



D6.1 Methodological Approach

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List of Acronyms

Abbreviation / acronym	Description
AI	Artificial Intelligence
BB	Building Block
BM	Business models
CA	Consortium Agreement
CARE	Collective Benefit, Authority to Control, Responsibility, Ethics
CEA-PME	Confédération Européenne des Association de Petites et Moyennes Entreprise
CEF	Connecting Europe Facility
CI	Company Information or Critical Infrastructure
CSE	Civil Society Europe
CSF	Community-supporting Functions
CSO	Civil Society Organisation
CSP	Core Service Platforms
DAO	Decentralized Autonomous Organisation (DAO)
DC/DP	Data Consumer / Data Provider
DESI	Digital Economy and Society Index
DGA	Digital Governance Act
DGT	Digital Government Transformation
DID	Decentralized Identifiers
DMA	Digital Markets Act
DoA	Description of Action (Grant Agreement)
DSA	Digital Services Act
DSI	Digital Service Infrastructure
DSM	Digital Single Market
Dx.y	Deliverable number y, belonging to WP number x
ECAS	European Citizen Action Service
EBSI	European Blockchain Service Infrastructure
EC	European Commission
ECRIN	Ecrin.org
EDCI	European Digital Credentials Issuer
EIF	European Interoperability Framework
EHEA	European Higher Education Area
EIRA	European Interoperability Reference Architecture
ERASMUS+	https://erasmus-plus.ec.europa.eu/
ESCO	European Skills/Competences Qualifications and Occupations
EESSI	Electronic Exchange of Social Security Information
ESSIF	European Self Sovereign Identity Framework
EU	European Union
EUF	European University Foundation

Abbreviation / acronym	Description
EUNIS	European University Information System
GA	Grant Agreement
GaaP	Government as a Platform
GaaS	Government as a Service
GEANT	Geant.org
GM	Governance Model
GS	Generic Services
IA	Impact Analysis
ICT	Information and Communication technologies
IMI/IHI	Innovative Medicines Initiative a PPP, Innovative Health Initiative (follow on program)
ISA	Interoperable Service Agreements
ISA2	Interoperability Solutions (Public) Administrations Program 2016-2020
KER	Key Exploitable Results
KPI	Key Performance Indicator
LE	Life Event
LSP	Large Scale Pilot
MS	Member State
MT	Machine Translation
NI	National Infrastructure
NPO	Non-Profit Organization
OGS	Open Government Services
OI	Organisational Interoperability
OOP TS	Once Only Principle Technical System
PC	Project Coordinator
PPP	Public-Private Partnership
PSA	Project Start Architecture
PSC	Point of Single Contact
PSI	Public Sector Information
QA	Quality Assurance
QM	Quality Manager
REFIT	Regulatory fitness and performance programme
SDG	Sustainable Development Goals
SDGR	Single Digital Gateway Regulation
SDGS	Single Digital Gateway Services
SDO	Standardisation Development Organisations
SEMPER	https://www.a-sit.at/en/semper/
SSI	Self-Sovereign Identity
TOOP	The Once Only Principle Project
UC	Use Case
UC-DBA	Use Case Doing Business Abroad

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Abbreviation / acronym	Description
UC-MA	Use Case Moving Abroad
UC-STA	Use Case Studying Abroad
VC	Verifiable Credential
WP	Work Package
WPL	Work Package Leader

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Glossary

It is important to have the same or similar understanding of the meaning and of used language and terms to achieve understanding. WP6 has used the Machine Translation (MT) service[1] and the Digital Single Market (DSM) Glossary[2] as far as possible and find it helpful to describe or reiterate the following concepts.

Term	Explanation
Agency	Agency is a business or organization providing a particular service on behalf of another business, person, or group.
Certificate	A document serving as evidence or as written testimony, as of status, qualifications, privileges, or the truth of something
Criteria	Procedural requirements as conditions to be met and used as a basis for making judgments or decisions in the procedure.
Digital Government Transformation (DGT)	Is the introduction of radical changes, alongside more incremental ones, in government operations, internal and external processes, and structures, to achieve greater openness and collaboration within and beyond governmental boundaries, enabled by the introduction of a combination of existing ICTs and/or new data-driven technologies and applications, as well as by a radical re-framing of both organisational and cognitive practices; it may encompass different forms of public sector innovation across different phases of the service provision and policy cycle to achieve key context-specific public values and related objectives such as, among others, increasing efficiency, effectiveness, accountability and transparency, to deliver citizen-centric services and design policies that increase inclusion and trust in government.[7]
Digital Service Infrastructures (DSI)	(DSIs) describe solutions that support the implementation of EU-wide projects. They provide trans-European interoperable services of common interest for citizens, businesses and/or public authorities, composed of core service platforms and generic services. <ul style="list-style-type: none"> ▶ Core Service Platforms (CSP) - the central hubs which enable trans-European connectivity. This part of a DSI is managed, implemented and operated by the EC. ▶ Generic Services (GS) - the link between national infrastructures (NI) to the CSP. This part of a DSI is managed, implemented and operated by the MS. Source Regulation (EU) No 283/2014 The DSIs are considered Critical Infrastructure (CI).
Ecosystem	An ecosystem lens can be used to make interdependencies among partners in exchange networks characterized by simultaneous cooperation and competition. To convey a sense of the interdependent social systems of actors, organizations, material infrastructures, and symbolic resources that can be created in technology-enabled, information-intensive social systems.
Government as a Platform (GaaP) and Government as a Service (GaaS)	Reorganizing the work of government around a network of shared APIs and components, open-standards and canonical datasets so that civil servants, businesses and others can deliver radically better services to the public, more safely, efficiently and accountably.”[8] “Government as a Platform is a common core infrastructure of shared digital systems, technology and processes on which it’s easy to build brilliant, user-centric government services.”[9]
Once Only Principle (OOP)	The public administrations should ensure that citizens and businesses can supply the same information only once to a public administration and administrations

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Term	Explanation
	should be able to retrieve and share this data to serve the user, in accordance with data protection rules.
Outputs, Outcomes (and Impacts)	Outputs are the tangible or intangible things that project produces. Outcomes are the short to medium effects which need to occur in order to achieve project objectives. Impact is project long term goal or ultimate objective
Public Service	The concept of public service is twofold: it embraces both the bodies providing services and the services of general interest they provide. The public authorities may impose public service obligations on the body providing a service (airlines, road or rail carriers, energy producers and so on) either nationally or regionally.
TOOP	The European Commission launched the Once-Only Principle Project (TOOP) [129] in January 2017 as an initiative of about 50 organizations from 20 EU Member States and Associated Countries. The main objective of TOOP is to explore and demonstrate the once-only principle across borders, focusing on data from businesses. Doing this, TOOP wants to better exchange business-related data or documents with and between public administrations and reduce the administrative burden for both companies and public administrations.
Use case	A specification of one type of interaction with a system. One use case may involve several scenarios (usually a main success scenario and alternative scenarios)
User	User is anyone who is a citizen of the Union, a natural person residing in a Member State or a legal person having its registered office in a Member State, and who accesses the information, the procedures, or the assistance or problem-solving services referred to in SDGR Article 2, through the gateway.

Executive Summary

DE4A is a Member States driven project that intends to assist Member States to be prepared for the Single Digital Gateway Regulation when it becomes a reality in 2023. The purpose of DE4A is to develop an open and comprehensive environment and platform for EU Member States to consistently deliver secure cross-border, high-quality, fully online procedures under the Once-Only Principle (OOP).

WP6 “Sustainable impact and new governance models” aims to develop business and governance models for long-term sustainability and evaluate their direct impact on public administration (and indirectly on businesses and citizens). WP6 addresses not only the sustainability of DE4A project outputs, but also longer-term outcomes and wider impacts. It looks at a broader perspective by looking at the key factors, such as desirability, feasibility and sustainability of the future pan-European government collaboration, with the necessary business and governance models in place, and bearing in mind the existing European-level initiatives. This deliverable is the first formal output of WP6 for the DE4A project. Having this in mind, it considers initial vision and strategy to guide methodological choices, including interlinking of broader impacts to desired outcomes and specific project outputs.

DE4A project outputs, outcomes and impacts should be an inclusive digest of our findings. Our target audience goes beyond public servants involved in European-funded projects and technology-oriented people and must include also citizens and private companies. Therefore, our communication style should be accessible and sector-neutral, fostering reflection and engagement.

The methodological approach consists of three streams, executed in parallel, with 5 phases and steps pertinent to the phases. The streams are inspired by the DigiGov Framework 2.0 [7] and focus on the transition from centralized to decentralized and hybrid services. They also consider how changes will affect the current building blocks (BB), co-delivery services and other existing Digital Service Infrastructures (DSI) elements. In line with the above-mentioned vision and strategy that links top-down aspects of impact, outcomes, and outputs, the methodology also includes bottom-up approach, with data collection from internal and external stakeholders, and its analysis that will help on how the DE4A will contribute to an overarching EU strategy. WP6 will use this approach to map its outputs for three of the identified time horizons. The focus will be practical and applied to the needs of the project and the requirements upon the European Commission and road-mapping, but openness to all stakeholders and dynamics of envisioned ecosystem is also considered.

The three streams of methodology are:

- ▶ Conceptual, that will produce a framework that describes all WP6 outcomes (e.g., business and governance models) and links to related factors and parameters (e.g. legal, financial etc.)
- ▶ Empirical, that takes inputs both from outside (e.g. desktop research of the state of the art), and from inside of the project, (e.g. project deliverables, pilots, existing surveys).; and
- ▶ Consultation, that is, validating and searching for active feedback from external stakeholders.

All streams start in the first project year (2020), and they have continuous interaction and dependency. However, the main WP6 results will be drafted around significant milestones that are aligned with the main milestones in the project timeline. Since this report is delivered at the end of the first year, we also present the first results of the conceptual stream, so called “inception” phase.

In the inception phase we provide our understanding of relevant concepts, such as the concept of citizen-centric service ecosystem, with related variations and the selected definitions of models and tools that we plan to use in the subsequent phases. This includes platform business model (PBM), and concepts such as Business Model Patterns, Government as a platform, processes, rules, norms, actions (PRNA), strategic, tactical and operational (STO) governance and others.

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Considering the interrelation between the diverse WP6 outputs, we also performed initial stakeholder analysis to identify the potential target audiences with their specific interest or roles. Specific definitions are taken, when appropriate, from official documents such as EC notice guidelines for the implementation of the SDG regulation (31.7.2019), where roles of competent authority and national coordinators are described.

In inception phase we also look at the list of 25 interdisciplinary issues identified in the other WPs and their link to specific WP6 outputs and outcomes, such as digital transformation or wider impacts. The first feedback received from stakeholders will be described in later deliverables in the consultation stream.

Once that inception has been described, in line with the outlined vision and strategy, we will apply an out-of-the-box and forward-thinking approach to analyze internal and external sources and report the results of this analysis, as well as the update of our conceptual framework in deliverable D6.2. Therefore, our aim in this deliverable was to define methodology, as well as focus and scope of WP6 outputs and further link them to the outcomes and impact stemming from the introduction of new models for Governance and Business. With the above in mind, WP6 will suggest a set of recommendations for improvement to be assessed, discussed, and prioritized by subject matter experts and focus groups.

We show their inter-dependence with larger impacts in the Digital Single Market (DSM) relating to The Digital Governance Act (DGA), Digital Services Act (DSA), and the stakeholder needs, that all need to form a part of the final sustainability roadmap.

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1 Introduction

1.1 Purpose of the document

The objective of “D6.1 Methodological Approach” is to develop the tailored methodology and process to design and evaluate WP6 “Sustainable impact and new governance models” results, like adequate and long-lasting business models (BM) for the exploitation of the main DE4A results. Given the fact that this document is delivered at the end of year 1, we also present the first findings related to the first step of methodological streams, namely inception of a conceptual framework, while the following steps, analysis of the state of the art, and initial feedback from the stakeholders, will be presented in the next deliverable D6.2 Business models for sustainability: design and implications.

The WP6 outcomes will be identified for different time horizons and will assess social and monetary implications on sustainability. Furthermore, these outcomes will be aligned with the technological development of the architecture and its deployment in the different pilots, for those time horizons (t2, t3, and t4). WP6 will also identify links to the wider impact such as the new models of collaboration between the MS, the European Commission (EC) and Civil Society Organisations (CSOs), in order to improve wellbeing of EU citizens. The work package will do this by executing a number of steps, clustered in several phases, such as addressing best practices and recommendations, analysis of received feedback, empirical inputs, or alignment with EU and MS Digital Government strategies.

The phased roadmap that this WP will produce will identify strategies and policy recommendations for overcoming legal, cultural, and managerial risks and barriers, within the identified time horizons. This roadmap will also identify further needs and remaining challenges to ensure a flexible yet sufficiently harmonized deployment of the Single Digital Gateway Services (SDGS) and longer-term Digital Government vision.

