Flexibility and Evolution in Process-Aware Information Systems: All Problems Solved?

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Flexibility and evolution in Process-Aware Information Systems (PAIS) have been intensively investigated for almost two decades and mature solutions [RW12], academic prototypes, e.g., the CPEE [MRM14], and even commercial systems, e.g., AristaFlow [LKRD10] have been developed. Starting from this statement, one could ask the following questions:

- Are there still open challenges and questions?
- Is the adoption of flexible PAIS still behind expectations in practice? And if yes, why is this?

The talk tries to answer these questions along the following building blocks:

1. Current situation and state of the art. As surveys [RRD04a, SMR+08] and books [RW12] show, flexibility and evolution in PAIS cover several dimensions ranging from design time flexibility (by underspecification or based on declarative models), runtime flexibility where we can distinguish between “foreseen” exceptions (to be dealt with by compensation or rollback) and “unforeseen” exceptions (dealt with by, e.g., ad-hoc changes of single process instances) to process evolution (meaning the migration of running process instances after changing the process schema). In addition, different kinds of flexibility might arise in interplay [RRD04b]. But not only process models and instances might be subject to change, also other aspects of the PAIS can undergo adaptations such as the organizational structures and access rules [RR07].

2. Challenges and requirements from practical projects. Insights from developing flexible process technology for the manufacturing domain (cf. ADVENTURE\(^1\) project), the care domain (cf. ACaPlan\(^2\) project), and collaborative process scenarios (cf.

\(^1\)http://www.fp7-adventure.eu/
\(^2\)http://cs.univie.ac.at/project/acaplan
3. Challenges and directions in research and technology transfer. One important conclusion that hence can be drawn is that flexibility and evolution in PAIS cannot be considered in isolation. This insight has been already gained when stating that different aspects of the PAIS might be subject to changes and changing one aspect might have more or less severe effects on the other aspects as well [RR07]. Specifically, if we understand flexibility in PAIS as a non-functional requirement, it cannot be considered in isolation from other non-functional requirements such as compliance and security, interoperability, or usability. Figure 1 sketches some of these requirements that might coincide with flexibility in PAIS. It is obvious, for example, that without providing users with some understanding of what a change means and what effects it might have, the adoption of flexible process technology might be low [KWRM13, RWRW05]. Moreover, violating existing compliance or security requirements by changing a process model or instance is not constructive as well [LRM14]. Finally, providing flexibility only for centralized process scenarios (“in-house processes”) is not enough. In turn, interoperable process scenarios between different partners or organizations can be also subject to change and it becomes even more important to be able to control the change effects potentially spreading over the collaboration [FRMR12].

In summary, the talk will raise the claim that flexibility and evolution in PAIS are still “en vogue”, i.e., crucial in practical applications and still posing many challenges questions

http://www.wst.univie.ac.at/communities/c3pro/
and research directions, particularly, at the interfaces and combinations of different aspects and requirements.

References


