TU Delft

Delft University of Technology

Adaptive governance

Towards a stable, accountable and responsive government

Janssen, Marijn; van der Voort, Haiko

DOI
10.1016/j.giq.2016.02.003

Publication date
2016

Document Version
Accepted author manuscript

Published in
Government Information Quarterly: an international journal of information technology management, policies, and practices

Citation (APA)
Janssen, M., & van der Voort, H. (2016). Adaptive governance: Towards a stable, accountable and responsive government. *Government Information Quarterly: an international journal of information technology management, policies, and practices*, *33*(1), 1-5. https://doi.org/10.1016/j.giq.2016.02.003

Important note
To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright
Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy
Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.

This work is downloaded from Delft University of Technology.
For technical reasons the number of authors shown on this cover page is limited to a maximum of 10.

© 2017 Manuscript version made available under CC-BY-NC-ND 4.0 license https://creativecommons.org/licenses/by-nc-nd/4.0/
Link to formal publication (Elsevier): http://dx.doi.org/10.1016/j.giq.2016.02.003

Adaptive governance: Towards a stable, accountable and responsive government

Marijn Janssen & Haiko van der Voort

Delft University of technology, Faculty of Technology Policy & Management, Jaffalaan 5, 2628BX Delft, The Netherlands

Post print version of: M. Janssen & H. Van der Voort (2016). Adaptive governance: Towards a stable, accountable and responsive government. Government Information Quarterly, Vol. 33, No. 1, pp. 1-5. DOI: 10.1016/j.giq.2016.02.003.

Highlights

- Organizations are struggling to adapt and to innovate
- Opportunities are missed due to an inability to mobilize capabilities
- Adaptive governance should improve the adaptive capacity of organizations to deal with uncertainties and complexities
- Adaptive governance strategies are suggested
- Stability, accountability and quick adaptation needs to be balanced

Abstract

Organizations are expected to adapt within a short time to deal with changes that might become disruptive of not adequately dealt with. Yet many organizations are unable to adapt effectively or quickly due to the established of institutional arrangements and patterns of decision-making and governance. Adaptive governance should enhance the capacity of an organization to deal with and adapt to changes, while protecting the same organization from becoming unstable. Strategies of adaptive governance include utilizing internal and external capabilities, decentralizing decision-making power, and seeking to inform higher-level decisions from bottom-up. At the same time, adaptive strategies may challenge stability and accountability, which remain to be essential values for governments. This means that adaptive governance implies a 'balancing act', and a reliance on ambidextrous strategies. The aim of this editorial is to introduce the concept of adaptive governance and discuss its implications for governments in the digital age.

Keywords: Agility, adaptability, speed, institutions, e-government, ambidexterity, adaptive governance, agile development, innovation, governance

1. Introduction

Changes in the environment, expectations from constituents, the global economy and technological developments like big data, data analytics, open linked data, semantic web influence societal values, privacy, cybersecurity requires organizations to adapt. There is a nexus of developments that might disrupt our society resulting in societal problems and governments have to respond to these. This results in changes of core values such as privacy and transparency (Janssen & van den Hoven, 2015). Governance is necessary to respond to these developments and the making of the necessary decisions. This puts high demands on the government to anticipate and develop sound policies and new services. Yet governments are often lagging behind. Governments have to be aware of these changes and they need to adapt their policies, legislation, systems and even internal structures to deal with these.

In the current environment technology enables ample opportunities for governments to improve and to innovate. Adapting to changes is becoming the more important as some argue that the government is fundamentally changing (Janowski, 2015; Linders, 2012) and

needs to transform (Luna-Reyes & Gil-Garcia, 2014; Nograšek & Vintar, 2014; Weerakkody, Janssen, & Dwivedi, 2011). However, organizations react often longer than citizens and businesses expect and legislation is running behind the possibilities enabled by technology. The same holds for public organizations. Public organizations are now facing new, disruptive developments, and their core tasks are at risk and subject to changes. Are arrived policies and legislation still valid? Do new services need to be developed? What is the role of the own organization? At the heart of this lies the questions if public organizations are flexible enough to cope with these new developments.

Governments and large organizations try to manage the new developments using established patterns of governance, with stability and accountability as the main values. However, these mechanisms were not developed to adapt to changes. The use of the existing mechanisms implies enhancing controls and procedures, just to get to grips to the new developments and take responsibility. However, society is developing, whereas procedures are inflexible and controls may be at the cost of professional knowledge or may result in damaging game play between managers and professionals, between public and private organizations or between different functional departments of large organizations.

