



Digital government transformation can be described as an ongoing application of modern technology to improve government performance, in terms of transparency, efficiency and cost-effectiveness. The pandemic propelled many governments into the next stage of digital transformation. Instead of just “doing digital” and offering certain online services to their citizens and business actors, governments are striving towards “being digital”, by using human-centred design and advanced technologies.

Cities can employ different technologies to collect data and manage resources efficiently, enabling them to improve governing capabilities, to develop better solutions to citizens’ problems and to improve the quality of services such as security, energy consumption, transportation, and other required utilities and services by reducing resource consumption and wastage of city resources. Sustainability of smart cities depends on efficient and transparent digital governance, which allows citizens to be well informed of all government information.

USE CASE:

Barcelona | Participatory democracy in Barcelona

Country	Spain
Population	1.61 million (2017)
Use case on	Participatory budgeting

In 2016 Barcelona introduced an online participatory platform called “Decidim Barcelona” (in Catalan, “Decidim” stands for “we decide”). Initially, the platform was based on an open source software *Consul*, and experimented with various participatory processes, such as public debates and citizen proposals.

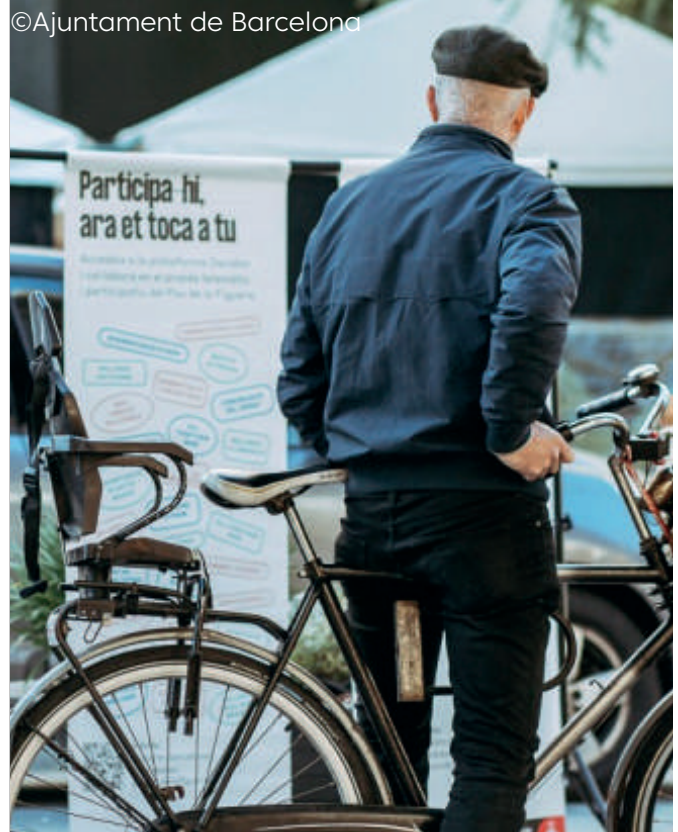
Increasing citizens’ engagement and representation led Barcelona City Council to open up a technologically mediated citizen-participation by making processes transparent and traceable, expanding participation through the digital platform and integrating face-to-face and digital participation.

This resulted in a complete rewrite of the software using a development tool called *Ruby on Rails*. This enabled any group, organisation or institution to use the platform with minimal technical requirements. As a result, transparency became a fundamental principle not just in citizen participation, but in software development too.

Today, the platform is called “Decidim” and it enables as many processes as people want, divided up into stages and with the possibility of setting several functions at each stage. An option to design new functions that could be integrated into the processes (surveys, collaborative-text drafting, result monitoring and so on) was left open, as was the integration of new participatory spaces such as citizen initiatives and participation councils.

There are four key participatory spaces on the platform:

- **processes** - one can create, activate and deactivate different participation tools, e.g. hosting an election process or set up a participatory budgeting process,
- **assemblies** - users can define groups/collectives that meet intermittently, list meetings and locations,



- **consultations** - users can organise referendums, discussions and debates on a given topic and subsequent voting systems,
- **initiatives** - users can launch citizen proposals in a collaborative way by gaining support or collecting results of discussions or debates.

In 2020, Barcelona started with a **Participatory Budgeting (PB) process**, which was hosted on the Decidim online platform (in addition to in-person events), during which a budget of 30 million euros was divided among 76 projects across ten city districts. OmaStadi, Helsinki’s service for participatory budgeting is also built on the Decidim platform.

Sources:

<https://decidim.org/>

<https://omastadi.hel.fi/?locale=en>

<https://participedia.net/case/7425>

USE CASE:

Groningen | Municipality of Groningen - Stadterspas smart vouchers

Country	The Netherlands
Population	234,950 (2022)
Use case on	Blockchain technology

Stadterspas is a fully operable service which uses blockchain infrastructure to provide discounted services to low-income citizens of the Municipality of Groningen. Promotion of inclusivity in the city via a voucher system started in 1994, and was completely paper-based until 2013. In 2016 the voucher system was switched to blockchain, allowing enhanced targeting of public money thanks to programmable money flows. Detailed spending conditions and eligibility criteria are programmed in the smart contract. Possible criteria include: detailed profiles of the beneficiaries and authorised providers, financial thresholds or usage limits. Smart vouchers can be used, for example, in sport clubs, cinemas or to subsidise solar panels for home owners. From the municipality perspective Stadterspas ensures that public money reserved for a specified purpose is spent exclusively on that purpose and targeted at a specific group of beneficiaries.

