Deliverable D4.2
Blueprint for next steps in eGovernment applications in Europe

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Dissemination level:	Public
Deliverable type:	Final
Version:	2
Submission date:	12th July 2018

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EXECUTIVE SUMMARY

This is deliverable report *D4.2: Blueprint for next steps in eGovernment applications in Europe,* of the European Commission Horizon 2020 funded project CLARITY (grant agreement number 693881). The CLARITY project aims to support European Member states in their pursuit for greater trust, transparency and efficiency within government via the increased uptake of open eGovernment initiatives.

This report presents a blueprint of the next steps required for the provision and uptake of eGovernment applications and services in the EU, to enhance accountability, transparency and trust in each of the following three public sector areas: (a) general practice healthcare, (b) local government, and (c) small business and self-employed[1].

This report is the result of the discussion and validation process with different stakeholders, based on the initial blueprint presented in deliverable D4.1[2]. This initial blueprint has been enhanced with the inline comments added to the consultation website developed for the project[3], the feedback obtained in five workshops where different activities and debates were carried out, and the feedback provided by reviewers during the final review of the project.

Table 1 summarises the key findings of this deliverable. It lists the main available and emergent solutions, the main business and data models that may contribute to the development and take-up of open eGovernment, as well as models that open eGovernment may foster, the main policy, technology and data gaps that hinder open eGovernment applications, the main social considerations that should be taken into account, and the list of recommendations for the provision and take-up of open eGovernment applications.

An online version of the blueprint (in English and Spanish) is available on CLARITY's website[4]. The site highlights the group of recommendations, presents a summary of the emerging solutions and business models, gaps, and social considerations, and directs users to each sector where they can find this deliverable and links to the marketplace. More details can be found in deliverable D4.3.

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[1] The original blueprint deliverable included the disability sector as one of the public sector areas. Our findings showed that this sector should not be considered separately, but taken into account across all sectors. That is why it has been removed from this version, as requested by the EC reviewers,

[2] All CLARITY deliverables are available on the project website at: http://clarity-csa.eu/resources

[3] http://clarity.oeg-upm.net/blueprint/

[4] http://blueprint.clarity-csa.eu

Table 1: Key findings of D4.2

Main available and emerging solutions	Main emerging business and data models
- Electronic prescriptions. - Patient-data repositories. - Online registration of patients and practitioners. - Telemedicine applications. - Services for caretakers. - Notification services. - One-stop shops. - eDemocracy and eParticipation services. - Applications for accountability. - Guides to the steps involved in creating and maintaining a business. - eProcurement platforms. - Specialized websites for people with disabilities, chronic illnesses and the elderly. - eGovernment websites that follow accessibility standards. - IoT applications, e.g. to check health-related measures. - Services that apply emerging technologies such as blockchain and artificial intelligence, e.g. to facilitate search, provide answers to users, manage records. - Services that provide or exploit open data, e.g. to visualize data on health, local budgets, procurement.	- Stakeholders that co-create services. - Public employees and organisations that assist stakeholders in the access and use of open eGovernment services, and regarding compliance with laws. - Positions for tasks such as live chat, forum moderation, email communication, etc. - Companies, organisations and public administrations that create (innovative) eGovernment solutions that exploit open data. - Companies that offer consulting services to public administrations on technology roadmaps. **Main gaps** - Slow implementation of directives and regulations. - No clear interaction between the public and the private sectors. - Low technology skills of stakeholders. - Lack of mobile applications. - Low interoperability. - Unavailability of open data. **Main social considerations** - Change in the labor force. - Equity and digital divide. - Quality of life. - Reservations about openness of health data. - Collaboration culture.
Main recommendations	
- User-centred design. - Universal accessibility of services. - Ubiquitous services. - Meeting the once-only principle. - Service personalization.	- Services in multiple languages. - Cross-border services. - People's access to their own data. - Openness of data and services. - eDemocracy sevices. - eProcurement services.

1   INTRODUCTION

This deliverable report *D4.2: Final version of the blueprint for next steps in eGovernment applications in Europe presents* a blueprint of the next steps required for the provision and uptake of eGovernment applications and services in the EU in each of the following three public sector areas: (a) general practice health, (b) local government, and (c) small business and self-employed. Although focused on these sectors, it follows a holistic approach to open eGovernment, highlighting sector particularities when relevant.

This deliverable draws on previous deliverable D4.1: *Blueprint for next steps in eGovernment applications in Europe[5],* which was submitted for discussion: i) at validation workshops with multiple stakeholders involved in encouraging the adoption of open eGovernment applications in Europe, and ii) via a consultation website where stakeholders could add and answer inline comments. The feedback from these assessment activities has been incorporated into the initial blueprint to arrive at the enhanced and final blueprint version presented in this deliverable D4.2.

An online version of the blueprint (in English and Spanish) is available on CLARITY's website[6]. The site highlights the group of recommendations, presents a summary of the emerging solutions and business models, gaps, and social considerations, and directs users to each sector where they can find this deliverable and links to the marketplace. More details can be found in deliverable D4.3.

1.1   MAIN CONSIDERATIONS

There are certain premises that are important to have in mind when reading the blueprint:

- **Technology should be the means not the goal.** The use of technological and data trends in open eGovernment implementations does not solve all the issues related to public administration. In many cases, an in-depth transformation of models and procedures underlying eGovernment services is required. However, technology can support the conceptualization and development of new practices and can boost innovative services. Moreover, new technologies may call for new strategies in order to exploit their possibilities.

- **Security plays a key role in the provision and take-up of open eGovernment services.** People will not trust and consequently use open eGovernment services if they are not convinced that their data are protected and that the applications are reliable, tamper-proof and available when required. Public administrations should provide a means so that both the user and the administration can be sure that they are interacting with the intended counterpart. Data should be stored in such a way that only authorised entities can access them and that they can be recovered after a security incident.

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[5] All CLARITY deliverables are available on the project website at: http://clarity-csa.eu/resources
[6] http://blueprint.clarity-csa.eu

- **The implementation of the recommendations should always be aligned with the applicable legislation.** In this regard, the General Data Protection Regulation (GDPR)[7] will play a key role since personal data are involved in many of them.

- **The disability sector should not be considered separately**, It should be taken into account transversally across all sectors. It should be stressed that services that are universally accessible will be usable by all citizens, not only those with disabilities.

1.2 DOCUMENT STRUCTURE

The rest of this report is structured as follows: **section 2** explains the methodology followed to develop the final blueprint. Next, **section 3** provides the background information related to the next steps for the provision and uptake of open eGovernment services in Europe: it consists of a description of open eGovernment; the main available and emerging solutions; the main business and data models; the policy, technology and data gaps; and the social considerations. Following, **section 4** describes the set of recommendations, and finally, **section 5** presents some conclusions.

Additionally, **annex I** contains statistics of the online consultation website, **annex II** describes the protocols followed in the workshops, and **annexes III to V** provide self-contained blueprints for each sector.

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[7] All CLARITY deliverables are available on the project website at: http://clarity-csa.eu/resources

2   METHODOLOGY

The process followed to produce the blueprint presented in this deliverable can be summarised in the following phases: (1) an initial blueprint (included in deliverable D4.1) was developed by integrating and completing the information of previous deliverables of work packages WP2 and WP3, on the needs, applications, and gaps related to open eGovernment; (2) the initial blueprint was submitted for discussion: i) via a consultation website where stakeholders could add and answer inline comments, and ii) at five validation workshops with multiple stakeholders involved in encouraging the adoption of open eGovernment applications in Europe; and (3) the feedback from discussion activities was integrated into the initial blueprint to generate an enhanced final blueprint. The following sections describe the consultation processes and the way the feedback was handled.

2.1   ONLINE CONSULTATION

After the initial blueprint was delivered, an online consultation website was developed. It contained a call for contributions, which included links to factsheets for each sector. In turn, each factsheet had links to the different sections of the complete blueprint document, where people could add and answer comments on a specific paragraph and on the document in general.

A call for contributions to the online consultation website was delivered to CLARITY's contact list, which contains over 820 stakeholders in open eGovernment. Additionally, 15 INSO projects were contacted, and 43 personal messages were sent. Furthermore, the group of people selected to be interviewed on different aspects of the project were also emailed the link and were asked questions about the blueprint.

The call for online consultation was also included in the following:

- News item on datos.gob.es, both in Spanish and English[8].
- Newsletter from EIT Health Spain, both in Spanish and in English. It included dissemination to EIT Health Spanish partners and to all European EIT Health Co-Location Centers.
- AMETIC (Biggest Spanish Industry Association on Electronics, Information Technologies and Digital Content) webpage[9].
- Sermas website (Comunidad de Madrid Health Department, including all public hospitals in the region)[10].

The consultation website in English has been up since 9th November 2017. A Spanish version of each sector's document[11] was developed and available by 21st November. By 5th February,

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[8] http://datos.gob.es/en/noticia/clarity-project-raising-upcoming-open-government

[9] http://ametic.es/es

[10] http://www.madrid.org/sanidad/

[11] http://clarity.oeg-upm.net/blueprint/generalPracticeHealthEsp2.html

2018[12], 16 people from seven countries had added 72 comments. Annex I presents some statistics generated by the discussion platform used in the website

2.2   WORKSHOPS

Five blueprint validation workshops were carried out. The first four included all of the blueprint topics: solutions, business and data models, gaps, social considerations and recommendations; in general participants were divided into groups per sector. The workshops included multiple stakeholders in open eGovernment, and their activities, detailed in Annex II, were oriented to assess (refute or validate) the blueprint statements and to determine missing elements.

The last workshop took place at the project's final conference[13] and mainly addressed the blueprint's eleven recommendations. There was a panel with three members, each of whom presented their view on a group of recommendations; then, the audience rated each recommendation from not relevant to very relevant while questions were asked to the panelists.

Table 2 summarises information of the workshops: location, date, if they were short (1h 15'), long (4h 30') or at the conference (30'), number of participants (excluding project members) and sectors that were addressed.

Table 2: Workshop Data

Place	Date	Type	# participants	Sectors
Amsterdam	19/12/2017	short	12	All (by sector)
Madrid	16/01/2018	long	12	General practice Local government SMEs and self-employed
Stockholm	23/01/2018	short	5	General practice Local government
Madrid	25/01/2018	short	5	Disability
Skellefteå	15/02/2018	conference	+ 70	All (global)

2.3   FEEDBACK INTEGRATION

The process carried out to analise the feedback and incorporate it to the blueprint followed the following steps:

- **Step 1**: Separate content-oriented comments from quality-of-writing comments.

- **Step 2**: Note the relevant paragraphs in the interviews.

- **Step 3**: For each section in the blueprint, list the corresponding content-oriented comments, interview paragraphs and workshop feedback.

- **Step 4**: For each item in the list:

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[12] This is the date we established as deadline to collect comments but the website is still up.

[13] https://clarity-conference.com/en/

o   Accept/decline. Decline should be justified.

o   Solve conflicts. Resolution should be registered.

o   Make any necessary follow-up questions.

- **Step 5**: Acknowledge contributors.

3   BACKGROUND

3.1   OPEN EGOVERNMENT

Open Government is a government with high levels of transparency and with an emphasis on government accountability. The concept of open government suggests that the public should have access to government-held information and that it is informed of government proceedings. It includes expectations for increased participation and collaboration of citizens, businesses, employees and other entities in government proceedings, through the use of modern, open technologies[14]. The term Open in this context means that data has not only to be accessible but also to be understandable in order for citizens to know how the data can be relevant to them. At the same time, *eGovernment* refers to the use of computers and other devices to provide information and services to the public. In turn, *eGovernance* extends the scope of eGovernment to include citizen engagement and participation in governance.

3.1.1   General Practice

General practice provides person centred, continuing, comprehensive and coordinated whole person health care to individuals and families in their communities. As a sector, general practice healthcare, its practice teams, and their primary healthcare relationships comprise the foundations of an effective health care system[15]. Health systems can greatly differ around the world in general and in the EU in particular, and public administrations play different roles in each of them. In some countries, health care is free and universal while in others, patients have to pay partially or completely for their health care. Moreover, practitioners can belong to the public sector and/or the private one.

Ultimately, open eGovernment services in this sector are twofold: on the one hand, there are health services provided to citizens and, on the other hand, there are services provided to the different practitioners involved in the general practice sector (such as doctors, nurses, care providers, pharmacists, etc.). Furthermore, service providers should also take into account the requirement of cross-border solutions, both at inter- and intra-national levels since differences in this sector are not only between Member States, but also between regional administrations from the same country.

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[14] https://opensource.com/resources/open-government
[15] https://www.racgp.org.au/becomingagp/what-is-a-gp/what-is-general-practice/

The sensitive nature of health data makes data protection especially important in this sector. Openness in solutions must be developed carefully and must ensure that available open data are conveniently anonymised. Citizens also need to have full access to their own data.