1.2 Structure of the document

The introduction describes the purpose and structure of this document and offers short definitions of concepts needed to understand this deliverable’s content. It then proceeds to describe the methodological approaches to be followed. The entire document is divided into several sections starting with the methodology and stakeholder analysis, then describing inception and conceptual framework for each of the main outputs of WP6: Business model, Governance model and Sustainability.

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2 The Methodology

The methodology approach developed in this and following chapters is aligned with DE4A project objectives, sustainable impact, outcomes and expected project outputs (e.g. services, software, procedures). Its main purpose is therefore to describe actions, organized around steps, phases and streams that will lead to production of the WP6 outputs (e.g. business model, governance model, sustainability roadmap). Besides, other high-level impacts, such as societal impact, and other outcomes, such as enablement of digital transformation of government, should also be considered and linked to the project outputs in general and those of WP6 in particular.

These WP6 specific outputs have already been listed in the Description of the Action (Grant Agreement) [122]:

- ▶ Suitable governance structure options, addressing both dimensions of ‘government as a platform’ and ‘government as a service’, to ensure consistency of all applicable instruments with bi-directional feedback from/to the European Interoperability Strategy.
- ▶ Business models for long-term sustainability of the new governance model (open government approach) will be developed and validated with representatives (i.e. senior public officers, business development managers) of public and private organisations.
- ▶ Assessment of the re-defined role and responsibility of Public Authorities and other stakeholders in delivering public goods and services to citizens and businesses with high administrative efficiency (including needs expressed by SMEs and start-ups).
- ▶ Impact assessment for businesses, citizens and administrations: with clear focus on analysis of incurred costs vs. realized benefits (including efficiency gains) and reinforced trust in public institutions.
- ▶ Sustainability plans, adequate recommendations and road mapping of elements enabling the migration of European public administrations towards new models for shared delivery of common services will be produced for policy makers, aimed to overcome legal, cultural, and managerial risks and barriers. They will also have specific focus on training, awareness raising and capacity building.

Nevertheless, these outputs should be also put in the overall context and project framework through the inception phase, where relevant terms and concepts will be defined through conceptual analysis. Methodological approach is guided by WP6 specific vision and strategy, outlined in the next sub-chapter. This strategy combines bottom-up approach, that links outputs and outcomes to impacts, with the top-down Digital Government Transformation objectives mapping, and vision that strives to promote the European values of an open, democratic and sustainable digital society through strengthening public service interoperability in the EU.

2.1 Vision and Strategy

The public sector in Europe is often considered too slow and reluctant to changes. It has also been mentioned that the public sector follows two logics: the logic of consequence, and the logic of appropriateness[7]. When it comes to reuse, shared resources and service co-delivery, the above logics becomes more difficult to apply, monitor, measure, or control. There is a constant threat that innovation and changes could follow a “Good Enough” approach.

However, the new technologies, bundled with innovative business and governance models, enable more accurate cost benefits prediction, real-time detection and tracking of quality of service, improved resource allocation, better and more transparent decision making, personalized context-aware and

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context-smart services, and many other things. One can argue that governments are in a unique situation to develop better, more inclusive and citizen-empowering services and policies.

In order for Digital Government Transformation (DGT) to happen, change needs to be managed carefully and for this reason WP6 sustainability roadmap need to have a holistic approach and always need to consider the three vectors: people, processes and technology (PPT), otherwise they are doomed to fail. *“The PPT framework is all about how the three elements interact. The people do the work. Processes make this work more efficient. Technology helps people do their tasks and also helps automate the processes. Thus, businesses can achieve organizational efficiency by balancing the three and optimizing the relationships between people, processes, and technology.”*[21].

In order to evaluate and validate WP6 outcomes, such as business and governance models, the above-named elements should be included in a vision that show how DE4A and DGT radically can change how policy and administrations work, in order to increase transparency, accountability, trust and legitimacy. DE4A WP6 will therefore follow empirical measurement of outputs, outcomes and impacts on the better operation of government – in terms of administrative effectiveness, better public services and citizen involvement in decision making.

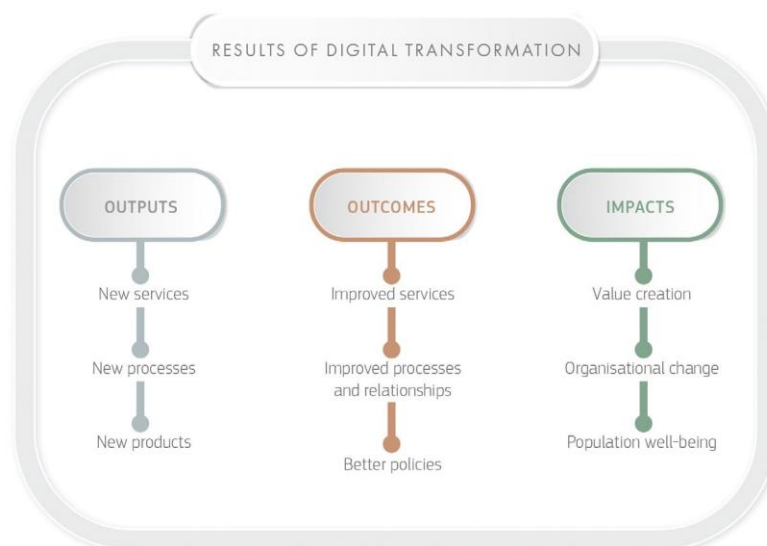


Figure 1: Linking project outputs to wider impacts (DigiGov-F[7])

In line with the recommendations from DigiGov approach (see figure above) that links project specific outputs to wider impacts, WP6 methodology will try to validate and refine the WP results such as BM and GM based on the outcome and impact dimensions, namely:

- a) Productivity and Efficiency
- b) Effectiveness, Inclusion and Sustainability
- c) Legitimacy and Trust.

As indicated in the DE4A Description of the Action, the impact of new GMs and BMs should be geared towards the impact of co-delivery in an open ecosystem that can guarantee sustainability by generating economically viable stimuli for public and private actors, thus caters for the element of Organisational Interoperability (OI). The results from multi-pronged approaches in DE4A need to be further consolidated into clear recommendations, building on the insights and lessons learned.

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Our Exploitation Strategy is focused mainly on the identified SDG procedures, and the services or software produced to pilot some of these procedures. However, bottom-up mapping of outputs into outcomes, such as facilitation of the further integration of new MS, domains, BBs and their related stakeholders, is also part of this strategy. It could be further generalized to encompass any Public Sector Digital Service. This logically demands a well-thought, widely discussed and agreed methodological approach that is focused on identifying, planning and developing the most adequate conceptual framework with business and governance model elements that ensure the widest take-up, scalability, reusability, consolidations and maintenance of achieved results at all levels.

Vision and strategy are taking assumption of an ecosystem approach, created by different public sector operators and service providers, but part of a broader social and economic system of individuals, communities, public organisations and private companies. To create a level playing field in the market, rules of engagement between the different roles and actors fulfilling those roles are also needed, so we start our work with stakeholder analysis that will later need an update and alignment with the decisions taken, for example, by SDG coordination group or in the EC SDG implementation documents. Following well-established principles of subsidiarity, reciprocity, transparency and flexibility, different aspects and functions will be addressed, potentially recommending the creation of task forces and boards with specific focuses: from IT cooperation, cross-domain service provisioning and architecture interoperability to usage expansion and business development.

Different sets of criteria, requirements, stakeholder needs, and legal considerations will be addressed by the business modeling that will include assessing positive externalities in terms of options for public-private collaboration where initial public investment can spur real growth, jobs and competitiveness in the ICT sector and beyond, according with Digital Single Market (DSM) goals. The alternative BMs options should provide descriptions of the roles and relationships among citizens, private and public organizations and identify the major flows of services, information and value (e.g. money), as well as the major benefits to these participants.

Higher level governance principles happen simultaneously on several layers such as societal norms, regulations and law, cross ecosystem (with individual as point of integration) at the level of infrastructure provider (e.g. operators offering “governance support”).

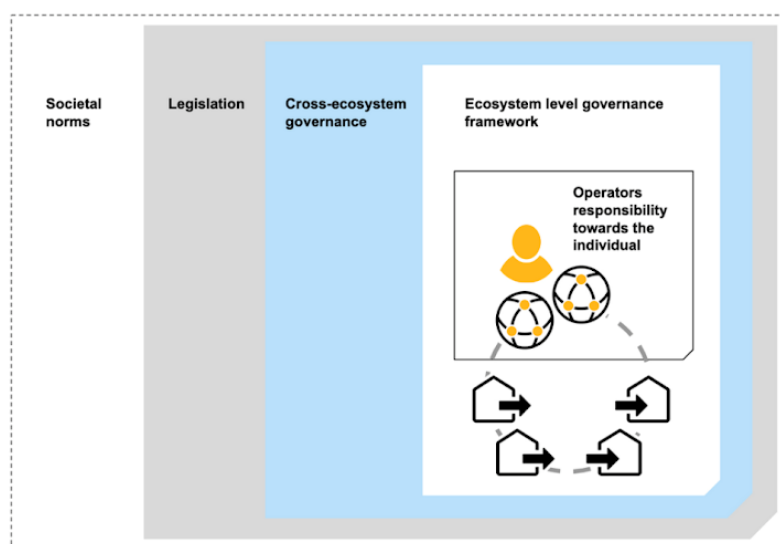


Figure 2: Levels of Governance[28]

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Both WP6 streams of work, on business and governance models, will feed sustainability analysis, that also brings together the knowledge on the BBs/DSIs and aligns the architecture level with the operative service provisions, as well as standardisation. It is therefore important to note that the actual implementation of the BMs and governance structure, while public sector-driven, falls under the responsibility of multiple stakeholders and entails a good level of cooperation and coordination (horizontal – between ministries or vertical – between the different levels of administration). This means that in our vision and strategy, business and governance model development must go hand in hand and that many potential values identified in the BMs need to be reflected in governance models. Therefore, validation by large group of stakeholders is essential for the methodology, and we reckon that further engagement will be needed during and after the duration of the action with the support of the MS and the EC in the frame of existing and new initiatives that will shape future IT governance and innovation in Europe (e.g. DEP, new CEF Program 2021-2027, Horizon Europe, etc.).

In this context, there are three groups of stakeholders:

A - *Specific Actors involved in the three pilots.*

B - *Specific Actors not involved in the pilots but affected by SDG solutions for the LE developed in the pilots*

C - *Generic Actors affected, short-term and long-term, of the Your Europe Gateway and vision of One Network for Europe (ONE): communities of policy makers, public bodies, public and private service providers, solutions developers, standardisation bodies, end users, etc.*

The EU and MS provisions of DE4A services also depend on a resilient infrastructure, the political and legal factors, and other issues, constraints and the requirements that need to be taken into account in a solid conceptual framework. While sustainability and value of the overarching system from the perspective of the different stakeholders is the main driver in this conceptual framework, wider context should therefore also be considered. Ultimately, the WP6 deliverable “New Models for Shared Delivery of Common Services Roadmap” (D6.3) will provide insights in key conditions for value realization (including short-term quick wins and high impact longer-term goals).

2.2 Methodological Approach

The main methodology elements we plan to use are typical for the collaborative projects although some of them apply and are well known in a wider context. Starting from vision and strategy explained in the previous chapter, we designed methodology based on a process flow from intake step towards the final analysis, with many refinement steps in-between.

In the next figure we present Digigov-F approach that served as an inspiration for our methodological approach.

