches to digital platforms: 1) the **utilitarian or functional** approach and 2) the **Government-as-a-Platform (GaaP)** approach. The utilitarian or functional approach focusses on public procurement to harness the innovation potential of digital platforms and technologies. The GaaP approach aims to transform governments on the principles of digital platforms, promoting public-private partnerships and the use of advanced digital technology products provided mainly by the private sector. Within the EU, there are various platform initiatives that take on the utilitarian or functional approach. The planned European Parliament GovTech Pilot project has characteristics of the GaaP approach, but is at a very early stage of conception.

A GovTech platform, like the European Parliament GovTech Pilot project, potentially generates benefits for governments in terms of **innovations, efficiency and effectiveness**, and **transnational collaboration**, as well as for citizens and SMEs in terms of **innovation of public procurement and engagement**. However, this research paper also identified a number of challenges and risks:

- for example, the platform may lead to a reduced incentive for individual public administrations to develop their in-house GovTech solutions;
- there may be reduced knowledge and ability of public sector procurers to evaluate new technologies as a result of their reliance on centralised expertise and delegated responsibility; and
- there may be unfair and/ or inefficient competition between SMEs and large companies providing GovTech solutions on digital platforms.

Digital technologies have the potential to **help governments shape and deliver better services** to citizens and businesses. But despite significant effort at EU level, their adoption and use still shows significant variation. This poses challenges for the development of an EU GovTech Platform. One risk is that the variation across Member States will be perpetuated as 'developed' Member States develop further by engaging with the platform, while 'less-developed' Member States are less able to engage and benefit.

We suggest the following concrete **recommendations** regarding the development of an EU GovTech Digital Platform:

- Develop a platform that is driven by user requirements, instead of driven by technology.

The functional requirements of local, national and EU-wide stakeholders should be central in the development of an EU GovTech platform, as opposed to technological possibilities. Efforts should be made to gather and understand these user requirements, so that solutions can be implemented that address particular needs. For example, advancements in AI allow for increasingly sophisticated chatbots to be implemented on platforms, but we recommend against developing such functionalities if they do not satisfy a particular user requirement.

- Incorporate below-threshold procurement.

For an EU GovTech platform to realise its full potential, it is necessary to include not only above-threshold but also below-threshold contracts for works, supplies, and services. Such contracts with lower monetary value make up the large majority of contracts awarded by the public sector (almost 80% in the EU in 2016), and because of the lighter contract award regimes that apply, they should be, at least in principle, more accessible to European SMEs, including those developing GovTech. In addition, an EU platform for GovTech could increase the chance of discovering cross border applications of GovTech, applications otherwise deemed to be only of national, regional or local interest.

- Navigating challenges regarding public platformisation.

In equal measure, the success of an EU GovTech platform will depend on the ability to navigate and manage not only known challenges generally associated with online platforms, but also known/ unknown challenges that are specific to public sector platforms. Generally accepted benefits of platforms as multi-sided markets include for example: direct and indirect network effects (the more users, the higher the value of the platform for each individual user); and economies of scale (reducing average production costs for market participants). Generally recognised drawbacks of platforms as multi-sided markets include, for example, tendencies towards market dominance and anticompetitive behaviour of some of the participants. Less well understood and therefore more challenging to manage would be, for example, non-price competition factors – such as innovation, quality, and privacy. An additional complexity is that public procurement platforms have broader goals than commercial platforms, in the sense that they aim to maximise *public value* for citizens, businesses, and public administrations alike. Another challenge in this category is likely to arise from the multiple roles

assumed by the public sector as owners or facilitators as well as potential developers, deployers, orchestrators, regulators, etc. of GovTech platforms.

- Engage citizens in public procurement.

Depending on the type of procurement, citizens can be involved in different ways. For example, when public procurement concerns citizens as end-users, it is critical to start with a needs assessment and involve end-users to ensure the use of the product once purchased. Citizens can also play a role in decision-making about awarding contracts, for example by voting in design contests as part of pre-commercial public procurement. Effective citizen participation contributes to the legitimacy of, support for, and satisfaction with government decision-making. It will be important to ensure that a **diverse population of citizens** is engaged in the platform.

