

# BOARD LEVEL IT GOVERNANCE RESEARCH PROJECT

## | RESEARCH BRIEFING 2





# HOW BOARDS LEAD AND GOVERN DIGITAL ASSETS: A SUMMARY OF THE STATE-OF-THE-ART RESEARCH

**In our increasingly digitized economy, information technology (IT) has become fundamental to support, sustain and grow organizations. Successful organizations leverage the digital innovation potential but also understand and manage the risks and constraints of technology.**

Previously, the governing board could delegate, ignore or avoid IT related decisions, but the disruptive new technologies (cloud, internet of things, big data...) are increasingly being felt at board level. Emerging research calls for more board-level engagement in IT governance and identifies serious consequences for digitized organizations in case the board is not involved. Yet, it appears that IT governance competence remains the 'elephant in the boardroom' for more than 80% of boards of directors.

In this context, a co-created research project was installed by University of Antwerp - Antwerp Management School, CEGEKA, KPMG Belgium and Samsung, focused on the role of the board in IT governance. This second research briefing summarizes the current body of knowledge on how boards (can) lead and govern digital assets. This summary is obtained through a structured literature review and reports on underlying theories grounding the "why" and "how" of board-level IT governance, identified enablers/inhibitors and implementation approaches. The report concludes with some high-level recommendations for practice.



# 1

# RESEARCH CONTEXT, OBJECTIVE AND DESIGN

IT governance, otherwise referred to as “enterprise governance of IT” or “corporate governance of IT”, is a focus area of corporate governance that is concerned with the organization’s IT assets. In analogy to corporate governance, it is concerned with the oversight of IT assets, their contribution to business value and the mitigation of IT-related risks (Weill & Ross, 2004). A common referenced definition comes from De Haes & Van Grembergen (2015) who state that *“Enterprise governance of IT is an integral part of corporate governance exercised by the board and addresses the definition and implementation of processes, structures and relational mechanisms in the organization that enable both business and IT people to execute their responsibilities in support of business/IT alignment and the creation of business value from IT-enabled business investments.”* Many sources identify five areas or domains of attention in the context of IT governance that need to be addressed (Butler & Butler, 2010; ITGI, 2003; Posthumus & Von Solms, 2010; Valentine & Stewart, 2015):

- Strategic alignment, with focus on aligning IT with the business and collaborative solutions
- Value delivery, concentrating on optimizing expenses and proving the value of IT
- Risk management, addressing the IT related business risks
- Resource management, optimising IT related knowledge and resources
- Performance management, monitoring IT enabled investment and service delivery

Emerging research calls for more board level engagement in IT governance and identifies serious consequences for digitized organizations in case the board is not involved. For example, Turel and Bart (2014) conclude that high levels of board-level IT governance, regardless of existing IT needs, will increase organizational performance. But from a board perspective, there is also an increasing need to comply with an increasing amount of regulatory and legal requirements (eg. privacy) of which many also impact IT. As such, these regulatory requirements redefine directors’ responsibilities for IT governance (Trites, 2004).

Despite the agreement between researchers and practitioners on the need for board-level involvement in IT governance, it appears that this is more the exception than the rule in practice (Andriole, 2009; Bart & Turel, 2010; Coertze & Von Solms, 2014). As this issue is prevalent, we posit that it

is time to provide a synthesis of state-of-the-art research on the subject of “board-level IT governance”. This will provide insights on the various determinants, theories and outcomes of the matter, how certain scholarly viewpoints intersect, and how this could drive future research activities and practical guidance. Therefore, the following general research question was put forward:

**“What is the state-of-the-art of the research domain of board-level IT governance?”**

To answer this research question, a focused systematic literature procedure was designed (Kitchingham & Charters, 2007). This implies that both automatic (using a structured search string) and manual searches were done in Web of Science or Google Scholar to retrieve the relevant top-tier journals and conference proceedings on this topic. The final set included 26 paper to be analyzed. The papers that were used to craft this high-level summary document are referenced at the end (together with some extra sources for background purposes).



