Abstract

ICT Mass Customization in Flowers & Food: Feasibility of Service-Oriented BPM Platforms[*]

C.N. Verdouw[1], C.M. Verloop[1] and H. Ten Voorde[2]

[1] *LEI Wageningen UR, P.O. Box 29703, 2502 LS The Hague, Netherlands*
[2] *Cordys, P.O. Box 118, 3880 AC Putten, Netherlands*

Firms in Flowers & Food industry are characterized by high uncertainty of both supply and demand. At supply side, they have to cope with great variability in their business processes because of dependency on living materials. They may reduce uncertainty by improving process control, but remain vulnerable to weather conditions, pests, decay and other incontrollable factors. At demand side, this type of firms faces a high degree of demand uncertainty among others because of weather-dependent sales and changing consumer preferences, especially if it is upstream in the supply chain. Furthermore, there are many environmental legislations and high consumer requirements on food safety. Information is of crucial importance to manage this uncertainty by enabling timely and network-wide information sharing and flexible response. This makes great demands on especially the interoperability and agility of supporting information systems. However, information systems in Flowers & Food are often patchy (island automation), characterized by poor integration and a lot of manual data re-entering. In order to achieve the required interoperability and agility, this paper proposes an ICT mass customization approach enabled by Business Process Management (BPM) platforms based on Service Oriented Architecture (SOA). In business literature, mass customization is broadly advocated as core approach to combine flexibility and customization with efficiency and standardization. It relates the ability to provide customized products or services through flexible processes with the ability to produce in high volumes at reasonable costs. Recently, application of mass customization principles to ICT has become possible by the progress at different lines of developments, especially the evolvement of modular software, shift from data-oriented to process-driven software, evolvement of Enterprise Application Integration (EAI), focus on architecture (model-driven software) and isolation of business logic in formalized rules. ICT mass customization combines the advantages of standard and customized software. It enables on-demand configuration of information systems from standard components with standardized interfaces. BPM platforms combine these developments in integrated and application-independent toolsets for business process definition, modelling, simulation, deployment, execution, monitoring, analysis, and optimization. In the paper, first a conceptual architecture of ICT Mass Customization using BPM platforms is developed. Next, the implementation of this architecture in the Cordys tool is described. Cordys is a single toolset that offers comprehensive BPM and SOA capabilities, including service bus technology, composite application development, business process modelling, business rules definition, data definition mapping, workflow execution, business activity monitoring and business intelligence. Finally, the applicability to agriculture is illustrated by means of a case-study in arable farming, in which integrated functionality for a geo-fertilizer advice process is composed from web services of different involved organisations for legislation, soil analysis, LAI (Leave Area Index) map and Advice Calculation. The EDITeelt+ standard is used for the content of the communication between the components. It is concluded that BPM platforms such as Cordys are promising toolsets to meet the high requirements on ICT interoperability and agility in Flowers & Food industry.