D5.6 Peer-reviewed Paper

RESPONSIBLE INNOVATION COMPASS

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1. Executive Summary

The COMPASS consortium is committed to publishing research results through academic outlets of the highest-quality. To predict research outcomes for 2018/2019 in 2014 is not possible. If research outcomes were certain, it would not be research. With agreement of the mid-term reviewer, COMPASS therefore optimized academic output by publishing two of the four deliverables exactly as planned in 2014 and a further two seeking new, better impact opportunities.

1.1. As predicted in 2014

A publication in the Cambridge Quarterly of Healthcare Ethics was achieved as predicted in 2014 (see below); likewise the Springer Book was sent into production as planned.

Cambridge Quarterly of Healthcare Ethics

Search Car

Article Metrics

Volume 28, Issue 1 January 2019 , pp. 144-152 Access Open access

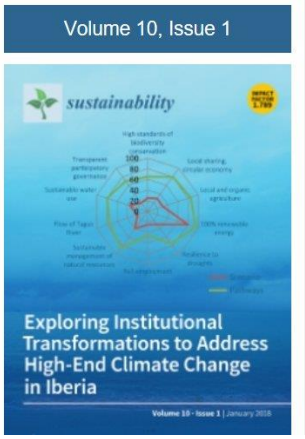
Involving Patients in Research? Responsible Research and Innovation in Small- and Medium-Sized European Health Care Enterprises*

KALYPSO IORDANOU

https://doi.org/10.1017/S0963180118000488 Published online: 20 December 2018

1.2. Seeking new opportunities

To use the opportunity of a high-profile Special Issue on *Responsible Research and Innovation*, one peer-reviewed paper was successfully placed in SUSTAINABILITY, a journal with a higher impact factor than the originally envisaged one.



Sustainability **2018**, *10*(1), 17; https://doi.org/10.3390/su10010017 Open Access Article

Implementing Responsible Research and Innovation Practices in SMEs: Insights into Drivers and Barriers from the Austrian Medical Device Sector

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(This article belongs to the Special Issue Responsible Research and Innovation (RRI) in Industry)

The publication that forms the fourth COMPASS academic output is described in this deliverable and reasons are given why it was chosen over other opportunities.

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2. Optimization Strategy for Publications

At the proposal stage, four peer-reviewed high-quality publications were envisaged in four areas: a book publication on the broad topic of COMPASS and one journal article each in ICT, Health and Nanotechnology. However, to predict research outcomes for 2018/2019 in 2014 is not possible.

At the mid-term review, two points were therefore discussed at the request of the consortium.

1. The distance between the publication planning in 2014 and final submission of deliverables (2018) is large.
2. To predict the research best suited for publication is often not possible. Research is, by definition, focused on interesting yet uncertain questions for which answers are needed.

> *Research is, by definition, focused on uncertain questions for which answers are needed.*

The external mid-term reviewer agreed that one cannot predict the exact topic of publications 3-4 years ahead of time when a research project has not even started yet.

Table 1 – Match with predicted outlets

Predicted outlet	Match
Springer book on broader topic or Research and Innovation	✓
Journal article in healthcare in Cambridge Quarterly of Healthcare Ethics	✓
Journal article in nanotechnology	
Journal article in ICT	

To achieve the best possible outcome for COMPASS and not lose valuable research, the team decided to publish two academic pieces exactly as planned in 2014 (see Table 1) and to seek new, better opportunities for impact for the remaining two.

The publication in SUSTAINABILITY was justified in Deliverable 5.7 mostly due to the higher impact factor of the journal and the chance to publish in a special issue on Responsible Research and Innovation (see Deliverable 5.7).

For the second outstanding publication, two opportunities were chosen, hence possibly over-achieving on publications, if both are realized.

The first opportunity was a Routledge book on *Responsible Research and Innovation Assessment Practices*. As the Routledge book chapter allows a publication of the arguably most high-profile output of the project, the COMPASS Self-Check Tool, this opportunity optimized publication output.

The second opportunity was a match to the topic ICT. Both are described in more detail below.

OPTIMIZE PUBLICATION SUCCESS BY PROMOTING THE POSSIBILITY OF COVERING THE MOST HIGH-PROFILE OUTPUT.

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3. Peer-reviewed book chapter in Routledge book

Publication guarantee: 100%

A publication with the following title is scheduled to be published in a Routledge book.