3.1.2   Local Government

Local government institutions vary greatly between countries in terms of size, demography, services they must or can provide, etc. In some countries local authorities have autonomy and a relatively independent economy, so they can decide on their projects and budget whereas in other countries, the central government makes most of the decisions. However, there is a general consensus about the fact that local government is the public administration that is closest to citizens, in contrast to regional, state (or even supranational) level governments.

As described by Shackeleton *et al*, "if governments are to fully exploit the benefits that can come from mature eGovernment implementations, then local government electronic service delivery must be seen as a vital component"[16].

Governments in general and local ones in particular cannot only enable the use of innovative solutions, but also play an active role in applying them to the open eGovernment services they provide.

The availability of open data together with open service source components will enable the development of new solutions and will foster reuse by small local governments that lack resources. However, differences in local governments' decision-making processes hinder this generalization and reuse.

Finally, political instability and political switches can be a barrier to the development of open eGovernment services. Some politicians lack commitment, they believe that open eGovernment services do not cause an impression on the public, so they do not invest in them.

3.1.3   SMEs and Self-employed

SMEs and self-employed make up a very heterogenous group that ranges from single person initiatives up to companies with at most 250 employees, and may belong to different sectors:

- Specifically, according to the EU definition given by the Commission Recommendation 2003/361/EC[17], an SME should employ less than 250 persons and have an annual turnover of not more than €50 million or an annual balance-sheet total of not more than €43 million.

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[16] Peter Shackleton, Julie Fisher & Linda Dawson (2004) Internal and External Factors Impacting on E-Government Maturity: A Local Government Case Study, *Journal of Information Technology Case and Application Research*, 6(4): 36-50, DOI: 10.1080/15228053.2004.10856053

[17] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:124:0036:0041:en:PDF

- A self-employed person is defined by Eurostat[18] as "the sole or joint owner of the unincorporated enterprise in which he/she works …. Self-employed people also include: unpaid family workers; outworkers (who work outside the usual workplace, such as at home); and workers engaged in production done entirely for their own final use or own capital formation, either individually or collectively".

Some key government services in this area have focused on reducing the administrative burden and shortening response times so that enterprises can be set up and run effectively. This has been done under the assumption that taking into consideration the size of SMEs, what they struggle with is the strength of expertise they have on board and the limited resources they may have to dedicate to administrative and legal work that is required to set up and run a business.

Furthermore, in the EU context, government services should also take into account the requirement of cross-border solutions in the context of the European Single Market, where an enterprise from one Member State may want to setup, run, and trade in another Member State.

3.2   SOME AVAILABLE AND EMERGING SOLUTIONS

This section discusses some of the available and emergent solutions that we have come across while doing desk research on existing open eGovernment services in this sector. We have focused on those that are leading the way or show a high level of innovation and provide examples of some implementations.

3.2.1   General Practice

Solutions for citizens

- Electronic prescriptions. In some Member States, a doctor can issue prescriptions for medicines electronically, and pharmacies can dispense medicines according to them. Innovative applications in this area include medicine surplus reuse and control of the delivery of doses to a patient.

  Examples: In Finland, the national Prescription Centre contains all the electronic prescriptions and the corresponding dispensing records entered by pharmacies[19]. Based on the information held in the Prescription Centre, any pharmacy can dispense medicines to citizens. Spain has also e-prescriptions, but there is no national repository and so far, only a few regions have interconnected their prescription systems.

- One-stop shop. In some countries, a single-entry point to access open eGovernment services for general practice is available together with other health services.

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[18] http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Self-employed

[19] https://tunnistus.suomi.fi/VETUMASSO/app

Example: Denmark has an entry point to a number of interactive and transactional services for citizens, including electronic booking of appointments with a general practitioner, viewing appointments with the healthcare services, receiving a reminder prior to visits, sending secure emails to healthcare authorities and renewing drug prescriptions[20].

- IoT applications. IoT applications for general practice include the use of sensors for different health-related measures such as heartbeat, blood pressure, temperature, insulin and glucose levels, etc. These applications may warn citizens themselves, doctors or emergency units when those measures reach alarming levels.

- Personalisation of websites and services. Personalisation of general practice websites and related services that are adaptive to the user profile and requirements.

- Specialized websites with information on important care and social security provisions for people with disabilities, chronic illnesses and the elderly. These are also catered to their families and support staff.

   Examples: One-stop website in the Netherlands[21] that provides information on important care and social security provisions for people with disabilities, chronic illnesses and the elderly.

- Chronic patient healthcare services. Applications for the empowerment of chronic patients by managing their healthcare on their own.

- Telemedicine. The use of ICT to provide general practice healthcare from a distance can be used to improve access to medical services when rural settings, lack of transport, lack of mobility (e.g., elderly or disabled citizens), decreased funding or lack of staffing make access difficult. It can also help in critical care and emergency situations. Telemedicine allows early diagnosis and adequate treatment of chronic patients.

Solutions for practitioners and caretakers

- Patient-data repositories. Repositories where healthcare units from public and private health systems can enter and look up patient records in a secure way and where patients themselves are also permitted access; additionally, patients can decide who else may access their medical data.

   Examples: In Malta, patients and their doctors can access the following health data: case summaries, medicines entitlement, lab results, medical image reports, among others[22]. Portugal's health network, *Rede Telemática da Saúde®*, allows access to clinical information and promotes the communication between certified health professionals, contributing to an improved access to medical care. Spain's digital clinical history,

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[20] http://www.sundhed.dk
[21] https://www.regelhulp.nl/
[22] https://myhealth.gov.mt/

Historia Clínica Digital[23] of the National Health System allows citizens and their general practice doctors to look up their medical reports[24].

- Online registration of practitioners and patients. These kinds of services can be useful for practitioners both in order to register themselves and in order to register patients or insured people into the corresponding health system.

  Example: The Croatian Health Insurance Fund[25] allows the electronic submission of applications for registration, deregistration, and change of information of an insured person.

- Services for caretakers. Applications and services that offer support to caretakers of citizens such as people with dementia.

  Example: In Norway, there is the Action project that stands for Assisting Carers using Telematic Interventions to meet Older Person's Needs[26]. The main aim is to enhance their quality of life via the use of user-friendly information and communication technology in their own homes.

- Services that apply big-data and artificial-intelligence technologies. The statistical analysis of (anonymised) health data can help practitioners learn about prevalence of a disease, drug (mis)use, etc. Emerging technologies such as data mining and deep learning can go further and provide insights to possible illness causes, help in diagnosis, and suggest treatments. Natural language processing of health records and drug specifications promotes the development of innovative applications for health practitioners.

- Services that exploit open data. Health open data is made available in a way that can be exploited through services that make it accessible to different stakeholders in this sector. For instance, a service to visualize data on general-practice centres (e.g. waiting time and other performance measures) could be developed.

  Example: The Danish government provides researchers access to anonymous open data (including health indicators and hospitalization data) on individual patients from the 1970s to the present day[27].

- Services that use shared vocabularies and linked data. Standardised terms and their relations to other terms and among different vocabularies can in general improve search and retrieval of health-related information. Furthermore, open data published as linked data facilitate the connection of different information sources, e.g. medical records and information about diseases and drugs, and give rise to new and innovative applications that improve the search and relevance of retrieved information.

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[23] http://www.madrid.org/historiaclinicadigital/

[24] http://www.rtsaude.pt/paginas_frontoffice_ingles/home_english.php

[25] http://www.hzzo.hr/

[26] http://www.action.hb.se/

[27] https://www.ncbi.nlm.nih.gov/pubmed/24642713

Examples: The NHS in the UK currently uses SNOMED CT as the underlying vocabulary for annotating clinical health records and for browsing those records[28].The Observational Health Data Sciences and Informatics[29] is a program that aims to integrate (with the support of shared vocabularies) and publish a large amount of observational data, and through large-scale analytics allow the evaluation and detection of diseases.

eIdentification

- eHealth (insurance) cards. Most Member States have particular identification schemes for the health sector. They issue cards for their residents, which, in many cases comprehend also the European Health Insurance Card (EHIC), and have different associated services depending on the country. With interoperable systems, health cards can be used across different health systems and employed for services like payment of medical costs.

  Examples: Austria's Chipkarte e-card[30] is a system that connects patients, providers, hospitals, and pharmacies' through Europe. Belgium's and France's cards enable direct settlement of certain medical costs, while other costs are reimbursed through mandatory/complementary private social insurances.

- eID cards as health-data repositories.

  Example: Finnish citizens have the possibility to request having their health insurance data included in their electronic ID card in order to use a single card.

3.2.2   Local Government

Simplification of administrative procedures for citizens of local governments

- Single notification service. Several kinds of notifications to different public bodies, such as change of address, can be performed via a single eGovernment notification service. Sometimes, users can also check online the status of their notifications.

  Example: In Spain, there is a convenient way for citizens to communicate online their change of address to a number of Public Administrations through a single notification service[31]. This service requires a digital certificate, which is also accepted by equivalent services in Slovequia, Estonia, Portugal and Sweden.

- Personalised services. Websites and applications interface which are adaptive to the user's profile and requirements.

  Example: Skellefteå municipality's "Mitt Skellefteå"[32] (My Skellefteå) is a mobile application (for Android and iPhone) containing a number of local government services that can be personalised by the user.

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[28] https://digital.nhs.uk/snomed-ct

[29] https://ohdsi.org/

[30] http://www.chipkarte.at/

[31] https://cambiodomicilio.redsara.es/pcd/

[32] http://www.skelleftea.se/kommun/press-och-kommunikation/digitala-kanaler/app

- Accessible eGovernment websites that follow standard recommendations for making web content more accessible.

  Examples: Zaragoza council eGovernment website[33] which complies with WCAG 2.0 norms. It is certified officially by the Spanish Agency for Normalization and Certification (AENOR); many other city council websites comply with these norms. Brazil website for people with disabilities[34].

- Services that use blockchain technologies. In general, it can be applied to Digital Property Rights in collaborative work, Electronic Voting or Smart Contracts. Specifically, it can support solutions for identity management, tax collection, land registry and any type of government record.

  Example: KSI, Keyless Signature Infrastructure[35] is a blockchain technology used in Estonia to guarantee the integrity, sovereignty and auditability of government services, processes, public records and documents. It prevents loss of critical digital assets and tracks data securely throughout its supply chain. It may also be applied to local governments.

- Services that apply big data and artificial intelligence technologies. In general, big data techniques can be used for decision-making processes. Natural language processing can be applied to the interaction of citizens with eGovernment services in their native language.

- One-stop-shop. Websites where all local open eGovernment services are available to a citizen or business.

  Example: Zaragoza's (Spain) local government website[36] lets citizens, businesses and other organisations access all the local procedures (e.g. water, taxes) in one entry point.

Open data and open source solutions for the provision of local government services

- Services that exploit open data. Local government open data is made available in a way that can be exploited through services that make it accessible to different stakeholders in this sector.

  Examples: The European Data Portal analytical report[37] investigates Open Data initiatives in eight medium-sized European cities: Gdansk[38], Ghent[39] and Lisbon[40] among the eight. All of these cities have Open Data strategies and portals in place which are not stand-

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[33] http://www.zaragoza.es/sede/portal/accesibilidad

[34] http://www.servicos.gov.br/area-de-interesse/assistencia-ao-portador-de-deficiencia

[35] https://e-estonia.com/solutions/security-and-safety/ksi-blockchain/

[36] http://www.zaragoza.es/sedeelectronica/

[37] https://www.europeandataportal.eu/es/highlights/open-data-european-cities

[38] http://otwartygdansk.pl/open-data/

[39] https://data.stad.gent/

[40] http://dados.cm-lisboa.pt/

alone initiatives but are embedded in broader digital or Smart City strategies. Most of the portals are not only focused on publishing data but also include features aimed at engaging with users, such as news items, event sections and feedback mechanisms.

- Services that use shared vocabularies and linked data. Standardised terms and their relations to other terms and among different vocabularies can in general improve search and retrieval of local government information. Furthermore, open data published as linked data facilitate the connection of different information sources and give rise to new and innovative applications that improve the search and relevance of retrieved information.

  Examples: The government website in Finland[41] is a multi-facet search website for finding relevant commodities, information and services by using ontologies. Several open data websites such as Spain´s open data government website[42] have published their data as Linked Data and provide a query service.

- Open source software for local government's websites and services. Software systems that provide generic local government website authoring, collaboration, and administration tools, and that are designed to allow the creation and management of services with relative ease.