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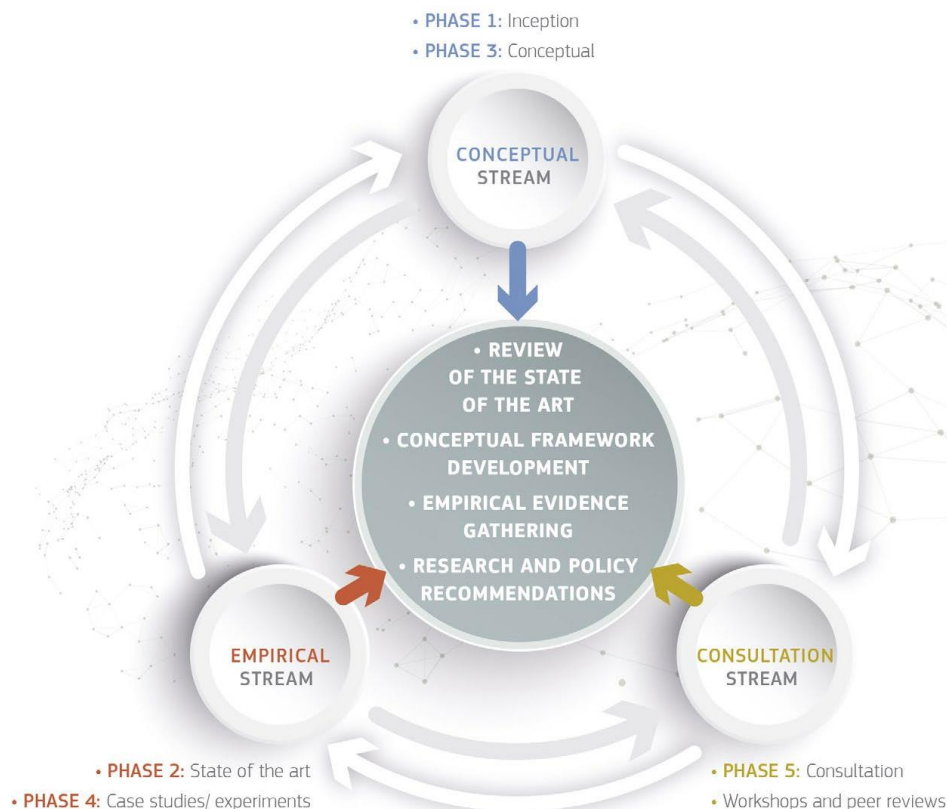


Figure 3: Methodology Overview from Digigov-F[7]

DE4A methodology, similar to Digigov-F, consists of streams running in parallel, five phases and different steps for each phase. While Digigov-F is focused on DGT in general, the scope of our study is more limited, so we will adapt steps to our context when needed. The use of tools in each step is another difference, as we will reuse many of the output specific tools such as Platform Model Canvas and Prioritization matrix.

Phase 1: Inception aims at conceptual description of the main WP6 outputs. As they describe in JRC report, “conceptual framework is not the same thing as a theory, a model, or a theoretical framework”. It is merely the first step when dealing with very complex phenomena, with knowledge is spread across different bodies of literature. Our goal is here to extract and aggregate all relevant terminology and definitions from relevant theoretical and empirical works, including DE4A grant agreement or previous projects such as TOOP or STORK. It will help us to define what elements should best describe WP6 outputs, namely:

- ▶ Suitable governance structure options
- ▶ Suitable business model
- ▶ Redefined role and responsibility of PA in a model based on shared use of resources and co-delivery of service
- ▶ Impact assessment for different stakeholders
- ▶ Sustainability plans, recommendations, and road mapping

Most importantly, specificity of WP6 methodological approach is geared towards co-delivery in an open ecosystem, so that the related business models and governance structures should be taken as a

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starting point. Therefore, after the conceptual description of expected results, state of the art analysis should be performed.

JRC report also briefly explains the steps followed in developing the conceptual framework for understanding and assessing DGT, including mapping of sources, reading and extrapolations of relevant insights, deconstructing and reconstructing the concepts, integrating elements, and making sense, and finally validation. As depicted in figure 3, this process is not linear or sequential, but rather dynamic. Validation, for example, can happen at multiple points during the project, by internal or external stakeholders.

To summarize, inception phase defines “WHAT”, in other words it places listed WP6 outcomes in a kind of conceptual framework and describes elements that need to be analysed in regard to business or governance model, sustainability etc.

Phase 2: State of the art analysis will be done for each of the above-named WP6 outputs, or even parts of these outputs, following their definition in the conceptual framework. One of the main sources that has already been identified is Digigov study, but other sources (e.g. describing government centric ecosystems, business or governance models) needs to be studied as well.

Besides linking outputs to desired outcomes and impacts, methodology also needs to consider mapping over timelines, considering the milestones contained in the SDG and its core provisions about e-Procedures, and other important milestones, also described in DE4A DoA [122].

Phase 3: Consultation should be done in regular intervals through workshops, peer reviews etc.

While empirical stream is mainly focused on internal project stakeholders, this phase is considering all other external actors, from each of target audience groups that has been mentioned in the previous chapter about strategy. In an end-user driven project we must take advantage of strong and committed user network, therefore regular feedback and conceptual updates are embedded in the methodology design.

Evolution of conceptual design should go in parallel with gradual maturation of the project results, as well as with the analysis of regulatory framework and lessons learned from other WP:s.

Phase 4: Inputs from pilots, workshops and other WPs will cover inputs from case studies, experiments, cost/benefit information from participants, legal issues etc.

We plan to ask questions and search for answers, knowledge and experience of project partners, not limited to pilots, but also to best practices from their previous experience and different examples around the world. Questions could cover wide range of issues such as: Can your service be delivered through existing operators and procedures? At what cost? What business models are available or known to you? How do you best balance the investment needed to create your service against future returns? How will you fund the ongoing operationalization of your service?

Phase 5: Final update of conceptual framework and consolidation of WP6 outputs that will depend on validation of assumptions and previous inputs, as well as consultations with the external stakeholders.

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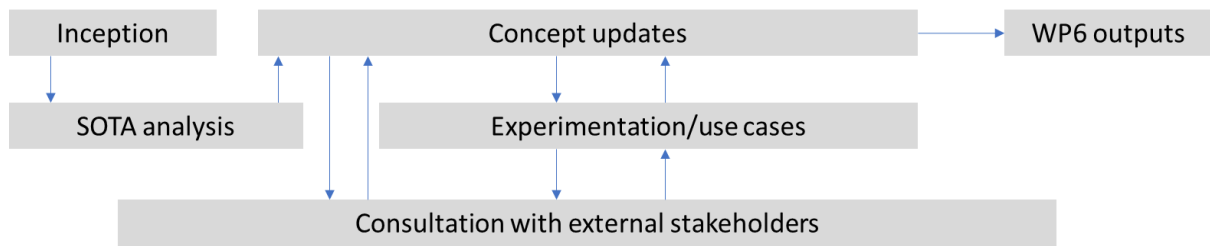


Figure 4: DE4A WP methodology overview

Each of the WP6 results defined in the inception phase will further use its own methodology set, composed of many different activities, which in turn can use separated methodologies, tools or techniques (such as Model Canvas, surveys or SWOT technique). It is important to notice that this iterative improvement approach enables us to start shaping DE4A sustainability right from the start of the project. Moreover, continuous search of feedback from both sides (demand from business and citizens, as well as supply side stakeholders) is another important characteristic of the selected approach.

When it comes to timeline for the sustainability roadmap, Large Scale Pilots (LSPs), CEF, DigiGov timeline and many other actions can be seen as steps on the journey. WP6 tries to continue that timeline based on the DE4A project objectives and findings. WP6 focuses on three of the time horizons (2022 (t2), 2023 (t3), 2025+ (t4) according to our original plan from the DoA (Description of the Action) [122].

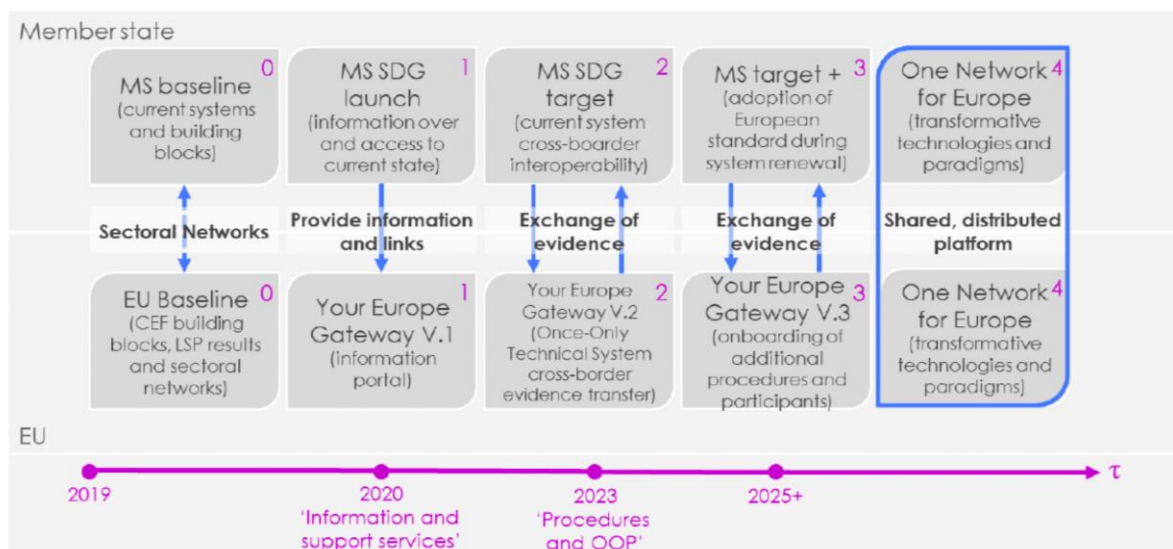


Figure 5: Time Horizons from De4A DoA

In total, five distinct horizons are identified and numbered 0 to 4. In addition, Figure 1 distinguished between an EU in the lower half and a MS-level in the upper half. The first time horizon that is relevant for WP6 is t2, when Your Europe Gateway V2 is available and stable. By end of 2023, the full implementation of the SDG moves center stage and is the focus of this project. The target architecture can follow different basic communication patterns, potentially even in parallel, integrating existing European BB to the maximum extent possible (i.e. CEF, LSP, ISA2, TOOP). In technical terms, for DE4A the implementation of the Your Europe Gateway v2 is a matter of system integration rather than software development, and this will likely be reflected in the initial governance structure.

The second time horizon, t3 is linked to version 3 of Your Europe Gateway V3 when architecture is still geared towards the transfer of evidence between MS systems. However, the stepwise inclusion of new technologies, i.e. the use of blockchain technology (DLT), and an increasing scope and scale of the overall system landscape are expected to cause changes in governance, but also business models. Number of procedures is expected to grow beyond the mandatory list of the SDG Regulation, as well as the number of participating actors.

Finally, time horizon t4, corresponding to ONE, envisions the blurring of the line between European, national systems, business and personal. The transformational impact of new technologies, such as DLT, needs to be considered in governance and business models. WP6 expects to derive insights into the non-technical adoption barriers for these technologies and their corresponding structural changes, for example by establishing a fully decentralized parts of governance. One example could be data governance, part of the operational governance model, with complete sovereignty entrusted to individual data subjects.

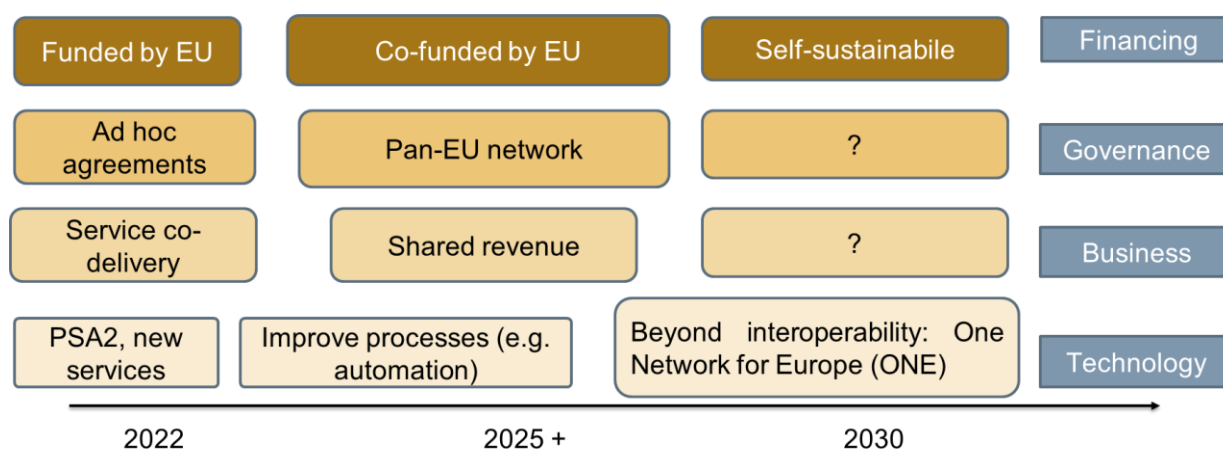


Figure 6: Example of mapping WP6 outputs to timeline

3 Stakeholder Analysis

Considering the interrelation between the diverse activities, in order to maximize project impact, it is important to perform stakeholder analysis and to identify the potential target audiences of the services along with their specific interest in the project. Similar activity is already done from a different perspective in the other DE4A WPs. In dissemination activities, for example, the DE4A consortium will focus on specific target audience groups, at the appropriate times when relevant and interesting results have been revealed. In a similar way, piloting activities and each use case identify the sectoral interest and stakeholders.

