

Adaptive Case Management

Leveraging open source technologies to perform knowledge work

Proposal

eingereicht von

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the case team is knowledge work, and non-traditional process automation techniques are needed to support case workers.

Several recent and ongoing projects at the European Commission aim to meet the needs of case workers involved in one or more of the mentioned fields: DG Trade developed the Negotiation Support Tool (NEST) prototype, assisting trade negotiators; DG Taxation and Customs Union will release Customs Decisions (CD) in 2017, connecting economic operators with customs officials; DG Competition is undertaking the Case Management Rationalisation (CMR) exercise, aiming to support a wide variety of case workers across several business domains.

I will examine these projects in detail, discuss the lessons learned, and propose an open source-based solution capable of handling the kind of unpredictable knowledge work faced by public administrations.

2 Expected Results

The aim of this work is to present a solution for an adaptive case management system based on open source technologies.

The reader will be introduced to the context of case management. A glossary will be established, based on the terminology used in recent publications by several authors, e.g. Keith Swenson, Max Pucher and Jacob Ukelson.

Next I will examine the Case Management Rationalisation (CMR) exercise, an ongoing project aiming at delivering a common case management system for several Directorate Generals of the European Commission. Based on the reusable building blocks defined by CMR, I will identify the core features of an adaptive case management system, and discuss how they can facilitate the work of case managers, handlers and assistants.

I will then discuss Negotiation Support Tool (NEST) and Customs Decisions (CD), two recent service- and business process-oriented case management systems developed at the European Commission. By examining the implemented features, the reader will gain an understanding of the practical application of case management concepts, as well as the challenges involved in designing service- and business process-oriented IT systems. At the same time, I will use NEST and CD as examples to demonstrate how structured processes fall short of the needs of knowledge workers.

Based upon the core features identified by CMR and lessons learned from the NEST and CD projects, I will propose a solution for a service- and business process-oriented adaptive case management system using open source technologies, which addresses the issues identified earlier. I will show how the combination of Activiti (a Java-based business process execution engine), CMIS (an open standard for document management interoperability) and LDAP (an industry standard application protocol for access control) can be leveraged to implement the foundation of an adaptive case management system.

3 Methodological Approach

The methodological approach consists of four steps.

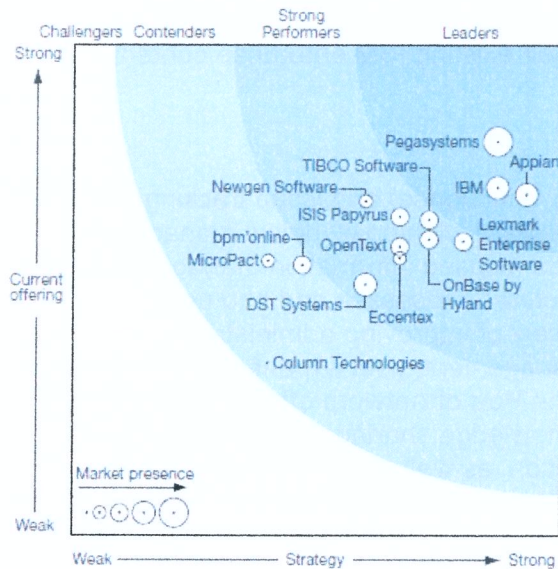


Figure 1 The Forrester Wave: Dynamic Case Management, Q1 '16



Figure 2 Gartner Magic Quadrant for BPM-Platform-Based Case Management Frameworks

4.1.1 Pegasystems

Pegasystems leads the field in respect to predictive analytics. It enables adaptive behaviour at execution time through the use of rules, events and ad-hoc tasks, and offers the configuration and personalization of reports and dashboards. Pega 7 relies on a heuristics-based rules and analytics engine and excels at rules versioning, allowing cases to adapt to new requirements. While it provides integrated social and collaboration features, data is not used as the primary case object, due to Pega 7's origin in the domain of traditional process automation. The pricing model is cost-prohibitive to small and medium enterprises and the Pegasystems methodology requires customers to adopt a new development paradigm, which modifies the traditional roles of stakeholders like business users, analysts and IT developers. [4]

4.1.2 Appian

Appian links unstructured social interactions to structured processes, and provides dual support for process-centric as well as data-centric cases. It has a mobile-first design approach, and offers pre-built business solutions (as well as tools and extensions) through an AppMarket. While customer satisfaction is high, the pricing model is demanding, and Appian follows a top-down change strategy, limiting the options for third parties to maintain innovative solutions on top of the Appian platform. [4]

4.1.3 IBM

IBM Case Manager includes various advanced analytics components like IBM WATSON, IBM Datacap and IBM SPSS, which allow for advanced automation capabilities like case initiation, i.e. deciding when a case requiring human interaction should be launched, and semantic text interpretation, i.e. extracting and classifying information from case-related documents. These strengths hint at IBM's origin in the domain of enterprise content management, and IBM continues to emphasize the importance of information for decision-

integration with other information systems; allowing tight integration between outside project partners and the project team. [9]

5 Relation to Information and Knowledge Management

“Adaptive case management systems are able to support decision-making and data capture while providing the freedom for knowledge workers to apply their own understanding and subject matter expertise to respond to unique or changing circumstances within the business environment.” [2]

This thesis presents recent case management systems developed at the European Commission, discusses their strengths and shortcomings, and proposes a solution based on open-source technologies, which addresses the problems posed by the unpredictability of knowledge work. The proposed solution draws on a wide array of topics from the Information and Knowledge Management curriculum.

5.1 Knowledge Management (188.486)

Adaptive case management relies heavily on knowledge management principles and techniques to facilitate the execution of unpredictable, non-repeatable, emergent and goal-oriented processes.

5.2 Business Engineering (188.39)

The automation of business processes requires them to be modelled. BPMN has become the de facto standard for specifying distributed workflows, and the business process execution engine selected for this thesis features extensive support for BPMN 2.0.

5.3 Distributed Systems Technologies (184.26)

Modern IT applications (including the prototype developed for this thesis) rely heavily on service-oriented architecture (SOA), i.e. location-independent processing of information. Business process execution engines are a powerful tool for managing distributed workflows and orchestrating services provided by an organisation and its partners.

5.4 Advanced Internet Computing (184.269)

The prototype developed for this thesis relies on various state-of-the-art technologies including Java, Spring, Apache Tomcat, Twitter Bootstrap, Activiti, LDAP and CMIS.

5.5 Internet Security (188.366)

Access control is a key requirement for document-centric processes, and this thesis presents a group-based approach to managing access to case resources.

5.6 Software Architekturen (184.159)

This thesis presents the architecture of an adaptive case management system integrating various components including business process execution, document management and identity and access management.