The ambition of innovations are often not known in advance and there is a need for trial and error strategies that do not fit well within the governance that is aimed at ensuring stability and the proper functioning of the government respecting our democratic values. Ambiguous purposes and objectives should be dealt with and there is uncertainty around the effectiveness of efforts and a high level of complexity is involved as development affect political, economic, social and technical aspects.

In this editorial we explore the challenges and concepts of adaptive governance. The problem of having different rhythms at various horizontal layers of governance will be analyzed. This is followed by a discussion of the main characteristics of adaptive governance. Next adaptive governance strategies will be explored and presented. We conclude that adaptive governance requires balancing adaptability and stability and requires ambidextrous organizations. Finally, further research direction are suggested.

2. A problem of rhythms: ICT and organizational speed

Organizations have different abilities to respond at different levels and a challenge is the coordination of these levels, which is complicated due to the time taken to respond. The

speed in the governance of technology is often different from other types of governance - e.g. regarding budget allocation - which results in a friction. Whereas governance at the organizational level should ensure stability and accountability, governance at lower levels should create adaptive capacity. Figure 1 shows schematically the differences in speed by visualizing horizontal layers of governance. Network governance needs a long time and involvement of many independent stakeholders who have to agree with each other. This is not simple and often takes a long time. Organizational governance should facilitate strategy development and is typically viewed as long term and does not change frequently. The strategy is translated in a yearly planning and budgeting cycle in which targets are set and budgets are allocated to programs. Within these programs many projects take place. Often software-based solutions are necessary to deal with societal problems. Software projects have typically a shorter life-cycle. Software projects embrace more and more agile software development, in which a heartbeat of several weeks guides the making of sprints to arrive at working software. Finally, the governance of the daily operations requires often immediate responses and governance mechanisms are aimed at facilitating this.

