Purpose

This position paper presents an overview of key insights pertaining to IT leadership in the digital business context, as derived from pertinent academic and practitioner literature. These insights, along with insights from subject matter experts, have informed development of IVI's IT-CMF IT Leadership (LDP) Critical Capability.

The Leadership versus Management Debate

'Most organizations today are over-managed and under-led' [1, p.85].

Leadership and management are radically different concepts, however the terms are often used interchangeably and much confusion remains around their use [2]. Firstly, this confusion often centres on the vital roles played by each function and the view that leaders exist only at the top levels of the organizational hierarchy. There is an incorrect assumption that 'management' exists below these top levels and that all the rest are workers, specialists, and individual contributors [2], [3]. There is also the view that leadership is synonymous with charisma and since few people have great charisma, this leads to the conclusion that few leaders exist [2], [3]. Another view is that 'leaders are born, not made'. However, it is purported that the major capacities and competencies of leadership can be learned, and we all have the capacity to learn if the basic desire is there [3]. The terms 'control', 'prod', direct', and 'manipulate' are terms also often used in conjunction with leadership. However, leadership is not the exercise of power itself; rather it is the ability to empower others. In effect, leaders 'lead' by pulling rather than pushing; by inspiring rather than ordering; and by enabling people to use their own initiative and experiences rather than by denying or constraining their experiences and actions [3].

To provide further clarity on this issue, management is concerned with a set of well-known processes, such as planning, budgeting, and problem-solving, which help an organization to predictably do what it knows how to do well [2]. It is about producing predictable, orderly results, and detailed plans and budgets to achieve strategies and visions [1]. Management helps to produce products and services in line with user requirements, to a consistent level of quality, on budget, day after day, week after week. Hence, it is clear that management is crucial — however, it is not leadership [2].

Leadership is a distinctly different concept. It is strategy oriented – taking an organization into the future, finding opportunities in a turbulent business environment, and responding to and successfully exploiting those opportunities [2]. Leadership is the overarching effort to ensure that an organization has an appropriate mission, vision, strategy, and culture, and that these elements are manifested in all

of the organization's activities. Leadership provides the 'macro' context for the 'micro' managerial activity (i.e. the daily efforts to achieve the organizational objectives) [4].

Leadership Development

In a recent study, over 90 percent of CEOs were already planning to increase investment in leadership development because they considered it the single most important human capital issue their organizations faced [5]. Leadership development has become 'big business' over the last decade given the importance of leadership in the current malaise around the financial crisis, climate control, and ethical debacles, which has been characterized in the media as a 'failure of leadership' [6]. However, few organizations today have a sufficient leadership capability [2]. This is despite the plethora of services, books, articles, seminars, conferences, and TED-like talks purporting to have the answers to this leadership issue — a global industry estimated to be valued at in excess of $50 billion — which are delivering disappointing results [7]. This is evident in a *Fortune* survey, where only 7 percent of CEOs believed their companies were building effective global leaders, and only 10 percent indicated that their leadership-development initiatives were having a clear business impact [7]. Further research had similar findings where only 11 percent of more than 500 executives polled internationally strongly agreed that their leadership-development interventions achieved and sustained the desired results [7]. Hence, it is clear that there is a significant issue and organizations need help and guidance to develop an effective leadership capability.

IT Leadership in the Digital Context

The core fundamentals of a 'leadership' capability, as discussed, are no different to those required for an 'IT leadership' capability, although adapted for the IT or digital context. In the digital business environment where digital transformation is key to organizational success [8], and where organizations struggle to maximize value by leveraging technology in new and innovative ways, IT leaders are increasingly expanding their focus beyond solely considering the technology, to working collaboratively across the business [9], [10], [11]. Similarly, technology-driven disruptive changes in business industries have forced IT leaders to keep abreast of what is happening in the business environment. For example, IT leaders in traditional retail are now being asked by the board such questions as: 'how are you responding to what Amazon is doing?' 'How are you using business intelligence for competitive advantage?' 'How is technology being used to challenge the incumbents?' And while problem solving has always been the mainstay of IT leaders, they are now being asked to communicate directly with customers, partners, vendors, analysts, regulators, and journalists in a much more public way than internal IT traditionally had to manage. Many IT leaders have to adjust to being in this new limelight [12]. This shift in the proficiencies required for IT leadership has necessitated a focus on the underlying organizational capabilities necessary to be effective with technology [9], [10], [11]. The focus on a capability approach is based on the realization that it is through the ability to regularly evaluate and adapt IT-related resources in response to changing market and environmental forces, that sustainable value is derived [13]. Leaders need to have the insight that in the digital context, the traditional approach of having a board made up of members with lengthy industry and P&L experience may no

longer be adequate when 22-year-old billionaires are disrupting whole industries. Further, as a leader, it is necessary to ensure that the organization has the capabilities and the capacity to talk about the future and to act upon it [14].

