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Pre-Implementation Assessment of User Resistance to Mandated Information System Use Based on Business Process Models

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Abstract

One of the most widely recognized reasons for the failure of organizational change initiatives, especially when these are driven by the implementation of an IT system, is user resistance. This ultimately results in losses to the organization in terms of time, money and productivity and also losses to employees in terms of confidence and job satisfaction. One opportunity to remedy this problem is by improving the process through which an implementation strategy is formulated. This thesis proposes a novel approach to improve the pre-implementation assessment of an organizational ecosystem in preparation for the introduction of an information system. It presents a conceptual framework that relates quantifiable characteristics of user resistance to information that can be derived from a business process model in the form of seven defined measures. The framework provides the assessor with a view of the change in these measures between two versions of a process model – the current 'as-is' model and the proposed 'to-be' model so as to highlight relevant information that might not be otherwise considered. The framework is applied to a real case study and the results and their conclusions are discussed. A prototypal software implementation of the framework is also developed and described, showing that all the relevant information required to carry out the assessment can be easily extracted from the XML representation of a process model.

Keywords: *User resistance, business process management, business process model, BPMN 2.0, RACI matrix*

Hinnang infosüsteemide kohustulikust kasutamisest põhjustatud kasutajatõrgetele äriprotsessi mudeli põhjal

Resümee

Töötajate tõrksus organisatoorsetele muudatustele võib tuua asutusele nii aja-, raha- kui ka tootmiskulude kasvu ning kahjustada töötajate enesekindlust ning nende rahulolu tööga. On leitud, et üheks peamiseks põhjuseks selliste uuenduste läbikukkumisel on kasutajapoolne vastasseis uute infosüsteemide rakendamisele. Üks võimalus selle probleemi lahendamiseks on täiustada rakendusstrateegia kujundamise läbiviimist. Käesolev magistritöö pakubki uudset lähenemist hinnangu andmisel organisatsiooni ökosüsteemile enne muudatuste sisseviimist. Töös välja töötatud konseptsioon seob kasutajatõrke mõõdetavad tunnused informatsiooniga, mis tugineb äriprotsessi mudeli seitsmel erineval hinnangul. Antud raamistik pakub hindajale ülevaadet muutustest kahe ñ protsessimudeli -praeguse ëas-isí mudeli ja välja pakutava ëto-beí- vahel, tõmmates tähelepanu olulisele informatsioonile, mida ehk muidu arvesse ei võetaks. Antud töös lahkab autor reaalset juhtumiuuringut võttes aluseks välja töötatud konseptsiooni ning analüüsib saadud tulemusi ja neist tehtud järeldusi. Samuti on välja toodud konseptsiooni katsejärgus rakendusviis mis näitab, et kasutajapoolsete tõrgete hindamiseks vajalik informatsioon on lihtsasti kättesaadav XML-kujul protsessimudelist.

Märksõnad: *kasutajatõrked, äriprotsessi korraldamine, äriprotsessi mudel, BPMN 2.0, RACI maatriks*

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CHAPTER 1

1. INTRODUCTION

Technology acceptance of users is a subject that has been studied since the information technology revolution. It is a robust field of research and numerous models have been proposed to encapsulate its contributing factors such as the TAM[1] and UTAUT[2]. These models and their extensions have been accepted as accurate representations of how users perceive, respond to and ultimately use new technology. However, they explain user behavior towards newly introduced technology in a very broad sense of the term, the scope of the models cover technology acceptance of any individual in any circumstance, regardless of whether its use is voluntary or enforced.

We would like to narrow our focus down to user behavior as a result of mandated use of technology within an organization, a category of user resistance in which research is relatively younger and sparse (1). In this context, the aforementioned models are not sufficient predictors of behavior as shown by Brown et al. (2).

Recent research (3) has shown that user resistance towards information systems is not simply the antonym of technology acceptance. When we talk about user resistance, we refer to its constituent factors that influence how an individual reacts to organizational changes that are an outcome of IT-driven organizational change. As researchers identified the need to understand user resistance as a separate phenomenon, multiple theories have been formulated to explain and

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[1] Technology Acceptance Model (27)
[2] Unified Theory of Acceptance and Use of Technology (28)

understand its contributing factors. It is important to understand that the phenomenon of user resistance is not characterized by just the fears or aversions someone may have towards abandoning familiar processes. Its complexity arises from a combination of several factors; namely, the combined impacts of the change in business processes, workflows, organizational power and politics that affect the work habits, status and relevance of the employee.

User resistance has been widely regarded as one of the most significant reasons for the failure of IT-driven organizational change. LJ Mullins defines resistance as *'the forces against change work organizations'* (4). For this thesis, user resistance is defined as resistance towards the implementation of an information system in an organization. This definition is important to clarify that we are not concerned with just any organizational change but only the branch that deals with the resistance arising from the interaction of employees with a new information system.

Now that the context in which we consider user resistance has been defined, we introduce the second concept relevant to this thesis, business process modeling. Any organization that implements business process management methodologies will initiate organizational change with an evaluation and redesign of business process models. Business process models are a valuable tool that provides decision makers with a visual overview of the activities and tasks of different employees and organizational subunits (henceforth, referred to as 'roles'). As is often the case, a role's activities can evolve over time and lead to work routines that are not documented and have become 'generally understood' practices which may or may not be inefficient. The BP[3] model view helps managers to make sure that activities across different areas of the organization are documented and provides a frame of reference to ensure consistency. This view is especially useful to identify whether a role's activities are inefficient and makes it easier to re-engineer business processes to address these operational inefficiencies.

This thesis aims to explore the relation between user resistance and business process models and proposes a framework that can serve to predict user resistance prior to the implementation of an information system in an organization.

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[3] Business Process

1.1 Motivation

As described earlier, organizational changes are often not well accepted by the involved workers. This ultimately results in losses to the organization in terms of time, money and productivity and also losses to employees in terms of confidence and job satisfaction. Hirschheim and Newman note that user resistance can occur at any stage of the software development life cycle (5). It can occur during requirements elicitation where users are unwilling to participate in interviews or implementation where users refuse to participate as testers and it can even occur during production. The negative reactions to such organizational change during production can vary from the subtle, such as workarounds that ignore new processes dependent on the new system, to more aggressive actions such as sabotage and can occur at different levels within the organizational hierarchy.

As English jurist, Henry de Bracton famously said, *"an ounce of prevention is worth a pound of cure"*. Obviously, better implementation strategies will mitigate the occurrence of user resistance in later stages of the change process. The work of Harrison and Shirom (6) stresses the importance of pre-implementation assessments prior to implementation of change and attributes the high failure rate of change initiatives to poor pre-implementation assessments of the organizational ecosystem. As illustrated by the case study (7), pre-implementation assessment typically follows two steps: qualitative and quantitative. In the first, interviews are scheduled with a sample of process users to evaluate patterns among the perceived pros and cons of the proposed changes. These interviews then form the basis for the quantitative analysis (which in this case were surveys based on the interview results that were disseminated to a larger sample of process users).

The critical aspect of this pre-implementation assessment is the qualitative step as it forms the foundation of the entire assessment. An improvement in the quality of these structured interviews would lead to more accurate and relevant assessments. If the factors of user resistance could be related to and derived from the information stored in a process model, it would highlight relevant information that could then be used to further refine the interview process and provide additional insights to formulate a better strategy.

1.2 Problem statement

User resistance to introduction of information systems within organizations is a widely documented reason for the failure of such initiatives. It can take several forms ranging from passive behaviors to aggressive actions towards the new system or even towards the organization. The strategy used to implement such an organizational restructuration is a critical determinant in preventing the manifestation of user resistance. As such, the refinement of this strategy is of utmost importance and will prevent organizational losses in terms of time, money and productivity and also losses to employees in terms of confidence and job satisfaction. Current implementations strategies begin with an interview process with users to gauge responses towards the proposed changes; we identify a potential opportunity to improve this process by analyzing a business process model from the perspective of user resistance, highlighting information that might not be otherwise visible to those who formulate the implementation strategy. Towards this end, the thesis aims to address the following research questions:

1. *Can the contributing factors of user resistance arising from the mandated use of information systems in an organization be related to the information captured in a business process model?*
2. *If so, how can the information captured in a business process model be used to assess potential user resistance?*

1.3 Contributions

Based on the identified opportunity for improvement, this thesis aims to achieve the following:

- Identify the factors of user resistance that are relatable to information stored in a business process model.
- Define a set of measures that transform this information into meaningful entities that are directly relatable to the identified factors of user resistance.
- Derive a framework for evaluating the change in these factors between two versions of a process model to potentially predict a manifestation of user resistance as a consequence of this change.

- Develop a prototypal implementation of the framework that will extract relevant information from the process model.

1.4 Outline

In Chapter 2, we cover existing models proposed to predict user resistance and other contributing factors of user resistance. Chapter 3 explains the business process management methodology in brief and covers the aspects of business process modeling that are of interest to us. Chapter 4 goes into detail with regards to the systematic approach used in the formulation of our framework namely identifying common patterns in user resistance theories, assessing their potential to be derived from business process models, defining measures relatable to these factors and applying the framework to assess the change in these measures on a case study. Chapter 5 explains the scope and development of a prototypal software implementation of the framework. Chapter 6 concludes the paper and discusses potential directions for future work.

CHAPTER 2

2. USER RESISTANCE THEORIES AND FACTORS

Before we move towards a conceptual framework for the evaluation of user resistance as can be derived from a business process model, it is important to have an understanding of the existing research, models and theories in the area so as to identify common features across widely accepted theories and also discover additional components of user resistance that may be of relevance. This chapter provides an overview of the models considered while developing the conceptual framework.

2.1 Model of resistance to organizational change (MRTOC)

This model proposed by Sven Laumer (8), identifies five sets of antecedents that express themselves as resistance in three key areas; work-related outcomes, technology-related outcomes and process-related outcomes [Fig. 2.1]. However, since our interest lies in the precursors of resistance, we will not discuss the outcomes, instead we will focus on the antecedents that comprise the first two columns in the model:

- *Individual differences and personality:* Differences in social and biological factors such as age, gender, professional background, etc. and psychological factors such as innate predisposition to resist change are covered here. The author also establishes the role of personality characteristics such as self-esteem and a need for achievement in influencing perceptions towards organizational change.
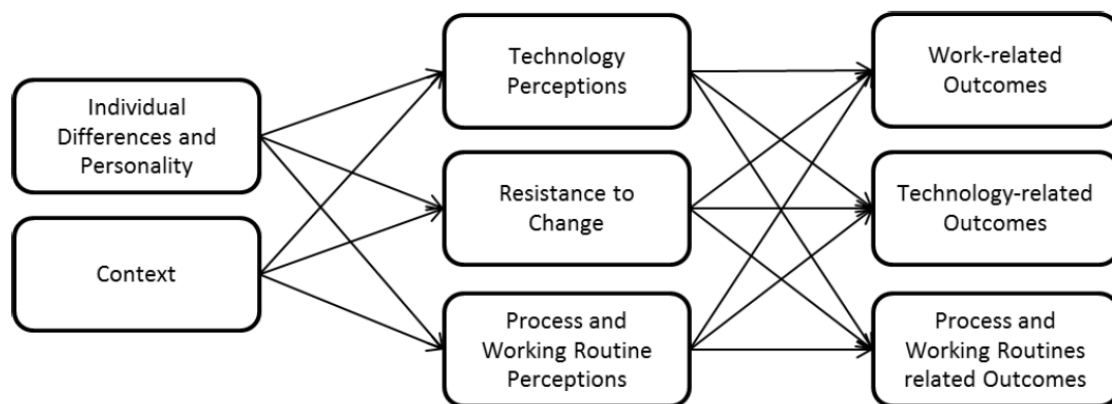
Fig. 2.1: The model of resistance to organizational change (MRTOC)(8)

- *Context:* In the MRTOC, the context of resistance to change is viewed as multi-dimensional construct and is comprised of several contextual variables that contribute to two types of resistance: resistance to the process of change and resistance to the outcomes of change. In the former category, factors include trust in management, social power and transparency in communication about the change. In the latter category we find that organizational power, intrinsic rewards and job security are the contributing factors. Intrinsic rewards are a factor of particular interest as they relate to how interesting, autonomous or challenging an employee finds his/her job (9). If the restrucration of tasks means an employee has less autonomy to carry out his/her responsibilities, the change will be perceived negatively.
- *Technology perceptions:* The two main factors in this component are perceived ease of use and usefulness.
- *Resistance to change:* Resistance in this model is viewed as a three-dimensional construct that assesses how one feels (emotion) about the change, how one perceives the outcome of the change (opinion) and how one will respond to the change (behavior). While these factors are not independent of one another, separating them will allow a greater degree of resolution when assessing the contributing factors to change resistance.

- *Process perceptions:* Similar to technology perceptions, this category pertains to how an employee perceives the usefulness of a new process and also the ease of implementing such a process.

2.2 Organizational power and user resistance

M. Lynn Markus (10) identified three major types of theories when describing user resistance towards implementation of an information system. The three categories are as follows:

- *People-determined:* The person or group may resist the system because of internal, psychological factors. This could be due to inherent negative reactions associated with all types of change and could apply to either all individuals/groups across the organization or just the unit under examination.
- *System-determined:* This theory explains the emergence of user resistance on factors specific to the technology being implemented. Such factors include ease of use, technical deficiencies, design weaknesses and other negative aspects related to the system alone.
- *Interaction theory:* This theory explains user resistance as a product of the interaction between the factors associated with people and associated with the system. Keep in mind that the interaction theory is not a simple combination of the first two groups of theories. It pertains to a *change in state* that the IS introduces after implementation. The term change in state can be further reduced to specify a *change in power*. In other words, prior to implementation, there will be an existing power structure within the organization that handles information and has authority over it. The introduction of an IS has the potential to alter this power structure and resistance arises from those who stand to lose power after its implementation. Daud and Mohamed (29) also acknowledge the role of power loss as a factor of user resistance to information systems.

This change in organizational power can be illustrated by an excerpt from the case study described in his work, where the implementation of a financial information system significantly altered the power structure between corporate accountants and divisional accountants. Before implementation, divisional accountants were given complete control of their transaction data and were responsible for summarizing it at their own discretion before forwarding it to the corporate

accountants for analysis. This level of control was valuable to the divisional accountants because it let them explain any discrepancies in the data prior to submission to the corporate accountants. After implementation, however, the information system would unify all the transaction data and provide ownership of the database to corporate accountants before the divisional accountants had a chance to preprocess it. This change in control was the cause of severe resistance from the divisional accountants.

Why is this of interest to us? The most important factor to note here was the handover of control that this example illustrates and its relevance is explained in greater detail when we cover the concept of responsibility charting in section 3.3.

2.3 User resistance behaviors development model

In this model developed by Klaus and Blanton (1), user resistance is the ultimate behavioral expression of a negative result in the four constituents of *perceived unmet promises.* Briefly explained, when expectations that an employee has from his/her employer are not met (whether knowingly or unknowingly), the result is resistant behavior.

The authors identify four components of the perceived unmet promise:

- *Individual issues:* Factors intrinsic to the employee like cognitive predisposition to change resistance. Analogous to the people-determined theory described in section 2.2.
- *System issues:* Technical factors of the system like ergonomics and user-friendliness Analogous to system determined theory described in section 2.2.
- *Organizational issues:* Factors that relate to the organizational structure and whether it is an environment that facilitates change.
- *Process issues:* Factors that affect the day to day work activities of the employees.

[Table 2.1] summarizes the twelve determinants that constitute these issues. We will analyze the potential of each of these determinants to be derived from a business process model in later chapters.

Component	Determinant	Definition
Individual Issues	Uncertainty	Future outcomes are not clear
	Input	User's suggestions will not be valued
	Power	Loss of current authority and status
	Self-efficacy	Perceived lack of ability
System Issues	Technical Problems	System defects or inadequacies
	Complexity	System is not user-friendly
Organizational Issues	Facilitating Environment	Company culture is static and resistant to change itself
	Communication	Organizational communication is ineffective and inefficient
	Training	Organization does not invest sufficiently in user training
Process issues	Job Skills Change	Job requirements and description changes
	Workload	Amount of effort a user has to contribute is increased
	Lack of Fit	The system does not merge well with the current organizational processes

Table 2.1: The four components of perceived unmet promises and their determinants

2.4 Categories of resistance theories

While developing their multilevel model of user resistance, Lapointe and Rivard (11) summarized the existing theories of user resistance and found that they fell into four main categories.

