Chapter 8
Implementing iE:
Learnings from a Drilling Contractor

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ABSTRACT
On the Norwegian continental shelf, utilization of iE has been regarded as a vital measure for avoiding a rapid decline in production. Implementation has however proven to be challenging, and an unharvested potential still exist. Taking a capability approach to such implementation may help attain this remaining potential. Doing so requires a good understanding of what factors secure a successful and sustainable iE-implementation. Here, a case study of how a drilling contractor has adopted iE is used as basis for identifying such factors. An analytical framework rooted in the tradition of innovation theory is used for exploring the empirical material. The findings are further used as basis for presenting a set of recommendations that, if utilized, could help managers and change agents in their efforts of successfully implementing iE-capabilities within their organization.

INTRODUCTION
Despite many success stories, there is still a significant potential for harvesting additional value from intelligent energy (iE) within the oil and gas industry. As suggested by the editors of this book, utilizing a capability approach could help companies within the industry in this endeavour. Doing so however require an understanding of what factors that enables a successful and sustainable implementation of such an approach, and how one can utilize these in a change management process.

This chapter aims to explore some of these factors. My starting point is the field of organizational innovation - more specific, theory describing how organizations build necessary capacity for carrying out successful innovation processes. I utilize this framework for a detailed review of how a major Norwegian drilling contractor has implemented the use of iE. The implementation was largely successful, and it proved decisive for the company to have a sufficient capacity for innovation as a basis for their efforts (Eike 2009). The learning’s drawn from this can be used for enhancing our understanding of factors necessary for implement-
Implementing iEing sustainable iE-capabilities, both within- and in the intersection between different companies. By the end of this chapter my goal is to have shed light on some vital factors for conducting a successful and sustainable implementation of iE.

My ambition is not to present an exhaustive list of all factors that may have relevance, but to point to some, as identified in the empirical review, and describe how these could be utilized in the form of a set of recommendations to iE stakeholders.

I begin this chapter however by reviewing the “iE-history” on the Norwegian continental shelf, including a short introduction to the capability approach, which, in my opinion, emerged as a result of the difficulties many experienced when attempting to implement the concept. I then briefly review some critical points from the tradition of organizational innovation, before describing the “capacity for innovation”-framework. This is then put to use on the case study of how a drilling contractor has built the capacity necessary for introducing iE in its organization. Following this I return to the capability approach to iE-implementation and examine how my findings can help enhance our understanding of how to best aid the implementation of this. I end with suggesting areas relevant for further studies and some closing remarks.

iE IN NORWAY AND THE EMERGENCE OF THE CAPABILITY APPROACH

iE on the Norwegian Continental Shelf (NCS)

iE has had many names in Norway, but is best known under the term IO. When emerging in the early 2000s, two underlying factors were decisive for the extensive focus it was given:

Increased focus on operational efficiency. Both government and the industry grew increasingly concerned over the long-term ability of efficient petroleum recovery. If the recovery rate from existing reservoirs and discovery of new fields did not increase, and new technology was not utilized, the production rate would stagnate within 10-20 years (OLF 2003). These challenging outlooks, combined with a significantly lower oil price compared to today, pushed the industry towards searching for new measures for increased operational efficiency.

Fibre-optic cables on the continental shelf. A prerequisite for utilizing the opportunities of iE was the presence of a technological infrastructure on the continental shelf. The installation of fibre-optic cables in the North Sea began already in the early 1990s, but it wasn’t until ten years later that an extensive grid was up and running (Paulsen 2005). This enabled the industry to move from short wave radio and satellite connections to real-time data sharing and video communication, necessary prerequisites for utilizing iE within offshore operations.

From this basis the industry moved quickly to implement iE. Between 2002 and 2005 a comprehensive amount of implementation efforts were initiated, both on industry and company level. Several iE-committees and a number of collaboration arenas were established along with comprehensive research programmes (NPD 2005, Wahlen et al. 2005). Ambitious goals were set for the future development of iE. A 2005 report developed by the Norwegian Oil Industry Association presented a two-generational timeline for future iE implementation. Generation 1, to be implemented between 2005 and 2010, involved real-time onshore-offshore communication and data sharing within individual companies, increased utilization of sensors, both down hole and on topside equipment, as well as more advanced modelling tools (OLF 2005). Generation 2, 2010-2015, would be a continuation of these efforts, but with several key modifications. Collaboration would move from being intra-organizational to inter-organizational. The operator’s communication centres would function as hubs for several