Transforming Software Products for Intelligent Automation Services

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Abstract

In recent academic and commercial literature, the extensive transformations of software products have been a focal topic. However, the discourse has insufficiently addressed the emergence and role of low-code technologies, including robotic process automation (RPA). With the growing significance of RPA and low-code solutions, a salient transition has been observed from conventional On-Premise to Software-As-A-Service (SaaS) paradigms, signifying a critical juncture in its developmental trajectory. Our research, placed at the context of intelligent automation (IA) offerings, explored the product transformation practices conducted by ECIT Veny AS, a renowned Nordic provider of process automation services. In this context, our study discovered a novel observation: notwithstanding the rapid commoditization of RPA technology across diverse business infrastructures, there is a transition for automation service providers to shift their focus from mere technological prowess to holistically addressing client-centric challenges and demands. It has triggered the conceptualization and deployment of a novel product named Robot as a Service - Process Automation ('RaaS-P'), characterized by an innovative approach to service level agreement (SLA). This approach placed emphasis on facets such as system availability, operational stability, expedited recovery mechanisms, and transaction quality, all underpinned by the principles of simplicity and predictability.

Keywords

Robotic Process Automation, Low Code, Software Product, Transformation

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1. Introduction

Software product transformations are complex processes influenced by technology, organization, and market factors [1]. The shift to 'software-as-a-service' (SaaS) and cloud computing has been extensively explored [2], including the differences between 'as-a-service' and 'on-premise' software ecosystems. Robotic process automation (RPA) and low-code products have seen rapid growth, offering both 'on-premise' and 'cloud-based' automation solutions [3].

Software product transformation involves evolving software products due to technological advancements, market changes, and user preferences [4], with the shift to Software-as-a-Service (SaaS) being crucial. For example, Komssi et al. [5] analysed a Finnish SaaS company's strategy, identifying four stages tied to market and customer shifts. In addition, Manikas [6] detailed a product series' evolution, affecting software practices and business, while Leenen et al. [7] studied the move from custom to standardized software. In addition, Robotic Process Automation (RPA) technology is a type of software that robotizes rule-based tasks by mimicking human actions is capable of handling various business processes and can be supplied with SaaS model. It can also get integrated with AI elements, such as machine learning (ML) and natural language processing (NLP) [8], empowering non-technical users. This has led to a rapid growth of automation software within Low-Code Development Platforms (LCDPs), enabling non-technical users to create diverse applications swiftly [9] reducing software development time at the same time [10]. Software products, often transitioning to SaaS, adapt to technology, market, and customer needs. RPA and LCDPs automate processes and expedite software development for

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non-technical users, underscoring the evident need for research on the intersection of RPA and 'as-a-service' models.

Market coordination in 'as-a-service' ecosystems and SaaS product strategies require attention [11]. Ylä-Kujala et al. [12] advocate examining RPA service models. Beyond technology, transitioning to 'as-a-service' encompasses organizational, market, and strategic changes. The implications, such as cost, service quality, and customer satisfaction, are largely untapped. Based on those recommendations and lacunas, our case study delves into the RPA providers' shift to 'as-a-service', scrutinizing impacts from cost to customer experience.

2. Research Method

Our case study was based on the guidelines by Benbasat et al. [13]. The case organization, ECIT Veny AS is part of the ECIT Group, a Nordic leader in accounting, finance, HR, and IT services, develops service solutions in RPA, Low-Code, and integrations. Their mission is to automate processes, enhance efficiency, and improve business quality. The research, conducted from June to August 2023, involved reviewing internal documentation and interviewing key staleholders, who were decision makers and owners of product transformation: Andrzej Knioła, Product Manager based in Warsaw, Poland, and Simon E. Jorn, Managing Director in Bergen, Norway. It provided insights into old products, the transformation process, as well as new product. One researcher worked at the case organization during the product transformation exercise in 2022, by observing and providing feedback. It's essential to note that the primary responsibility for the transformation was with the Product Manager. The series of interviews conducted, as well as thorough analysis of product documentation, together internal observations of transformation stakeholders and practicalities, allowed the researchers to formulate the study narrative. The case organization's feedback and improvement suggestions were considered, and the research results were reflected through consensus.

3. Findings and Discussion

In this section, we delve into key findings and discuss results while presenting additional research data. The case company embarked on delivering intelligent automation services in 2016, utilizing UiPath, a global RPA market leader valued at 8.9 billion USD [14]. They were early adopters of UiPath, the third partner in UiPath's history and the first to implement business process automation in a cloud model. The company initially offered two primary process automation products: 'on-prem' and cloud automation.