- Given the relatively low maturity of GovTech, procuring through the EU GovTech Platform (if this is envisaged) will require careful thought. Consider use of procedures which provide possibilities to negotiate with potential suppliers (e.g. Competitive Dialogue); and the contractual regime and assignment of Intellectual Property (IP) rights. Ensure that processes, specifications and e.g. certification requirements are made as simple as possible, perhaps by using Agile or Lean methodologies.

- Consider potential challenges related to international procurement. Addressing this potential challenge would have to take into account the fact that, similar to commercial digital platforms, the GovTech market (in terms of product suppliers and especially in terms of infrastructure suppliers) is dominated by North American and UK firms¹¹⁵. This could potentially interfere with the stated purpose of an EU GovTech platform: to create a level playing field for all firms, EU as well as non-EU, large as well as SMEs.

- Finally, engage with businesses of all sizes in the market to gain their feedback on approach.

¹¹⁵ In terms of GovTech start-up activity in 2020, according to one market report, the US and the UK accounted for over 50%. The only EU country featuring in the top five (after the US, the UK, Israel, and Canada) was Spain (3%). Source: StateUp, 2021. Data-driven insights into global govtech. Available at: <https://stateup.co/wp-content/uploads/2021/01/StateUp-21-2021.pdf>. In terms of GovTech infrastructure or cloud computing services (cloud infrastructure, platform services), the global market in 2021 was dominated by large US corporates, such as Amazon AWS, Microsoft Azure, and Google, together with Chinese corporates, such as Alibaba Cloud and Tencent Cloud. See for example ZDNet,c, 22 December 2021, Top cloud providers: AWS, Microsoft Azure, and Google Cloud, hybrid, SaaS players. Available at: <https://www.zdnet.com/article/the-top-cloud-providers-of-2021-aws-microsoft-azure-google-cloud-hybrid-saas/>.

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ANNEX 1: INTERVIEWS AND INTERNAL WORKSHOPS

Interviews

Name of the respondent	Organisation
Georges Lobo	DIGIT, European Commission
Arune Matelyte	GovTech Lab Lithuania
Jason Waterman (retired)	UK Crown Commercial Service/ Cabinet Office

Internal Workshops

Date	Topic/s	Attendees
21 February 2022	Innovation in the context of public procurement GovTech	TNO: Gabriela Bodea, Annelieke van den Berg, Cass Chideock, Marissa Hoekstra, Mathilde Theelen, Anne Fleur van Veenstra GNKS Consult: Jonathan Cave TU Delft: Nitesh Bharosa Technopolis: Ben Kokkeler
1 March 2022	Digital Platforms and Government Risks and Benefits (part 1)	TNO: Gabriela Bodea, Annelieke van den Berg, Cass Chideock, Marissa Hoekstra, Mathilde Theelen, Anne Fleur van Veenstra GNKS Consult: Jonathan Cave TU Delft: Nitesh Bharosa Technopolis: Ben Kokkeler
15 March 2022	Risks and Benefits (part 2)	TNO: Gabriela Bodea, Cass Chideock, Marissa Hoekstra GNKS Consult: Jonathan Cave TU Delft: Nitesh Bharosa Technopolis: Ben Kokkeler

