How can we understand information technology (IT) governance projects that combine a mix of organizational and process change measures, as well as IT governance software implementations? With so many IT governance projects underway - of which quite a few are challenged - this question is gaining importance. This article presents and discusses a conceptual and operational research model combining research in change management, IT governance, and IT implementation success. This research model is used in two contrasting case studies of large-scale IT governance projects, one with a strong focus on IT to induce and sustain change, the other with a strong focus on organizational and process measures. The study analyzes and contrasts each case’s success and presents a discussion of the underlying reasons, concluding with recommended next research steps.

1. Introduction and Research Question

The purpose of this research is to explore the role of different change management approaches in IT governance projects. IT governance is concerned with the set of enabling mechanisms to request, prioritize, fund, monitor, enforce, and realign IT investment decisions [1], linking it directly with the top three IT issues as identified by the 2008 SIM IT Industry Trend Survey IT [2]: business alignment, building business skills in IT, and IT strategic planning. IT governance projects are initiatives aimed at sustained improvement of IT governance arrangements, and their reportedly strongly varying degrees of success [3-5] have motivated us to explore this area in more detail.

Why are IT governance projects important for organizations and how do we measure their success? For monetary success measures, Lainhart [6] found empirical evidence that well-governed enterprises can command acquisition premiums of up to 16% in takeover situations. The premium is paid on the assumption that those organizations manage risks better, recover from setbacks more flexibly, and develop above average share value growth. Weill & Ross [7] claim that well-governed firms can reap returns on their IT assets of up to 40% above industry average. For non-financial success measures, researchers mainly relied on SEI’s CMMi maturity model and Luftman’s IT/business alignment maturity assessment model [8].

Earlier qualitative [9] and quantitative research [10] has shown the influence of change management factors on the success of IT governance projects. Particularly project planning & analysis, executive support, and organizational integration have been identified as powerful measures to overcome common failure points: lack of managerial support, missing objectives for the tool rollout, unclear processes designs, and starting too rapidly with a too big implementation scope [11, 12].

The theory underlying these change management factors comes mostly from IT implementation research - perhaps not surprising since many IT governance initiatives involve (or sometimes strongly rely on) the implementation of software tools for supporting or enforcing processes. In addition, IT governance projects can - and typically do - involve other non-software measures to either induce or sustain a change and improvement in IT governance processes. In some cases software is not used at all. For our research we have therefore chosen to build on IT implementation research, as well as on general change management research to address the following question: How can we understand IT governance projects that combine a mix of organizational and process change measures, as well as IT governance software implementations?

The low success rate of IT development and implementation projects is widely published and researched: e.g. in the CHAOS 2009 study [13], the Standish Group reports that only 32% of all IT projects can be considered successful (on time, on budget and with required features), 44% challenged, and 24% failed (projects cancelled or results never used).
For IT governance projects - with a much smaller base and shorter history - no comparable quantiative studies are published, although Meyer [14] e.g. reports that the results of many IT governance initiatives are “often bureaucratic, imposing oversight and convoluted approval processes on already burdened organizations. These heavy-handed top-down controls squelch entrepreneurship, bog organizations down, and drive administrative costs up.” Though the earlier mentioned studies by Heier et al [9, 10] do not deal specifically with project success and failure, they do consider the above mention change management factors, therefore offering a good starting point for understanding the IT implementation side of IT governance projects.

As mentioned above, our research on IT governance projects is not limited to IT implementation research alone and requires us to include general change management approaches. This includes looking at the timing and sequencing of change management factors before and during the actual change initiative, as well as at change management factors to sustain the after-change situation - both short-term and long-term. Particularly relevant in that regard is the so-called “magic bullet theory” by Markus and Benjamin [15] on IT-enabled transformation, linking IT implementation failure to widespread non-use of change management best practices.

In their article, Markus and Benjamin argue that failure to employ best practices in IT-enabled change is typically due to mistaken beliefs about the causes of change, in particular the belief in IT as a magic bullet - that technology alone can successfully deliver the intended change. Both change management theory as well as the “magic bullet” theory will be explicitly considered in our study. As will be explained in our methodology section we have selected two contrasting case studies of companies that have chosen different change management approaches for their IT governance projects; one relying heavily on the use of IT governance software without many supporting measures (i.e. IT as a “magic bullet”), the other more or less the opposite.

