

Editorial: Innovation Tools and Techniques

Chris McPhee, Editor-in-Chief

Brendan Galbraith and Nadia Noori, Guest Editors

From the Editor-in-Chief

Welcome to the March 2015 issue of the *Technology Innovation Management Review*. The editorial theme of this issue is **Innovation Tools and Techniques**, and I am pleased to welcome our guest editors: **Brendan Galbraith**, Senior Lecturer at Ulster University Business School in Belfast, Northern Ireland, and **Nadia Noori**, EU Researcher at BES La Salle – Roman Lull University in Barcelona, Spain. I am also grateful to **Bernhard Katzy**, Founder and Director of the Center for Technology and Innovation Management (CeTIM) in Munich, Germany, who provided the spark and inspiration for this issue.

This issue is based on articles selected and adapted from the 2014 International Conference on Engineering, Technology and Innovation (ICE) Conference, which took place last June in Bergamo, Italy. Dr. Galbraith is hosting the 2015 ICE Conference (www.ice-conference.org), which will be held from June 22–24 at Ulster University in Belfast, Northern Ireland.

This issue also includes a summary of a recent TIM Lecture by **Cheri McGuire**, Vice President of Global Government Affairs & Cybersecurity Policy at Symantec, who spoke on the topic of "The Expanding Cybersecurity Threat".

In our April issue, we will explore the theme of **Cyber-Resilience in Supply Chains**, and the guest editor will be **Omera Khan**, Professor of Operations Management at the Technical University of Denmark.

We hope you enjoy this issue of the TIM Review and will share your comments online. For future issues, we welcome your submissions of articles. Please contact us (timreview.ca/contact) with article topics and submissions, suggestions for future themes, and any other feedback.

Chris McPhee
Editor-in-Chief

From the Guest Editors

The innovation process, unlike many other management processes, is inherently risky and there is a myriad of routes for the few projects that finally graduate to commercial success. In many other management processes, for example, the recruitment and selection process for a new hire, it is a fairly predictable set of activities that will ultimately guide the process of appointing the most suitable and qualified candidate. Innovation, by its very definition, cannot be guided by a predictable set of activities, because it is a journey into the unknown, and there are many untested hypotheses about value propositions that may be related to the market, technology or society. Innovators need methods and tools to manage the innovation process, to test their assumptions, to truly understand the latent needs of their potential customers, and to develop products, services, or processes that calibrate with market reality.

Essentially, the innovator aims to progress their brilliant or simple concepts by minimizing risk at each stage of the process. Practitioners, whose job is to help or support innovative new projects in incubators or corporate spin-off facilities, have a fine balance to strike to ensure they are not providing artificial "life support" for unsustainable projects and instead focus on nurturing promising projects. The start-up model that they deploy to manage this risk and ultimately make the best use of their resources, must ensure that these projects can overcome "innovation constraints" – they need to be validated through a concise set of milestones in order to graduate to the next stage of the innovation process. As for the poor projects, well, as an investor would say, "poor projects must be drowned in shallow water".

With the advent of the digital economy and the clear emergence of numerous and large societal challenges in areas such as healthcare, energy efficiency, green technologies, sustainable transport, and the bioeconomy, there is a need for better tools and techniques for managing the inherent risk in the innovation process. In healthcare, for example, there are examples

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of quadruple-helix models such as living labs that are being deployed to balance user, technology, and market needs from the ideation right through to the launch of a new product or service (Galbraith et al., 2008). If we consider the rise in the popularity of the open innovation concept (Chesbrough, 2003), this approach to restructuring the management of innovation inside large corporations is a response to the failure of these wealthy corporations to effectively manage the risk in their internal innovation processes. If innovators can effectively reduce the risk in their innovation processes then, arguably, there has never been a better time to be involved in innovation. We are currently faced with numerous, large societal problems, which for innovators equates to big opportunities. Moreover, the availability of everyday, low-cost technologies and technology platforms helps to level the playing field for almost anyone to experiment with new applications and business models. The opportunities and available technologies are in abundance, but how do we combine that by translating the real latent needs of customers and cultivate a lucrative market?

As stated in a popular adage by an American industrialist: "It is about making the research machine work, and if you are doing that then the rest will follow. If you do it for the money, you do it wrong; if you do it right, the money will follow" (Galbraith et al., 2006). Although this quotation has been recited many times at industry events, it does raise important questions about innovation and how to do it right. What tools and techniques do *you* employ to make your research machine work? How do they allow *you* to manage the inherently risky innovation process?

