

REPORTING AND VISUALISATION IN PUBLIC ADMINISTRATIONS ACROSS EUROPE

With special Regard to Performance Management

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Imprint

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Executive summary

The public sector has been an early user of digital technologies – sometimes a lead user – and has also contributed significantly to the development of the base technologies. This concerns funding received from military sources, space programmes or financing of academic research within or outside of public sector research facilities. The long-term impact of these investments and actions is now triggering the next big reshaping in the organising and working of the public sector.

e-government comes with an agenda for change as the digitalisation offers new technological opportunities that “demand” product, process, organisational and marketing innovations, as well as retraining employees and reorganising processes and workflows. This change process has been ongoing for quite some years but is far from finished in the public sector. Digital technologies allow to make public processes more transparent, granting wider access to data online and interaction directly in two-way communications with citizens to provide new services, source knowledge and experience and get inspiration for policies and actions.

Reporting and visualisation – the main topics of this study – build on increasingly digital workflows. Digitalisation of workflows aims at the seamless and fully digitalised integration in the production of public services. The practical implication of the digitalisation of workflows demand that workflows are studied, changed or even developed from scratch in order to make the digital system work. This may be either a simple translation of an existing workflow into a digital environment or – more likely – a complete rework of how the public sector functions. Analogue to digitised production process in manufacturing allows for new ways of service delivery, monitoring of service production and remodelling of production processes.

The survey on the state of the art in reporting and visualisation across public administration in Europe sheds some light on the ongoing change process due to digitalisation. In total, 65% of the participants indicated significant innovations in the reporting and visualisation workflow (including data collection, manipulation and aggregation and data analysis) in the public sector of their country between 2015 and 2017. Innovation efforts in the public sector are substantial with only one-third of respondents abstaining from significant innovations in the workflow. The share of innovators – although a direct comparison is beset with problems – is remarkably high even if compared with companies.

The nature of innovations ranges – and this is far from being an exhaustive list – from a new database that contains data for all ministries and combats silofication, new portals for procurement issues, big data applications, cockpits to monitor developments in the health sector, open data on budgets, to dashboards that support management by objectives.

Innovation activities in the public sector are thus broad and varied and unlikely to abate in the future. This is because there is still a lot of experimentation – that

precedes the roll-out of digital products – taking place. About 70% of respondents are aware of significant innovations to be introduced in the reporting and visualisation workflow in the public sector of their country between 2018 and 2020.

Innovation efforts seem to cluster around topics and technologies. The correlation analysis hints that technologies driving digitalisation (e.g. data warehousing, enterprise resource planning, business analytics) in the public sector are correlated, indicating that implementation of the whole bundle is needed rather than patchwork or isolated deployment of technologies.

The goals of public administrations are also correlated. It seems that striving for digital or e-government is connected to treating service users as customers, with transparency and open government, better-informed citizens and citizen participation. Overall, this hints at strategies that focus on citizens and are built on strong investments in digital technologies.

Many of the envisaged innovations are related to performance management and seem to underline a general strive for more efficiency and effectiveness in the public sector as well as the provision of open data and citizen information.

Performance management is clearly of importance for most countries: three-quarters of countries report having a performance management system in place and also assigned responsibility to a specialised organisation which is in most cases part of a ministry.

The activities of the organisations assigned responsibilities for performance management do have two dimensions: the first one is to provide performance data for decision makers; the second dimension is building and maintaining working performance management systems by helping colleagues across the public sector through information dissemination, trainings, workshops etc. This very much reflects that in many countries performance management systems are “work in progress”.

The question on the digitalisation grade of the performance management workflows revealed two distinct groups among the answering countries and corroborated the fact that the spread between more advanced countries and laggards with respect to digitalisation of the workflow is still significant. The first – and larger – group is in the process of developing or rolling out digital performance management systems. The smaller group has already mostly digital workflows that support performance management and reporting and visualisation activities in particular.

Both in reporting and visualisation traditional approaches dominate the landscape but – it seems – advanced solutions based on largely digital workflows are increasing in importance: access to real time data, interactive visualisation, and dashboards benchmarking goal achievement are just some of the approaches increasingly used.

Generally, the majority of countries follow a rather open dissemination policy on public sector performance information of which most is available in print. Most countries visualise at least part of the information but rarely use interactive visualisations. In contrast, a substantial part of websites offers interactive presentations, geographic data and the long-term evolution of public sector performance. Parts of the shared data – but this is really the exception – are available in real time. The driving force behind an increasingly open dissemination policy is the public sector administration itself. Government and ministers score strongly in trying to be as “transparent as possible” as well as “demonstrating that government delivers services effectively and efficiently”. The media and civil society focus on holding the government accountable and educate citizens on public sector services.

Introduction

Digitalisation started in the 1950s. The invention of transistors brought about radios and mainframe computers, microelectronics and consumer electronics amongst a host of other new products. Until the introduction of the Internet, digital technologies had been used in the public sector almost exclusively to increase productivity. Large mainframe computers in big computing centres automated mass transactions in mostly independent computer systems in different agencies/organisation of the public sector¹.

The advent of the Internet has changed this isolated use of digital technologies profoundly and marked the start of what is now called “digitalisation”. This new paradigm has been based on networked computing, massive rises in computing power and sharply increased availability of data.

The exponential increase in computing power (Moore’s law²) has allowed to develop new digital products and services that process natural language on smartphones, and – together with the new abundance of data – power big data application, autonomous driving cars, machine learning systems, etc. The second component besides advances in hardware and software is the interconnectivity of digital services, best illustrated by social media sites and the ecosystems that have developed around them. This offered unprecedented outreach and interactivity options, but also fortified behaviour that is detrimental for democracies as well as enabling mass surveillance by private and public actors.

The public sector has been an early user of digital technologies – sometimes a lead user – and has also contributed significantly to the development of the base technologies. This concerns funding received from military sources, space programmes or financing of academic research within or outside of public sector research facilities. The long-term impact of these investments and actions is now triggering the next big reshaping in the organisation and working of the public sector. The massive spread of digital technologies consequently impacts on the production of public services, shapes the expectations of citizens and enables new forms of interaction. Many of these impacts are integral to definitions of the term e-government.

e-government comes with an agenda for change as the introduction of new technologies demand product, process, organisational and marketing innovations

¹ see Yildiz (2007) for a more detailed description of the e-government evolution.

² Moore stated in 1965 that “The complexity for minimum component costs has increased at a rate of roughly a factor of two per year.... Certainly over the short term this rate can be expected to continue...” cited from Brynjolfsson - McAfee (2014).

as well as retraining employees and reorganising processes and workflows. This change process has been ongoing for quite some years, but is far from finished in the public sector.

The assessment of the impact of digitalisation on reporting and visualisation starts from a “bird’s eye view” on innovation in the public sector, technological diffusion, e-government, and advances in reporting and visualisation. This is the base for the interpretation of survey results that cover these topics for European public sector administration that cooperate in the EUPAN (European Public Administration Network).

This study was financed by the Austrian presidency and aims at advancing the work in countries that participate in EUPAN.

Digitalisation and innovation in the public sector

Digitalisation

In 2002 Danzinger and Andersen had a very detailed look on the impact of digitalisation on the public sector. They divided the field of public administration in four categories (“capabilities”, “interactions”, “orientations” and “value distribution”) and identified 22 sub-categories in which the impact of digitalisation was to be measured.

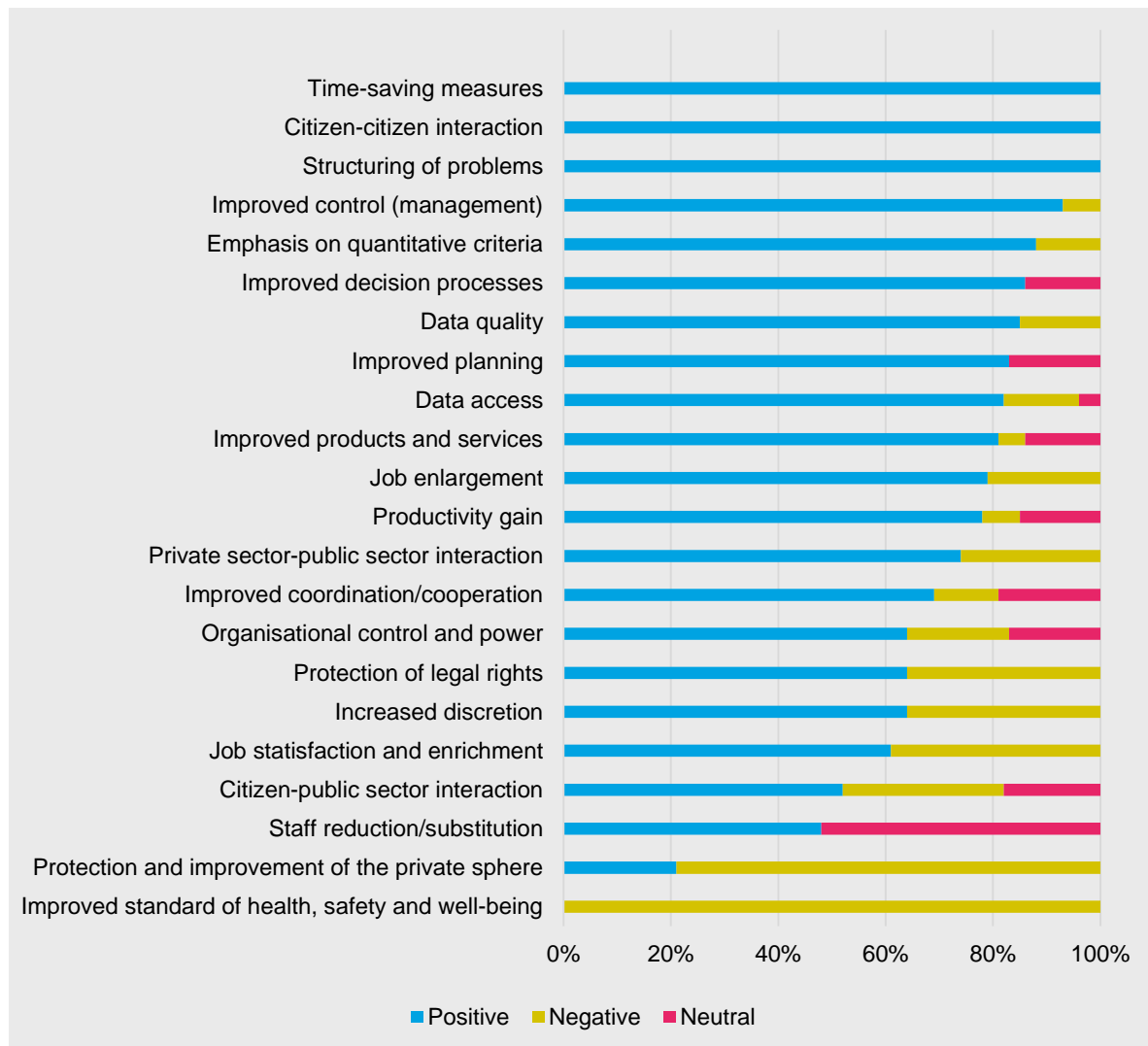
The impact-categories with the clearest positive impacts generated by IT could be located in areas of efficiency and productivity of government performance³. Negative impacts from IT were expected in such areas as citizens’ private and legal spheres, citizens’ interactions with government, and public employees’ work environments and power relationships (see figure 1).

Sabbagh et al. (2012) found also a clear positive impact of digitalisation on economic advancement, social well-being, and government effectiveness in their analysis, but they also mentioned that this impact varies depending on a country’s level of digitalisation. Overall, they found a U-shaped impact curve: digitalisation improves and enhances economic activities as well as the quality of life in line with the deployment of IT systems in the public sector – thus showing increasing returns. At the same time, the impact of digitalisation is also more than proportional at the beginning of the process, as access to basic services and education proves highly beneficial.

These results are illustrative for many approaches that aim at producing general results of the impact of digitalisation on public sector performance. At the most general level, all studies in this domain assume that there is a massive impact of digitalisation on the working of the public sector and the delivery of services to citizens and companies. These studies thus chart the potential impact that may vary considerably across administrations, as different paths and speeds are taken at the national and regional level.

³ More specific the categories “Data access”, “Improved planning”, “Data quality”, “Improved decision processes” “Emphasis on quantitative criteria”, “improved control (management)”, “Structuring of problems”, “Citizen-citizen interaction”, “Time-saving measures” had over 80% positive impacts from IT.

Figure 1: Distribution of positive, negative and neutral IT impacts by impact category.



Source: Danziger, Andersen (2002), p. 616

Digitalisation impacts on both the core capabilities that governments use to engage stakeholders, i.e. the methods and tools to provide services, the processes implemented, the decision-making approach and the sharing and publishing of useful data. This of course is shaped by organisational enablers that help government in delivering these capabilities. This encompasses strategy, governance and organisation, leadership, talent, culture and technology (Corydon, Ganesan, Lundqvist (2016)). Breaking this approach down renders a large number of fields where digitalisation is impacting on the working of the public sector or – seen otherwise – where people managing the change process can or must intervene to achieve the desired results (see table 1).

The breakdown into factors that shape the citizen- and business-facing innovations in the public sector (capabilities) and innovations across government systems

(enablers) may also be seen as frontend (capabilities) and backend innovations (enablers). The latter shapes both the working of the public sector and also the capabilities to provide services and take appropriate decisions.

Table 1: innovations in the public sector driven by digitalisation

| Capabilities: citizen- and business-facing innovations | | Enablers: Innovations across government systems | |
|---|---|--|---|
| Services | <ul style="list-style-type: none"> • Digitalisation of touchpoints • Consolidated online-access platforms • Citizen and business portals • Messaging platforms • Payment platforms | Strategy | <ul style="list-style-type: none"> • Close connection to broader government priorities • Bold aspirations translated into concrete targets • Focus on citizen and business experience • Attention to needs of marginal populations (e.g., elderly) |
| Processes | <ul style="list-style-type: none"> • Automation of transactional processes (e.g. grant applications) • Digital enablement (e.g. e-health) | Governance and organisation | <ul style="list-style-type: none"> • Organisational design mapped directly to goals • Governance and accountability for pace, scale and collaboration • Funding mechanisms for collaboration, innovation, and efficiency • Regulations that allow open, joined-up citizen experiences |
| Decisions | <ul style="list-style-type: none"> • Development of sensors (e.g. mass transit) • Advances predictive analytics • Large-scale, cloud-based data storage | Leadership, talent, and culture | <ul style="list-style-type: none"> • Leadership commitment and awareness of trends and opportunities • Technical and implementation talent • Programs to attract and retain digital workers |
| Data sharing | <ul style="list-style-type: none"> • Unified, open public registers • Peer-to-peer sharing of data • Co-creation of solutions with private sector and citizens | Technology | <ul style="list-style-type: none"> • Two-speed model for rapidly deploying new services • Agile development at scale • Analytics platforms to support efforts in big data and open data • Robust cybersecurity measures and controls |

Source: Corydon, Ganesan, Lundqvist (2016).

Digitalisation is thus an ongoing and wide-reaching change/innovation process that impacts on all parts of government by altering the front and backends of digital systems, the interaction with citizens, enterprises and within public sector organisations. As new technologies always demand organisational change and training of employees to unfold their full potential, digitalisation touches all aspect of the work of the public sector.

Innovation

Out of the main drivers of innovation in companies – technological opportunities, appropriability conditions and demand (Nelson, Winter (1982); Cohen, Levin (1989)) – digitalisations is first of all increasing technological opportunities that make it easy to develop a more advanced version of a product or services. As – traditionally – the public sector is not equipped with research and development units (EY (2018)), most of the technological opportunities are realised by investing in new technologies and making them work in the expected way. Things may change in this respect but more on this below.

Appropriability conditions (e.g. options to protect an innovation by getting a patent a product or service or apply another protection strategy) which shape the likelihood of recuperating the invested resources through market interactions are not a dominant concern for public sector decision-makers, because the major part of a statal income stems from taxes. Services and cross-subsidised in many cases and consequently must on recovering costs in each and every case. While there may be upper limits with respect to acceptable taxation levels, the basic collecting mechanisms work fairly well in most established countries. The actual struggle is rather (1) how much of the resources are allocated to internal innovation/change processes and (2) how to innovate in structures that are not build to be “engines of innovation” but rather administrate and provide services (for statistics on these issues see OECD (2017b)).

Market demand is the main motivator for companies to be innovative (Nelson, Winter (1982); Cohen, Levin (1989)). Otherwise they might fail to keep up with competitors and consequently go out of business if insufficient revenues are generated. The public sector is confronted with strong demand by citizens and companies that depend on it e.g. for health services, the education system, or regulatory framework conditions. Dissatisfaction of clients with the services provided may not be as crucial for the state as for companies that are exposed to market forces.

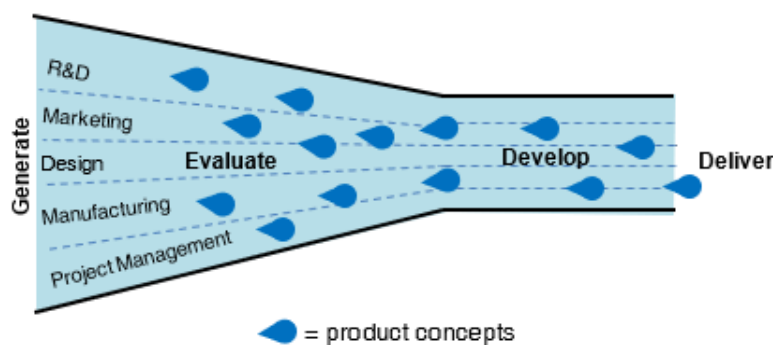
Digitalisation has strengthened the role of the user – and thus the demand side – in this process. Citizens and companies are used to digital services by now and demand more digital interaction with the public sector (see also EY (2018)). They also apply the same standards for the evaluation of digital public services as they do for private services providers. Understanding the role of the user (who takes the decision to buy/use the product or services) is becoming more and more important

for the acceptance of public digital services. For this reason – but also to reduce the risk associated with innovations – many up to date innovation techniques diffuse into the public sector (i.e. lean startup, design thinking, behavioural economics).

Open innovation – a term coined by Chesbrough (2003) – refers to a strategy in innovation management that focuses on a broad search for external knowledge and its integration into the innovation process. In contrast to closed innovation, the focus is on an open, network-oriented and cooperative approach that permanently demands interactive relationships with stakeholder groups, in particular customers and users, as a source of new ideas.

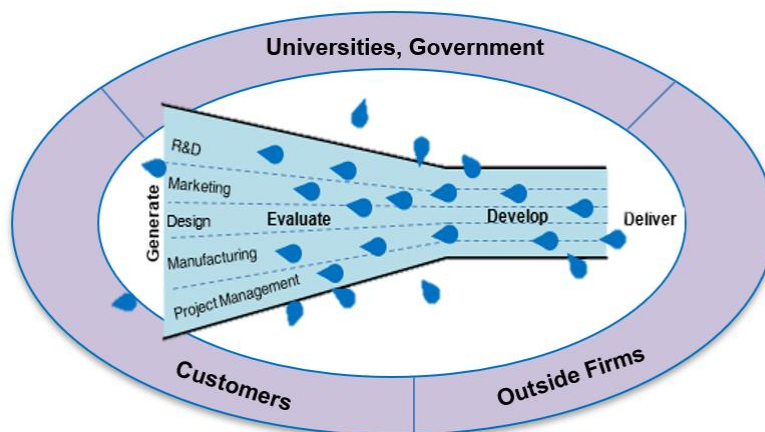
Exactly this dichotomy between open and closed innovation processes is shown in Figures 2 and 3. In closed innovation processes, the ideas for innovation come from internal stakeholders which are then evaluated, developed and implemented in the "funnel". In the case of open innovation processes, impulses/ideas for innovations as well as feedback during the evaluation of innovation projects come from both inside and outside actors.