ANNEX 2: DEFINITIONS

CivTech/ Civic Tech	CivTech or Civic Tech does not yet have a universally agreed definition, but here is defined this as technology used to inform, engage and connect (citizens) with government and one another to advance civic outcomes. Civic tech and GovTech are neither mutually exclusive nor overlapping.
GovTech	GovTech refers to technological (mostly digital) products developed to support the internal operations of public administrations, or the delivery of public services to citizens and businesses.
GovTech ecosystem	GovTech ecosystems refer to networks of citizens, public and private actors (including SMEs and start-ups), academia, and (venture) capital involved in the development of technological solutions to address public challenges.
Innovative public procurement	New approaches (e.g. legal, technological) by which public bodies undertake procurement.
Public procurement for innovation	Using public procurement as part of innovation policy.
Public procurement of innovation	Using procurement to purchase new goods or services that support delivery or development of public policy.
Novation	The replacement of one of the parties in a two-party contract with a third party. To novate is to replace obligations falling on an original supplier with obligations on a new one.
Utilitarian or functional platform approach	Approach in which governments may use public procurement to harness the innovation potential of digital platforms and technologies in order to improve their own operations and public services to citizens and businesses (in other words, promoting digital technologies as a tool rather than a purpose in itself).
Whole-of-government, or the Government-as-a-Platform (GaaP) approach	Aims to transform governments comprehensively on the principles of digital platforms, promoting public-private partnerships and the use of advanced digital technology products provided mainly by the private sector.
Virtual Enterprise	A virtual enterprise is a temporary alliance of businesses (a collaborative network) that often share resources, skills or competencies with the aim to respond better to business opportunities.

ANNEX 3: OVERVIEW OF OPPORTUNITIES, CHALLENGES, RISKS AND BENEFITS

GovTech

<p>Opportunities</p> <ul style="list-style-type: none"> - New procurement instruments such as civic hackathons, start-up incubation, acceleration labs, pre-commercial procurement solutions and design contests 	<p>Challenges</p> <p>General:</p> <ul style="list-style-type: none"> - Data quality - Interoperability - Lack of common standards - Legal and ethical issues - Institutional void, as the current GovTech ecosystem lacks organisations that are well adapted to the characteristics of GovTech <p>Specifically for SMEs:</p> <ul style="list-style-type: none"> - Entry barriers - Dependency on venture capital growth expectations - and dominance in the market of established providers - dependency on legacy software
<p>Benefits</p> <p>Specifically for SMEs:</p> <ul style="list-style-type: none"> - Overcome a classic market failure, by finding a first initial group of customers for their products and services - GovTech can be a good starting point for SMEs, where other businesses do not want to take risks or do not have the money to invest in new products. Provides opportunity for businesses to test their products and have their first contracts to help them grow - Pre-commercial procurement <p>Specifically for public sector:</p> <ul style="list-style-type: none"> - Pre-commercial procurement allows for public sector to engage in multi-partner consortia. Citizens could be invited - Access to latest innovations - Access to a wider and more diverse citizen audience 	<p>Risks</p> <p>Specifically for Government:</p> <ul style="list-style-type: none"> - GovTech is part of the critical infrastructure of public sector. Risk is that GovTech start-ups can fail to deliver. Therefore public sector has to be prepared to invest or take extra measures for experimenting and process innovation

Procurement of Innovation/Innovation in Procurement

<p>Opportunities</p> <ul style="list-style-type: none"> - Sandbox new tech goods and services - Design contest approach - Create backstop contracts - Small business innovation research (SBIR) in US and NL - Inclusive procurement approaches - Market consultation, analysis and engagement; - Dialogue between procurement and policy professionals about outcomes - Specification of functional requirements - Explicit acceptance of alternative solutions - Change award criteria - Bundling or division of demand - Wider engagement of SMEs - Strategic procurement of innovations: use of procedures which provide possibilities to negotiate with potential suppliers - Consideration of the contractual regime and assignment of intellectual property (IP) rights - Procurement of R&D services (pre-commercial procurement approaches) - Cross-border pre-commercial procurement - Lean and Agile methodologies in redesigning contracts and the contracting process 	<p>Challenges</p> <ul style="list-style-type: none"> - Procurement process can be highly regulated and time consuming to set up - Procurement process may be resource intensive for purchaser and suppliers - Outcome of the process can remain uncertain - Successful procurement requires skill in structuring the process - Successful procurement requires a strong understanding of the market - In some projects and sectors it can be challenging for public sector organisations to work with GovTech providers to co-create contracts rather than outsourcing them - Lack of in-house capacity on the side of the government can leverage larger contractors - Differences in working culture between businesses and public sector - Size of contract - Cross-border harmonisation - Success of the arrangement depends on participation - Ownership and compensation for IP
<p>Benefits</p> <p>Specifically for SMEs:</p> <ul style="list-style-type: none"> - Strengthening the SME ecosystem - Changing the risks facing SMEs - Enhancing competitive pressure on larger firms - Minimising risks of lock-in and foreclosure - Access to solutions more adapted to specific client needs - Innovation in public procurement such as the Lean approach benefits SMEs 	<p>Risks</p> <p>Specifically for SMEs:</p> <ul style="list-style-type: none"> - Many standard form contracts include terms that are disproportionately onerous for smaller firms - Smaller companies could be excluded when too stringent qualification criteria are set as a first pass of evaluation - Safe space programmes might be taking too long while improving products or services in close contact with envisaged customers, without embarking on a wider market

