



**Commissioning, developing  
and deploying Distributed Ledger  
Technology-based public services**  
Learnings and recommendations  
from the TOKEN Policy Observatory

TOKEN Policy Observatory Briefing Paper

[!\[\]\(666e09182d4cd268646ea700ea60dcdf\_img.jpg\) Token Website](#)

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### **This is an interactive PDF.**

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## What is TOKEN?

TOKEN, or, the *Transformative Impact of Distributed Technologies in Public Services*, is a research and development project funded by the European Union's Horizon 2020 programme. Launched in January 2020, the project will run until the end of 2022.

TOKEN aims to ease the adoption of Distributed Ledger Technologies as drivers for more transparent, trusted, and efficient public services. TOKEN furthermore develops an experimental ecosystem to enable the adoption of DLTs. The ecosystem's value is established via replicable [Use Cases](#), which contribute to transforming governance approaches towards openness and collaboration.

TOKEN also acts as a hub for actors interested in how decentralized technologies can impact and improve the work of public organizations. To get informed and engage with us, you may [join the conversation on our DLT4Gov platform](#), [visit the project website here](#) and follow us on Twitter [@TOKEN\\_EU](#).



The TOKEN platform and components will continue to run independently after the conclusion of the project.



## What is a TOKEN Policy Observatory?

TOKEN Policy Observatory events bring together policy makers, practitioners, thinkers and researchers to discuss the possibilities of DLTs in the public sector. The Observatories mobilize experts across Europe in an effort to share ideas and knowledge. The Observatory sessions are organized by a TOKEN consortium partner, think tank [Demos Helsinki](#).

They mix co-creative methods, such as facilitated foresight work and workshops with expert presentations and panel discussions. There will be a set of five Observatories organized during the project.

TOKEN publishes Briefing Papers such as this one to disseminate the findings of the Observatories.





## Introduction

### Why do these learnings matter today?

Distributed Ledger Technologies, such as Blockchain, have been developed fairly recently and their use in public services is even more recent. The European Union and its Member States have made large scale investments into researching and developing Blockchain and other DLT infrastructures. There are ongoing pilot projects within public administration, focused on e.g. [public funding distribution and last mile logistics](#).

The EU has also established a [European Blockchain Services Infrastructure](#) (EBSI) and develops the legal [regulation for Blockchain and DLT](#).

With policy, regulation and the technology itself all under development simultaneously, now is an opportune time to share what we have learnt so far. It is in the interest of

the citizens of the EU that DLT-based public services are developed and regulated so that they will prove worthy of the investments: addressing justified needs in a fair manner. This requires catering to the needs of the end users such as citizens and civil servants, and assessing the effects of the technologies for anyone who is impacted by their use.

This Briefing Paper will present learnings and recommendations in the order typical for a DLT-based public service project: first assessing the needs for the technology, then commissioning and developing it, and finally deploying it.

Even though this categorization serves dissemination, the processes themselves are of course less linear.



This also implies that the learnings presented here are not final; on the contrary, we hope this publication will help us and others develop the learnings further. The contents of this Paper are thus intended to initiate conversation and co-creation in order to iteratively refine best practices together.

We invite readers of this briefing paper to continue the conversation with us at the [DLT4Gv community](#), by joining our upcoming observatories and other events, or by [getting in touch with us](#).

We would like to thank the Observatory participants as well as the entire TOKEN community for their insights and inputs and we look forward to continuing the foresight process within the TOKEN Policy Observatory.





## Methodology

### How did we extract the learnings?

The recommendations and learnings were initially gathered at the TOKEN Policy Observatory session online, April 5th, 2022. This session, entitled '[Cases of the Future: DLT and Public Services](#)', focused on scenarios of desirable/undesirable and likely/unlikely developments of future DLT in public services. The Observatory consisted of four parallel scenario workshops facilitated by the think tank [Demos Helsinki](#), a presentation of the work done in TOKEN as well as talks by [Dr. Joachim Schwerin](#) (Principal Economist, DG GROW, the European Commission) and [Philippe Dardier](#) (Senior Partner, Avolta Partners and City Councilor).

At the Observatory, some thirty experts assessed scenarios of possible future DLT-based public services and how they should be developed. By focusing on future hypothetical cases, the

participants were able to take a step back and critically assess what should be kept in mind when developing and deploying similar services in the present. The recommendations presented in this Briefing Paper are a distillation of the learnings from this foresight methodologies based workshop, expert talks and discussions within the Observatory.

Next, we will describe the learnings as best practices and provide concrete recommendations in the form of bullet points. The recommendations are intended for public officials, policy makers and technology developers working with DLT-based services for the public sector. The Briefing Paper concludes with our plans on how to further develop and refine the learnings presented here.