## 2 INSIGHTS ON HOW BOARD (CAN) LEAD AND GOVERN DIGITAL ASSETS

The key findings of the state-of-the-art research are visually summarized in Figure 3 and discussed further in the following paragraphs. The findings include theories that ground the “why” and “how” of board-level IT governance, and extends these insights with identified enablers/inhibitors and implementation approaches of board-level IT governance.



FIGURE 1: SUMMARY OF KEY FINDINGS ON HOW BOARD (CAN) LEAD AND GOVERN DIGITAL ASSETS



## 2.1 THEORIES EXPLAINING THE “WHY” AND “HOW” OF BOARD-LEVEL IT GOVERNANCE

A multitude of theories have been applied to board-level IT governance by prior research. They not only allow us to position the problem in a broader context, but also apply known and predictable patterns in terms of the “why” and “how” of board-level IT governance.

### 2.2.1 THE “WHY” OF BOARD-LEVEL IT GOVERNANCE

Building on organizational theories, the following key factors are identified explaining “why” boards should be involved in IT governance:

#### Provide oversight on IT related matters (agency theory)

Building on agency theory, the board should play an oversight role to address the so-called principal-agent problem. The agency theory defines two actors: the principal, who is the task-assigning actor, and the agent who is the task-executing actor. Due to the different levels of risk acceptance among the actors, the tasks assigned to the agent can be executed in a way that conflicts with the principal's interests. To avoid the self-interested behavior of the agent, governance mechanisms can be applied to provide oversight (Eisenhardt, 1989; Posthumus & von Solms, 2008). In terms of the board-level IT governance, the agency problem can arise between the board and executive management. Executive management and more specifically the CIO are employed as an agent by the board to take up the day to day operation of the organization, including IT matters. To enable effective oversight, the board can set an IT policy, ask critical question, establish an IT related oversight committee (see infra) etc.

#### Improve firm valuation through IT governance transparency (voluntary disclosure theory)

Theoretical research has also advocated the importance of IT governance communications to external stakeholders of the firm (Raghupathi, 2007). This theoretical underpinning, rooted in voluntary disclosure theory and agency theory, predicts that firms can improve their liquidity and firm valuation through better information intermediation. In highly digitized environment, transparency on IT governance can indeed be an important source of information for investors and other stakeholders. This

requirement to create transparency on IT governance towards stakeholders was addressed in “Research Briefing 1: How Governing Boards Report on IT Governance” of our research program (visit [www.antwerpmanagementschool.be/boarditgovernance](http://www.antwerpmanagementschool.be/boarditgovernance)), where we analyzed how boards report on IT value, IT risk, IT performance, IT strategic alignment.

#### Provide guidance and direction on IT related matters (stewardship theory)

The stewardship theory postulates that, in contradiction to the agency theory, the relationship of the owners and management is built on trust in equal interests. The behaviors of the stewards are aligned with those of the principals (Donaldson & Davis, 1991). Given this perspective, “managers need less oversight, and more advice, because they are deemed to be trustworthy good stewards of the resources they manage.” (Bart & Turel, 2014). In the context of board-level IT governance, this implies that it is the board's role to discuss IT issues and provide guidance to management based on these discussions. How the discussion of IT issues on board-level is facilitated, is further discussed in this research paper in the section on critical questions boards can ask.

#### Build unique digital capabilities for competitiveness (resource dependence theory)

Resource dependence theory states that organizational success is dependent on the deployed resources. These resources can be internal or external to the organization (Pfeffer, 1972). In this context, the board can also be a valuable resource in knowledge and capital to the organization, acquired through experience in industry. For example, board members can reuse IT oversight and guidance practices applied in other organizations or acquired through outsourcing experiences. (Kuruzovich, Bassellier, & Sambamurthy, 2012; Bart & Turel, 2014). In this way, IT governance competencies at board level improves organizational performance by means of building unique (difficult to copy) board-level digital capabilities as an enabler for competitiveness and sustainable growth (Bart & Turel, 2014).