- *Resistance to power loss:* The implementation of the IS reorganizes the power structure within the organization as already discussed in 2.2. (10)
- *Resistance to equity changes:* The IS could result in a net decrease in the equity of an individual. (12)

- *Resistance to the new routine of performing work:* Changes in the process disrupts the familiar daily work routines (13). A point similarly discussed in section 2.3.
- *Resistance to attribution changes:* The IS hinders the activity of the users, lowering their output and increasing the likelihood of them using workarounds. (14)

Cheng et al. (15) identified an additional category in their later review of the user resistance theories when applied to lean production systems:

- *Resistance related to status quo bias:* People could be inherently opposed to change. (16)

The multilevel model of user resistance explains how user resistance rises in significance as individual resistance behaviors coalesce to form group resistance behaviors over time. While this model is not of immediate relevance to the thesis, the identified categories of user resistance theories prove useful. From the theories discussed so far, we can already begin to see patterns of factors that contribute to user resistance.

2.5 Job characteristics and job satisfaction

The recent work of P. C. Struijs (17), established the role of job satisfaction in mediating user resistance. The results of his analysis concluded that low degree of job satisfaction can express itself in user resistance when employees are faced with organizational change and this in turn, leads to a higher chance of employees leaving the organization. The existence of this relationship motivates a deeper look into the characteristics of job satisfaction.

In their study of ERP systems implementation (18), Venkatesh and Morris propose a model to understand the changes in job satisfaction between before and after the introduction of an ERP system. Drawing from the work of Hackman and Oldham (19), job satisfaction is defined as the degree to which an employee relates the alignment between his activities on the job and his personal values to a positive emotion. Job satisfaction in this model is composed of the following five characteristics [Fig. 2.2]:

- *Task significance:* The degree to which an employee's activities significantly influences the lives of people either internal to the organization or society in general.
- *Task identity:* The degree to which an employee considers himself responsible for the outcome of a complete piece of work. For example, an employee who is responsible for
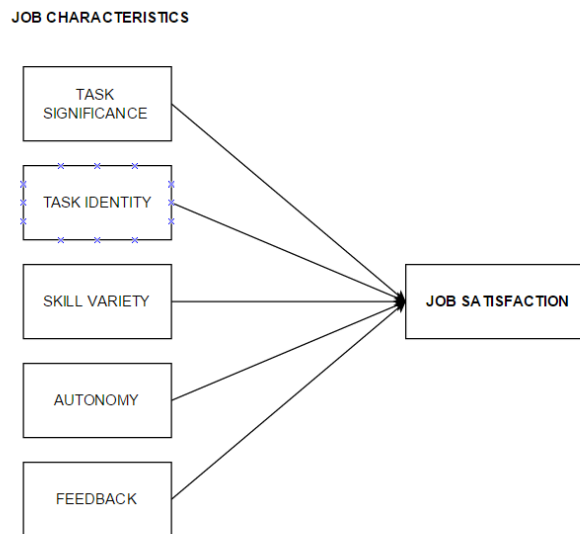
Fig. 2.2: Job satisfaction as a function of job characteristics

assembling a whole PC fan as opposed to one responsible for just placement of the fan blades.

- *Skill variety:* The degree to which multiple skills and talents of an employee are fully utilized during his activities.
- *Autonomy:* The degree to which an employee is allowed to carry out his responsibilities at his own discretion and the extent to which he does not feel limited in his ability to make decisions while carrying them out.
- *Feedback from the job:* The degree to which the employee is provided with insights into work performance and quality as the work is carried out. This is not feedback from a supervisor but an indication of how well an employee can view performance and results as the work is carried out.

Based on these characteristics, Hackman and Oldham (19) proposed a formula to evaluate the magnitude of job satisfaction called the Motivating Potential Score (MPS) which calculates the job satisfaction of a job as follows.

$$MPS = \left[\frac{Skill\ variey + Task\ identity + Task\ significance}{3}\right] \times Autonomy \times Feedback$$

It is clear that autonomy and feedback have a very significant effect on the overall MPS as opposed to skill variety, task identity and task significance. For the scope of this thesis, considering that our interest is limited to deriving these factors from a business process model, we seek to evaluate the change in these factors from the existing and the proposed versions of the process models. While there is no possibility to evaluate feedback from a process model itself as it is entirely dependent on interviews and information captured outside the model, we will instead focus on the possibilities of deriving information related to the other four characteristics in subsequent chapters. Considering the extent of its impact on the MPS, it will be extremely valuable if we can identify a mechanism with which to gauge autonomy.

Apart from these five core characteristics, Hackman and Oldham (20) identified two additional factors that were useful in understanding job satisfaction, however there relation to the MPS was not defined:

- *Feedback from agents:* This is a measure of whether the employee receives clear feedback from his managers and supervisors.
- *Dealing with others:* This is the extent to which an employee is required to interact with his colleagues or even other organizations and clients while carrying out his activities.

2.6 Technostress

In their paper on information technology as a daily stressor (21), Maier, Laumer and Echkardt discussed how the role of technology stressors and 'techno-exhaustion' have an ultimate impact on work-related outcomes including job satisfaction. They define work exhaustion as the state of being fatigued by the end of a work day. They then proceed to define techno-exhaustion as a factor of work exhaustion that is caused by using IT systems. Using IT systems can lead to exhaustion and frustration if the system is defective or responsible for delays that cause an increase in overall workload. The increased pervasiveness of technology in our personal lives also blurs the boundaries between home and work lives. The authors identify five types of techno-stressors [Table 2.2] and establish that each of these stressors increase techno-exhaustion. This increase in techno-exhaustion contributes to work exhaustion which leads to a decrease in

Techno-stressor	Description
Techno-induced work-home conflict	Perceived conflict between demands of technologies used at work and responsibilities at home
Techno-induced invasion of privacy	Perceived invasion of privacy due to use of technology at work
Techno-induced work overload	Perceived expectation of greater outputs due to use of technology at work
Techno-induced role ambiguity	Perceived confusion about whether one should tend to work activities or deal with technology-related problems
Techno-induced job insecurity	Perceived fear of losing a job because technologies might make their role irrelevant or they may not be able to acquire the skills necessary for utlization of the technology

Table 2.2: Techno-stressors that contribute to techno-exhaustion

job satisfaction and can lower output and productivity, ultimately leading to a desire to quit the job unless the stressor is dealt with.

There is also a noted difference between the impact of techno-exhaustion on IT personnel and non-IT personnel with the conclusion being that non-IT personnel are significantly more likely to be negatively affected by each of the techno-stressors due to an increased likelihood of the employee being affected by techno-induced job insecurity. With that in mind, pre-implementation identification of potential technostress can be useful in predicting user resistance and will be explored in this thesis.

CHAPTER 3

3. BUSINESS PROCESS MANAGEMENT

Now that we have covered the relevant models and concepts related to user resistance, we will talk about BPM[4], its uses, notation and the information of interest that it captures when describing business processes.

BP modeling is the process of representing the organizational activities and workflows in relation to their performers diagrammatically. BP modeling is usually performed by business analysts who have are well trained in the BPM paradigm and understand how to translate organizational activities into a BP model. They analysts can be employees with an existing understanding of the organizational processes or they may be consultants working in liaison with the employees who possess knowledge of the processes.

3.1 The benefits of business process management

In a large organization, work practices have to evolve over time to manage changes in the scale of operations and respond to changing market conditions. Implementing BP management to represent organizational workflows provides a common frame of understanding for employees (at the same level and across the organizational hierarchy) to understand their activities and responsibilities. There are several benefits of BPM, some of which are briefly explained below:

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[4] Business Process Management

- *Efficiency:* BPM enhances efficiency of an organization by providing a holistic view of its processes from end to end. This provides visibility to process bottlenecks and makes it easier to address such issues. It can also improve process efficiency by identifying opportunities for waste elimination through removal of wasteful activities or even roles.
- *Clear visibility of roles and responsibilities:* Having tasks and activities of a role outlined in a model provides clear boundaries for responsibility and eliminates any confusion a role may have with regards to their responsibilities. It can also highlight when an activity has more than one role responsible for it.
- *Business agility:* BPM makes it easy for managers to restructure processes and view the impacts of these changes on the process participants. This enables greater certainty and control when implementing changes and responding to their results.

Implementation of BPM methodologies has been proven to be of great strategic value to organizations (22) and is a valuable tool in identifying the impact of process changes from an operational perspective within an organization. This applies to the changes caused by the introduction of an information system and provides us with an interesting perspective from which to analyze user resistance.

3.2 BPMN 2.0

Business process model notation 2.0 (BPMN) is the current industry standard for graphical representation of business processes. It provides a standard format for communication of business processes within and among organizations. The capabilities of the notation which are of relevance to this thesis would be best illustrated by the example below which describes the interaction between a customer and pizza vendor when placing an order for a pizza [Fig. 3.1 Taken from (23)]. This section will not go into details with regards to all elements of the BPMN but covers some of the most commonly used features to provide a cursory overview for the case study analysis carried out later.

- The participants 'Pizza customer' and 'Pizza vendor' are represented by separate *pools.*

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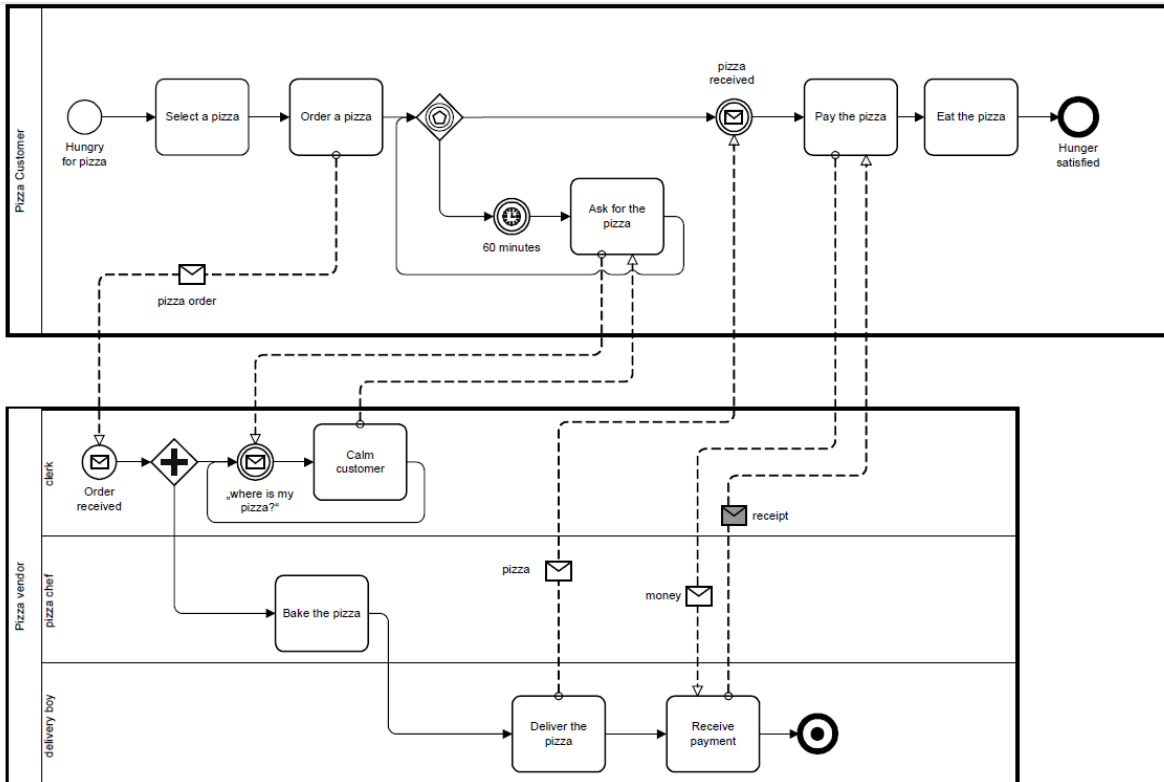
Fig. 3.1: A pizza order process.

- The vendor alone has three roles of its own; 'clerk', 'pizza chef' and 'delivery boy' in their own *lanes*.
- Circles represent *events* such as the *start event* 'Hungry for pizza', the *end event*, 'Hunger satisfied' and *message events* like 'order received' and 'where is my pizza?'. An event is not time consuming and does not signify work.
- *Activities* such as 'select a pizza' and 'order a pizza' are represented by rectangles. Activities are the work units of a process and consume resources in their execution.
- *Gateways* represent the routing of a sequence flow and are represented by diamond shapes. There are different kinds of gateways such as the *inclusive gateway* after the 'Order received' activity. This means that all routes emerging from the gateway will be carried out. There are also *exclusive gateways* which show that a decision must be made before proceeding. In the example, there also exists an *event-based gateway* that means a path is based not on a decision but the occurrence of an event.

- *Communication flows* are represented by dashed lines. Please note that communication flows are only captured between different pools. If there are multiple roles within a pool, communication flows between them will not be explicitly described, instead, it is assumed that they can communicate with each other through a non-described channel.

3.3 Responsibility charting and the RACI Matrix

As described in section 3.1, business process models are useful in highlighting roles and their responsibilities. One method of collating this information is by constructing a RACI matrix through a process called responsibility charting.

A responsibility assignment matrix or RACI Matrix (24) is the output of a method called responsibility charting. The method is applied to business process models to understand the involvement an employee has in process outcomes. Through development of a RACI matrix, differences in responsibilities are highlighted and this provides a common frame of understanding for entire teams with which related issues can be addressed.

The resultant RACI matrix is a table [Fig. 3.2] that that shows the activities on the left and the roles of employees of along the top. There are four levels of involvement that are to be considered:

- *Responsible:* This represents the person who actually carries out the activity, the worker.
- *Accountable:* This represents the person who has ownership for the outcome of an activity. If more than one role is identified to be accountable for an activity, it shows a conflict of ownership and the outcome has greater potential to be negatively affected by such a situation. Note that it is possible for a single person to be both, accountable and responsible for an activity.
- *Consult:* The consult is a person who needs to be consulted before the process can continue. More than one person may be the consultant for an activity. This person is involved prior to the completion of the activity. For example, if a process output requires

	Roles of participants									
Activities										
				Type of participation						

Fig. 3.2: RACI Matrix

review from a peer prior to approval from the owner of the activity, the peer will be a consultant.

- *Inform:* This represents a role that needs to be aware that the activity is being carried out but is not involved in carrying out the work aspect of the activity. Unlike the consultant, the person can be informed either before or after its completion.

Following our example from section 2.2, we see that prior to implementation of the financial information system, the divisional accountants were the ones responsible and accountable for the transaction data. However, with the shift in ownership, the corporate accountants were the ones accountable for the data while the divisional accountants were still responsible for the data entry activities. This change in the accountability factor provided the corporate accountants with a reason to interfere in activities that were previously carried out solely at the discretion of the divisional accountants. This was the cause of user resistance in this scenario and is a component of our conceptual framework.

CHAPTER 4

4. A FRAMEWORK FOR PRE-IMPLEMENTATION EVALUATION OF USER RESISTANCE

This chapter documents the approach used in evaluating the identified factors of user resistance for relevance to information captured in a process model to define an initial proposal for the framework. An analysis of a case study is then carried out and the information obtained is used to define seven measures that are then related to the factors. A comparative analysis is run on the case study to assess the change in these factors and the results, inferences and possibilities for further conclusions are summarized. Finally, the complete framework including both factors and measures is presented.

4.1 Development of the framework

Based on the literature review of user resistance theories, we observe several emerging patterns of user resistance factors; in this section we will look at each of these patterns and weigh their relevance to our conceptual framework. The following flowchart [Fig. 4.1] encapsulates the process we use to carry out this evaluation:

The summary of the assessment of each identified pattern follows:

- *Individual factors and perceptions:* Factors related to the employee under consideration such as their age, gender, educational/professional background and psychological predisposition to

change resistance. This group of factors fails the first step of our assessment and so, they cannot be reasonably included in our framework.

- *System factors and perceptions:* Factors intrinsic to the system being implemented such as ease of use, design flaws, technical deficiencies and ergonomics. This group of factors fails at the first step of our assessment and so, they cannot be reasonably included in our framework.
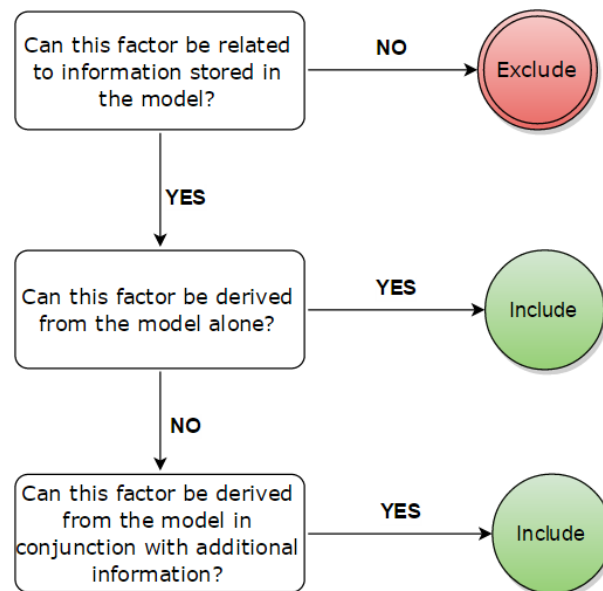
Fig 4.1: Process used to assess relevance of user resistance factors

- *Power factors:* Factors related to organizational power distributions. As established in 3.3, we see that it is possible to assess responsibilities and accountabilities from the RACI matrix which are indicative of shifts in this specific aspect of organizational power. So we can attempt to assess power changes by comparing information in the responsibility charts of as-is and to-be versions of process models.
- *Process factors:* Factors related to changes in daily routines of employees. We can assess some aspects of daily routines by analyzing changes in the communication flows, workload, structure of activities and decisions. With the exception of work load, the rest can be

analyzed with information from the model. Work load would require additional information in terms of effort or time required for each activity which could be reasonably added in by the assessor.

