

CALL FOR PAPERS



IEEE Transactions on ENGINEERING MANAGEMENT

**Special Issue:
Co-design and Collaborative Innovation for Grand
Challenges**

Guest Editors

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Theme

The United Nations have defined a set of grand challenges in terms of the so-called Sustainable Development Goals (SDGs). These SDGs include unsolved problems related to poverty, climate change, demographic imbalances, disease management and disruptive digital innovations, amongst others. If left unresolved, grand challenges have dramatic implications at a global scale (Colquitt & George, 2011; George et al., 2016). However, tackling grand challenges demands engaging in co-design and collaborative innovation for a sustainable future, as well as integrating otherwise disparate bodies of knowledge to promote institutional transformation, behavioural change and digital transformation (Brown, Werbeloff & Raven, 2019; Colquitt & George, 2011; Linnenluecke et al., 2018). Co-design in this regard refers to design efforts in which problem requirements are integrated with design principles to guide collaborative works in developing desired and usable solutions. The importance of this special issue topic is thus rooted in understanding how co-design and collaborative innovation can shape the real impact and managerial practices in resolving grand challenges (Voegtlin et al., 2019).

In reviewing extant literature and calls for special issues related to grand challenges, the following observations can be made:

- Academic journals have been increasingly hosting explorations and discussions on key concepts, processes, contingencies and ways of organizing for SDGs (Ferraro, Etzion, & Gehman, 2015; George, Howard-Grenville, Joshi, & Tihanyi, 2016; Linnenluecke et al., 2018; Ricciardi, Rossignoli & Zardini, 2019).
- Most studies have captured how problems are formulated and the factors affecting their articulation. Some of these studies have, for instance, focused on major challenges arising from environmental degradation and climate change (Howard-Grenville et al., 2014), big data (George, Haas & Pentland, 2014; George et al., 2016), health and ageing (Kulik et al., 2014), digitalisation and digitisation (Dodgson et al. 2015; Ostrowski, Tapus & Yim, 2007), and social inequality (Joshi et al., 2015, see also George et al., 2016).

- Most studies have examined and analysed problems within a context (e.g. health, autonomous driving, robotics) or explored policy implications (e.g. governance, responsible innovation).
- Very few studies have highlighted methodological approaches to tackle grand challenges (Eisenhardt, Graebner, & Sonenshein, 2016; see also Ferlie et al., 2005; Zolfagharian et al., 2019).
- Limited studies have explored, examined or predicted the role of co-design and collaborative innovation practices.

Although the interest in open and collaborative innovation practices has been on the rise (see Cai et al., 2019; Olsen, Sofka & Grimpe, 2016), several facets from theoretical, methodological and practical perspectives need to be further examined (Zolfagharian et al. 2019). This ambiguity has recently been recognised by scholars who have explored the fundamental concepts and features of disruptive technologies shaping how we work and live (e.g. Saadatmand & Daim, 2019). Scholarly attention has already been directed to facets of collaborative practices, for instance, the challenges in crowdsourcing (Tidd, Brem & Daim, 2019) and the more recent focus on cross-disciplinary technology assessment for grand challenges in *IEEE TEM* (see table). **The aim of this special issue is to investigate the role of co-design and collaborative innovation in conceptualizing, organizing, performing, managing and leading ways to respond to grand challenges.**

This special issue invites authors to submit (conceptual and/or empirical) studies that go beyond the conventional managerial and organizational approaches, by unveiling and developing the underlying concepts, structures, mechanisms, processes, tools, logics and boundaries of pursuing bold ideas and solutions for a sustainable future. We thus invite authors to depart from a uni-directional policy perspective to a multi-directional ecosystem perspective (e.g. Cantino et al., 2017; Walrave et al., 2018; Williams & Shepherd, 2016). The latter ecosystem perspective can be developed in the form of descriptive-explanatory theory, but also in instrumental tools addressing any of the grand challenges (e.g. Talmar et al., 2019). We also invite authors to submit a variety of methodological approaches and theoretical perspectives, although papers are expected to focus on bold ideas and go beyond small-scale cases. Submitted manuscripts do not necessarily have to provide a solution to a grand challenge, but all manuscripts are required to pave the way for understanding, exploring and examining ways to address a grand challenge in novel ways.