Figure 2: A closed innovation approach



Source: Noble et al. (2014)

Figure 3: An open innovation approach



Source: Noble et al. (2014)

In practice, this dichotomy between open and closed innovations can hardly be found. Really closed innovation processes are just as rare as completely open ones. Innovation processes are therefore above all search and discovery processes, as Hajek (1945) correctly formulated it. As in the private sector, almost all innovation processes in the public sector are open by default – of course to a varying degree – integrating external sources of knowledge like citizens/customers, suppliers and scientific institutions.

Most companies are located somewhere between these two poles, because in the vast majority of cases innovations are based on the recombination of existing knowledge (Schumpeter (1942)). Only a small part of technological innovations is based on truly new knowledge and developments. Relevant knowledge for innovation can and is sought and found in different industries, fields of knowledge, users and stakeholders.

Even before the advent of the Internet or the dissemination of the definition of "open innovation", innovation processes tended to be open and the sources of innovation very diverse⁴. The studies by Hippel (1988) also showed that user innovation was already practiced on a broad basis long before the concept was received in innovation research and policy. Innovation research and innovation policy therefore usually describes and reinforces existing phenomena.

⁴ This was already evident in the first innovation surveys conducted in Austria. Particularly important among external impulse generators in 1985 and 1990 were competitors (named by more than 50% of the companies), customers (>50%) and trade fairs and congresses (>38%) (Leo, Palme, Volk (1992)). The impulse generators mentioned have also remained relevant over the years. Scientific institutions were almost irrelevant at the time but have now become much more important.

The various innovation modes have not fundamentally changed over the years but their relative weight has shifted. The open innovation paradigm - propelled by the Internet - has brought significant changes and enabled outreach processes that were previously only possible with great effort and in smaller communities. Specifically, it is now relatively easy to carry out broad-based tenders/calls to search for ideas or solutions or to set them up on specialised platforms. The Internet also offers a variety of search options to generate inputs for innovation processes and tools to put cooperation in development processes on a new footing.

Additionally, the role of the user have become more prominent in innovation processes both as the main focus – rather than a technological innovation – and as an active contributor to innovation processes. The increasing utilisation of innovation techniques like lean startup, design thinking or the use of behavioural economics gives testimony of this development. Last but not least, innovation processes are increasingly agile. This is more in line with the user-focussed processes that concentrate on learning and applying the insight during the process. Consequently, the final outcome is shaped by the process rather than simply developed during the process.

Agile and radical innovation is not hampered by the regulations that govern public sector activities, but rather by the actual management practices. OECD (2017) argues that the societal values represented by the public sector include stability, efficiency, effectiveness, accountability, transparency are not hostile to innovation. In some organisations, risk aversion, “silos”, hierarchical structures, bureaucracy and lack of diversity may have become embodied in rules and regulations, or they may have become parts of a wider culture. The public sector has reacted to the new opportunities and demands by introducing cross department innovation/change teams/networks, innovation labs, behavioural economics units etc. to create more agile change processes or at least to gain more momentum by actors within the organisation that are not hampered by established cultures.

Even the popularity of Innovation Labs and networks (OECD (2017b)) has only gradually changed the framework conditions for innovation in the public sector. EY (2018) consider many of the issues that private companies struggle with are also a challenge for innovation in the public sector:

- lack of a defined innovation strategy
- no specific innovation process of framework
- limited budget or leadership capacity
- the sheer size of the organisation

Coupling this with risk-averse actors and the increasing demand for system innovation (OECD (2017b)) rather than piecemeal innovation, renders formidable challenges for the public sector. Still there are numerous examples of well implemented innovations and constant change process that delivers product and process innovations. Particularly connected with the opportunities created by

digitalisation are changes in e-government, open government, open data and performance management. All of these innovations demand approaches that impact deeply on the inner working of the public sector, and in many cases ask for radical rather than incremental innovations. At the same time, advances in these areas stand for the (visible) output of innovation activities (for examples, see OECD (2018)).

Output and outcome: From innovations to revenues and performance management

The generation of public revenues would be the analogy for turnover in the enterprise sector. This could potentially be used to measure the success of innovations in the public sector. This analogy holds only if the production of economic growth – value added – is still a valid indicator for success. In this case one might argue that well-functioning public services, based on well-deployed new technologies and management approaches, will provide excellent public services that help companies and citizens to prosper and thus increase (tax) revenues for the state. More concretely, providing excellent health services may reduce the days of sickness observed in companies and thus increase output in companies. Likewise, well-educated graduates will support companies in their activities, allowing them to constantly increase productivity and become more competitive through innovation. Efficient and demanding regulatory regimes may challenge companies to develop innovative products and services that meet the regulatory demands and thus have a competitive edge, vis-a-vis competitors on global markets. This list could of course be much longer.

While this view of the state is still widely shared, the number of objectives decision-makers are balancing is far broader than increasing Gross Domestic Product (GDP): Target systems that go beyond GDP, including the long-term sustainability of natural resource use or social systems or the UN Millenium development goals, securing fair distributions of income etc. are increasingly on centre stage rather than part of the wider environment.

Politicians and decisions-makers in the public sector consequently have a wide set of objectives to fulfil by designing interventions for a highly complex economic system and society. Public actors aim at shaping the outcomes and outputs but are one actor among many who has to take decision under uncertainty based on incomplete data. Attribution of a certain outcome to a specific intervention may thus be difficult and/or demand tedious research and evaluation. The state of economic modelling is illustrative of the difficulties that have to be mastered when outputs and outcomes are to be matched to specific interventions. Despite many efforts and improvements, modelling of the economy and interventions still faces many challenges that start with the choice of the theoretical framework that is being used to build the model, finding appropriate data sets and deciding on the granularity of the modelling efforts. The significant shortcomings of present economic modelling

efforts were not least illustrated by the failure to predict the economic and financial crisis in 2008.

Additionally, many of the interventions of the public sector only produce outcomes in a medium- or long-term perspective. It takes time for measures to unfold their impact as well as for companies and citizens to adapt their behaviour based on the changed environment. This process may demand learning and adaptations on the side of the public sector, as well with the intention to create virtuous cycles which increase goal achievement. Frequent innovations are a necessary input for the working of such a system.

Performance management is tasked with optimising the way public resources are allocated and helps decision-makers on a day-to-day basis to master the aforementioned challenges. Using Dooren, Bouckaert and Halligan (2015) performance management definition – „a type of management that incorporates and uses performance information for decision-making“ – offers a pragmatic starting point that focuses attention on the decision-making process. Measuring performance is thus a key and challenging and integral task of well-organised decision-making processes. Building such a process demands four distinct process steps:

- Establishing which factors impact on the performance of a particular activity/process/area, that is to be decided based on theoretical and empirical evidence (“the model”)
- Defining the indicators needed to take decisions and developing a process how to measure these indicators (“definitions and measurement concept”)
- Implementing the measurement of the indicators in the organisation and measuring them (incorporating measurement)
- Taking evidence based-decisions based on the data collected (“the decision”)
- Reviewing of outputs and outcome – “the performance” – of the decisions taken.

Performance management encompasses different dimensions like financial management, human resource management, capital management and information technology management (see also Dooren, Bouckaert, Halligan (2015)).

Résumé

The impacts of digitalisation on the working of the public sector are manifold. At the most general level, most studies in this domain assume that there is a massive impact of digitalisation on the productivity of the public sector, the delivery of services to citizens and companies and the interactions with citizens. Still, the speed of digitalisation across different administration still varies substantially.

The drivers for innovation in the public sector are somewhat different than in companies. Innovation activities in companies are shaped by technological opportunities, appropriability conditions and demand (Nelson, Winter (1982); Cohen, Levin (1989)). Digitalisation is first of all increasing technological

opportunities that make it easy to develop a more advanced version of a product or services or improve the production process. This holds for both public sector institutions and companies.

The innovation process differs substantially as traditionally – but this is about to change - the public sector is not equipped with R&D units (EY (2018)), most of the technological opportunities are realised by investing in new technologies and making them work in the expected way. The public sector has in many instances been a great promoter of open innovation techniques to integrate stakeholders and citizens in innovation processes. Additionally, new innovation methods like design thinking, lean startup and behavioural economics are taking a hold in the public sector and are greatly enhancing innovation skills and performance. The risks associated with innovation are surprisingly not that different from companies.

Politicians and decisions-makers in the public sector have a wider set of objectives to fulfil by designing interventions for a highly complex economic system and society. Public actors aim at shaping the outcomes and outputs but are one actor among many. Attribution of a certain outcome to a specific intervention may thus be difficult and/or demand tedious research and evaluation. Many of the interventions of the public sector only produce outcomes in a medium- or long-term perspective. It takes time for measures to unfold their impact as well as for companies and citizens to adapt their behaviour based on the changed environment. This process may demand learning and adaptations on the side of the public sector, as well with the intention to create virtuous cycles which increase goal achievement. Frequent innovations are a necessary input for the working of such a system.

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Digital and e-government, digital workflows and reporting and visualisation

“Digital or e-government” is one of the outcomes enabled by digitalisation in the public sector. Digital Government/e-government is often defined as production and delivery of information and services within government and between government and the public using information and communication technologies (Fountain (2002)). Through Digital Government, internal government operations and services for the citizens are to be improved with digitalisation of public services and consequent changes within the organisation being the tools to achieve the desired progress (Lindgren, van Veen (2018)). Digital government is thus frequently seen as a major driver of transformation of the public sector (e.g. see Cordella, Bonina (2012); Lindgren, van Veen (2018)).

Digitalisation has increased the scale and scope of the supply of new technologies that could be employed in the public sector to increase efficiency and efficacy. This is a continuation of the traditional use of digital technologies in the public sector⁵. Still digitalisation does not stop here: digital technologies also allow to make public processes more transparent, granting wider access to data online and interaction directly in two-way communications with stakeholders to provide new services, insource knowledge and experience and get inspiration for policies and actions.

Leaving the meta level and moving closer to the actual implementation level of e-government, digitalisation changes the production process in the public sector by digitising existing workflows. This goes well beyond the use of personal computers and office software. Digitalisation of workflows aims at the seamless and fully digitalised integration in the production of public services. Analogue to digitised production process in manufacturing, this allows for new ways of service delivery, monitoring of service production and remodelling of production processes.

Reporting and visualisation – the main topics of this study – build on increasingly digital workflows. The “performance” of reporting and its visualisation depends in multiple ways on the previous steps in the workflow as well as on advances in the fields itself. Each of these steps has its own challenges but altogether they shape the potential of reporting and visualisation approaches.

The practical implication of the digitalisation of workflows demand that workflows are studied, changed or even developed from scratch, in order to make the digital system work. This may be either a simple translation of an existing workflow into a

⁵ Yildiz (2007) pointed out that the public sector had always been one of the first and also most innovative users of digital services. The demand from space and military programmes where – according to some authors – instrumental in the development of IT software and hardware.

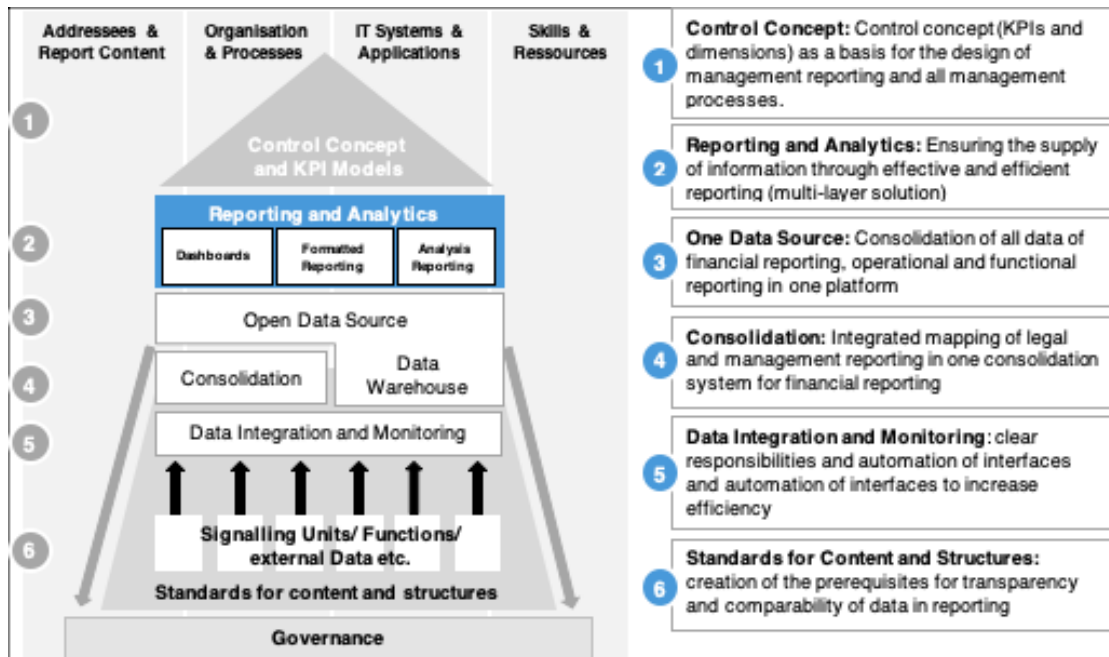
digital environment or – more likely – a complete rework of how the public sector operates.

Workflows are structured differently and constructed with varying degree of complexity. For the illustration of visualisation and reporting workflows, the following stages might suffice: Data collection; data processing; data analysis; reporting; and visualization. Mixing the workflow with digital technologies and some of the potential outputs renders this representation of a digital reporting and visualisation workflow (see also figure 4):

- Collection tools: Where and how is data collected, one-off survey, part of the workflow
 - Data mining
- Processing tool: debugging and transforming data
 - Data Warehousing
- Statistical analysis tools: finding patterns and structures in data
 - Data mining
 - Business analytics
- Reporting tools: analysing data and presenting insights
 - Automated reports
 - Performance cockpits
- Display tools: presenting and creating understanding of insights
 - Static/interactive
 - One variable/two or many variables
 - Dashboards

Digitalising workflows in the public sector is a main driver in reaping the benefits of digital technologies and making public sector more efficient and effective as well as more transparent and accountable. But technologies alone are not enablers. They need considered concepts to be implemented in a way that improves the inner working and service delivery to stakeholders. Figure 4 illustrates not only the need for concepts that steer the implementation of better reporting and visualisation structures, but also hints that changes have to be applied at all layers of the public sector: organisation and processes, IT systems and applications and skills and resources. Skipping parts of this transversal process results in frictions and sub-par performance.

Figure 4: Reporting Workflow



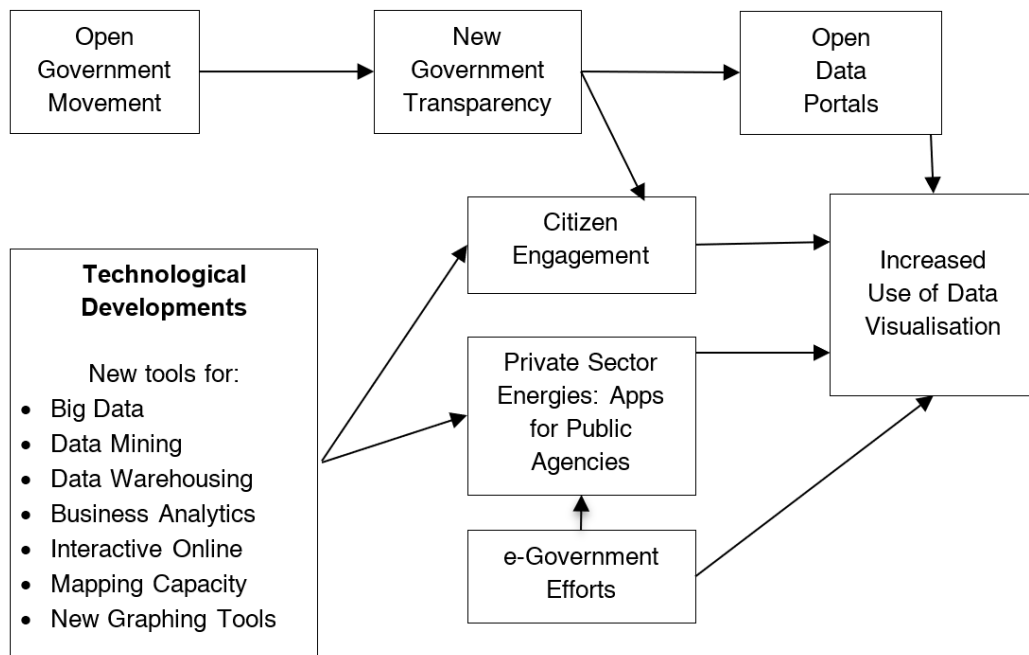
Source: Klein, Gräf (2017).

Reporting and visualisation

The steadily increasing amount and availability of data is a direct consequence of progressing digitalisation in all parts of life. It demands easily accessible forms of representation that convey the overall situation and the change over time. Visualisation in reporting is thus an “intuitive” answer to the ever-increasing data overload and can be used for internal reporting or informing of wider audiences.

In recent decades, a number of societal, managerial and technological developments have both enabled and increased the need for intensified reporting with recourse to increased visualisation of contents. Stowers (2013) identifies the open government movement, the provision of open data and increased citizen participation as a main driver for visualisation. Likewise, new technological developments – for example big data, data mining, data warehousing and business analytics – create new avenues for citizen engagement and the provision of eGov services which many governments are keen to exploit by increasing efforts to intensify offerings. (see figure 5).

Figure 5: Emergence of increased use of Data visualisation

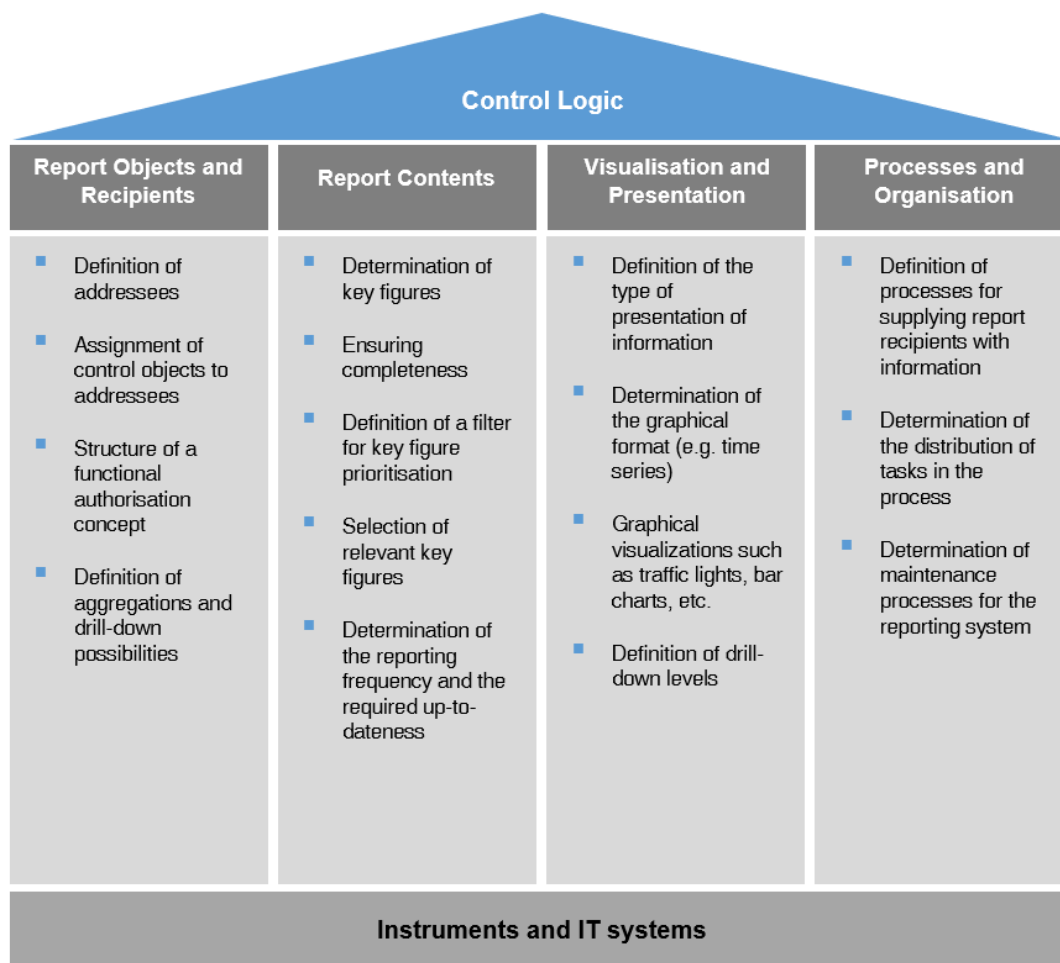


Source: Stowers (2013).

