

# Living up to standards : interoperability governance and standards adoption in government information networks

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## Annex M. Valorisation

This annex discusses the valorisation of this dissertation. It begins with a brief description of the general background, explaining why interoperability (IOP) in Government Information Networks is a relevant source of social and economic value, and why the problems in achieving it require the scientific knowledge presented in this dissertation. This is followed by a discussion how the main knowledge contributions presented in this dissertation can be translated into social and economic value.

It is the ultimate goal of studying public policy study to generate knowledge that translates into recommendations about how policies should be made in order to improve public welfare. As such, a great deal of public value lies in the subject domain which this dissertation addresses. The social, policy-related and economic value creation that is the objective of e-Governance, and in particular Government Information Networks, is discussed in depth in Chapter 1 of this dissertation and summarised further below in this annex. Achieving these objectives essentially rests upon the ability of the organisations in these networks to electronically exchange information and services among each other – in other words, they must be “interoperable”. To achieve IOP, organisations need to adhere to a common set of standards and agreements. Achieving IOP, however, is challenging because often organisations in Government Information Networks do not adopt and comply with these standards.

The potential for public value creation from this dissertation is that it provides relevant findings and recommendations that can help stakeholders to achieve the potential benefits of Government Information Networks by contributing a better understanding of IOP standards adoption by organisations in Government Information Networks, in particular of the process, actors, drivers and barriers behind their adoption, and by providing insights and guidance how to best approach the governance on IOP in such networks.

As argued by OECD (2003), e-Governance can generate public value by 1) improving the efficiency of public administrations; 2) improving public service provision for customers; 3) improving the outcomes of specific policies; 4) contributing to economic policy objectives; 5) serving as a major catalyst for administrative modernisation and reform; and 6) contributing to better democracy. More specifically regarding Government Information Networks, the benefits can be of organisational, political and technological nature (cf. Dawes 1996; Gil-Garcia, Chengalur-Smith, & Duchessi, 2007). Organisational benefits include improved decision-making, reduced administrative burden and costs, and better enforcement due to the availability of more and higher-quality information. In particular, Government Information Networks facilitate public services that are oriented at citizens’ “life events” rather than following bureaucratic structures. Political benefits include increased accountability, better service provision, as well as improved interactivity, responsiveness and an improved public image as a result. Technical benefits include for instance the formation of a shared infrastructure and reduced duplication of data collection, processing and storage with an associated reduction of administration costs.

It is one key contribution of this dissertation to identify and discuss in detail the potential benefits from IOP in Government Information Networks. In particular, the benefits from IOP in Government Information Networks identified in this dissertation include gains in administrative efficiency (such as operations cost, usability), effectiveness (including service quality, responsiveness), public data management (for instance data quality and security), resource acquisition (such as information and financial resources), benefits for coordination (improved reporting and uncertainty reduction), improved image (demonstrability of results and accountability), greater reach of organisations, and enhanced innovativeness of public governance (for instance creating new services and delivery mechanisms). For each of these points, the dissertation provides further detail and discusses concrete examples how public value can be generated.

However, the dissertation does not only generate value by identifying and discussing the benefits from IOP in Government Information Networks, it also provides both a theoretical basis and concrete guidance how to overcome the barriers to achieving IOP and reaping these benefits. These are discussed in the remainder of this annex.

One major contribution of the dissertation to this is to provide an empirically validated conceptualisation of IOP and its implications for adopting organisations. First, the dissertation validates the distinction of the three interrelated dimensions of technological, semantic and organisational IOP standards as a useful analytical framework that stakeholder can use. Beyond providing an analytical framework, the analysis also shows that these three IOP dimensions and the corresponding types of standards appear to be highly interrelated. This translates into the concrete advice for stakeholders that they should therefore take a holistic approach to IOP governance which considers these connections. Second, the dissertation finds that none of these IOP dimensions is of significantly lower or higher concern for stakeholders in Government Information Networks than the other dimensions. A concrete advice for stakeholders in IOP governance resulting from this is that they cannot afford to neglect any of the dimensions of an IOP architecture – in particular, the findings alert stakeholders that in practice IOP is about much more than mere technological standardisation. Third, the dissertation finds that there does seem to be a difference in the significance of the three IOP dimensions if the various adoption efforts and results are compared. This results in the advice to stakeholders that whilst keeping a holistic approach, IOP governance thus should also be mindful of this variation and pay particular attention to the most significant IOP dimension for each category of IOP adoption implications.

The second major contribution of the dissertation is to provide insights into the “black box” of IOP standards adoption by organisations in Government Information Networks, and accordingly providing advice that stakeholders can translate into improved IOP governance to produce the expected benefits from IOP. First, the findings validate standards adoption as a phased process, and identify three distinct phases (planning, implementation, operational) following the adoption decision that stakeholders in IOP governance need to take into account. Second, by contributing a more detailed picture of variation in the significance of the adoption determinants along these phases, the dissertation also contributes to IOP governance by showing when to focus on which aspects of the adoption process. Third, by

showing that the operational phase is by far the most relevant in the adoption process, the dissertation alerts stakeholders that it is important to consider the effects of the various determinants with particular care during this phase. Moreover, by also showing that it is during the operational phase that non-compliance with standards becomes a key concern, the findings provide important governance advice as to when it is the most important to monitor adoption and compliance.