The remainder of this paper is organized into five sections. In the following section “conceptual foundations and framework”, earlier research relevant to the research question is assessed and synthesized. The third section “research methodology” describes the detailed research approach, the selection of case study sites, the data collection and the analysis approach taken. The fourth section “case study results” presents and discusses observations and findings from our two case studies, after which the fifth and last section "conclusions and next research steps" relates these findings to our overall research question and presents next research steps.

2. Conceptual Foundations and Framework

2.1 Research Framework Introduction

For this research, we have adopted the research framework used by Heier et al. [3], extended here by including additional change management measures and outcome factors to reflect the broader scope of this current study. The resulting framework is shown in Figure 1. We are particularly interested in the mix of IT governance software implementation and non-IT change management factors (discussed in more depth in section 2.2) - as well as in their timing and sequencing - and in the more general outcomes of IT governance projects, specifically IT/business alignment maturity (discussed in section 2.3). In Figure 1 we label the corresponding three blocks as our 'focus areas'. The model also covers two additional 'context' building blocks which are described below (see [10] for a more detailed description):

- **IT governance strategies and structures** - the first context area - addresses IT strategy and organizational capacities, primarily reflected in the choice between centralized, decentralized, or federal IT governance arrangements [16, 17]. Centralized IT governance structures allocate decision-making responsibilities to a central IT function. Benefits of increased coordination and control are offset by more bureaucracy and less responsiveness to business demands. Decentralized IT governance structures delegate most decision authorities to business unit managers; however, the flexibility suited for turbulent environments must be balanced with standardization tradeoffs. A federal IT governance structures maintains central control of some IT domains while business units can deploy business applications at their discretion [18].

- **Environmental contingencies** - the second context area - is based on Sambamurthy and Zmud’s [19] tripartite categorization of influences: corporate governance, economies of scope, and absorptive capacity [19]. Corporate governance refers to the already existing organizational control arrangements, such as firm size, and centralized or decentralized decision-making structures. Economies of scope refer to corporate diversification modes: internal growth vs. external acquisitions. Absorptive capacities reflect the level of IT knowledge in the line management of a firm. We have added organizational culture as a fourth element but it remains unclear whether and how fast this can be altered [comp. 14, 20].
2.2 Focus Area: Change Management

Change management involves both IT as well as non-IT-related initiatives, including their timing and sequencing. In terms of our research model (see Figure 1) this refers to IT governance processes and software modules and change management factors. Following our definition from section one, IT governance processes cover the following six major decision areas: request, prioritize, fund, monitor, enforce, and realign. In order to improve these processes, organizations can resort to a range of measures such as publishing guidelines, training employees, rewarding or punishing behavior, or implementing IT governance software to change and IT governance processes.

Software, in particular, can enforce processes by automatically routing workflows and decisions and escalating exceptions and delays when reaching a certain threshold [21]. There are four main software modules: demand management, portfolio management, program/project management, as well as resource/time management.

Earlier research [4] has identified a series of implementation factors which can affect the outcomes of an IT governance software implementation in one way or another. These implementation factors - clustered into six major categories - are: project planning and analysis, executive support, user involvement, user training, commitment, and organizational integration (see [9, 10] for more details). Change management approaches related to these factors can help to create or sustain change.

Studies on change management effectiveness, including those focusing on IT implementations [e.g. 22, 23], typically build on the Lewin-Schein change model. Based on Lewin’s [24] more theoretical foundation, Schein [e.g. 25, 26] conducted a series of empirical studies leading to the development of a more concrete model which identified individual factors. The Lewin-Schein change approach - widely acknowledged both in descriptive studies [e.g. 27, 28] and prescriptive analysis [e.g. 29, 30] - views organizations as moving from an old quasi-stationary equilibrium to a new one.

In Lewin-Schein’s first stage - “unfreezing: creating the motivation to change” - people become aware of the need for culture change and see the necessity to deviate from prior behavior patterns and mindsets [31]. In this stage, change is introduced - in our case to the existing IT governance landscape - and employees become aware that the current ways of working, as well as roles and responsibilities will change.

Lewin-Schein’s second stage - “cognitive restructuring: learning new concepts and new meanings for old concepts” - implies moving the organization from an old to a new quasi-stationary (IT governance) equilibrium. This is typically a period of confusion and transition where new IT governance mechanisms are implemented. During this phase, IT governance will become more formalized and will, potentially, reach a higher level of maturity. Success is dependent on maintaining teamwork and effective communication with stakeholders [23].