The glue that binds the selected articles for this issue of the TIM Review is that each one makes its own contribution of tools and techniques for managing risk in the innovation process.

In the first article, **Carina Veeckman** and **Shenja van der Graaf** from iMinds-SMIT research group at the Vrije Universiteit Brussel in Belgium present a toolkit to optimize citizen involvement and bottom-up innovation in the public sector. Through a case study of a living lab framework implemented across four collaborative smart city initiatives in Europe, they show how more inclusive citizen involvement can be realized by providing users with tools that align with their specific capacities and skills. They also share lessons learned in applying a living lab approach to facilitate participation and co-creation, and to empower citizens.

Next, **Claude Baron**, **Philippe Esteban**, **Rui Xue**, and **Daniel Esteve** from the LAAS Laboratory of the CNRS (French National Center for Sciences and Research) in Toulouse, France, and **Michel Malbert**, entrepreneur and consultant, argue that the lack of integration between the systems engineering and project management domains poses a key risk for system and product development projects. Thus, to support the management of systems engineering projects, they propose the DECWAYS method and tool, which enables managers to bridge the domains and provide consistent follow-up and decisions in collaborative work and project steering.

Then, **Bernardo Nicoletti** from the Università di Tor Vergata in Rome, Italy, discusses how to improve innovation results and manage the uncertainties of innovation using the Lean and Digitize Innovation process, which integrates digitization into the Lean Six Sigma method while taking into account the possibilities of automation. Through its seven stages and 29 steps, the process helps organizations innovate from start to end: from the definition of the value for the customers up to the implementation of a prototype and engineering of the delivery processes.

Finally, **Ferran Giones** and **Francesc Miralles** from the La Salle Campus at Ramon Llull University in Barcelona, Spain, bring a signalling perspective to the process of technology entrepreneurship. By studying three new technology-based ventures, they explore how an entrepreneur's actions can be interpreted as strategic market, technology, and social capital signals designed to reduce uncertainty and unlock strong value propositions. Their key finding is that an entrepreneur's use of signals may positively influence opportunity exploration and exploitation and help them overcome their "newness", which manifests as the reluctance of potential customers to consider a new and untested product from a young venture.

We hope that you find value in the tools and techniques described in the articles we selected for this special issue and that they will contribute to your own efforts to research and manage risk in innovation.

Brendan Galbraith and Nadia Noori
Guest Editors

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About the Editors

Chris McPhee is Editor-in-Chief of the *Technology Innovation Management Review*. Chris holds an MASC degree in Technology Innovation Management from Carleton University in Ottawa and BSCh and MSc degrees in Biology from Queen's University in Kingston. He has over 15 years of management, design, and content-development experience in Canada and Scotland, primarily in the science, health, and education sectors. As an advisor and editor, he helps entrepreneurs, executives, and researchers develop and express their ideas.

Brendan Galbraith is a Senior Lecturer at the Ulster University Business School in Northern Ireland. Brendan has led national and prestigious European research and innovation projects with a combined value of more than £4 million and his work has been presented in the European Commission, European Parliament, Northern Ireland Assembly and a wide range of national media outlets including the BBC. Brendan's research has appeared in *R&D Management*, *Technovation*, *Technology Analysis and Strategic Management*, and the *International Journal of Operations and Productions Management*. Brendan is the Book Reviews Editor for *Technology Analysis and Strategic Management* and has served on the European Network of Living Labs Leadership Portfolio Group.

Nadia Noori is a Researcher and PhD Candidate at the Fundación Privada Universidad Y Tecnología – FUNITEC La Salle Universitat Ramon Llull in Barcelona, Spain. She started her PhD in Crisis Management Networks in 2013 as part of the Marie Curie – ITN project. Her research work in crisis management is in the area of organizational collaboration and coordination complex networks. She holds BSc and MSc degrees in Computer and Control Engineering from Baghdad University, Iraq, and an MASC degree in Technology Innovation Management from Carleton University in Ottawa, Canada. Before commencing her PhD studies, Nadia was a Platforms and Product Manager at Coral CEA, a Canadian not-for-profit organization and open innovation network focused on building platform-based ecosystems.

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