Public scrutiny has created a demand for transparent reporting and increased accountability standards. Up-to-date reports that accurately reflect the work of the public sector are an essential means to comply with these demands. Likewise, internal demand from decision-makers works in the same direction and supports the use of the growing sets of data produced in increasingly digital workflows for reporting purposes that also employ advanced visualisation techniques.

Reporting in this context means defining who get reports, what is in the report, how the information in the report is presented, and how the process is integrated into the organisation (figure 6). This control logic sits on top of the workflow that is again based on the IT infrastructure. The degree of digitalisation determines the resources needed for creating and distributing reports. A fully digital workflow enables automated reporting after the control logic of the report – as illustrated in figure 6 – was elaborated.

Figure 6: Control logic of reporting processes



Source: Klein, Gräf (2017).

Advanced reporting infrastructures allow the public sector to demonstrate that it has delivered on stated commitments, requirements, priorities, and has used public resources effectively. Reports on public sector activities and achievement are consequently published at least once a year, so that stakeholders can understand and evaluate the issues at stake and whether the public sector is delivering value for its money.

Digitalisation allows to increasingly report developments in real time and thus a shift towards “pull” services – i.e. the receiver requests the report rather than wait until the report is “pushed”/delivered in a meeting, in offline or online formats or uploaded to a portal – can be observed as the digitalisation of the workflow is advancing. This allows frequent reporting or actual interactive dashboards that present developments in real-time.

Visualisation

Visualisation practices and options have been steadily increasing in recent years, thus increasing the benefits of a structured and automated use of visualisation for reporting and performance measurement. Building on existing typologies and developing them further would contribute to better decision-making and the performance of public and private actors. Likewise, new technologies enable innovative interfaces between administrations, politicians and citizens. The drawback is that this has substantially increased the options at hand and consequently the complexity in finding the appropriate visualisation for any given data set.

While the potential benefits of new digital technologies are huge and pervasive, they will demand organisational change to develop their full impact and thus may also impact on the framework conditions for performance management overall.

“Interactive online mapping capacities” and “new graphing tools” are those technological developments that are of imminent importance for the topic to be researched as they actively shape the options at the interface between reporting and visualisation but also between the different actors in the field (administration to politicians, administration to citizens, politicians to citizens, administration to administration).

Because of the new developments in data analytics, the need of data visualisation is growing rapidly. There are a lot of new techniques and possibilities to get and process data. Examples for these new developments are the use of data warehouses and data mining by government employees to answer more complicated kinds of questions or searching for patterns in data. The challenge is to explain the issues and results emerging from the data analysis to decision-makers and the public. Data visualisation is also a way to communicate data to citizens and foster citizen engagement (see also Stowers (2013)).

Types of Visualisation

Visualisation has been a widespread strategy in the public sector (and elsewhere) to support decision-making and create interface with citizens. Smith et al. (2009) previously found and described 170 data visualisation examples in the public sector in the UK already in 2009.

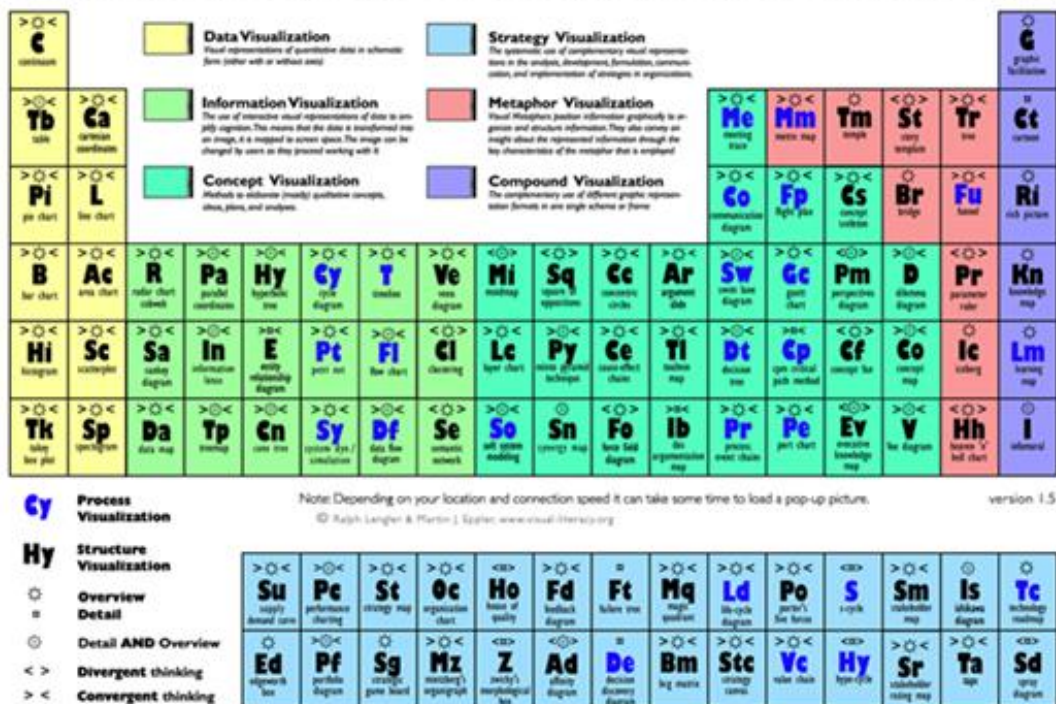
Lengler and Eppler (2007) developed a periodic table of visualisation methods for management (see figure 7). This table distinguishes the following data visualisation approaches:

- **“Data Visualisation”** which includes standard quantitative formats like pie charts, area charts or line graphs. In this category you’ll find visual representations of quantitative data in schematic form.

- **“Information Visualisation”**. It includes semantic networks or tree maps and is defined as “the use of interactive visual representations of data to amplify cognition.”
- **“Concept Visualisation”** can be a concept map or a Gantt chart, which are methods to construct qualitative concepts, ideas, plans etc. through rule-guided mapping procedures.
- **“Metaphor Visualisation”**, including methods like metro maps or story templates. These methods can convey complex insights, because they position information graphically to organize and structure it and they also “convey an insight about the represented information through the key characteristics of the metaphor that is employed.” (p.4).
- **“Strategy Visualisation”** like a Strategy Canvas or technology roadmaps is defined “as the systematic use of complementary visual representations to improve the analysis, development, formulation, communication, and implementation of strategies in organisations.”
- **“Compound Visualisation”** contains several above-named formats as it includes the complementary use of different graphic representation formats in one single frame. (Lengler, Eppler (2007)) For more detailed information visit where you’ll find an example for every single visualisation method.

Figure 7: A periodic table of visualisation methods

A PERIODIC TABLE OF VISUALIZATION METHODS



Source: http://www.visual-literacy.org/periodic_table/periodic_table.html

Unfortunately, there is no new version of the periodic table since 2007, which makes it hard to use for the technologies of today. One reason for not having a new

version could be, that the increased possibilities of creating visualisations make it very challenging to provide a concise summary.

Stowers (2013) developed an easier way to structure the different types of Data Visualisation (see table 2). The range of the visualisations ranks here from static two-dimensional representation to highly interactive and citizen-friendly visualisation with more than two variables.

Table 2: Types of Data Visualisation Available Today

| Data Viewable / Manipulable | One or Two Variables | More than Two Variables |
|-----------------------------|--|---|
| No: Static | <ul style="list-style-type: none"> ■ Old School Charting ■ Basic Paper Charts—Excel, etc ■ Basic Paper Graphs | <ul style="list-style-type: none"> ■ Old School Plus ■ Infographics ■ Static Dashboards |
| Yes: Interactive | <ul style="list-style-type: none"> ■ Limited Interaction ■ Online Charts ■ Online Maps | <ul style="list-style-type: none"> ■ Highly Interactive and Citizen-Friendly ■ Interactive Dashboards ■ Interactive Online Charts and Maps |

Source: Stowers (2013).

Software/IT systems to digitise the workflow/tools for visualisation

As there is a wide range of ways to visualise data, there’s also a **wide range of tools for constructing these visualisations**. datos.gob.es (2013) show that there are different types of tools that help in the visualisation of data. **“Processing tools”** were designed “to assist in the debugging and the transformation of data.” Messy data can be cleaned, refined and also converted into appropriate formats with these tools.

“Statistical analysis tools” help combining graphical representations of data with a strong numerical analysis. One example here is the R project for Statistical Computing. **“Display services”** stand for generic visualisation applications. Some of these applications use conventional tables and charts while others use new options such as tree diagrams or word clouds.

Also included in “Display services” are Geospatial visualisation tools, which can be used for representing geographic data. Examples are OpenHeatMap, OpenLayers and OpenStreetMap. Another interesting type of “Display services” are temporal

data visualisations, which can be used when time is an important component of the analysis.

The last type of tools is called “**Tools for network analysis**”. Tools in this category are interesting for social networks analysis, where “people and connections among them can be represented from different data sets.”

There is not strict correspondence between the type of data to be displayed and the visualisation method, i.e. the chart type used. Although there are ongoing efforts to apply machine learning and user inputs to better match chart types to the nature of data to be visualised, deciding on how to visualise data still has to be made by humans.

Résumé

Reporting and visualisation build on increasingly digital workflows as well as on the advance in the fields itself. The practical implication of the digitalisation of workflows demand that workflows are studied, changed or even developed from scratch, in order to make the digital system work. This may be either a simple translation of an existing workflow into a digital environment or – more likely – a complete rework of how the public sector operates. The outcome of this change process will set the scope for the reporting and visualisation practices of the public sector.

Demand for transparent reporting has increased and is manifest in tightened accountability standards. Up-to-date reports that accurately reflect the work of the public sector are an essential means to comply with these demands. Likewise, internal demand from decision-makers works in the same direction and supports the use of the growing sets of data for reporting purposes that also employ advanced visualisation techniques.

The need for data visualisation is growing in line with reporting needs. There are a lot of new techniques and possibilities to get and process data and eventually automatise the reporting and visualisation workflow. Examples for these new developments are the use of data warehouses and data mining by government employees to answer more complicated kinds of questions or searching for patterns in data. The challenge is to explain the issues and results emerging from the data analysis to decision-makers and the public. Data visualisation is also a way to communicate data to citizens and foster citizen engagement (see also Stowers (2013)).

Results of the survey on digitalisation in the public sector

Survey design and approach

The survey developed for the Austrian Presidency is meant to contribute to the EUPAN networks discussions on digitalization and innovation in European public administrations. The survey investigates the impacts of digitalisation on reporting and visualisation practices, which help to better present developments resulting from government actions pursuing goal attainment. Additionally, the survey focuses on the role of reporting and visualisation in performance management.

The survey was conducted in August 2018 with an extension into September. Overall 24 completed questionnaires were received covering 21 countries and the European Commission. The following countries participated in the survey: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Italy, Ireland, Luxembourg, Latvia, Malta, Norway, Poland, Portugal, Romania, Slovak Republic and Slovenia. This is a good base to assess the current state and future development of the study topics.

The topics of interest – which are broadly speaking digitalisation, performance management, reporting and visualisation in the public sector – are incorporated in the survey and grouped into the following three sections

- Section 1 (chapter III-V) documents innovations, impacting factors and results regarding the reporting and visualisation workflow.
- Section 2 (chapter VI-IX) focuses on performance management and the role of reporting and visualisation in performance management.
- Section 3 (chapter X) asks for examples that document these innovations.

The questionnaire can be found in Annex 1.

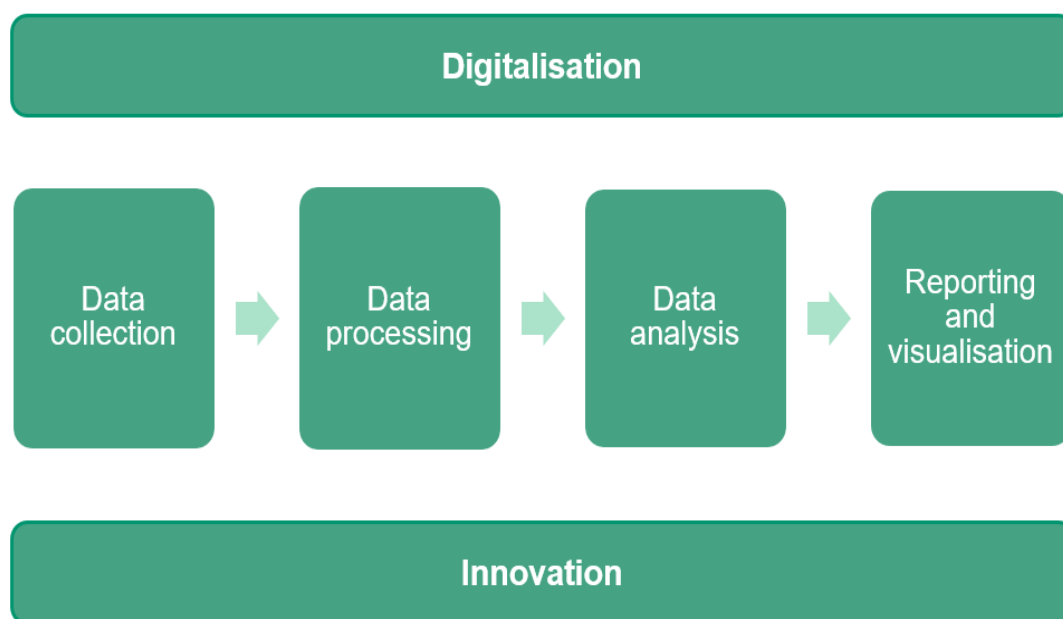
Past and future (workflow) innovations

Reporting and visualisation build on a working process, a workflow, that encompasses data collection, data processing, data analysis, reporting and visualisation. The quality of reporting and visualisation depends in multiple ways on the previous steps in the workflow as well as on advances in these segments. Each of these steps has its own challenges, but altogether shape the potential of reporting and visualisation approaches to leverage internal management practices, help evaluating past performance, foster evidence-based decision making and keep citizens, media and civil society updated on the various activities of the public sector.

Digitalisation has a big impact on all segments in this workflow and thus eventually enables innovations in reporting and visualisation. The alternative approach, to only study the reporting and visualisation part, would neglect the base innovations in the preceding segments and – as an analogy – measure the equivalent “end of the pipe” solutions in combating environmental degradation. Changes only in the reporting and visualisation segment are limited in scope and scale and would thus create a biased impression of innovation as the later frequently depends on innovations in earlier process steps.

Practical measurement relied on the methodology developed for the Community Innovation Survey which is the de facto standard for measuring innovation activities in enterprises (see Eurostat Metadata (2014)). Here the question about innovation activities between 2015 and 2017 is directed towards the reporting and visualisation workflow which – given the way it is defined here – governs most of government work. This also applies for the question asking for future innovations, i.e. between 2018 and 2020.

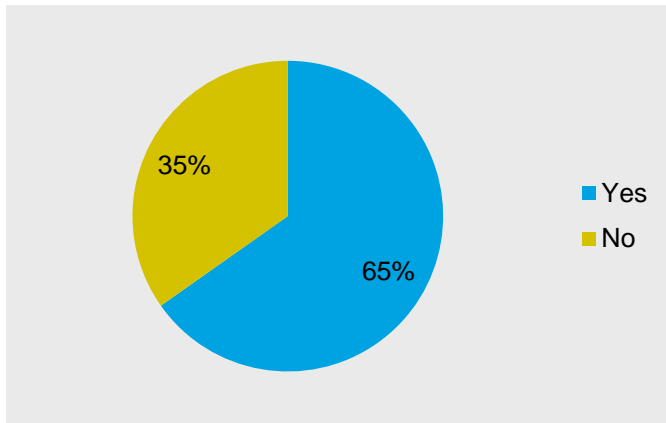
Figure 8: Digitalisation and innovation in the reporting and visualisation workflow



Past and Future Innovations

Sixty-five percent of the participants indicated significant innovations in the reporting and visualisation workflow (including data collection, manipulation and aggregation and data analysis) in the public sector of their country between 2015 and 2017. Innovation efforts in the public sector are substantial with only one-third of respondents abstaining from significant innovations in the workflow.

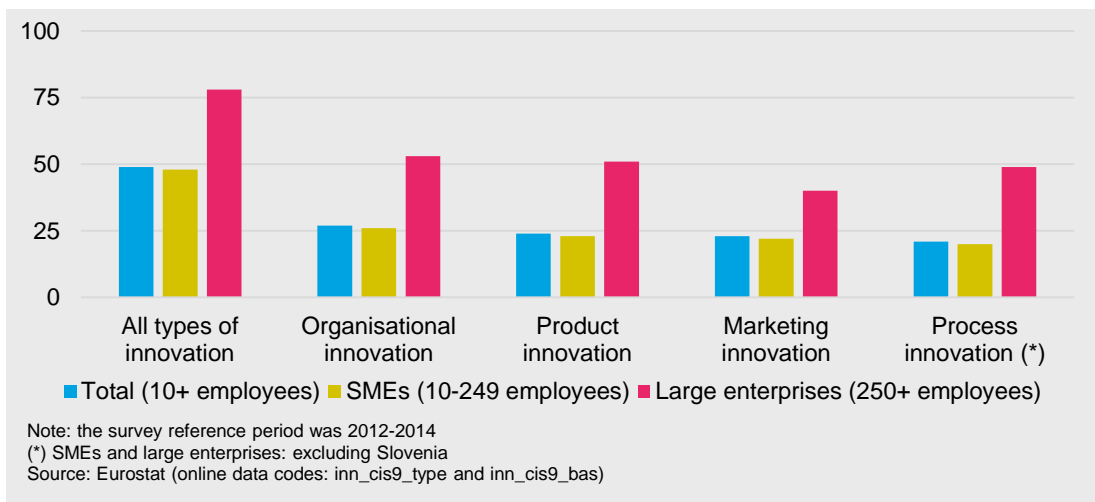
Figure 9: Share of countries that introduced significant innovations in the reporting and visualisation workflow between 2015 and 2017.



Source: Own survey

It is somewhat difficult to find appropriate benchmarks to put this figure into perspective. Many public sector organisations have thousands of employees and would thus count as large companies in the private sector. As the share of innovators increases over size classes, the share of innovative large companies might be a benchmark. The numbers from the latest Community Innovation Survey 2014 suggest that public administrations perform rather well. Large companies still have a higher share of innovative companies – more than 75% are innovative – but these numbers are not as far apart as some observers would have guessed. The overall number of innovative companies across Europe stand at roughly 50% and the share of innovators is thus somewhat lower than among public administrations.