IT Leadership Critical Capability

This section presents the key components of the IT Leadership Critical Capability (CC), which is made up of six key categories: *People, Process, Tools and Technologies, Culture, Structures and Relationships,* and *Cognition*. These are discussed in greater detail below.

People

In every area of business, there is an acknowledgement that the ability of an organization to compete is directly related to its ability to 'attract, develop, motivate, organize, and retain talented people' [15, p.xi]. IT leaders need to ask themselves 'how do we build a diverse and creative team that can reach better decisions?' [16]. It is the role of the IT leader in this context to advise and assist line managers in the recruitment, management, and retention of the workforce.

IT leaders may encourage the adoption or trial of a combination of recruitment approaches such as group interaction sessions and 'virtual recruitment' to select the best candidates [17], [18]. They may ensure that the correct management approach (e.g. task/goal oriented, extent of autonomous decision-making) informs workforce management practices [15]. IT leaders should also encourage and may directly intervene to help retain permanent and project-based teams through, for example, increased responsibility, implementing two-way communication approaches via regular meetings, and appraisals to show respect for the views and feedback of team members [19].

However, while these practices are indeed important in any organization, the people-related challenges extend far beyond recruitment and retention [20]. One of these challenges is around the management of 'teams' and IT leaders need to work in a mentoring or advisory capacity with line managers in team formation and management [21], [22]. IT leaders must have a good understanding and promote the benefits and methods associated with good teamwork practices.

In today's disruptive business environment, IT leaders must strive to create agile learning environments capable of rapidly adjusting to the changes engulfing them. An agile workforce has the capacity to reduce some of the stress currently experienced in relation to talent shortages [15]. A critical component of workforce and team agility is having the knowledge and skills to make rapid changes and the inclination to acquire new competencies [15]. IT leaders may also encourage the use of competency analysis to identify the knowledge, skills, and process abilities required to perform the organization's business activities, and may adjudicate on these analysis results to produce a competency improvement programme [15].

IT leaders must also deploy and oversee a rewards and incentives strategy that motivates and rewards the competencies and behaviours the organization considers vital to its success, in line with the IT strategic plan [15]. They can, for example, ensure that rewards for staff are based on the achievement of outcomes that are linked to the IT strategic plan's objectives. There may be a focus primarily on extrinsic rewards, such as a raise in salary or a bonus for reaching some quota, for individuals based on their performance [23]. Related to this idea of workforce compensation or rewards is that of performance management where processes are implemented for individuals, teams, and units to ensure continual discussion around the performance of work to identify ways to improve it [15]. It is the job of IT leaders to ensure some degree of equanimity throughout the system in order to promote buy-in and support from the workforce.

The role of the IT leader with regard to 'people' is diverse and challenging. However, with a proven set of practices in place covering recruitment, management, retention, teams, rewards and incentives, competency development, and performance management, this provides IT leaders with a roadmap for continuously improving the capability of the organization's workforce [15].

Process

IT leaders must ensure the IT function takes on the mantle to lead, or at a minimum shows strong support for the IT or digital strategy [24], [25]. Effective IT leaders typically have a strategic vision of how technology can help transform the business, and they are aware of how it needs to be implemented. They innovate relentlessly, they focus on driving growth, they ensure their vision is understood, they can move beyond operations and infrastructure, and they are courageous risk takers [25], [26].

Successful organizations need to transform their vision of the future into a present day reality through devising processes that will operationalize it. To realize a new vision, it is important to establish new ways of doing things: to conceive, design, and implement new ways of interacting and organizing [27]. One such process is the development of a coherent IT vision statement and IT or digital strategy which is led and promoted by IT leaders. In its most fundamental form, an IT or digital strategy represents how the business strategy is influenced by leveraging digital resources to create value [25]. IT leaders can contribute to this process through 'stretching' the planners creative horizons, quality control of planning outputs, critiquing and fine-tuning the planning process model, allocating sufficient and competent resources to planning, and embedding 'lessons learned' in policies and processes, for example. Alternatively, IT leaders could create learning opportunities for the planning team and assert IT's potential in the senior management councils.

Another such process is that of governance and performance where a common understanding needs to exist between IT and the business regarding decision-making authority and responsibilities on IT matters. IT leaders need to assign responsibility and decision-making authority, and hold all direct reports and senior IT management accountable for performance. They may also act as the individuals accountable for the security of the IT systems and ensure disaster recovery policies and procedures

work. An example of this in practice is where IT leaders are actively involved in goal-setting and appraisals for direct reports. In a digital context, the organization needs to evolve from having an IT governance focus to enterprise digital governance and enterprise accountability [28], [29].

