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IT tools for foresight: The integrated insight and response system of Deutsche Telekom Innovation Laboratories

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ABSTRACT

In this article we present and discuss the IT tools that Deutsche Telekom Innovation Laboratories use to support their corporate foresight activities. These tools are integrated into an approach that encompasses the discovery of change, interpretation, and triggering managerial responses. The overall system consists of a tool for scanning for weak signals on change (PEACOQ Scouting Tool), a tool for collecting internal ideas (PEACOQ Gate 0.5), and a tool for triggering organizational responses (Foresight Landing page). Particularly the link to innovation management and R&D strategy is discussed in detail. We further report on the value creation and lessons learned that have accumulated over the last eight years throughout which the tools and approach have been built gradually.

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1. Introduction

In many industries, firms are increasingly looking at corporate foresight approaches to help them increase their responsiveness towards external change [1–4]. At the same time new information technology (IT) based tools have emerged that can support corporate foresight activities and increase their productivity.

In the past years, many firms have experimented with the usage of social networks inside and outside the firm [5], with Internet-based broadcast search [6,7], and idea competitions [8]. To a lesser extend also tools such as (real-time) Delphi analysis [9,10], Wikis [11,12], and prediction markets [13].

In this article we explore how such IT-based tools are integrated in a consistent system that includes scanning for change and triggering organizational responses. Or put differently, we aim to shed light on how IT tools need to be combined to bridge the gap between corporate foresight and follow-up functions such as innovation and strategic management.

Our discussion is based on existing literature on the topics corporate foresight, IT tools in management, and IT tools in foresight as well as on our 8 year experience of using IT tools for corporate foresight, innovation and strategic management at Telekom Innovation Laboratories (T-Labs).

T-Labs are the central research and innovation unit of the telecommunication provider Deutsche Telekom (DT). T-Labs work closely with the operative units of the corporation offering new ideas and support in the development and implementation of innovative products, services and infrastructures for DT's growth areas. T-Labs have locations in Berlin, Darmstadt, Bonn (Germany), Beer Sheva and Tel Aviv (Israel), and Mountain View (USA).

With this large geographic reach and a topic scope reaching from core network functionalities, through secure communication to IP-based end-user services, T-Labs need to build a foresight approach that is broad enough to serve all areas (and

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potential white spots), but which also generates insights that are concrete enough to trigger organizational responses.

In this article we conclude with lessons learned and general recommendations on how to implement IT-based foresight and innovation management systems.

2. Literature review

2.1. The corporate foresight process

The foresight process discussion has been inspired and guided particularly by the "Organizations as Interpretation Systems" model of Daft and Weick [14]. They identified three steps that lead from perceiving change to an organizational response:

- Step 1: "scanning — data collection", where the change is perceived
- Step 2: "interpretation — data giving meaning", where the perceived change is translated into organizational implications
- Step 3: "learning — action taken", where the organization defines and executes a response based on their insights into their environment.

Their model has inspired many foresight activities for both public organizations [15,16] and private firms [2,17–20].

While the model of Daft and Weick is particularly useful as a mental framework it is weaker on highlighting the important aspects of implementing foresight activities. Building on an earlier multiple case study with 19 large European companies we identified 5 major barriers in translating signals on change into organizational responses [4] (see Fig. 1).

When designing a foresight process these barriers can be taken as a starting point, which allows identifying the activities that need to be implemented and the actors that would drive these activities. In Fig. 1 we distinguish between the actor responsible for the step and actors that are needed as participants. It can be seen that scouts drive the initial detection of signals in the environment. We define scouts as either internal employees or hired consultants that gather data on changes through multiple means, including expert interviews, data mining, and visiting conferences and other relevant events [21].

This first detection is particularly challenging and can be characterized as a search for a needle in a haystack in which you do not know what you are looking for [22]. Liebl and Schwarz propose to operationalize this search by distinguishing into the novelty aspect ("invention") and the diffusion aspect [23]. In that way the novelty filter provides a large number of candidates for important changes, and assessing for a sufficient diffusion allows identifying the changes that are on the track to become major changes. At the same time it is important to keep an open mind and not focus too much on a limited number of megatrends, which would in most cases result in additional blind spots [24].

After the initial detection most firms would employ foresighters to serve as process facilitators or brokers [25] between the scouts and internal stakeholders that trigger organizational actions. We define these foresighters as internal employees, performing the functional task of supporting the translation of change drivers into organizational responses. This functional task can be enacted through re-phrasing of change drivers, publishing trend reports, organizing workshops, creating inspiring visions and scenarios [26,27] or through any other suitable methods to increase communication and ensure a high level of participation of internal stakeholders.

These internal stakeholders include upper management decision makers (for example the executive board) and the actors responsible for planning and executing the organizational response. In the process model we mention innovation and strategy managers as two examples for the latter group, but depending on the role distribution in the respective organizations' organizational responses might also be owned by functions such as corporate development, risk management, and strategic marketing.

For innovation management, corporate foresight would be expected to first and foremost contribute by spotting innovation opportunities and initiating innovation projects [28], particularly in times when the environment is uncertain [29]. In addition, firms are also using corporate foresight to continuously monitor and challenge the state-of-the-art of on-going innovation projects and in a more strategic role, to support the identification of new promising innovation fields [30]. Thus, foresight would also be expected to contribute to the overall innovation capacity of a firm [31].

For strategic management, corporate foresight would be expected to contribute to management under uncertainty [32,33]. More specifically, corporate foresight should help informing decision makers about how to deal with state, effect, and response uncertainty [1,34]. This is particularly important

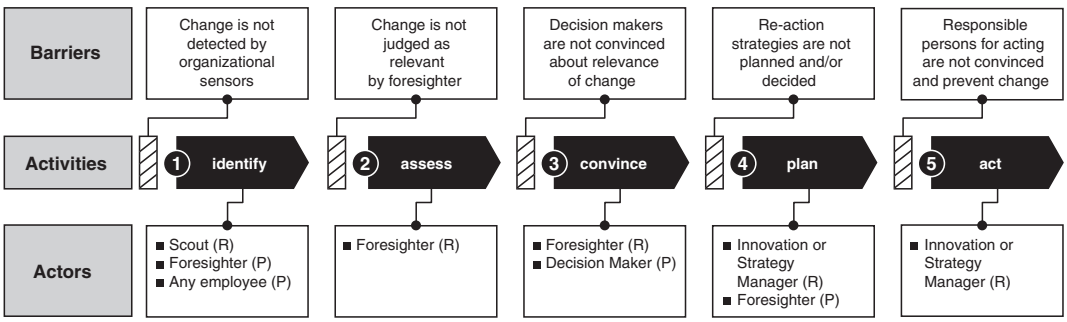

Fig. 1. Foresight process with barriers, activities and actors (based on [4]).

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