### 2.2.2 THE “HOW” OF BOARD-LEVEL IT GOVERNANCE

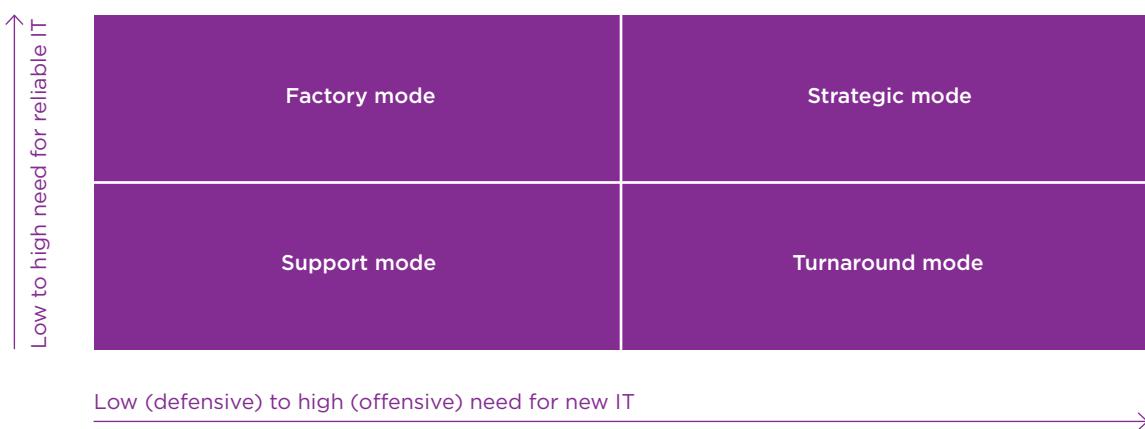
Theoretical insights also explain that there is no “silver-bullet” approach in IT governance, and that boards are confronted with many factors that influence “how” they should and can take up their IT related accountabilities.

### Board-level IT governance is dependent on the role of IT (contingency theory)

The contingency theory describes the dependence of an organization's success to various internal and external factors (e.g. organization's size, adaptability to environment, resource availability, etc.). As such, this theory postulates that the way board-level IT governance is shaped for an individual firm depends on an interplay of external factors. The main contingency that has shaped this line of research is the reliance of the firm's current and future operation on technology (Nolan & McFarlan, 2005). It defines four "IT use modes" along two axes (contingencies). A low need for new information technology entails a

these organizational structures come from "established" values, norms and beliefs that have been institutionalized in the organization.

The strategic choice theory is used by Jewer & McKay (2012) to research propositions regarding organizational factors, such as the board size, proportion of insiders and IT expertise and their influence on board-level IT governance. The institutional theory is used by Jewer & McKay (2012) to research propositions regarding organization size, organization age and role of IT in the organization and their influence on board-level IT governance. More discussion on these elements is provided in the next section.



**FIGURE 2.**  
**NOLAN AND**  
**MFARLAN**  
**STRATEGIC**  
**IMPACT GRID**  
**(2005)**

defensive IT strategy, whereas a high need requires an offensive IT strategy. The spectrum is completed by the need for reliable information technology: within a defensive IT strategy, a high need for reliability results in a "factory" use mode, a low need results in a "support" use mode. Within an offensive strategy, a high need for reliability results in a "strategic" use mode, a low need results in a "turnaround" mode. In each of these modes, the level and approach in board IT governance can be different, for example in terms of required governance structures and oversight questions to be asked. Some of these examples are discussed in section 2.3.