Figure 10: Share of innovative companies in Europe by size class (CIS 2014)

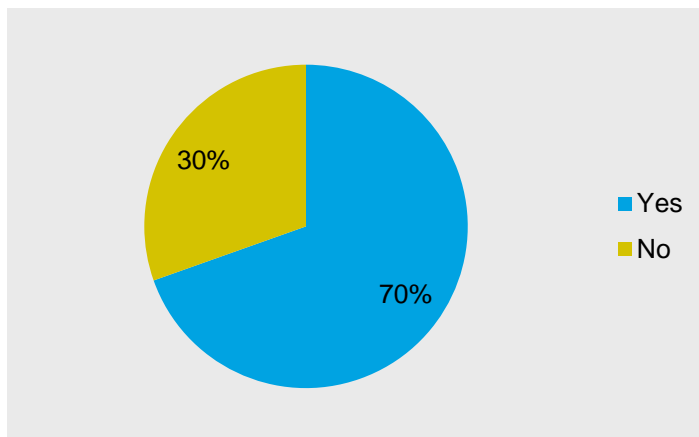


Sources: Eurostat - https://ec.europa.eu/eurostat/statistics-explained/images/c/c4/Share_of_enterprises_that_are_innovative%2C_EU-28%2C_2012%E2%80%932014_%28%25%29_YB17.png

It is obvious that this enterprise data out of CIS provides only a very crude anchor to assess the numbers obtained from the survey on significant innovations in the public sector. The practical examples shed some light on the nature of innovations which range from a new database that contains data for all ministries and combat silofication, new portals for procurement issues, big data applications, cockpits to monitor developments in the health sector, open data on budgets, to dashboards that support management by objectives.

Innovation activities in the public sector are thus broad and varied and unlikely to abate in the future as still a lot of experimentation – that precedes the roll out of digital products – is taking place. About 70% of respondents are aware of significant innovations to be introduced in the reporting and visualisation workflow in the public sector of their country between 2018 and 2020. The number of future innovators is slightly higher than in the past. Many of the envisaged innovations are related to performance management and seem to underline a general strive for more efficiency and effectiveness in the public sector as well as the provision of open data and citizen information. Data warehousing and an increased emphasis on business analytics are process innovations on which many future innovations will build.

Figure 11: Share of countries with potentially significant innovations in the reporting and visualisation workflow in the future.



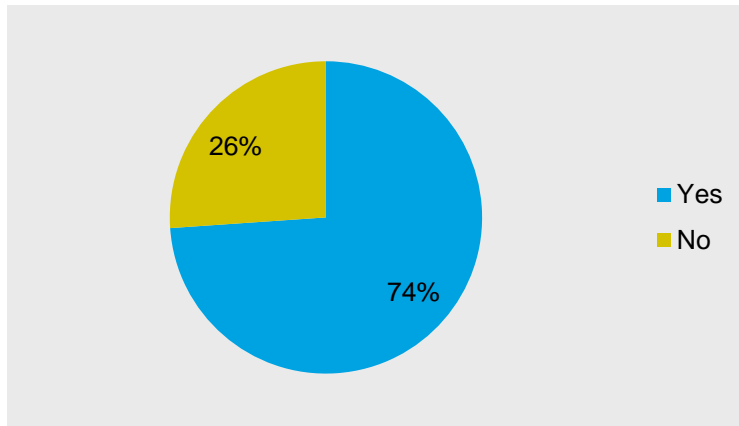
Source: Own survey

Given the high level of past and future innovators among the surveyed countries, the bulk of countries are continuously innovative. There are two exceptions: one country with innovation in the past may not be among the ranks of innovators in the 2018–2020 period. Out of past non-innovators, 2 foresee innovations in the period up to 2020. Thus there is a small group of constant non-innovators, a large group of continuous innovators and a group of about 15% of respondents that (significantly) innovates occasionally.

The examples for past and future innovations were all digital products, services and processes. To be efficiently implemented, many of these innovations demand, or

are enabled by, a fully digital workflow. Not surprisingly, 74% respondents answered that their country is making efforts to achieve a fully automated workflow. As will be further elaborated in the section on performance management below, the spread between the most and least advanced countries in the digitalisation of the workflow is large.

Figure 12: Efforts to achieve a fully automated workflow



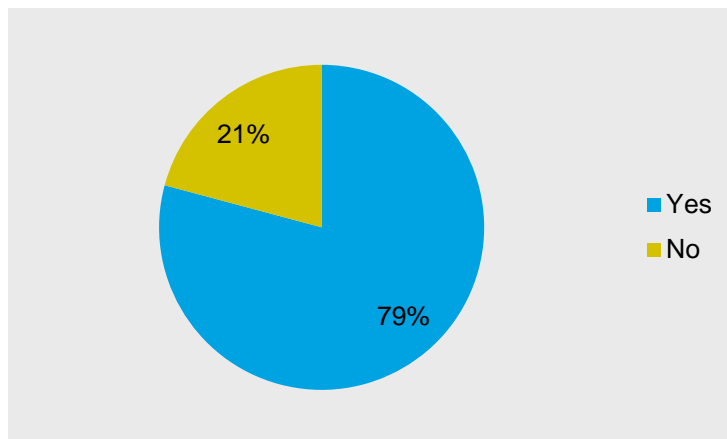
Source: Own survey

Workplace changes

The questions on past and future innovation activities are supplemented with spotlight questions on the aim of innovation efforts, its impact on the organisation and work practices. These questions help to better understand if digitalisation is a driver of innovations and if complementary steps in workplace practices and organisation help to reap the benefits of new technologies. Missing organisational and workplace flexibility would most likely result in low productivity gains despite (potentially) high investments in digital technologies (Brynjolfsson, McAfee (2014)).

A total of 79% of participants said that digitalisation significantly impacted work practices, the organisation of work and efforts to (re)train employees in the public sector in their country.

Figure 13: Impact of digitalisation on work practices, the organisation of work and efforts to (re)train employees



Source: Own survey

Examples of the impact of digitalisation on work practices, the organisation of work and efforts (re)train employees in the public sector:

- **Performance tracking:** Constant/real time visibility of progress, objectives and time/budget parameters allows monitoring and efficient identification and response to issues and risks.
- **Improved process management:** Impact on improving and understanding processes of whole organisation from strategy of business processes to information architecture.
- **Enabling coordination:** Organised and linked work-flows displayed in one system. This enables the generation of timely reports and limits follow ups.
- **Big data:** Data warehouses and business analytics installed as central building block allow for horizontal service provision for governmental agencies.
- **Skills trainings, also in cooperation with universities and research institutes:** training programmes to get employees up to date with technological developments, encompassing e.g. data science, business intelligence, machine learning, and open data management for different groups in the institution
- **Digital services replace analogue services:** This applies to interfaces with the general public like self-service portals, and for internal processes (e.g. e-procurement, e-cabinet meetings).
- **Government services as SaaS (Software as a Service) for municipalities:** Rather than building decentralised IT systems, services can be provided centrally and used in accordance with the needs of clients.
- **Digital HR system:** online competency profiles, evaluation and selection of candidates. These systems allow for a better management and planning of human resources overall.

- **Experimentation:** A substantial number of pilots are organised to study in more detail the possibilities and consequences of digitalisation in the public sector.

Supply and demand side factors

Most public administrations aim at automated workflows that encompass all routines ranging from data collection to visualisation. This is driven by technological advances, new management routines and new trends in governance. The spectrum of drivers is broad, as both supply and demand side factors have impact on the reporting and visualisation workflow. Therefore a broad set of potentially impacting factors ranging from Big Data to the need to better inform stakeholders of the public sector was included in the question.

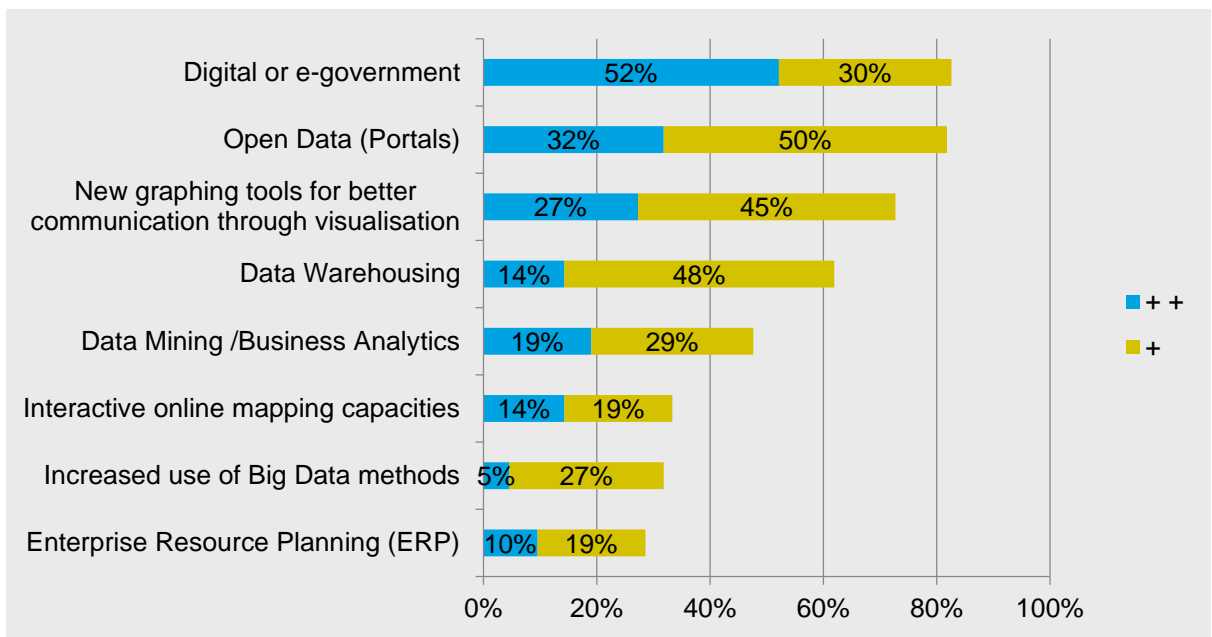
Technologies supporting “Digital or e-government” is on top of the supply side factors with 83% of participants voting indicating this is a very important (“++”) or important (“+”) factor. This is followed by “Open Data (Portals)” which were seen as important by 82% of respondents. “New graphing tools for better communication through visualisation” (73%), “data warehousing” (62%) and “data mining/business analytics” (48%) were attributed as important. Less than half of participants responded with “increased use of big data methods” (33%), “enterprise resource planning” (32%) and “interactive online mapping capacities” (29%) as trends that influenced changes in the reporting and visualisation workflow.

On the demand side factors, intensified efforts to reduce internal bureaucracy and cut red tape was the most important factor. In total, 96% of the participants responded that this is an important factor triggering changes in the workflow. However, many of the factors included in the survey were seen as important. Here is the ranking of the factors that were deemed important by at least 60% of respondents:

- Intensified efforts to reduce internal bureaucracy and cut red tape (96%)
- Increased efforts to treat service users as customers (83%)
- Better informed citizens (82%)
- Better and quicker dissemination of reporting data (78%)
- Effort to increase overall public sector productivity (77%)
- Transparency and open government (74%)
- Data driven/evidence-based decision making (70%)
- Shifted focus in performance management from input to output and outcome targets (65%)

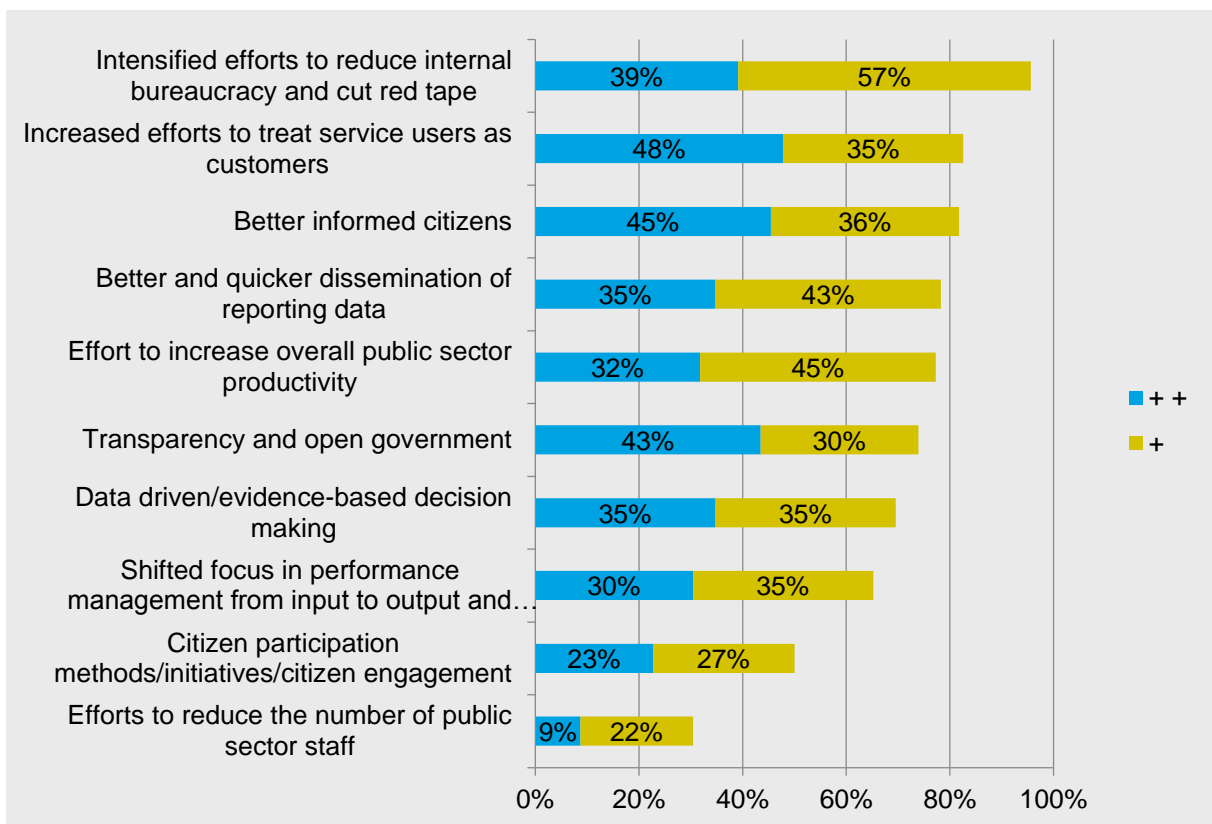
The trends “Citizen participation methods/initiatives/citizen engagement” (50%) and “Efforts to reduce the number of public sector staff” (32%) seem to be less important demand factors according to the participant’s answers.

Figure 14: Supply side factors



Source: Own survey

Figure 15: Demand-side factors



Source: Own survey

The overall picture that emerges on the supply side is somewhat blurred. Digital or e-government as well as open data have a “dual” nature as there are not only technologies that support efforts in these areas but there are also services to be provided in the field of e-government and open data. Thus they could be classified as both supply and demand side factors. Together with the other most important demand side factors – i.e. efforts to reduce bureaucracy and increase productivity, treat service users as customers, better inform citizens and public sector employees, and foster data-driven decision making – they seem to be the drivers behind actual digitalisation efforts in the public sector. There is little evidence that the abundance of newly available digital technologies created a technology push that triggered changes in the public sector. These tend to be the “means” to achieve the above mentioned objectives.

Output of digitalisation of workflow

The last question in the part on innovation of the survey focussed on the output and outcome of increased digitalisation in the public sector. There is a large number of issues that were impacted by increased digitalisation of the workflow. On the top of the list are “reporting and monitoring” and evidence-based decision which seem to benefit most from a more digital workflow. “Timely access to data” was also highly ranked (68%) as well as “transparent public sector activities” (65%).

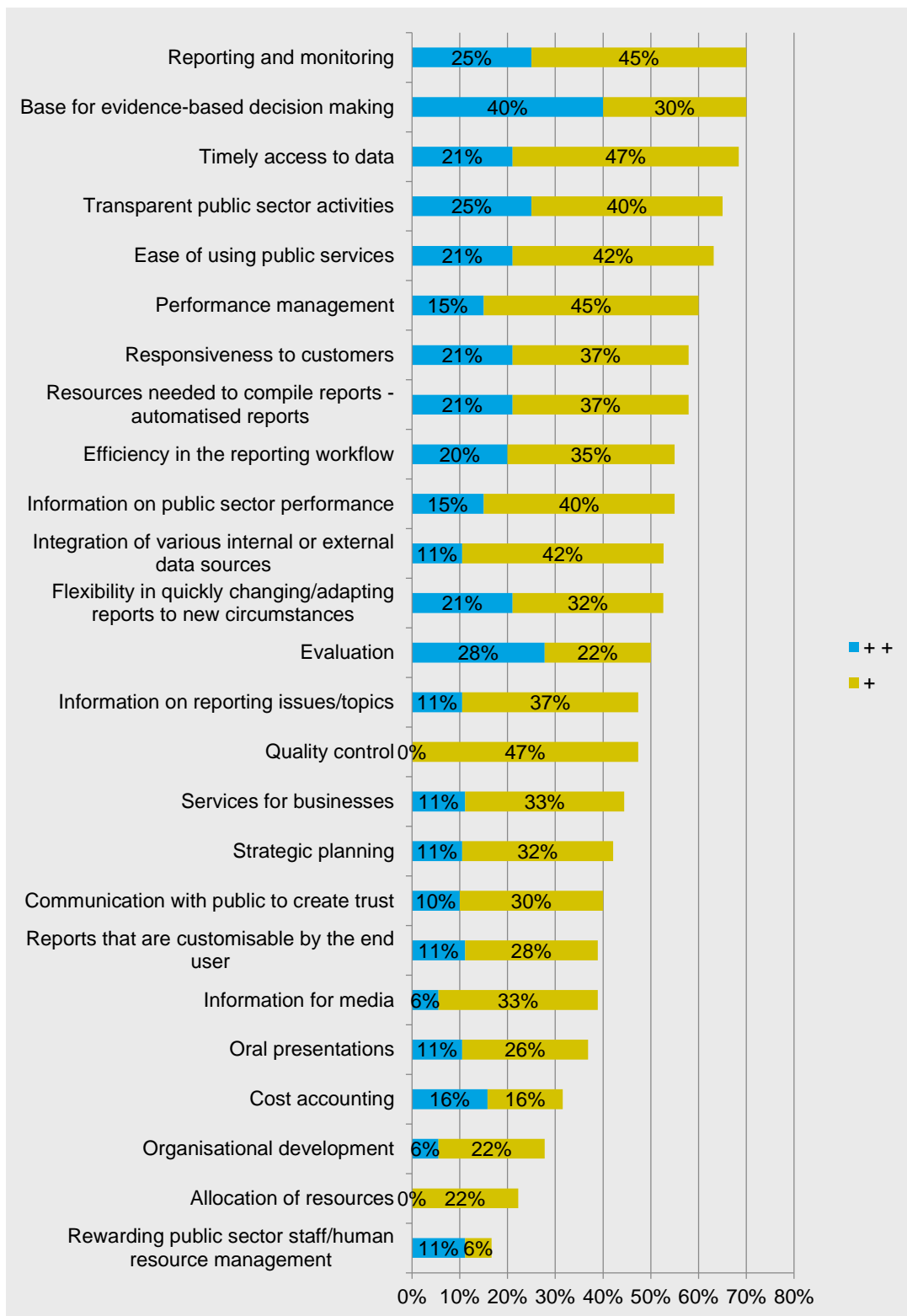
The ranking of other topics is as follows:

- Reporting and monitoring (70%)
- Base for evidence-based decision making (70%)
- Timely access to data (68%)
- Transparent public sector activities (65%)
- Ease of using public services (63%)
- Performance management (60%)
- Responsiveness to customers (58%)
- Resources needed to compile reports – automated reports (58%)
- Efficiency in the reporting workflow (55%)
- Information on public sector performance (55%)
- Integration of various internal or external data sources (53%)
- Flexibility in quickly changing/adapting reports to new circumstances (53%)
- Evaluation (50%)
- Information on reporting issues/topics (47%)
- Quality control (47%)
- Services for businesses (44%)
- Strategic planning (42%)
- Communication with public to create trust (40%)
- Reports that are customisable by the end user (39%)
- Information for media (39%)
- Oral presentations (37%)
- Cost accounting (32%)

- Organisational development (28%)
- Allocation of resources (22%)
- Rewarding public sector staff/human resource management (17%)

It is important to note that the “very important” and “important” categories render a large number of relevant issues. A closer look on the “very important” category only, results in a different ranking. Evidence-based decisions making (40%), evaluations (28%), reporting and monitoring (25%), transparent public sector activities (25%), timely access to data (21%), ease of use of public services (21%), and efficiency in reporting (20%) are the areas which seem to be impacted most by digital technologies. With the exception of easier usable public services, these impacts of digitalisation seem to strongly materialise in the internal working of the public sector and related to a core property of digitalised systems: producing data in abundance that allows to monitor many activities in much greater details and real time. This may result in speedier service delivery, easier evidence-based decision making and increased accountability. Not all of this seems to transcend into the public sphere.