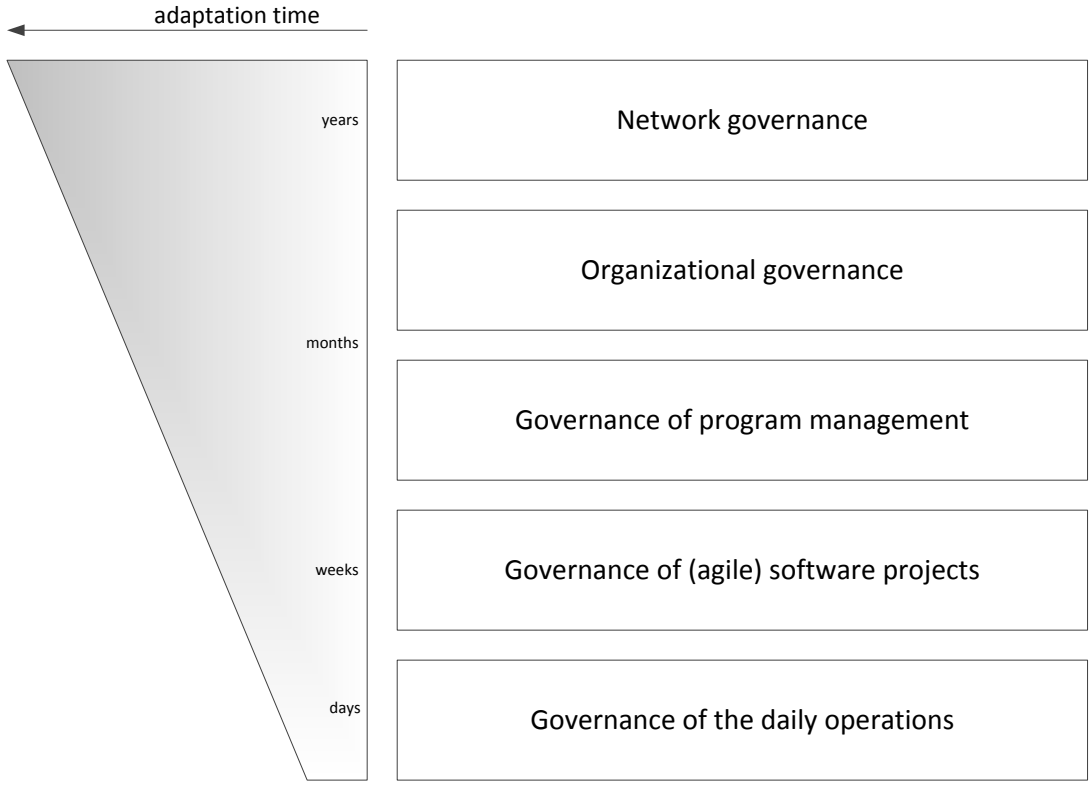


Figure 1: overview of differences in time in governance

As software projects are complex and often hard to predict in advance they opt for taking small steps, including evaluations of what is done and what should be done next. Agile software development enables adaptive planning, flexible response to change incremental development, early delivery of working software which enables continuous improvement (Sutherland, van Solingen, & Rustenburg, 2011). These kinds of projects are characterized by complexity, dynamics which are both caused by and result of uncertainties and unexpected behavior. The complexity originates from having to take into account many interrelated aspects and not being able to view all. Uncertainty is caused by the inability to know all the requirements in advances and the many changes happening during the projects. Many projects fail and the high level of expectations are not achieved due to the inability to deal with the complexity and uncertainty (Anthopoulos, Reddick, Giannakidou, & Mavridis, 2016; Janssen, Voort, & Veenstra, 2014). The chance of failure is higher when political and organizational elements come to the fore (Gauld, 2007) and vertical governance does not connect the horizontal layers. Furthermore, the number and variety of stakeholders is often higher when going from the governance of daily operations to network governance. In higher levels stakeholders might come at the table that might not have foreseen in advance.

Each governance layer might be constrained by other layers. What happens when the budgets need to be re-allocated due to changes in a project? And what if there are different allocations of budget necessary to the rise of new developments? Do they have to wait for a next budgeting round? This implies that adapting to changes would take the time of the budgeting cycle. Figure 1 shows the increasing levels of speed connected to various levels of governance. The horizontal levels of governance are out of sync and there is no vertical integration. This results in a disconnect between the levels and an inability to adapt.

The control-based model often assumes that decisions are taken higher in the hierarchy. In a hierarchical organizational model there are clear procedures for who is responsible for what, to determine when a higher hierarchical level is needed. This is a solid, but static model which is often not suitable for dealing with dynamic and complex situations in which quick response times are needed. An event happening in the environment, for example a cybersecurity attack, might require a fast reaction. For emergency often plans and procedures are made to deal with them, but what about innovations, changing technology, or user needs that also need quick reactions, but are not emergencies? It might take too long if the traditional hierarchical decision-making model is followed. For example it might need a

too long time to free budget. Often reporting is necessary to higher hierarchical echelons, the timeliness (see fig 1) is slower at these levels resulting in long reaction time, whereas constituents expects quick response and an adaptive government.

There is a tension between the ability to react quickly and ensuring stability and the making of sound, transparent and accountable decisions. Faster might not mean better and making an uninformed decision or without stakeholders involvement is full of risks. A major government role is to ensure stability and therefore governments may have a particular aversion to risk and errors. As such the challenge is to respond as quickly as possible without sacrificing decision-making quality and involvement.

3. What is adaptive governance?

Adaptive governance is suited to dealing with problems and projects that are complex, uncertain and in which many actors are involved (Nelson, Howden, & Smith, 2008). Adaptive governance recognizes that technology projects are inherently complex, surrounded by a high level of uncertainty and different interests that might even be conflicting. There is no uniform, standard way for dealing with high complexity, uncertainty and many stakeholders that works in all situations and organizations need to be prepared. Instead of stability and accountability, adaptive governance takes *learning* as the core value (Gunderson & Holling, 2002).

Adaptive governance is an approach that is often used for societal complex issues in which there are many stakeholders with diverging interests, and uncertainty about the actions that can be taken. Adaptive governance is used as a principle in areas like climate-induced community relocations (Bronen & Chapin, 2013), ecological systems (Dryzek, 1987; Folke, Hahn, Olsson, & Norberg, 2005) and drought policies (Nelson et al., 2008). Adaptive governance is a way to cope with unpredictability which due to, among other things, the complexity, non-reducibility, spontaneity, variability, and collective quality of ecosystems (Huitema et al., 2009). Because of these characteristics of natural systems, adherence to prescribed plans, procedures and rules is not feasible. Rather successful adjustment to real-time contingencies based on timely information is key (Robertson & Choi, 2010). Adaptive governance is about being able to improve the adaptive capacity of organizations to deal with uncertainty and improve the speed of decision-making.