### Board-level IT governance is dependent on strategic choices and organizational factors (strategic choice and institutional theory)

Strategic choice theory and institutional theory have been set against each other in the context of board-level IT governance by Jewer & McKay (2012). Strategy choice theory states that leaders of organizations can have an impact on the structures of the organization depending on their strategic choices, as opposed to institutional theorists who state that

## 2.2 ENABLERS AND INHIBITORS (DETERMINANTS) OF BOARD-LEVEL IT GOVERNANCE

Some researchers worked on identifying the determinants that influence whether boards do or do not take up their accountability around IT. Often, a lack of technology skills is named as one of the primary inhibitors of board-level IT governance (Trites, 2004; Butler & Butler, 2010). Secondly, motivational factors are reported such as the fact that in many organizations IT governance is not perceived as a topic that the board should take care about, but rather a topic associated to and within the IT department (Parent & Reich, 2009; Butler & Butler, 2010, De Haes and Van Grembergen, 2015). Other factors that explain absence of board level engagement in IT governance include:

- The reliance on the CIO (Best & Buckby, 2007; Parent & Reich, 2009)
- Being confident with the current state of IT governance (Andriole, 2009)
- CIO's avoidance of board involvement in IT governance (Best & Buckby, 2007)
- The lack of guidance for boards in IT governance frameworks (Parent & Reich, 2009)
- The role of IT (see section 2.3.2; 2.3.3) (Jewer,

Mckay, 2012; Nolan & McFarlan, 2005)

- The proportion of insiders in the board (negatively correlated to board-level IT governance) (Jewer, Mckay, 2012)
- The size of the board (negatively correlated to board-level IT governance (Jewer, Mckay, 2012)
- Age of the organization (boards of younger organizations, 20 years or younger, are more likely involved in IT governance than boards of older organizations) (Jewer, Mckay, 2012)

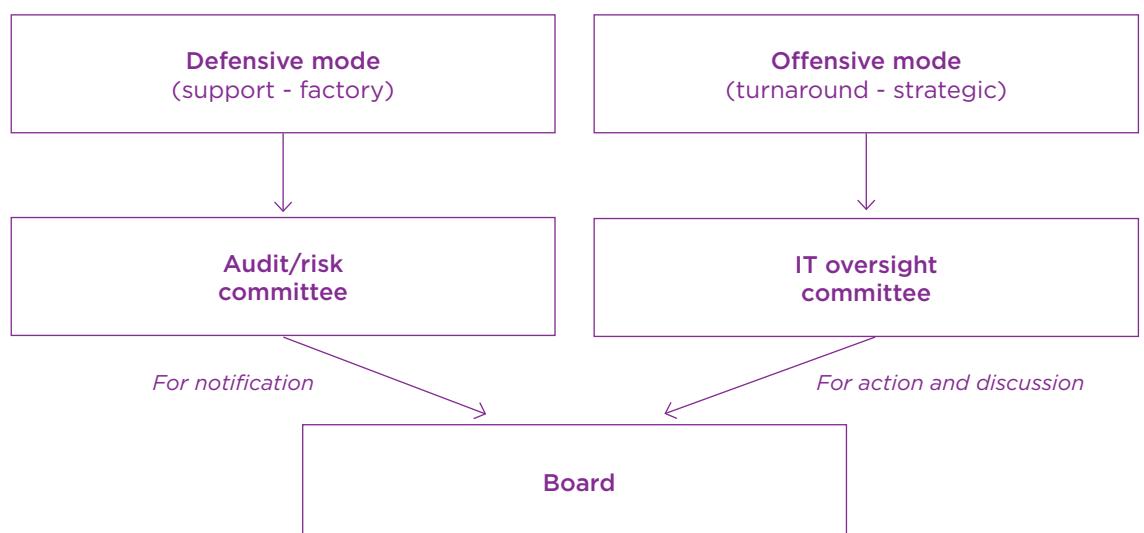
## 2.3 IMPLEMENTATION APPROACHES OF BOARD-LEVEL IT GOVERNANCE

Research not only identified enablers and inhibitor of board-level IT governance, but some implementation approaches for boards seem to emerge as well in the current body of knowledge.