- *Job satisfaction (We will consider each job characteristic individually):*
  - *Task significance:* While we can retrieve tasks from the model, the relevance of these tasks to the overall mission of the organization or society would be highly subjective and challenging, if not impossible, to generalize so this characteristic will be excluded from our framework.
  - *Task identity:* This characteristic would require a categorization of work outcomes and then an assessment of whether these work outcomes were carried out by individual roles or were the result of collaboration between multiple roles. BP models do not express work outcomes as part of the notation; instead they are identified by comments or names of elements. As such, this information is extremely semantic and contextual in nature so this characteristic is excluded from the framework.
  - *Skill variety:* The required information to assess this characteristic is the extent of an employee's skillset which is again, very specific to each employee's background. In the absence of a way to generalize this information, this characteristic will be excluded from our framework.
  - *Autonomy:* This characteristic is a measure of the independence given to an employee in carrying out his activities and decisions. How is independence defined? It is the extent to which an actor has the authority to carry out his activities at his own discretion. This factor can be assessed similar to the earlier power factor as it relates to the spread of accountabilities and responsibilities across a role's activities.
  - *Feedback:* This characteristic is dependent on tracked job performance of an employee and fails the first step of our assessment. Hence, it cannot be reasonably included in our framework.
  - *Dealing with others:* This is the reliance of an employee's activities on other people can be viewed via communication flows and the extent of interaction with others while carrying out activities. This information is captured in the model.
  - *Technostress:* With the link between job satisfaction and technostress established in section 2.6, we propose its inclusion as a job characteristic. While it is not possible to

capture all of a role's interactions with different kinds of technology over the course of his/her activities, it is still possible to measure the extent of interaction with the new information system by tracking message flows between the actor and the system. Also, if the employee under consideration can be identified as IT or non-IT personnel, another aspect of technostress can be evaluated. So we will attempt to include this in our framework. This information can be derived from the model in conjunction with external information.

Based on the results of the factor analysis, we see that there is an opportunity for some of the contributing factors of user resistance to be assessed from a BP model. These factors fall into two main categories – process characteristics and job characteristics which leads us to the initial proposal for the conceptual framework [Fig. 4.2]. Please note that we combine the organizational power factor with autonomy. The aspect of organizational power that we can evaluate is equivalent to autonomy as they are both evaluated by an assessment of an employee's accountabilities and responsibilities.

It is important to understand that our framework is not just interested in evaluating the magnitude of these factors but providing a view into the *change* of these factors between two versions of a process model (the current as-is version and the proposed to-be version). With the relations of these factors to user resistance already established, it is the evaluation of their change that can predict user resistance. As such, we propose the following model to carry out for this evaluation. The model postulates that the existence of change in either the identified job characteristics or process characteristics as related to a process model can be a predictor of user resistance if the change is implemented. With this model defined, we can now explore the other end of the spectrum and analyze our data source, i.e. the business process model.

4.2 BP model analysis

The approach used in relating our initial model of resistance to a business process model begins with data extraction from a process model. We first look at all meaningful data that can be derived from model in terms of the actors, their activities, decisions and communication flows. We then use this information to define measures that can be related to factors in our model. If a measure can be calculated with data from the model in conjunction with external information, we

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assess the possibilities of relating it to a factor as well. With these relations established, we can run a meaningful comparison between two versions (as-is and to-be) of a process model. The framework is meant to be applied to equivalent human roles in the two versions of the process model. The reason we evaluate from the perspective of equivalent roles alone is because different roles can have different reactions to the change and such the evaluation of user resistance is highly dependent on the perspective of the role affected by the change.
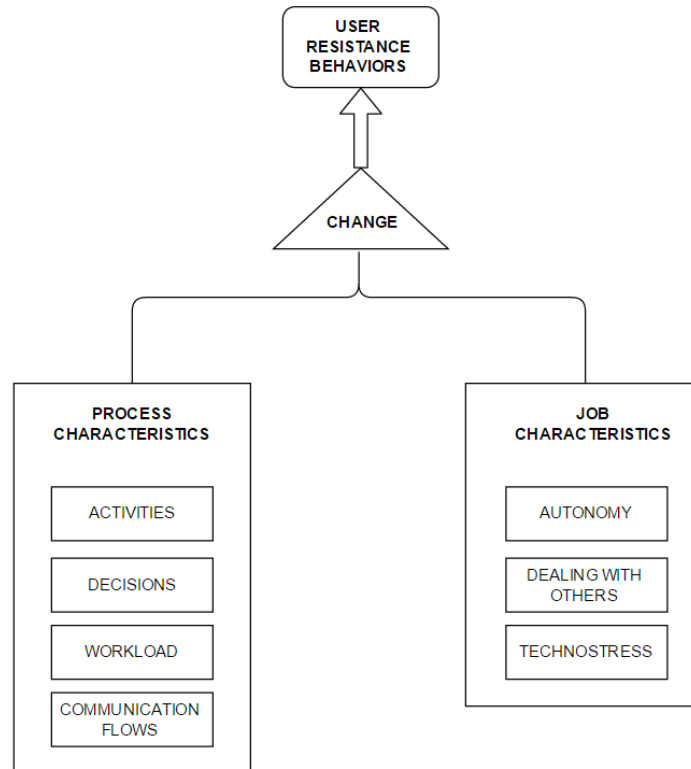
Fig 4.2: Initial concept of model of user resistance relatable to BP models

4.2.1 Limitations

One of the challenges faced while going forward with this approach is the lack of suitable models to analyze. While there are several examples of real process models available from different institutions and process banks, the scarcity lies in the fact that both, to-be and as-is versions of a process are required and they must reflect an implementation of an information system to have any relevance to the proposed model. With these constraints in mind, there was one case study was found to be relevant. For confidentiality reasons,

the name of this agency cannot be disclosed, henceforth, it will be referred to as 'Agency'.

4.2.2 The Agency case study

The Agency is an organization responsible for the registration and tracking of land ownership. In 2008, the management recognized a need for implementing business process methodology to improve their paper-based process structure. This involved implementing an online tracking system and the automation of several manual activities. While we do not know how successful the implementation was, the process models provide an adequate starting point to refine our model as they represent a real example of business process changes seen after an information system is introduced.

4.2.3 Analysis method

The models were analyzed from the perspective of two equivalent roles, 'Surveyor' in the as-is model and 'Lodging Party' in the to-be. The roles were identified as equivalent from parallelisms between their sub processes and also a comment on sub process '1.0 Prepare Plan' from the to-be version of the model which states that the Lodging Party has to be a licensed surveyor. It is assumed that the definition of the Surveyor role was broadened to Lodging Party to accommodate the broader business strategy and the supporting processes lined up for the restructuration. To carry out the analysis, we decided to represent the information in the model as an extended version of the RACI matrix based on the additional information required to evaluate factors of interest to us. This is because the RACI matrix already captures process information from the model like activities and roles that we need so it was simpler to represent this additional information in the same format. The additional information that we wanted to capture is as follows:

- Existence of communication flows and whether they are incoming or outgoing (CF).
- The average/expected duration of an activity (t).
- Whether an activity was followed by a decision, represented by an exclusive gateway (D).

- And also, whether an activity involves interaction with the information system to provide insight into the level of technostress (IS).

Also, in the absence of contextual information, we have to define certain rules to follow and assumptions made while assigning the values of these parameters:

- A role is attributed accountable (A) and responsible (R) for an activity in its lane or pool unless explicitly stated otherwise.
- A role is attributed a consult (C) for an activity if the activity is preceded by an incoming message event from that role. This fulfills the criterion that the consult is required prior to the completion of the activity.
- The assignment of a role as informed (I) is extremely contextual and is not dependent on just the flow of messages between the actor and an activity. Also, considering that the information can be transferred at any stage of the process as per the definition of inform in section 3.3, there is no reasonable basis on which to assign a role as the informed party of an activity without more contextual information and so we will be excluding this from our analysis.
- To express the average duration of an activity, t, we apply a point scale where 1 point is equal to 10 minutes of work. We then semantically analyzed the activity names to assign a rating to the activity. The accuracy of the semantic analysis is not of high importance as the purpose of this evaluation is to illustrate the potential to compare workloads between the two versions of the process and what such a comparison would require. The point being made is not that semantic analysis is necessary but that external information from someone knowledgeable about the process is required.
- Communication flows are represented using arrows ($\rightarrow$,$\leftarrow$) that represent incoming and outgoing messages to the activity or role under consideration respectively.
- Decisions are identified by the existence of an activity that leads to exclusive gateway (X).
- And finally, a task is shown to involve the IS if there is a message between the activity and the IS in any direction ($\checkmark$). This signifies that the activity requires

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interaction with the system regardless of the extent of interaction and while it will not capture the entire extent of a role's involvement with the system that is contextual, it's a starting point.

To illustrate our process of data extraction from the model, we will apply it to the 'Create Non-NECS Transaction' sub process of the to-be model [Fig. 4.3]. Let us consider the first row 'T1 Log on to portal'; we assign the *Lodging Party* as 'A' and 'R' because we have no other indication of who is accountable for the activity. We see that there is an outgoing communication flow and so we assign the *CF* column a value of '←'. The communication is sent to the Online portal which is part of the new information system and hence we assign the *IS* column a value of '✓'. Semantically analyzing the activity name shows us that it is a login activity which cannot reasonably take more than 10 minutes so we assign the *t* column a value of '1'. If we look at the activity 'Complete transaction data required', we see that it is preceded by an incoming message event from the Online portal. Hence, the Online portal is a consult for this activity and is assigned the value 'C'. Also when we look at the activity 'Determine Digital or Paper Lodgement', we see that it leads to an exclusive gateway and hence the X column is assigned a value '✓'. The sub process and its results[5] are below [Table 4.1] and are followed by the results of evaluating both process versions completely [Table 4.2] [Table 4.3] (the complete process models can be viewed in the appendix).

Activities	Lodging Party	Registry	Online portal	Online forms or NECS	Tracking System	Registry Officer	CF	IS	t	X
T1 Log on to portal	A, R						←	✓	1	
Request registry transactions	A, R						←	✓	1	
Optionally prepare priority notice	A, R								6	
Tender fees	A, R						←	✓	1	
Request remaining data from client using fixed business rules			A, R				→	✓		
Complete transaction data required	A, R		C						1	
Send data	A, R						←	✓	1	
Determine digital or paper lodgement	A, R								1	✓
Request print & commit completed transaction pending final evidence	A, R						←	✓	1	
Set settlement/lodging date for digital transactions	A, R						←	✓	1	

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[5] A grey activity font means that the activity does not lie in the pool under consideration but is connected via message flow

Consider impact of registry changes on transaction	A, R						→	✓	1	
Check that registry data has not changed			A, R				→			

Table 4.1: Assessment of the 'Create Non-NECS Transaction' sub process
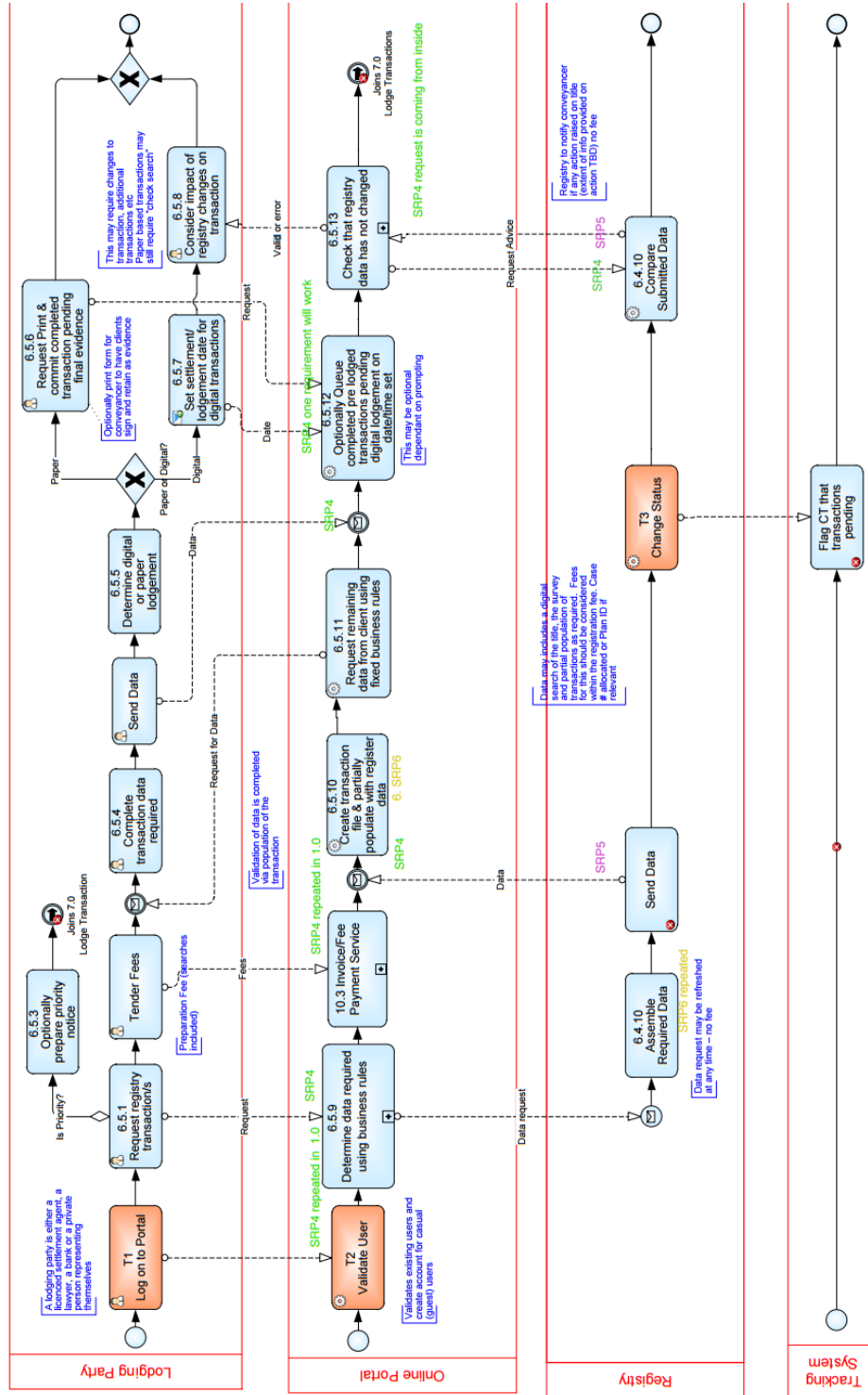
Fig. 4.3: 'Create Non-NECS transaction' sub process

Sub process	Activities	Surveyor	Agency			CF	t	X
			General	Plan lodgement	Plan audit			
Plan Preparation by Surveyor	Developer Requests Precal Plan	A, R					1	
	Obtain Information From Agency[6]	A, R				→		
	Create Pre-cal Plan	A, R					6	
	Obtain GEONOMA Committee Street Name Approval	A, R				→	1	
	Perform Survey	A, R					12	✓
	Obtain Pre-allocated Plan Number	A, R				→	1	✓
	Create Plan	A, R					6	
	Create CSD file	A, R					12	
	Fill in Self Assessment form for Fees	A, R					6	
	Fill in Surveyor's Report	A, R					6	
	Email Lodgement Plan to Agency	A, R				←	1	
	Post or Submit Plan to Agency	A, R				←	1	
	Create Field Book	A, R					12	
	Obtain Pre-allocated Field Book Number	A, R				→	1	✓
	Email Field Book To Agency	A, R				←	1	
	Post or Submit Field Book to Agency	A, R				←	1	
	Create Survey Sheet	A, R					6	✓
	Post or submit Survey Sheet to Agency	A, R				←	1	
	Email Survey Sheet to Agency	A, R				←	1	
Obtain Information From Agency	Survey Advice	A, R					1	
	General My Agency Search	A, R					1	
	SLIP	A, R					1	
	Search CT	A, R					1	
	Search Surveys	A, R					1	
	Search Field Books	A, R					1	
	Obtain SCDB Extract	A, R					1	
Lodge Plan level 2	Contact Surveyor for clarification			A, R		→		
	Clarify Account with Agency and Surveyor			A, R		→		
Audit survey level 2	Send Notification or Requisition to Surveyor				A, R	←,→		
	Notify Surveyor				A, R	→		
Receive Release Letter Level 2 Process	Check for Release Letter				A, R	←		
IOFD Approval Level 2 Process	Notify Surveyor Plan is IOFD				A, R	→		

Table 4.2: Results of as-is process model analysis

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[6] Red activity font indicates that the activity is a sub process of its parent process and its analysis will follow.