While DE4A needs to analyze wider stakeholders' relations to the activities, WP6 mainly focuses on the Public organizations that play role in business and governance models, e.g. service and data providers and the end users due to budgetary constraints. The following are the stakeholder categories of DE4A:

Governments and Public Sector Agencies (Category A)

- ▶ Representatives of the Member States that do not participate in the DE4A consortium. (A)
- ▶ Public sector bodies (at national, regional, local level) from all the Member States that provide online public services. (A)
- ▶ Policymakers from the public institutions (international, national, regional, local) responsible for the implementation of the once-only principle. (A)

Business (Category B) - Industries, Branches & Sectors, Thematic areas

- ▶ ICT industry from big ICT players, developers of DLT, machine learning and self-emerging technologies. It is highly important to spread the knowledge to generalist ICT suppliers to be able to scale up knowledge and adopt DE4A successfully. (Category B)
- ▶ IT Service providers (third parties) in support of the DC and DP (B)
- ▶ Standardisation Development Organisations (SDO) (B)
- ▶ Expert Groups (Category C as Prosumers)

Supranational Entities - European commission

- ▶ BRIS: The Business Registers Interconnection System (BRIS) connects the business registers of each Member State to a "European Central Platform". (A)
- ▶ ESSIF in the context of the European Blockchain partnership: A Blockchain DSI (the European Blockchain Services Infrastructure (EBSI) will soon become a fully operational Building block. (A)
- ▶ ESCO, EDCI

Digital Government focused collaborative platforms

- ▶ Examples: eGovernment ISA2 [A], IMI (IHI) [A], REFIT Platform [A], the Single Market Forum [B], the implementation of the services directive expert group [B], the EU Citizenship Inter-Service Group. (B)

Enablers and other stakeholders

- ▶ Organisations representing business and consumers (Eurochambres[B], Eurocommerce[B], BUSINESSEUROPE[B], national chambers of commerce, CEA-PME[C], Startup City Alliance Europe[C], etc.)
- ▶ Citizens; (B) Special focus on the borderline groups and individuals e.g. Indigenous people (A), poor and otherwise marginalized (A) and the longtail of categorisations. (C)
- ▶ Civil society organisations: ECAS (European Citizen Action Service) [B], CSE (Civil Society Europe [B]), Council of Europe Civil Society Division[B],
- ▶ Higher education coordinating bodies like EUNIS [B], EUF [B], GÉANT [B], ERASMUS+[B], Bologna process[B] and EHEA [B]
- ▶ Specific European initiatives [A] to facilitate citizens and workers mobility like EESSI (A) and ECRIN (B).

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- ▶ Opensource communities: (B)

Other EU projects (B)

- ▶ SEMPER (Cross-Border Semantic Interoperability of Powers and Mandates) [B]: This CEF Telecom action aims to provide solutions for cross-border powers of representation and e-mandates. In particular, the action defines the semantic definitions of mandate attributes and enhances the eIDAS Interoperability Framework for connecting national mandate management infrastructures [128]. This action is closely related to the “DE4A doing business abroad” that aims at lower barriers for companies starting a business or doing business in another Member State and therefore, will use the mandates / acting on behalf of solutions.
- ▶ TOOP (The Once-Only Principle Project) [B]: The main objective of TOOP is to explore and demonstrate the once-only principle across borders, focusing on data from businesses. Doing this, TOOP wants to enable better exchange of business-related data or documents with and between public administrations and reduce the administrative burden for both businesses and public administrations [129].
- ▶ More projects will be added during the second step of our methodology, state of the art analysis. Within these stakeholder organizations, several roles or types of actors can be identified: for example those with adjacent or supplementary programs or initiatives, those with specific knowledge or assignments within one of the services specific goals, those with special ability to reach a central target group, or those that are needed for collaboration purposes with mandate to design and manage initiatives such as DE4A.

We should also note that in the inception phase we plan to use definitions extracted from the official EC documents, in order to align our conceptual framework with the current legislation. This will be addressed in the following chapters, but we can give some examples here. EC notice guidelines for the implementation of the SDG regulation (from 31.7.2019) is giving definitions of competent authority and national coordinators, that are, in the conceptual framework, concrete roles within member states that should or could be used in governance or business models.

3.1 Surveys

As Surveys are hard to construct and usually benefits from longer time periods than a project to be relevant, WP6 will focus on reusing and clarifying existing relevant surveys from longer-term initiatives and processes.

- ▶ Survey for MS; WP1 surveys, planned for 2022-05-01
- ▶ Survey for Citizens; Focus our services of the 21 SDG-Services and beyond as needed. Planned for 2022-11
- ▶ Survey for Business, NPO, CSO, SDO; Focus on Business model issues planned for 2022-01

3.2 Expert Workshops

WP6 intends to run three workshops 2021-10, 2022-02, 2022-10. The focus will be on the validation of our assumptions, feedback or answers on our questions, identified during the analysis, and quantification with a focus on prioritization. In line with the vision and strategy, we will look for feedback on all three categories that span over the timeline presented in chapter 2:

- ▶ Outputs (New Service, Process or Products).
- ▶ Outcomes (Improved Service, Process & Relationships and Better Policies).
- ▶ Impacts (Value Creation, Organisational Change and Population Wellbeing)

WP6 is also working with the dissemination package, WP8, to bring in experts from Funding Portal, Transparency registry, Business Stakeholder boards and from a group of Marginalized users.

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3.3 Open Workshops

WP6 also intends to have one workshop that is entirely open 2022-09 to any type of stakeholder. The focus will be on the questions identified as multi-stakeholder or intersectoral, to obtain their implications and quantification of importance from different perspectives.

We will try to bring in e.g. the European Data Innovation Board, Data Intermediaries, and professionals from the nine Data Spaces/Sectors/Domains actors and the EU Observatory on online platforms.

3.4 Dynamics of Stakeholder Involvement

The nature of the DE4A services makes it likely that stakeholders will enter and leave the collaboration structure over time. The collaboration should therefore focus on structure, rather than on identifying individual actors.

A dynamic involvement and commitment plan is considering needs, incentives, motivation and skills to a large extent:

1. A high interest in participation in the various services or support activities
2. A long-term use of the digital capacity that stimulates development and digitization of private and public sector

The main elements in the stakeholder involvement and collaboration structure could be a central core and several groups of collaborating actors, based on e.g. different knowledge domains. The organizations in the central core could focus on providing us feedback for more generic issues, while the cluster experts could be involved and collaborate on specific areas.

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4 Business Model Inception

While the concept of a business model is a clear, basically a description of how a business operates, and provide value to the customers, in domain of public services there are still many challenges that need to be addressed. Unlike commercial for-profit companies, value proposition is usually not assumed as being there “by default” as there are no competitors. For-profit BM are focused on getting large numbers of customers as soon as possible (even non-paying customers, as it is case in many platform business models), while government business models already have their customers “pre-assigned”, which are citizens and businesses. The business model of private for-profit companies is translating the value proposition into the potential for rapid growth, while BMs in government sector do not envisage growth (but increased usage or simplification), to name just few examples of differences.

The “traditional” business model, or Pipeline business models, creates value in a linear fashion that resembles a straight line between producer and consumer. Products or services are sourced, created and shipped from internal operations to the external customer. The central focus of such a business lay with the internal value chain. The pipeline business model is often associated with the industrial era where product manufacturing and service creation followed a linear business model structure[132].

However, more recently, digital platform model changed the way business is conceived and operated and this also had an impact on how public value is obtained[139]. New type of public sector BM emerged, such as for example Public Service Platform (PSP)[140] that supports the demand side of the marketplace (i.e., citizens) as well as the supply side.

For the purpose of BM inception, we can also rely on the older models such as Public Sector Concept Model (PSCM)[141], published already in 2012, that contains a small number of concepts, which can be applied to any part of the public sector. However, we will focus our attention to the future, and introduce concepts relevant to the platform business model, as well as the post-platform alternatives. A major tool for DE4A for Business modeling will be platform model canvas (PMC) that has several free templates and is licensed under the Creative Commons Attributions-Share Alike 3.0. It is based on the original business model canvas (BMC), invented by Alex Osterwalder and used as a de facto standard for fast and simple visualization of business model elements. It may at times seem hard to apply this model to the public sector, but we are convinced, due to the prevalence and longevity of it, that we should try to apply it in DE4A. We should also note that another variation of business model canvas exists, namely Government Service Model Canvas (GSMC)[142], which is practically identical to BMC expect that the revenue scheme is replaced with the key Digital by Default Standard KPIs, which are:

1. Cost per transaction,
2. User satisfaction,
3. Completion rate,
4. Digital take-up

Following chapter tries to give some background and it introduces relevant concepts in the project’s aim to define the future business models described at the end below. Early examples from the project are found in the grey boxes.

4.1 Platform Business Model for Multi-sided platforms

Multi-sided platforms have existed throughout history but have transformed in the age of internet and smartphones to become a dominant business model in today’s economy. A platform business

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model creates value by facilitating the exchange of products and services between two or more independent external groups. The platform's key activities revolve around coordinating the external ecosystems and stakeholders, rather than an internal production process. A platform business thrives through co-creation of value and a user base that grows through positive network effects.

Whilst the concept of platform business models has become popular in the networked economy, less explored is whether it is equally applicable to digital government transformation. If one emphasizes cross-agency collaboration in the form of public service networks and draw upon the literature on resource-based views, dynamic capability, and coordination theory, there are six elements that need to be considered in our conceptual framework for BM [133]:

1. organizations in the public service network
2. service offerings
3. network coordination
4. business processes
5. shared resources
6. network capabilities.

The model is also useful for understanding the relation between service offering and the challenges of coordinating public service networks. Overcoming these challenges results in better leveraging the advantages of business model. Furthermore, we need to validate business model assumptions in relation to facilitation of knowledge transfer and understanding of shared resources and network capabilities that can further enhance and optimize resource mix in migrating toward citizen-oriented service co-delivery [52].

Public Service Platforms (PSPs) are a new type of technology platform. They are based on the philosophy of New Public Management (NPM) and public services for citizens in quasi-markets. DE4A WP6 needs to analyze and understand the business models behind these PSPs in terms of their Value Propositions, structures, networks, and financing. We can identify, for example, a "Traditional view" with its focus on public agencies and an "Emerging view" that includes dialogues, user evaluations, long-term perspectives, promotion of choice, and the underlying business logic of PSPs [53].

4.2 Business Model Patterns

Researchers conducted research on a significant number of business model innovators and found out that about 90 % of the innovations turned out to be re-combinations of previously existing concepts. In his way they identified 55 repetitive patterns that form the core of many new BMs by The St. Gallen BM-Navigator framework [58]. Any BM can be built by mixing up those patterns in different weights to obtain different variants, or we could be designing and adding one or more pattern component to come up with the 10% innovation in this mix.

With that in mind, the following major BM patterns are considered relevant by WP6 and should be part of our conceptual framework:

the Orchestrator: The organisation's focus is on the core competencies within its value chain. The other segments of the value chain are outsourced and actively coordinated. This allows the organisation to reduce costs and to benefit from economies of scale.

the Open Business: Collaboration with partners in the ecosystem becomes a central source of value creation. Organisations pursuing this model actively search for novel ways of working together with suppliers, customers and complementors to open up and extend their activities.

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4.3 The Platform Model Canvas

The Platform Canvas[65] is a framework and a tool for identifying and interpreting the elements of multi-sided platform organisations and their network dynamics.



Figure 7: The platform canvas [63]

The Platform Canvas [65][66] consists of 12 parts that represent the essential elements of a platform business. The framework’s structure represents the two mirroring external sides, namely producers and consumers that come together creating value through their interaction.

The **Producer Segments** cover the attributes of the user groups that offer the **services, goods** and the **information** consumed by the Consumer Segments [65][66] [119].

In the **Moving Abroad – Change of Address** pilot, the Producer Segments are the Civil Base Registries. They have the up to date citizen’s personal data, address and household composition (descendants, ascendants, partners, others...). In certain cases, they also register which people are authorized to request a service or retrieve attributes on behalf of other.

The **Producer Value Propositions** are the **reasons** for producers to participate, which is often, but not exclusive, to a form of monetary gains [65][66] [119]. We consider that it can be related to KPI:s in the public sector.

In the **Moving Abroad – Change of Address** pilot, the Civil Base Registries could earn money or gain other value by providing digitally signed qualified up to date data. They would save money by reducing front office in person assistance and by simplifying the processes of sharing and updating data with other entities.

The **Consumer segments** contain the groups of customers (or other stakeholders), their wants, needs and characteristics. [65][66] [119]

In the **Moving Abroad – Change of Address** pilot, these would include both the citizen (with a new simplified convenient service) and all the systems notified on each change of address: former and new Member States’ registration systems, Tax Administration systems, Social Security systems, Health systems, Voter Registration systems and other private and public entities selected by the citizen such as the water company, electricity company, gas company, banks, and others.

The **Consumer Value Propositions** are the benefits that the platform offers to the Consumer Segments. That is to say, what the consumer desires and is willing to “pay” for:

- ▶ Core values delivered
- ▶ Problems solved
- ▶ Benefits gained [65][66] [119]

In the **Moving Abroad – Change of Address** pilot, these would be reduced administrative burden, for both the citizen and the moving to Member State registration system, with all the checking of documents and data for actuality, consistency, accuracy, completeness and authenticity, both in front office and back office. The same applies to all new and former MS systems that are notified with the updated address.