  Examples: Estonia's Rural Municipality Website[43] is based on an open source content management tool which allows for easy and uniform site administration. It includes a standard website structure for local governments, tools for site administration and built-in interfacing with public registers. The FixMyStreet Platform[44] is an open code system that allows a website to be launched which helps people to report street problems like potholes and broken street lights.

eDemocracy and transparency

- eDemocracy and eParticipation services. Applications where it is possible for citizens to participate in decision-making and make their own proposals to start an initiative or a referendum. Citizens can make complaints and suggestions or request new services as well. Sometimes, it is possible to participate through social media platforms.

  Examples: Reykjavik's *Betri Reykjavik* (Iceland)[45] is an online participatory social network; citizens can present their ideas on municipal issues ranging from services to operations of the city; it enables citizens to voice, debate and prioritise ideas to improve their city. The Stem Van West participation platform in the Netherlands is a participatory platform where people can share their ideas about the city and do participatory

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[41] https://yrityssuomi.fi/en/

[42] http://datos.gob.es/

[43] https://www.kovtp.ee/

[44] https://www.fixmystreet.com/

[45] https://www.citizens.is/portfolio_page/better_reykjavik/

budgeting[46]. In Zaragoza (Spain) there is a Participatory Budgeting program[47], where citizens can help the council know and prioritise their needs and demands. The platform Decide Madrid[48] allows citizens participate in proposals for the city improvement, public debate, and participative budgeting, among others. It uses the free software Consul[49] as the platform for the different modes of eParticipation.

- Applications for accountability. Applications that present information on where money is spent and how well public services are performing (also in comparison to other services). Not only does this allow people to hold government accountable, but it can also help to improve efficiency, give people a choice in using public services and contribute to economic growth.

  Examples: In the United Kingdom the Performance platform[50] presents the performance of government services: cost per transaction, user satisfaction, digital take-up and completion rate. Open Budget in Florence[51], Italy, presents data on the city's annual budget, "so that people can see clearly all costs". Open Cohesion[52] in Italy provides data on the implementation of investments programmed by Regions and State Central Administrations via cohesion policy resources. Public administrations can draw on platforms such as the OpenBudgets platform[53], which offers several applications: from easy-to-use budget visualisations to performance comparisons between cities and participatory budgeting mechanisms.

3.2.3   SMEs and Self-employed

Administrative procedures for SMEs and self-employed

- Automatic workflows in eGovernment websites. Automatic workflows for relevant procedures guide businesses through the steps involved in creating and running them.

  Example: Croatia´s eGovernment website[54] offers a number of transverse workflows where the flow automatically finds the forms that are relevant to each user. It works on top of a workflow engine, meaning that forms can be collected and then distributed within Government offices, tracking progress and informing the applicant accordingly.

- Personalisation of websites and services. Interfaces that are adaptive to the user's profile and requirements.

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[46] https://stemvanwest.amsterdam.nl/

[47] https://www.zaragoza.es/sede/servicio/presupuestos-participativos/

[48] https://decide.madrid.es/

[49] http://consulproject.org/

[50] https://www.gov.uk/performance

[51] http://opendata.comune.fi.it/

[52] http://www.opencoesione.gov.it/progetto/en/

[53] http://openbudgets.eu/

[54] http://www.hitro.hr/Default.aspx?sec=18

Examples: Italy's eGovernment website for businesses[55] provides personalised access to a virtual desk of "integrated services" i.e. services provided by different authorities but relating to a unique goal for the user.

Business opportunities for SMEs and self-employed

- Services that use blockchain technologies. For instance, in the context of SMEs and self-employed, Smart Contracts apply blockchain technologies to enable credible transactions in a conflict-free way, avoiding services of a middleman.

- Services that apply big data and artificial intelligence technologies. For example, big data can be used to analyse market previsions and help SMEs and self-employed to find and take advantage of new business opportunities.

- Marketplace for the exchange of skills and expertise among SMEs and self-employed. A platform that would incentivize joint ventures among stakeholders in this area.

Better and more transparent eProcurement

- eProcurement platforms. Platforms based on open European standards and EC directives that automatically find the forms that are relevant to each user with information on eProcurement opportunities and procedures, and with access to digital eProcurement services.

  Examples: The Belgian eTenders website[56] is deployed together with an eNotification platform to alert on eProcurement opportunities. The TED website (Tenders Electronic Daily)[57], dedicated to European public procurement, allows the user to browse, search and sort procurement notices by country, region, and business sector.

- Services that exploit open eProcurement data. Procurement open data is made available in a way that can be exploited through services that make them accessible to SMEs and self-employed. These services would help SMEs and self-employed to participate in procurement that is tailored to their area and expertise. For example, an alert system that notifies users whenever relevant new procurement opportunities arise.

  Example: The platform euroalert[58] has contents related to EU funding, law, events and tenders for SMEs.

3.3   SOME AVAILABLE AND EMERGING BUSINESS AND DATA MODELS

This section presents business and data models that may contribute to the development and uptake of open eGovernment, as well as models that open eGovernment may foster.

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[55] http://www.impresainungiorno.gov.it/psc-italy

[56] https://eten.publicprocurement.be/etendering/home.do

[57] http://ted.europa.eu/TED/main/HomePage.do

[58] https://euroalert.net/

3.3.1   Multi-sector

- Government and general practice healthcare stakeholders that initiate, design, or implement together open eGovernment services. This implies the provision of co-creation spaces and of the job positions required for this.

- Public and private organisations that provide spaces for citizens to foster community interaction and collaborative work.

- Public employees and organisations that assist stakeholders in the access and use of open eGovernment services. This assistance includes in-person attention and call centres.

- Public employees and organisations that assist stakeholders regarding compliance with laws, directives, regulations, etc.

- Personnel that support general practice services in eGovernment websites by doing tasks such as live chat, forum moderation, email communication, health alerts, and community management in general.

- Companies, organisations and public administrations that create (innovative) eGovernment solutions that exploit open data and services provided by public administrations.

- Companies that offer consulting services to public administrations on technology roadmaps in order to enable open eGovernment.

3.3.2   General practice

- Companies whose products or services can contribute to health and illness prevention (e.g. sport centres) that establish agreements with health administrations.

3.3.3   SMEs and self-employed

- Non-aggregated data are opened for SMEs and self-employed who may access them to develop open eGovernment applications and tools. Services can be developed from reusable components.

- Incubators of startup companies that develop new services, i.e. development ecosystems.

3.4   POLICY GAPS

This section presents a list of policy gaps that hinder the provision and take-up of open eGovernment applications

3.4.1   Multi-sector

- Some EU directives and policies related to open eGovernment need to be fully implemented in Member States (Some examples are provided by sector).

- Developing and implementing policies where the interaction between the public and the private sectors is clearly established can greatly help in the provision and take-up of open eGovernment services in general practice: how can they jointly contribute, what responsibilities each partner has, how private practices can benefit the public sector and vice-versa.

3.4.2   General practice

- The General Data Protection Regulation (GDPR)[59] lists health data, genetic data and biometric data as sensitive personal data and permits Member States introduce further conditions on their processing. However, there are still many countries which do not have specific policies for these data.

- The Directive on security of network and information systems (the NIS Directive)[60], which is also important to protect health data, has not yet been transposed in all Member States.

- Since the eIDAS Regulation[61] does not impose a particular eIdentification model on Member States, an analysis of the incorporation of identification schemes already used in the health sector seems relevant.

3.4.3   Local government

- Only a small portion of local governments have developed their own strategies for eGovernment and open-government.

- Financing for the adoption of open eGovernment services is often short-term. Often, financial support is provided to public administrations for the introduction of a technology, but not for its maintenance and update.

3.4.4   SMEs and self-employed

- EU directives and policies regarding eProcurement are not fully implemented yet. For example, by April 2016 (transposition date for the Directives 2014/23/EU, 2014/24/EU and 2014/25/EU), tender opportunities and tender documents had to be electronically

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[59] REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation): http://ec.europa.eu/justice/data-protection/reform/files/regulation_oj_en.pdf

[60] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.194.01.0001.01.ENG&toc=OJ:L:2016:194:TOC

[61] REGULATION (EU) No 910/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0073.01.ENG

available. However, some of the Member States were late in implementing them and only did so weeks or months after the deadline.

3.5 TECHNOLOGY AND DATA GAPS

This section presents a list of technology and data gaps that hinder the provision and take-up of open eGovernment applications

3.5.1 Multi-sector

- Low technology skills of stakeholders. Training is needed, on the one hand, to understand the advantages and disadvantages of using ICTs and, on the other hand, to develop the capabilities needed to address the constant evolution of services and applications.

- Lack of mobile applications and responsive websites.

- Low interoperability of open eGovernment services within a sector and with services in other sectors, both at local and upper levels.

- Few open data available in an appropriate way in the general practice healthcare sector.

- Insufficient research on the application of disruptive technologies, such as artificial intelligence, big data, Internet of Things and wearables, in open eGovernment services.

3.5.2 Local Government

- Lack of preparation to adapt data storage and manipulation of services to the GDPR [62].

3.6 SOCIAL CONSIDERATIONS

This section presents a list of social considerations that should be taken into account for open eGovernment.

3.6.1 Multi-sector

- The digitalisation of government services will change the labor force requirements. For instance, with online appointments less staff will be needed at health centres for this task whereas other jobs will be generated to support the online services. Governments need to plan on this and implement policies regarding education and new job profiles for their staff.

- Open eGovernment services should act as drivers of an inclusive society and contribute to reduce (or at least, not to increase), the digital divide.

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[62] REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation): http://ec.europa.eu/justice/data-protection/reform/files/regulation_oj_en.pdf

3.6.2   General practice

- People can object to the openness of health data:

    i.   Some people have concerns on the misuse of the data, e.g. insurance companies can overcharge people living in certain areas.

    ii. Some people do not want to give their data for free when private companies can profit from them. Will selling one's own data become another way of making money? Will people pay for health services with their data?

- Patients expect an in-person relationship with their doctors and may think that digital services will make this more difficult.

- By addressing such an important aspect as health, open eGovernment services for general practice can help to improve the quality of life in general.

3.6.3   SMEs and self-employed

- The lack of a participation and collaboration culture makes it difficult for SMEs and self-employed to get involved in the development of open eGovernment services.

- Open eGovernment services can help to:
    i.   achieve equity between businesses regarding procurement.
    ii. stimulate entrepreneurship.
    iii. enable self-employment.

4   RECOMMENDATIONS

This section presents the set of recommendations for the provision and take-up of open eGovernment applications to enhance accountability, transparency and trust. When analising the open eGovernment background on each sector considered in CLARITY, we came to the conclusion that there are basic goals that have still to be achieved regardless of the sector. The proposed recommendations address those goals. Moreover, they are not ordered by relevance or priority, since the validation process produced no conclusive results on their ranking. All of them are relevant and should be accomplished by 2030.

The recommendations can be ascribed to one or more of the following lines of action: (1) Stimulating the creation, delivery and use of new services, (2) Providing more personalised public services, (3) Reducing administrative burden of citizens and businesses, and (4) Increasing transparency of and trust in public administration (See Table 3). These lines of action bring to light the existing relations among the recommendations.

Table 3: Relation between recommendations and action lines

	Stimulating the creation, delivery and use of new services	Providing more personalised public services	Reducing administrative burden of citizens and businesses	Increasing transparency of and trust in public administration

User-centred desing	(blue)	(yellow)		(orange)
Universal accessibility	(blue)	(yellow)		
Ubiquitous services	(blue)			
Once-only principle			(green)	
Service personalisation		(yellow)		
Services in multiple languages		(yellow)		
Cross-border services			(green)	
People's access to their own data			(green)	(orange)
Openness of data and services	(blue)			(orange)
eDemocracy services				(orange)
eProcurement services			(green)	(orange)

User-centred design: Awareness of user expectations when dealing with the public sector through eGovernment services may facilitate the interaction between public administrations and users. Open eGovernment services should be developed around how users can, want, or need to use those services, rather than forcing people to use a service that does not meet their expectations.

Articulating these expectations requires service designers not only to analyse and envision the way the service will be used by citizens and businesses, but also to validate their assumptions. It is also important that once services have been developed, users continue to contribute to their improvement. This requires training of developers in emerging user-centred design methodologies and tools. Methodologies for co-creation can also support this action and eParticipation can be used as a means to assess existing services, to learn of citizens and businesses' needs and to co-create new solutions.

It is important to note that user-centred-design processes should consider different groups within society, e.g., migrants, elderly, people with disabilities and computer illiterate. This will enable open eGovernment applications that not only cater to people in those group, but also to the average population.

Finally, eParticipation can be used as a means to assess existing services, to learn of citizens and businesses' needs and to co-create new ones.

Universal accessibility of services: Universal accessibility is a fundamental requirement for the success of any open eGovernment. In contrast to the private sector, which can be excluding by reaching only target market segments, public administrations should design open eGovernment services that are inclusive by default and cater to the needs of everyone. However, accessibility options are often few and ill-locatable on open eGovernment services.

