

## Chapter 2.8

# The ‘Social Experience Factory’ and the Fabrics of Collaboration in Virtual Communities of Practice

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### ABSTRACT

This chapter proposes and discusses the “social” experience factory (SEF). The SEF provides a general model and architecture supporting information-based product assembly by cross-organization communities of practice using interactive toolkits and practice-specific technologies. In terms of engineering ground, the SEF builds on two prevalent research tracks, namely experience-based and reuse-oriented proposals for the management of virtual assets and automated software assembly as conceived and facilitated by recent advances on software factories. Our account of the SEF focuses on functions facilitating electronic squads (i.e., cross-organization virtual community management) and workflows (i.e., practice management) which collectively define the scope of collaboration using the SEF. Further technical details on operational aspects of the SEF as deployed in the tourism sector

to facilitate vacation package assembly are presented in Chapter XXI in this volume.

### INTRODUCTION

Over the years, increasingly mature ICT infrastructures and novel software platforms and tools either general purpose or domain-specific, have established new grounds for augmenting human intellect across a variety of application domains and engineering disciplines. Amongst the primary beneficiaries are enterprises which face new opportunities for innovation, through novel means of production and customer-relationship management models. This is particularly evident in information-based industries whose products are non-material (intangible) and knowledge is central to gaining competitive advantage. In such domains, new product development is progressively dependent upon the capability to manage virtual (knowledge-based) assets through inter- or intra-organizational virtual partnerships.

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In this chapter our objective is to describe a technical framework for appropriating the benefits of virtual networking to assemble new information-based products and services from shared virtual assets. We refer to this framework as the ‘social’ experience factory (SEF) to highlight three characteristic properties. Firstly, the ‘social’ qualification is derived from the SEF’s orientation to provide support for the articulation of shared practices devised to establish a social protocol of cooperation between (otherwise autonomous) members of communities of practice. We are interested in communities of practice formed by representative knowledge workers engaged in virtual partnerships whose mission is to build and support a ‘collective’ information-based product. In this context, product assembly is conceived of as a *social practice* framed in designated workflows as much as in *social interaction*—considered as informal exchanges—concerning expression of opinion, commenting, reflecting upon and critiquing aspects of the product being developed – expressed electronically through dedicated tools.

Secondly, the primitive knowledge-based assets of the SEF are in the form of codified *experience* stored and manipulated in shared and reusable repositories (or data stores). These experiences include software product specifications (typically encoded as XML product families), visual domain-specific vocabularies for visualizing the product and its evolution, as well as reusable components for executing statements of the visual vocabulary.

Thirdly, the production process is highly automated, implying a *factory* setup whereby final products are assembled as instances of a corresponding product line/family. To this effect dedicated software plug-ins are needed to undertake the required transformation of an abstract model into a concrete offering matching the requirements and expectations of the intended customer base.

In the remaining of the chapter we provide insights to the theoretical roots and rationale of

the SEF as well as its functional and structural underpinnings as established in the context of recent research and development work. We also review on-going efforts to provide supporting software tools for enacting a variety of software engineering processes within a deployed SEF, thus establishing an effective operational model for collaboration in cross-organization communities of practice.

## **THEORETICAL LINKS AND STATE OF PRACTICE**

The SEF in its basic form constitutes a reference model for a mature virtual enterprise in which new product development is the collaborative outcome of virtual partnerships operating as communities of practice. The qualification ‘mature’ to the virtual enterprise is used to designate the SEF’s commitment towards continuous improvement of engineering practices to achieve high quality through mass customization and adaptations. In terms of theoretical ground, the SEF links with recent works on virtual organizations and cross-organization communities of practice. As for its engineering base, the SEF builds upon recent developments on software product assembly and in particular the notion of software factories so as to attain the goal of mass customization through adaptation. In the following we provide a brief review of relevant recent works in these research fields emphasizing how the SEF expands some of the prevalent conceptions.

### **Virtual Partnerships and Cross-Organization Communities of Practice**

In a recent article Ripeanu et al. (2008) define virtual organizations as ‘... flexible networks of independent, globally distributed entities (individuals or institutions) that share knowledge and resources and work toward a common goal...’.

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