The need for adaptive governance originates from the mismatch between the characteristics of the environment and the way organizations are governed. Viewed from this way adaptive governance assumes the inevitability of dynamics. On top of these dynamics the governing of ecosystems has to deal with different institutional scales and the linkages between them. There is often a mismatch between horizontally functions, and vertically between governance levels. The lack of alignment between institutional scales is a major source of dynamics and are unavoidable, though it is possible to mitigate dynamics.

Adaptive governance takes the challenge of really accepting uncertainty by being prepared for change and surprise and by enhancing the adaptive capacity to deal with disturbance (Folke et al., 2005; Termeer, Dewulf, & Van Lieshout, 2010). Learning has a central role (Gunderson & Holling, 2002), because the concept of learning acknowledges the inability to predefine and control all possible factors that come in. Rather, taking learning as a central concept provides more leniency towards improvements and adaptations as a result of inevitable surprise. Strategies involving 'adaptive governance' are usually not centralistic.

4. Possible adaptation strategies

The idea behind adaptive governance is often that decentralized organizations can tackle problems in a more effective manner than providing top-down solutions (Brunner & Lynch, 2010). This does not necessarily mean that there is no guidance from top-down. Core characteristics of adaptive governance are decentralized decision-making, engagement of many stakeholders in decision-making and the use of tacit decentralized knowledge (Brunner & Lynch, 2010). Adaptive Governance is a principle providing strategies for dealing with uncertainty and adapting to changes originating from the environment. By employing adaptive governance the fragmented capacity and capabilities within an organizations should be fully utilized to spot changes early and take appropriate actions in a timely manner. Adaptive governance should contribute to policy and strategy development or organizations and to ensure that potential disruptions and changes are deal with. Essential is the organizations of decision-making authorities to accomplish this.

No dominating of overarching strategies exist and in table 1 examples of possible adaptive governance strategies are outlined. In governance efforts typically risks are identified and future projections are made. Furthermore the capacity to monitor relevant societal

processes and spot developments and taking of measures are important aspects. The current institutionalization of social media to monitor discussions on social media is an important part of this (Mergel, 2016; Sandoval-Almazan & Ramon Gil-Garcia, 2014) which has to followed anywhere, while begin nowhere (Zavattaro & Sementelli, 2014).

Table 1: examples of adaptive governance strategies

name	**explanation**
Know the stakeholders and their capabilities	Identify patterns of participants, their interest and the goals, and look at how their capabilities can be used (De Bruijn & Ten Heuvelhof, 2008). Both organizational internal and external stakeholders and capabilities needs to be identified.
Mobilize stakeholders and cooperate	Once you know the stakeholder they need to be mobilized to work together. Bringing in new players this strategy can help to gain novel insights. A coalition can have all the capabilities and resources needed or might already developed useful solutions (De Bruijn & Ten Heuvelhof, 2008).
Public-private strategies	As a specification of the previous strategy, public and private parties can be involved, but attention should be given to the differences in objectives and the changes that are necessary (Klievink, Bharosa, & Tan, 2016; Klievink & Janssen, 2014)
Self-organization	Self-organize as social networks with teams and actor groups that draw on various knowledge systems and experiences for the development of a common understanding and policies (Folke et al., 2005).
Decompose complexity	Decompose a complex challenges into smaller, tangible problems that can be solved (Sutherland et al., 2011). In agile software developments sprints are taken which results in output and based on which a next step is taken.
Keep options open	Make decision that cannot be easily alternated as late as possible to keep the option open to adapt to other directions (Dym & Little, 2009).
Flexible infrastructure	Providing infrastructure, that is flexible and adaptive over time

	and can facilitate various directions (Janssen, Chun, & Gil-Garcia, 2009).
Shortening decision-making cycle times	Use to inform higher-level decisions from the bottom-up and ensure short cycle times. Once innovations are spotted there is a need for decision-making within a short time frame. Procedures allowing this should be in place, which often requires more decentralized decision-making.
Confrontation strategy	confront stakeholders with outcomes of not reacting to disruptive changes and maintaining the status quo.
Education and training	Education and training are key concepts to provide more leniency towards improvements and adaptations and provides more ability to react. Also staff in the top of an organization should be educated to become IT-savvy.