Sub process	Activities	Lodging Party	Registry	Online portal	Online forms or NECS	Tracking System	Registry Officer	CF	IS	t	X
Prepare Plan	Log on To Portal	A, R						←,→	✓	1	
	Validate User		A, R							1	
	Select Business Processes	A, R						←	✓	1	
	Send Plan Number		A, R					←			
	Send Payment Consent	A, R						←,→	✓	1	
	Send Digital File to Lodging Party		A, R					→	✓		
	Prepare/Amend Plan	A, R	C							6	
Lodge Plan	Request Lodgement of Plan	A, R	C					←,→	✓	1	
	Invoice/Fee Payment Service		A, R					→			
	Send Payment Details	A, R	C					←	✓	1	
Examine Plan	Issue Requisition		A, R					→			
	Review Correction Request	A, R	C							6	
Approve Plan	Send Planning Approval Report		A, R					→			
Prepare Transactions	Determine that a registry transaction is required	A, R								1	✓
	Create NECS transaction	A, R								12	
	Create non-NECS transaction	A, R									
Create non-NECS transaction	T1 Log on to portal	A, R						←	✓	1	
	Request registry transactions	A, R						←	✓	1	
	Optionally prepare priority notice	A, R								6	
	Tender fees	A, R						←	✓	1	
	Request remaining data from client using fixed business rules			A, R				→	✓		
	Complete transaction data required	A, R		C						1	
	Send data	A, R						←	✓	1	
	Determine digital or paper lodgement	A, R								1	✓
	Request print & commit completed transaction pending final evidence	A, R						←		1	
	Set settlement/lodging date for digital transactions	A, R						←	✓	1	
	Consider impact of registry changes on transaction	A, R						→	✓	1	
Lodge Transactions	Present transaction for lodgement	A, R						←	✓	6	
	Advise Lodging Party					A, R		→			
	Send payment details	A, R				C		←,→	✓	1	
	Fee Payment Service				A, R						
Examine Transactions	Issue Requisition						A, R	→			
	Cancel draft requisition						A, R	→			
Issue Requisition	Liase with lodging party		A, R					←,→			
	Reject or Withdraw dealing		A, R					→			
	Return Rejected/Withdrawn Documents where		A, R					→			

	paper to lodging party									
Update Register	Advise Lodging Party or registry update		A, R					→		

Table 4.3: Results of to-be process model analysis

4.3 Measures

Based on the above responsibility chart and an analysis of the models, we can define the following measures relatable to our proposed model. Some of these measures will require additional information that can be gathered from people familiar with the process.

4.3.1 Amount of work (W)

Definition: The sum total number of hours a role's activities will require to complete.

Calculation: This metric is evaluated by adding the times for all activities a role is responsible for.

$$W = \sum_{i=1}^{n} t(activity(i))$$

Where n is the total number of activities for the role under consideration.

Relation to model: Related to the workload process characteristic.

Information requirements for calculation: List of activities (contained in model), average duration for activity (external information)

4.3.2 Autonomy (AT)

Definition: The degree to which a role is accountable and responsible for its activities.

Calculation: The ratio of the number of activities for which the role is assigned 'A' and 'R' versus the total number of activities he is assigned either 'A' or 'R' or both.

$$AT = \frac{n(A,R)}{n(R) + n(A) + n(A,R)}$$

An AT value of 1 means that a role has complete autonomy while carrying out its activities.

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Relation to model: Direct relation to the autonomy job characteristic.

Information requirements for calculation: It is a RACI evaluation, hence the information is a combination of information internal and external to the model.

4.3.3 Involvement in communication (IC)

Definition: The number of times a role has to communicate with other roles while carrying out its responsibilities.

Calculation: The count of the incoming and outgoing communication flows (CF) from a role.

$$IC = \text{n(CF)}$$

Relation to the model: Related to the dealing with others job characteristic and communication flows process characteristic.

Information requirements for calculation: Message flows can be extracted directly from the model.

4.3.4 Synchronization requirements (SR)

Definition: The extent to which a role is dependent on communication provided by another role. This measure can help to identify pain points in a role's routine that can cause delays due to its reliance on another role.

Calculation: This is the count of activities under the responsibility of the role under consideration that require consultation with another role for completion.

$$SR = \text{n(R} \cap \text{C)}$$

Relation to the model: Related to the dealing with others job characteristic and communication flows process characteristic.

Information requirements for calculation: This information can be derived by analyzing the model alone.

4.3.5 Process steps (PS)

Definition: The total number of activities a role is responsible for.

Calculation:

$$PS = \mathrm{n}(R)$$

Relation to the model: Related to the activities process characteristic.

Information requirements for calculation: This information can be derived by analyzing the model alone.

4.3.6 Decisions (D)

Definition: The total number of decisions a role has to make while carrying out its responsibilities.

Calculation: Total number of activities that lead to an exclusive gateway.

$$D = \mathrm{n}(X = '\checkmark')$$

Relation to the model: Related to decisions process characcteristic.

Information requirements for calculation: This information can be derived by analyzing the model alone.

4.3.7 Dependence on IS (TS)

Definition: The measure of a role's dependence on the information system to carry out its responsibilities. This will give us the extent to which a role will be required to directly interact with the system.

Calculation: This value would be best expressed as a ratio between activities requiring the IS over total activities that the role is responsible for. The ratio would provide a view of the percentage of his work that will require the IS.

$$TS = \frac{n(R_{IS=\checkmark})}{n(R)}$$

A TS approaching 1 signifies that the role is almost entirely reliant on the system.

Relation to the model: Related to the technostress job characteristic.

Information requirements for calculation: This information would require knowledge of the activity to ascertain whether the activity is IT-related or not.

4.4 Results

The application of the framework to the models evaluates the magnitude of the changes in user resistance factors with respect to the Surveyor/Lodging Party roles. The results [Table 4.4] show the following:

- A reduction in the workload by 36.1%.
- A maintenance of complete autonomy while carrying out activities.
- An increase in expected communication with others by a factor of 82%.
- A greater dependence on communication provided by other roles for completion of activities due to an increase in synchronization requirements.
- A decrease in total number of activities carried out.
- A mild increase in number of decisions involved in the process.
- A significant involvement with the new information system with 68% of all activities reliant on it.

Measure	As-is	To-be	Change
W	83	53	-36.1%
AT	1.0	1.0	0
IC	17	31	+82%
SR	0	5	+5
PS	26	22	-15.4%
D	4	5	+1
TS	0	0.68	+68%

Table 4.4: Comparison of measures between as-is and to-be models

There are some inferences to be made from these results, for example, we see that the workload reduces by a margin of 36.1% which indicates that the new process would be much easier for the Lodging party (an entity external to Agency) which if true, will improve their customer satisfaction ratings. The increase in synchronization requirements can also indicate potential pain points if the consults are held up by other activities and cannot tend to the consultations.

However, without more contextual information, formulation of hypotheses regarding the positive or negative effects of changes in these measures and then empirical testing and validation of the hypotheses, we cannot reasonably come to stronger conclusions regarding the expected effects of these differences. But what we have shown is that it is in fact, possible to quantify and compare characteristics of user resistance from business process models that are understood to be predictors of user resistance. The impact of the changes of these characteristics will be left for future work.

4.5 Complete framework

The complete proposed framework for evaluation of user resistance with inclusion of the measures follows [Fig. 4.4]:
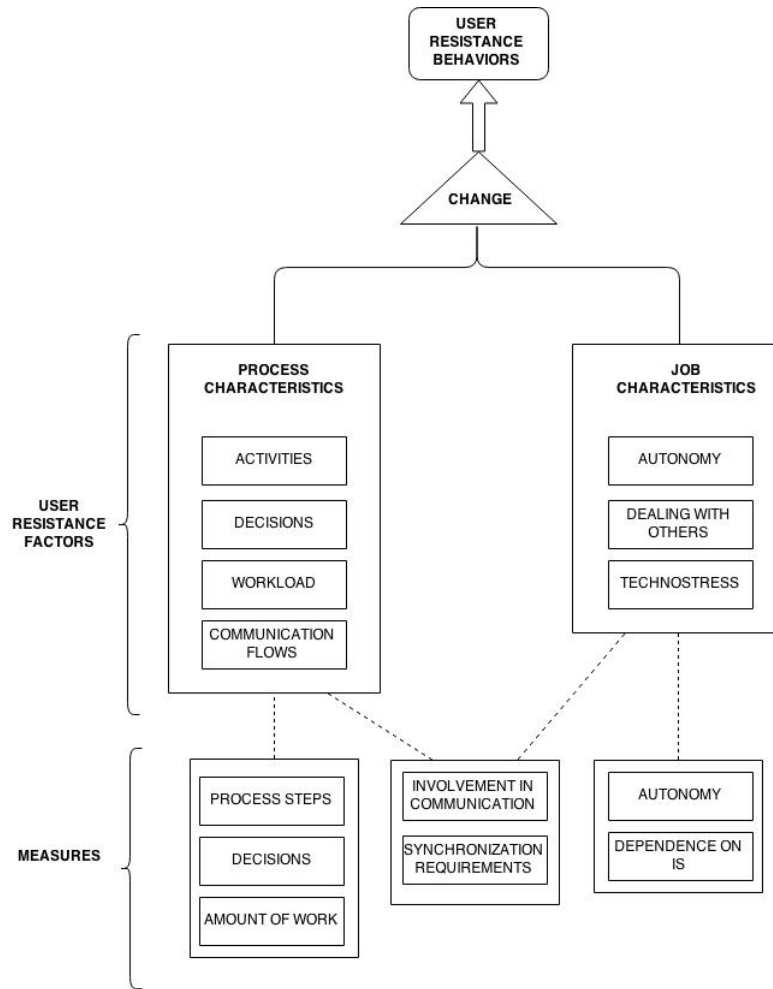
Fig. 4.4: Complete framework

As seen in the figure, the model shows that user resistance behaviors can be anticipated by a change in the identified sets of user resistance factors - process characteristics and job characteristics. Measures extracted from a process model provide a clear insight into this change and highlight the differences for consideration while formulating implementation strategies.

CHAPTER 5

5. IMPLEMENTATION

In this chapter, the development of the software prototype is discussed. The intention and scope of the implementation is first stated and then the actual development process is detailed.

5.1 Scope of implementation

With the framework defined, we will now describe an approach for its implementation as a web application. With this implementation, it is shown that the extraction of all information required to carry out the comparison of the process models can be automated. The application will automatically calculate measures that can be derived solely from the model and for the remainder, it will extract the information required to build a partially constructed RACI matrix that can be filled in by users. Displaying the matrix is beyond the scope but the application output will show that the information has been stored in an accessible data structure that can be manipulated on the front end for construction of the matrix. For the purpose of illustration, we will be using the same sub process used in section 4.2.3; 'Create non-NECS transaction'. Our aim will be to extract the following information from the model:

D1: List of roles for construction of the RACI matrix.

D2: List of activities according to role for construction of the RACI matrix and also for evaluation of PS.

D3: Number of communication flows a role is involved with for evaluation of IC.

D4: Number of decisions for evaluation of D.

D5: Number of activities preceded by a message event for calculation of SR.

With this information stored, we will have four of the seven measures already calculated; involvement in communication, synchronization requirements, process steps and decisions. The remaining measures are dependent on an evaluation of the RACI matrix so, additionally, the application will extract information necessary to construct a partially filled RACI matrix that can be completed by user input.

5.2 Signavio and the BPMN 2.0 XML format

Signavio is a BP modeling software provided as a SaaS[7] platform that is used for collaborative process design (25). It implements an intuitive interface to draw process models for business process improvement. Models can be exported in the BPMN 2.0 XML format as defined by the Object Management Group (26). The exported BPMN 2.0 XML has the structure shown in [Listing 5.1].

```
1.  <header>
2.      <collaboration>
3.      //Information regarding roles and message flows
4.      </collaboration>
5.      <process>
6.      //Information regarding the activities, notations used, their connections, etc.
7.      </process>
8.      < bpmndi:BPMNDiagram>
9.      //diagrammatic information related to position of different elements
10.     </ bpmndi:BPMNDiagram>
11. <footer>
```

Listing 5.1: BPMN XML structure

All information of relevance to the framework is stored in the collaboration and process nodes. An example of the sections holding this data in the XML of the 'Create non-NECS transaction' sub process is given in [Listing 5.2]. The XML is more descriptive and complex than displayed

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[7] Software as a service

here but only the tags and attributes of interest to us have been shown here for clarity and readability.

```xml
1.  <?xml version="1.0" encoding="UTF-8"?><definitions>
2.
3.     <collaboration id="sid-1974ae38-6ee8-4131-853c-b748b2155c69">
4.        < participant id="sid-0C2E6E80-A454-4642-90C6-
    8AA9F1B3EEC4" name="Lodging Party" processRef="sid-2EE2A68D-5559-4905-A4C7-
    F7ED2ED29AF8"></participant>
5.        <messageFlow id="sid-9D7CC6D5-8FE8-4934-8D4C-F472B9B87DBD" sourceRef="sid-
    02DB1868-8DBF-4E5A-A3CD-E371F0A85B0F" targetRef="sid-D85EBF1D-B3E4-484F-AA70-
    865B7E826ABD"/>
6.     </collaboration>
7.
8.     <process id="sid-2EE2A68D-5559-4905-A4C7-F7ED2ED29AF8" name="Lodging Party">
9.        <laneSet id="sid-8029716c-ac48-4856-9169-425f35efb25b">
10.           <lane id="sid-8EAC2204-F70B-4C46-8757-F5E4FC710B6D">
11.              <flowNodeRef>sid-97424C30-000F-492B-BED1-93652FC39E5E</flowNodeRef>
12.           </lane>
13.        </laneSet>
14.
15.        <task id="sid-D967F3B4-88BD-4587-8AE0-
    3E682B94D2BD" name="T1 Log on to Portal">
16.           <incoming>sid-CA60D532-9285-41F4-ADA6-72A7A0175603</incoming>
17.           <outgoing>sid-134EB82E-040E-42C4-BF02-3CE90AECDE57</outgoing>
18.        </task>
19.
20.        <intermediateCatchEvent id="sid-E6B11DA3-FEAA-4A36-A763-
    0B20EBF23444"            >
21.           <incoming>sid-4819572B-0C98-4C38-A450-F249E8EA6C3E</incoming>
22.           <outgoing>sid-2FBFADCE-D444-478C-8588-4ACF0E9A0D38</outgoing>
23.        </intermediateCatchEvent>
24.
25.        <exclusiveGateway gatewayDirection="Diverging" id="sid-6818FB4F-A484-4F7A-B982-
    B4E2C3C7B235" name="">
26.           <incoming>sid-C75BAAD6-F31C-4B33-97C3-D15968AFDA56</incoming>
27.           <outgoing>sid-8BE68B1F-3208-4AB7-88D2-0B114DED389A</outgoing>
28.           <outgoing>sid-59071FDB-EFBC-4CF9-B7DA-107F6BA8F168</outgoing>
29.        </exclusiveGateway>
30.
31.        <sequenceFlow id="sid-CA60D532-9285-41F4-ADA6-72A7A0175603" sourceRef="sid-
    97424C30-000F-492B-BED1-93652FC39E5E" targetRef="sid-D967F3B4-88BD-4587-8AE0-
    3E682B94D2BD"/>
32.     </process>
33.
34.     < bpmndi:BPMNDiagram></ bpmndi:BPMNDiagram>
35.
36. </definitions>
```

Listing 5.2: 'Create non-NECS transaction' sub process XML fragment

The description of each node follows:

- `<collaboration>` nodes and their children contain information about describing the actors and message flows.

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- `<participant>` nodes hold the identifying information related to a role.

- `<messageFlow>` nodes hold communication flows between two pools.

- `<process>` nodes and their children represent information related all the elements contained in a pool such as tasks, gateways, events, etc.

- `<laneSet>` is used to indicate a pool.

- `<lane>` is a child node of `<laneSet>` that indicates a lane.

- `<flowNodeRef>` is a child of `<lane>` that stores the unique id of every element that lane contains. This id is used to reference the definitions of these elements stored in `<process>`.

- `<task>` contains information related to an activity. Its children; `<incoming>` and `<outgoing>` use the id stored in `<flowNodeRef>` to identify the preceding and succeeding element respectively.

- `<intermediateCatchEvent>` represents an incoming message event to the role. (This is the marker used to identify synchronization requirements.) It also has `<incoming>` and `<outgoing>` children.