Finally in Lewin-Schein’s third stage - “refreezing: internalizing new concepts and meanings” - the new distribution of social forces is reinforced to maintain and stabilize the new quasi-stationary equilibrium [27]. New IT governance structures, processes, and software tools are integrated into stakeholders’ ways of
working. In practice, this can be a slow and painful process for organizations as staff struggle with unfamiliar new processes and may soon find themselves in a valley of despair [32]. While some can be trained to familiarize themselves with the new changes in order to depart from the valley of despair, there are others who attempt to find workarounds in order to return to old familiar ways working. This could negatively impact IT governance maturity.

Though it is now common textbook wisdom that deliberate change management measures can increase the success of IT implementation projects, our earlier reference to Markus and Benjamin’s ”magic bullet theory” [15] illustrates that this ”common wisdom” is far from common practice. In fact, our own observations and consulting experience as well as anecdotal evidence from professional publications seems to suggest that belief in the ”magic bullet theory” is on the rise, in the sense that managers and IT professionals today seem to put an increasing amount of weight on IT implementations as change enablers and less on supporting change management measures. To explore this, one of our two case studies has been selected to match this situation.

2.3 Focus Area: IT Governance Outcomes; Alignment Maturity

IT governance projects are aimed at improving the business value of IT, including both effectiveness and efficiency. Although the findings by Lainhart [6] and Weill & Ross [7] about better financial performance of companies with better IT governance are important to justify these projects, the measurements are too indirect and too coarse-grained to be suitable to serve as a success criterion at various stages of a change process, which is what we need. Based on the more fine-grained frameworks developed around the link between IT and business (value) such as Henderson et al.’s strategic alignment model [33], and models from Smaczny [34], Kearns et al. [35], Bergeron et al. [36], Strnadl [37], Avison et al. [38], we have chosen to focus on measures of IT/business alignment as a measure of IT governance project success.

The IT Governance Institute defines alignment of business and IT as “whether an enterprise’s investment in IT is in harmony with its strategic objectives (intent, current strategy and enterprise goals) and thus building the capabilities necessary to deliver business value” [39]. For our study we have adopted the quantitative measurement of ”alignment maturity” developed by Luftman [40] who provides a similar definition, referring to IT/business alignment as ”applying IT in an appropriate and timely way, in harmony with business strategies, goals and needs”. He adds that alignment maturity “evolves into a relationship where the function of IT and other business functions adapt their strategies together”.

Since its publication, the framework was applied by various researchers [41-45] and provided important findings around IT/business alignment. To measure both short-term and long-term success of IT governance projects, we apply Luftman’s alignment maturity model [46, 47] to compare the alignment maturity of the companies before, during, and after (both short-term and long-term) an IT governance project. Improved IT/business alignment maturity, in this sense, is used here as an indicator of improved business value from IT. Van Grembergen and De Haes [48] go further, by modeling IT/business alignment as a mediator which enables an increase in business value from IT investments.

The alignment maturity model features six maturity areas - each with five maturity stages. The six key maturity areas are communication, competency and value measurement, governance, partnership, scope and architecture, and skills. Each key area comprises a group of related mechanisms and assessment criteria which are important for achieving IT/business alignment. The five maturity stages are initial/ad hoc process, committed process, established focused process, improved/managed process, and optimized process - the latter being the highest level of maturity.

2.4 Research Proposition Summary

Combining the frameworks from Lewin-Schein, Markus & Benjamin and Luftman, we derive the following three working propositions (WPs) as the basis for our empirical exploration. The WPs are illustrated graphically in Figure 2:

- WP1 - Using IT governance software without preceding or supporting structure/process change measures in an attempt to ”move” and ”refreeze” an enduring change (improvement) in IT alignment maturity does not work. This proposition is in line with the aforementioned ”magic bullet theory” that predicts that users are not sitting ducks and will dodge the bullets, in that way preventing a painful change and using IT as the scapegoat.
- WP2 - Creating an IT alignment maturity increase through structure/process changes without using IT governance software (either as part of the ”move” and/or ”refreeze” stage) will prevent an enduring process change, meaning the ”refreeze” stage will only be partially successful and the long-term alignment maturity will decrease. This proposition focuses on the later stages of the Lewin-Schein
model, postulating that without IT governance software the IT/business alignment maturity will fall back to a level closer to the initial level.