Effective, accurate, and persuasive communication is also key to successful leadership [30]. IT leaders need to take charge, direct, encourage, stimulate, and have the capacity to convince others and to encourage the following of defined goals. Effective communication conveys what is expected of others. It helps to develop a better understanding and belief among people and inspires them to follow the principles and values which the IT leaders want to inculcate in them [31], [32]. One important aspect of the IT leader's role with respect to communication is to act as the 'boundary spanner' between the business functions and the technologists at the senior management level, and to advocate on behalf of the IT function in dealings with senior business management. It is also imperative to ensure that effective communication networks exist between the technologists and the business users and to promote receptivity to change in support of the IT strategy. In practice, IT leaders may act as evangelists; promoting a positive attitude to change in support of new IT systems and approaches, or exert influence on human resources and organizational design policymaking on cultural adaptation that promotes receptivity to change. Effective IT leaders are cognisant of the fact that productive communication is not a one-way process; rather there are two key factors: speaking and listening with understanding. They are aware that they cannot be successful unless they are heard and understood appropriately by their team members [32].

Tools and Technologies

With the role of technology within the organization radically changing, the role of IT leadership must also change to keep pace with the digitization journey [33]. The role of technology is multifaceted - it can keep us where we are but moving faster, or can be viewed as a key mechanism in leveraging the greatest opportunities requiring transformation [14]. IT leaders need to ensure that the appropriate tools and technologies, for example, resource management, workflow planning models, people/competency finder software, learning management tools, and MOOCS, are in place to support and drive leadership activities. They may also ensure that acquisition decisions are in line with a defined standard.

Culture

Organizational culture and leadership are inextricably entwined [34]. Strong cultures can often be traced to founders or to leaders who drove comprehensive transformation or renewal programmes [34]. The value of culture is intangible but real [35], [36], [37], whereby a company's economic value is not merely the sum of the values of its tangible assets, but must also include the value of its intangibles [35]. For example, when a company is taken over, the acquirer can be sure it has acquired its tangible assets such as patents, but cannot be certain to retain the intangible resources such as know-how, culture, or networks, which are 'people dependent' [36].

Culture has been extensively researched in the field of anthropology, but its first appearance in management science is credited to Pettigrew in 1979 [38], [39]. Initially considered as unresponsive to human intervention, by the 2000's it was viewed as amenable to assessment and manipulation by organizational leaders using well-defined frameworks and tools [39], [40], [41]. With this in mind, it is the role of IT leaders to develop and maintain a model of the appropriate IT culture that takes account of, inter alia, organizational culture, the vocational nature of IT, organizational attitude to risk, and collaboration. Schein [34] posits three 'levels' of culture (level denotes the degree to which the phenomenon is visible to the observer, how 'deep' the assumption is). These levels manifest their presence by observing the following:

1. Artefacts - visible organization structures and processes, observed behaviour
2. Espoused beliefs and values - strategies, goals, philosophies
3. Underlying assumptions - unconscious, taken-for-granted beliefs, perceptions, thoughts, and feelings.

IT leaders may use a multiplicity of cultural adaptation levers, such as artefacts, IT leadership style, education, positive/negative reinforcement, and structural change to manipulate attitudes, behaviours, and unconscious assumptions so that they conform to the desired cultural model. The ease with which leaders can effect change to the prevailing culture will vary depending on the 'depth' of the observed phenomenon. IT leaders have at their disposal a range of frameworks, tools, channels, and mechanisms with which to understand and manipulate the prevailing culture [39], [41]. The choice of tool will depend on the depth, breadth, and permanence of the change sought. Short-term temporary behavioral change can be affected by advocacy, decree, or tinkering with reward systems on a temporary basis; more deeply-rooted change can be brought about by education and training, constant refreshing of the core message, minor structural change, and reward systems to promote the desired culture change [34]. However, when radical culture change is required, this will prove challenging and often high-risk. The most powerful cultural influences are usually based on past experiences that are unwittingly assimilated over time into behaviours which appear to offer the greatest chance of success. Such assumptions are often unspoken and indeed, unconsciously held. Changing culture in these instances requires replacing the proponents of that culture, which is high-risk and generally accompanied by a great deal of disruption [34]. Understanding the existing culture and the levers that can best manipulate it can make culture a very powerful tool in the IT leader's toolkit [42].