Figure 16: Impact of innovations in the reporting and visualisation workflow



Source: Own survey

Correlations

So far each indicator was analysed separately. Now we extend the scope and analyse the correlation between the quantitative indicators around innovation behaviour in the public sector. Correlations offer insights into how the variables are related and whether the relationship is positive or negative, i.e. positively related if one indicator goes up/down and the other goes up/down too; they are negatively correlated if one indicator goes up while the other goes down or vice versa. Correlations do not indicate causality, i.e. identifying the indicator that triggers a specific behaviour. Consequently, statements on what caused a certain development or effect cannot be substantiated by correlations.

The statistical significance of the correlation score at the 90% and 95% significance level was also calculated. A significant correlation coefficient indicates that the coefficient is with 90% or 95% probability different from zero, meaning that correlation is real and not by chance. In figure 17 coefficients that are significant at 95% are in dark green while those significant at 90% are in a brighter green. Similarly, negative coefficients are in different shades of reds.

Figure 17: Correlation between innovation variables

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|------|-------|-------|------|------|------|----|
| 1 Significant innovations 2015 and 2017 | 1,00 | | | | | | | | | | | | | | | | | | | | |
| 2 Significant innovations 2018 and 2020 | 0,47 | 1,00 | | | | | | | | | | | | | | | | | | | |
| 3 Fully automated workflow | 0,11 | 0,17 | 1,00 | | | | | | | | | | | | | | | | | | |
| 4 Changed work practices, organisation & training | 0,11 | -0,07 | 0,49 | 1,00 | | | | | | | | | | | | | | | | | |
| 5 New graphing tools | 0,43 | 0,24 | 0,04 | -0,08 | 1,00 | | | | | | | | | | | | | | | | |
| 6 Big Data methods | -0,39 | 0,04 | 0,16 | 0,01 | 0,04 | 1,00 | | | | | | | | | | | | | | | |
| 7 Open Data (Portals) | 0,21 | -0,07 | 0,21 | 0,21 | 0,08 | -0,29 | 1,00 | | | | | | | | | | | | | | |
| 8 Data mining /Business Analytics | 0,24 | -0,01 | 0,39 | 0,16 | 0,54 | 0,37 | 0,07 | 1,00 | | | | | | | | | | | | | |
| 9 Data Warehousing | 0,21 | 0,50 | 0,22 | -0,02 | 0,59 | 0,15 | -0,08 | 0,42 | 1,00 | | | | | | | | | | | | |
| 10 Interactive online mapping capacities | 0,05 | 0,39 | 0,04 | -0,14 | -0,03 | 0,40 | -0,44 | 0,04 | 0,34 | 1,00 | | | | | | | | | | | |
| 11 Digital or e-government | -0,02 | 0,46 | 0,03 | 0,03 | -0,11 | 0,23 | -0,09 | 0,05 | 0,18 | 0,44 | 1,00 | | | | | | | | | | |
| 12 Enterprise Resource Planning (ERP) | -0,05 | 0,42 | 0,26 | -0,04 | 0,31 | 0,20 | -0,05 | 0,26 | 0,61 | 0,55 | 0,60 | 1,00 | | | | | | | | | |
| 13 Treat service users as customers | 0,05 | 0,64 | 0,01 | -0,21 | 0,18 | 0,06 | -0,03 | -0,02 | 0,36 | 0,22 | 0,75 | 0,56 | 1,00 | | | | | | | | |
| 14 Output and outcome targets | -0,19 | 0,13 | 0,26 | 0,15 | -0,07 | 0,55 | 0,02 | 0,27 | 0,09 | 0,41 | 0,04 | 0,29 | -0,06 | 1,00 | | | | | | | |
| 15 Reduce internal bureaucracy | -0,12 | 0,26 | 0,23 | -0,07 | -0,15 | 0,13 | 0,12 | -0,16 | 0,15 | 0,02 | 0,20 | 0,33 | 0,16 | -0,07 | 1,00 | | | | | | |
| 16 Transparency and open government | 0,16 | 0,36 | 0,26 | 0,05 | -0,24 | 0,28 | 0,05 | 0,15 | -0,06 | 0,50 | 0,56 | 0,30 | 0,39 | 0,44 | 0,16 | 1,00 | | | | | |
| 17 Quicker dissemination of reporting data | -0,01 | 0,24 | 0,09 | -0,05 | 0,16 | 0,35 | 0,06 | 0,29 | 0,36 | 0,30 | 0,13 | 0,46 | -0,04 | 0,40 | 0,26 | -0,02 | 1,00 | | | | |
| 18 Better informed citizens | -0,12 | 0,33 | 0,34 | 0,24 | -0,17 | 0,20 | 0,16 | 0,09 | 0,04 | 0,25 | 0,64 | 0,47 | 0,61 | 0,36 | 0,14 | 0,71 | -0,13 | 1,00 | | | |
| 19 Citizen participation methods | -0,12 | 0,39 | 0,26 | 0,06 | -0,07 | 0,42 | 0,05 | 0,23 | 0,06 | 0,40 | 0,54 | 0,51 | 0,52 | 0,59 | 0,02 | 0,67 | 0,30 | 0,77 | 1,00 | | |
| 20 Reduce the number of public sector staff | 0,00 | 0,37 | 0,00 | 0,00 | 0,09 | -0,06 | 0,40 | -0,26 | 0,14 | -0,04 | 0,37 | 0,39 | 0,54 | 0,00 | 0,42 | 0,13 | 0,11 | 0,42 | 0,31 | 1,00 | |
| 21 Data driven/evidence-based decision making | 0,13 | 0,34 | 0,16 | -0,15 | 0,46 | 0,44 | 0,01 | 0,51 | 0,35 | 0,12 | 0,24 | 0,40 | 0,37 | 0,17 | 0,10 | 0,05 | 0,59 | 0,05 | 0,49 | 0,20 | 1 |

Source: Own survey and calculations

The correlation analysis brings some relationships to light which would have been difficult to find based on the analysis so far. Some of them are very suggestive while others are difficult to interpret. Here the most pertinent correlations are presented without adding much interpretation:

- 1) Most correlations are positive. Thus, there seems to be one or more common causes behind them. The two negative correlations are difficult to interpret. Why the use of big data methods and past innovation are negatively correlated is left to speculation. Likewise, the negative relationship between open data portals and interactive online mapping capacities.

- 2) Interestingly, past innovation efforts are only correlated with few indicators. The positive relationship with future innovative activities seems straightforward as many countries are continuously innovative.
- 3) Future innovation activities are related both with technologies (data warehousing, interactive online mapping activities, enterprise resource planning, citizen participation methods) as well as with administrative and political goals (digital or e-government, treat service users as customers). This may hint at the general denominator in future innovation activities across European administrations.
- 4) Changes in work practices, organisation and employee training are only related to a fully automated workflow and the increased use of data mining and business analytics. This may indicate that a fully automated workflow – but also advances in big data and business analytics – demand changes in workplace organisation. As a fully automated workflow is on the agenda of most administrations, only the full implementation – it might be speculated – will be coupled with changes in the workplace.
- 5) Technologies driving digitalisation in the public sector are correlated, indicating that implementation of the whole bundle is needed – rather than patchwork or isolated deployment of technologies.
- 6) The goals of public administrations are also correlated. Thus, it seems that striving for digital or e-government is connected to treat service users as customers, transparency and open government, better-informed citizens and citizen participation as well as enterprise resource planning. Overall these hint at strategies that focus on citizens.
- 7) Enterprise resource planning seems to be the backbone of digitalisation of the public sector as it is both related to other digital technologies as well as the broader goals of modern public administrations vis-à-vis citizens.
- 8) Data-driven/evidence-based decision-making shows expected relationships. Significant correlations can be observed with new graphing tools, big data methods, data mining/business analytics, enterprise resource planning, and quicker dissemination of reporting data. This suggests a heavy (planned) reliance on digital technologies in future decision-making process of public sector employees.
- 9) Citizen participation methods interact with online mapping capacities, digital or e-government, enterprise resource planning, treating service users as customers, output and outcome targets, transparency and open government, and better-informed citizens. The correlations link citizen participation with the implementation of digital technologies, and variables hinting at open, transparent and well-informed governance styles in the public sector.
- 10) Last but not least, an increased orientation towards output and outcome targets is related with big data methods, interactive online mapping capacities, transparency and open government, quicker dissemination of reporting data and citizen participation methods. The use of new digital technologies seems to help internal processes but also shows a strong orientation towards the general public across European public administrations.

Résumé

The survey responses help to chart innovation efforts of the public sector and develop a rough understanding of ongoing innovation efforts across Europe. Although more detailed questions would be warranted given the complexity of the matter, the attraction of this low-key “innovation survey” is that it delivers quantifiable data that was not yet available.

Among participants, 65% indicated significant innovations in the reporting and visualisation workflow (including data collection, manipulation and aggregation and data analysis) in the public sector of their country between 2015 and 2017. Innovation efforts in the public sector are substantial with only one-third of respondents abstaining from significant innovations in the workflow.

It is somewhat difficult to find appropriate benchmarks that put this figure into perspective. Most public sector organisations have thousands of employees and would thus count as large companies in the private sector. As the share of innovators increases with the size of a firm, the share of innovative large companies might be a benchmark. The numbers from the latest Community Innovation Survey 2014 suggest that public administrations perform rather well. Large companies still have a higher share of innovative companies – more than 75% are innovative – but these numbers are not as far apart as some observers would have guessed. The overall number of innovative companies across Europe stand at roughly 50% and the share of innovators is thus somewhat lower than among public administrations.

These numbers have to be interpreted with caution nonetheless. Practical examples shed some light on the nature of innovations, which range from a new database that contains data for all ministries and combat silofication, new portals for procurement issues, big data applications, cockpits to monitor developments in the health sector, open data on budgets, to dashboards that support management by objectives.

Innovation activities in the public sector are thus broad and varied and unlikely to abate in the future as still a lot of experimentation – that precedes the roll out of digital products – is taking place. About 70% of respondents are aware of significant innovations to be introduced in the reporting and visualisation workflow in the public sector of their country between 2018 and 2020.

Innovation efforts cluster around topics and technologies. The correlation analysis hints that technologies driving digitalisation in the public sector are correlated, indicating that implementation of the whole bundle is needed rather than patchwork or isolated deployment of technologies. Enterprise resource planning (and its variants) seems to be the backbone of digitalisation of the public sector as it is both related to other digital technologies as well as the broader goals of modern public administrations vis-à-vis citizens.

The goals of public administrations are also correlated. Thus it seems that striving for digital or e-government is connected to treating service users as customers, with transparency and open government, better-informed citizens and citizen participation. Overall this hints at strategies that focus on citizens and are built on strong investments in digital technologies.

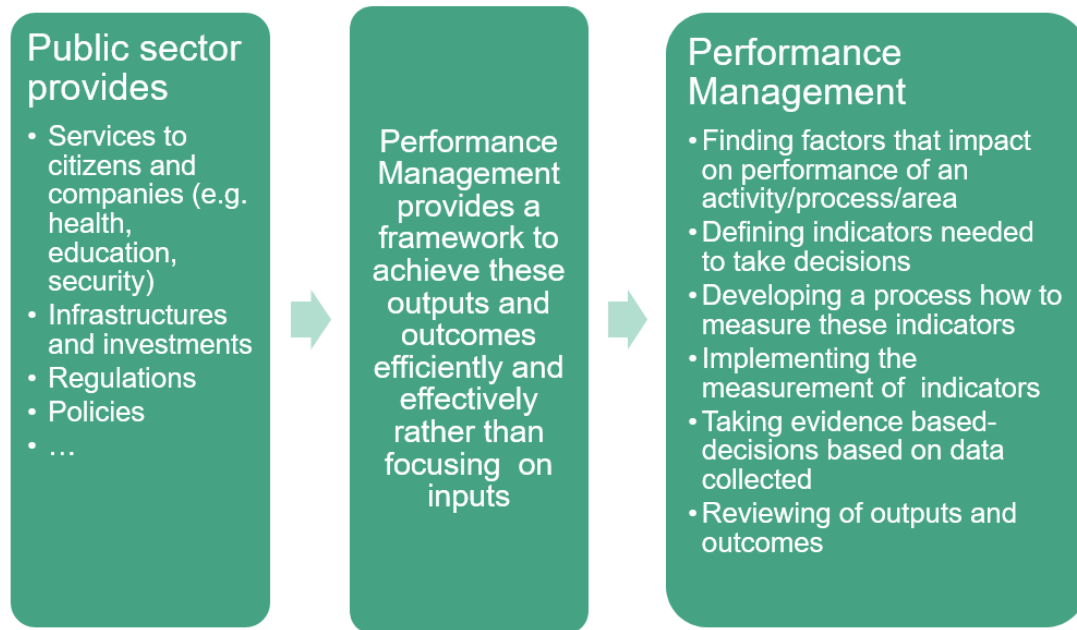
Many of the envisaged innovations are related to performance management and seem to underline a general strive for more efficiency and effectiveness in the public sector as well as the provision of open data and citizen information. Data warehousing and increased emphasis on business analytics are processes on which many future innovations will build.

Citizen participation is strongly related to already-advanced digital infrastructures in the public sector, i.e. online mapping capacities, digital or e-government, enterprise resource planning, treating service users as customers, output and outcome targets, transparency and open government, and better-informed citizens and seems to bode well with an open, transparent and well-informed governance style in the public sector.

Performance management

Production processes are designed to achieve objectives by using inputs to undertake activities, which result in outputs that lead to outcomes. Performance can be understood as outputs and outcomes of production processes. In the public sector the latter is public goods and/or public values like services to citizens and companies (e.g. health, education, security), public infrastructures, regulations, policies. Performance management is a data-driven process that measures and maps the real production process, which has been increasingly digitalised and automated. In this process performance management aims at establishing factors that impact on performance, defining indicators to measure these factors, actually measuring them and taking the results to take evidence-based decisions and further optimise the process itself (see see Dooren, Bouckaert and Halligan (2015) and figure 18).

Figure 18: From public sector services to performance management



Source: Based on Dooren, Bouckaert and Halligan (2015), own modifications.

Performance management is one of the areas demanding a working reporting and visualisation workflow as it has to communicate the results. This enables understanding, allows to steer activities and holds public activities accountable. The survey asked for information on how performance management is organised across European public sectors, i.e. its existence, incorporation, activities of responsible institutions and the role of citizens in this process.

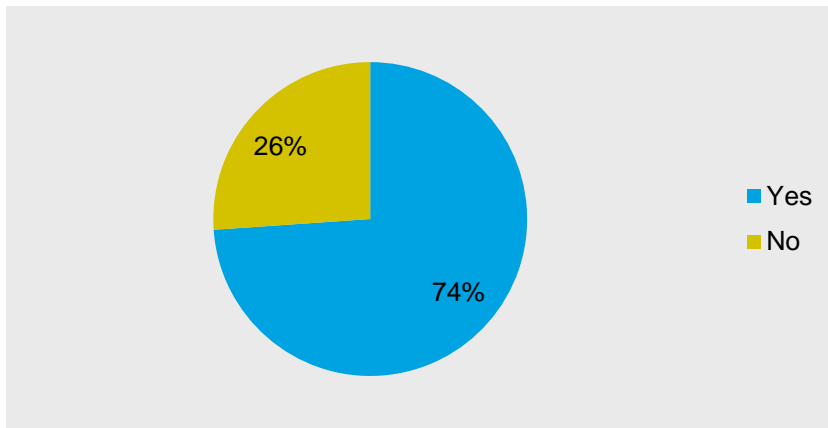
The workflow for reporting and visualisation, as well as changes to it, aims at improving the output and outcome – both in terms of quality as well as resources needed to produce it (productivity, efficiency). The survey focusses on the reporting and visualisation process that may have evolved from regular paper-based reports that were circulated to cockpits or dashboards that notify users whenever there are major updates. Likewise, what started as visualisation of a single variable may have evolved into an interactive visualisation platform producing those visualisations that are demanded by users.

Here the focus is at the practical importance of performance management across responding countries, how it's institutionalised, its scope and goal-setting process. This is followed by studying the impact of digitalisation on the workflow for performance management as a special case of the general workflow orientation in this survey.

Occurrence and institutionalisation of performance management

Performance management is on course to become a standard, digitalised practice across European administration. Of the participants of this survey, 74% indicated that their public administration has a working performance management system in place. Most of the countries that do not have a working system are in the process of either building a performance management system or are reworking existing systems.

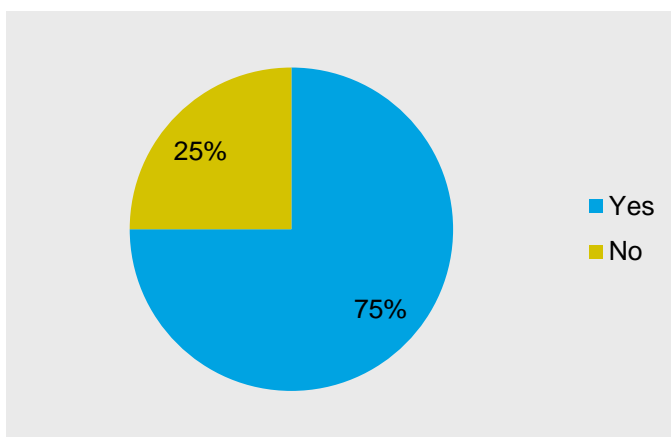
Figure 19: Is there a performance management system in place?



Source: Own survey

The standard way of implementing and running performance management system is by institutionalising them. Three-quarters of responding countries have a specialised government organisation responsible for performance management within the public service.

Figure 20: Is there a specialised government organisation in charge of promoting performance management?



Source: Own survey

The scope of performance management organisation differs from country to country although there is a clear pattern: 44% of the participants noted that the organisation is responsible for the “whole central government”. As multiple answers were allowed, adding the cases where the answers included whole government and individual ministries and/or directorates/unit increases this score to 61%. In 11% of answers “several ministries” represent the scope of performance management (see table 3). This pattern may be due to two different approaches: 1. Some of the responding countries are in the process of developing or rolling out performance management systems and thus start at department or ministry level and then scale up the activities. 2. Some countries – although this is clearly a small group – do performance management intentionally for different organisations in isolation.