Data and Identity interoperability and portability are another Consumer and Producer Value Propositions. In the book *Designed for Digital – How to architect your business for sustained success*[95], taking a business from traditional to digital requires moving from a company with business silos to a company with a shared operational backbone. Digital Identity extended to an enlarged set of attributes [118] is the glue that connects systems and entities, and Member States - making the systems interoperable and data portable.

For the co-creation of value within the platform is vital that both parties involved must compare the value outcome favourably with alternatives outside the platform. [65][66] [119]

The **Producer Substitutes** are current or future alternatives producers must make use of their resources, constitute the current alternatives to the Producer Value Proposition as well as the transfer future substitute that might affect the platform’s context. [65][66] This can be in the shape of other platforms, entities or through other channels. [65][66] [119]

In the **Moving Abroad – Requesting Birth and Marriage certificates** pilot, these would include all the current online eProcedures and front office locations for requesting birth and marriage certificates. Many DE4A Member States implemented solutions (web services to data providers and data consumers, previewer portal, extensions to authorization system) that will be used both cross-border and nationwide.

Consumer Substitutes are other entities consumers have access to in order to cover their needs described in the value proposition, both current competitors and future competitors [65][66] [119].

In the **Studying Abroad – Application for Higher Education** pilot, these would include the Higher Education Institution’s front office the students use to apply for a course. And also, all the alternative Higher Education Institutions or courses available off-line or even in the cross-border platform, that a student could select from.

We usually think government services, like issuing birth and marriage certificates, are something only governments can provide, and so there is no consumer substitute. But it may be different in the future.

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One example is the context of using **eIDAS eIDs** as authentication mechanisms, a consumer substitute would be using bank eIDs, Google’s IDs, Apple’s IDs, Facebook’s IDs, or Samsung smartphone’s eIDs[115][116][117]. Those private entities’ eIDs or private platforms’ eIDs already have acceptance in some e-government services and systems.

The **Interaction** is where the value is created and the exchanges between the user segments are made. This element defines the activities pursued by the Consumer and Producer segments in order to co-create value, including:

- ▶ **Matching** of producers to consumers
- ▶ The **dialogue** between these parties
- ▶ Their **interchanges** that deliver the respectively desired value propositions[65][66] [119]

In the **DE4A** pilots, these would be useful and convenient **cross-border services** that Member States would provide for citizens and businesses moving abroad, studying abroad and doing business abroad. These also would be an opportunity for technical, business, communication, governance and legal experts, from a few Member States, to join and discuss concerns, explore ideas, learn and experiment solutions (piloting different patterns), on a small sandbox, before implementing them large scale on SDG.

The **Facilitation** element describes the **technology** and **governance** that the platform operator employs to promote and constrain the interaction. [65][66][119] Governance is described as the “policies to increase value and enhance growth”[90].

- ▶ The **technology enables** the interaction through: filters and matching algorithms[65][66]; building a digital platform and/or building an external developer platform[94][95]. Another article[106] refers to the former as the **Toolbox**.
- ▶ The **governance regulates** the value proposition, through community rules and trust building mechanisms[65][66] [119]

As an example of technology that enables business, Uber, provides the payment system for the transaction between drivers and passengers [119].

Cost Model - The initial costs of a platform are typically lower than those of pipeline businesses, but there are other expenses that are more prominent. Operational costs and software development are costs found in most modern platform businesses, along with different promotional measures [65][66] [119].

In the DE4A project, the main **digital platform components** (infrastructure, data and business) and the cross-border changes to the piloted **digital offerings** have been financed by Member States and the European Commission through DE4A funding. However, new digital offerings and components are expected to be created and funded by different means, for instance by building an **External Developer Platform**[94][95]. Also, some sustainability model should be thought off, at least to address both corrective and evolutive maintenance and regulation.

Monetization - Platforms can employ an array of different revenue models, from subscription to pay-per-click. Monetization captures where the revenues are coming from, the procedure that are in place in order to ensure that the platform generates revenue [65][66] [119].

On this point, one can make a clear distinction between creating and capturing (taking) the value created by a platform[89]. On the platform business model value isn’t created inside the firm (by horizontal or vertical integration and by producing the value itself) but by orchestrating third parties. What is done is helping producers and consumers creating value for one another and then taking a small sliver for the orchestration of the ecosystem – the Inverted Firm. In this way, the managerial attention and effort should shift from the inside to the outside [89].

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DE4A main revenue streams could consist of fees collected from: users, service consumer portals, data producers, technology partners providing digital offerings on the platform, EU and MSs. In addition, both raw usage data (but with no personal data) and usage reports could be sold to EU, MSs, consumer and producer entities.

Metrics contain the many trackable indicators that describe the **performance of the facilitators** and **checks the value propositions**. that happens within a platform. This element also tracks developments in the Cost Model and Monetization and value realization, to monitor the platform's financials [65][66] [119].

Digital platforms should leverage on technologies (such as data science, cloud, machine learning and Artificial Intelligence) that help create network effects[89]. Those would help create **data feedback loops** to capture **data** and its **relationships** and analyse it to improve goods, services, information or even improve the match. That would then generate engagement and new business and again new data. This is sometimes referred to as a feedback loop that enables the Facilitation element as the **matchmaker**.

On the other hand some frameworks refer to creating an **accountability framework**[94][95] for measuring each Digital Platform or External Developer Platform component's performance. She also elaborates on how platform and onboarding rules should be defined, for new external developer platform partners (on our context, that would refer to either technology partners, public and private entities for data or service providers).

Stimuli is the upper top element on the canvas. This element contains all the measures the platform undertakes to make **attractive** and **easy** for new participants to join the platform. Also it includes the actions that encourage the current users of the platform to **engage further** in the interaction [65] [119]. The Stimuli element of the platform is also referred to as the **Magnet** [106].

In Platform Revolution[90], for example, the authors explain several concerns and strategies for attracting multiple profiles of users (producers, consumers, facilitators, technology partners, others), depending on the business and stage (launching, mature, other) of the platform. This source, as well as the other sources mentioned in his chapter, will be further used in the next step of our methodology, namely state of the art analysis and will be validated with the internal and external stakeholders.

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5 Governance Model Inception

To come with the appropriate governance model alternatives, we are following DE4A methodology that was defined in the first chapter, consisting of three streams running in parallel, namely conceptual, empirical and consultation stream. In this chapter we present inception, while the other phases will be described in later deliverables. We should, however, mention that empirical stream for governance models is somehow limited due to the obvious reasons: related assumptions are hard to simulate or validate.

Inception, or the initial conceptual description of the main WP6 outputs, is trying to outline the main issues or pillars of governance model, also called governance model framework, while designing key parameters that could serve in the assessment of suitable options and choices. It considers other related concepts, from service co-delivery business models to redefined role and responsibility of PA or impact assessment for different stakeholders. Basically, inception phase is giving answers to:

- ▶ Who: list of relevant stakeholders, partially covered in chapter 3, but enhanced with specific definitions and groups that already exist, such as SDG coordination group
- ▶ What: list of processes, rules, norms, and actions with a different degree of formality
- ▶ How: list of parameters (cost, desirability, feasibility etc.) to decide about the most suitable governance model options

We start by the definition of “governance” as a sum of processes, rules, norms, and actions with different degree of formality, that are applied to various levels: strategic, tactical, and operational. In case of DE4A, the list still needs to be defined, but examples include e.g. maintenance of code or decision making about enlargement of service provision to new services or member states.

Given the similarities with projects such as Stork 2.0 and TOOP, inception of governance model is inspired with concepts and directions from these projects, while the other EU projects or related deliverables are analyzed in the empirical phase through the state-of-the-art analysis, when the initial concept is enhanced with best practices.

Both Stork 2.0 and TOOP were developing a generic federated architecture that supports the interconnection and interoperability between member state IT systems, and both have similar, if not same, stakeholders such as DE4A.

In the chapter of governance model maturity and gaps in Stork 2.0 deliverable the main stakeholders in governance model are identified as:

- ▶ expert groups (at that time composed from representatives of STORK 2.0 MS that is convened on an ad-hoc base to solve issues raised after the project end
- ▶ Directorate-General for Informatics (DIGIT), which oversaw the maintenance of the common code of STORK and had the same role for STORK2.0 common code
- ▶ Member states (MS) organizations that operate their STORK, later eIDAS, node

Therefore, the question “who”, which is also treated in stakeholder analysis chapter, could be more focused on “shape”, described as “DE4A ecosystem” and that resembles features of networked organizations and multi-sided platforms. The right or balanced distribution of control or decision-making processes between centralized (EC) and decentralized (member states) organisations is the key governance principle.

The second question is about “what” and while the other deliverables of DE4A provide partial list of processes, rules, norms, and actions, the starting point for DE4A WP6 are nine fundamental principles,

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consolidated from eight policy documents, with 13 derived principles (or rules) that are specific to the project-scope. This is also in line with the Project Start Architecture PSA list of interdisciplinary issues/questions (D2.4 [135]) already identified and presented in D4.1 Studying Abroad -Use cases definition and requirements [136], D4.5 Doing Business Abroad -Use cases definition and requirements[137], and D4.9 Moving Abroad -Use cases definition and requirements [138]. We therefore refer to all processes, rules, norms, and actions (PRNA) related to our 25 Interdisciplinary questions:

1. Orchestration / Choreography
2. Complementary, overlapping or conflicting evidence equivalents
3. Interrupted vs. exchange Uninterrupted Exchange
4. Explicit request and transitivity between actors
5. Preview & Approval UI
6. Identity Management incl Record Matching
7. Transitivity of user identity
8. Handover of UI between actors
9. Mandate and Proxy
10. Encryption Gap
11. Structured vs. unstructured data
12. Automated re-use of data
13. Production systems and real-life cases
14. EESSI integration
15. BRIS integration
16. eIDAS and national authentication systems integration
17. Non-notified eIDs
18. Payment for evidence
19. Trust Management
20. Legal Basis for SSI and DLT
21. Explicit scope of art. 14
22. Matching evidences between MS
23. Multi-evidence cases
24. Stateless DE4A Connector
25. Highly Distributed, Cross-border systems

After the project end, the maintenance of results, service co-delivery, sustainability and evolution, and other issues will depend on the governance model devised. The same is true also for the strategic decision making, or decision making related to technological choices, often referred as the tactical level decisions. However, before conceptualizing the governance model, WP6 introduces some concepts that are related to multi-organizational value chains and networks. These are examples of concepts that have been used in the past for the joint value creation and delivery. There is a certain overlap with BM conceptual framework, as they are all more or less encompassed in the PMC or Multi-sided platform. We refer to business ecosystem and networked organisations.

An ecosystem is created by different operators and service providers, working with data sources and using services that are part of a broader social and economic system of individuals, communities, public organisations and private companies. Therefore, the ecosystems function within the wider context of legislation, regulation and social norms. Legislation is necessary for the creation of trust, but it is insufficient for an effective governance. In order to create a level playing field in the market, rules of engagement between the different roles and actors fulfilling those roles are needed. This is often captured in an ecosystem governance framework, which is binding at the ecosystem level. Cross-

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ecosystem governance would further enable individuals to become connection points regarding data about them, also across different data ecosystems[28].

We expect that most of processes, rules, norms, and actions (PRNA) will be clarified further during the project and will be taken into account in the empirical stream. Based on Governance Analytical Framework (GAF)[49], a practical methodology for investigating governance processes developed by the Swiss National Centre of Competence in Research (NCCR), we propose to cluster relevant DE4A governance model concepts, namely processes, rules, norms, and actions (PRNA), into several categories:

- ▶ ‘Meta-PRNA’ that refer to DE4A governance principles and strategic goals. These will be treated as the strategic governance model issues. An example should be transition between centralized to decentralized or semi-autonomous governance structures.
- ▶ ‘Implementation PRNA’, or issues expressed in terms of what each stakeholder in DE4A must or can do, in alignment with the existing or forthcoming regulations. We will not limit this cluster to regulations, but rather to any other top-down instrument that, in order to accomplish strategic goals, is used with specific tactical objective. An example could be additional funding or new project that would initially support DE4A governance’
- ▶ ‘Operational PRNA’ that refer to operational mechanisms that need to have organizational or institutional mapping of roles and actions

These strategic, tactical and operational (STO) issues will be analyzed in the upcoming months until the end of the project. In some cases we expect that more than one option will be available and this is where “how” or the list of parameters, namely cost, desirability, feasibility and suitability is important, in order to come with relevant conclusions for the sustainability roadmap.

It is worth mentioning that in a survey done with MS representatives, several stakeholders identified that the main costs expected after the project ends were on “governance and reliable production-grade operations with CEF building blocks”, which is therefore an important issue to include as a parameter.