Considerations for universal accessibility of services are related to alternatives for audio content, such as transcripts and captions or sign language; page structure and content, which need to be properly coded so that they can cater to text-to-speech synthesis or audio descriptions; and textual content that follows Easy-to-Read guidelines.

Although there are international guidelines such as WCAG 2.0[63] for the design of accessible websites, it is generally agreed that they do not cater to people with cognitive difficulties so greater effort should be applied in this respect. The W3C Accessibility Guidelines Working Group is working on requirements for a WCAG 3.0 version that should widen the spectrum of the 2.0 version.

The Web Accessibility Directive[64], which regulates accessibility of public sector websites and mobile applications in the EU, will reduce uncertainty for developers and foster interoperability. Member States are expected to comply with this directive by September 2018.

The European Accessibility Act[65], currently under discussion by the EU co-legislators, is expected to make sure that both public and private sectors follow accessibility requirements when designing their products and services.

Considerations for universal accessibility of services are fundamental for open eGovernment services in general, but when it comes to health they are even more so. Moreover, many people with disability issues need health services on a more frequent basis than the average citizen.

Although people with disabilities need some specific services, what they really need is that all of the open eGovernment services meet minimum universal accessibility requirements, with "extensions" that cater to particular types of impairments when required.

Ubiquitous services (mobiles, tablets and other devices): In general, only one third of public sector websites in the EU are mobile-friendly. Specifically, there is a lack of mobile apps for eGovernment services.

As mobiles are fast becoming the main device through which people access the internet, it is imperative that more services are provided through mobile friendly websites or apps that would open access to a greater number of citizens and businesses.

Moreover, public administrations should be up to date on new developments of devices and eGovernment services should be responsive.

Meeting the once-only principle: The once-only principle states that a user should not have to supply the same information more than once to public administrations. Open eGovernment

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[63] https://www.w3.org/TR/WCAG20/

[64] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.327.01.0001.01.ENG&toc=OJ:L:2016:327:TOC

[65] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2015:0615:FIN

services should offer this option to users whenever possible. However, people should not be forced to apply it.

Interoperability and identification play a very important role in meeting his principle; that is why the European Interoperability Framework (EIF), and the eIDAS directive are recommended here. The use of open source software, open standards and open APIs will result in more open and scalable ICT systems for public service delivery. This will pave the way for the integration of systems and the implementation of the once-only principle for citizens and businesses.

An interesting approach, which is also relevant for people's access to their own data, is to provide a personal-data repository that applications can access when necessary, instead of having applications exchanging personal data.

Service personalization: Personalisation is a way to improve user satisfaction by tailoring a service to specific individuals or segments of individuals' needs. Open eGovernment services should be customisable and adapt to the user or group of users' profile. Besides, services should be proactive, and notify or prompt a person to use them according to circumstances like age or health-related parameters.

Services in multiple languages: A great majority of eGovernment websites in the EU are available only in the native language or in the native language and English; the English version often only provides information and not all the eGovernment services that are provided in the native language.

Language support should include not only the translation of website content but also the translation of forms and documents. This is under-developed and it is hindering access to services by non-native speakers.

When it comes to general practice healthcare, understanding the service is critical. The possibility of using it in the person's native language would be very helpful. The lack of this option in general-practice services does not only hinder access to services by non-native speakers, but can also have severe public health consequences.

Cross-border services: Cross-border provision of services is based on the freedom of movement, so that nationals of an EU Member State be able to pursue their activities as citizens or businesses in another EU Member State.

This goal is included, among others, in the Single Digital Gateway proposal, the interconnection of all Member States' business registers, the electronic interconnection of insolvency registers, the Electronic Exchange of Social Security Information, and the exchange of electronic evidence between judicial authorities.

Citizens living or arriving to a foreign town should be able to access open eGovernment services provided locally. This requires eDocuments implemented cross-border.

People's access to their own data: Allowing people to "own", use and amend their data could go a long way to make them more invested in the services they use and more trusting of government. Additionally, it would cut down on information queries by governments and allow for faster resolution times. According to the General Data Protection Regulation

(GDPR)[66], people have the right to obtain confirmation as to whether personal data concerning them is being processed, where and for what purpose. Yet only 55% of the EU Member States make this access possible for citizens.

It is important to understand how people think about their data in relation to public services and how they would like to interact with them. Also, people should know if their data are linked to data from other services. Research to comprehend how citizen-controlled data are understood and accepted in government is also vital to drive this trend forward. Patient's access to their health data is a particularly significant case.

This recommendation is especially relevant for the once-only principle. Control on one's own data should go beyond all or nothing; people should be able to decide what data can be shared and with whom.

Openness of data and services: Public administration's open data that is machine-readable and that is capable of being shared and distributed, allows the development of solutions that cater to the increasing demand for transparency, accountability, and responsiveness.

Data and algorithms transparency is essential for digital trust and appropriation of emerging technologies. An important shift deals with control of the data used and the intelligibility of algorithms.

Openness of data implies the use of standards for data management, digital services and metadata, as well as shared concepts and terms (when available). Openness of services implies the use of open source software where there is no risk of vendor lock-in and code may be reviewed and maintained by the parties involved in the development of solutions.

The availability of open data together with open service components, will enable the development of new solutions by third parties and the public administration itself, and will foster reuse by small local governments that lack resources for the development of services.

Public administrators and other stakeholders have to be especially careful when dealing with health data, the use and processing of these data have to be clearly stated, consent has to be specifically asked for, and data have to be anonymised when provided to others.

eDemocracy services: eDemocracy enhances citizen and businesses engagement and participation in government decision making processes such as policy making, budgeting and service delivery. It is fundamental for user adoption and for building trust towards the public sector.

In general, eDemocracy and eParticipation are not offered as services on eGovernment websites in the EU. Public authorities should take into account a number of success factors for eParticipation projects, including strong government support (with a commitment to act

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[66] REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation): http://ec.europa.eu/justice/data-protection/reform/files/regulation_oj_en.pdf

on input received); a user-friendly interface; the use of different channels of communication (offline as well as online); appropriate security and privacy provisions (ranging from anonymous responses to fully identified participants); and a political issue that can be addressed in a way understandable by non-experts[67]. Tools should include features such as web forums, discussion spaces and social media interaction, and make sure that the input is transparently processed.

eProcurement services: Providing eProcurement, eTender and eInvoicing services is very important to level the playing field and ease access to the information for all businesses, and thus develop the potential for bidding for public contracts procurement opportunities and tenders.

The transition of European Member States towards full eProcurement and use of contract registers is necessary. The focus should be on setting up eProcurement and eTender websites that are easily accessible for businesses of all sizes. Besides, open data on eProcurement guarantees transparency in the management of public funds. As with other eGovernment services, a user focused approach would be necessary to gauge both the interest and the usefulness of such websites and how they can be designed to ensure maximum take-up by businesses.

5   CONCLUSIONS

This deliverable presents an enhanced blueprint document that is the result of a validation process on an initial blueprint version where many and diverse stakeholders were involved. This assessment included different kinds of mechanisms for obtaining feedback.

Workshops proved to be much more productive than online consultation. The feedback from the workshops made up for the effort devoted to gather experts together and prepare the activities. The effort to develop and manage the consultation website, and to send calls for consultation did not generate as much feedback; one could affirm that a few dedicated users contributed most of the comments, and some discussion was triggered with participation of a few users.

While each sector has its own particularities, we have found many commonalities regarding the provision and uptake of open eGovernment applications; that is why a single list of recommendations is proposed. The main differences among sectors lie in the particular solutions provided for each sector, which seems logical since each sector has its own set of specific requirements.

Although there has been no consensus on the relevance or priority of the recommendations, "user-centred design" was the most agreed upon in the validation workshops, regardless of

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[67] Ron Davies (2015). eGovernment Using technology to improve public services and democratic participation. European Parliamentary Research Service

the sector under discussion. "Universal accessibility of services" and "openness of data and services" followed closely.

Even though the main product of this deliverable is the set of recommendations for the uptake and provision of open eGovernment services, the other sections, especially policy gaps and social considerations, are important to get a complete picture of what is at stake.

ACKNOWLEDGEMENTS

Marjolein Brasz, Amsterdam Economic Board
Nagore de los Ríos
Nancy Zikken, Amsterdam Smart City
Oscar García, Plena Inclusión Madrid
Paul Voskuilen, Alliander
Pierre Mesure
Rafael Ayala
Remco Vroegop, Engie
Roberto Magro Pedroviejo. Ayuntamiento de Alcobendas
Sonia Castro, red.es (datos.gob.es)
Victoria Dykes

ANNEX I: COMMENTS ON THE ONLINE CONSULTATION WEBSITE
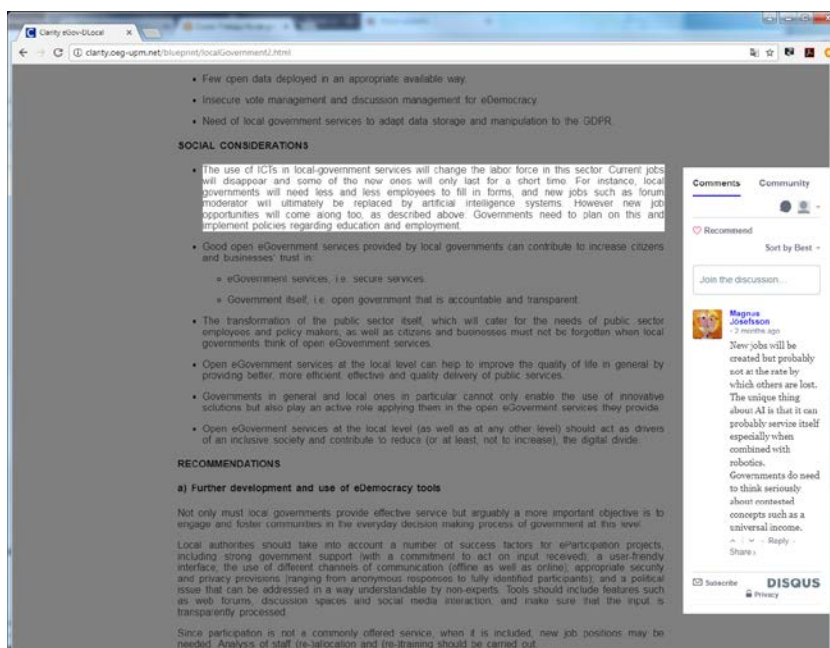
Figure 1: Screenshot of the consultation website with an example of comment

Table 4: Statistics of comments on the website

Sector	People (# comments)	Countries
General practice health	Maaike Kamps (1) Antonio Ibáñez (3) Lucía Rodríguez (1) Sonia Castro (9)	Belgium Germany Iceland Italy Netherlands Spain Sweden
Local government	Maaike Kamps (2) Marek Vogt (6) Magnus Jósefsson (10) Babis Ipektsidis (4) JC Goilo (2) Leif Rehnstrom (1) Antonio Ibáñez (6) Lucía Rodríguez (1) Marie Larsson (1) Cristina Vasilescu (5) Victoria Dykes (3) Sonia Castro (5) Gerardo Rodríguez (1)	
SMEs and self-employed	Lucía Rodríguez (1) Gerardo Rodríguez (1) Sonia Castro (1)	
Disability	Alina Ostling (2) Antonio Ibáñez (1) Lucía Rodríguez (1) Hugo Hedlund (1) Alejandro Moledo (1) Sonia Castro (2)	

ANNEX II: PROTOCOLS FOR THE WORKSHOPS

Short protocol

- Presentation (15 minutes) on the blueprint containing: general desciption 4 topics, overview emerging solutions per topic, overview emerging data models per topic.

- In groups: each group has a circular large print divided into 'POLICY GAPS, TECHNOLOGY/DATA GAPS, SOCIAL CONSIDERATIONS'. Each group gets 15 minutes to fill in those sections for a particular sector.

- Then the groups receive the summarized points from the blueprint on each of these topics. They now get 15 minutes to comment on these / expand them / change them and add to and change their own points.

- Then the groups receive the 11 general recommendations printed on pieces of paper. They get 15 minutes to prioritise the points, amend, change, add as they want.

- Finally, 15 minutes plenary feedback, max 5 minutes per group.

Long protocol

- **Welcome** (15 minutes), round-table introduction and description of objectives

- **Activity 1** (45 minutes). (People grouped by sectors) Propose how services will look like in 2030. Think about some of the open government services that may be provided in 2030 in the domain that we are working with. After 5 minutes thinking, they will have to write down a story on how such services are provided and present it aloud to the others. Finally, write down features of those services (adjectives or verbs) in post-its, and place them in a common area.