Among others, the call for this special issue welcomes contributions addressing:

- **Role of co-design and collaborative innovation in grand challenges.** How are co-design and collaborative innovation approaches in grand challenges conceptualized across multiple (e.g. individual, organizational and ecosystem) levels? Are co-design and collaborative innovation practices formulated, developed and performed in the same way across industries or are they industry dependent? Do contextual situations or actors affect co-design and collaborative innovation effect on grand challenges? Do various stages and/or types of co-design and collaborative innovation practices affect grand challenges in the same way?
- **Theoretical perspectives of co-design and collaborative innovation in grand challenges.** To what extent do institutional logics (Nicholls & Huybrechts, 2016; Smet, Morris & Greenwood, 2012; Thornton, Ocasio & Lounsbury, 2012) explain co-design and collaborative innovation practices in grand challenges? Do dynamic co-evolution

of knowledge (Gasbarro et al., 2017) and/or adaptive co-management of commons practices (Cantino et al., 2017) explain how individuals, firms, communities and nations cope with grand challenges? How and under what conditions is the process of co-design and collaborative innovation influenced by individuals in addressing grand challenges? How do disparate views and boundary conditions of co-design and collaborative innovation processes affect grand challenges? What are the characteristics of collaborative innovation ecosystems that enable firms to better contribute to robust action in addressing grand challenges? How does co-design impact social, environmental and economic outcomes arising from attempts to respond to any of the grand challenges?

- **Methodological perspectives.** How can we monitor and evaluate the individual, firm and system-level effects of co-design and collaborative innovation in grand challenges? What type of tools support effective responses to grand challenges, and which do not, and why?
- **Practical perspectives of implementing co-design and collaborative innovation in grand challenges.** How, why and under what conditions do collaborative industrial clusters, institutions and co-design communities contribute towards resolving grand challenges? What is the role of digital innovations and big ideas (e.g. Industry 4.0, IoT, AI, etc.) in shaping co-design and collaborative innovation practices in grand challenges? What are the new forms of organizing and practice mechanisms that support (constrain) co-design and collaborative innovation efforts at individual, firm and system-level?

Notes for Prospective Authors:

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere.

Conference papers can only be submitted if the paper has been completely re-written and if appropriate written permissions have been obtained from any copyright holders of the original paper.

Manuscripts should be submitted through the publisher's online system. Submissions will be reviewed according to the journal's rigorous standards and procedures through double-blind peer review by at least two qualified reviewers.

Submission Process

Please prepare the manuscript according to IEEE-TEM's guidelines (<http://www.ieee-tems.org/guidelines-for-authors>) and submit to the journal's Manuscript Central site (<https://mc.manuscriptcentral.com/tem-ieee>). Please **upload the paper** on the IEEE TEM Editorial Manager **clearly indicating** it is submission **for the IEEE TEM Special Issue on Co-design and Collaborative Innovation for Grand Challenges**.

Schedule

- **Submission of the Full Paper: 31st January 2021**
- **Tentative date for double blind review outcome: 30th April 2021**
- **Final submission: 30th September 2021**

References

Brown, R., Werbeloff, L. and Raven, R., 2019. Interdisciplinary Research and Impact. *Global Challenges*, 3(4) : 20.

Cai, C.W., Gippel, J., Zhu, Y. and Singh, A.K., 2019. The power of crowds: Grand challenges in the Asia-Pacific region. *Australian Journal of Management*. doi: [10.1177/0312896219871979](https://doi.org/10.1177/0312896219871979)

Cantino, V., Devalle, A., Cortese, D., Ricciardi, F., & Longo, M. 2017. Place-based network organizations and embedded entrepreneurial learning: emerging paths to sustainability. *International Journal of Entrepreneurial Behavior and Research*, 23(3): 504–523.

Colquitt, J.A. and George, G., 2011. Publishing in AMJ—part 1: topic choice. *Academy of Management Journal*, 54: 432-435.

Dodgson, M., Gann, D., Wladawsky-Berger, I., Sultan, N. and George, G., 2015. Managing digital money. *Academy of Management Journal*, 58(2): 325-333.

Eisenhardt, K.M., Graebner, M.E. and Sonenshein, S., 2016. Grand challenges and inductive methods: Rigor without rigor mortis. *Academy of Management Journal*, 59(4): 1113-1123.

Ferlie, E., Fitzgerald, L., Wood, M. and Hawkins, C., 2005. The nonspread of innovations: the mediating role of professionals. *Academy of Management Journal*, 48(1): 117-134.

Ferraro, F., Etzion, D. and Gehman, J. 2015. Tackling grand challenges pragmatically: Robust action revisited. *Organization Studies*, 36(3): 363-390.

Gasbarro, F., Annunziata, E., Rizzi, F. and Frey, M., 2017. The interplay between sustainable entrepreneurs and public authorities: Evidence from sustainable energy transitions. *Organization & Environment*, 30(3): 226-252.

George, G., Haas, M. R., & Pentland, A. 2014. Big data and management. *Academy of Management Journal*, 57: 321-325.

George, G., Howard-Grenville, J., Joshi, A. and Tihanyi, L. 2016. Understanding and tackling societal grand challenges through management research. *Academy of Management Journal*, 59(6): 1880-1895.