## Learnings and recommendations

### Before commissioning public sector DLTS

- 1 Assess the need for DLTS in the specific context: how will they serve individuals and communities?
- 2 Address questions of access, accessibility and privacy thoroughly
- 3 Deliberate and communicate the needs and legitimacy of the services openly

### During the design process

- 4 Employ inclusive design to create better quality digital services
- 5 Conduct holistic and iterative impact assessments to increase social, environmental and economic sustainability

### When the services are ready to be used

- 6 Build capabilities, offer training and share information openly
- 7 Learn by doing – test use cases, build capabilities, and anchor learning to concrete action



## Before commissioning public sector DLTs

### **1** Assess the need for DLTs in the specific context: how will they serve individuals and communities?

Authorities commissioning public sector DLTs should be very mindful of whether the technology is indeed needed and suitable for the context in which it is to be used. European cities, regional and municipal authorities, as well as EU and Member State authorities should invest time and resources in making sure they have capabilities to identify in which cases and contexts it makes sense to use DLTs.

Contexts vary quite a bit even within a Member State – and so do service needs. Even though striving for standardization in order to spread best practices, learn from successful pilot projects and create interoperability should be valued, one size will not fit all, or even most.

**Ensure that the use of DLT is necessary and proportionate to achieve objectives agreed upon locally.**

**Take into account how user needs vary, e.g. by region or user population.**

**Involve the local communities and stakeholder groups in decision-making at the stage of considering the needs and impacts of DLTs.**

Public sector DLTs are intended to serve the local communities; representatives from those communities should thus be involved when deciding whether these services are needed, and if so, how they should operate to best benefit the communities in question.