- **WP3** - Using IT governance software to "refreeze" the improvement of IT governance maturity will increase the likelihood of an enduring maturity improvement. This proposition is related to WP2 but now describing the situation with (!) IT governance software, postulating a successful "refreeze" with a long-term increased IT/business alignment maturity increase.

### 3. Research Methodology

Our literature review, summarized in the previous section, and findings from secondary data - provided by consulting projects and interviews with application vendors - allowed us to build the research framework [49] and state the exploratory study’s purpose, as well as criteria to judge a successful exploration [50]. We posit that a multiple case research approach is suitable to examine the complex, contextual, and contemporary nature of change management approaches in an IT governance context. As Yin [50] states, “[a] case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.”

This clearly applies to our research question, since research in this area is in its early, formative stages, and we are dealing with practice-based problems where the actor’s experiences and the action context are critical [51, 52]. In 2009, we have conducted two in-depth case studies in Europe to gather data - through document analysis (e.g., governance landscape documentation, project data, and change management plans), semi-structured interviews, and direct observation. We were also able to use questionnaire data for both companies from an earlier related study [9, 10]. The triangulation has allowed for cross-check [53]. A total of 10 semi-structured interviews have been conducted with key IT governance and change management stakeholders, each lasting some 1.5 hours.

We compiled an interview framework/questionnaire that is structured into three distinct sections. First, structural, process, and software-related topics contribute to the clarification of the chosen IT governance implementation approach. Second, the section with change management factors focuses on moderator variables, looking at the type of change-management initiative (e.g., IT, process, structure) as well as the sequence and timing. Third and last, improvements in IT/business alignment maturity are measured to derive the business value from IT both before, during, shortly after, and more long-term after the change initiatives. The interviewees were asked to rate all six strategic alignment maturity dimensions on a five-point Likert scale using Luftman's instrument [46, 47].

Assessments were cross-checked between respondents per company and averaged to identify possible improvements over time. To support the data analysis activities - and following the advice of Darke et al. [54], Myers [55], and Weitzman and Miles [56] - we have employed a special-purpose software tool for qualitative research, i.e. QSR NVivo. This software package supports non-numerical, unstructured data indexing, searching, and theorizing. NVivo facilitates the storage, coding, retrieval, and analysis of textual data, as well as theory-testing [57]. It supports case study research with its capacity to integrate mixed research methods by merging quantitative and qualitative data [58].

### 4. Case Study Results

#### 4.1 Rio Tinto Alcan - Engineered Products

Rio Tinto Alcan is the aluminum business of Rio Tinto (NYSE: RTP). The unit of analysis for this case study was the engineered products division of Rio Tinto Alcan (RTA-EP), a relatively autonomous part of the company with a global headcount of 15,000 and a significant presence in Australia, Canada, and France. The interviewees at RTA-EP’s Paris headquarters included the CIO, the business relationship manager responsible for IT governance, the IT executive who was responsible for planning and running the initial IT governance initiative, and two external consultants. RTA-EP focused on the implementation of IT governance software to both initiate and sustain IT governance maturity increases, allowing us to explore the research working propositions WP1 and WP3.

RTA-EP’s history - prior to being acquired by Rio Tinto in November 2007 - was one of strong growth,
organically, as well as through acquisitions. As a result, the IT governance arrangements were strongly decentralized to allow for local flexibility, with the exception of a centralized approval by the CFO for projects surpassing a set limit and some informal central knowledge sharing initiatives. In mid 2007, fueled by the ongoing global rollout of multiple large SAP projects, the decision was made to move from a decentralized to a federated model in order to harmonize processes, to achieve synergies, and to increase business visibility.

The change team consisted of RTA-EP-internal employees and external consultants; the team had to handle several environmental difficulties such as dealing with diverse previously independent working cultures and a turbulent business environment that included the takeover by Rio Tinto and ongoing discussions about divestitures. As a first step, the company introduced the IT governance software modules program/project management and resource/time management to support various project rollouts. This first phase lasted from September 2007 to April 2008. At that time, the decision-making process and the management of IT assets were still decentralized, i.e. there was no central governance authority.