A third major contribution that can be translated by stakeholders into better IOP governance towards realisation of the benefits from Government Information Networks is to analyse the way in which decisions on IOP standards adoption are made in organisations, and to identify the key actors involved in this process. First, by providing a typology of the key actors at three levels (inter-organisational, intra-organisational management and operational levels) and their roles in the adoption process, the recommendation for IOP governance is given to recognise IOP standards adoption as a multi-stakeholder interaction which requires systematic and continuous stakeholder analysis. Moreover, the findings suggest that IOP governance should pay attention to the involvement of private-sector partners such as IT vendors to provide support with adoption (this can translate not only into public value but also stimuli for the private ICT sector). In addition, the findings also indicate at which levels it is particularly important for IOP governance to monitor the determinants for adoption and compliance are monitored, namely not only at the management level, but at all levels throughout the organisations. Finally, the dissertation identifies the key actors with regard to the major adoption determinants. IOP governance can use this analysis for a targeted approach to strengthening the supportive capacity of the most important actors for each particular factor determining adoption. Overall, the findings show that IOP governance needs to especially support “infomediaries” at the network level.

A fourth key contribution of the dissertation is to provide an empirically validated theoretical model on the determinants of IOP standards adoption. This is a relevant contribution to producing public value from Government Information Networks because having a clear understanding of what these factors are and what their relative significance is for stakeholders is imperative for IOP governance: it can serve as a framework for monitoring partner organisations’ intention to adopt specific standards, for assessing the feasibility of diffusing a standard and to identify key barriers, and for tailoring an IOP governance strategy to the specific context of a particular network. First, the findings show that all the major determinants in this framework should be taken into account for effective IOP governance. Second, the findings show that IOP standards adoption is also shaped by the idiosyncratic context of a given network, highlighting the necessity for a context-sensitive approach to IOP governance.

In particular, the dissertation provides recommendations concerning how the degree of IOP governance centralisation should match the degree of a given network’s complexity. To this end, it provides an analytical framework that stakeholders can use as a tool to assess both the complexity of a given network and the degree of centralisation of IOP governance. Moreover, based on its finding that higher network complexity requires more centralised IOP governance, the dissertation also provides recommendations how IOP governance can best be matched to a network’s complexity. It gives four key recommendations in this

regard. First, IOP governance in complex networks should designate a broker body and provide it with a clear governance mandate and decision-making powers, in particular to act as an intermediary and communication node among partner organisations, and as an institution enforcing the IOP architecture. Second, it recommends that a minimum level of stakeholder involvement in IOP governance is indispensable. Third, the dissertation recommends that IOP governance actors at the network level are equipped with sufficient coercive powers in order to enforce the IOP architecture of that network. And fourth, the dissertation recommends that particularly in complex networks, accountability mechanisms are important such as a formalised IOP architecture into binding obligations, and central monitoring. Importantly, the dissertation also recommends that with regard to stakeholder involvement, coercion and accountability, the coordination costs of these measures need to be carefully assessed, and it identifies several mechanisms that can be used to minimise such costs.

The fifth key contribution of the dissertation to public value is that it identifies the relative relevance of the various adoption determinants for stakeholders in Government Information Networks, thus providing important guidance as to what should be priority areas of IOP governance in order to materialise the benefits from IOP. First, it is important to ensure that in the design of a network's IOP architecture, as much as possible use is made of IOP standards that are well established and tested in practice. Moreover, it is important that IOP governance is supported by institutions to formalise the IOP architecture (in particular a solid legal framework), and that it is well aligned with dedicated IOP policies at the national level. Furthermore, the results show that it is informal institutions and soft governance in particular that are of primary importance, with effective guidance and leadership being a key issue for facilitating standards adoption. Second, with regard to the network-external environment, the political background and the role of network-external stakeholders should be taken into account. In addition, the advice is given to increase the consideration in the organisations for the longer-term public-value benefits of IOP, rather than focusing on government-internal benefits. Third, recommendations concerning the characteristics of adopting organisations are given. In particular, a needs analysis is recommended in each case that identifies which capacities are lacking in order to provide targeted assistance and guidance to partner organisations in these areas. In addition, a clear communication how IOP can serve organisational needs is needed. Fourth, the dissertation provides recommendations regarding the implications of standards adoption for organisations. Especially, it shows that certain implications (organisational efforts and internal-operations results in particular) are of considerably higher significance for stakeholders and should thus receive special attention. Moreover, where adoption efforts and costs cannot be avoided, particular emphasis should be placed on communicating the long-term benefits implied. In addition, the dissertation recommends that IOP governance needs to be designed in a holistic approach in order to address the interlinkages and trade-offs between adoption implications. Fifth, the dissertation also provides recommendations regarding the characteristics of a given Government Information Network. Most importantly, IOP governance should aim at reducing the negative effect on adoption from a network's complexity insofar possible, for instance through structural changes to the network, institutional review and appropriate communication strategies.

In conclusion, e-Government and in particular Government Information Networks offer a rich source of public value creation. By contributing a better understanding of IOP standards adoption by organisations in Government Information Networks, in particular of the process, actors, drivers and barriers behind their adoption, and by providing insights and guidance how to best approach the governance on IOP in such networks, the findings from the research in this dissertation provide a number of recommendations that can help to better leverage this value potential in the future.