Table 3: Scope of performance management

| What is the scope of the performance management organisation's work? | | |
|--|-----------|-------|
| | Frequency | % |
| Whole government | 8 | 44,4 |
| Several ministries | 2 | 11,1 |
| Directorate/unit within ministry | 1 | 5,6 |
| Whole Government + Individual ministry + Directorate/unit within ministry | 1 | 5,6 |
| Whole government + Individual ministry | 2 | 11,1 |
| Other | 7 | 38,9 |
| | | N= 18 |

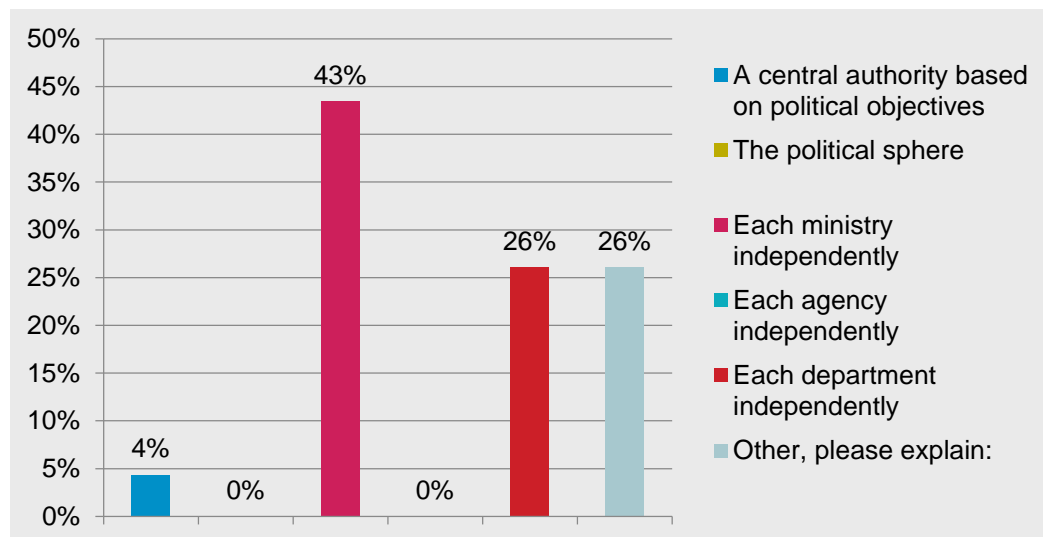
Source: Own survey

Overall responsibilities for performance management units focus on managing the performance measurement cycle (set objectives, implement them, measure output and outcome, evaluate results, learn for next cycle) and are mostly affiliated with ministries for public administration, ministries of finance, and ministries responsible for human resources. There is some exception to this affiliation pattern observed within the responding organisations.

While the scope of performance management encompasses mostly all of government, the setting of performance management goals is decentralised. Forty-three percent of the participants answered that goals were set by each ministry independently in their country. Departments are the focus of goal setting for 26% of the respondents. Only one country (4%) signalled that that performance

management goals are set by a central authority based on political objectives. About one-quarter of respondents do goal-setting processes which involve more than one of these groups. Nonetheless, agencies and also the political sphere play a small role in setting goals for performance management. This is rather done by public administrations and in a very decentralised manner.

Figure 21: Goals in performance management are set by



Source: Own survey

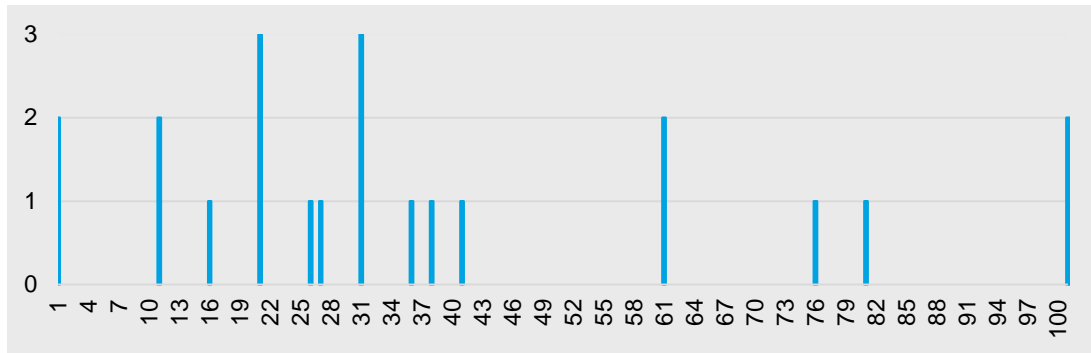
Also 26% added their own answer with the “Other” option, pictured in figure 21.

The digitalisation of the performance management workflow

Performance management follows in most cases an elaborate process to come up with relevant data and insights to manage the system and to allow for evidence-based decisions. Of course, the underlying workflow is increasingly digital as are all other workflows in the public sector. The question on the actual level of the digitalisation of the performance management workflow allows a glimpse where countries are with respect to this endeavour within a specific area.

There are clearly two groups of countries with respect to the digitalisation of the performance management workflow: the larger group (15 respondents) reports a digitalisation grade of less than 50%. The smaller group (6 respondents) signals a digitalisation of the performance management workflow of more than 50% up to 100%.

Figure 22: Percentage of the digitalisation of the performance management workflow



Source: Own survey

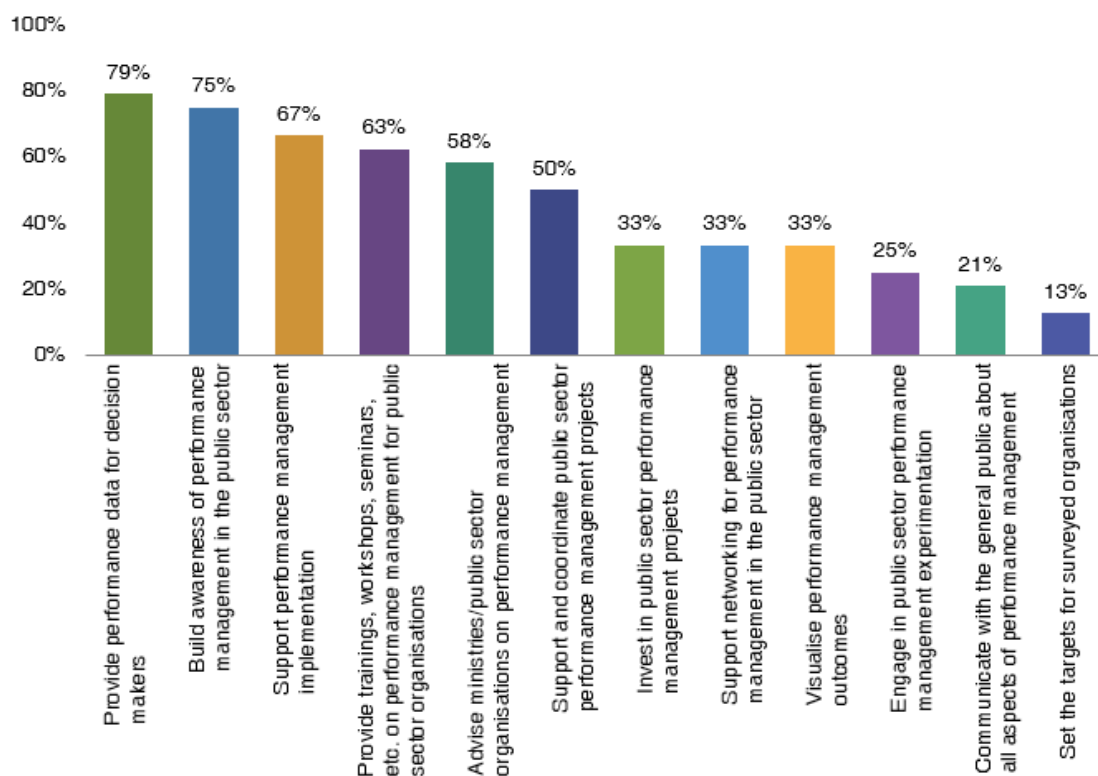
To set the slider in the questionnaire at the appropriate level of digitalisation of the workflow demands a lot of guesswork by the respondents and cannot be taken at face value. Thus, it does not make sense to compare the grade of digitalisation between countries – say 28% is worse than 41% – as the true value of digitalisation is not known by anybody and the estimates depend on individual knowledge of the system. Still, the estimates of the digitalisation grades are a simple indication of where a country might stand right now, i.e. at the beginning, advanced, or fully digitalised already. Given the nature of the data, these insights are to be taken from the observed pattern:

1. Digitalisation is not an even process across European administrations but – as in almost every other field – countries move into the same direction with different speeds and from a different starting point. Thus, there is obviously a common trend – inferred from the analysis above – but not yet coherence in outcomes nor any visible coordination.
2. Although every administration is impacted by digitalisation, the spread is from no digitalisation to full digitalisation – at least for the performance management workflow. This pattern may apply to other workflows for government processes at the country level too. Countries may lag in one area but lead in others, because there may be no coherent underlying framework but a patchwork of not-interconnected (legacy) systems. One of the main challenges of digitalisation in the public sector is to have a coherent IT system that integrates the various services and the attached workflows.

Activities and objectives of performance management

The objective of performance management seems to be obvious at first glance. Through a well-designed process, performance management delivers data and insights for decision makers in the public sectors. Vaguely speaking, based on past experiences, goals setting, measurement of goal attainment and evaluation of the process, the working of the public sector is continuously enhanced and optimised in order to produce the intended outputs and outcomes.

Figure 23: Activities and objectives of performance management



Source: Own survey

This stylised view of performance management is in line with the most important objective identified by respondents: “Provide performance data for decision makers” – selected by 79% of the participants. This is followed by the following five objectives of which each received more than 50% of at least “important” votes:

1. Build awareness of performance management in the public sector (75%)
2. Support performance management implementation (67%)
3. Provide trainings, workshops, seminars, etc. on performance management for public sector organisations (63%)
4. Advise ministries/public sector organisations on performance management (58%)
5. Support and coordinate public sector performance management projects (50%)

These important objectives constitute the “second pillar” of performance managed activities: help to build a working system and make sure the system in place works as supposed by constantly informing, training, and educating all involved people and institutions. Given the different development levels of performance management systems across Europe (see above) this is not surprising while the efforts needed to keep a system working as planned and further improving may be often underestimated.

The remaining goals which received less support still underline the transient nature of performance management. The low importance of communicating results to the general public (21%), or of visualising performance management outcomes (33%) or experimentation (25%) may hint that presently many systems are being set up rather than fully operational.

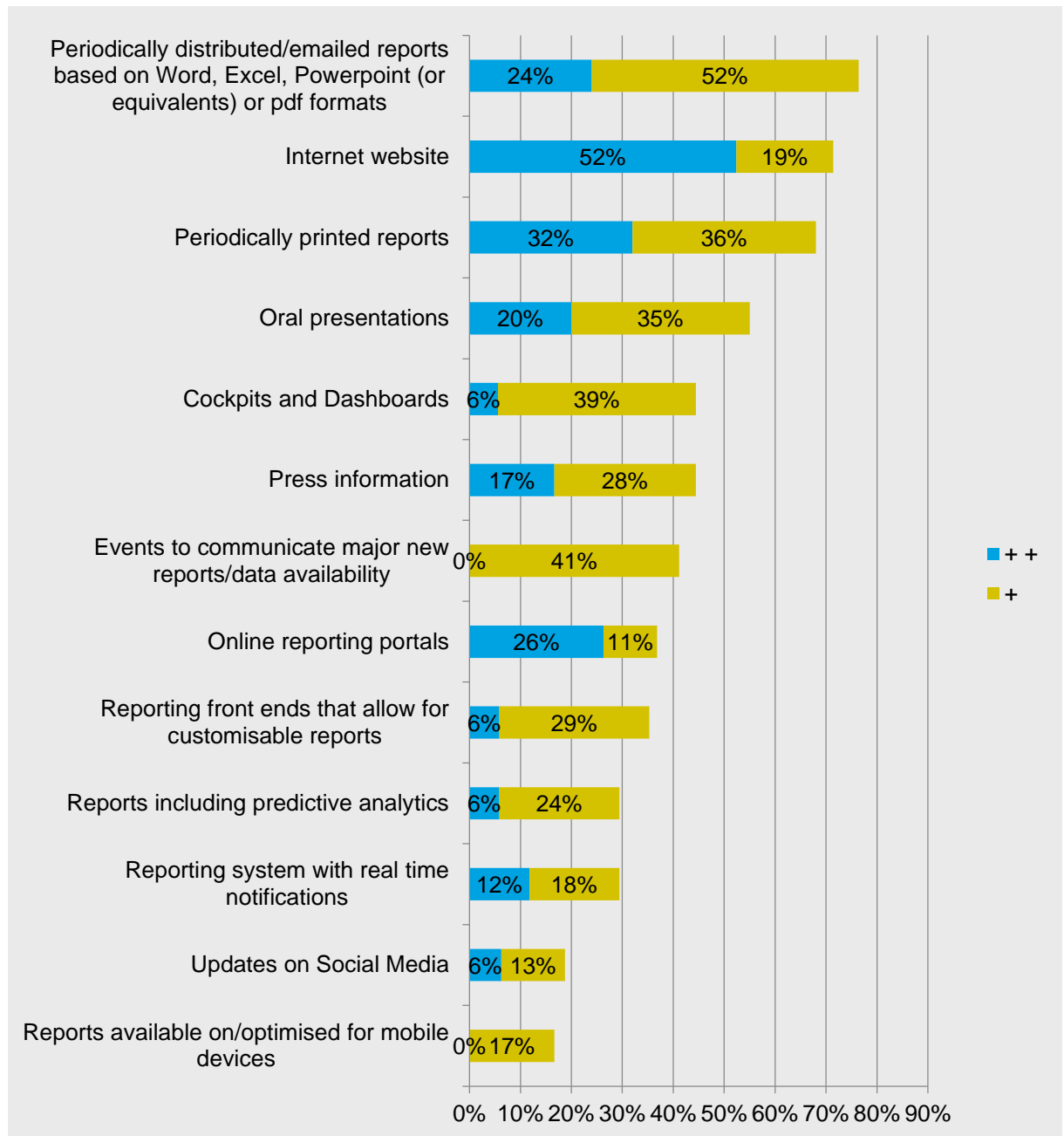
Reporting in performance management

Most of the reporting practices in performance management are not laid down in a specific strategy. Respondents signal that there are other regulations and practices that also rule reporting in performance management. The answer to the open question on innovations in reporting suggest that many reporting systems on performance management were recently introduced. Reporting is thus an integral part of these systems and follows the same reporting guidelines as in other areas.

In the following question the participants were asked to indicate the importance of different channels in reporting performance management related issues between 2015 and 2017. To identify the most important channels, the channels were sorted by their votes on “++” and “+”. According to this ranking, periodically distributed/emailed reports based on Word, Excel, PowerPoint (or equivalents) or pdf formats are the most important channels with 76% of the participants agreeing. Websites are in second place while periodically printed reports rank third:

1. Periodically distributed/emailed reports based on Word, Excel, Powerpoint (or equivalents) or pdf formats (76%)
2. Internet website (71%)
3. Periodically printed reports (68%)
4. Oral presentation (55%)
5. Cockpits and Dashboards (44%)
6. Press information (44%)
7. Events to communicate major new reports/data availability (41%)
8. Online reporting portals (37%)
9. Reporting front ends that allow for customisable reports (35%)
10. Reporting system with real time notifications (29%)
11. Reports including predictive analytics (29%)
12. Updates on Social Media (19%)
13. Reports available on/optimised for mobile devices (17%)

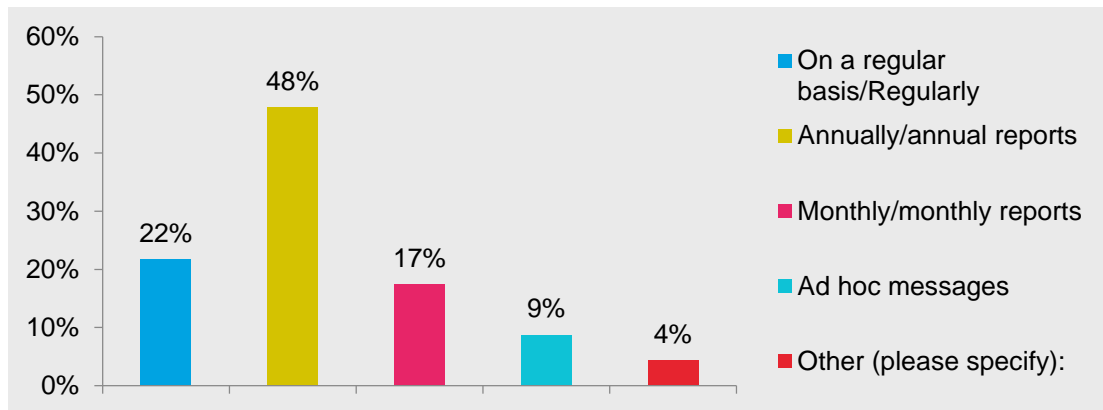
Figure 24: Importance of different channels in reporting performance management.



Source: Own survey

Most of the reports that analyse and communicate the outcome of performance management are released annually (48%). What's more, 22% of reports get published on a regular basis, a further 17% on a monthly basis while the remaining reports (9%) are communicated through ad hoc messages.

Figure 25: Releasing frequency of reports



Source: Own survey

After having elaborated the past, the next question was about future trends in performance management issues which are foreseen for the 2018-2020 period by the participants. Participants mentioned the following developments:

1. Automation of creation and distribution of performance management reports in the public sector
2. Further improvement of existing systems with special regard to reporting and visualisation
3. Training of employees and manager how to read report
4. Activity-based budgeting based on an IT system for strategic information
5. Increasing digitalisation of workflow
6. Preparation of various report types
7. Reports are increasingly shifted into online formats, including dashboards and update on websites and social media

Visualisation in performance management

Any working performance management workflow produces a huge data set that has to be communicated to decision makers, the general public, political decision makers, media outlets – depending on the decision making and dissemination strategies. Reporting and visualisation are thus the instrument of choice to get the data, the already accomplished analysis and the insights across to target groups.

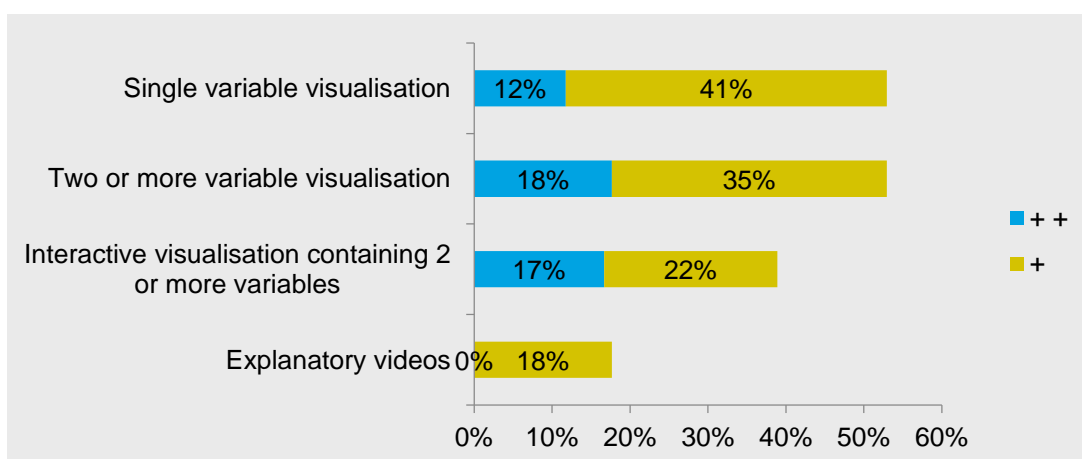
Digitalisation promises to substantially simplify reporting and visualisation by fully integrating this segment into the digital workflow. Public sector employees may then access real-time data that comes in handy reporting formats and visualisations at any time, benchmarks results and does forecasts based on actual developments.