Based on these initial materials, inception phase efforts for governance model were focused to determine what factors underlie the establishment of an efficient governance model for cross-border public administration service co-delivery. It is also identifying, and prioritizing governance needs envisaged for DE4A results uptake, as well as structuring the alternatives and framing possible governance models. The output of inception phase will be contrasted with state-of-the-art analysis from empirical and consultation phases, delivered in terms of identified best practice.

Table 1: inception of governance model with initial assumptions

	Examples	Initial Assumptions
Who	Different actors within EC, member states, expert groups. Roles of competent authority and national coordinators re-defined in EC notice guidelines for the implementation of the SDG regulation, while other terms (evidence provider, requester, intermediary etc.) are or will be defined in EC implementing regulation.	Balance between centralized and decentralized structures and decision making needs to be achieved. Balance and alignment between strategic level decision making and operational level processes needs to be supported by the right tactical instruments (e.g. interim expert groups, new project etc.). Consultation with the external stakeholders is also needed.

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What	Processes, rules, norms, and actions derived from interdisciplinary issues identified in PSA and from EC documents (e.g. guaranteeing availability, ensuring quality, contributing to the development of tools, assistance services etc)	Some of these issues are more technical, while others are linked to regulations and legal issues. During the empirical phase clustering will be made (e.g. meta PRNA or governance principles at the strategic level, operational mechanisms and mappings at tactical and operational levels.
How	Parameters that influence governance model options	Cost, feasibility or desirability will be validated by different stakeholders. If possible, this should be enabled by consultation and data gathering in top-down (strategic to operational), as well as bottom up (operational to strategic) manner.

This conceptual framework must also be in line with the overall strategy, defined in the second chapter, as well as the first conceptual framework for business model, described in the chapter 4. Common issues cover:

- ▶ Identify **what outcomes** we need to sustain over time and **what actions** the consortium, as the initial ecosystem or other stakeholders (expert groups, DIGIT) must do to sustain their project outcomes.
- ▶ Identify **what resources** are required (investment, training technology, partners) to sustain the results overtime.
- ▶ Explore **related actions and needs**, for example further fundraising, need to communicate DE4A value propositions, etc.

5.1 Alignment with Business Model

Whilst the inception or initial conceptualization of DE4A business models is discussed in the previous chapter, there is also an open challenge to consider and align some business model elements and their impact on PRNA or governance principles.

Multi-sided platforms, and pertinent platform business models, are creating value by facilitating the exchange of products and services between several independent groups, for example citizens or e-ID owners, service providers and identity providers. A platform business model is related to co-creation of value, more than service co-delivery (which is DEA case), but network effects are an important consideration to take into account for the governance model.

In the platform business model, there is a noticeable lack of policy and governance model literature. What role does government play in monitoring platforms? What role do the app developers play in building and making evolution of these platforms?

Some governments already started to reorganize their ecosystem approach around Government-as-a-Platform (GaaP) paradigm. The term ‘Government as a Platform’ was originally coined by Tim O’Reilly in an essay of the Lathrop and Ruma’s 2010 book. This has also later been defined by consultants as “a holistic approach, in which the public sector collaborates with private sector partners, citizens and even robots”[146]. The same source is also listing four platform models with varying communication channels and ecosystems for delivering public services:

- ▶ Whole-of-Government Platform: Focused on the role of government as the centralized service provider.

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- ▶ Peer Platform: A service-centric and vertically integrated platform established by two or more government entities.
- ▶ Ecosystem Platform: An open and outcome-focused platform in which government collaborates or offers services jointly with non-governmental actors.
- ▶ Crowdsourcing Platform: An innovation-focused approach in which governments collaborate with citizens, companies, other government organizations or NGOs.

There is an additional definition from an OECD paper: “A government acts as a platform for meeting the needs of users when it provides clear and transparent sources of guidelines, tools, data and software that equip teams to deliver user-driven, consistent, seamless, integrated, proactive and cross-sectoral service delivery.”[71].

In most of these platform models, governments can create a starting point, something that others can reuse and extend, so value building is different from other models. Governance related principles or PRNA, for example open standards and low entry barriers, look obvious but might need validation by users and external developers in order to check value evolution directions. The same holds for open government APIs that might enable anyone to write an application using government data. Three layers of governance model identified previously, and corresponding PRNA, might need to be in place before external applications can be designed to collect new data from citizens, or added value services are onboarded to increase the intelligence and responsiveness of government. In any case, these long-term consequences and impact of GaaP paradigm and business model on proposed governance model, will be left outside of the scope in the first part of empirical stream.

The nature of the DE4A services makes it likely that actors will enter and leave the collaboration structure over time. The collaboration should therefore also focus on structure, for example by defining onboarding processes, rules, norms, and actions (PRNA). Stakeholder dynamics (see chapter 3.4) will be impacting our initial governance model and challenge is to address this dynamicity, rather than identifying individual actors in the present moment. The collaboration should be based on three main criteria as per the WP6 objectives: considering needs and skills of stakeholders, interest in participation in the various services and long-term use of the digital capacity that stimulates development and digitization of private and public sector.

As mentioned before, the two main elements in the ecosystem approach could be a central core and several groups of collaborating actors, based on e.g. different knowledge domains, or different digital services. The organizations in the central core focus on collaboration and coordination at program level, while the clusters around DSI collaborate on specific areas. In the clusters, actors collaborate in thematic areas but might be coordinated by a single actor, probably stakeholder included in the core of the ecosystem approach. The actual division of labor and responsibilities can be regulated by voluntary, bilateral agreements, insofar as they are deemed necessary. However, it cannot be ruled out that amendments to regulations or additional government assignments will be necessary.

Finally, for the scope of governance of DE4A and to benefit common interests as much as possible, long-term political orientation and prioritization within the various areas covered by the program should also be considered. This means that in the medium term we might need to encompass the social layer of above depicted governance layers and also consider more technical decentralization governance elements often discussed in Decentralized Autonomous Organisation (DAO)[147][148].

5.2 Tools for analysis of processes, rules, norms, and actions (PRNA)

In order to collect feedback from internal stakeholders in the empirical stream, or from external stakeholders during the consultation stream, we need to find tools that provide a structured response. While there are no specific recommendations, we opt to start with prioritization matrix for 25 interdisciplinary issues, in order to find the most relevant PRNA and address those first.

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(example of a) **Prioritization Matrix**

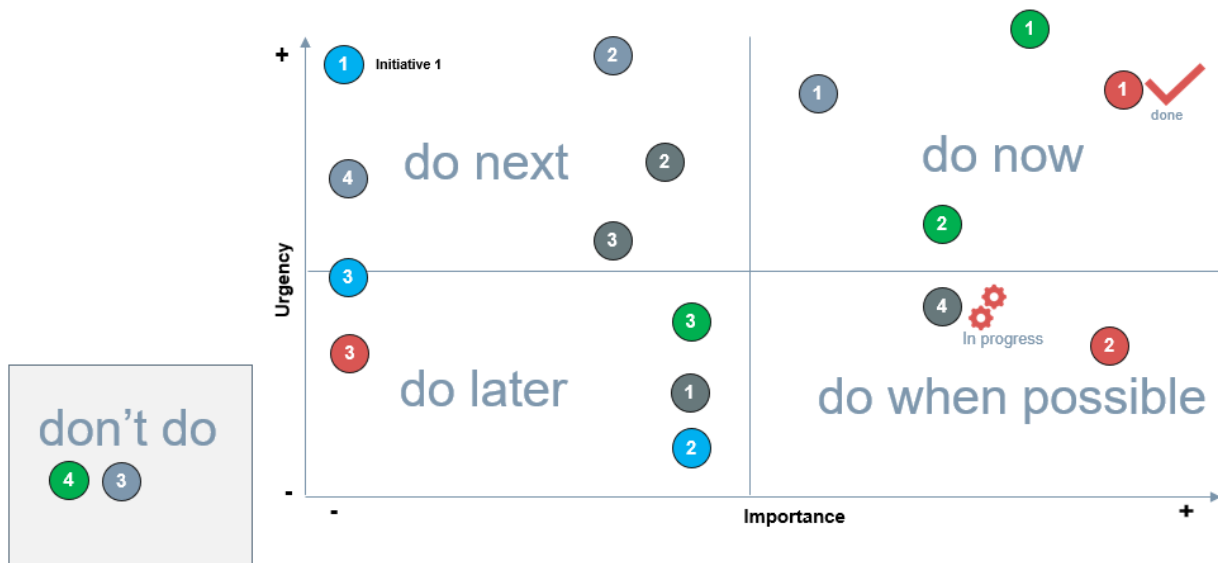


Figure 8: proposed tool for the first empirical validation of DE4A priorities

Given that empirical and consultation streams will rely on workshop format, we also opt to use techniques such as Post-it or Post-up supported Brainstorming. Sticking ideas written on post-it is also available in online innovation workshop tools and helps to organize or cluster ideas in several dimensions, which is particularly important for the governance model. These dimensions will be based on GOFA model, first introduced in 2015 study commissioned by the EC [6] as a framework for assessing sustainability for the digital service infrastructure (DSIs). The GOFA model (governance, operations, financing, and architecture coordination) is useful to narrow down scope of purely governance issues, both for policy governance, as well as on operational governance: i.e. day-to-day decisions on the functionalities required for the DSI to provide continuous service.

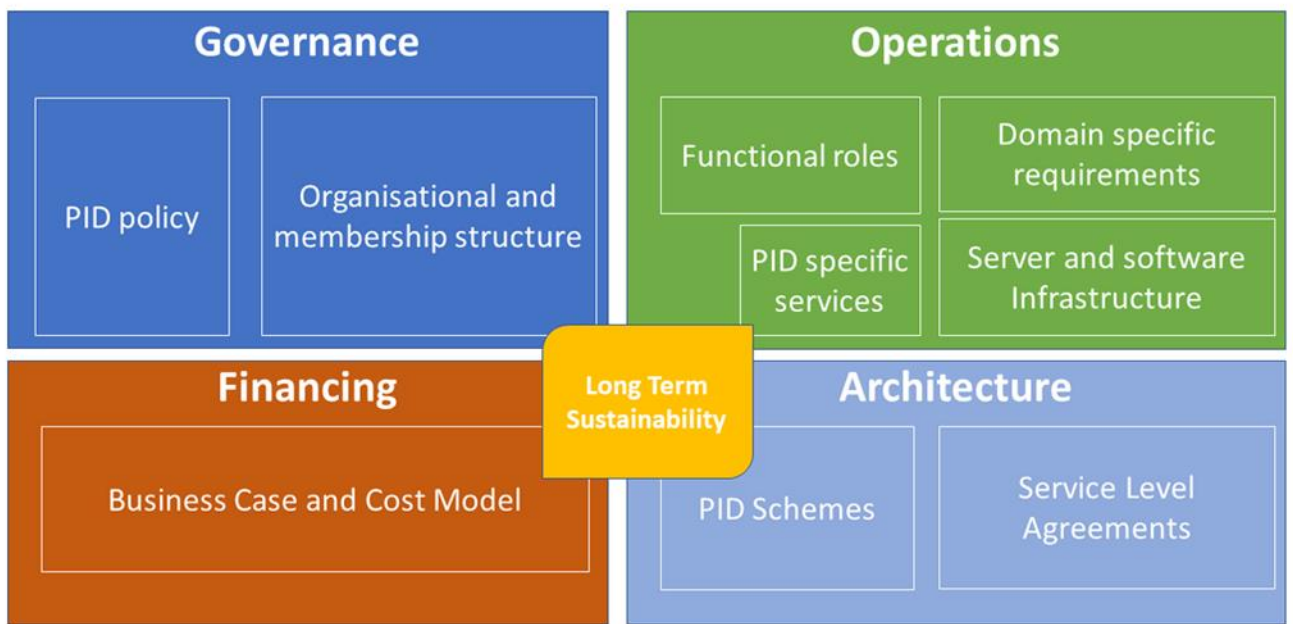


Figure 9: GOFA model taken from 2015 study [6]

In the long term, therefore, we envisage governance to happen simultaneously on several different levels such as societal norms, regulations and law, cross ecosystem (with individual as point of integration) and at the level of infrastructure provider (e.g. operators offering “governance support”). This is visualized below.

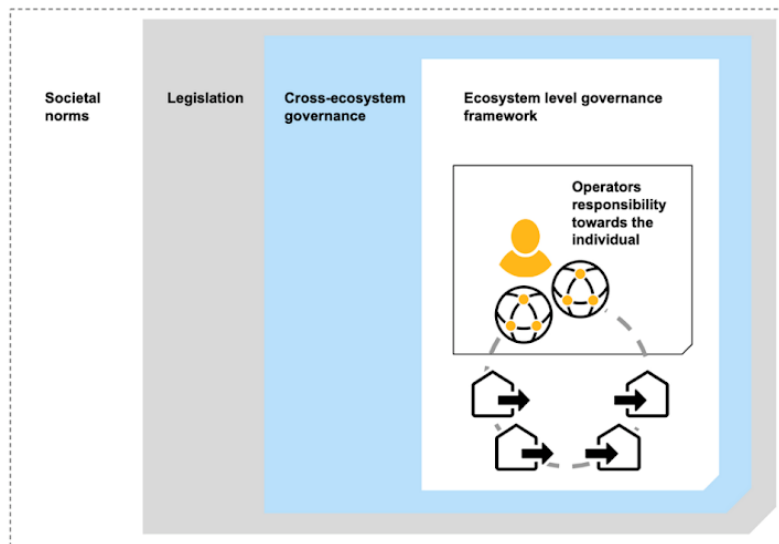


Figure 10: Levels of Governance (28)

In the following steps that will lead to the update of conceptual framework, we will also look into other ecosystems, such as DLT or service and sectorial ecosystems, where these actors collaborate in thematic areas or clusters that are often based on specific goals or temporary structures.