The IT governance tool was extended in a second phase - which more formally put a central IT governance initiative in place - with the introduction of demand management and portfolio management features. This phase, which is where our actual case study measurements start, began in May 2008 and lasted until February 2009. To standardize processes and achieve rapid results, it was decided to introduce the IT governance software first in its standard, non-customized form. The new demand management process consisted of three phases completely supported by the software. New IT demands from that moment on had to go through the idea phase and the proposal phase before they could enter the project phase.

To ensure that all affected stakeholders were involved in decision-making, several demand gates had to be passed before a project request could move to the next phase. If the project request passed all gates, it would move into the project phase where the software supported the organization’s project management office (PMO) with all necessary software features. The new process also mandated that every project above a set number of mandays had to create a cash flow analysis, a risk profile, as well as a value profile. This led to the optimization of IT portfolio management and reduced the amount of non-value-adding projects. The need to compile spreadsheet-based portfolio analyses was made redundant by real-time dashboard functionality.

Resource/time management increased RTA-EP’s awareness of (internal and external) resource capacities and facilitated as-is and to-be comparisons. With the introduction of time-tracking features, budget accountability was enforced and key performance indicators (KPIs) helped to measure performance against targets set by RTA-EP’s executive management. Though the change initiatives strongly relied on software to enforce process changes (e.g., “no time-tracking, no payment of external consultants”), additional structural alterations were made.

First, an IT governance committee was set up with a quarterly meeting schedule. It comprised RTA-EP’s business unit leaders, the CIO, and the business relationship manager. This committee reported directly to the division’s CEO and CFO. The task of the committee was to make decisions on the IT portfolio, on IT assets, procurement strategies, and human resource (HR) issues. Second, weekly business review meetings and bi-weekly investment review meetings were initiated.

Not many other non-IT supporting change management initiatives were employed for the IT governance project. Some executive support and user involvement took place by demonstration and review of the processes at management level. The IT governance software was, however, implemented using a top-down approach without any explicit end-user involvement. User training did take place, conducted both in classrooms and one-to-one sessions on an as-needed basis. Commitment was ensured through pooling strong supporters and resisters in teams and following a step-by-step rollout approach. Adoption was further enforced by including tool usage into employees’ annual reviews.

By February 2009 most of the change management initiatives were concluded and a period of relative stability began. Table 1 summarizes the Luftman IT alignment maturity levels for this case before the IT governance change initiative (May 2008), shortly after (Feb 2009) and in the more long-term stable situation (May 2009).

<table>
<thead>
<tr>
<th>May 2008</th>
<th>Feb 2009</th>
<th>May 2009</th>
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<tbody>
<tr>
<td>Communications</td>
<td>1.7</td>
<td>2.8</td>
</tr>
<tr>
<td>Competency/Value</td>
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<td>3.2</td>
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<td>Governance</td>
<td>1.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Partnership</td>
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<tr>
<td>Scope/Architecture</td>
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</tr>
<tr>
<td>Skills</td>
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</tr>
<tr>
<td><strong>Total Average</strong></td>
<td>1.6</td>
<td>2.9</td>
</tr>
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</table>

Table 1. Rio Tinto Alcan EP Alignment Maturity
4.2 Siemens Global Shared Services-IT

Siemens AG, headquartered in Germany, is one of the world’s largest engineering companies, specializing in three main business sectors: industry, energy and healthcare (NYSE: SI). Consisting of 15 divisions, it has approximately 430,000 employees and global revenues of more than $110 billion (2008). The unit of analysis for this case study is Siemens global shared services IT (GSS IT), one of the four business lines within Siemens’ global shared services division. GSS IT operates six regional application management centers (AMCs) and four infrastructure management centers (IMCs) located worldwide. Headquarters are in Munich.

Interviews were conducted with the GSS IT head of portfolio management - also responsible for overseeing the overall IT governance initiative - one of his direct reports from the central portfolio management department as well as one from a regional AMC, complemented with two external consultants. Contrary to Rio Tinto Alcan, GSS IT’s IT governance project had a two-phased approach. It focused extensively on process design and change management approaches to initiate change before implementing IT governance software to sustain change.