Adaptive governance might have far reaching consequences. Changing governance mechanisms and decentralized decision-making influence the power structure. Also technology developments influence power structures as persons who have an understanding of technology and its possible use might use this to gain power. These changes might result in instability and a change in the status quo. A major challenge is to ensure stability and to be adaptive at the same time. This requires that there is knowledge about which parts can change and need to change and which parts should remain stable for a longer time.

5. Stability, adaptability or ambidexterity?

Governance needs to be both stable, efficient and ensure accountability on the one hand, whereas being adaptive at the other hand. Governance mechanisms should ensure that the state provides essential services and serves as a responsible steward of state resources. Government officials should be held accountable through political and legal processes to avoid corruption and manipulation, wasting money and taking societal risks. Power should be balanced to avoid that one can gain authority and control over resources and misuse them for their own benefits instead of societal benefits.

Governance mechanisms like organization structures and decision-making authority are there for ensuring the proper functioning of government and should ensure transparent and

accountable decisions. This is created by having bureaucracies based on fixed organizational structures, procedures and processes. Bureaucracies are inherently slow in reacting due to well-defined rules, policies and organizational hierarchy. The latter are necessary for ensuring accountability and fair treatment of constituents.

This demands check and controls to avoid that this might happen and civil servants have often a risk averse attitude. This structure has a tensions with the need to react in time and quickly on changing societal needs. The system should avoid the making of huge mistakes, taking unacceptable risks and degrading of essential values like safety and security, however, this should not halt or block innovation. Too many changes might make the situation unclear and result in a lack of accountability.

Taken them to the extremes, approaches inspired by adaptive governance are challenging the whole idea of organization. Thinking 'capabilities', 'adaptiveness', 'learning', 'coping with surprise' drive people away from control, and procedures. At the same time, controls and procedures are crucial for stability and ensuring accountability.

Learning as a value is generally seen as competing with control. Jay Galbraith (2004) contrasts two types of organizations. The first is the innovative organization with qualifications such as 'freedom', 'creativity', and 'differentiation'. The second is the operational organization with qualifications such as 'controls and deadlines', 'efficiency', and 'effectiveness'. He states that the types of organization may both be effective in their own right, but they do not combine very well. For mature organizations in changing times however, both learning and control might be crucial at the same time.

An essential requirement for adaptive governance seems balancing the values. The idea of ambidextrous organizations assume that some separation is necessary to change. Answering disruptive innovations involves accepting new operations, tools and organizational forms. It leads to different types of organizations with different competences under one roof. Big data and the shared economy therefore may involve a move towards an 'ambidextrous organization'. Ambidextrous organizations are just that: organizations that adopt conflicting values within one organization, accepting the tensions among those activities. The word 'ambidexterity' is derived from the Latin *ambos* (both) and *dexter* (right). Ambidexterity is the ability of humans to use both hands with equal skill. In the literature, it has increasingly been used to refer to an organization's ability to pursue two contradictory activities at the same time (Simsek, 2009). One of the first uses of the term "organizational ambidexterity"

by Duncan (1976) built on earlier studies (e.g. Burns & Stalker, 1961; Thompson, 1967) to argue that firms need to consider dual structures for long-term success: different structures to initiate versus execute innovation. The idea of ambidexterity is usually applied to the activities 'exploration' versus 'exploitation'. This idea of marrying explorative and exploitative activities in one organization naturally involves tensions. Overall, in the literature on ambidextrous organizations, there is broad recognition that the challenges of managing a mature business, with its emphasis on productivity, incremental improvement, and short-term focus, is quite different from managing an entrepreneurial venture with the mandate to move quickly and learn from failure, and a more long-term orientation (O'Reilly & Tushman, 2008).

Due to a short-term bias, organizations focus often on exploitation to become better in using what they already know (March, 2003). Although in this way organizations might become dominant on the short-run, however, these organizations will gradually become obsolescent and fail (March, 2003; O'Reilly & Tushman, 2008). This is called the '*competency trap'*: the organization puts too much emphasis on exploiting their existing competences, products and services. A second risk is the '*failure trap'* in which an organization puts too much emphasis on explorative trial-and-error processes with the chance that the error element will prevail.