Role of digital platform for GovTech and public procurement

<p>Advantages</p> <ul style="list-style-type: none"> - Co-innovation - Accumulate reputational information - A more inclusive and deliberative approach to public spending where the platform includes an engagement function - Faster, more efficient and more effective public service procurement - An increased capacity to develop, implement, monitor and enforce baseline security, privacy, environmental and ethical criteria for GovTech procurement - Improved ability to tailor public services to needs of specific constituencies - More usable, targeted, proportionate and accepted public services - Improved interoperability and cross-border cooperation - Lower entry thresholders for SMEs - GovTech can be regarded as a two-sided market, where clients and suppliers can interact to their mutual benefit 	<p>Disadvantages</p> <ul style="list-style-type: none"> - Reduced incentive for individual public administrations to develop their in-house GovTech solutions - Reduced knowledge and ability of public sector procurers to evaluate new technologies as a result of their reliance on centralised expertise and delegated responsibility - Governance challenges - Challenges relating to product and service delivery liabilities and ownership of data and other IP - Unfair and /or inefficient competition between SMEs and large companies providing GovTech solutions on digital platforms - Search and switching costs may be high - Potential market failures include incumbent advantage, lock-in, contractor control of IP and deterrent of unfair contractual terms - Platform may support a tipping equilibrium, with dominance of very few firms or solutions - Power of the first-mover advantage and power of strategic suppliers to influence rebidding
<p>Benefits</p> <ul style="list-style-type: none"> - Ways to ensure benefits - Ability to form strategic partnerships - Supply chain and innovative capacity maintenance - Capacity <p>Specifically for SMEs:</p> <ul style="list-style-type: none"> - Standardised proposal procedure makes it easier for SMEs to respond and for the procurer to analyse the response - Platform can enable early communication about the project and future tender towards the market, helps SMEs to be ready at the publication of tender - Publication of smaller lots - Provision of information, training and support 	<p>Risks</p> <ul style="list-style-type: none"> - Broadening of procurement arrangements can expose public sector clients to manipulation and they are sometimes vulnerable to collusion - In the context of innovation, network externalities associated with the common platform can lead to tipping - Kickbacks, foreclosure and hold-up and other market-rigging arrangement, facilitated by a possible loss of transparency - Spatial market distortions - Hosting on the platform of technologies and standards to control entry to public markets or collusive in-market behaviour, which could limit interoperability

<p>Governments:</p> <ul style="list-style-type: none">- Joint cross-border procurement may reduce administrative burdens on themselves as well as on tenderers	<ul style="list-style-type: none">- Tie-in arrangements to leverage advantage in parallel private markets, or gain private market cost advantages by low-balling bids- Problems of assessing and managing risks- Regarding joint cross-border public procurement; national jurisdiction prohibit joint purchasing by public agencies- Defining common technical requirements and agreeing on the assessment process and decision can be difficult
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This research paper provides insight into GovTech and innovation in the context of public procurement. It examines the possibilities for developing an EU GovTech Platform with the aim of supporting the modernisation of the public sector; the further development of the European GovTech market; and engagement with citizens and businesses.

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