### 2.3.1 BOARD-LEVEL IT GOVERNANCE COMPETENCIES

A possible approach to realize board-level IT governance is through increasing the expertise and competencies of the board members in this area. Both Mohamad et al. (2014) and Valentine & Stewart (2013, 2015) have introduced competency sets enabling an evaluation of current competencies

FIGURE 3.  
BOARD-LEVEL  
IT GOVERNANCE  
COMMITTEES  
(POSTHUMUS ET  
AL., 2010)



and develop or recruit desired IT governance competencies. Competencies identified by Valentine & Stewart (2015) include the ability of the board member to:

- “Direct and govern technology-enabled strategy and planning to maximize the advantages of technology and enhance performance at all levels of organization”
- “Lead and govern business technology investment and risk”
- “Direct and govern technology-enabled innovation and value creation”

### 2.3.2 BOARD-LEVEL IT GOVERNANCE COMMITTEES

When limited IT governance expertise is present at board level, literature has noted the use of committees by the board to effectively discharge their oversight responsibilities. Directors seem to be wary about the concept of an IT oversight committee, mainly because of possible additional overhead this might imply. A separate IT oversight committee is still warranted in case of an offensive stance on IT, as in such case, aspects of value delivery and alignment will need to be explicitly steered by the board (Andriole, 2009; Posthumus, Von Solms, & King, 2010; Turel and Bart, 2014).

Under more defensive conditions, the audit committee can be leveraged by the board to

perform IT governance oversight, certainly on aspects of risk (Mahring, 2006; Trites, 2004). Audit committees should however be skilled enough to include IT risk in their activities as they are primarily advised by internal audit (ERM perspective) and external audit (fiscal perspective) (Parent & Reich, 2009). Other areas of concern should still be governed by the board itself.

### 2.3.3 KEY IT GOVERNANCE QUESTIONS TO BE ASKED BY THE BOARD

Best & Buckby (2007) state that in view of the board's role of protecting stakeholder interests and providing proper oversight on the executive management, the board should ensure the production of quality information by asking the right critical questions. Along with the classification scheme, Nolan & McFarlan (2005) proposed focus areas and question sets which they mapped to the four quadrants. Example of these questions are provided in figure 4.

<ul style="list-style-type: none"> <li>• Do we have fast-response processes in place in the event of an attack?</li> <li>• Are we protected against possible intellectual-property-infringement lawsuits?</li> </ul>	<ul style="list-style-type: none"> <li>• Are our strategic IT development plan proceeding as required?</li> <li>• Do we regularly benchmark to maintain our competitive cost structure?</li> </ul>
<ul style="list-style-type: none"> <li>• Has the strategic importance of IT changed?</li> <li>• What are our current and potential competitors doing in the area of IT?</li> </ul>	<ul style="list-style-type: none"> <li>• Do we have processes in place that will enable us to discover and execute any strategic IT opportunity?</li> <li>• Is our application portfolio sufficient to deal with competitive threat?</li> </ul>

FIGURE 4:  
ASKING THOUGH  
QUESTIONS  
LINKED TO THE IT  
STRATEGIC IMPACT  
GRID (NOLAN & MC  
FARLAN, 2005)



## 3 CONCLUSIONS AND RECOMMENDATIONS

In our increasingly digitized economy, information technology (IT) has become fundamental to support, sustain and grow organizations. Successful organizations leverage the digital innovation potential but also understand and manage the risks and constraints of technology. Previously governing board could delegate, ignore or avoid IT decisions, but the disruptive new technologies are increasingly being felt at board level. Emerging research calls for more board level engagement in IT governance and identifies serious consequences for digitized organizations in case the board is not involved. Yet, it appears that the IT governance competence remains the 'elephant in the boardroom' for more than 80% of boards of directors.