> *The COMPASS Self-Check Tool: Enhancing Organizational Learning for Responsible Innovation through Self-Assessment*

The authors are: Tharani, A.; Jarmai, K.; Schönherr, N.; Urban, P. from the Institute for Managing Sustainability, Vienna University of Economics and Business (COMPASS Co-ordinators).

The following three sections describe the publisher, the book and provide an abstract. The full book chapter is available, but cannot be reprinted here for copyright reasons. After publication, the book will become available as an open access eBook.

3.1. Routledge

Routledge is a British, global publisher founded in 1836 by George Routledge. The group specialises in academic books, journals, & online resources in the area of humanities, behavioural science, education, law and social sciences. According to the publisher itself:

> Today Routledge is the world's leading academic publisher in the Humanities and Social Sciences. We publish thousands of books and journals each year, serving scholars, instructors, and professional communities worldwide. Our current publishing program encompasses groundbreaking textbooks and premier, peer-reviewed research in the Social Sciences, Humanities, Built Environment, Education and Behavioral Sciences. We have partnered with many of the most influential societies and academic bodies to publish their journals and book series. Readers can access tens of thousands of print and e-books from our extensive catalog of titles.[1]

3.2. Aims and rationale for the book[2]

Responsible Research and Innovation (RRI) aims to encourage societal actors to work together during the whole research and innovation (R&I) process to better align R&I and its outcomes with the values, needs and expectations of society. Understanding the benefits of RRI is crucial to furthering inclusivity, collaboration and transparency in R&I systems. This effort needs to be built upon, to deepen understanding of whether and how RRI leads to societal, democratic, scientific and economic benefits, and to provide stakeholders with user-friendly yet advanced tools that help their efforts to improve the outcomes of R&I.

The RRI Assessment book aims to provide tools for measuring, monitoring, and reporting how well RRI is done and what social, environmental, scientific, and economic benefits it has. These tools are useful for mitigating risks and strengthening strategic planning.

Taking 'RRI Assessment Practices' into account will help science and technology and innovation to increase their relevance and make optimal use of their established strengths.

[1] https://www.routledge.com/info/about
[2] Thanks to the book editors, Dr Emad Yaghmaei and Prof. Ibo van de Poel for providing this rationale.

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Furthermore, whereas many *components* of RRI are well-known, the concept of RRI is rarely reflected upon in practice. To redress knowledge gaps about the benefits of RRI in practice, this book aims at assessing RRI principles and aligning the assessment practices with the UN Sustainable Development Goals (SDGs).

Given that COMPASS produces a self-check tool on responsible innovation, which falls exactly into the scope of the above RRI book, it was excellent news when the opportunity to provide a chapter was presented to the Vienna team of COMPASS. The paper has been submitted and it already went through the first peer review. Its publication is ensured whilst a second quality check is undertaken on the final piece.

The book is likely to be published in the fall of 2019.

3.3. Abstract

Innovation is a requirement to stay competitive in light of ongoing digitalization, globalization and rapidly changing markets. At the same time, a general drop in trust in businesses and new technologies can be observed. Innovation is perceived as a potential threat to human and ecological welfare and business leaders are not fully trusted with it. To re-establish trust, businesses can use the concept of responsible innovation (RI) to innovate in a way that is accepted by the public and that tries to avoid harmful impacts. Yet, even though private businesses account for a large segment of all research and innovation activities, efforts to integrate RI practice are rare.

This chapter connects responsible innovation to organizational learning theory. It discusses the contribution of self-assessments to organizational learning and presents a self-assessment tool that was developed with the purpose to enhance learning and evoke organizational change towards responsible innovation in Small and Medium-Sized Enterprises (SMEs). It concludes with a discussion of the usefulness of the tool, its effect on organizational learning and an outlook on future opportunities.

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4. Peer-reviewed journal article in ICT

Publication guarantee: 50%

To keep to the original deliverable focus (implementation of RRI in the ICT industry), research was submitted to a high-profile ICT conference for later publication in a special issue. The topic is summarized below:

> Cyber security is an increasingly important industry throughout the world, protecting governments, organisations, individuals, and infrastructure in our data-driven world. Many cyber security companies operate out of the US and Europe, but demand is soaring across low and middle income countries and their services are increasingly sought after in countries with questionable human rights records. Thus the ethical dilemma arises: should these cyber security companies expand into countries that have vastly different values from their own? What should their "red lines" of unacceptable requests or activities be, and how can they come to an agreement on these within their company? What sorts of activities in these countries might be ethically acceptable, and what might be more difficult to justify?
>
> The paper examines several plausible scenarios likely to arise in the expansion of cyber security companies outside of "Western" countries. It takes an ethical perspective using the newly updated ACM Code of Ethics as a reference point, drawing on concerns about ethical "red lines" that arose from focus group data collected as part of the EU-funded COMPASS project ("Responsible Innovation Compass," 2017) investigating the embedding of responsible innovation practices into small-medium cyber security companies in the UK.