George, G., Osinga, E.C., Lavie, D. and Scott, B.A., 2016. Big data and data science methods for management research. *Academy of Management Journal*, 59(5): 1493-1507.

George, G., Schillebeeckx, S.J. and Liak, T.L., 2015. The management of natural resources: An overview and research agenda. *Academy of Management Journal*, 58(6): 1595-1613

Howard-Grenville, J., Buckle, S. J., Hoskins, B. J., & George, G. 2014. Climate change and management. *Academy of Management Journal*, 57: 615-623.

Joshi, A., Neely, B., Emrich, C., Griffiths, D. and George, G., 2015. Gender research in AMJ: an overview of five decades of empirical research and calls to action: thematic issue on gender in management research. *Academy of Management Journal*. 58(5): 1459-1475.

Kulik, C. T., Ryan, S., Harper, S., & George, G. 2014. Aging populations and management. *Academy of Management Journal*, 57(4): 929-936.

Linnenluecke, M. K., Branicki, L., Brammer, S., & Smith, T. 2018. Grand challenges in the Asia-Pacific region: Implications for organisational strategy and management. Special Issue in *Australian Journal of Management*, forthcoming.

Nicholls, A. and Huybrechts, B., 2016. Sustaining inter-organizational relationships across institutional logics and power asymmetries: The case of fair trade. *Journal of Business Ethics*, 135(4): 699-714.

Olsen, A.Ø., Sofka, W. and Grimpe, C., 2016. Coordinated exploration for grand challenges: The role of advocacy groups in search consortia. *Academy of Management Journal*, 59(6): 2232-2255.

Riccaiaridi, F., Rossignoli, C., & Zardini, A. 2019. Grand challenges and entrepreneurship. Special issue in *International Entrepreneurship and Management Journal*, forthcoming.

Saadatmand, M. and Daim, T., 2019, June. Blockchain technology through the lens of disruptive innovation theory. In *2019 IEEE Technology & Engineering Management Conference (TEMSCON)* (pp. 1-6). IEEE.

Smets, M., Morris, T.I.M. and Greenwood, R., 2012. From practice to field: A multilevel model of practice-driven institutional change. *Academy of Management Journal*, 55(4): 877-904.

Talmar, M., Walrave, B., Podoynitsyna, K.S., Holmström, J., & Romme, A.G.L. 2019. Mapping, analyzing and designing innovation ecosystems: The ecosystem pie model. *Long Range Planning*, forthcoming. <https://doi.org/10.1016/j.lrp.2018.09.002>

Tidd, J., Brem, A., & Daim, T. 2019. Introduction: Crowdsourcing challenges. In A. Brem, J. Tidd, & T. Daim (Eds.), *Managing Innovation: Understanding and Motivating Crowds* (pp. xvii-xxiv). London: World Scientific. Series on Technology Management, Vol.. 32. https://doi.org/10.1142/9781786346490_fmatter

Thornton, P. H., Ocasio, W., & Lounsbury, M. 2012. *The institutional logics perspective : foundations, research, and theoretical elaboration*. Oxford: Oxford University Press.

Voegtlin, C., Scherer, A., Hawn, O., Siegel, D. and Stahl, G.K., 2019. Grand societal challenges and responsible innovation. *Journal of Management Studies*. Forthcoming.

Walrave B., Talmar, M., Podoyntsyna, K.S., Romme, A.G.L., & Verbong, G. 2018. A multi-level perspective on innovation ecosystems for path-breaking innovation. *Technological Forecasting & Social Change*, 136: 103-113.

Williams, T.A., & Shepherd, D.A., 2016. Building resilience or providing sustenance: Different paths or emerging ventures in the aftermath of the Haiti earthquake. *Academy of Management Journal*, 59 (6): 2069-2102.

Zolfagharian M., Walrave, B., Raven, R., & Romme, A.G.L. (2019). Studying transitions: Past, present, and future. *Research Policy*, 48: 103788.

Guest Editor Bios

Professor Anne-Laure Mention (PhD) is Professor and Director for Global Business Innovation Enabling Capability Platform, RMIT University, Australia. She is a visiting professor at Tampere University, Finland and holds several other visiting positions in Europe and Asia, including a visiting Fellow appointment in Fintech and Blockchain at Singapore University of Social Sciences. Anne-Laure is one of the founding editors of the *Journal of Innovation Management*, and currently its co-editor in chief, and was the Deputy Head of the ISPIIM Advisory Board from 2010 till 2018. She has been awarded the prestigious IBM Faculty Award twice for her research on innovation. Her research interests revolve around open and collaborative innovation, innovation in business to business services, technology management, and business venturing. Her research has been published in leading technology and innovation management journals such as *Technovation* and *Technological Forecasting and Social Change*, and she is the co-editor of the book series entitled “Open Innovation: Bridging Theory and Practice”, published by World Scientific/Imperial College Press.

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