To further understand this paradox, the purpose of this study was to identify and analyze the existing state-of-the-art knowledge already described in literature in this area. Out of the data, some supporting theories were identified providing rationales for the need (why) and context (how) of board-level IT governance. Related to this, specific determinants were captured that enable (positive) or inhibit (negative) boards to be engaged in IT governance (e.g. board size, number of insiders, age of the organization, etc). Current approaches described in

literature include the establishment of governance committees, asking critical questions and creating IT related competencies at board level. It was also concluded that in general, board-level IT governance should lead towards more IT enabled value creation while managing the IT related business risks.

The research also contributes to practice as some first specific governance approaches practices are identified that boards can leverage. Steps boards are recommended to consider are:

- Evaluating their current IT governance system by determining the role and significance of IT with respect to the business' innovation and reliability
- Directing their current IT governance system by establishing the appropriate governance structures in line with the agreed-upon role of IT
- Providing oversight over their current IT governance system by asking the appropriate set of critical questions

The upcoming briefings in this series will also report more hands-on guidance how these steps can be undertaken.

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## ➤ ABOUT THE RESEARCH PARTNERS

This research is part of a co-created research project installed by **KPMG Belgium, CEGEKA Belgium, Samsung Belgium, together with the Antwerp Management School and the University of Antwerp**. The leadership role of the industry partners in supporting this research is focused at better understanding the crucial accountability of the board in governing the digital assets and to provide solutions and tools for these board member to take up their accountability.

## ➤ ABOUT THE RESEARCHERS

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# COMPETENCE CENTER ITAG

## Mission

The Competence Center IT Alignment and Governance (ITAG) focuses on the design and implementation of organizational capabilities and e-leadership skills required to be successful in digital innovation and transformation journeys.

The Competence Center departs from the critical role information technology (IT) fulfills in digitized organizations and focuses on the necessary management practices needed to create value through IT enabled investments.

## Vision

The Competence Center IT Alignment and Governance focuses on the organizational challenges of governing and managing the digital assets. In this knowledge area, the emphasis is on how organizations enable both business and IT people to execute their responsibilities in support of business/IT alignment and the creation of business value from IT-enabled investments.

The objective of the Competence Center is to develop state-of-the-art concepts, models and theories that help organizations to generate more value out of IT enabled investments while managing its business risks. ITAG is an international point of reference that creates, distributes and applies innovative research that is grounded in science and rooted in practice.

## Co-creation

ITAG is part of the collective of Competence Centers at Antwerp Management School. The Competence Centers have various partners and active cooperation with public authorities, other knowledge institutions and organizations from civil society.

ITAG is a leading partner in an ecosystem of universities, private companies and public organizations that are investing in developing e-leadership skills. Co-creating partners in recent and running research include the University of Antwerp, Maastricht School of Business and Economics, ISACA (independent international non-profit organization that focuses on value and trust in information systems), EuroCIO, the European Commission (Digital Agenda), and IWT (Institute for Innovation through Science and Technology).