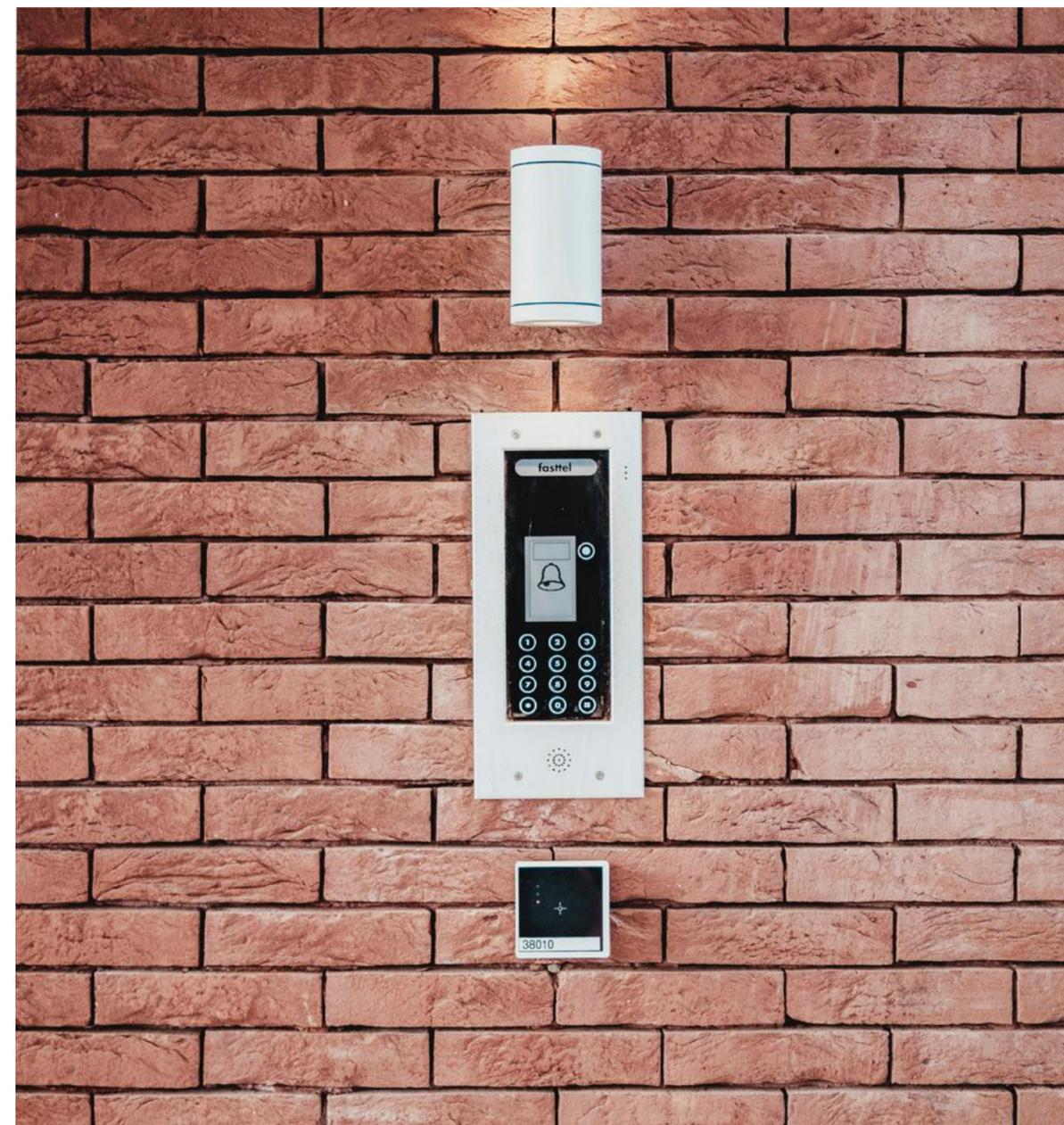


Before commissioning public sector DLTs

## 2 Address questions of access, accessibility and privacy thoroughly

After establishing the need for a public sector DLT service, authorities should review the possible implications for the users, paying attention to their basic rights and liberties, such as privacy. Assessing, for example, data storage, user access and accessibility for different user groups should be done thoroughly before deciding to commission a public DLT service.

[Privacy and data protection are essential aspects to consider](#), since those are closely interlinked with the legality, legitimacy and acceptability of these services. Allowing one's data to be collected, stored and used is inherently risky for anyone, but especially so for marginalized groups. The risks become evident e.g. when combining DLT-based services with automated





## 2 Address questions of access, accessibility and privacy thoroughly

processes, such as control of access. In those cases, the need for accountability and transparent decisions is even greater. These risks could be mitigated with thorough analyses as well as engaging in open, deliberative dialogue about data use with the users of the services. This implies that citizens would have opportunities to shape the requirements for data use.

Furthermore, access and accessibility questions are essential when deliberating what kind of public sector DLTs to commission. Access here refers to who is eligible to use the services: Will access be restricted to e.g. registered citizens of a state, city or a region? What will that imply e.g. in the case of dual citizens or irregular migrants? Also accessibility, i.e. who will be able to access the services is worth considering thoroughly from the perspective of equal rights. Creating services only for able bodied and/or digitally fully literate citizens constitutes a clear breach of European and Member State legislation.

**Assess the DLT service's impact on users' basic rights and liberties. Ensure that applications do not carry risks to undermine those.**

**Pay particular attention to protecting the rights of marginalized and vulnerable groups.**

**Consider both access (who is eligible to use the service) as well as accessibility (who will be able to access and use the service).**



Before commissioning public sector DLTs

3

## Deliberate and communicate the needs and legitimacy of the services openly

Developing and deploying DLT-based public services that are useful, accepted and have actual users requires clear communication on why and how the technology is being used. Efficient processes for involving civil servants, citizens and decision makers alike are key in this effort. Effective avenues for participation in the planning, testing and implementation of the services during the entirety of their life cycle increases legitimacy while improving service itself. A broad stakeholder view should be adopted, with special attention paid to diversity, equity and inclusion.

The interplay between different administrative levels of service infrastructure should also be considered.





### 3 Deliberate the needs and legitimacy of the services openly – and communicate those

When developing pan-European services or components, or potentially scaling infrastructure tested in another context, local administrations (and by extension, the communities they serve) should still feel empowered and capable to shape the use of these service infrastructure components to their needs.

Finally, deliberation and open communication should also be seen as a cornerstone of those services that somehow involve the private sector as a supplier of some parts of the service infrastructure. This means clear rules and regulations and public procurement processes that ensure the avoidance of vendor lock-in and that the public sector is able to deliver on its service promise, all the while extending the requirements of transparency and accountability to the entirety of the service and its underlying technological enablers.

**Communicate with different stakeholders. Understanding why and how DLTs are used increases the service's uptake.**

**Involve different stakeholders in the development process in order to design useful, accepted and used DLTs.**

**Develop the infrastructure enabling different levels of government as well as citizens to participate.**

**Note that public-private partnerships in DLT-based services require special attention: establishing clear rules and regulations and following public procurement processes that ensure the avoidance of vendor lock-in and that the public sector is able to deliver on its service promise.**



During the design process

#### 4 **Employ inclusive design to create better quality digital services**

The inclusion of users and communities should not end in the planning phase of DLT-based public services but rather be a red thread running through the entirety of the lifecycle of the service.

