

**Mobile Process Workflow**

Loic Niragire

TIM-7010 Computer Networks & Mobile Computing

Dr. Phillip Davis

1. Selected paper (Analyzing and Enhancing Business Processes and IT-Systems for Mobile Workforce Automation – A Framework Approach)

The scholarly article I examine and critique in this paper is titled “Analyzing and Enhancing Business Processes and IT-Systems for Mobile Workforce Automation – A Framework Approach”. This article was selected due to the problem space it addresses, namely mobility workflow integration. With the rise of IoT devices and better network infrastructure, such as 5G, businesses are interested in streamlined work processes incorporating remote workers. Mainly, this paper focuses on Business-to-employee (B2E) applications. Where the primary goal is to facilitate the coordination of business tasks to employees. As a software architect who has engaged in delivering these types of applications, I found the article very appealing and thus why it was selected for review. Two other mobile application types also mentioned in this paper are Business-to-customer and Machine-to-Machine applications (Gruhn & köhler, 2007)

2. Problem addressed

The authors addressed mobility problems in a constantly changing business world. Businesses need to continually adapt to new rules, regulations, and business models. Meanwhile, there is a lack of a general framework that could facilitate these constant changes, especially one that incorporates mobile workers. Generally, this is an agreed-upon problem. Keeping remote workers handling routine tasks in compliance with new business models and regulations. The added mobility component implies that these workers may not always have access to the company’s information systems. Therefore, imposing a coordination challenge.

### 3. What was accomplished

The authors established a general industry-independent, task-based, mobile process framework that can describe most of today's mobile processes. They also presented typical factors that influence the design of these processes. These factors are divided into two distinct groups: influencing factors due to organization structure and business model versus those due to mobile information technology. Thereby describing a mobile process as a combination of these influencing factors. Lastly, the authors described the selection of factors as a multi-objective optimization concern between cost, time, and quality.

### 4. Methodology

The authors summarized the findings of mobility-related studies and abstracted out a general-purpose, industry-independent workflow process. To narrow down the scope of their proposed method, they restricted themselves to B2E-applications and avoided ties to any technology stack. I find this methodology appropriate. It illustrates the general problem concisely without getting into implementation details.

### 5. Possible extension to the research

Although the authors strived to remain technology agnostic, mobility workflow processes inevitably interface with Cloud-based resources. Therefore, a possible extension to this research is toward a cloud-based process, possibly a multi-cloud process. Most business organizations today have outsourced some, if not all, of their infrastructure to the cloud. Authors in (Heilig & Vob, 2015) presented a prototype, named JobRoute, a cloud-based workflow management system for vehicle routing with support for a real-time decision. Cloud-based solutions offer a flexible and economical model for organizations of various sizes. Moreover, they discussed the benefits of a cloud-based solution on the mobile workforce in terms of on-demand scalable

infrastructure. The ability for small businesses to meet spike demands without provisioning new infrastructure while only paying per usage.

Mobile edge computing (MEC) is another possible extension to this research for improved latency and security concerns. Ascertain tasks carried out by mobile workers may involve sensitive data. A common trend in these scenarios is to bring compute resources closer to the source to reduce risk exposure. Additionally, to ease network loads and improve mobile worker's experience, it is essential to minimize the number of required trips to the cloud. Edge computing can bring these features to the presented framework. KubeEdge project (KubeEdge Project, 2021) explores the ability to compute at the edge by leveraging containerized applications on Kubernetes. Authors in (Bonomi, Milito, Zhu, & Addepalli, 2012) give a detailed discussion of richer applications and services enabled by extending cloud computing to the edge of the network. They argue that edge computing, also referred to as Fog computing, is the appropriate platform for several critical IoT services and applications.

## 6. Methodology

The authors gathered findings from various conducted case studies on mobile applications and workforces, integrated mobility architecture, and mobile business processes. Business processes analyzed were taken from different industry sectors ranging from electricity/utility, construction, and banking. These findings formed a consensus model of common factors that make up mobile process workflow. They presented possible usage scenarios of their framework and dived into analyzing influencing factors in each case. Overall, I find the methodology in this paper lacking necessary details such as selection criteria for selected reference papers. Additionally, it would have been more helpful to utilize generated datasets from previous case studies supporting the proposed framework. Without insight into data

collection processes and analysis performed in referenced case studies, it is unclear how the authors can relate those findings to the problem addressed in this paper.

### **References**

- Bonomi, F., Milito, R., Zhu, J., & Addeparli, S. (2012). Fog computing and its role in the internet of things. MCC Workshop on mobile computing (pp. 13-16). Helsinki, Finland: ACM.
- Gruhn, V., & köhler, A. (2007). Analysing and enhancing business processed and IT-systems for mobile workforce automation: a framework approach. Euro American conference on telematics and information systems (pp. 1-8). ACM.
- Heilig, L., & Vob, S. (2015). A Mobile cloud workforce management system for SMEs. International conference on design science research in information systems and technology (pp. 391-395). Switzerland: Springer international publishing.
- KubeEdge Project. (2021, May). Compute at the Edge. Retrieved from kubeedge.io:  
<https://kubeedge.io/en/>