- **BREAK** (15-20 minutes)

- **Activity 2** (60 minutes). (People grouped by sectors) Discussion on emerging trends (technology, data, business models). A description of the emerging trends that have been identified in the blueprint is provided, with a list of those trends, and a brief description of them. These trends are already written down/printed in a flipboard (flipboard sheets with trends need to be prepared), or alike, and participants are given a fixed set of stickers (10 each), so that they have to place them in those trends that they consider most relevant for the evolution of services. If they want to add new trends that have not been identified, they can write them down and put a sticker in each of them. A final prioritised list of trends is provided, starting with those with more stickers, and this is written down and posted publicly.

- **Activity 4** (40 minutes). (People grouped by sectors) Reality check: trends vs proposed features In this activity, participants discuss in a round-robin fashion on how each of the trends (starting from the high priority one) can help towards achieving the features identified in activity 1. There may be the case that there are some trends that do not seem to help or contribute, and some others that clearly contribute to a specific area. Gaps may be also identified, where a feature is not achieved by any of the trends that have been discussed (This really is the next activity).

- **BREAK** (15-20 minutes)

- **Activity 5** (30 minutes). (People grouped by sectors) Let¹s get negative. Identify gaps. Which are the main barriers for adoption? In this case, no material is provided to participants. They are allowed to say aloud what the main barriers are. The facilitator has a printed list of the barriers/gaps identified in the blueprint, which has not been shown to participants, and when somebody describes something that has been considered in the blueprint, this is posted in the common area. If there is something new, it is written down in a post-it, and posted as well. No ranking or priority list is provided for this.(different colors for post-its existing and new ones)

- **Activity 6** (30 minutes). (People grouped by sectors) Let¹s get positive. How to address those gaps, starting from a list of recommendations. A list of initial recommendations, identified in the blueprint, is provided, with only a very brief description. Each participant has to adopt one or two of those recommendations, explain them further (how they would apply them to solve a current problem with the emerging set of solutions identified before) and propose new ones if necessary. Cooperative discussion over each proposal is made.

- **Final set of conclusions,** and encouragement to continue contributing to specific pieces of text of the online blueprint (10 minutes)

Final conference

- **Description** of the blueprint recommendations (15 minutes)

- **Instructions** on how to rate the recommendations (2 minutes)

- **Questions** and comments from the audience (13 minutes) (while rating)

ANNEX III: NEXT STEPS FOR OPEN EGOVERNMENT SERVICES RELATED TO GENERAL PRACTICE HEALTHCARE

FACTSHEET ON GENERAL PRACTICE HEALTHCARE

AVAILABLE AND EMERGING SOLUTIONS	• Electronic prescriptions. • One-stop shop. • Patient-data repositories. • IoT applications. • Personalised websites and services. • Telemedicine applications. • Online registration of patients and practitioners. • Services for caretakers. • Big data applications. • Services that exploit open data. • Services that use shared vocabularies and linked data. • eHealth cards.
EMERGING BUSINESS AND DATA MODELS	• Stakeholders that co-create general-practice services. • Public employees and organisations that assist stakeholders in the use of open eGovernment services. • Positions for tasks such as live chat, forum moderation, email communication, etc. • Companies, organisations and public administrations that create eGovernment solutions which exploit open data. • Companies that offer consulting services to public administrations on technology roadmaps. • Companies whose products or services can contribute to health and illness prevention.
GAPS	• Lack of specific policies for health data. • Lack of analysis of the IDs used in the health sector within the eIDAS Regulation. • No clear interaction between public and the private sectors. • Low technology skills of general-practice-health staff. • Little availability of mobile applications. • Low interoperability of services. • Few open data are available in an appropriate way. • Insufficient research on the application of innovative technologies.
SOCIAL CONSIDERATIONS	• Reservations about openness of health data. • Patients expect an in-person relationship with their doctors. • Change in the labor force, especially in administrative roles. • Equity and Digital divide. • Quality of life.
RECOMMENDATIONS	• Applying user-centred design methodologies and tools. • Creating proactive personalised eGovernment services. • Making universally accessible services. • Providing open eGovernment services in multiple languages. • Increasing the number of ubiquitous services. • Developing cross-border services. • Meeting the once-only principle. • Providing open data and algorithm transparency. • Increasing the use and further development of eDemocracy tools.

OPEN EGOVERNMENT IN GENERAL PRACTICE HEALTHCARE

Open Government is a government with high levels of transparency and with an emphasis on government accountability. The concept of open government suggests that the public should have access to government-held information and that it is informed of government proceedings. It includes expectations for increased participation and collaboration of citizens, businesses, employees and other entities in government proceedings, through the use of modern, open technologies[68]. The term Open in this context means that data has not only to be accessible but also to be understandable in order for citizens to know how the data can be relevant to them. At the same time, *eGovernment* refers to the use of computers and other devices to provide information and services to the public. In turn, *eGovernance* extends the scope of eGovernment to include citizen engagement and participation in governance.

This document focuses on open eGovernment services that are aimed for general practice healthcare. General practice provides person centred, continuing, comprehensive and coordinated whole person health care to individuals and families in their communities. As a sector, general practice healthcare, its practice teams, and their primary healthcare relationships comprise the foundations of an effective health care system[69]. Health systems can greatly differ around the world in general and in the EU in particular, and public administrations play different roles in each of them. In some countries, health care is free and universal while in others, patients have to pay partially or completely for their health care. Moreover, practitioners can belong to the public sector and/or the private one.

Ultimately, open eGovernment services in this sector are twofold: on the one hand, there are health services provided to citizens and, on the other hand, there are services provided to the different practitioners involved in the general practice sector (such as doctors, nurses, care providers, pharmacists, etc.). Furthermore, service providers should also take into account the requirement of cross-border solutions, both at inter- and intra-national levels since differences in this sector are not only between Member States, but also between regional administrations from the same country.

The sensitive nature of health data makes data protection especially important in this sector. Openness in solutions must be developed carefully and must ensure that available open data are conveniently anonymised. Citizens also need to have full access to their own data.

SOME AVAILABLE AND EMERGING SOLUTIONS

This section discusses some of the emergent solutions that we have come across while doing desk research on existing eGovernment services in this sector. We have focused on those that are leading the way or show a high level of innovation and provide examples for some implementations.

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[68] https://opensource.com/resources/open-government
[69] https://www.racgp.org.au/becomingagp/what-is-a-gp/what-is-general-practice/

Solutions for citizens

- Electronic prescriptions. In some Member States, a doctor can issue prescriptions for medicines electronically, and pharmacies can dispense medicines according to them. Innovative applications in this area include medicine surplus reuse and control of the delivery of doses to a patient.

  Examples: In Finland, the national Prescription Centre contains all the electronic prescriptions and the corresponding dispensing records entered by pharmacies[70]. Based on the information held in the Prescription Centre, any pharmacy can dispense medicines to citizens. Spain has also e-prescriptions, but there is no national repository and so far, only a few regions have interconnected their prescription systems.

- One-stop shop. In some countries, a single entry point to access open eGovernment services for general practice is available together with other health services.

  Example: Denmark has an entry point to a number of interactive and transactional services for citizens, including electronic booking of appointments with a general practitioner, viewing appointments with the healthcare services, receiving a reminder prior to visits, sending secure emails to healthcare authorities and renewing drug prescriptions[71].

- IoT applications. IoT applications for general practice include the use of sensors for different health-related measures such as heartbeat, blood pressure, temperature, insulin and glucose levels, etc. These applications may warn citizens themselves, doctors or emergency units when those measures reach alarming levels.

- Personalisation of websites and services. Personalisation of general practice websites and related services that are adaptive to the user profile and requirements.

- Specialized websites with information on important care and social security provisions for people with disabilities, chronic illnesses and the elderly. These are also catered to their families and support staff.

  Examples: One-stop website in the Netherlands[72] that provides information on important care and social security provisions for people with disabilities, chronic illnesses and the elderly.

- Chronic patient healthcare services. Applications for the empowerment of chronic patients by managing their healthcare on their own.

- Telemedicine. The use of ICT to provide general practice healthcare from a distance can be used to improve access to medical services when rural settings, lack of transport, lack

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[70] https://tunnistus.suomi.fi/VETUMASSO/app

[71] http://www.sundhed.dk

[72] https://www.regelhulp.nl/

of mobility (e.g., elderly or disabled citizens), decreased funding or lack of staffing make access difficult. It can also help in critical care and emergency situations. Telemedicine allows early diagnosis and adequate treatment of chronic patients.

Solutions for practitioners and caretakers

- Patient-data repositories. Repositories where healthcare units from public and private health systems can enter and look up patient records in a secure way and where patients themselves are also permitted access; additionally, patients can decide who else may access their medical data.

  Examples: In Malta, patients and their doctors can access the following health data: case summaries, medicines entitlement, lab results, and medical image reports, among others[73]. Portugal's health network, *Rede Telemática da Saúde®*, allows access to clinical information and promotes the communication between certified health professionals, contributing to an improved access to medical care. Spain's digital clinical history, *Historia Clínica Digital[74]* of the National Health System allows citizens and their general practice doctors to look up their medical reports[75].

- Online registration of practitioners and patients. These kinds of services can be useful for practitioners both in order to register themselves and in order to register patients or insured people into the corresponding health system.

  Example: The Croatian Health Insurance Fund[76] allows the electronic submission of applications for registration, deregistration, and change of information of an insured person.

- Services for caretakers. Applications and services that offer support to caretakers of citizens such as people with dementia.

  Example: In Norway, there is the Action project that stands for Assisting Carers using Telematic Interventions to meet Older Person's Needs[77]. The main aim is to enhance their quality of life via the use of user-friendly information and communication technology in their own homes.

- Services that apply big-data and artificial-intelligence technologies. The statistical analysis of (anonymised) health data can help practitioners learn about prevalence of a disease, drug (mis)use, etc. Emerging technologies such as data mining and deep learning can go further and provide insights to possible illness causes, help in diagnosis, and suggest treatments. Natural language processing of health records and drug specifications promotes the development of innovative applications for health practitioners.

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[73] https://myhealth.gov.mt/

[74] http://www.madrid.org/historiaclinicadigital/

[75] http://www.rtsaude.pt/paginas_frontoffice_ingles/home_english.php

[76] http://www.hzzo.hr/

[77] http://www.action.hb.se/

- Services that exploit open data. Health open data is made available in a way that can be exploited through services that make it accessible to different stakeholders in this sector. For instance, a service to visualize data on general-practice centres (e.g. waiting time and other performance measures) could be developed.

  Example: The Danish government provides researchers access to anonymous open data (including health indicators and hospitalization data) on individual patients from the 1970s to the present day[78].

- Services that use shared vocabularies and linked data. Standardised terms and their relations to other terms and among different vocabularies can in general improve search and retrieval of healh-related information. Furthermore, open data published as linked data facilitate the connection of different information sources, e.g. medical records and information about diseases and drugs, and give rise to new and innovative applications that improve the search and relevance of retrieved information.

  Examples: The NHS in the UK currently uses SNOMED CT as the underlying vocabulary for annotating clinical health records and for browsing those records[79].The Observational Health Data Sciences and Informatics[80] is a program that aims to integrate (with the support of shared vocabularies) and publish a large amount of observational data, and through large-scale analytics allow the evaluation and detection of diseases.

eIdentification

- eHealth (insurance) cards. Most Member States have particular identification schemes for the health sector. They issue cards for their residents, which, in many cases comprehend also the European Health Insurance Card (EHIC), and have different associated services depending on the country. With interoperable systems, health cards can be used across different health systems and employed for services like payment of medical costs.

  Examples: Austria's Chipkarte e-card[81] is a system that connects patients, providers, hospitals, and pharmacies' through Europe. Belgium and France's cards enable direct settlement of certain medical costs, while other costs are reimbursed through mandatory/complementary private social insurances.

- eID cards as health-data repositories.

  Example: Finnish citizens have the possibility to request having their health insurance data included in their electronic ID card in order to use a single card.

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[78] https://www.ncbi.nlm.nih.gov/pubmed/24642713

[79] https://digital.nhs.uk/snomed-ct

[80] https://ohdsi.org/

[81] http://www.chipkarte.at/

SOME AVAILABLE AND EMERGING BUSINESS AND DATA MODELS

This section presents business and data models that may contribute to the development and uptake of open eGovernment in the general practice sector, as well as models that open eGovernment may foster.

- Government and general practice healthcare stakeholders that initiate, design, or implement together open eGovernment services. This implies the provision of co-creation spaces and of the job positions required for this.

- Public employees and organisations that assist stakeholders in the access and use of open eGovernment services regarding general practice. This assistance includes in-person attention and call centres.