The actual situation might be far from this scenario: 72% of respondents claim there is no explicit strategy for visualisation in performance management. The answers to the open question on this issue suggest that in some countries there

are specific but horizontal strategies – reporting and visualisation in performance management would be rather sectorial – available and thus the focus of this question was too specific. Others point out that reporting and visualisation are done at the institutional level, i.e. each ministry/agency/department/unit may develop its own strategy how to present and communicate data out of the performance management system.

Presently, “Single variable visualisation” and “Two or more variable visualisations” were on top of presenting approaches with 53% each. “Interactive visualisation containing 2 or more variables” got 39% “important” votes, while “Explanatory videos” received 18%.

Figure 26: Importance of different visualisation approaches in performance management

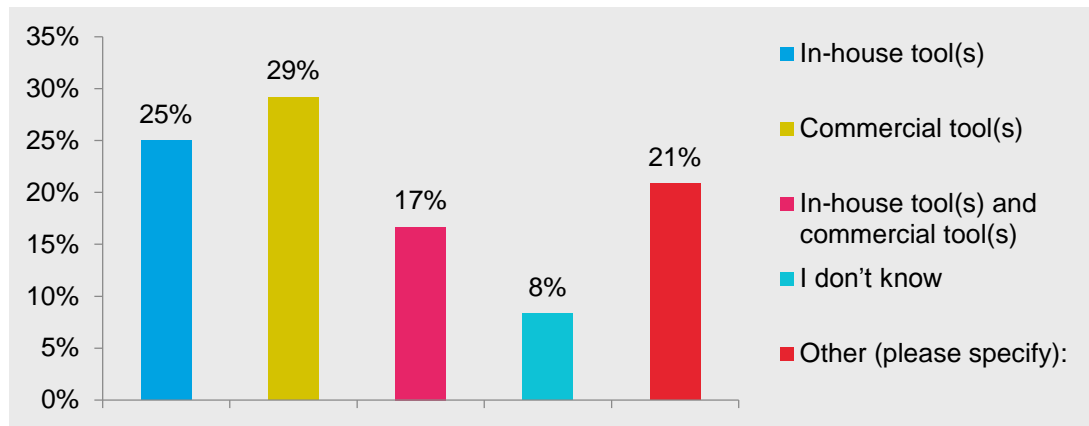


Source: Own survey

The present situation is being dominated by “traditional” visualisation approaches that will of course remain important in the future. The focus in the different countries is not so much on the type of visualisation but on building visualisation (and reporting) systems. More advanced countries already use managerial dashboards at all levels of the hierarchy that allow monitoring of the objectives. The indicators are also aggregated in order to be displayed on a country-wide dashboard. Many more projects are in the pipeline or in development that go in this direction. Not surprisingly, innovations in reporting are often coupled with advances in visualisation.

For actual visualisations, 29% of the participants use commercial tools for their visualisations, 25% use in-house tools and 17% a combination of in-house tools and commercial tools. A further 8% don’t know which tools are used within their organisation for creating visualisations.

Figure 27: Tools used within the organisations for creating visualisations

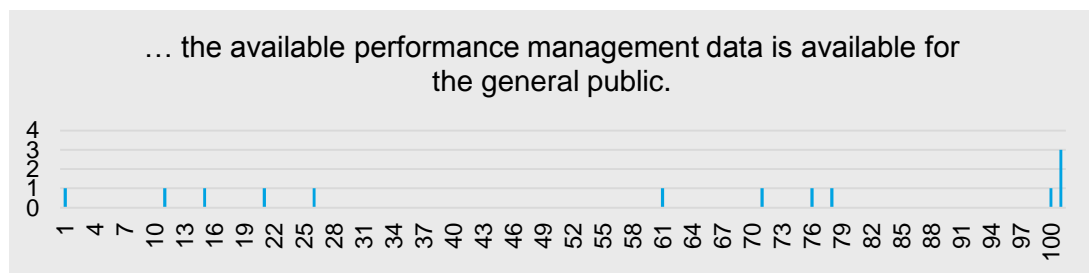


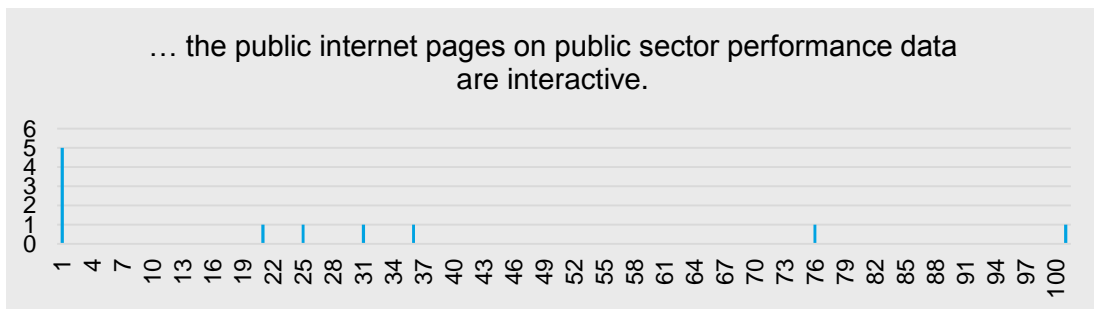
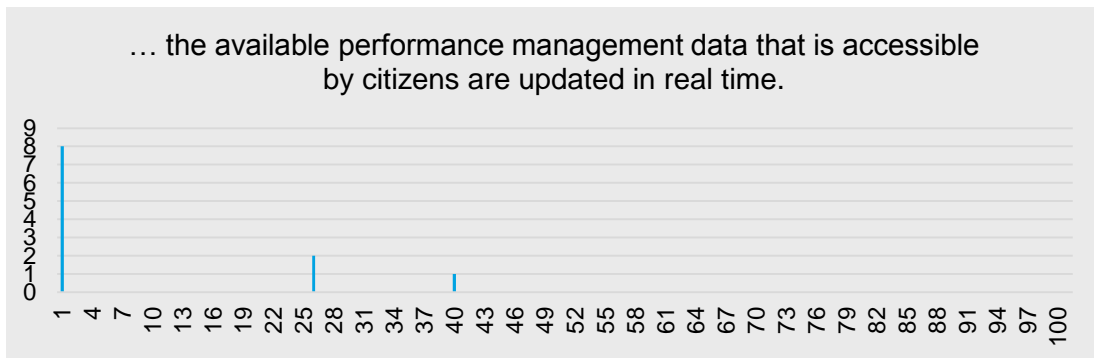
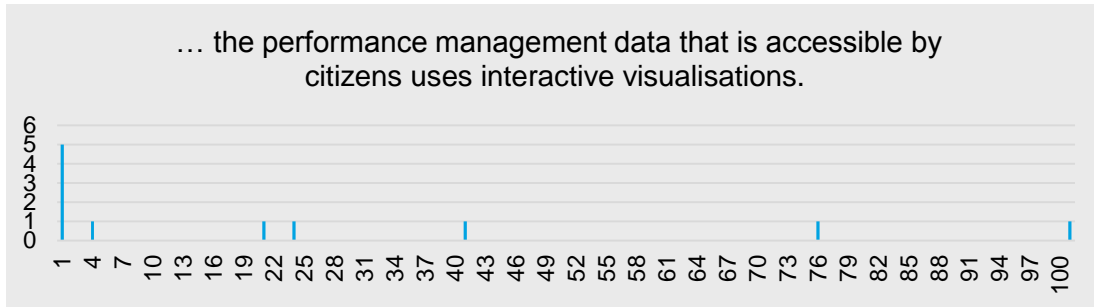
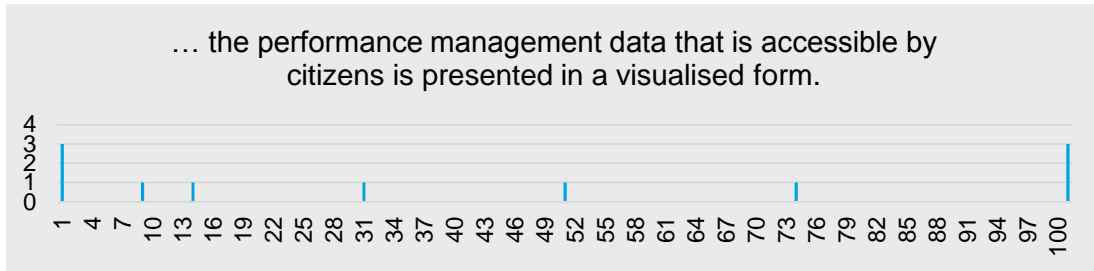
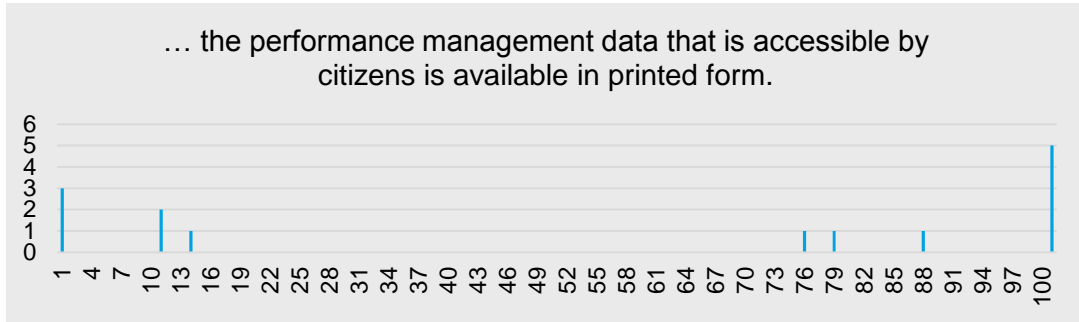
Source: Own survey

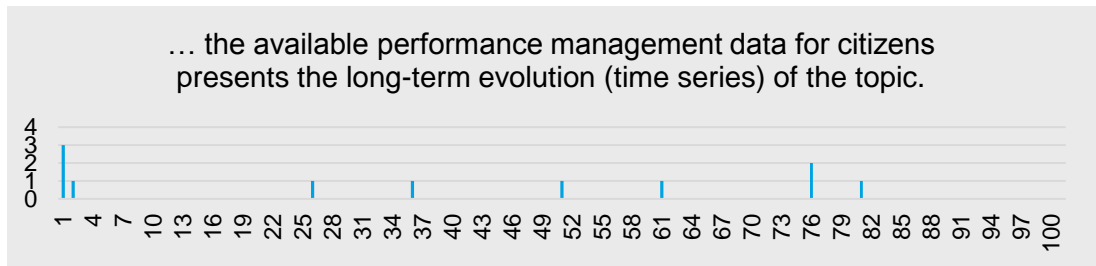
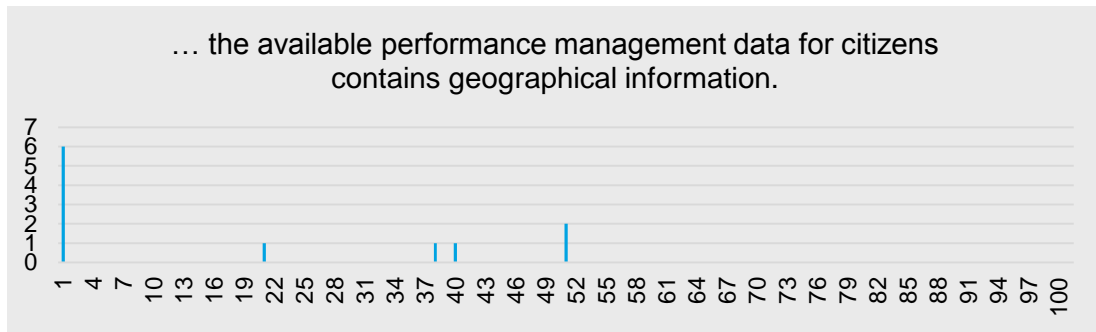
The dissemination activities of performance management information are driven in exactly 50% of cases by an explicit strategy. The resulting information-sharing strategies are very heterogeneous and are showcased in figure 28 which presents the self-assessment how of different information categories is shared with different groups.

Generally, the majority of countries follow a rather open dissemination policy on public sector performance information of which most is available in print. Most countries visualise at least part of the information but rarely interactive visualisations. In contrast, a substantial part of websites offer interactive presentations, geographic data and the long-term evolution of public sector performance. Parts of the shared data – but this is really the exception – are available in real time.

Figure 28: How much of...





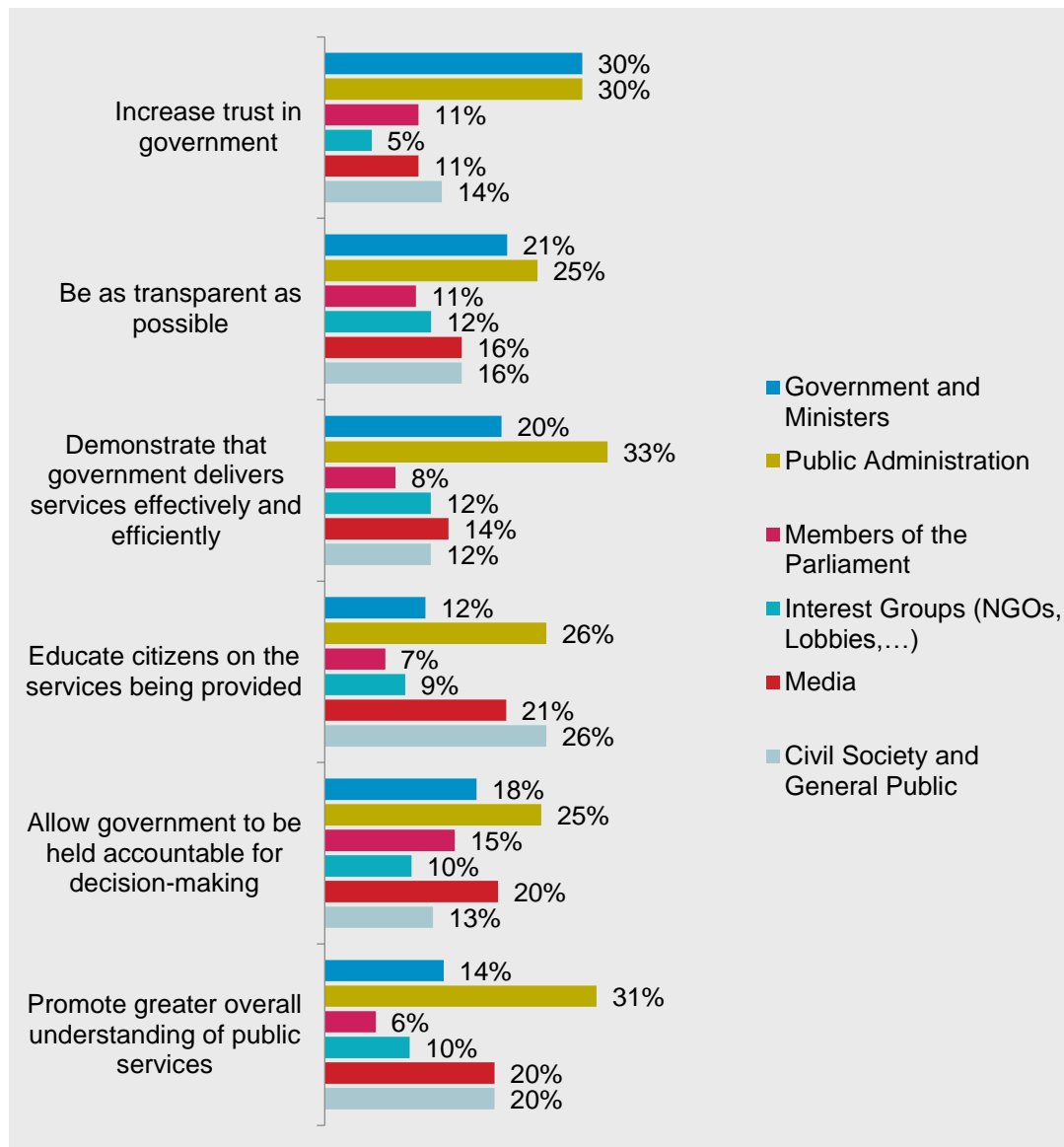


Source: Own survey

Dissemination goals and stakeholders

Dissemination activities is an area that receives a lot of attention as it may shape the perception of the public sector and of politicians across the population, and also provide information and insights that allow citizens to use public services, interact with the public sector as well as participate in deliberations and gather information to form opinions that affect the democratic/voting process. Likewise, enterprises are affected in many ways by dissemination activities of the public sector.

Figure 29: Which of the following objectives motivate the information dissemination activities of the public sector with regard to specific stakeholders in your country?



Source: Own survey

The survey asked which stakeholder groups encouraged information dissemination with regards to six goals pertinent to public sector dissemination activities. Obviously, the public sector itself is a main driver in all dissemination policies, equalled only by measures to “increase trust in the government” by government and ministers, and in the “education of citizens in services” to be provided by the civil society and the general public.

The public administration and governments and ministers score strongly in trying to be as “transparent as possible” as well as “demonstrating that government delivers services effectively and efficiently”. Media and civil society and the general public are involved in shaping dissemination policies with respect to “educate citizens in

services being provided”, “allow the government to be held accountable” and in “promoting a greater understanding of public services”.

Résumé

The chapter on performance management dealt with the practical importance of performance management across responding countries, how it is institutionalised, its scope and goal-setting process. This is followed by studying the impact of digitalisation on the workflow for performance management as a special case of the general workflow orientation in this survey.

Performance management is clearly of importance for most countries: three-quarters of countries report having a performance management system in place and also assigned responsibility to a specialised organisation which is in most cases part of a ministry.

The activities of the organisations assigned responsibilities for performance management do have two dimensions: the first one is to provide performance data for decision-makers; the second dimension is building and maintaining a working performance management system by helping colleagues across the public through information dissemination, trainings, workshops etc. This very much reflects that in many countries performance management systems are “work in progress”.

The question on the digitalisation grade of the performance management workflows revealed two distinct groups among the answering countries and corroborated the above stated view. The first – and larger – group is in the process of developing or rolling out digital performance management systems. Some of them are about to start at department or ministry units that experiment with approaches with the intention to scale up working solutions. The smaller group has already mostly digital workflows that support performance management and reporting and visualisation activities in particular.

The latter are governed in some countries by horizontal regulations that apply across the public sector while others do have explicit reporting and visualisation strategies. Governments that have specific visualisation and reporting strategies for performance management are a minority. Both in reporting and visualisation traditional approaches dominate the landscape but – it seems – advanced solutions based on largely digital workflows are increasing in importance: access to real time data, interactive visualisation, dashboards benchmarking goal achievement are just some of the approaches increasingly used.

Generally, the majority of countries follow a rather open dissemination policy on public sector performance information of which most is available in print. Most countries visualise at least part of the information but rarely use interactive visualisations. In contrast, a substantial part of websites offers interactive presentations, geographic data and the long-term evolution of public sector performance. Part of the shared data – but this is really the exception – are

available in real time. The driving force behind an increasingly open dissemination policy is the public sector administration itself. Government and ministers score strongly in trying to be as “transparent as possible” as well as “demonstrating that government delivers services effectively and efficiently”. The media and civil society focus on holding the government accountable and educate citizens on public sector services.

