

# Get Your Experience Factory Ready for the Next Decade: Ten Years After “How to Build and Run One”

Frank Bomarius<sup>1</sup> and Raimund L. Feldmann<sup>2</sup>

<sup>1</sup> Fraunhofer Institute for  
Experimental Software Engineering (IESE),  
Fraunhofer Platz 1,  
67663 Kaiserslautern, Germany  
Tel.: +49 631 6800 1201

[frank.bomarius@iese.fraunhofer.de](mailto:frank.bomarius@iese.fraunhofer.de)

<sup>2</sup> Fraunhofer Center for Experimental Software Engineering (CESE) 4321 Hartwick Rd - Suite  
500 College Park, 20742 MD, USA  
Tel.: +1 301 403 8933  
[rfeldmann@fc-md.umd.edu](mailto:rfeldmann@fc-md.umd.edu)

**Abstract.** Ten years after the presentation of the tutorial “The Experience Factory: How to Build and Run One” at ICSE 17 in 1995 [4], the idea of building such a Learning Software Organization (LSO) is in wide spread use. Meanwhile, the Experience Factory (EF) concept [2], i.e., the systematic goal-oriented utilization of *experience*, is also being successfully applied outside the domain of Software Engineering [11], [12]. However, defining and implementing a successful Experience Factory is still a challenge [9]. In this tutorial we take a look at existing concepts on how to identify and structure the *content* of the experience base (EB), discuss solutions for how to *implement an* EB, and present *processes* on how to setup, run, evaluate, and maintain an EF in an organization. The tutorial is based on the authors’ organizations’ experiences with implementing EFs in research, industry, and government environments.

**Keywords:** Experience Factory, Experience Base, Knowledge & Experience Management, Experience-based process improvement.

## 1 Objectives

The general goal of this tutorial is to provide an overview on how to define and successfully implement a state-of-the-art Experience Factory (EF) infrastructure [2] and how to systematically build up and manage the experience of an organization. Based on our practical experiences (e.g., [5], [8], [11], [12]), we will discuss different aspects ranging from processes via tools and implementation techniques to different EF sizes and scalability. More specifically, the goals of this tutorial are:

- to provide participants with a method for setting the goals of an EF and identifying relevant content to be captured in the Experience Base (EB);
- to describe guidelines and principals on how to organize and structure an EB to effectively support the identified learning processes;

- to discuss an approach for how participants can tailor EF requirements to their specific organizational needs (e.g., specific environment/domain, distribution, eBiz support);
- to give an overview of candidate implementation technologies and how to select the appropriate ones for incremental implementation of the EF;
- to guide participants in defining necessary processes for running, evaluating, and maintaining the EF;
- to present examples and lessons learned so as to help avoid common problems and pitfalls.

The material included in this tutorial is not limited to the authors' own experiences. Lessons learned and research results regarding EF installations such as [1], [3], [6], [7], [10] are integrated in the approach and presented as examples.

## **2 Scope**

This tutorial aims at industry practitioners, managers, and developers alike, who want to learn more about how to successfully design, implement, and run an EF. Attending this tutorial will help the participants (not only from the software domain) to initially setup or to further develop and improve their organization's EF. Thereby, participants can effectively support improvement activities (such as TQM, ISO 9000, CMMI or SPICE, TSP) to gain competitive advantages. The tutorial will also provide practical guidance on how to evaluate the cost-benefit of an EF in an organization. .

## **3 Structure of Contents**

### **I Introduction**

The introduction sets the stage for understanding the EF concepts and its capabilities as well as its limitations. This includes:

- The "original" EF organization
- What can be expected from an EF
- Common misconceptions

### **II Example Applications of EF in Today's Organizations**

Examples from different domains and of different sizes are presented, thus demonstrating the flexibility and scalability of the EF concept:

- Software engineering research support
- Software process improvement (SPI) support
- Knowledge intensive quality assurance support
- Knowledge portals