- Public employees and organisations that assist stakeholders regarding compliance with laws, directives, regulations, etc. regarding general practice.

- Personnel that support general practice services in eGovernment websites by doing tasks such as live chat, forum moderation, email communication, health alerts, and community management in general.

- Companies, organisations and public administrations that create (innovative) eGovernment solutions that exploit open data, not only health-related data, but also data in other related areas such as temperature and pollution levels.

- Companies that offer consulting services to public administrations on technology roadmaps, in order to enable open eGovernment.

- Companies whose products or services can contribute to health and illness prevention (e.g. sport centres) that establish agreements with health administrations.

GAPS: POLICY, TECHNOLOGY AND DATA

This section presents a list of policy, technology and data gaps that hinder the provision and take-up of open eGovernment applications in the general practice sector.

Policy Gaps

- The General Data Protection Regulation (GDPR)[82] lists health data, genetic data and biometric data as sensitive personal data and permits Member States introduce further conditions on their processing. However, there are still many countries that do not have specific policies for these data.

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[82] REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation): http://ec.europa.eu/justice/data-protection/reform/files/regulation_oj_en.pdf

- The Directive on security of network and information systems (the NIS Directive)[83], which is also important to protect health data, has not yet been transposed in all Member States.

- Since the eIDAS Regulation[84] does not impose a particular eIdentification model on Member States, an analysis of the incorporation of identification schemes already used in the health sector seems relevant.

- Developing and implementing policies where the interaction between the public and the private sectors is clearly established, can help a lot in the provision and take-up of open eGovernment services in general practice: how can they contribute together, what are the responsibilities of each partner, how private practices can benefit the public sector and vice-versa.

Technology and Data Gaps

- Low technology skills of general practice healthcare staff. Training is needed, on the one hand, to understand the advantages and disadvantages of using ICTs and, on the other hand, to develop the capabilities needed to address the constant evolution of services and applications.

- Lack of mobile applications and responsive websites.

- Low interoperability of general practice eGovernment services within the sector and with services in other sectors. In this regard, international standards, such as the ones developed by **Health Level Seven (HL7)**[85]**, can play an important role.**

- Few open data available in an appropriate way in the general practice healthcare sector.

- Insufficient research on the application of disruptive technologies, such as artificial intelligence, big data, Internet of Things and wearables to general practice eGovernment services.

SOCIAL CONSIDERATIONS

This section presents a list of social considerations that should be taken into account for open eGovernment in the general practice sector.

- People can object to the openness of health data:

    i.   Some people have concerns on the misuse of the data, e.g. insurance companies can overcharge people living in certain areas.

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[83] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.194.01.0001.01.ENG&toc=OJ:L:2016:194:TOC
[84] REGULATION (EU) No 910/2014 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0073.01.ENG
[85] http://www.hl7.org/

ii.   Some people do not want to give their data for free when private companies can profit from them. Will selling one's own data become another way of making money? Will people pay for health services with their data?

- Patients expect an in-person relationship with their doctors and may think that digital services will make this more difficult.

- The digitalisation of government services for general practice will change the labor force requirements in this sector. For instance, with online appointments less staff will be needed at health centres for this task whereas other jobs will be generated to support the online services. Governments need to plan on this and implement policies regarding education and new job profiles for their staff.

- By addressing such an important aspect as health, open eGovernment services for general practice can help to improve the quality of life in general.

- The development of open eGovernment services for general practice healthcare should not contribute to increase the digital divide.

RECOMMENDATIONS

This section presents the list of recommendations for the provision and take-up of open eGovernment applications to enhance accountability, transparency and trust in the general practice sector.

- **User-centred design**

In order to create valuable and useful open eGovernment services for the general practice sector, developers should attend the needs and expectations of all stakeholders. These services should be developed around how users can, want, or need to use those services, rather than forcing people to use a service that does not meet their expectations.

- **Universal accessibility of services**

Considerations for universal accessibility of services are fundamental for open eGovernment services in general, but when it comes to health they are even more so. Moreover, many people with disability issues need health services on a more frequent basis than the average citizen.

- **Ubiquitous services (mobiles, tablets and other devices)**

As mobiles are fast becoming the main device through which people access the internet, it is imperative that more services are provided through mobile friendly websites or apps that would open access to a greater number of citizens and businesses.

Moreover, public administrations should be up to date on new developments of devices and eGovernment services should be responsive.

- **Meeting the once-only principle**

The once-only principle states that a user should not have to supply the same information more than once to public administrations. Open eGovernment services should offer this option to users whenever possible. However, people should not be forced to apply it.

The use of open source software, open standards and open API will result in more open and scalable ICT systems for public service delivery. This will pave the way for the integration of systems and the implementation of the once-only principle for general practice.

- **Service personalisation**

Personalisation is a way to improve user satisfaction by tailoring a service to specific individuals or segments of individuals' needs. Open eGovernment services should be customisable and adapt to the user or group of users' profile. Both citizens and practitioners would benefit from personalised open eGovernment services' interfaces. When it comes to citizens, these services could be proactive and, for instance, advise a person of preventive checkups for certain diseases.

- **Services in multiple languages**

Language support should include not only the translation of website content but should also include the translation of forms and documents. This is under-developed and it is hindering access to services by non-native speakers.

When it comes to health, understanding the service is critical. The possibility of using it in the person's native language would be very helpful. The lack of this option in general-practice services does not only hinder access to services by non-native speakers, but can also have severe public health consequences.

- **Cross-border services**

Cross-border provision of services is based on the freedom of movement of services, so that nationals of a EU Member State are able to pursue their activities as citizens or businesses in another EU Member State.

In general practice healthcare it is important to guarantee cross-border health services and to implement a secure electronic interchange of health information. Interoperability is a precondition for implementing cross-border services.

The existence of specific identification for health services in many Member States can, on the one hand, facilitate the once-only principle in general practice services in those countries, but, on the other hand, make it more difficult for other open eGovernment services in those countries and across borders to comply with the principle.

- **People's access to their own data**

Allowing citizens to "own", use and amend their data could go a long way to make them more invested in the services they use and more trusting of government. In health care services, user's access to their own data is very important, especially for patients regarding their health data.

This recommendation is especially relevant for the once-only principle. Control on one's own data should go beyond all or nothing; people should be able to decide what data can be shared and with whom.

- **Openness of data and services**

Data and algorithms transparency is essential for digital trust and appropriation of emerging technologies. An important shift deals with control of the data used and the intelligibility of algorithms.

Openness of data implies the use of standards for data management, digital services and metadata, as well as shared concepts and terms (when available). Openness of services implies the use of open source software where there is no risk of vendor lock-in and code may be reviewed and maintained by the parties involved in the development of solutions.

Public administrators and other stakeholders have to be especially careful when dealing with health data, the use and processing of these data have to be clearly stated, consent has to be specifically asked for, and data have to be anonymised when provided to others.

- **eDemocracy services**

General practice healthcare is a field that public administrations can use to engage users' participation. For instance, citizens and practitioners' opinions can be very important when deciding on a new general practice centre because they are the ones that will benefit (or not) from it. This participation can help governments decide, and citizens and practitioners increase their trust in the public sector.

ANNEX IV: NEXT STEPS FOR OPEN EGOVERNMENT SERVICES RELATED TO LOCAL GOVERNMENT

FACTSHEET ON LOCAL GOVERNMENT

AVAILABLE AND EMERGING SOLUTIONS	- Notification services. - Personalised local government services. - One-stop-shop. - Services that apply emerging technologies such as blockchain and artificial intelligence to award participation, facilitate search, provide answers to users, manage records, etc. - Services that provide or exploit open data. - Open source software for local government's services. - eDemocracy and eParticipation services. - Applications for accountability.
EMERGING BUSINESS AND DATA MODELS	- Stakeholders that co-create services. - Public employees and organisations that assist stakeholders in the access and use of open eGovernment services, or regarding compliance with laws. - Positions for tasks such as live chat, forum moderation, email communication, etc. - Companies, organisations and public administrations that create (innovative) eGovernment solutions that exploit open data and services. - Companies that offer consulting services to public administrations on technology roadmaps.
GAPS	- Need for implementation of EU directives and policies. - Lack of strategies for eGovernment and open government at local level. - Low technology skills of staff in local governments. - Little availability of mobile applications. - Low interoperability of services. - Non-secure vote management and discussion management for eDemocracy. - Lack of preparation to adapt data storage and manipulation to GDPR.
SOCIAL CONSIDERATIONS	- Change in the labour force, especially in administrative roles. - Equity and Digital divide.
RECOMMENDATIONS	- Applying user-centred design methodologies and tools. - Creating proactive personalised eGovernment services. - Making universally accessible services. - Providing open eGovernment services in multiple languages. - Increasing the number of ubiquitous services. - Developing cross-border services. - Meeting the once-only principle. - Providing open data and algorithm transparency. - Increasing the use and further development of eDemocracy tools. - Providing eProcurement, eTender and eInvoicing services.

OPEN EGOVERNMENT IN LOCAL GOVERNMENT

Open Government is a government with high levels of transparency and with an emphasis on government accountability. The concept of open government suggests that the public should have access to government-held information and that it is informed of government proceedings. It includes expectations for increased participation and collaboration of citizens, businesses, employees and other entities in government proceedings, through the use of modern, open technologies[86]. The term Open in this context means that data has not only to be accessible but also to be understandable in order for citizens to know how the data can be relevant to them. At the same time, *eGovernment* refers to the use of computers and other devices to provide information and services to the public. In turn, *eGovernance* extends the scope of eGovernment to include citizen engagement and participation in governance.

This document focuses on open eGovernment services that are aimed for local government. Local government institutions vary greatly between countries in terms of size, demography, services they must or can provide, etc. In some countries local authorities have autonomy and a relatively independent economy, so they can decide on their projects and budget whereas in other countries, the central government makes most of the decisions. However, there is a general consensus about the fact that local government is the public administration that is closest to citizens, in contrast to regional, state (or even supranational) level governments.

As described by Shackeleton *et al*, "if governments are to fully exploit the benefits that can come from mature eGovernment implementations, then local government electronic service delivery must be seen as a vital component"[87].

Governments in general and local ones in particular cannot only enable the use of innovative solutions, but also play an active role in applying them to the open eGovernment services they provide.

The availability of open data together with open service source components will enable the development of new solutions and will foster reuse by small local governments that lack resources. However, differences in local governments' decision-making processes hinder this generalization and reuse.

Finally, political instability and political switches can be a barrier to the development of open eGovernment services. Some politicians lack commitment, they believe that open eGovernment services do not cause an impression on the public, so they do not invest in them.

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[86] https://opensource.com/resources/open-government

[87] Peter Shackleton, Julie Fisher & Linda Dawson (2004) Internal and External Factors Impacting on E-Government Maturity: A Local Government Case Study, *Journal of Information Technology Case and Application Research*, 6(4): 36-50, DOI: 10.1080/15228053.2004.10856053

This section discusses some of the emergent solutions that we have come across while doing desk research on existing eGovernment services in this sector. We have focused on those that are leading the way or show a high level of innovation, and provide examples for some implementations.

Simplification of administrative procedures for citizens of local governments

- Single notification service. Several kinds of notifications to different public bodies, such as change of address, can be performed via a single eGovernment notification service. Sometimes, users can also check online the status of their notifications.

  Example: In Spain, there is a convenient way for citizens to communicate online their change of address to a number of Public Administrations through a single notification service[88]. This service requires a digital certificate, which is also accepted by equivalent services in Slovequia, Estonia, Portugal and Sweden.

- Personalised services. Websites and applications interface which are adaptive to the user's profile and requirements.

  Example: Skellefteå municipality's "Mitt Skellefteå"[89] (My Skellefteå) is a mobile application (for Android and iPhone) containing a number of local government services that can be personalised by the user.

- Accessible eGovernment websites that follow standard recommendations for making web content more accessible.

  Examples: Zaragoza council eGovernment website[90] which complies with WCAG 2.0 norms. It is certified officially by the Spanish Agency for Normalization and Certification (AENOR); many other city council websites comply with these norms. Brazil website for people with disabilities[91].

- Services that use blockchain technologies. In general it can be applied to Digital Property Rights in collaborative work, Electronic Voting or Smart Contracts. Specifically, it can support solutions for identity management, tax collection, land registry and any type of government record.

  Example: KSI, Keyless Signature Infrastructure[92] is a blockchain technology used in Estonia to guarantee the integrity, sovereignty and auditability of government services, processes, public records and documents. It prevents loss of critical digital assets and

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[88] https://cambiodomicilio.redsara.es/pcd/

[89] http://www.skelleftea.se/kommun/press-och-kommunikation/digitala-kanaler/app

[90] http://www.zaragoza.es/sede/portal/accesibilidad

[91] http://www.servicos.gov.br/area-de-interesse/assistencia-ao-portador-de-deficiencia

[92] https://e-estonia.com/solutions/security-and-safety/ksi-blockchain/

tracks data securely throughout its supply chain. It may also be applied to local governments.

