**Topic 1: Data Collection for Robotic Process Automation**

Robotic process automation (RPA) describes a family of tools and techniques that allow organizations to automate the execution of their business processes using independent software robots. Compared to other techniques of process automation, RPA is non-invasive, meaning that it works directly in the user interface and does not require any changes in the process-supporting software. It is also not restricted to a single application system but is often used to transfer data from one system into another. RPA bots are built by inspecting how humans execute the respective business process and then attempting to repeat this behavior. Typically, this is done by training machine learning models on event logs that record the behavior of the human users. These logs therefore play a major role in the design and implementation of high-quality RPA bots.

The goal of this seminar thesis is to investigate the current state of the art in data collection for robotic process automation. Therefore, the participant should conduct a structured literature review to find existing approaches for data collection as the basis for RPA implementations and analyze them regarding the types of data that is collected, the tools that are used, the necessary transformation efforts, and other interesting aspects. The focus should be on those applications related to process mining but approaches from neighboring areas can also be considered.

**Topic 2: Robotic Process Automation in ERP Systems**

Robotic process automation (RPA) describes a family of tools and techniques that allow organizations to automate the execution of their business processes using independent software robots. This is particularly relevant for standardized or highly repetitive activities, which do not require human creativity, but cannot be fully automated, because they, e.g., involve multiple systems. A typical example for this type of task is the transfer of data from one system into another. However, because automating their business processes is favorable for organizations in terms of time, cost, and reliability, they are interested to apply RPA beyond individual tasks and automate the execution of end-to-end processes. This is particularly interesting for highly standardized business processes with a high case load, such as those processes within enterprise resource planning (ERP) systems.

The goal of this seminar paper is to identify the state-of-the-art in robotic process automation for end-to-end business processes, with a particular focus on highly standardized ERP processes, like sales or procurement. Therefore, the participant should conduct a structured literature review to find existing RPA approaches that either go beyond the automation of single standardized tasks in a process or have a particular focus on the ERP domain. This thesis should help in achieving a detailed understanding of the application potentials, employed techniques, and overall maturity of RPA for ERP systems.
**Topic 3: Measuring the Quality of Procure-to-Pay Processes**

The quality of a business process is measured by means of the devil’s quadrangle, which contains the four competing dimensions of time, cost, output quality, and flexibility. Stakeholders want their processes to be as efficient as possible, i.e., to use the lowest possible amount of resources (time, cost, personnel) to achieve the highest possible quality. Process inefficiencies are hence expenditures of resources that do not contribute to the quality of a process and should therefore be avoided. This is particularly relevant for support processes, which do not directly contribute to the value creation of a company, but are necessary for keeping up operations. One example for such a process is the procure-to-pay process, whose goal is to purchase all goods and services that the company needs.

The digitization of process execution within IT systems has enabled process management researchers and practitioners to objectively assess and measure the process quality in terms of outcome-related key-performance indicators (KPIs), such as the percentage of orders that is delivered on time. In addition, the availability of process event log data, which record the real-life execution of business processes, has extended those measurement capabilities by allowing to inspect the actual process flow and identifying, e.g., rework activities (activities that retroactively make changes to previous process steps). This is particularly relevant to processes like procure-to-pay, which are executed so often that even minor improvements in the process may yield substantial improvements in its overall efficiency and quality.

The goal of this seminar thesis is to identify existing approaches for measuring the quality of procure-to-pay processes. Therefore, the participant should conduct a structured literature review focusing on literature from both business process management and operations management. The focus of the literature review should lie on those quality measurements that consider event logs, but can be extended towards KPI-based measurements as well.

**Topic 4: Business Processes and Organizational Routines**

Research on business processes has so far been conducted in two rather disjoint research communities. Organizational researchers have focused on organizational routines, which are defined as “repetitive, recognizable patterns of interdependent actions, carried out by multiple actors” (Feldman & Pentland, 2003). Here, the research focus is mostly on routine dynamics, where research contributions focus on theories and explanations for why routines change. It often adopts a practice perspective to investigate how technologies influence (digital) transformations and relies mostly on qualitative methods that enable researchers to understand how routines work.