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Cross Ecosystem Governance and connections between/within governance models & structures will be also analyzed later after the state-of-the-art analysis and validation with external stakeholders.

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6 Sustainability and Road mapping

As the web matures, societies increasingly move away from bureaucratic systems (enforced by laws and rules) to algocratic systems (enforced by code and DLT). A major task in DE4A WP6 sustainability analysis and road mapping exercise is to align all these different context changes, from technology and society, to business and governance models, while creating and operating trustworthy compliant services.

There are a number of success stories already, but the introduction of new technologies in the public sector has also often failed. Public sector presents specific challenges to the effective diffusion and take up of innovation. Previous researchers have identified three main barriers to the adoption of new technology [134].

1. Resistance to change: In the absence of the competitive pressures that drive commercial enterprises, public-sector organizations may focus on maintaining current performance rather than striving to innovate.

2. Risk aversion: Public-sector organizations generally find it difficult to manage either technical or market risk because failures are potentially high profile and open to public scrutiny.

3. Hierarchical structure: Public servants tend to view their own senior managers as the primary source of ideas for innovation. This may be problematic, as centralization can reduce innovativeness.

Stakeholders might try to remove, circumvent or minimize these barriers, and WP6 should consider this in a draft Roadmap to achieve sustainability of DE4A.

6.1 Road mapping Framework

The sustainability factors for the project results in this first phase will be analyzed according to existing knowledge and perspectives of project partners. The focus here will be on business and governance sustainability, with models devised in WP6 as the enabling inputs. Nevertheless, an overarching perspective should also be given by including societal, technological, policy or legal analysis.

Taking inspiration from work in the Nordics (Nordic Smart Government) on similar topics and road-mapping, we intend to visualize suggested continued work similarly. In the following figures we present some examples.

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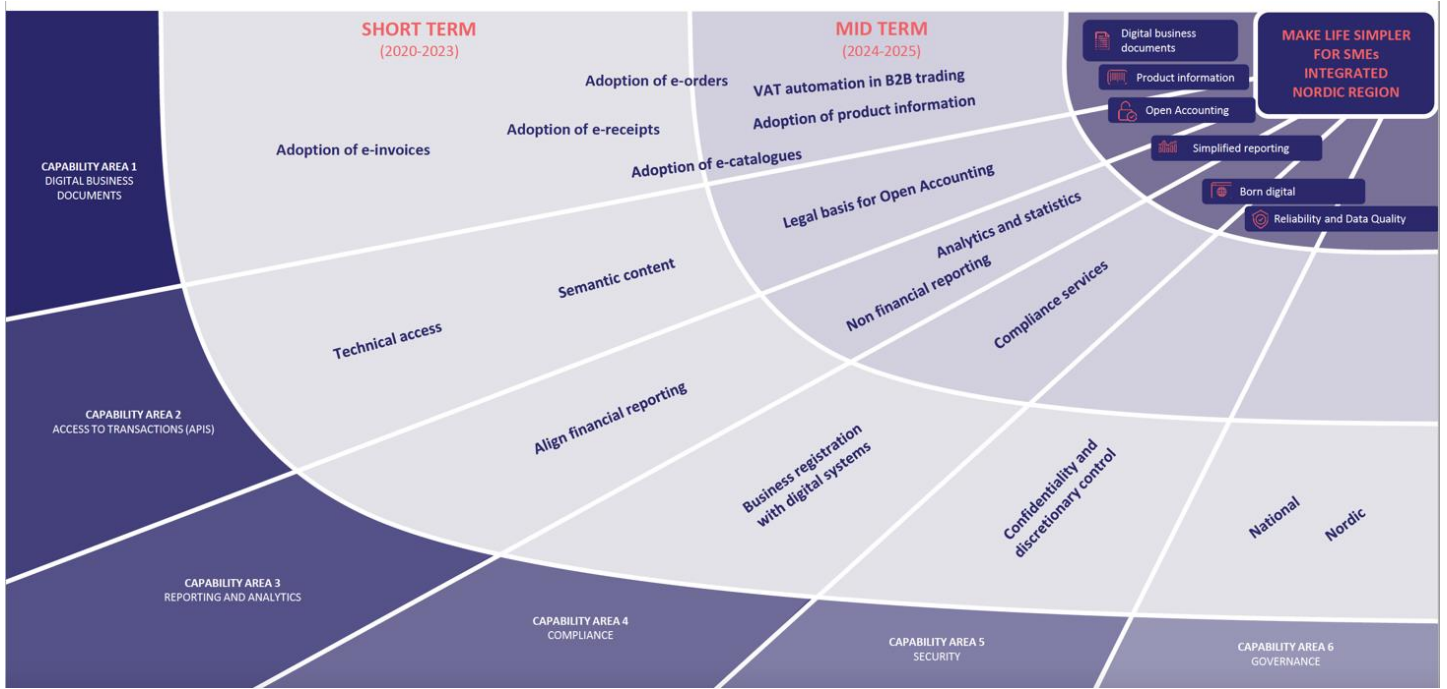


Figure 11: Capabilities and main areas of alignment[143]

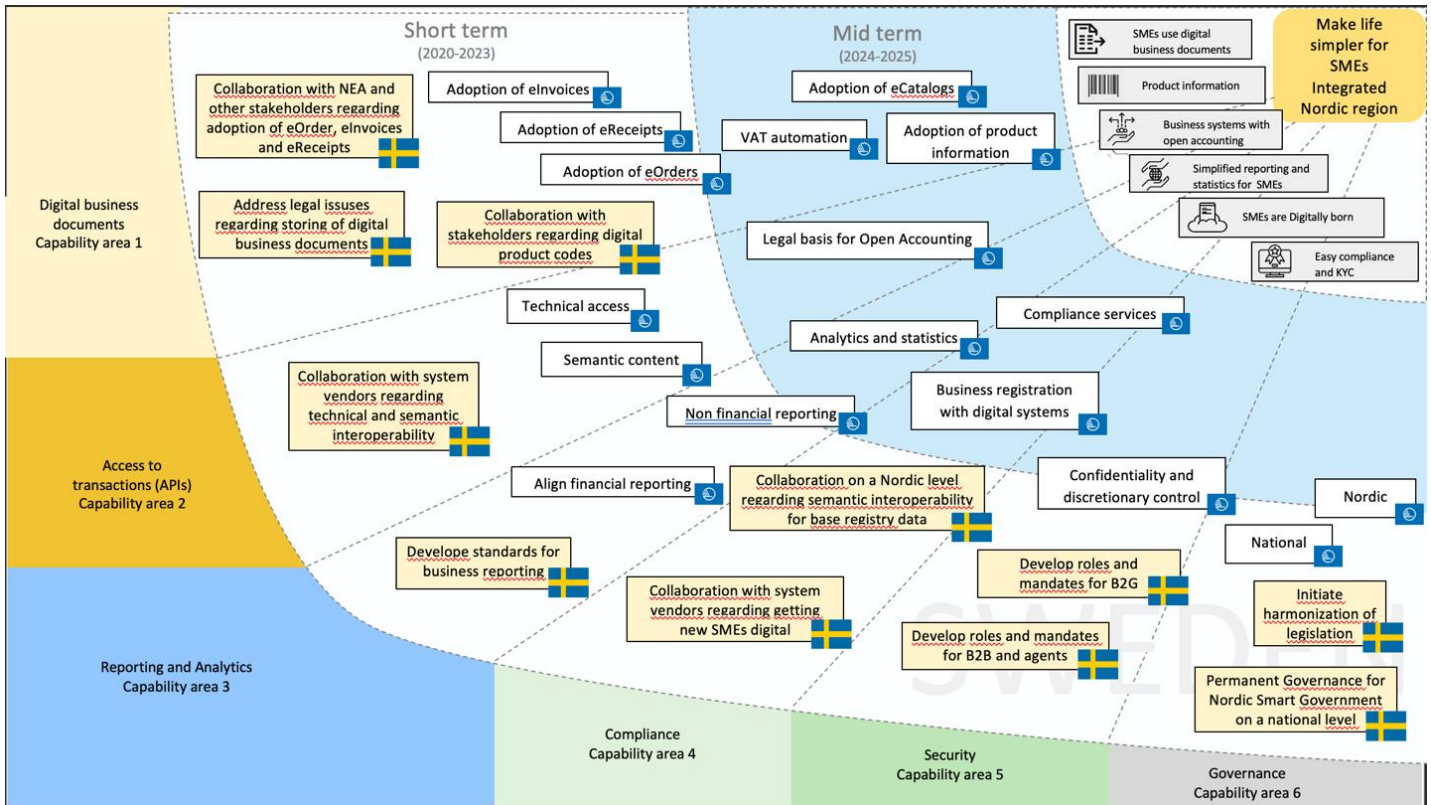


Figure 12: Capabilities and main areas of alignment MS example[143]

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6.2 Sustainability Internal and External Factors

In analysing the use cases (UCs) and the findings of their components, we will also study and explore the real-life drivers and barriers for the sustainability, as well as the link between outputs and the outcomes or impacts that are actually produced, including those which could potentially be achieved in the future. According to the DigiGov-F, that has focus on digital government transformation (DGT) in general, these are : a) Productivity and Efficiency; b) Effectiveness, Inclusion and Sustainability; and c) Legitimacy and Trust.

The sustainability factors will be also influenced by external factors, but as depicted in DigiGov-F conceptual framework (figure below), they also concern policy and service design, implementation and delivery, and should be concretely followed both in the choice of technology and in the process of the internal reframing of the organization. Similar to DE4A methodology, this DGT framework is updated in line with the inputs obtained from the case studies or experiments, such as AI in the public sector, and the consultation with the community of and stakeholders. Various iterations may take place and, depending on the final effects of the transformation, changes may be decided both at the level of public values and of strategy definition.

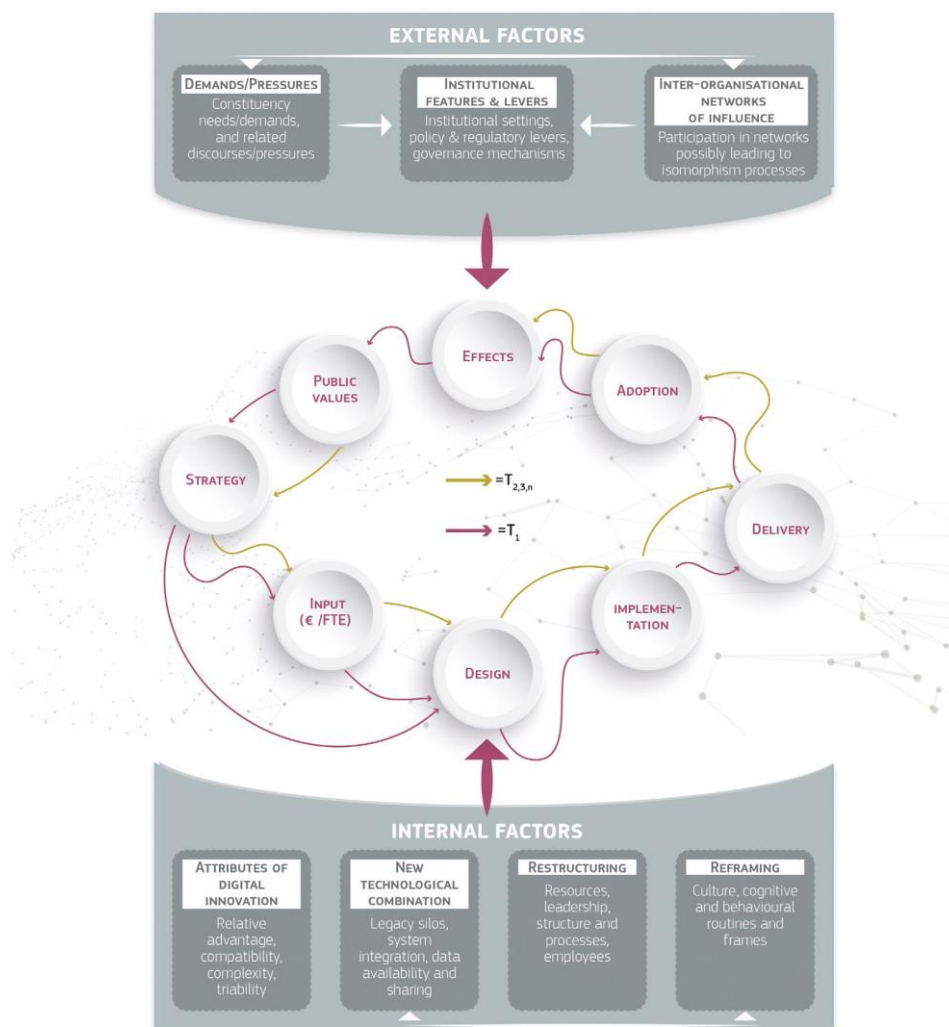


Figure 13: Graphical representation of DigiGov-F 2.0[7]

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We will take a precautionary approach when uncertainties concerning crucial and value-relevant issues require it. We will also suggest the adoption of a more stringent approach to regulation when needed to ensure (digital) sovereignty. Alternatively, sustainability guidelines might imply managing risks by assessing the costs and benefits, including additional regulation and, when the costs outweigh the benefits, employing a softer approach or substituting it with co-regulation, steering self-regulation, and collaborating with innovators in the process of bringing vision to practice.