GSS IT had a decentralized structure in terms of decision-making processes and IT asset management. Each AMC managed its own assets and made independent portfolio decisions. As a result, all subsidiaries had their own way of managing service provisioning - with inconsistent performance across AMCs. To standardize service quality and to minimize risks when developing new (costly) service offerings, GSS IT embarked on an IT governance project to develop a common, harmonized service lifecycle management process for all AMCs and IMCs. The ultimate goal was to increase external/customer transparency. This was done using the existing IMC lifecycle management process as a starting point with a focus on portfolio management.

The project team consisted of both external consultants and internal staff from headquarters and the regional subsidiaries. The IT governance project had four stages: analysis of documents, processes and standards, followed by the development of concepts for processes and workflows, active stakeholder management, and finally customization and configuration of an IT governance tool. The initiative started in December 2007 with an initial analysis and development of the IT governance concept. At this point in time, only informal and limited IT governance arrangements were in place. The project team spent the majority of their time on defining IT governance processes, roles, and responsibilities.

Though GSS IT had active executive support from headquarters, the project was met with resistance from regional AMCs and IMCs since they did not want to make their internal service lifecycle management transparent. They were reluctant to share information about demand pipelines, project portfolios, and financial KPIs. In order to increase acceptance of the newly standardized processes and associated responsibilities, selected users from headquarters and regional subsidiaries were involved in the design process. In addition, the regional AMC in Vienna was picked as a pilot - and as a means to convince and motivate other regional AMCs and IMCs to adopt the formal IT governance arrangements.

The IT governance initiative was concluded in June 2008 and marked the start of the post-change period. By then, GSS IT had a global service lifecycle management process consisting of six distinct phases, alignment with internal and external frameworks - e.g. ITIL and ISO 20.000 - as well as a handbook containing detailed process steps, financing models, risk management approaches, and general governance policies.

Two IT governance software modules were also implemented for demand management and portfolio management. The tool was meant to provide the organization with improved capabilities to identify opportunities and threats at an early stage in the portfolio lifecycle, as well as more immediate alerts regarding project deviations. Process gates in the proposal phase of the service portfolio lifecycle also helped to reduce unnecessary efforts spent on projects that might eventually be cancelled by customers. However, the tool was not immediately used. GSS IT focused on ensuring that IT governance processes were running well first before they started the adoption of IT governance software.

Table 2 summarizes the IT/business alignment maturity levels for this case before the IT governance change initiative (December 2007), shortly after (January 2008) and in the more long-term stable situation (November 2008).

<table>
<thead>
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<td>Skills</td>
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<td>2.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Total Average</td>
<td>2.2</td>
<td>3.1</td>
<td>2.9</td>
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Table 2. Siemens GSS IT Alignment Maturity
5. Discussion

In the following sections we subsequently discuss our findings from the RTA-EP case and the GSS IT case, after which we return to our general research question and discuss next research steps. Figure 3 repeats our research framework, showing the overall changes in the scores for each building block for both of the case studies.

5.1. Understanding Rio Tinto Alcan - EP

Looking at the overall outcomes of the IT governance project in this case, we observed improvements in all six of the Luftman IT/business alignment maturity dimensions. The overall maturity increase was impressive: starting from 1.6 before the IT governance initiative and moving to 3.1 at the time of the research site visit.

Considering the change initiatives within this project we see a strong focus on IT governance software (and much less on process change measures) to "move" and "refreeze" the IT governance processes, medium activity in terms of structural changes, and minor evidence for change management factors and environmental contingencies. The approach followed at RTA-EP clearly focused on improving IT governance processes through the top-down implementation of IT governance tools. The structural changes - e.g. setting up the IT governance committee - became a necessity with the introduction of process changes but they were not change drivers. In other words, RTA-EP employed a "magic bullet" approach and was successful, contrary to our "magic bullet theory" working proposition WP1 (see Figure 4).

Focusing in more detail on non-IT change measures, we see that careful project planning and analysis took place but our interviews do not indicate a significant effect on the overall project success. Although the CIO (the initiator of the IT governance initiative) provided a high degree of executive support, special measures for ensuring user involvement and commitment were lacking.

The possible influence of environmental contingencies on the overall success of the IT governance project in his case study is unclear or at least mixed. Most of the factors listed under that heading did not change or had no discernable influence. However, the significant turbulence caused by the Rio Tinto acquisition, the subsequent economic crisis and the possible divestiture could either lead to more or less user resistance as employee morale and fear of job loss may be affected strongly and differently, also across countries, departments and individuals.
In summary, and with reference to Figure 4, we see that RTA-EP predominantly used IT implementation as a change measure to both "move" and "refreeze" the organization. Whereas, based on the magic bullet theory, one would expect a path similar to that described in our WP1, they followed a "road to success" most similar to our working proposition WP3.