Structures and Relationships

Structures and relationships describe the broad and interlinked areas of relationships, lines of communication, formal structures, and social networks, largely but not wholly within the organization, through which information flows, issues are debated, and decisions are made. They can be considered under two key headings:

1. Formal structures: lines of authority, expressly defined and calculated to align with the nature of the business, and

2. Informal structures: networks of relationships that emerge through time and experienced activity, generally organically but capable of manipulation and of being improved.

Formal structures are usually easily discerned and may remain static for extended periods. It is the role of the IT leaders to design, put in place, and adapt as necessary, formal organizational structures for the IT function. The degree of change will depend on the volatility of the business environment [43]. Changing priorities or work intensities are often managed using flexible teams [44], but working within established structures.

In contrast, as a 'vocational discipline' [34], IT practitioners will develop extensive informal networks both within and outside the organization. In this context, it is the role of IT leaders to understand, shape, and use the networks of connections (formal and informal, internal and external) that impact or support the achievement of the IT strategic plan. The scope includes formal entities, such as roles and responsibilities and organizational hierarchies, as well as less easily identified phenomena such as communities of practice, key influencers, relationship densities and bottlenecks, social capital, and social networks. Understanding and refining these networks can add to IT's effectiveness with minimal additional investment [45]. IT development is normally accomplished using teams [44], which facilitate flexibility and improve resource utilization. Communities of practice and communities of interest, described by Wenger [46], are specialized forms of teams and a useful instrument in the IT leader's toolkit. Increasingly, the concept of 'social capital', employing relationships and social networks in the service of the organization, has been described and promoted [47]. The wide availability of technology-supported networking tools and social media enhances its relevance for IT leaders.

Cognition

Cognition, in the context of the organization and in the sense used here, describes an amalgam of constructs and fields of study that are more usually considered as discrete areas of scholarship. In the 'cognition' model, they are integrated using relationship networks and business processes that build an infrastructure which acts as the 'nervous system' of the organization. At a macro level, its purpose is to ensure that all the elements are in place to facilitate the continuous flow of information, intelligence, and knowledge to support effective leadership decision-making, and to ensure that lessons learned from past experience are captured in organizational memory [48]. Cognition is a key aspect of IT leadership, whereby it is necessary to maintain a constant awareness of the dynamics of both the IT and business environments and their interplay. IT leaders must understand and shape those organizational systems, employee competencies, and behaviours that impact the organization's capacity to assimilate, share, and apply knowledge of both IT and the business. The many elements of cognition can be summarized as 1) Sense, 2) Respond and 3) Learn.

1. Sense: in the context of IT leadership, this usually refers to technology scanning and road mapping [49], [50], event detection [51], and knowledge and intelligence capture [52].
2. Respond: the stages of responding are assessment or sense-making [53], decision-making [54], and taking action (the latter stage is considered as being outside the realm of cognition).

3. Learn: this final category marks out the high-performing organizations. Learning can easily and quickly be dissipated unless captured in a re-useable form such as processes [53], tools [48], implicit knowledge [55], or explicit knowledge repositories [56].

This effective organizational cognition feeds into some key processes under the authority of IT leadership – an example of which is the development of the IT vision statement, which is built on a keen awareness of the business and technology environments. IT leaders must inspire, direct, and closely monitor the formulation of the long-term scope and objectives of IT value generation (IT vision), and derive high-level guidelines for the development of hardware and software infrastructure and services (IT design principles). Many elements of cognition exist in organizations and function independently of each other, unconnected, and under-contributing. The IT leader who integrates them in line with the organizational cognition construct enhances the prospects of managing a high-performance organization.

Conclusions

The demands placed on IT leaders have increased, in part because of the increasing complexity and challenges of the global context in which businesses operate, but also because academics and practitioners continue to produce theories and approaches to leadership that demand more of them [57]. With the ongoing focus on organizational digitization, the role of IT leaders is radically changing and is barely recognizable when compared with a number of years ago [9], [10]. The model proposed in this paper enables IT leaders to easily distinguish between the key responsibilities that are required of them as leaders and how these differ from those of 'management'. Additionally, the key categories delineated within this IT leadership capability model provide a distinct focus and guidance in key areas. Incorporation of the key concepts, practices, and processes outlined within these categories supports improvement in the level of maturity of IT leadership within the organization. Taking into account the findings of recent research where CEOs identified leadership as the 'single most important human-capital issue their organizations faced' [5], understanding how to facilitate the development of effective leadership is now more crucial than ever [6].

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Contributing Authors

Dr Eileen Doherty, Research Fellow, Innovation Value Institute.
John Holmes, Head of Research, Rathbeau Technologies.
Dr Dave Chatterjee, Associate Professor, University of Georgia.

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