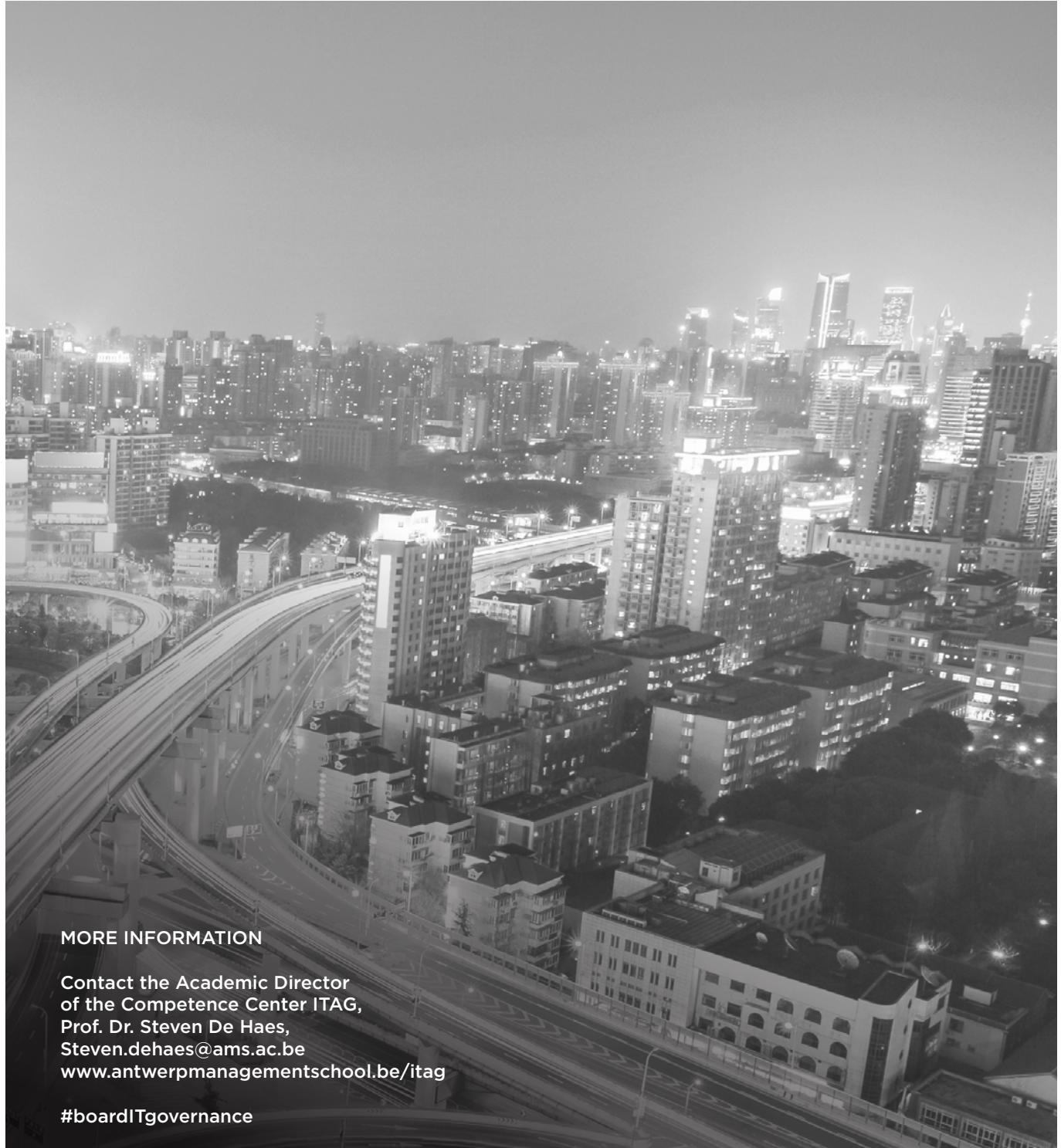
## What does the Competence Center offer?

ITAG explores new frontiers of knowledge with its partners, starting from challenges in their organization, sector, client base or society at large, and turns new insight into hand-on models, tools and guidance with impact. The Competence Center has the intention to develop a shared research and/or management development agenda with its partners on topics such as:

- › Enterprise Governance of IT;
- › Business and IT Alignment;
- › IT enabled Value and Performance;
- › IT Audit and Assurance;
- › Information Risk and Cybersecurity;
- › Digital (Transformation) Strategies;
- › E-leadership;
- › COBIT

To apply and distribute its research, ITAG also offers a portfolio of unique programs on IT Governance and Assurance, IT Management and Enterprise IT Architecture. Visit the website of Antwerp Management School at [www.antwerpmanagementschool.be/itag](http://www.antwerpmanagementschool.be/itag) to explore these programs.





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#### RESEARCH PROJECT WITH OUR KNOWLEDGE PARTNERS:



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