From initial scoping to design and the iterative feedback and development of the service, the development and deployment of DLT-based services needs to involve citizens, users and other impacted stakeholders. This increases the quality, uptake and legitimacy of the service.

Engagement, co-creation and dialogue are key to building trust for DLT-based public services and creating services that are fit for purpose, usable and take into account the needs and specificities of those using them.



**Continue the active inclusion of users and communities beyond the development phase, throughout the life cycle of the service.**



During the design process

5

## Conduct holistic and iterative impact assessments to increase social, environmental and economic sustainability

The design process of DLT-based public services should be premised on a holistic approach to assessing the key impacts before deployment and iteratively after the pilot and larger roll-out phases.

An assessment framework could, for example, include organizational, technological, socio-cultural, economic, legal and environmental aspects. These should be paired with key targets as well as pre - and post-assessment.

**Adopt a holistic impact assessment framework and employ it iteratively.**

**Integrate impact assessment with broader policy goals within the public sector.**

Ideally, the impact assessment would not be tied to a single project, but the targets within it would align more broadly with the policy goals of the public sector – with, for example, the energy use aspects of DLT-based projects being critically assessed within the overall framework of public emission targets.

*One such impact assessment framework is being developed in the context of the TOKEN project. We hope that our example can inspire other public sector DLT-projects.*



When the services are ready to be used

6

## Build capabilities, offer training and share information openly

The adoption of new digital services is usually slow amongst citizens. As with other digital services, DLT-based ones require that citizens trust them, find that they cater to their needs and that they are able to access them easily.

Building capabilities, such as information and data literacy, disseminating knowledge on issues related to privacy and data rights, and abilities to participate in shaping technologies are crucial; as is sharing information, while recognizing the different information needs of various groups.

At the same time, this applies also to policymakers, civil servants and public sector workers: their sufficient skills and knowledge are prerequisites for safe, efficient, responsible, sustainable and inclusive digital services.

**Empower citizen groups to participate in shaping the technologies by offering training and communicating openly.**

**Offer training and information also to civil servants.**





When the services are ready to be used

## 7 Learn by doing – test use cases, build capabilities, and anchor learning to concrete action

Ultimately, the key for generating learnings about DLT-based public services is to pilot them in practice, iterate and scale them further in a contextualized manner.

This, of course, does not mean that the necessary steps in the commission, development and deployment can be skipped – but rather that these steps should be aimed and based around concrete use cases with actual users.

These can be further complemented by other action oriented spaces such as sandboxes or education platforms, where different stakeholders (public, private, academia, civil society, citizens themselves) can come together to share learnings.





**7** Learn by doing – test use cases, build capabilities, and anchor learning to concrete action

This action-oriented learning is also about a vibrant funding ecosystem for use cases and general DLT-based service infrastructure at different stages.

Initial pilot funding is vital, but pathways to scaling up and the resourcing of continuous stakeholder participation in development should be taken into account.

**Experiment and pilot concrete use cases with actual users involved.**

**Pay attention to the funding ecosystem: Will it allow scaling up? Will it allow the necessary, broad stakeholder participation at various stages? If not, what can and should be done?**



## Conclusion

### Next steps to refine the learnings

In this Briefing Paper, we have presented distilled learnings from TOKEN's Policy Observatory work and recommended courses of action for building trustworthy, transparent and inclusive DLT-based digital infrastructures in the EU. This requires developing technologies serving clear purposes and operating in an understandable, equitable, and legitimate way.

As mentioned, we view these findings and recommendations as starting points for conversations to come. When engaging with any emerging technology, recommending an exhaustive list of items would not make sense. We recognize also that as policies and regulation regarding DLT-based public services evolve, needs for adjusting and iterating the recommendations will arise.

Our work in the TOKEN project will continue until the end of 2022. We will organize two more Policy Observatories: the first, held in September 2022, will present Public Sector DLT Use Cases and assess their operational learnings, map out their scaling potential and refine policy recommendations.

The last Observatory serves further discussing and validating the overall policy learnings from TOKEN's three-year duration, including all five Policy Observatories.

If you are interested in the learnings offered here, the Policy Observatory work, TOKEN's Pioneer Use Cases or the TOKEN platform and service components being developed, we invite you to [join the DLT4Gov community](#), [book a time for a demo](#) of the services and platform on the TOKEN website, follow us on social media, subscribe to our newsletter or to get in touch with us directly to talk further. We hope that we can keep the conversation going with the readers of this Paper during our upcoming sessions and events.



# Join the discussion and come work with us towards making the vision a reality.

Be part of the conversation and join the Community

[JOIN DLT4GOV COMMUNITY](#)





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