One-way DE4A could intend to improve the capabilities of change is via toolbox (task 2.4 Service interoperability solutions toolbox), following the DigiGov Framework to increase the speed of change within different domains and levels: international, local, regional and national.

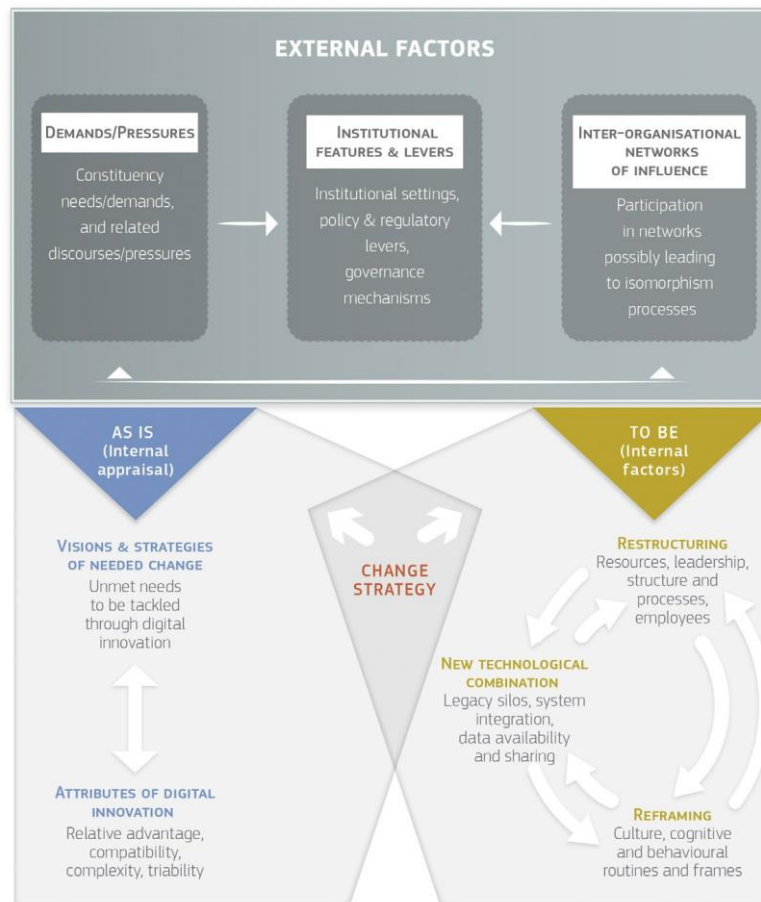


Figure 14: From antecedents of innovation to the internal and external change factors[7]

Our Sustainability strategy & roadmap will also take inputs from WP7 “Legal and ethical compliance and consensus building” that covers legal aspects, both in terms of architecture compliance requirements, as well as collecting insights from legal assessment of piloting activities, deriving reports on legal barriers and advice for policy makers on pragmatic resolution options, suitable for feeding the SDGR implementation roadmap (e.g. secondary legislation to be produced).

In a similar way, WP1 “Inventory of current eGovernment landscape” provides insight in the status-quo as the “starting point” in the relevant member states, including current barriers to cross-border interoperability as well as suitable enablers to address them. The resulting documentation will serve as guiding basis in the process of sustainability road mapping.

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Both “conceptual stream” as well as “consultation stream” will feed road mapping activities with suitable business and governance structure options, addressing dimensions of ‘government as a platform’ and ‘government as a service’, or consistency of all applicable elements with bi-directional feedback from/to the European Interoperability Strategy. This would also feed the assessment of the redefined role and responsibility of Public Authorities and other stakeholders in delivering public goods and services to citizens and businesses (including needs expressed by SMEs and start-ups) with high administrative efficiency.

As for WP4 “Cross-border Pilots for Citizens and Business and Evaluation”, we expect that its input covers the assessment of each MS current situation (existing processes and technology) on the LE being piloted, the gap analysis, needs and requirements; user-centricity and user-experience. We will also look at the financial sustainability of the services, albeit this information and assumptions might not be easy to validate.

WP2 “Architecture Vision and Framework” performs assessment of existing building blocks from EU and other projects and defines architectural patterns for the project target architecture, while WP3 “Semantic Interoperability Solutions” offers assessment of existing semantic initiatives (SEMIC, ISA2) and TOOP building blocks on semantics and interfaces; info-service-desk. In both cases, inputs to sustainability could be considered, as well as those from WP5 “Common Component Design & Development”, that analyzes the implementation of the common components and interfaces in the DE4A architecture and lays the foundation for the BM as well. Findings from all these other WPs will be further assessed in D6.2 Business models for sustainability: design and implications and D6.3 New Models for Shared Delivery of Common Services Roadmap.

Lessons learned from WP1 (eg. intermediation patterns), WP2 (eg. level of decentralization), WP3+WP4+WP5 (roles and responsibilities) as well as WP7, will therefore provide inputs for sustainability of the ecosystem in the second phase (empirical stream), when typology of government innovation can be assessed.

6.3 Government Innovation

While sustainability is often considered as the key driver of innovation (think of EU Green Deal)[144], innovating for sustainability is much less explored paradigm. Digital innovation, which is another policy priority in EU[145], is therefore source of inspiration and an essential element in sustainability road mapping exercise. Innovation that has impact on society, such as the one from DE4A, needs to serve a long-term sustainability rather than generating short term returns, and also requires business and governance models that balances experimentation and precaution. Changes are occurring at an unprecedented scale, and this brings both opportunities and threats for sustainability. Therefore, we need to evaluate not only strengths and weaknesses of the current DE4A innovations, that can be analyzed within value proposition analysis in later WP6 phases, but also these opportunities and threats.

Initially, DE4A WP6 interprets the MS interest in DE4A as “Joining-up” or “Expansion” type of innovation (see figure) as DE4A is focusing on a Service or Platform with wide reach and radical reframing. This remains to be verified in workshops (consultation phase) and will mainly be connected to sustainability and governance.

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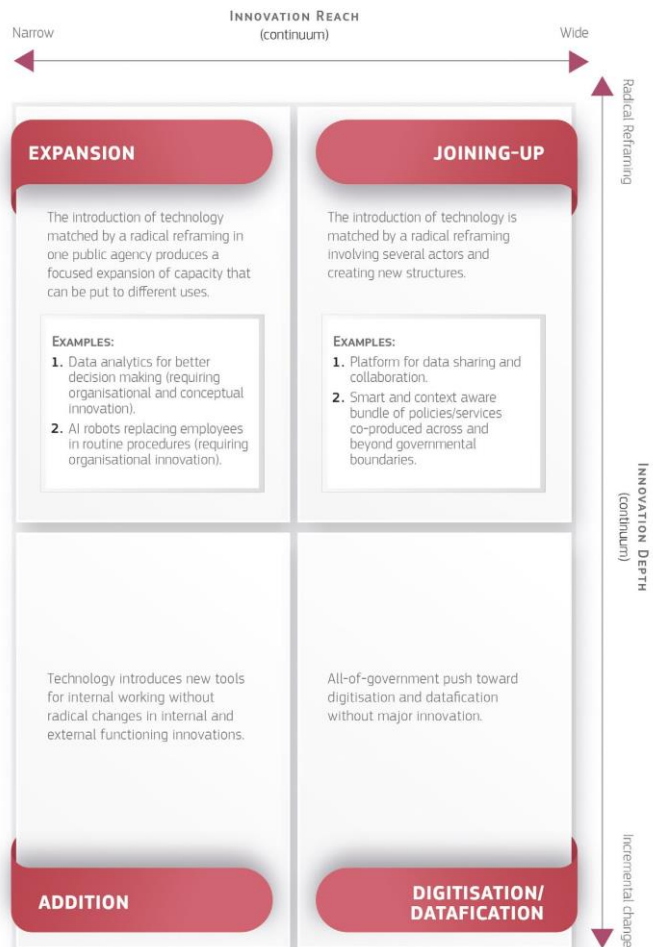


Figure 15: Typology of digital government innovation[7]

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7 Conclusions

The objective of this deliverable was to develop the specific methodology and describe steps to design and evaluate WP6 results, like adequate and long-lasting business and governance models. Next to the methodology, we also present the first findings of inception phase, basically consisting of conceptual framework. In the next deliverable we will describe initial analysis of the state of the art, and initial feedback from the stakeholders.

We understand that DE4A is Digital Transformation Project (DGT), and as a such it could reuse some methodological elements from DGT projects, such as Digigov-F framework. The WP6 will use this approach to map its outputs for three of the identified time horizons: t2, t3 and t4 and will assess their implications on sustainability. In addition, we also presented our vision and strategy, that includes alignment in several dimensions e.g. between outputs, outcomes and impacts, or between Legal, Policy, Finance, BM, GM and architecture elements. The work package will do this by executing a number of steps, such as addressing best practices and recommendations, analysis, validation based on the received feedback through surveys and workshops, empirical inputs, and finally consolidation in the form of sustainability roadmap.

The whole concept will be developed and validated with representatives of different stakeholder groups (i.e. senior public officers, Business Development Managers of Public and Private organisations from the MS, the European Commission (EC) and Civil Society Organisations (CSOs). The focus will be practical and applied to the needs of the project and the requirements upon the European Commission and road-mapping, but openness to all stakeholders and dynamics of envisioned ecosystem is also considered.

We have also presented inception of our conceptual framework, having in mind the Platform Business Model. With support of the Platform Model Canvas WP6 we will conduct document analysis, observation, interviews, prototyping, brainstorming and workshops for stakeholders and improvement opportunities elicitation. While most of our conceptual elements comes from this BM, we also need to integrate considerations such as role and responsibilities of organizations in the public service network, concrete service offerings, network and ecosystem coordination and collaboration activities, platform related business processes, shared resources, capabilities or selected business model patterns.

Pertinent governance elements were also introduced based on categorization and extraction of key elements. Dimensions of Governance (Strategic, Tactical, and Operational) are described with few examples of procedures, rules, norms and actions belonging to each one of these dimensions. While inception phase started from questions like who (list of relevant stakeholders, what (list of processes, rules, norms, and actions), how (list of parameters to be considered such as cost or desirability), other sources and state of the art literature needs to be used for the update of this conceptual framework. This includes material from SDG coordination group, composed of national coordinators, and chaired by the EC (that acts as secretariat). Alignment with business model is not only desirable, but also an imperative and deep-diving into two of the four existing GaaP models will be done in the next step: peer platform model and ecosystem platform. In the medium term, as the integration with blockchain based infrastructure progresses, we might also need to encompass the social layer and consider more decentralized governance elements often discussed in Decentralized Autonomous Organisation (DAO). Next steps will focus on prioritization of processes, rules, norms and actions related to identified operational issues such as matching evidence between Member States, Mandate and Proxy, Trust Management, or articles from draft of implementing regulation that discuss or mention who should set the rules e.g. evidence broker that should be based on rules provided by MS. For each issue,

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question and improvement opportunity in this PRNA analysis WP6 will open consultation and use tools such as prioritization matrix to validate assumptions and assessing urgency, relative priority and impact with stakeholders.

Finally, in the sustainability chapter, we have identified three main barriers to the adoption of new technology, and we have also described steps toward the sustainability roadmap, with practical examples. The sustainability factors will use internal and external information and will be influenced by both types of factors. Inspired by Digigov-F conceptual framework we will consider policy and service design, implementation and delivery, but will also look at the role of innovation and the wider impact expectations.

In the future deliverables, WP6 will focus on the further alignment between outputs, outcomes and impacts of the project, and drawing of a roadmap in relation to our defined timing, with a strong human-centric paradigm and in line with the European values.

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