- Services that apply big data and artificial intelligence technologies. In general, big data techniques can be used for decision-making processes. Natural language processing can be applied to the interaction of citizens with eGovernment services in their native language.

- One-stop-shop. Websites where all local open eGovernment services are available to a citizen or business.

  Example: Zaragoza's (Spain) local government website[93] lets citizens, businesses and other organisations access all of the local procedures (e.g. water, taxes) in one entry point.

Open data and open source solutions for the provision of local government services

- Services that exploit open data. Local government open data is made available in a way that can be exploited through services that make it accessible to different stakeholders in this sector.

  Examples: The European Data Portal analytical report[94] investigates Open Data initiatives in eight medium-sized European cities: Gdansk[95], Ghent[96] and Lisbon[97] among the eight. All of these cities have Open Data strategies and portals in place, which are not stand-alone initiatives but are embedded in broader digital or Smart City strategies. Most of the portals are not only focused on publishing data but also include features aimed at engaging with users, such as news items, event sections and feedback mechanisms.

- Services that use shared vocabularies and linked data. Standardised terms and their relations to other terms and among different vocabularies can in general improve search and retrieval of local government information. Furthermore, open data published as linked data facilitate the connection of different information sources and give rise to new and innovative applications that improve the search and relevance of retrieved information.

  Examples: The government website in Finland[98] is a multi-facet search website for finding relevant commodities, information and services by using ontologies. Several open data websites such as Spain´s open data government website[99] have published their data as Linked Data and provide a query service.

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[93] http://www.zaragoza.es/sedeelectronica/
[94] https://www.europeandataportal.eu/es/highlights/open-data-european-cities
[95] http://otwartygdansk.pl/open-data/
[96] https://data.stad.gent/
[97] http://dados.cm-lisboa.pt/
[98] https://yrityssuomi.fi/en/
[99] http://datos.gob.es/

- Open source software for local government's websites and services. Software systems that provide generic local government website authoring, collaboration, and administration tools, and that are designed to allow the creation and management of services with relative ease.

  Examples: Estonia's Rural Municipality Website[100] is based on an open source content management tool, which allows for easy and uniform site administration. It includes a standard website structure for local governments, tools for site administration and built-in interfacing with public registers. The FixMyStreet Platform[101] is an open code system that allows a website to be launched which helps people to report street problems like potholes and broken streetlights.

eDemocracy and transparency

- eDemocracy and eParticipation services. Applications where it is possible for citizens to participate in decision-making, and make their own proposals to start an initiative or a referendum. Citizens can make complaints and suggestions or request new services as well. Sometimes, it is possible to participate through social media platforms.

  Examples: Reykjavik's *Betri Reykjavik* (Iceland)[102] is an online participatory social network; citizens can present their ideas on municipal issues ranging from services to operations of the city; it enables citizens to voice, debate and prioritise ideas to improve their city. The Stem Van West participation platform in the Netherlands is a participatory platform where people can share their ideas about the city and do participatory budgeting[103]. In Zaragoza (Spain) there is a Participatory Budgeting program[104], where citizens can help the council know and prioritise their needs and demands. The platform Decide Madrid[105] allows citizens participate in proposals for the city improvement, public debate, and participative budgeting, among others. It uses the free software Consul[106] as the platform for the different modes of eParticipation.

- Applications for accountability. Applications that present information on where money is spent and how well public services are performing (also in comparison to other services). Not only does this allow people to hold government accountable, but it can also help to improve efficiency, give people a choice in using public services and contribute to economic growth.

  Examples: In the United Kingdom the Performance platform[107] presents the performance of government services: cost per transaction, user satisfaction, digital take-up, and

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[100] https://www.kovtp.ee/
[101] https://www.fixmystreet.com/
[102] https://www.citizens.is/portfolio_page/better_reykjavik/
[103] https://stemvanwest.amsterdam.nl/
[104] https://www.zaragoza.es/sede/servicio/presupuestos-participativos/
[105] https://decide.madrid.es/
[106] http://consulproject.org/
[107] https://www.gov.uk/performance

completion rate. Open Budget in Florence[108], Italy, presents data on the city's annual budget, "so that people can see clearly all costs". Open Cohesion[109] in Italy provides data on the implementation of investments programmed by Regions and State Central Administrations via cohesion policy resources. Public administrations can draw on platforms such as the OpenBudgets platform[110], which offers several applications: from easy-to-use budget visualisations to performance comparisons between cities and participatory budgeting mechanisms.

SOME AVAILABLE AND EMERGING BUSINESS AND DATA MODELS

This section presents business and data models that may contribute to the development and uptake of open eGovernment in the local government sector, as well as models that open eGovernment may foster.

- Local government and citizens that initiate, design, or implement together programs, projects, or activities. This implies the provision of co-creation spaces and of the job positions required for this.

- Public and private organisations that provide spaces for citizens to foster community interaction and collaborative work.

- Public employees and organisations that assist stakeholders in the access and use of open eGovernment services regarding local government. This assistance includes in-person attention and call centres.

- Public employees and organisations that assist stakeholders regarding compliance with laws, directives, regulations, etc. regarding local government.

- Personnel that support local government services in eGovernment websites, by doing tasks such as live chat, forum moderation, email communication, and community management in general.

- Companies that offer consulting services to local governments on technology roadmaps, in order to enable open eGovernment.

- Companies, organisations and public administrations that create (innovative) eGovernment solutions that exploit open data and services provided by public administrations.

GAPS: POLICY, TECHNOLOGY AND DATA

This section presents a list of policy, technology and data gaps that hinder the provision and take-up of open eGovernment applications in the local government sector.

Policy Gaps

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[108] http://opendata.comune.fi.it/

[109] http://www.opencoesione.gov.it/progetto/en/

[110] http://openbudgets.eu/

- Only a small portion of local governments have developed their own strategies for eGovernment and open-government.

- Some EU directives and policies related to open eGovernment, need to be fully implemented in Member States (and consequently, at a local level).

- Financing for the adoption of open eGovernment services is often short-term. Often, financial support is provided to public administrations for the introduction of a technology, but not for its maintenance and update.

- Developing and implementing policies where the interaction between the public and the private sectors is clearly established, can greatly help in the provision and take-up of open eGovernment services at local-government level: how can they contribute together, what are the responsibilities of each partner, how private practices can benefit the public sector and vice-versa.

Technology and Data Gaps

- Low technology skills of staff in local governments. Training is needed, on the one hand, to understand the advantages and disadvantages of using ICTs and, on the other hand, to develop the capabilities needed to address the constant evolution of services and applications.

- Lack of mobile applications and responsive websites.

- Low interoperability of eGovernment services both at local and upper levels. Homogenisation and uniformisation of the services provided by local entities, and of the procedures behind them, could help. This would also be key to the reuse of local government applications and services, and consequently, to saving money.

- Insufficient research on the application of disruptive technologies such as artificial intelligence and big data in open eGovernment services at a local level.

- Few open data deployed in an appropriate available way.

- Lack of preparation for adapting data storage and manipulation of local government services to the GDPR[111].

SOCIAL CONSIDERATIONS

- The digitalisation of government services for general practice will change the labor force requirements in this sector. For instance, less staff will be needed in local governments to fill out forms whereas other jobs will be generated to support the online services.

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[111] REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation): http://ec.europa.eu/justice/data-protection/reform/files/regulation_oj_en.pdf

Governments need to plan on this and implement policies regarding education and new job profiles for their staff.

- Open eGovernment services at the local level (as well as at any other level) should act as drivers of an inclusive society and contribute to reduce (or at least, not to increase), the digital divide.

RECOMMENDATIONS

This section presents the list of recommendations for the provision and take-up of open eGovernment applications to enhance accountability, transparency and trust in the local government sector.

- **User-centred design**

In order to create valuable and useful open eGovernment services for the local-government sector, developers should attend the needs and expectations of all stakeholders. As open-eGovernment-service providers, local governments should incorporate user-centred design to their services, whether they develop them or outsource their development. These services should be developed around how users can, want to, or need to use those services, rather than forcing people to use a service that does not meet their expectations.

eParticipation can be used as a means to assess existing services, to learn of citizens and businesses' needs and to co-create new ones.

- **Universal accessibility of services**

Universal accessibility is a fundamental requirement for the success of any open eGovernment. In contrast to the private sector, which can be excluding by reaching only target market segments, public administrations should design open eGovernment services that are inclusive by default and cater to the needs of everyone. Local governments are not an exception to this.

- **Ubiquitous services (mobiles, tablets and other devices)**

As mobiles are fast becoming the main device through which people access the internet, it is imperative that more services are provided through mobile friendly websites or apps that would open access to a greater number of citizens and businesses.

Moreover, public administrations should be up to date on new developments of devices and eGovernment services should be responsive.

- **Meeting the once-only principle**

The once-only principle states that a user should not have to supply the same information more than once to public administrations. Open eGovernment services should offer this option to users whenever possible. However, people should not be forced to apply it.

The use of open source software, open standards and open API will result in more open and scalable ICT systems for public service delivery. This will pave the way for the integration of systems and the implementation of the once-only principle for local government services.

- **Service personalisation**

Personalisation is a way to improve user satisfaction by tailoring a service to specific individuals or segments of individuals' needs. Open eGovernment services should be customisable and adapt to the user or group of users' profile. These services could be proactive and include applications where users are presented with eGovernment-related steps that need to be taken according to their circumstances, e.g. change of residence.

- **Services in multiple languages**

Language support should include not only the translation of website content but also the translation of forms and documents. This is under-developed and it is hindering access to services by non-native speakers.

Local governments should provide not only information in the user's native language, but also fully multilingual open eGovernment services, so that non-native speakers are catered to.

- **Cross-border services**

Cross-border provision of services is based on the freedom of movement of services, so that nationals of a EU Member State are able to pursue their activities as citizens or businesses in another EU Member State.

Citizens living or arriving to a foreign town should be able to access open eGovernment services provided locally. This requires eDocuments implemented cross-border.

- **People's access to their own data**

Allowing citizens to "own", use and amend their data could go a long way to make them more invested in the services they use and more trusting of government. It is important for local governments to understand how people think about their data in relation to public services and how they would like to interact with them.

This recommendation is especially relevant for the once-only principle. Control on one's own data should go beyond all or nothing; people should be able to decide what data can be shared and with whom.

- **Openness of data and services**

Data and algorithms transparency is essential for digital trust and appropriation of emerging technologies. An important shift deals with control of the data used and the intelligibility of algorithms.

Openness of data implies the use of standards for data management, digital services and metadata, as well as shared concepts and terms (when available). Openness of services implies the use of open source software where there is no risk of vendor lock-in and code may be reviewed and maintained by the parties involved in the development of solutions.

The availability of open data together with open service components, will enable the development of new solutions by third parties and the public administration itself, and will foster reuse by small local governments that lack resources for the development of services.

- **eDemocracy services**

eDemocracy enhances citizen and businesses engagement and participation in government decision making processes such as policy making, budgeting and service delivery. It is fundamental for user adoption and for building trust towards the public sector.

In general, eDemocracy and eParticipation are not offered as services on eGovernment websites in the EU. eGovernment websites need to be transformed in order to support increasing engagement and participation of citizens and businesses, providing features such as web forums, discussion spaces and social media interaction.

However, a shift in public service delivery and governance needs to accompany a move towards eDemocracy so that citizen input is adequately taken up and used. For instance, there is little sense in creating a consultation service for citizens to suggest where money should be spent if there are not enough people to read and handle the suggestions.

- **eProcurement services**

Providing eProcurement, eTender and eInvoicing services is very important to level the playing field and ease access to the information for all businesses, and thus develop the potential for bidding for public contracts procurement opportunities and tenders.

Local governments should focus on setting up eProcurement and eTender services that are easily accessible for businesses of all sizes and that citizens can look up in order to monitorise the bidding process.