- `<exclusiveGateWay>` represents a decision. It also has `<incoming>` and `<outgoing>` children.

- `<sequenceFlow>` represents the link between two activities from which the flow of a process can be constructed.

- `<bpmn:BPMNDiagram>` contains all diagrammatic information related to positions of the elements and is not of interest to us.

In addition to the information stored in the tags, each tag has attributes that also contain information we need. This information is described in [Table 5.1]. All the information we need to implement the framework is stored in these tags and their attributes.

Tag	Parent	Attribute	Description
collaboration	definitions	id	Unique alpha-numeric identifier
participant	collaboration	id	Unique alpha-numeric identifier
		name	Name of the role
messageFlow	collaboration	id	Unique alpha-numeric identifier
		sourceRef	Source flowNodeRef
		targetRef	Target flowNodeRef
process	definition	id	Unique alpha-numeric identifier
		name	Name of the role this process belongs to
laneSet	process	id	Unique alpha-numeric identifier
lane	laneSet	id	Unique alpha-numeric identifier
task	process	id	Unique alpha-numeric identifier
		name	Name of the activity
intermediateCatchEvent	process	id	Unique alpha-numeric identifier
exclusiveGateway	process	id	Unique alpha-numeric identifier
		gatewayDirection	Whether the gateway is converging or diverging
sequenceFlow	process	id	Unique alpha-numeric identifier
		sourceRef	Source flowNodeRef
		targetRef	Target flowNodeRef

Table 5.1 Attributes of each XML tag

5.3 Development

The prototype was built on the MEAN development stack. MEAN is a full stack Javascript framework that utilizes AngularJS for the front end and a combination of ExpressJS, NodeJS and MongoDB for the back end. An advantage of using MEAN is that both, the front and back ends can be developed using just the Javascript language.

The prototype is a web application with a web interface through which a user can upload a BPMN XML. The XML is then sent to the server for preprocessing and parsing and the results are stored in data structures. To extract the information we need from the XML, we use Xpath. Xpath is a query language used to traverse an XML document, select nodes and extract values from them. For the implementation of XPath in the application, we use NodeJS. NodeJS has a very active community that has created a wide base of open source, packaged modules for public use . One of these packages is a Javascript XPath package called 'xpath' itself.

5.3.1 Important functions and queries

The application uses a combination of XPath queries to select and store nodes and data structure manipulations in order to collect this data into a format that can be used. In the next section, we will describe the algorithms implemented to extract the information we need but first, this section will describe the most important XPath queries and functions used throughout the implementation.

Select an element by its id:

```
1.  var actorNodes = xpath.select("//collaboration/participant/@name", doc);
```

Listing 5.3: Selecting an element by id

[Listing 5.3] selects all participant elements under the parent <collaboration> by their name attribute and stores it in the actorNodes object.

Read values of the created xpath object and store them in an array:

```
1.  for (var actor in actorNodes) {
2.      if (actorNodes.hasOwnProperty(actor)) {
3.          var obj = actorNodes[actor];
4.          for (var prop in obj) {
5.              if (prop == 'value') {
```

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```
6.                    if (obj.hasOwnProperty(prop)) {
7.                        actors.push(obj[prop]);
8.                    }
9.                }
10.          }
11.      }
12. }
```

Listing 5.4: Retrieve values from xpath object and store in array

[Listing 5.4] iterates over the previously created `actorNodes` object, extracts the value of the `name` attribute and stores it in the `actors` array.

Retrieve text held by nodes

```
1.  var flowString = xpath.select("/process/laneSet/lane/flowNodeRef/text()", doc).toString
    ();
2.  flows = flowString.split(',');
```

Listing 5.5: Obtain values contained in a node

[Listing 5.5] retrieves all the textual information that a node holds (this is different from attribute values). However, it collates all the information into a comma-separated string which needs to be split by the `.split()` method.

Beyond this, there are many functions related to array and object manipulations that concatenate arrays, compare them, shorten them and so forth, however, these kinds of array manipulations do not need to be explained here. The full code is presented in the appendices.

5.3.2 Algorithms used

This section outlines the algorithms used to extract the needed data.

D1: List of roles for construction of the RACI matrix.

- Select and store all participant nodes by their name.
- Extract name values into array [Fig 5.1]

D2: List of activities according to role for construction of the RACI matrix and also for evaluation of PS

Similar to how we just listed roles in the model, we can also derive a list for all the activities in the model. The next question is how a task can be linked to a role.The answer lies in the <flowNodeRef> tags that provide an identifier for us to filter out relevant tags.

- Extract an array, 'A' of tuples, pairing the role names with the ids stored in each of their `<flowNodeRefs>`.
    - Extract an array, 'B' of ids of all task nodes.
    - Run a comparison and delete all elements of A that do not have an id value that exists in B. This leaves us with an array of role name/task id pairs.
    - Construct an array 'C' of task name/task id pairs.
    - Compare the two arrays 'A' and 'C', replace the ids in A with the names attached to corresponding ids in C [Fig. 5.2]
    - To calculate PS, we count the number of occurrences of each role name. [Fig. 5.3]

D3: Number of communication flows a role is involved with for evaluation of IC.

For calculation of IC, we follow the following algorithm:

- Use the array A from before.
- Extract an array of `sourceRef` attributes of each <`messageflow`>.
- Compare these two arrays and eliminate non-matching ids. This gives an array of roles and the messages that they initiate. [Fig. 5.4]
- Repeat the process with `targetRef` attribute. This gives an array of actors and messages that they receive.
- Concatenate the arrays and you have the entire list of messages that an actor initiates and receives.
- Count occurrence of each actor's name to get the IC. [Fig 5.5]

D4: Number of decisions for evaluation of D.

We need to identify the number of <`exclusiveGateway`> tags that have the same ids as <`flowNodeRef`> tags in array 'A' from the earlier method. We then divide this number by two because each gateway has a converging and a diverging element and we do not want to count a single decision twice.

- Extract an array of ids of all the <exclusiveGateway> tags
- Run a comparison between 'A' and this array and count the result.
- Divide the result by 2. [Fig 5.6]

D5: Number of activities preceded by a message event for calculation of SR.

We just need to identify the number of <intermediateCatchEvent> tags that have the same ids as <flowNodeRes> tags in array 'A' from the previous method.

- Extract an array of ids of all the <intermediateCatchingEvents>,
- Run a comparison between 'A' and this array and count the result. [Fig 5.7]

5.3.3 Results

Fig. 5.1: D1 output

```
:\Users\JAKET~1\AppData\Local\Temp\54424-s0hdgw.bpmn
[ 'Lodging Party', 'T1 Log on to Portal' ],
[ 'Lodging Party', 'Request Registry Transaction' ],
[ 'Lodging Party', 'Optionally prepare priority notice' ],
[ 'Lodging Party', 'Tender fees' ],
[ 'Lodging Party', 'Complete transaction data required' ],
[ 'Lodging Party', 'Send data' ],
[ 'Lodging Party', 'Determine digital or paper lodgement' ],
[ 'Lodging Party',
  'Request print and commit completed transaction pending final evidence' ],
[ 'Lodging Party',
  'Set settlement and lodgement date for digital transactions' ],
[ 'Lodging Party',
  'Consider impact of registry changes on transaction' ],
[ 'Online Portal', 'T2 validate user' ],
[ 'Online Portal',
  'Determine data required using business rules' ],
[ 'Online Portal', 'Invoice/fee payment service' ],
[ 'Online Portal',
  'Optionally queue completed prelodged transactions pending digital lodgement on date/time set' ],
[ 'Online Portal', 'Check that registry data has not changed' ],
[ 'Online Portal',
  'Create transaction file and partially populate with register data' ],
[ 'Online Portal',
  'Request remaining data from client using fixed business rules' ],
[ 'Tracking system', 'Flag CT that transactions pending' ],
[ 'Registry', 'Assemble required data' ],
[ 'Registry', 'Send data' ],
[ 'Registry', 'T3 change status' ],
[ 'Registry', 'Compare submitted data' ] ]
```

Fig. 5.2: D2 output[1]


```
C:\Users\JAKET~1\AppData\Local\Temp\52820-183u295.bpmn
{ 'Lodging Party': 10,
  'Online Portal': 7,
  'Tracking System': 1,
  Registry: 4 }
```

Fig. 5.3: D2 output[2]

Fig. 5.4: D3 output[1]

Fig. 5.5: D3 output[2]

Fig. 5.6: D4 output

Fig. 5.7: D5 output

With this information extracted from the model and stored in reusable data structures, we have everything needed to calculate IC, PS, SR and D. For the rest of the measures, we can pass the required information to the front end for construction of the RACI matrix and its completion with user input. With all measures calculated, the application can be extended to accept two models and run a comparison of the evaluated measures. The results can then be displayed using appropriate graphical representations on the front end.

CHAPTER 6

6. CONCLUSIONS AND FUTURE WORK

This thesis explores an opportunity to enhance existing processes of formulating user resistance prevention strategies from a previously untouched perspective – the relation of user resistance to business process models. A novel framework for assessing user resistance towards changes in organizational business processes arising from the introduction of an information system is proposed. A systematic evaluation of existing models of user resistance was carried out and the emerging patterns of user resistance factors were analyzed for relevance to a business process model. The final framework proposal establishes relations between these factors to information captured from a business process model. Seven measures were identified from this information and related to the factors of user resistance. A comparison of the measures was run on an actual case study and the results showed that changes in several important factors of user resistance could be evaluated utilizing the framework.

Additionally, a prototypal implementation of the framework was developed to illustrate a mechanism for extraction of information from a process model using a NodeJS implementation of Xpath to traverse the XML representation of the model. The implementation shows that all required information for the implementation of the proposed framework can easily be derived and serves as a template for future development.

There are several directions for future work to be carried out in the development of the contributions of this perspective:

- Measures could be further improved and enriched to increase their degree of accuracy using more sophisticated algorithms for their evaluation.
- The conclusions to be drawn from the results can be established by empirical testing and feedback from actual practitioners of change implementation strategies.

- The thesis covers a narrow scope of the BPMN and also other capabilities of BP modeling software. By widening this scope, additional relations of relevance to user resistance may be established.
- The prototype can be further developed into a complete implementation of the framework and hosted as an online service.

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APPENDIX A

Source Code

This is the source code of the main controller in the application where all the functionality has been implemented. The full project is available on github: https://github.com/srsjake/UR-BPMN

```
1.  'use strict';
2.
3.  var fs = require('fs');
4.  var xpath = require('xpath');
5.  var dom = require('xmldom').DOMParser;
6.
7.  var UserController = function() {};
8.
9.  UserController.prototype.uploadFile = function(req, res) {
10.
11.
12.      var file = req.files.file;
13.      console.log(file.name);
14.      console.log(file.path);
15.
16.      fs.readFile(file.path, 'utf8', function(err, data) {
17.          if (err) {
18.              return console.log(err);
19.          }
20.
21.          //Preprocessing data by removing headers and footers and replacing quotes
22.
23.          var doublequotes = data;
24.          var deleteline = doublequotes.replace(/^.*definitions.*$/mg, "");
25.          var singlequotes = deleteline.replace(/"/g, "'");
26.          var doc = new dom().parseFromString(singlequotes);
27.
28.
29.          var actorNodes = xpath.select("//collaboration/participant/@name", doc);
30.          var taskNodes = xpath.select("/process/task/@id", doc);
31.          var taskNames = xpath.select("/process/task/@name", doc);
32.          var msgNodeID = xpath.select("//collaboration/messageFlow/@id", doc);
33.          var msgNodeSource = xpath.select("//collaboration/messageFlow/@sourceRef", doc)
    ;
34.          var msgNodeTarget = xpath.select("//collaboration/messageFlow/@targetRef", doc)
    ;
35.          var actors = [];
36.          var actorFlows = [];
37.          var flows = [];
38.          var taskIds = [];
39.          var actorTaskNames = [];
40.          var actorTasks = [];
41.          var taskCountResults = {};
42.          var msgIDs = [];
43.          var msgSources = [];
44.          var msgTargets = [];
45.          var msgID_source = [];
46.          var msgID_target = [];
47.          var taskNameId = [];
48.
```

```
49.
50.            //list of actors
51.
52.            for (var actor in actorNodes) {
53.                if (actorNodes.hasOwnProperty(actor)) {
54.                    var obj = actorNodes[actor];
55.                    for (var prop in obj) {
56.                        if (prop == 'value') {
57.                            if (obj.hasOwnProperty(prop)) {
58.                                actors.push(obj[prop]);
59.                            }
60.                        }
61.                    }
62.                }
63.            }
64.
65.            //list of actor-flow pairs
66.
67.            for (var i = 0; i < actors.length; i++) {
68.                var flowString = xpath.select("/process[@name='" + actors[i] + "']/laneSet/
    lane/flowNodeRef/text()", doc).toString();
69.                flows = flowString.split(',');
70.                for (var j = 0; j < flows.length; j++) {
71.                    actorFlows.push([actors[i], flows[j]]);
72.                }
73.            };
74.
75.            //list of tasks by ID
76.
77.            for (var taskId in taskNodes) {
78.                if (taskNodes.hasOwnProperty(taskId)) {
79.                    var obj = taskNodes[taskId];
80.                    for (var prop in obj) {
81.                        if (prop == 'value') {
82.                            if (obj.hasOwnProperty(prop)) {
83.                                taskIds.push(obj[prop]);
84.                            }
85.                        }
86.                    }
87.                }
88.            }
89.
90.            //compare actor-flows to task array
91.
92.            for (var i = 0; i < actorFlows.length; i++) {
93.                for (var j = 0; j < taskIds.length; j++) {
94.                    if (actorFlows[i][1] == taskIds[j]) {
95.                        actorTasks.push(actorFlows[i]);
96.                    }
97.                }
98.            }
99.
100.               //list of tasks by name
101.
102.               for (var taskName in taskNames) {
103.                   if (taskNames.hasOwnProperty(taskName)) {
104.                       var obj = taskNames[taskName];
105.                       for (var prop in obj) {
106.                           if (prop == 'value') {
107.                               if (obj.hasOwnProperty(prop)) {
108.                                   actorTaskNames.push(obj[prop]);
```

```
109.                              }
110.                          }
111.                      }
112.                  }
113.              }
114.
115.          //compare actor-flows to task array
116.
117.          for (var i = 0; i < actorFlows.length; i++) {
118.              for (var j = 0; j < taskIds.length; j++) {
119.                  if (actorFlows[i][1] == taskIds[j]) {
120.                      actorTasks.push(actorFlows[i]);
121.                  }
122.              }
123.          }
124.
125.          //combine list of actorTaskNames and list of TaskIDs
126.
127.          var taskNameIdPairs = [];
128.          for (var i = 0; i < taskIds.length; i++) {
129.              taskNameIdPairs.push([taskIds[i], actorTaskNames[i]]);
130.          }
131.
132.          var actorNameTaskPairs = [];
133.
134.          for (var i = 0; i < actorFlows.length; i++) {
135.              for (var j = 0; j < taskNameIdPairs.length; j++) {
136.                  if (actorFlows[i][1] == taskNameIdPairs[j][0]) {
137.                      actorNameTaskPairs.push([actorFlows[i][0], taskNameIdPairs[j
    ][1]]);
138.                  }
139.
140.              }
141.          }
142.
143.          var actorTaskPairs = [];
144.
145.
146.          //get count of individual actor tasks
147.
148.
149.          for (var i = 0, j = actorTasks.length; i < j; i++) {
150.              taskCountResults[actorTasks[i][0]] = (taskCountResults[actorTasks[i]
    [0]] || 0) + 1;
151.          }
152.
153.          //List message ids
154.
155.          for (var msg in msgNodeID) {
156.              if (msgNodeID.hasOwnProperty(msg)) {
157.                  var obj = msgNodeID[msg];
158.                  for (var prop in obj) {
159.                      if (prop == 'value') {
160.                          if (obj.hasOwnProperty(prop)) {
161.                              msgIDs.push(obj[prop]);
162.
163.                          }
164.                      }
165.                  }
166.              }
167.          }
```