At the same time, business process management (BPM) defines a business process as a “collection of related, structured activities or tasks by people or equipment in which a specific sequence produces a service or product (serves a particular business goal) for a particular customer or customers” (Weske, 2012). BPM research concerns itself with methods to discover, model, analyze, measure, improve, optimize, and automate business processes, using mainly quantitative methods to develop new methods and practical applications.

The goal of this seminar thesis is to analyze the commonalities and differences between business processes and organizational routines. Therefore, the participant should first conduct a structured literature review to find any existing works that connect or relate the two terms with one another. As a second step, the participant should analyze the definitions of both terms (not limited to those given above) in detail and point out any parallels and contradictions between them.
Topic 5: Analyzing User Behavior in ERP Systems

Enterprise resource planning (ERP) systems are IT systems for the integrated management of the core business processes in organizations, such as procurement, sales, accounting, or HR. They are nowadays used by many organizations in practically every industry because they facilitate an integrated, seamless, and consistent opportunity to manage business processes efficiently and in real-time. Because they cover an increasingly complex process and data landscape, ERP systems also tend to be very complex, offering a high degree of flexibility and variability to their users. Although necessary, this complexity can lead to wrong or inefficient user behavior, which in turn negatively influences the performance of the underlying business processes. If ERP vendors are able to analyze the behavior of their users, they can better understand how their systems are used and adapt them to enable a more efficient process execution.

The goal of this seminar thesis is to identify existing approaches for analyzing user behavior in ERP systems. Therefore, the participant should conduct a structured literature review to identify those approaches that are specifically set out to capture and analyze user behavior in ERP systems. Those approaches can come from research on process mining and business process management but also from neighboring fields such as information systems, interface design, or web analytics. Given that the number of relevant papers is expected to be sparse, the participant should analyze the available approaches in detail, specifying the objectives, techniques, and available data.

Topic 6: Metrics for Software Usability

The usability of an Information System (IS) is a key factor in designing and selecting business application software. If an IS has a high usability, it is easy to use, easy to learn, leads to a satisfactory outcome for the user, is efficient to use, and easy to memorize. Because usability has been shown to be a clear competitive advantage for any software, the field of usability engineering has dedicated itself to researching how a high degree of software usability can be achieved. In addition to qualitative methods for assessing usability (such as think-aloud studies), quantitative methods for measuring software usability have received considerable interest. Those methods are typically based on so-called software usability metrics, which measure the usability of a certain software.

The goal of this seminar thesis is to compile a list of software usability metrics, which are used in state-of-the-art IS usability engineering. Therefore, the participant should conduct a structured literature review, with a focus on business software applications. For each usability metric, the objective, formula (if applicable), required data, and any other type of relevant property should be stated. If necessary, the resulting list should distinguish between mobile devices and PCs, focusing on the latter.
Topic 7: Selecting Processes for Analysis and Improvement

The application of process mining and other process analysis technologies can have a high impact on the process quality because they enable organizations to find problems and inefficiencies in the process and address them. Although all processes can in general benefit from such analysis and improvement projects, companies typically have limited resources for them. Before starting a process mining project, companies therefore first have to select the processes which they want to analyze in detail. This selection depends on the overall objective and strategy of the organization, but it should be based on a comprehensive criteria catalogue to ensure that the process improvement projects are directed to those processes whose improvement has the best possible impact on the overall company performance.

The goal of this seminar thesis is to analyze how organizations choose the processes for their process mining projects. Therefore, the participant should conduct a structured literature review in business process management and information systems literature and identify state-of-the-art approaches for selecting processes for analysis and improvement. For each approach, the individual criteria and selection approach should be extracted and compared. It could also make sense to supplement the literature by additional information from case studies or literature on other project types.