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Annex: Questionnaire



I. SURVEY TOPICS AND PURPOSE

Welcome to our survey on the “Impacts of digitalisation on reporting and visualisation with special regards to performance management”!

The Austrian Presidency’s contribution to this year’s EUPAN discussions highlights the impacts of digitalisation on reporting and visualisation practices, which help to better present developments resulting from government actions pursuing goal attainment. Additionally, the survey focuses on the role of reporting and visualisation in performance management.

These topics are incorporated in the survey, which is made up of three sections:

- Section 1 (chapter III-V) documents innovations, impacting factors and results regarding the reporting and visualisation workflow.
- Section 2 (chapter VI-IX) focuses on performance management and the role of reporting and visualisation in performance management.
- Section 3 (chapter X) asks for examples that document these innovations.

The survey tool saves your answers automatically. You may quit the survey and resume completion later by clicking “Continue later” at the bottom of each page. In this case, please follow the instructions given by the tool.

By participating in the survey, you accept that your answers will be stored, processed and analysed electronically. You may request to see what data is stored and request deletion of data at any time.

We kindly ask you to respond to the survey **until 31 August 2018 at latest**.

Should you need any further information or clarification, please do not hesitate to contact Michael Kallinger or Stephan Mathes.

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We very much look forward to your contributions and thank you for your cooperation.

Kind regards,
Ursula Rosenbichler

Head of Department

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Federal Ministry for the Civil Service and Sport
Dept. III/9 – Federal Performance Management Office, Strategic Public Administration
Management, Civil Service Innovation

Short description of used concepts and approaches

Workflow

Reporting and visualisation build on a working reporting system, a workflow, that encompasses data collection, data processing, data analysis, reporting and visualisation. The quality of reporting and visualisation depends in multiple ways on the previous steps in the workflow as well as on advances in the fields themselves. Each of these steps have their own challenges, but altogether shape the potential of reporting and visualisation approaches to impact the above-mentioned aims as well as the resources needed to implement them.

(Workflow) innovation

A challenge in the elaboration of the survey is the analysis of "hot spots" alongside this workflow as the innovations at the end of the "pipeline" - advances in reporting and visualisation - might be heavily dependent on changes in some of the process steps before. We thus decided to "measure", where innovation activities were most intense in the period from 2015-2017 for each of the components of the workflow. We also ask for future activities to alter the reporting and visualisation hotspots.

This helps to chart innovation efforts of the public sector with respect to a more data driven decision making and communications culture. This, of course, is not to say that all countries will come up with the same internal and external reporting and visualisation strategies, but that they have the same options in implementing these strategies that are in line with requirements and culture of a country.

Impacting factors

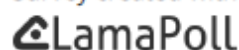
Presently, the private sector as well as the public sector aim at mostly automated workflows that encompass all routines ranging from data collection to visualisation. This is driven by technological advances, new management routines and new trends in governance. The spectrum of drivers is broad, as both supply and demand side factors have impact on the reporting and visualisation workflow. We therefore ask for a broad set of potentially impacting factors ranging from Big Data to the need to better inform stakeholders of the public sector.

The workflow for reporting and visualisation as well as changes to it aim at improving the output and outcome both in terms of quality as well as resources needed to produce it (productivity, efficiency). In the survey we focus on the reporting outputs that may have evolved from regularly paper-based reports that were circulated to cockpits or dashboards that notify users whenever there are major updates. Likewise, what started as visualisation of a single variable may have evolved into an interactive visualisation platform producing those visualisations that are demanded by users.

Performance management

Performance Management "[...] is a type of management that incorporates and uses performance information for decision-making" (Dooren, Bouckaert and Halligan 2015). Production processes are designed to achieve objectives by using inputs to undertake activities, which result in outputs that lead to outcomes. Performance can be understood as outputs and outcomes of production processes. In the public sector the latter are public goods and/or public values. Performance management is a data driven process that measures and maps the real production process, which has been increasingly digitalised and automatised.

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Performance management is one of the areas demanding a working reporting and visualisation workflow as it has to report and communicate the results. This enables understanding, steering activities and holding public activities accountable. In the survey we try to shed some light on performance management, i.e. its existence, incorporation, activities of responsible institutions and the role of citizens in this process.

Reporting and visualisation examples

The survey also collects examples of reporting and visualisation in the context of performance management which deserve to be highlighted in the study. Each example is being described in terms of structure, organisation and output/outcome. Further questions aim at elucidating the area of implementation, internal and external sources for the project, hampering factors, resulting organisational changes, etc.

This may be the starting point for a repository of European practices in reporting and visualisation projects.



II. INTRODUCTORY QUESTIONS

★ 1. Please fill in your contact details:

By participating in the survey, you accept that your answers will be stored, processed and analysed electronically. Of course, you may request to see what data is stored and request deletion of data at any point in time.


Country:

Name of respondent:

Organisation name:

Email:

Telephone:

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III. INNOVATION IN THE REPORTING AND VISUALISATION WORKFLOW

Reporting and visualisation are part of a larger workflow that ranges from data collection to evidence-based decisions and information of the public. Innovations in this workflow may generate advances in reporting and visualisation or hamper them. Here we are interested to learn which part of the workflow was significantly modified in the past years and how the workflow will evolve in the medium-term future. We are aware that the questions concern the whole public sector - something that is too diverse to be monitored by simple questions. Thus, we need your personal assessment when it comes to answering these questions.

2. Did you observe **significant innovations** in the reporting and visualisation workflow (including data collection, manipulation and aggregation and data analysis) in the public sector of your country between 2015 and 2017?

Yes No

3. Please give some **examples** of such innovations:

| Example: | Workflow Stage: | Due to Digitalisation | Disruptive |
|----------------------|-----------------|--------------------------|--------------------------|
| <input type="text"/> | Click ↓ | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="text"/> | Click ↓ | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="text"/> | Click ↓ | <input type="checkbox"/> | <input type="checkbox"/> |

4. Are you aware of **significant innovations** to be introduced in the reporting and visualisation workflow (including data collection, manipulation and aggregation and data analysis) in the public sector of your country between 2018 and 2020?

Yes No

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5. Please give some examples of such innovations:

| Example: | Workflow Stage: | Due to Digitalisation | Disruptive |
|----------------------|--|--------------------------|--------------------------|
| <input type="text"/> | <input type="button" value="Click ↓"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="text"/> | <input type="button" value="Click ↓"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="text"/> | <input type="button" value="Click ↓"/> | <input type="checkbox"/> | <input type="checkbox"/> |

6. Is your country making efforts to achieve a fully automated workflow from data gathering to reporting and visualisation?

Yes No



III. INNOVATION IN THE REPORTING AND VISUALISATION WORKFLOW

7. Did digitalisation significantly impact work practices, the organisation of work and efforts to (re)train employees in the public sector in your country?

Yes No

8. Please give examples of the impact of digitalisation on work practices, the organisation of work and efforts to (re)train employees in the public sector in your country.

9. Which software/IT system is used to digitalise the workflow?




IV. SUPPLY AND DEMAND FACTORS IMPACTING THE REPORTING AND VISUALISATION WORKFLOW

Innovations in the workflow respond to developments outside and inside the public sector. These may be technological developments or new priorities in communicating the work of the public sector. Often more than one of these factors causes the modifications in the reporting and visualisation workflow.

Please indicate which of the following trends influenced changes in the reporting and visualisation workflow.

10. Supply side factors

| | ++ | + | +/- | - | -- |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| New graphing tools for better communication through visualisation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Increased use of Big Data methods | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Open Data (Portals) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Data Mining /Business Analytics | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Data Warehousing | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Interactive online mapping capacities | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Digital or e-government | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Enterprise Resource Planning (ERP) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other (please describe): <input type="text"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Survey created with



11. Demand side factors

| | ++ | + | +/- | - | -- |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Increased efforts to treat service users as customers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Shifted focus in performance management from input to output and outcome targets | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Intensified efforts to reduce internal bureaucracy and cut red tape | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Transparency and open government | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Better and quicker dissemination of reporting data | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Better informed citizens | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Citizen participation methods/initiatives/citizen engagement | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Efforts to reduce the number of public sector staff | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Data driven/evidence-based decision making | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Effort to increase overall public sector productivity | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other (please describe): | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input style="width: 400px; height: 20px;" type="text"/> | | | | | |




V. RESULTS BASED ON INNOVATIONS IN THE REPORTING AND VISUALISATION WORKFLOW

Public sector activities aim at producing a number of public goods that are made up of numerous outcomes. Here we try to identify how these outcomes were influenced by the above mentioned changes and the reporting and visualisation workflow.

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12. Please indicate which of the following topics/issues were impacted by innovations in the reporting and visualisation workflow between 2015 and 2017 in your country.

| | ++ | + | +/- | - | -- |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Timely access to data | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Evaluation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Allocation of resources | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Responsiveness to customers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Rewarding public sector staff/human resource management | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Information on reporting issues/topics | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Quality control | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Resources needed to compile reports - automatised reports | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Flexibility in quickly changing/adapting reports to new circumstances | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Organisational development | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Integration of various internal or external data sources | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Strategic planning | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Communication with public to create trust | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reporting and monitoring | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Performance management | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reports that are customisable by the end user | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cost accounting | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Efficiency in the reporting workflow | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Base for evidence-based decision making | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Information on public sector performance | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Transparent public sector activities | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ease of using public services | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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Services for businesses



Information for media



Oral presentations



Other (please add):






VI. THE STATUS QUO OF PERFORMANCE MANAGEMENT

Performance management deals with planning, monitoring, managing and evaluating the performance of the public sector. Reporting and visualisation are integral parts of performance management systems and depend to a large extent on the data gathering, aggregation and analysis to provide up to date, timely and “fit for the purpose” data that are then included in reports and visualised to empower decision makers and citizens in taking part in the political process.

13. Does your public administration have a working performance management system in place?

Yes No

If "No", please explain the situation/reasoning behind this:

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VI. THE STATUS QUO OF PERFORMANCE MANAGEMENT

15. Is there a specialised government organisation in charge of promoting performance management within the public service?

Yes No

16. What is the scope of the performance management organisation's work? Please select all that apply.

- Whole central government
- Individual ministry
- Several ministries
- Directorate/unit within ministry
- Other (please specify):

17. Please name the organisation:

18. Please describe the tasks of the organisation in the performance management system:

19. Please describe the organisational status of the performance management unit, i.e. is it a fully autonomous organisation or part of a ministry, etc.?



VI. THE STATUS QUO OF PERFORMANCE MANAGEMENT

20. Are the performance management goals set by

- A central authority based on political objectives
- The political sphere
- Each ministry independently
- Each agency independently
- Each department independently
- Other, please explain:

21. Please estimate to what percentage (%) the performance management workflow is already automated:

(0 - 100)

22. What are the activities and objectives of the performance management in your country? Please select all that apply.

- Build awareness of performance management in the public sector
- Advise ministries/public sector organisations on performance management
- Provide trainings, workshops, seminars, etc. on performance management for public sector organisations
- Support and coordinate public sector performance management projects
- Engage in public sector performance management experimentation
- Support performance management implementation
- Invest in public sector performance management projects
- Support networking for performance management in the public sector
- Provide performance data for decision makers
- Set the targets for surveyed organisations
- Visualise performance management outcomes
- Communicate with the general public about all aspects of performance management
- Other (please specify):



VII. REPORTING IN PERFORMANCE MANAGEMENT

Reporting is an integral part of performance management as the main results are presented in conducive ways for different stakeholders and target groups. Please let us know about technological developments and digitalisation, in particular which have opened new options in this field.

23. Is there an explicit strategy for handling reporting in performance management?

24. What were the major reporting developments in performance management in the period from 2015 to 2017?


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VII. REPORTING IN PERFORMANCE MANAGEMENT

25. Please indicate the importance of different channels in reporting performance management related issues between 2015 - 2017.

| | ++ | + | +/- | - | -- |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Periodically printed reports | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Periodically distributed/emailed reports based on Word, Excel, Powerpoint (or equivalents) or pdf formats | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reports available on/optimised for mobile devices | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Internet website | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Online reporting portals | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reporting front ends that allow for customisable reports | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Cockpits and Dashboards | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reports including predictive analytics | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Reporting system with real time notifications | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Oral presentations | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Events to communicate major new reports/data availability | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Press information | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Updates on Social Media | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Other (please specify): | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input style="width: 390px; height: 20px;" type="text"/> | | | | | |

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26. Please let us know what trends in reporting performance management issues are foreseen for the 2018 - 2020 period:

27. Reports that analyse and communicate the outcome of performance management are released

On a regular basis/Regularly

Annually/annual reports

Monthly/monthly reports

Ad hoc messages

Other (please specify):



VIII. VISUALISATION IN PERFORMANCE MANAGEMENT

Visualisation may be seen as a stand alone activity, but in many cases it is already integrated in reporting activities within the public sector or within the wider public. Again, technological advances opened new ways of visualising outputs and thus to better communicate the outcomes of public sector activities.

28. Is there an explicit strategy how to handle visualisation in performance management?

29. What were the visualisation developments in performance management in the period from 2015 to 2017?



VIII. VISUALISATION IN PERFORMANCE MANAGEMENT

30. Please indicate the importance of different visualisation approaches in performance management between 2015 - 2017.

| | ++ | + | +/- | - | -- |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Single variable visualisation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Two or more variable visualisation | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Interactive visualisation containing 2 or more variables | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Explanatory videos | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Others (please specify): <input type="text"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

31. Please describe the visualisation trends in performance management in the years to come.



VIII. VISUALISATION IN PERFORMANCE MANAGEMENT

32. Which tools are used within your organisation for creating visualisations?

- In-house tool(s)
- Commercial tool(s)
- In-house tool(s) and commercial tool(s)
- I don't know
- Other (please specify):

33. If you use commercial tool(s) for creating visualisations, please name the tool(s) here:



IX. STAKEHOLDER'S ACCESS TO INFORMATION

Granting access to public sector information is an important way to be accountable to the public and to provide essential information for political participation in various forms.

34. Is there an explicit strategy on how to inform stakeholders about performance management issues?

35. Which of the following objectives motivate the information dissemination activities of the public sector with regard to specific stakeholders in your country?

| | Government and Ministers | Public Administration | Members of the Parliament | Interest Groups (NGOs, Lobbies, ...) | Media | Civil Society and General Public |
|---|--------------------------|--------------------------|---------------------------|--------------------------------------|--------------------------|----------------------------------|
| Increase trust in government | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Be as transparent as possible | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Demonstrate that government delivers services effectively and efficiently | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Educate citizens on the services being provided | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Allow government to be held accountable for decision-making | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Promote greater overall understanding of public services | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other (please specify): | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input style="width: 200px; height: 15px;" type="text"/> | | | | | | |



IX. STAKEHOLDER'S ACCESS TO INFORMATION

36. How is reporting and visualisation handled within the performance management framework? Please indicate which forms of visualisation have increased in the 2015 to 2017 period? Please estimate how much of

Please indicate your tendency on a scale from 0% to 100%

... the available performance management data is available for the general public. (0 - 100) no answer

... the performance management data that is accessible by citizens is available in printed form. (0 - 100) no answer

... the performance management data that is accessible by citizens is presented in a **visualised form**. (0 - 100) no answer

... the performance management data that is accessible by citizens uses **interactive visualisations**. (0 - 100) no answer

... the available performance management data that is accessible by citizens are **updated in real time**. (0 - 100) no answer

... the public **internet pages** on public sector performance data **are interactive**. (0 - 100) no answer

... the available performance management data for citizens contains **geographical information**. (0 - 100) no answer

... the available performance management data for citizens presents the **long term evolution** (time series) of the topic. (0 - 100) no answer

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X. REPORTING AND VISUALISATION EXAMPLES IN PERFORMANCE MANAGEMENT

We would like to showcase examples in your country that may enable insights and learning. Please upload examples for changes in **reporting and visualisation in performance management** in your country.

37. Please describe the reporting and/or visualisation solution implemented:

38. Please specify how the project was implemented and who contributed in which way:

39. Please describe the results and impacts of the project:



40. Are the results visible online? Please insert the link:

41. Are all results visible for citizens?

Yes No

42. Which institutions were responsible for this project?

43. Please indicate who was responsible for the tasks listed below:

| | Target setting | Defining framework conditions | Generating output | Evaluation | ICT system design and maintenance |
|---------------|--|--|--|--|--|
| Reporting | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> |
| Visualisation | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> |



X. REPORTING AND VISUALISATION EXAMPLES IN PERFORMANCE MANAGEMENT


44. Please give the contact details for the person responsible for the project:

45. In which area was the project implemented?

- General government
- Foreign affairs
- Finance
- Economic affairs
- Infrastructure and transportation
- Defence
- Justice, public order & safety
- Employment services
- Health
- Other social protection and welfare
- Education
- Environment protection
- Recreation, culture, religion
- Other (please specify):

46. Is there going to be a follow-up project?

Please describe how the project will evolve.

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47. Are we allowed to cite the project in the study and online?

Yes No

48. Was there another interesting reporting and/or visualisation solution implemented in your country?

Yes

No

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X. REPORTING AND VISUALISATION EXAMPLES IN PERFORMANCE MANAGEMENT

49. Please describe the reporting and/or visualisation solution implemented:

50. Please specify how the project was implemented and who contributed in what way:

51. Please describe the results and impacts of the project:

52. Are the results visible online? Please enter the link:

53. Are all results visible for citizens?

Yes No

54. Which institutions were responsible for this project?

55. Please indicate who was responsible for the tasks listed below:

| | Target setting | Defining framework conditions | Generating output | Evaluation | ICT system design and maintenance |
|---------------|--|--|--|--|--|
| Reporting | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> |
| Visualisation | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> |



X. REPORTING AND VISUALISATION EXAMPLES IN PERFORMANCE MANAGEMENT


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- Other social protection and welfare
- Education
- Environment protection
- Recreation, culture, religion
- Other (please specify):

58. Is there going to be a follow-up project?

Please describe how the project will evolve.

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59. Are we allowed to cite the project in the study and online?

Yes No

60. Was there another interesting reporting and/or visualisation solution implemented in your country?

Yes

No

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X. REPORTING AND VISUALISATION EXAMPLES IN PERFORMANCE MANAGEMENT

61. Please describe the reporting and/or visualisation solution implemented:

62. Please specify how the project was implemented and who contributed how.

63. Please describe the results and impacts of the project:

64. Are the results visible online? Please insert the link:

65. Are all results visible for citizens?

Yes No

66. Which institutions were responsible for this project?

67. Please indicate who was responsible for the tasks listed below:

| | Target setting | Defining framework conditions | Generating output | Evaluation | ICT system design and maintenance |
|---------------|--|--|--|--|--|
| Reporting | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> |
| Visualisation | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> | <input type="button" value="Click ↓"/> |



X. REPORTING AND VISUALISATION EXAMPLES IN PERFORMANCE MANAGEMENT

68. Please give contact details of the person responsible for the project:

69. In which area was the project implemented?

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- Economic affairs
- Infrastructure and transportation
- Defence
- Justice, public order & safety
- Employment services
- Health
- Other social protection and welfare
- Education
- Environment protection
- Recreation, culture, religion
- Other (please specify):


70. Is there going to be a follow-up project?

Please describe how the project will evolve.

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71. Are we allowed to cite the project in the study and online?

Yes No

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Thank you, that was the last question.

If you submit this page with NEXT the survey is finished and cannot be resumed.

If you still want to make changes in the questionnaire, you can now make changes to your answers in the questionnaire with BACK.

If you would like to print the survey with your answers click on [Reporting_Visualisation](#)

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Thank you very much for your participation!

We will keep you posted on the results of the survey.

For all matters concerning the survey, please send an email to eupan@bmoeds.gv.at

best regards
your BMOEDS EUPAN Team

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