The ‘on-prem’ model, while appealing to a number of customers due to its compliance with privacy regulations and organizational mandates, required a setup of proprietary computing infrastructure. This model imposed significant resource allocation, time commitment, and capital expenditure obligations, similar to the establishment of an internal Center of Excellence (CoE). In contrast, cloud automation catered to companies that preferred to delegate operational functionalities to external providers, facilitated by software robots that operated continuously, thus reducing post-contractual client engagement. As described by Product Manager and supported by Managing Director, the novel automation service product sought to provide a clear, customer-centric, and predictable offering. The product was named Robot as a Service - Process Automation (‘RaaS-P’), and got anchored in simplicity and predictability, aiming to demystify the facets of automation for stakeholders, eliminating the need for heavy engagement. This comprehensiveness extended from pre-commitment through pricing, execution, ongoing support, and service termination. A key attribute was its transparency, particularly in terms of tax implications and quality of deliverables. RaaS-P resonated with a wide range of organizations and addressed diverse automation objectives encompassed within parameters such as cost effectiveness, operational throughput, quality assurance, regulatory compliance, and time optimization. Operational modalities were facilitated by virtual machines in which robotic tasks were performed. Such environments were either client-centric or managed under the aegis of

ECIT Veny. Process assessments were regimented, using standardized workshop templates accompanied by favourable pricing offerings. As presented at Figure 1, robotic allocations were process-specific:

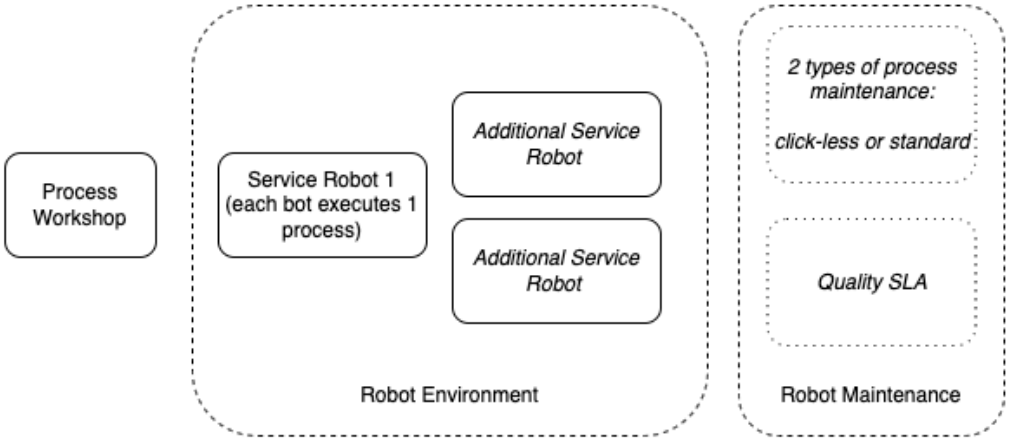

Figure 1: RaaS-P model

Maintenance was envisioned as a static monthly expense, contingent on automation modalities, either click-less or traditional. Automated operations were tied to a fixed monthly fee, ensuring operational smoothness. A significant change in the new product was the approach to service level agreements (SLAs), with a focus on customer-centric key performance indicators (KPIs) instead of traditional SLAs, like uptime. The SLA for RaaS-P was based on the guarantee that automation would start within a specified time after a triggering event, prioritizing reliability over platform uptime. The focus was on minimizing the actual business impact of automation disruptions. At the same time, it is important to highlight that the approach of ECIT Veny was based on its culture of experimentation, constantly improved by rapid prototyping and market feedback. The company's journey in providing automation services, was a transition to a simplified and predictable automation solution, and the shift in SLA metrics to prioritize customer-centric performance over vendor-focused metrics.

4. Conclusions

The RPA market has seen rapid growth, aligning with the broader trend of shifting to low-code software at global business. Our single case study on ECIT Veny examines the gradual shift from 'on-prem' to 'as-a-service' model, focusing on their drivers and effects on cost, quality, and customer experience. The key triggers of this shift include industry trends and internal experiences. Factors like cost pressures brought by COVID-19 pandemic, rising inflation, and salary expectations played a crucial role, in line with previous findings by Kedziora et al. [15]. A notable observation is the increasing complexity of implementing new robots, as companies progress in their automation journey. As the RPA market matures, the emphasis shifts from technology to addressing customer needs, fostering a more customer-centric approach. Triggers for this transition include changes in vendor licensing from 'on-premise' to 'as-a-service,' macroeconomic factors, and the growing prevalence of remote work. A key finding is the novel approach to service level agreements (SLAs) based on availability, job stability, recovery, and transaction quality, underpinning the principles of simplicity and predictability. The 'click-less' SLA option for process maintenance, which operates at the back-end of processes, has not been discussed at RPA research so far. Standardized process discovery processes are also highlighted, echoing previous works like Seppänen et al. [16] and Weder et al. [17]. While the study focuses on a single organization, replicating this research across diverse settings, cultures, and domains is recommended. Furthermore, exploring the influence of artificial intelligence (AI) on various lenses of software production, incl. requirement specifications, development and operations

(DevOps) is recommended. We also suggest studying how automation service choices align with a company's digital transformation strategy. It would be also interesting to examine the setups and circumstances of building and transforming software start-up companies, in line with reshaping their product offering.

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