If the extended abstract below is accepted, it will be written up in full as part of the COMPASS outputs, outside of the timescale of the project.

Should cyber security companies expand into countries with questionable human rights records?

Catherine Flick, deMontford University

Cyber security is an increasingly important industry throughout the world, protecting governments, organisations, individuals, and infrastructure in our data-driven world. Many cyber security companies operate out of the US and Europe, but demand is soaring across the developing world and their services are increasingly sought after in countries with questionable human rights records. Thus the ethical dilemma arises: should these cyber security companies expand into countries that have vastly different values from their own? What should their "red lines" of unacceptable requests or activities be, and how can they come to an agreement on these within their company? What sorts of activities in these countries might be ethically acceptable, and what might be more difficult to justify?

The difficulties of responsibilities of multi-national companies towards human rights has been documented before (Taylor, 2016). A policy vacuum exists between state actors in other countries (covered by the UN Convention on Human Rights and various international laws, trading agreements and treaties) and the private sector, which is subject to local law and thus usually needing to adapt if business is to be done. This has led to problems like Google's recent foray into China, where public and, more importantly, employee opinion forced them to

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reconsider their approach to working to help censor freedom of speech of Chinese citizens (Conger and Wakabayashi, 2018). Previous attempts by companies like Google to reform such countries from within have also failed (Waddell, 2016), and it has been suggested that large companies like Google and Yahoo! have increased political risk when operating in these countries (although they can manage this) (Stevens et al., 2016). Suggestions for companies on how to pressure countries to conform to human rights accords include taking the country to the World Trade Organisation (WTO) for breaching its commitments (Erixon and Lee-Makiyama, 2011). However, this might not be so feasible for smaller companies, which make up the bulk of cyber security companies, and there are arguments as to whether this would be successful at all given some countries' global influence (Patni and Joseph, 2010).

So what is an ethical cyber security company to do? Should they ignore the bigger picture of human rights issues, or attempt to constrain the activities they conduct within problematic countries to those which do not touch on human rights? Or should they simply not enter into that market at all, even if there is a dire need for cyber security in the country? Perhaps they could take Lee Rowland's (a senior staff attorney from the American Civil Liberties Union) advice and continue their work but publish all human rights-restricting activities they are requested to partake in (Waddell, 2016)? Good sets of heuristics exist in business ethics, such as (Hamilton et al., 2009)'s "manager-friendly" set for resolving cross cultural ethical conflicts, but this doesn't necessarily help the company determine what the "questionable practices" might actually be, especially if a company's set of values are vaguely defined. Additionally, cyber security itself is often borderline ethical, with complex ethical dilemmas around equality of access to security, active vs. passive security, hacking vs. penetration testing, access to sensitive data, and responsible disclosure of vulnerabilities. These techno-ethical issues could easily collide with business ethical issues in some countries and will need sensitive teasing out to determine the best way to use heuristics such as Hamilton et al.'s (2009).

In this paper, I will use the Association of Computing Machinery's new Code of Ethics (Gotterbarn et al., 2018) to tease out some of these potential conflicts from a techno-ethical perspective. For example, the Code includes an obligation to "[promote] fundamental human rights and [protect] each individual's right to autonomy", and has strong wording about security of and access to individuals' data. Cyber security companies who assist authoritarian governments to collect and secure private data about citizens' behaviour on the internet will be under pressure to abide by the local custom (which may be that such data collection and use is passively accepted by the population, an example here is SesameCredit (Liang et al., 2018)), but concerned about the potential for human rights breaches, autonomy, and privacy, as suggested in the Code of Ethics. This method of using the Code to help cyber security companies to determine their values prior to the use of a decision-making heuristic such as Hamilton et al.'s could make for more meaningful use of the tool to determine their "red lines" and subsequent decision-making about whether to conduct business in that country.

This paper examines several plausible scenarios likely to arise in the expansion of cyber security companies outside of "Western" countries. It takes an ethical perspective using the newly updated ACM Code of Ethics as a reference point, drawing on concerns about ethical "red lines" that arose from focus group data collected as part of the EU-funded COMPASS project ("Responsible Innovation Compass," 2017) investigating the embedding of responsible innovation practices into small-medium cyber security companies in the UK.

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