The inability of the governance to deal with adaptability is often one of the reasons why innovations are sometimes held outside the existing organizations. Nevertheless this means that the existing and innovative organizations are disconnected and the immense amount of knowledge and the capabilities that are available within the organizations are not mobilized. Other ways of dealing with is the free persons for a certain amount of time to work on innovations or the creation of a lab in which people can experiment and play with their ideas.

6. What are we heading for?

Organizations are all too often focused on running their day-to-day operations and having little mechanisms to be adaptive and to react to changes that might have a disruptive nature. Traditional governance is often focused on ensuring stability and accountability and dealing with repeatable issues but give little room for taking advantages of new developments and adapting quickly to changes in the environment. Despite that all the necessary capabilities are available within organizations, they are often not able to react and

adapt. Taking advantage of their internal capabilities, but also of the capabilities and skills outside the own organization is essential. This results in the need for adaptive governance which is ambidextrous by nature, as these should be able to balance stability, accountability at one side and adaptability and agility at the other side.

Adaptive governance is not easy as stability should remain to ensure continuity and reliable and accountable processes, but at the same time changes should be spotted and adequate measures should be taken. Adaptive governance takes *learning* as the core value and acknowledge that societal and technology challenges are inherently complex, surrounded by a high level of uncertainty and different interests that might even be conflicting. The main characteristics of adaptive governance are decentralized decision-making and efforts to mobilize the internal and external capabilities, bottom-up (and top-down) decision making, wider participation to spot and internalize developments, and dealing with uncertainty by continuous adjustment.

As there are many technology developments that are changing our society more research in this domain is needed. Especially plea for more research into the type of governance mechanisms, overarching institutional frameworks and their dependency on the context and their impact. At the same time we should understand the horizontal and vertical levels of governance and how they influence each other. Ambidexterity strategies needs to be developed and evaluated.

The needs for being adaptive is often intuitive clear, however, in reality there might be hidden tradeoffs, obviously with efficiency, accountability, stability and robustness. There need still a lot of empirical research to be done about the trade-offs and limits of adaptiveness under different conditions, the limiting factors for adaptiveness, the way adaptiveness is traded off by several actors within an organization, and between organizations, and the governance challenges that this may imply.

Acknowledgement

The authors would like to thank Tomasz Janowski for his careful review and suggestions.

References

Anthopoulos, L., Reddick, C. G., Giannakidou, I., & Mavridis, N. (2016). Why e-government projects fail? An analysis of the Healthcare.gov website. *Government Information Quarterly*. doi: http://dx.doi.org/10.1016/j.giq.2015.07.003

Bronen, R., & Chapin, F. S. (2013). Adaptive governance and institutional strategies for climate-induced community relocations in Alaska. *Proceedings of the National Academy of Sciences of the United States of America, 110*(23), 9320-9325. doi: 10.1073/pnas.1210508110

Brunner, R. D., & Lynch, A. H. (2010). Adaptive governance and climate change.

Burns, T. E., & Stalker, G. M. (1961). The management of innovation. *University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship*.

De Bruijn, J. A., & Ten Heuvelhof, E. (2008). *Management in networks: on multi-actor decision making*: Routledge.

Dryzek, J. S. (1987). Rational ecology: Environment and political economy.

Duncan, R. B. (1976). The ambidextrous organization: Designing dual structures for innovation. *The management of organization, 1*, 167-188.

Dym, C. L., & Little, P. (2009). *Engineering Design* (3rd ed.). New York, N.Y: John Wiley & Sons, Inc.

Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2005). Adaptive governance of social-ecological systems. *Annual Review of Environment and Resources, 30*, 441-473. doi: DOI: 10.1146/annurev.energy.30.050504.144511

Gauld, R. (2007). Public sector information system project failures: Lessons from a New Zealand hospital organization. *Government Information Quarterly, 24*(1), 102-114. doi: http://dx.doi.org/10.1016/j.giq.2006.02.010

Gunderson, L. H., & Holling, C. S. (2002). *Panarchy: understanding transformations in human and natural systems*. Washington DC: Island Press.

Huitema, D., Mostert, E., Egas, W., Moellenkamp, S., Pahl-Wostl, C., & Yalcin, R. (2009). Adaptive water governance: assessing the institutional prescriptions of adaptive (co-) management from a governance perspective and defining a research agenda. *Ecology and society, 14*(1), 26.