The system works as follows: a citizen applies for the Stadterspas at the municipality, providing their name, address and citizen's number. The municipality checks



whether the registered citizen is eligible for any smart voucher. If so, the municipality sets up an anonymised user identity on the blockchain, linked with personal details stored off-chain. The municipality grants the citizen a Stadterspas, accompanied with a personal QR code referencing to their ID in the blockchain-based smart voucher system and also manually assigns smart vouchers to the citizen in its own system. The citizen uses a service of the authorised provider (each provider has an application that scans the QR code on the pass to activate the smart voucher and calculates discount) and every time a smart voucher is invoked, smart contract checks whether this user is eligible for the criteria and how many times they have used this smart voucher already. There is also an application for beneficiaries, enabling them to browse offers from authorised providers and make reservations. It is however not a mandatory part of the system. After a certain period, SEPA payments are done from the municipality to the providers.

Source: <https://1library.net/article/stadterspas-smart-vouchers-groningen-the-netherlands.zx037kwz>

USE CASE:

The Hague | Hack the Hague

Country	The Netherlands
Population	544,766 (2019)
Use case on	Cybersecurity

Since 2017, the Municipality of The Hague has organised an annual hackathon "Hack the Hague", a hacking competition which is part of the Municipality's policy to promote digital resilience. During the competition, international professionals and student hackers get the opportunity to hack the live IT systems, applications and websites of The Hague Municipality and its suppliers to put their digital security to the test. Participating hackers report any vulnerabilities they identify - e.g. unsafe access to accounts, outdated software, the ability to inject malicious code into a website or an account that could be taken over completely.

Following the event's success, both the city and its cybersecurity company Cybersprint have been approached by other municipalities and the business



community about how to organise such an event. As a result, the city has produced a document which contains an overview of their experience and learning, which will be shared with the largest possible group of Chief Information Security Officers, ICT and Security Managers and policy-makers. It can be used as a guideline to host their own hackathon, and provides information about the measures that need to be taken to prioritise, monitor and resolve any vulnerabilities in their websites and systems. The document can be accessed here: https://5479065.fs1.hubspotusercontent-na1.net/hubfs/5479065/E-guide_How%20to%20hack%20a%20city_EN%20-%20V1.0.pdf

Source: <https://www.cybersprint.com/hack-the-hague>

USE CASE:

Amsterdam | Algorithm Register

Country	The Netherlands
Population	873,555 (2020)
Use case on	Data Ethics

The municipal government of Amsterdam in the Netherlands shows its commitment to data ethics through its approach to publishing information about all algorithms used in services provided to its citizens. The Algorithm Register represents a window into an overview of artificial intelligence and algorithms used by the City of Amsterdam.

The intention behind the Register is to provide transparency in a standardised format about how data is being used in public services (e.g. algorithms can show if there is a risk of a major traffic jam or if an area is excessively dangerous so that the city officials can take the appropriate measures). By including journalists, activists, elected members and others in the development of the Register, the City shows an open and transparent approach that will allow any citizen to see how algorithms have been designed and are in use across Amsterdam.

The information about an algorithm includes who created it, what data sources were used, how the process was designed, the intended audience, its relationship with other non-algorithmic processes and review protocols. Although the Register is in its initial phase of development, the plan is to gather information about every algorithm used by the city. The City of Amsterdam believes that all people of Amsterdam should have access to understandable and current information about how algorithms affect their lives.

The impact of the city's approach to being transparent about algorithms is already being seen in the field of public procurement. The city is looking for procedural transparency by asking suppliers of services to the

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government in Amsterdam to share the details of any algorithms including dataset choice, training approach, bias selection/removal, and assessment of the outcomes.

The University of Utrecht has developed **Data Ethics Decision Aid** to help data analysts, project managers and policy makers to recognise ethical issues in data projects, data management and data policies. The City's Chief Information Office (CIO) is able to draw on this tool in both training and operational situations.

The CIO is also helped by a wider initiative called **Tada - data disclosed**. This is a manifesto signed by government authorities, companies and other organisations from different regions showcasing their ambitions to shape a responsible digital city.

Source: <https://docs.google.com/document/d/19VynsF8XAimuN7VABWeSwV4-DI97qh2e/edit>

<https://algoritmeregister.amsterdam.nl/en/ai-register/>

USE CASE:

Helsinki | Data-driven decision making

Country	Finland
Population	653,835 (2019)
Use case on	Data-driven decision making

The City of Helsinki has participated in several projects based on data-driven approaches, such as:

the **SPOTTED** project, funded by the Connecting Europe Facilities (CEF) program - Horizon2020, aims to provide an innovative solution based on the integration and customised processing of satellite data, to support decision makers in city planning, particularly in green area management, by taking into consideration different factors (e.g. tourism impact, quality of life, economic growth, etc.). Solutions created in the project will support the City of Helsinki's innovative work in the development of a digital twin and the opening of datasets supported by interfaces. Project outputs could also be used for the development of geospatial data services and measures related to carbon neutrality goals;

the **URBANITE** project, funded by Horizon2020, aims to create in-depth knowledge on the implications of the use of technologies such as AI in the public sector and other stakeholders in the mobility and urban transformation value chain; to provide automatic mechanisms to collect existing open and proprietary data coming from different sources related to urban mobility and transportation; and to facilitate policy decision-making processes in the context of mobility and urban transformation with a scalable, integrated and modular ICT ecosystem;



the **RIDE2RAIL** project, funded by Shift2Rail Joint Undertaking - Horizon2020, aimed to develop an innovative framework for intelligent mobility, facilitating the efficient combination of flexible (ride-sharing) and scheduled transport services (rail, bus, and other public transport services), thus enhancing the performance of the overall mobility system. The project looked to integrate multiple (public/private/social) data sets and existing transport platforms to make ridesharing a complementary transport mode that extends public transport and rail networks.

Sources:

<https://cef-spotted.eu/>

<https://urbanite-project.eu/>

<https://ride2rail.eu/>