ANNEX V: NEXT STEPS FOR OPEN EGOVERNMENT SERVICES RELATED TO SMALL BUSINESS AND SELF-EMPLOYED

FACTSHEET ON SMALL BUSINESS AND SELF-EMPLOYED

AVAILABLE AND EMERGING SOLUTIONS	- Guides to the steps involved in creating and maintaining a business. - Personalisation of websites and services. - eProcurement platforms. - Services that apply emerging technologies, such as blockchain and artificial intelligence, to facilitate search, provide answers to users, manage records, etc.
EMERGING BUSINESS AND DATA MODELS	- Stakeholders that co-create services. - Public employees and organisations that assist stakeholders in the access and use of open eGovernment services, or regarding compliance with laws. - Positions for tasks such as live chat, forum moderation, email communication, etc. - Companies, organisations and public administrations that create (innovative) eGovernment solutions that exploit open data. - Companies that offer consulting services to public administrations on technology roadmaps. - Incubators of startup companies that develop new services, i.e. development ecosystems.
GAPS	- Need for implementation of EU directives and policies. - No clear interaction between the public and the private sectors. - Low technology skills of staff in SMEs and self-employed. - Little availability of mobile applications. - Low interoperability of services. - Few open data are available in an appropriate way. - Insufficient research on the application of innovative technologies. - Low development of eGovernment services for self-employed (most for SMEs).
SOCIAL CONSIDERATIONS	- Equity among businesses regarding procurement. - Stimulation of entrepreneurship and self-employment. - Collaboration culture. - Change in the labour force.
RECOMMENDATIONS	- Applying user-centred design methodologies and tools. - Creating proactive personalised eGovernment services. - Making universally accessible services. - Providing open eGovernment services in multiple languages. - Increasing the number of ubiquitous services. - Developing cross-border services. - Meeting the once-only principle. - Providing open data and algorithm transparency. - Increasing the use and further development of eDemocracy tools. - Providing eProcurement, eTender and eInvoicing services.

OPEN EGOVERNMENT IN SMALL BUSINESS AND SELF-EMPLOYED

Open Government is a government with high levels of transparency and with an emphasis on government accountability. The concept of open government suggests that the public should have access to government-held information and that it is informed of government proceedings. It includes expectations for increased participation and collaboration of citizens, businesses, employees and other entities in government proceedings, through the use of modern, open technologies[112]. The term Open in this context means that data has not only to be accessible but also to be understandable in order for citizens to know how the data can be relevant to them. At the same time, *eGovernment* refers to the use of computers and other devices to provide information and services to the public. In turn, *eGovernance* extends the scope of eGovernment to include citizen engagement and participation in governance.

This document focuses on open eGovernment services that are aimed for SMEs and self-employed citizens. This group is very heterogenous and ranges from single person initiatives up to companies with at most 250 employees, and may belong to different sectors:

- Specifically, according to the EU definition given by the Commission Recommendation 2003/361/EC[113], an SME should employ less than 250 persons and have an annual turnover of not more than €50 million or an annual balance-sheet total of not more than €43 million.

- A self-employed person is defined by Eurostat[114] as "the sole or joint owner of the unincorporated enterprise in which he/she works. Self-employed people also include: unpaid family workers; outworkers (who work outside the usual workplace, such as at home); and workers engaged in production done entirely for their own final use or own capital formation, either individually or collectively".

Some key government services in this area have focused on reducing the administrative burden and shortening response times so that enterprises can be set up and run effectively. This has been done under the assumption that taking into consideration the size of SMEs, what they struggle with is the strength of expertise they have on board and the limited resources they may have to dedicate to administrative and legal work that is required to set up and run a business.

Furthermore, in the EU context, government services should also take into account the requirement of cross-border solutions in the context of the European Single Market, where an enterprise from one Member State may want to setup, run, and trade in another Member State.

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[112] https://opensource.com/resources/open-government

[113] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:124:0036:0041:en:PDF

[114] http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Self-employed

This section discusses some of the emergent solutions that we have come across while doing desk research on existing eGovernment services in this sector. We have focused on those that are leading the way or show a high level of innovation, and provide examples for some implementations.

Administrative procedures for SMEs and self-employed

- Automatic workflows in eGovernment websites. Automatic workflows for relevant procedures guide businesses through the steps involved in creating and running them.

  Example: Croatia´s eGovernment website[115] offers a number of transverse workflows where the flow automatically finds the forms that are relevant to each user. It works on top of a workflow engine, meaning that forms can be collected and then distributed within Government offices, tracking progress and informing the applicant accordingly.

- Personalisation of websites and services. Interfaces that are adaptive to the user's profile and requirements.

  Examples: Italy's eGovernment website for businesses[116] provides personalised access to a virtual desk of "integrated services" i.e. services provided by different authorities but relating to a unique goal for the user.

Business opportunities for SMEs and self-employed

- Services that use blockchain technologies. For instance, in the context of SMEs and self-employed, Smart Contracts apply blockchain technologies to enable credible transactions in a conflict-free way, avoiding services of a middleman.

- Services that apply big data and artificial intelligence technologies. For example, big data can be used to analise market previsions and help SMEs and self-employed to find and take advantage of new business opportunities.

- Marketplace for the exchange of skills and expertise among SMEs and self-employed. A platform that would incentivize joint ventures among stakeholders in this area.

Better and more transparent eProcurement

- eProcurement platforms. Platforms based on open European standards and EC directives that automatically find the forms that are relevant to each user with information on eProcurement opportunities and procedures, and with access to digital eProcurement services.

  Examples: The Belgian eTenders website[117] is deployed together with an eNotification platform to alert on eProcurement opportunities. The TED website (Tenders Electronic

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[115] http://www.hitro.hr/Default.aspx?sec=18

[116] http://www.impresainungiorno.gov.it/psc-italy

Daily)[118], dedicated to European public procurement, allows the user to browse, search and sort procurement notices by country, region, and business sector.

- Services that exploit open eProcurement data. Procurement open data is made available in a way that can be exploited through services that make them accessible to SMEs and self-employed. These services would help SMEs and self-employed to participate in procurement that is tailored to their area and expertise. For example, an alert system that notifies users whenever relevant new procurement opportunities arise.

  Example: The platform euroalert[119] has contents related to EU funding, law, events and tenders for SMEs.

SOME AVAILABLE AND EMERGING BUSINESS AND DATA MODELS

This section presents business and data models that may contribute to the development and uptake of open eGovernment in the SMEs and self-employed sector, as well as models that open eGovernment may foster.

- Government and businesses initiate, design, or implement together programs, projects, or activities. This implies the provision of co-creation spaces and of the job positions required for this.

- Public and private organisations that provide spaces for SMEs and self-employed to foster interaction and collaborative work.

- Public employees and organisations that assist stakeholders in the access and use of open eGovernment services regarding SMEs and self-employed. This assistance includes in-person attention and call centres.

- Public employees and companies that assist stakeholders regarding compliance with laws, directives, regulations, etc. regarding SMEs and self-employed.

- Personnel that support eGovernment services for SMEs and self-employed by doing tasks such as live chat, forum moderation, email communication, and community management in general.

- Non-aggregated data are opened for SMEs and self-employed who may access them to develop open eGovernment applications and tools. Services can be developed from reusable components.

- Consulting services by SMEs to governments on technology roadmaps in order to enable eGovernment.

- Incubators of startup companies that develop new services, i.e. development ecosystems.

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[117] https://eten.publicprocurement.be/etendering/home.do

[118] http://ted.europa.eu/TED/main/HomePage.do

[119] https://euroalert.net/

GAPS: POLICY, TECHNOLOGY AND DATA

This section presents a list of policy, technology and data gaps that hinder the provision and take-up of open eGovernment applications in the SMEs and self-employed sector.

Policy Gaps

- EU directives and policies regarding eProcurement are not fully implemented yet. For example, by April 2016 (transposition date for the Directives 2014/23/EU, 2014/24/EU and 2014/25/EU), tender opportunities and tender documents had to be electronically available. However, some of the Member States were late in implementing them and only did so weeks or months after the deadline.

- Developing and implementing policies where the interaction between the public and the private sectors is clearly established can be of great help in the provision and take-up of open eGovernment services involving SMEs and self-employed: how can they contribute together, what are the responsibilities of each partner, how private practices can benefit the public sector and vice-versa.

Technology and Data Gaps

- Lack of eGovernment applications and websites specific for self-employed and SMEs.

- Low technology skills of staff in SMEs and of self-employed. Training is needed, on the one hand, to understand the advantages and disadvantages of using ICTs and, on the other hand, to develop the capabilities needed to address the constant evolution of services and applications.

- Low interoperability of eGovernment services for SMEs and self-employed; this is especially relevant among eProcurement platforms at the different levels of public administration.

- Insufficient research on the application of technologies such as artificial intelligence and big data in open eGovernment services for SMEs and self-employed.

- Few open data deployed in an appropriate available way.

SOCIAL CONSIDERATIONS

- The lack of a participation and collaboration culture makes it difficult for SMEs and self-employed to get involved in the development of open eGovernment services.

- Open eGovernment services can help to:

    i.   achieve equity between businesses regarding procurement.

    ii. stimulate entrepreneurship.

    iii. enable self-employment.

RECOMMENDATIONS

This section presents the list of recommendations for the provision and take-up of open eGovernment applications to enhance accountability, transparency and trust in the SMEs and self-employed sector.

- **User-centred design**

In order to create valuable and useful open eGovernment services for the SMEs-and-self-employed sector, developers should attend the needs and expectations of all stakeholders. These services should be developed around how users can, want to, or need to use those services, rather than forcing people to use a service that does not meet their expectations.

- **Universal accessibility of services**

Universal accessibility is a fundamental requirement for the success of any open eGovernment. In contrast to the private sector, which can be excluding by reaching only target market segments, public administrations should design open eGovernment services that are inclusive by default and cater to the needs of everyone. This is especially relevant for self-employed people with disabilities.

- **Ubiquitous services (mobiles, tablets and other devices)**

As mobiles are fast becoming the main device through which people access the internet, it is imperative that more services are provided through mobile friendly websites or apps that would open access to a greater number of citizens and businesses.

Moreover, public administrations should be up to date on new developments of devices and eGovernment services should be responsive.

- **Meeting the once-only principle**

The once-only principle states that a user should not have to supply the same information more than once to public administrations. Open eGovernment services should offer this option to users whenever possible. However, people should not be forced to apply it.

The use of open source software, open standards and open API will result in more open and scalable ICT systems for public service delivery. This will pave the way for the integration of systems and the implementation of the once-only principle for SMEs and self-employed.

- **Service personalisation**

Personalisation is a way to improve user satisfaction by tailoring a service to specific individuals or segments of individuals' needs. Open eGovernment services should be customisable and adapt to the user or group of users' profile. Besides, services should be proactive, and notify or prompt a SME or self-employed to use them according to circumstances like being subject to tax exemptions.

- **Services in multiple languages**

Language support should include not only the translation of website content but also the translation of forms and documents. This is under-developed and it is hindering access to

services by non-native speakers. Such is the case of services related to SMEs and self-employed users and is relevant for cross-border business development.

- **Cross-border services**

Cross-border provision of services is based on the freedom of movement of services, so that nationals of a EU Member State are able to pursue their activities as citizens or businesses in another EU Member State.

For SMEs and self-employed to operate cross-border, several Single Digital Gateway proposals need to be developed, for example the interconnection of all Member States' business registers, the electronic interconnection of insolvency registers, and the EURES European Job Mobility website.

- **People's access to their own data**

Allowing SMEs and self-employed to "own", use and amend their data could go a long way to make them more invested in the services they use and more trusting of government. Additionally, it would cut down on information queries by governments and allow for faster resolution times.

This recommendation is especially relevant for the once-only principle. Control on one's own data should go beyond all or nothing; people should be able to decide what data can be shared and with whom.

- **Openness of data and services**

Data and algorithms transparency is essential for digital trust and appropriation of emerging technologies. An important shift deals with control of the data used and the intelligibility of algorithms.

Openness of data implies the use of standards for data management, digital services and metadata, as well as shared concepts and terms (when available). Openness of services implies the use of open source software where there is no risk of vendor lock-in and code may be reviewed and maintained by the parties involved in the development of solutions.

The availability of open data together with open service components, will enable the development of new solutions by third parties (SMEs and self-employed included) and the public administration itself, and will foster reuse by small local governments that lack resources for the development of services.

- **eProcurement services**

Providing eProcurement, eTender and eInvoicing services is very important to level the playing field and ease access to the information for all businesses, and thus develop the potential for bidding for public contracts procurement opportunities and tenders.

The transition of European Member States towards full eProcurement and use of contract registers is necessary. The focus should be on setting up eProcurement and eTender websites that are easily accessible for businesses of all sizes. Besides, open data on eProcurement guarantees transparency in the management of public funds. As with other eGovernment

services, a user focused approach would be necessary to gauge both the interest and the usefulness of such websites and how they can be designed to ensure maximum take-up by businesses.

- **eDemocracy services**

eDemocracy enhances citizen and businesses engagement and participation in government decision making processes such as policy making, budgeting and service delivery. It is fundamental for user adoption and for building trust towards the public sector.

In general, eDemocracy and eParticipation are not offered as services on eGovernment websites in the EU. eGovernment websites need to be transformed in order to support increasing engagement and participation of citizens and businesses, providing features such as web forums, discussion spaces and social media interaction.