Janowski, T. (2015). Digital government evolution: From transformation to contextualization. *Government Information Quarterly, 32*(3), 221-236. doi: http://dx.doi.org/10.1016/j.giq.2015.07.001

Janssen, M., Chun, S. A., & Gil-Garcia, J. R. (2009). Building the next generation of digital government infrastructures. *Government Information Quarterly, 26*(2), 233-237.

Janssen, M., & van den Hoven, J. (2015). Big and Open Linked Data (BOLD) in government: A challenge to transparency and privacy? *Government Information Quarterly, 32*(4), 363-368. doi: http://dx.doi.org/10.1016/j.giq.2015.11.007

Janssen, M., Voort, H., & Veenstra, A. F. (2014). Failure of large transformation projects from the viewpoint of complex adaptive systems: Management principles for dealing with project dynamics. *Information Systems Frontiers, 17*(1), 15-29. doi: 10.1007/s10796-014-9511-8

Klievink, B., Bharosa, N., & Tan, Y.-H. (2016). The collaborative realization of public values and business goals: Governance and infrastructure of public–private information platforms. *Government Information Quarterly*. doi: http://dx.doi.org/10.1016/j.giq.2015.12.002

Klievink, B., & Janssen, M. (2014). Developing Multi-Layer Information Infrastructures: Advancing Social Innovation through Public–Private Governance. *Information Systems Management, 31*(3), 240-249. doi: 10.1080/10580530.2014.923268

Linders, D. (2012). From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Government Information Quarterly, 29*(4), 446-454. doi: http://dx.doi.org/10.1016/j.giq.2012.06.003

Luna-Reyes, L. F., & Gil-Garcia, J. R. (2014). Digital government transformation and internet portals: The co-evolution of technology, organizations, and institutions. *Government Information Quarterly, 31*(4), 545-555. doi: http://dx.doi.org/10.1016/j.giq.2014.08.001

March, J. G. (2003). Understanding Organizational Adaptation. *Society and Economy in Central and Eastern Europe, 25*(1), 1-10. doi: 10.1556/SocEc.25.2003.1.1

Mergel, I. (2016). Social media institutionalization in the U.S. federal government. *Government Information Quarterly*. doi: http://dx.doi.org/10.1016/j.giq.2015.09.002

Nelson, R., Howden, M., & Smith, M. S. (2008). Using adaptive governance to rethink the way science supports Australian drought policy. *Environmental Science & Policy, 11*(7), 588-601. doi: http://dx.doi.org/10.1016/j.envsci.2008.06.005

Nograšek, J., & Vintar, M. (2014). E-government and organisational transformation of government: Black box revisited? *Government Information Quarterly, 31*(1), 108-118. doi: http://dx.doi.org/10.1016/j.giq.2013.07.006

O'Reilly, C. A., & Tushman, M. L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in organizational behavior, 28*, 185-206.

Robertson, P. J., & Choi, T. (2010). Ecological governance: Organizing principles for an emerging era. *Public administration review, 70*(s1), s89-s99.

Sandoval-Almazan, R., & Ramon Gil-Garcia, J. (2014). Towards cyberactivism 2.0? Understanding the use of social media and other information technologies for political activism and social movements. *Government Information Quarterly, 31*(3), 365-378. doi: http://dx.doi.org/10.1016/j.giq.2013.10.016

Simsek, Z. (2009). Organizational ambidexterity: Towards a multilevel understanding. *Journal of Management Studies, 46*(4), 597-624.

Sutherland, J., van Solingen, R., & Rustenburg, E. (2011). *The power of scrum*: CreateSpace.

Termeer, C., Dewulf, A., & Van Lieshout, M. (2010). Disentangling scale approaches in governance research: comparing monocentric, multilevel, and adaptive governance. *Ecology and society, 15*(4), 29.

Thompson, J. D. (1967). *Organizations in action: Social science bases of administrative theory*: Transaction publishers.

Weerakkody, V., Janssen, M., & Dwivedi, Y. K. (2011). Transformational change and business process reengineering (BPR): Lessons from the British and Dutch public sector. *Government Information Quarterly, 28*(3), 320-328. doi: http://dx.doi.org/10.1016/j.giq.2010.07.010

Zavattaro, S. M., & Sementelli, A. J. (2014). A critical examination of social media adoption in government: Introducing omnipresence. *Government Information Quarterly, 31*(2), 257-264. doi: http://dx.doi.org/10.1016/j.giq.2013.10.007