```
168.
169.            //list message source
170.
171.            for (var source in msgNodeSource) {
172.                if (msgNodeSource.hasOwnProperty(source)) {
173.                    var obj = msgNodeSource[source];
174.                    for (var prop in obj) {
175.                        if (prop == 'value') {
176.                            if (obj.hasOwnProperty(prop)) {
177.                                msgSources.push(obj[prop]);
178.
179.                            }
180.                        }
181.                    }
182.                }
183.            }
184.
185.            //list message targets
186.
187.            for (var target in msgNodeTarget) {
188.                if (msgNodeTarget.hasOwnProperty(target)) {
189.                    var obj = msgNodeTarget[target];
190.                    for (var prop in obj) {
191.                        if (prop == 'value') {
192.                            if (obj.hasOwnProperty(prop)) {
193.                                msgTargets.push(obj[prop]);
194.
195.                            }
196.                        }
197.                    }
198.                }
199.            }
200.
201.            //list id-source and id-target pairs
202.
203.            for (var i = 0; i < msgIDs.length; i++) {
204.                msgID_source.push([msgIDs[i], msgSources[i]]);
205.                msgID_target.push([msgIDs[i], msgTargets[i]]);
206.
207.            }
208.
209.
210.            //list source message/actor pairs
211.
212.            var msgActorSource = [];
213.
214.            for (var i = 0; i < actorFlows.length; i++) {
215.                for (var j = 0; j < msgID_source.length; j++) {
216.                    if (actorFlows[i][1] == msgID_source[j][1]) {
217.                        msgActorSource.push([actorFlows[i][0], msgID_source[j][0]]);
218.                    }
219.                }
220.            }
221.
222.            //list target message/actor pairs
223.
224.            var msgActorTarget = [];
225.
226.            for (var i = 0; i < actorFlows.length; i++) {
227.                for (var j = 0; j < msgID_target.length; j++) {
```

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```
228.                    if (actorFlows[i][1] == msgID_target[j][1]) {
229.                        msgActorTarget.push([actorFlows[i][0], msgID_target[j][0]]);

230.                    }
231.                }
232.            }
233.
234.
235.            //get store count of incoming, outgoing and total message flows in separ
    ate objects
236.
237.            var actorSourceCount = {};
238.            var actorTargetCount = {};
239.            var actorMessageCount = {};
240.
241.
242.            for (var i = 0, j = msgActorSource.length; i < j; i++) {
243.                actorSourceCount[msgActorSource[i][0]] = (actorSourceCount[msgActorS
    ource[i][0]] || 0) + 1;
244.            }
245.
246.            for (var i = 0, j = msgActorTarget.length; i < j; i++) {
247.                actorTargetCount[msgActorTarget[i][0]] = (actorTargetCount[msgActorT
    arget[i][0]] || 0) + 1;
248.            }
249.
250.            var sourceTargetConcat = msgActorSource.concat(msgActorTarget);
251.
252.            for (var i = 0, j = sourceTargetConcat.length; i < j; i++) {
253.                actorMessageCount[sourceTargetConcat[i][0]] = (actorMessageCount[sou
    rceTargetConcat[i][0]] || 0) + 1;
254.            }
255.
256.
257.            //synchronization requirements
258.
259.            var msgEventNodes = xpath.select("/process/intermediateCatchEvent/@id",
    doc);
260.            var msgEventIds = [];
261.            var actorMsgEventPairs = [];
262.            var actorMsgEventCount = {};
263.
264.            for (var msg in msgEventNodes) {
265.                if (msgEventNodes.hasOwnProperty(msg)) {
266.                    var obj = msgEventNodes[msg];
267.                    for (var prop in obj) {
268.                        if (prop == 'value') {
269.
270.                            if (obj.hasOwnProperty(prop)) {
271.                                msgEventIds.push(obj[prop]);
272.                            }
273.                        }
274.                    }
275.                }
276.            }
277.
278.            for (var i = 0; i < actorFlows.length; i++) {
279.                for (var j = 0; j < msgEventIds.length; j++) {
280.                    if (actorFlows[i][1] == msgEventIds[j]) {
281.                        actorMsgEventPairs.push([actorFlows[i][0], msgEventIds[j]]);
```

```
282.                             }
283.                         }
284.                     }
285.
286.
287.                 for (var i = 0, j = actorMsgEventPairs.length; i < j; i++) {
288.                     actorMsgEventCount[actorMsgEventPairs[i][0]] = (actorMsgEventCount[a
     ctorMsgEventPairs[i][0]] || 0) + 1;
289.                 }
290.
291.
292.                 //decisions
293.
294.                 var decisionNodes = xpath.select("/process/exclusiveGateway/@id");
295.                 var decisionIDs = [];
296.                 var actorDecisionPairs = [];
297.                 var actorMsgEventCountDouble = {};
298.                 var actorMsgEventCount = {};
299.
300.                 for (var msg in decisionNodes) {
301.                     if (decisionNodes.hasOwnProperty(msg)) {
302.                         var obj = decisionNodes[msg];
303.                         for (var prop in obj) {
304.                             if (prop == 'value') {
305.
306.                                 if (obj.hasOwnProperty(prop)) {
307.                                     decisionIDs.push(obj[prop]);
308.                                 }
309.                             }
310.                         }
311.                     }
312.                 }
313.
314.                 for (var i = 0; i < actorFlows.length; i++) {
315.                     for (var j = 0; j < decisionIDs.length; j++) {
316.                         if (actorFlows[i][1] == decisionIDs[j]) {
317.                             actorDecisionPairs.push([actorFlows[i][0], decisionIDs[j]]);
318.                         }
319.                     }
320.                 }
321.
322.
323.                 for (var i = 0, j = actorDecisionPairs.length; i < j; i++) {
324.                     actorMsgEventCount[actorDecisionPairs[i][0]] = (actorMsgEventCount[a
     ctorDecisionPairs[i][0]] || 0) + 1;
325.                 }
326.
327.
328.
329.
330.         });
331.
332.
333.
334.
335.     };
336.
337.     module.exports = new UserController();
```