5.2. Understanding Siemens GSS IT

Referring to Table 2 and Figure 5, we see that maturity levels for GSS IT in terms of IT/business alignment in all six dimensions improved during the "move" stage but "refreeze" was unsuccessful and the alignment maturity dimensions dropped from that point onwards, with the exception of the maturity area “competency and value measurement”. Overall, GSS IT started from a maturity of 2.2 before the IT governance initiative, reached a peak maturity of 3.1 after the initiative, quickly fell back to 2.9 and afterwards failed to stabilize but continued a slow slide. All in all, despite comparatively high alignment maturity scores throughout the change initiative, it would be difficult to call this a complete success.

Revisiting the building blocks from our research framework, we see a strong focus on IT governance process improvement initiatives (here without IT implementation, contrary to the RTA-EP case) and attention to many of the non-IT change management factors, minor evidence for structural changes, and minor change in environmental contingencies.

From our interview analysis we learned that GSS IT’s focus was on driving best practice IT governance into the organization through IT governance processes and change management factors. Before the actual change initiative took place, GSS IT ensured support from headquarters as well as regional centers. During the change initiative, employees from GSS IT headquarters and regional centers worked extensively for 6 months with external consultants to define IT governance processes, roles, and responsibilities before starting to develop the IT governance software modules for demand management and portfolio management. Such careful project planning and analysis, with frequent user involvement, facilitated the introduction of IT governance into the organization.

The establishment of a pilot center in Vienna was also effective for building commitment and garnering further support from regional centers that were initially skeptical about the change initiative. Regional centers were not coerced into adopting the change, instead they were given time and hands-on opportunities to convince themselves of the change benefits. Furthermore, users were given training to familiarize themselves with the software. Their involvement in defining the IT governance processes gave them an in-depth understanding of the purposes of the IT governance software.

Although the software development was more or less finished by June 2008, the actual rollout was effectively put on hold as a result of, by then, incomplete acceptance by the regional centers. This led to a loss of enthusiasm over time from regional centers that were already on board, leading in a decrease in overall maturity. Despite this, “competency and value measurement” maturity continued to improve as newly introduced metrics, which were established for measuring the extent of service provided to the business functions, could be used even in the absence of an IT governance software.

In terms of environmental contingencies we identified a few challenges such as a competitive organizational culture which led to reluctance to share information between regional centers. Nevertheless, we argue that the environmental contingencies had no major impact on IT governance outcomes.

In summary, and with reference to Figure 5, we see that GSS IT only used non-IT change initiatives to both "move" and "refreeze" the organization. Effectively it was successful in this first phase whereas the absence of IT governance software to "refreeze" and sustain the new situation proved less successful. Unclear is whether the fact that software was expected but not delivered was instrumental to the unsuccessful "refreeze". Overall, we see that working proposition WP2 has the strongest explanatory power.

5.3. Conclusions and Next Research Steps

This study set out to explore the role of different change management approaches in IT governance projects, with an explicit focus on IT and non-IT change measures to "move" and subsequently "refreeze" organizations embarking on IT governance initiatives. The analysis of two contrasting case studies shows how our research model can help explain the dynamics within IT governance initiatives as well as
their short-term and long-term success, measured in terms of IT/business alignment maturity.

Our findings in the first case seem to contradict the conventional wisdom embodied in Markus & Benjamin's "magic bullet theory" (i.e., despite relying only on IT to induce and sustain change the change initiative proved successful), although environmental pressures may help to explain this case. Clearly this situation warrants more research through additional empirical studies, also because the environmental pressures are not unique to this company. The second case relies on non-IT change measures, and our analysis shows that after initial success the company was unable to sustain the improvements. The goodness-of-fit with our research model is close and the case is more or less consistent with one of our working hypotheses.

Moving forward it is clear that, with only two case studies, more empirical studies are needed, in particular for situations going against the grain of the "magic bullet" theory. This study shows how the current research model and the operationalization through the IT/business alignment maturity model prove fruitful to understand these cases, in particular for IT governance projects.

References