APPENDIX B

'Create non-NECS transaction' XML

```xml
1.  <?xml version="1.0" encoding="UTF-
    8"?><definitions xmlns="http://www.omg.org/spec/BPMN/20100524/MODEL" xmlns:bpmndi="http
    ://www.omg.org/spec/BPMN/20100524/DI" xmlns:omgdc="http://www.omg.org/spec/DD/20100524/
    DC" xmlns:omgdi="http://www.omg.org/spec/DD/20100524/DI" xmlns:signavio="http://www.sig
    navio.com" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
    instance" exporter="Signavio Process Editor, http://www.signavio.com" exporterVersion="
    9.0.0" expressionLanguage="http://www.w3.org/1999/XPath" id="sid-d4ee533a-a07a-4bbc-
    8414-
    8d683e1e9408" targetNamespace="http://www.signavio.com/bpmn20" typeLanguage="http://www
    .w3.org/2001/XMLSchema" xsi:schemaLocation="http://www.omg.org/spec/BPMN/20100524/MODEL
     http://www.omg.org/spec/BPMN/2.0/20100501/BPMN20.xsd">
2.      <collaboration id="sid-1974ae38-6ee8-4131-853c-b748b2155c69">
3.          <extensionElements>
4.              <signavio:signavioDiagramMetaData metaKey="revisionid" metaValue="1c4222ac5393
    40779a3c8bc88da3036a"/>
5.          </extensionElements>
6.          <participant id="sid-2634E11C-AE9E-4B29-A544-
    461FE9EC8F82" name="Registry" processRef="sid-B2D69743-5B9D-46F7-9C4E-9E1FF060EAA3">
7.              <extensionElements>
8.                  <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
9.              </extensionElements>
10.         </participant>
11.         <participant id="sid-914E9E53-4441-43E4-ACFE-
    B15D7043C88F" name="Tracking system" processRef="sid-AC2879D1-49A4-4BA3-AD8F-
    4766C0AA18EC">
12.             <extensionElements>
13.                 <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
14.             </extensionElements>
15.         </participant>
16.         <participant id="sid-D9218AEF-9431-4E3E-8964-
    4EC809ECE5FF" name="Online Portal" processRef="sid-78CE0462-9CC0-496D-ABDB-
    0123FBCA44DC">
17.             <extensionElements>
18.                 <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
19.             </extensionElements>
20.         </participant>
21.         <participant id="sid-0C2E6E80-A454-4642-90C6-
    8AA9F1B3EEC4" name="Lodging Party" processRef="sid-2EE2A68D-5559-4905-A4C7-
    F7ED2ED29AF8">
22.             <extensionElements>
23.                 <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
24.             </extensionElements>
25.         </participant>
26.         <messageFlow id="sid-9D7CC6D5-8FE8-4934-8D4C-
    F472B9B87DBD" name="" sourceRef="sid-02DB1868-8DBF-4E5A-A3CD-
    E371F0A85B0F" targetRef="sid-D85EBF1D-B3E4-484F-AA70-865B7E826ABD"/>
27.         <messageFlow id="sid-ACFEAE77-BFC2-4E0E-A996-
    3733EA4975B5" name="" sourceRef="sid-D967F3B4-88BD-4587-8AE0-
    3E682B94D2BD" targetRef="sid-5E0CAEAC-3AD1-43C8-84AC-A6C7EEF2FEC3"/>
```

```xml
28.     <messageFlow id="sid-D88E9EB9-DF8D-4F14-A04C-
    2509C298338E" name="" sourceRef="sid-7A6B1BA1-F09B-4669-8036-
    959697CADCDB" targetRef="sid-02DB1868-8DBF-4E5A-A3CD-E371F0A85B0F"/>
29.     <messageFlow id="sid-67BC139C-D830-4E4B-A747-
    2E3653EE864E" name="" sourceRef="sid-25C5D455-EF03-41B7-936D-
    9DC4536699F6" targetRef="sid-7673465C-1145-4AAC-9EBE-8B6CD1AE9D49"/>
30.     <messageFlow id="sid-9ECDCBFB-9382-405F-972D-
    E6CF5F759771" name="" sourceRef="sid-4E8E1A59-8A37-4006-B2EE-
    C2E0FCB16A88" targetRef="sid-CD1E9014-162B-4477-9E1C-C92FC984B132"/>
31.     <messageFlow id="sid-08E9B506-4C1A-4B72-BB14-
    B57F2E975C19" name="" sourceRef="sid-3ADE63CC-12F2-4896-8062-
    131E22B93061" targetRef="sid-5640112B-B4B0-4FA8-81C6-540C3C7B2440"/>
32.     <messageFlow id="sid-6DDE3D1B-334C-45A9-81EC-
    09B5484022FA" name="" sourceRef="sid-20F84487-AA72-4CAC-84A9-
    2E130936632F" targetRef="sid-7DDA476E-1522-4594-93BB-D2A762632530"/>
33.     <messageFlow id="sid-AD118E8C-0EB7-4623-B8BF-
    30E300E3F9B1" name="" sourceRef="sid-1E76BAA7-7CE7-4242-B084-
    63BF16BD0ED4" targetRef="sid-F6878B6B-7A09-41B0-8BFB-CDFFAE19EED2"/>
34.     <messageFlow id="sid-B3C48D78-AE24-46C9-BA86-
    DFE953370ADF" name="" sourceRef="sid-02DB1868-8DBF-4E5A-A3CD-
    E371F0A85B0F" targetRef="sid-7A6B1BA1-F09B-4669-8036-959697CADCDB"/>
35.     <messageFlow id="sid-B81BB329-2FD6-4167-A400-
    10E9FEDDECD5" name="" sourceRef="sid-D1BB816B-1897-4727-B1E9-
    AF033FCAB1CA" targetRef="sid-E6B11DA3-FEAA-4A36-A763-0B20EBF23444"/>
36.     <messageFlow id="sid-1653E650-521E-46BD-ABFA-
    827709464E76" name="" sourceRef="sid-A599A79D-7AE4-4C1C-A12C-
    5C0492801860" targetRef="sid-7673465C-1145-4AAC-9EBE-8B6CD1AE9D49"/>
37.     <messageFlow id="sid-06FA4DDB-9847-42C7-8EF5-
    89B256D74754" name="" sourceRef="sid-5E0CAEAC-3AD1-43C8-84AC-
    A6C7EEF2FEC3" targetRef="sid-F807551C-8A84-42C6-887F-E2ECD0A2037A"/>
38.     <messageFlow id="sid-F6D97FF6-89E3-4BEC-91B2-
    F5637F5CBB5B" name="" sourceRef="sid-4E55B80E-C82F-4052-8914-
    0068D4B705FE" targetRef="sid-F8415304-5BF1-42D7-B6BF-7970CB429DC8"/>
39.   </collaboration>
40.   <process id="sid-2EE2A68D-5559-4905-A4C7-
    F7ED2ED29AF8" isClosed="false" isExecutable="false" name="Lodging Party" processType="N
    one">
41.     <extensionElements/>
42.     <laneSet id="sid-8029716c-ac48-4856-9169-425f35efb25b">
43.       <lane id="sid-8EAC2204-F70B-4C46-8757-F5E4FC710B6D">
44.         <extensionElements>
45.           <signavio:signavioMetaData metaKey="bgcolor" metaValue=""/>
46.         </extensionElements>
47.         <flowNodeRef>sid-97424C30-000F-492B-BED1-93652FC39E5E</flowNodeRef>
48.         <flowNodeRef>sid-D967F3B4-88BD-4587-8AE0-3E682B94D2BD</flowNodeRef>
49.         <flowNodeRef>sid-4E55B80E-C82F-4052-8914-0068D4B705FE</flowNodeRef>
50.         <flowNodeRef>sid-6537BA03-FC5D-4A2D-B275-2B6387907AFC</flowNodeRef>
51.         <flowNodeRef>sid-9702EF95-D554-4174-8168-18D682C30F0F</flowNodeRef>
52.         <flowNodeRef>sid-13ACAB55-67A7-48A4-A2BE-ABE1504D11BD</flowNodeRef>
53.         <flowNodeRef>sid-20F84487-AA72-4CAC-84A9-2E130936632F</flowNodeRef>
54.         <flowNodeRef>sid-E6B11DA3-FEAA-4A36-A763-0B20EBF23444</flowNodeRef>
55.         <flowNodeRef>sid-3A4F0E05-CC9A-4451-B74D-A1A4F68D4F9F</flowNodeRef>
56.         <flowNodeRef>sid-3ADE63CC-12F2-4896-8062-131E22B93061</flowNodeRef>
57.         <flowNodeRef>sid-D982AE87-DA9F-4779-873C-F1F3D917A8EF</flowNodeRef>
58.         <flowNodeRef>sid-6818FB4F-A484-4F7A-B982-B4E2C3C7B235</flowNodeRef>
59.         <flowNodeRef>sid-25C5D455-EF03-41B7-936D-9DC4536699F6</flowNodeRef>
60.         <flowNodeRef>sid-A599A79D-7AE4-4C1C-A12C-5C0492801860</flowNodeRef>
61.         <flowNodeRef>sid-D85EBF1D-B3E4-484F-AA70-865B7E826ABD</flowNodeRef>
62.         <flowNodeRef>sid-1509FB6E-1CA6-4C04-832A-BCF2A228F24C</flowNodeRef>
63.         <flowNodeRef>sid-187DA8C5-B027-4356-A1B9-51461437C76F</flowNodeRef>
64.       </lane>
```

```
65.        </laneSet>
66.        <startEvent id="sid-97424C30-000F-492B-BED1-93652FC39E5E" name="">
67.            <extensionElements>
68.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
69.                <signavio:signavioMetaData metaKey="vorgngerprozesse" metaValue=""/>
70.            </extensionElements>
71.            <outgoing>sid-CA60D532-9285-41F4-ADA6-72A7A0175603</outgoing>
72.        </startEvent>
73.        <task completionQuantity="1" id="sid-D967F3B4-88BD-4587-8AE0-
   3E682B94D2BD" isForCompensation="false" name="T1 Log on to Portal" startQuantity="1">
74.            <extensionElements>
75.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
76.                <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
77.                <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>
78.                <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/>
79.                <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=""/>
80.                <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>
81.            </extensionElements>
82.            <incoming>sid-CA60D532-9285-41F4-ADA6-72A7A0175603</incoming>
83.            <outgoing>sid-134EB82E-040E-42C4-BF02-3CE90AECDE57</outgoing>
84.        </task>
85.        <task completionQuantity="1" id="sid-4E55B80E-C82F-4052-8914-
   0068D4B705FE" isForCompensation="false" name="Request Registry Transaction" startQuanti
   ty="1">
86.            <extensionElements>
87.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
88.                <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
89.                <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>
90.                <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/>
91.                <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=""/>
92.                <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>
93.            </extensionElements>
94.            <incoming>sid-134EB82E-040E-42C4-BF02-3CE90AECDE57</incoming>
95.            <outgoing>sid-EFF71DFE-2AFF-47C0-A7DD-C013D6996EA9</outgoing>
96.        </task>
97.        <task completionQuantity="1" id="sid-6537BA03-FC5D-4A2D-B275-
   2B6387907AFC" isForCompensation="false" name="Optionally prepare priority notice" start
   Quantity="1">
98.            <extensionElements>
99.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
100.                   <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
101.                   <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

102.                   <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
   >
103.                   <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
   ""/>
104.                   <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

105.               </extensionElements>
106.               <incoming>sid-22E9B9EF-50F5-403B-AC0F-3EA395F738C8</incoming>
107.               <outgoing>sid-056F87B9-2B83-4DCD-ABCE-4FF18BDA940F</outgoing>
108.           </task>
109.           <endEvent id="sid-9702EF95-D554-4174-8168-18D682C30F0F" name="">
110.               <extensionElements>
111.                   <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
112.                   <signavio:signavioMetaData metaKey="nachfolgerprozesse" metaValue=""
   />
113.               </extensionElements>
114.               <incoming>sid-056F87B9-2B83-4DCD-ABCE-4FF18BDA940F</incoming>
115.           </endEvent>
```

```
116.          <parallelGateway gatewayDirection="Diverging" id="sid-13ACAB55-67A7-48A4-
      A2BE-ABE1504D11BD" name="">
117.              <extensionElements>
118.                  <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
119.              </extensionElements>
120.              <incoming>sid-EFF71DFE-2AFF-47C0-A7DD-C013D6996EA9</incoming>
121.              <outgoing>sid-22E9B9EF-50F5-403B-AC0F-3EA395F738C8</outgoing>
122.              <outgoing>sid-6DC0DEE1-E9D1-4FDB-BD55-AE1E1019E0B9</outgoing>
123.          </parallelGateway>
124.          <task completionQuantity="1" id="sid-20F84487-AA72-4CAC-84A9-
      2E130936632F" isForCompensation="false" name="Tender fees" startQuantity="1">
125.              <extensionElements>
126.                  <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
127.                  <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
128.                  <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

129.                  <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
130.                  <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
131.                  <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

132.              </extensionElements>
133.              <incoming>sid-6DC0DEE1-E9D1-4FDB-BD55-AE1E1019E0B9</incoming>
134.              <outgoing>sid-4819572B-0C98-4C38-A450-F249E8EA6C3E</outgoing>
135.          </task>
136.          <intermediateCatchEvent id="sid-E6B11DA3-FEAA-4A36-A763-
      0B20EBF23444" name="">
137.              <extensionElements>
138.                  <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
139.              </extensionElements>
140.              <incoming>sid-4819572B-0C98-4C38-A450-F249E8EA6C3E</incoming>
141.              <outgoing>sid-2FBFADCE-D444-478C-8588-4ACF0E9A0D38</outgoing>
142.              <messageEventDefinition id="sid-f730c83d-a35a-43ca-8407-
      ad160f5801e0"/>
143.          </intermediateCatchEvent>
144.          <task completionQuantity="1" id="sid-3A4F0E05-CC9A-4451-B74D-
      A1A4F68D4F9F" isForCompensation="false" name="Complete transaction data required" start
      Quantity="1">
145.              <extensionElements>
146.                  <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
147.                  <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
148.                  <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

149.                  <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
150.                  <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
151.                  <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

152.              </extensionElements>
153.              <incoming>sid-2FBFADCE-D444-478C-8588-4ACF0E9A0D38</incoming>
154.              <outgoing>sid-AD1C90B4-3135-4311-9A31-F1A80FDA5E16</outgoing>
155.          </task>
156.          <task completionQuantity="1" id="sid-3ADE63CC-12F2-4896-8062-
      131E22B93061" isForCompensation="false" name="Send data" startQuantity="1">
157.              <extensionElements>
158.                  <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
159.                  <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
160.                  <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>
```

```
161.                <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
162.                <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
163.                <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

164.            </extensionElements>
165.            <incoming>sid-AD1C90B4-3135-4311-9A31-F1A80FDA5E16</incoming>
166.            <outgoing>sid-FD96ADBE-D515-4A19-96EA-1BF0B59D9B19</outgoing>
167.         </task>
168.         <task completionQuantity="1" id="sid-D982AE87-DA9F-4779-873C-
      F1F3D917A8EF" isForCompensation="false" name="Determine digital or paper lodgement" sta
      rtQuantity="1">
169.            <extensionElements>
170.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
171.                <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
172.                <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

173.                <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
174.                <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
175.                <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

176.            </extensionElements>
177.            <incoming>sid-FD96ADBE-D515-4A19-96EA-1BF0B59D9B19</incoming>
178.            <outgoing>sid-C75BAAD6-F31C-4B33-97C3-D15968AFDA56</outgoing>
179.         </task>
180.         <exclusiveGateway gatewayDirection="Diverging" id="sid-6818FB4F-A484-4F7A-
      B982-B4E2C3C7B235" name="">
181.            <extensionElements>
182.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
183.            </extensionElements>
184.            <incoming>sid-C75BAAD6-F31C-4B33-97C3-D15968AFDA56</incoming>
185.            <outgoing>sid-8BE68B1F-3208-4AB7-88D2-0B114DED389A</outgoing>
186.            <outgoing>sid-59071FDB-EFBC-4CF9-B7DA-107F6BA8F168</outgoing>
187.         </exclusiveGateway>
188.         <task completionQuantity="1" id="sid-25C5D455-EF03-41B7-936D-
      9DC4536699F6" isForCompensation="false" name="Request print and commit completed transa
      ction pending final evidence" startQuantity="1">
189.            <extensionElements>
190.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
191.                <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
192.                <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

193.                <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
194.                <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
195.                <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

196.            </extensionElements>
197.            <incoming>sid-8BE68B1F-3208-4AB7-88D2-0B114DED389A</incoming>
198.            <outgoing>sid-2A55B785-19A7-4A0C-9B13-3CFC4A8BF1C6</outgoing>
199.         </task>
200.         <task completionQuantity="1" id="sid-A599A79D-7AE4-4C1C-A12C-
      5C0492801860" isForCompensation="false" name="Set settlement and lodgement date for dig
      ital transactions" startQuantity="1">
201.            <extensionElements>
202.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
203.                <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
```

```
204.                <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

205.                <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
    >
206.                <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
    ""/>
207.                <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

208.            </extensionElements>
209.            <incoming>sid-59071FDB-EFBC-4CF9-B7DA-107F6BA8F168</incoming>
210.            <outgoing>sid-4E8264F0-C717-4C1E-B2B2-04671B38F9EB</outgoing>
211.        </task>
212.        <task completionQuantity="1" id="sid-D85EBF1D-B3E4-484F-AA70-
    865B7E826ABD" isForCompensation="false" name="Consider impact of registry changes on tr
    ansaction" startQuantity="1">
213.            <extensionElements>
214.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
215.                <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
216.                <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

217.                <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
    >
218.                <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
    ""/>
219.                <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

220.            </extensionElements>
221.            <incoming>sid-4E8264F0-C717-4C1E-B2B2-04671B38F9EB</incoming>
222.            <outgoing>sid-396B8DE8-9DE7-4C94-97B5-6A99CB3353C0</outgoing>
223.        </task>
224.        <exclusiveGateway gatewayDirection="Converging" id="sid-1509FB6E-1CA6-
    4C04-832A-BCF2A228F24C" name="">
225.            <extensionElements>
226.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
227.            </extensionElements>
228.            <incoming>sid-2A55B785-19A7-4A0C-9B13-3CFC4A8BF1C6</incoming>
229.            <incoming>sid-396B8DE8-9DE7-4C94-97B5-6A99CB3353C0</incoming>
230.            <outgoing>sid-CBDCB203-31D4-4455-8A44-D0A13A063A87</outgoing>
231.        </exclusiveGateway>
232.        <endEvent id="sid-187DA8C5-B027-4356-A1B9-51461437C76F" name="">
233.            <extensionElements>
234.                <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
235.                <signavio:signavioMetaData metaKey="nachfolgerprozesse" metaValue=""
    />
236.            </extensionElements>
237.            <incoming>sid-CBDCB203-31D4-4455-8A44-D0A13A063A87</incoming>
238.        </endEvent>
239.        <sequenceFlow id="sid-CA60D532-9285-41F4-ADA6-
    72A7A0175603" name="" sourceRef="sid-97424C30-000F-492B-BED1-
    93652FC39E5E" targetRef="sid-D967F3B4-88BD-4587-8AE0-3E682B94D2BD"/>
240.        <sequenceFlow id="sid-134EB82E-040E-42C4-BF02-
    3CE90AECDE57" name="" sourceRef="sid-D967F3B4-88BD-4587-8AE0-
    3E682B94D2BD" targetRef="sid-4E55B80E-C82F-4052-8914-0068D4B705FE"/>
241.        <sequenceFlow id="sid-056F87B9-2B83-4DCD-ABCE-
    4FF18BDA940F" name="" sourceRef="sid-6537BA03-FC5D-4A2D-B275-
    2B6387907AFC" targetRef="sid-9702EF95-D554-4174-8168-18D682C30F0F"/>
242.        <sequenceFlow id="sid-22E9B9EF-50F5-403B-AC0F-
    3EA395F738C8" name="" sourceRef="sid-13ACAB55-67A7-48A4-A2BE-
    ABE1504D11BD" targetRef="sid-6537BA03-FC5D-4A2D-B275-2B6387907AFC"/>
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243.            <sequenceFlow id="sid-EFF71DFE-2AFF-47C0-A7DD-
   C013D6996EA9" name="" sourceRef="sid-4E55B80E-C82F-4052-8914-
   0068D4B705FE" targetRef="sid-13ACAB55-67A7-48A4-A2BE-ABE1504D11BD"/>
244.            <sequenceFlow id="sid-4819572B-0C98-4C38-A450-
   F249E8EA6C3E" name="" sourceRef="sid-20F84487-AA72-4CAC-84A9-
   2E130936632F" targetRef="sid-E6B11DA3-FEAA-4A36-A763-0B20EBF23444"/>
245.            <sequenceFlow id="sid-2FBFADCE-D444-478C-8588-
   4ACF0E9A0D38" name="" sourceRef="sid-E6B11DA3-FEAA-4A36-A763-
   0B20EBF23444" targetRef="sid-3A4F0E05-CC9A-4451-B74D-A1A4F68D4F9F"/>
246.            <sequenceFlow id="sid-AD1C90B4-3135-4311-9A31-
   F1A80FDA5E16" name="" sourceRef="sid-3A4F0E05-CC9A-4451-B74D-
   A1A4F68D4F9F" targetRef="sid-3ADE63CC-12F2-4896-8062-131E22B93061"/>
247.            <sequenceFlow id="sid-FD96ADBE-D515-4A19-96EA-
   1BF0B59D9B19" name="" sourceRef="sid-3ADE63CC-12F2-4896-8062-
   131E22B93061" targetRef="sid-D982AE87-DA9F-4779-873C-F1F3D917A8EF"/>
248.            <sequenceFlow id="sid-C75BAAD6-F31C-4B33-97C3-
   D15968AFDA56" name="" sourceRef="sid-D982AE87-DA9F-4779-873C-
   F1F3D917A8EF" targetRef="sid-6818FB4F-A484-4F7A-B982-B4E2C3C7B235"/>
249.            <sequenceFlow id="sid-8BE68B1F-3208-4AB7-88D2-
   0B114DED389A" name="" sourceRef="sid-6818FB4F-A484-4F7A-B982-
   B4E2C3C7B235" targetRef="sid-25C5D455-EF03-41B7-936D-9DC4536699F6"/>
250.            <sequenceFlow id="sid-59071FDB-EFBC-4CF9-B7DA-
   107F6BA8F168" name="" sourceRef="sid-6818FB4F-A484-4F7A-B982-
   B4E2C3C7B235" targetRef="sid-A599A79D-7AE4-4C1C-A12C-5C0492801860"/>
251.            <sequenceFlow id="sid-4E8264F0-C717-4C1E-B2B2-
   04671B38F9EB" name="" sourceRef="sid-A599A79D-7AE4-4C1C-A12C-
   5C0492801860" targetRef="sid-D85EBF1D-B3E4-484F-AA70-865B7E826ABD"/>
252.            <sequenceFlow id="sid-2A55B785-19A7-4A0C-9B13-
   3CFC4A8BF1C6" name="" sourceRef="sid-25C5D455-EF03-41B7-936D-
   9DC4536699F6" targetRef="sid-1509FB6E-1CA6-4C04-832A-BCF2A228F24C"/>
253.            <sequenceFlow id="sid-396B8DE8-9DE7-4C94-97B5-
   6A99CB3353C0" name="" sourceRef="sid-D85EBF1D-B3E4-484F-AA70-
   865B7E826ABD" targetRef="sid-1509FB6E-1CA6-4C04-832A-BCF2A228F24C"/>
254.            <sequenceFlow id="sid-CBDCB203-31D4-4455-8A44-
   D0A13A063A87" name="" sourceRef="sid-1509FB6E-1CA6-4C04-832A-
   BCF2A228F24C" targetRef="sid-187DA8C5-B027-4356-A1B9-51461437C76F"/>
255.            <sequenceFlow id="sid-6DC0DEE1-E9D1-4FDB-BD55-
   AE1E1019E0B9" name="" sourceRef="sid-13ACAB55-67A7-48A4-A2BE-
   ABE1504D11BD" targetRef="sid-20F84487-AA72-4CAC-84A9-2E130936632F"/>
256.        </process>
257.        <process id="sid-78CE0462-9CC0-496D-ABDB-
   0123FBCA44DC" isClosed="false" isExecutable="false" name="Online Portal" processType="N
   one">
258.            <extensionElements/>
259.            <laneSet id="sid-4f53a5f1-4554-4b1b-b3ce-c1c62548c1fb">
260.                <lane id="sid-84F8D8FF-67E3-4AF9-94B4-D51814446250">
261.                    <extensionElements>
262.                        <signavio:signavioMetaData metaKey="bgcolor" metaValue=""/>
263.                    </extensionElements>
264.                    <flowNodeRef>sid-B3849FD5-35C5-4D5A-A282-
   6D2323F76603</flowNodeRef>
265.                    <flowNodeRef>sid-5E0CAEAC-3AD1-43C8-84AC-
   A6C7EEF2FEC3</flowNodeRef>
266.                    <flowNodeRef>sid-F8415304-5BF1-42D7-B6BF-
   7970CB429DC8</flowNodeRef>
267.                    <flowNodeRef>sid-7DDA476E-1522-4594-93BB-
   D2A762632530</flowNodeRef>
268.                    <flowNodeRef>sid-F6878B6B-7A09-41B0-8BFB-
   CDFFAE19EED2</flowNodeRef>
269.                    <flowNodeRef>sid-7673465C-1145-4AAC-9EBE-
   8B6CD1AE9D49</flowNodeRef>
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270.                    <flowNodeRef>sid-02DB1868-8DBF-4E5A-A3CD-
      E371F0A85B0F</flowNodeRef>
271.                    <flowNodeRef>sid-6910CBC7-ECFB-47A7-8FBB-
      A60A2B8C30D5</flowNodeRef>
272.                    <flowNodeRef>sid-42A669CF-E0E1-442A-A317-
      23590B909DFA</flowNodeRef>
273.                    <flowNodeRef>sid-D1BB816B-1897-4727-B1E9-
      AF033FCAB1CA</flowNodeRef>
274.                    <flowNodeRef>sid-5640112B-B4B0-4FA8-81C6-
      540C3C7B2440</flowNodeRef>
275.                </lane>
276.            </laneSet>
277.            <startEvent id="sid-B3849FD5-35C5-4D5A-A282-6D2323F76603" name="">
278.                <extensionElements>
279.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
280.                    <signavio:signavioMetaData metaKey="vorgngerprozesse" metaValue=""/>

281.                </extensionElements>
282.                <outgoing>sid-B75B2566-2294-4C7F-AD57-EF679A39BBF2</outgoing>
283.            </startEvent>
284.            <task completionQuantity="1" id="sid-5E0CAEAC-3AD1-43C8-84AC-
      A6C7EEF2FEC3" isForCompensation="false" name="T2 validate user" startQuantity="1">
285.                <extensionElements>
286.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
287.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
288.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

289.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
290.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
291.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

292.                </extensionElements>
293.                <incoming>sid-B75B2566-2294-4C7F-AD57-EF679A39BBF2</incoming>
294.                <outgoing>sid-DCF276A4-B234-4670-BC69-8844593DFD37</outgoing>
295.            </task>
296.            <task completionQuantity="1" id="sid-F8415304-5BF1-42D7-B6BF-
      7970CB429DC8" isForCompensation="false" name="Determine data required using business ru
      les" startQuantity="1">
297.                <extensionElements>
298.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
299.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
300.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

301.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
302.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
303.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

304.                </extensionElements>
305.                <incoming>sid-DCF276A4-B234-4670-BC69-8844593DFD37</incoming>
306.                <outgoing>sid-D86BF94F-1A8D-4990-BD87-DDCD35E93CB9</outgoing>
307.            </task>
308.            <task completionQuantity="1" id="sid-7DDA476E-1522-4594-93BB-
      D2A762632530" isForCompensation="false" name="Invoice/fee payment service" startQuantit
      y="1">
309.                <extensionElements>
310.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
311.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
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312.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

313.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
314.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
315.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

316.                </extensionElements>
317.                <incoming>sid-D86BF94F-1A8D-4990-BD87-DDCD35E93CB9</incoming>
318.                <outgoing>sid-0CC16F8F-595C-4A36-9E71-CAFA021EC143</outgoing>
319.            </task>
320.            <intermediateCatchEvent id="sid-F6878B6B-7A09-41B0-8BFB-
      CDFFAE19EED2" name="">
321.                <extensionElements>
322.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
323.                </extensionElements>
324.                <incoming>sid-0CC16F8F-595C-4A36-9E71-CAFA021EC143</incoming>
325.                <outgoing>sid-61E5814C-B6C1-4E5E-89C9-1B170E935104</outgoing>
326.                <messageEventDefinition id="sid-602a9865-56be-4b1c-bb49-
      0734ee1bfdf2"/>
327.            </intermediateCatchEvent>
328.            <task completionQuantity="1" id="sid-7673465C-1145-4AAC-9EBE-
      8B6CD1AE9D49" isForCompensation="false" name="Optionally queue completed prelodged tran
      sactions pending digital lodgement on date/time set" startQuantity="1">
329.                <extensionElements>
330.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
331.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
332.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

333.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
334.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
335.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

336.                </extensionElements>
337.                <incoming>sid-ABBA39F7-F318-4867-8157-3F5E43CE9090</incoming>
338.                <outgoing>sid-912D6AD3-082C-42C8-9295-1D6FE384F884</outgoing>
339.            </task>
340.            <task completionQuantity="1" id="sid-02DB1868-8DBF-4E5A-A3CD-
      E371F0A85B0F" isForCompensation="false" name="Check that registry data has not changed"
       startQuantity="1">
341.                <extensionElements>
342.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
343.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
344.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

345.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
346.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
347.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

348.                </extensionElements>
349.                <incoming>sid-912D6AD3-082C-42C8-9295-1D6FE384F884</incoming>
350.                <outgoing>sid-D2317390-5895-4A95-A1A9-1BD07118C35D</outgoing>
351.            </task>
352.            <endEvent id="sid-6910CBC7-ECFB-47A7-8FBB-A60A2B8C30D5" name="">
353.                <extensionElements>
354.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
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355.                    <signavio:signavioMetaData metaKey="nachfolgerprozesse" metaValue=""
      />
356.                </extensionElements>
357.                <incoming>sid-D2317390-5895-4A95-A1A9-1BD07118C35D</incoming>
358.            </endEvent>
359.            <task completionQuantity="1" id="sid-42A669CF-E0E1-442A-A317-
      23590B909DFA" isForCompensation="false" name="Create transaction file and partially pop
      ulate with register data" startQuantity="1">
360.                <extensionElements>
361.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
362.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
363.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

364.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
365.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
366.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

367.                </extensionElements>
368.                <incoming>sid-61E5814C-B6C1-4E5E-89C9-1B170E935104</incoming>
369.                <outgoing>sid-FBCC9B28-5F9A-4DE7-B327-D38F23315CC0</outgoing>
370.            </task>
371.            <task completionQuantity="1" id="sid-D1BB816B-1897-4727-B1E9-
      AF033FCAB1CA" isForCompensation="false" name="Request remaining data from client using
      fixed business rules" startQuantity="1">
372.                <extensionElements>
373.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
374.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
375.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

376.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
377.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
378.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

379.                </extensionElements>
380.                <incoming>sid-FBCC9B28-5F9A-4DE7-B327-D38F23315CC0</incoming>
381.                <outgoing>sid-EA65BC1A-9001-4634-BE86-13521CFBF53C</outgoing>
382.            </task>
383.            <intermediateCatchEvent id="sid-5640112B-B4B0-4FA8-81C6-
      540C3C7B2440" name="">
384.                <extensionElements>
385.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
386.                </extensionElements>
387.                <incoming>sid-EA65BC1A-9001-4634-BE86-13521CFBF53C</incoming>
388.                <outgoing>sid-ABBA39F7-F318-4867-8157-3F5E43CE9090</outgoing>
389.                <messageEventDefinition id="sid-89d213b2-45b2-4730-bc7d-
      1ce90c1ed926"/>
390.            </intermediateCatchEvent>
391.            <sequenceFlow id="sid-B75B2566-2294-4C7F-AD57-
      EF679A39BBF2" name="" sourceRef="sid-B3849FD5-35C5-4D5A-A282-
      6D2323F76603" targetRef="sid-5E0CAEAC-3AD1-43C8-84AC-A6C7EEF2FEC3"/>
392.            <sequenceFlow id="sid-DCF276A4-B234-4670-BC69-
      8844593DFD37" name="" sourceRef="sid-5E0CAEAC-3AD1-43C8-84AC-
      A6C7EEF2FEC3" targetRef="sid-F8415304-5BF1-42D7-B6BF-7970CB429DC8"/>
393.            <sequenceFlow id="sid-D86BF94F-1A8D-4990-BD87-
      DDCD35E93CB9" name="" sourceRef="sid-F8415304-5BF1-42D7-B6BF-
      7970CB429DC8" targetRef="sid-7DDA476E-1522-4594-93BB-D2A762632530"/>
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394.            <sequenceFlow id="sid-0CC16F8F-595C-4A36-9E71-
     CAFA021EC143" name="" sourceRef="sid-7DDA476E-1522-4594-93BB-
     D2A762632530" targetRef="sid-F6878B6B-7A09-41B0-8BFB-CDFFAE19EED2"/>
395.            <sequenceFlow id="sid-912D6AD3-082C-42C8-9295-
     1D6FE384F884" name="" sourceRef="sid-7673465C-1145-4AAC-9EBE-
     8B6CD1AE9D49" targetRef="sid-02DB1868-8DBF-4E5A-A3CD-E371F0A85B0F"/>
396.            <sequenceFlow id="sid-D2317390-5895-4A95-A1A9-
     1BD07118C35D" name="" sourceRef="sid-02DB1868-8DBF-4E5A-A3CD-
     E371F0A85B0F" targetRef="sid-6910CBC7-ECFB-47A7-8FBB-A60A2B8C30D5"/>
397.            <sequenceFlow id="sid-61E5814C-B6C1-4E5E-89C9-
     1B170E935104" name="" sourceRef="sid-F6878B6B-7A09-41B0-8BFB-
     CDFFAE19EED2" targetRef="sid-42A669CF-E0E1-442A-A317-23590B909DFA"/>
398.            <sequenceFlow id="sid-FBCC9B28-5F9A-4DE7-B327-
     D38F23315CC0" name="" sourceRef="sid-42A669CF-E0E1-442A-A317-
     23590B909DFA" targetRef="sid-D1BB816B-1897-4727-B1E9-AF033FCAB1CA"/>
399.            <sequenceFlow id="sid-EA65BC1A-9001-4634-BE86-
     13521CFBF53C" name="" sourceRef="sid-D1BB816B-1897-4727-B1E9-
     AF033FCAB1CA" targetRef="sid-5640112B-B4B0-4FA8-81C6-540C3C7B2440"/>
400.            <sequenceFlow id="sid-ABBA39F7-F318-4867-8157-
     3F5E43CE9090" name="" sourceRef="sid-5640112B-B4B0-4FA8-81C6-
     540C3C7B2440" targetRef="sid-7673465C-1145-4AAC-9EBE-8B6CD1AE9D49"/>
401.        </process>
402.        <process id="sid-B2D69743-5B9D-46F7-9C4E-
     9E1FF060EAA3" isClosed="false" isExecutable="false" name="Registry" processType="None">

403.            <extensionElements/>
404.            <laneSet id="sid-2919163a-0aa2-4ed8-a683-affeb543fa19">
405.                <lane id="sid-64FCC5FD-37FC-4164-8E61-40DCE42B5B5E">
406.                    <extensionElements>
407.                        <signavio:signavioMetaData metaKey="bgcolor" metaValue=""/>
408.                    </extensionElements>
409.                    <flowNodeRef>sid-F807551C-8A84-42C6-887F-
     E2ECD0A2037A</flowNodeRef>
410.                    <flowNodeRef>sid-D0CF146F-0F0B-44F2-B6C5-
     D1EE335C2C8B</flowNodeRef>
411.                    <flowNodeRef>sid-1E76BAA7-7CE7-4242-B084-
     63BF16BD0ED4</flowNodeRef>
412.                    <flowNodeRef>sid-4E8E1A59-8A37-4006-B2EE-
     C2E0FCB16A88</flowNodeRef>
413.                    <flowNodeRef>sid-7A6B1BA1-F09B-4669-8036-
     959697CADCDB</flowNodeRef>
414.                    <flowNodeRef>sid-12B44214-9659-469D-ADA1-
     9FED80711093</flowNodeRef>
415.                </lane>
416.            </laneSet>
417.            <startEvent id="sid-F807551C-8A84-42C6-887F-
     E2ECD0A2037A" isInterrupting="true" name="">
418.                <extensionElements>
419.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
420.                    <signavio:signavioMetaData metaKey="vorgngerprozesse" metaValue=""/>

421.                </extensionElements>
422.                <outgoing>sid-E41C5539-C790-41E3-B3ED-BA3B65DE6C56</outgoing>
423.                <messageEventDefinition id="sid-ae63af02-e223-45db-b3c2-
     37ecda463bd8"/>
424.            </startEvent>
425.            <task completionQuantity="1" id="sid-D0CF146F-0F0B-44F2-B6C5-
     D1EE335C2C8B" isForCompensation="false" name="Assemble required data" startQuantity="1"
     >
426.                <extensionElements>
427.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
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428.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
429.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

430.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
431.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
432.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

433.                </extensionElements>
434.                <incoming>sid-E41C5539-C790-41E3-B3ED-BA3B65DE6C56</incoming>
435.                <outgoing>sid-BA5C50B4-12CC-457A-A834-0B1EC07EBF10</outgoing>
436.            </task>
437.            <task completionQuantity="1" id="sid-1E76BAA7-7CE7-4242-B084-
      63BF16BD0ED4" isForCompensation="false" name="Send data" startQuantity="1">
438.                <extensionElements>
439.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
440.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
441.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

442.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
443.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
444.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

445.                </extensionElements>
446.                <incoming>sid-BA5C50B4-12CC-457A-A834-0B1EC07EBF10</incoming>
447.                <outgoing>sid-86F9230E-0E3A-4B3D-8ABD-7121AE712354</outgoing>
448.            </task>
449.            <task completionQuantity="1" id="sid-4E8E1A59-8A37-4006-B2EE-
      C2E0FCB16A88" isForCompensation="false" name="T3 change status" startQuantity="1">
450.                <extensionElements>
451.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
452.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
453.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

454.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
455.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
456.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

457.                </extensionElements>
458.                <incoming>sid-86F9230E-0E3A-4B3D-8ABD-7121AE712354</incoming>
459.                <outgoing>sid-20E683F2-5505-43AA-9F17-F9F6D721F483</outgoing>
460.            </task>
461.            <task completionQuantity="1" id="sid-7A6B1BA1-F09B-4669-8036-
      959697CADCDB" isForCompensation="false" name="Compare submitted data" startQuantity="1"
      >
462.                <extensionElements>
463.                    <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
464.                    <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
465.                    <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>

466.                    <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
      >
467.                    <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
      ""/>
468.                    <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>
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469.                    </extensionElements>
470.                    <incoming>sid-20E683F2-5505-43AA-9F17-F9F6D721F483</incoming>
471.                    <outgoing>sid-2D23770B-4D7C-463D-A93F-D0D4ED0C98F2</outgoing>
472.                </task>
473.                <endEvent id="sid-12B44214-9659-469D-ADA1-9FED80711093" name="">
474.                    <extensionElements>
475.                        <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
476.                        <signavio:signavioMetaData metaKey="nachfolgerprozesse" metaValue=""
    />
477.                    </extensionElements>
478.                    <incoming>sid-2D23770B-4D7C-463D-A93F-D0D4ED0C98F2</incoming>
479.                </endEvent>
480.                <sequenceFlow id="sid-E41C5539-C790-41E3-B3ED-
    BA3B65DE6C56" name="" sourceRef="sid-F807551C-8A84-42C6-887F-
    E2ECD0A2037A" targetRef="sid-D0CF146F-0F0B-44F2-B6C5-D1EE335C2C8B"/>
481.                <sequenceFlow id="sid-BA5C50B4-12CC-457A-A834-
    0B1EC07EBF10" name="" sourceRef="sid-D0CF146F-0F0B-44F2-B6C5-
    D1EE335C2C8B" targetRef="sid-1E76BAA7-7CE7-4242-B084-63BF16BD0ED4"/>
482.                <sequenceFlow id="sid-86F9230E-0E3A-4B3D-8ABD-
    7121AE712354" name="" sourceRef="sid-1E76BAA7-7CE7-4242-B084-
    63BF16BD0ED4" targetRef="sid-4E8E1A59-8A37-4006-B2EE-C2E0FCB16A88"/>
483.                <sequenceFlow id="sid-20E683F2-5505-43AA-9F17-
    F9F6D721F483" name="" sourceRef="sid-4E8E1A59-8A37-4006-B2EE-
    C2E0FCB16A88" targetRef="sid-7A6B1BA1-F09B-4669-8036-959697CADCDB"/>
484.                <sequenceFlow id="sid-2D23770B-4D7C-463D-A93F-
    D0D4ED0C98F2" name="" sourceRef="sid-7A6B1BA1-F09B-4669-8036-
    959697CADCDB" targetRef="sid-12B44214-9659-469D-ADA1-9FED80711093"/>
485.            </process>
486.            <process id="sid-AC2879D1-49A4-4BA3-AD8F-
    4766C0AA18EC" isClosed="false" isExecutable="false" name="Tracking system" processType=
    "None">
487.                <extensionElements/>
488.                <laneSet id="sid-aae11a7b-e098-468b-a9e5-a924436ed02e">
489.                    <lane id="sid-EEF70F69-89DC-48C3-AE4D-F40E0F0EC61F">
490.                        <extensionElements>
491.                            <signavio:signavioMetaData metaKey="bgcolor" metaValue=""/>
492.                        </extensionElements>
493.                        <flowNodeRef>sid-E324528B-16C4-42EF-BB9C-
    CF244D954EA3</flowNodeRef>
494.                        <flowNodeRef>sid-CD1E9014-162B-4477-9E1C-
    C92FC984B132</flowNodeRef>
495.                        <flowNodeRef>sid-266667E5-F724-462E-A54D-
    DBA39EF945D3</flowNodeRef>
496.                    </lane>
497.                </laneSet>
498.                <startEvent id="sid-E324528B-16C4-42EF-BB9C-CF244D954EA3" name="">
499.                    <extensionElements>
500.                        <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
501.                        <signavio:signavioMetaData metaKey="vorgngerprozesse" metaValue=""/>

502.                    </extensionElements>
503.                    <outgoing>sid-8F082A6B-7EF6-4823-9422-18A19CE37125</outgoing>
504.                </startEvent>
505.                <task completionQuantity="1" id="sid-CD1E9014-162B-4477-9E1C-
    C92FC984B132" isForCompensation="false" name="Flag CT that transactions pending" startQ
    uantity="1">
506.                    <extensionElements>
507.                        <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffcc"/>
508.                        <signavio:signavioMetaData metaKey="wirdinformiert" metaValue=""/>
509.                        <signavio:signavioMetaData metaKey="wirdkonsultiert" metaValue=""/>
```

```
510.                  <signavio:signavioMetaData metaKey="externaldocuments" metaValue=""/
     >
511.                  <signavio:signavioMetaData metaKey="risikenundkontrollen" metaValue=
     ""/>
512.                  <signavio:signavioMetaData metaKey="erteiltfreigabe" metaValue=""/>

513.             </extensionElements>
514.             <incoming>sid-8F082A6B-7EF6-4823-9422-18A19CE37125</incoming>
515.             <outgoing>sid-6E3C9A37-21FA-49A8-BC42-2C544BC71FE0</outgoing>
516.         </task>
517.         <endEvent id="sid-266667E5-F724-462E-A54D-DBA39EF945D3" name="">
518.             <extensionElements>
519.                 <signavio:signavioMetaData metaKey="bgcolor" metaValue="#ffffff"/>
520.                 <signavio:signavioMetaData metaKey="nachfolgerprozesse" metaValue=""
     />
521.             </extensionElements>
522.             <incoming>sid-6E3C9A37-21FA-49A8-BC42-2C544BC71FE0</incoming>
523.         </endEvent>
524.         <sequenceFlow id="sid-8F082A6B-7EF6-4823-9422-
     18A19CE37125" name="" sourceRef="sid-E324528B-16C4-42EF-BB9C-
     CF244D954EA3" targetRef="sid-CD1E9014-162B-4477-9E1C-C92FC984B132"/>
525.         <sequenceFlow id="sid-6E3C9A37-21FA-49A8-BC42-
     2C544BC71FE0" name="" sourceRef="sid-CD1E9014-162B-4477-9E1C-
     C92FC984B132" targetRef="sid-266667E5-F724-462E-A54D-DBA39EF945D3"/>
526.     </process>
527.     <bpmndi:BPMNDiagram id="sid-d54c650e-9a4b-4b35-97db-c5a4024845f9">
528.         //Excluded
529.     </bpmndi:BPMNDiagram>
530. </definitions>
```

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