

Vaasan yliopisto
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Designing of Virtual Factory Information System By Enterprise Portal

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Agenda

- Introduction
 - Basic Concepts
 - Research problems
- Our Solution
 - Enterprise Portal for Virtual Factory
 - Prototype implementation



Introduction

- Virtual Enterprise (VE)
 - Collaborate with other enterprises
 - Concentrate on own core competencies
 - Contribute to the total value chain
- Virtual Factory (VF)
 - Geographically dispersed factories
 - Plug & Play
 - Fulfill the new products' requirements



Introduction (conti.)

- VF is highly relying on Information System
 - Need modern technologies
 - But many solutions only support traditional transaction-based business process
 - Not sufficient to collaborative process and multiple parties
- Problems:
 - Lack of comprehensive IT support
 - Lack of efficient communication



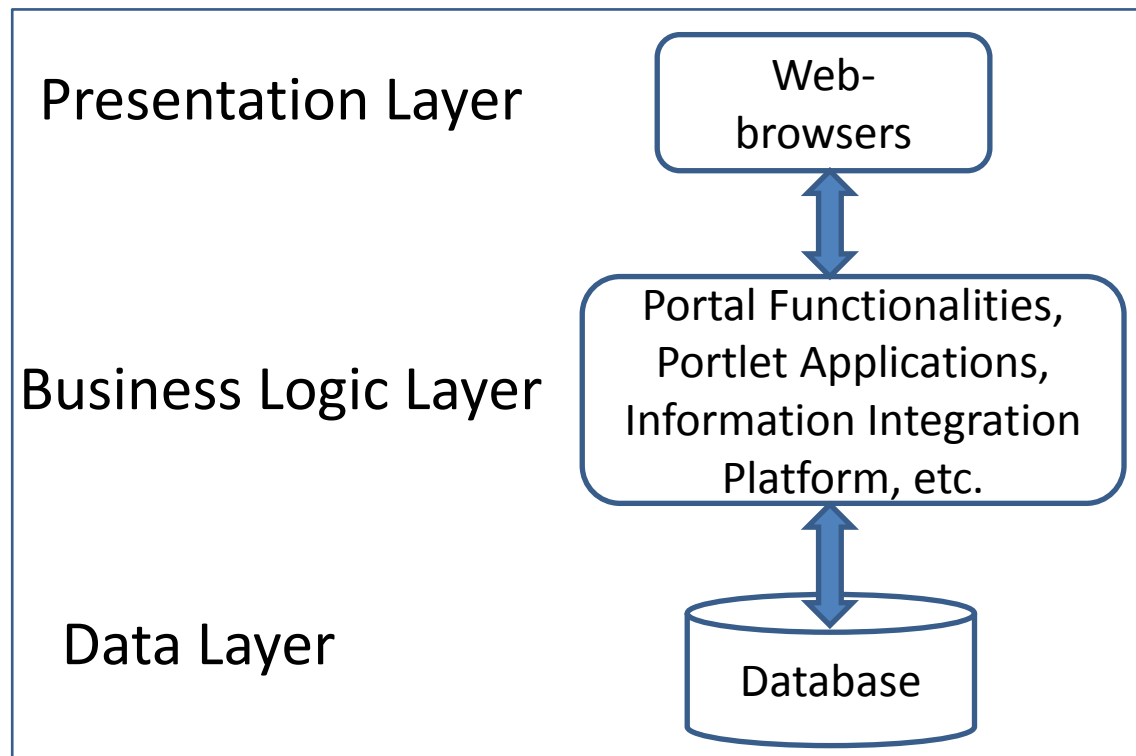
Introduction (conti.)

- Enterprise Portal (EP): is a solution to develop and maintain integrated, personalized environments for collaborative commerce.
 - Enterprise-wide integration
 - Internal/external interaction
 - Component-based development approach
 - Integration of user experience and relationship management componenets



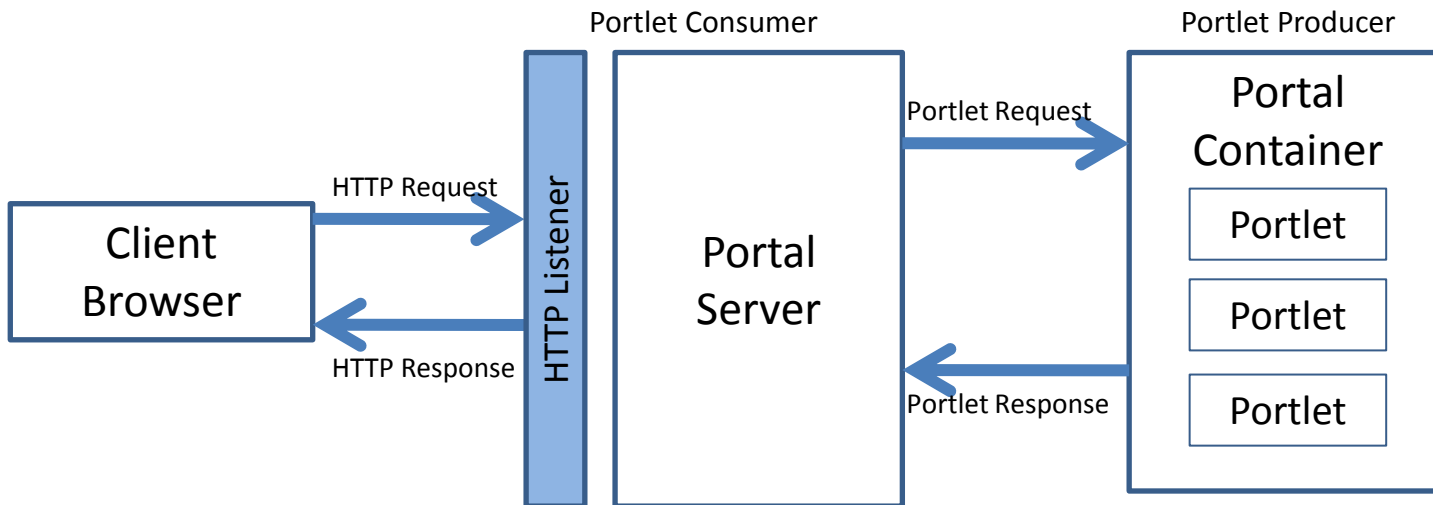
Introduction (conti.)

- Architecture of Enterprise Portal



Introduction (conti.)

- Enterprise Portal technology

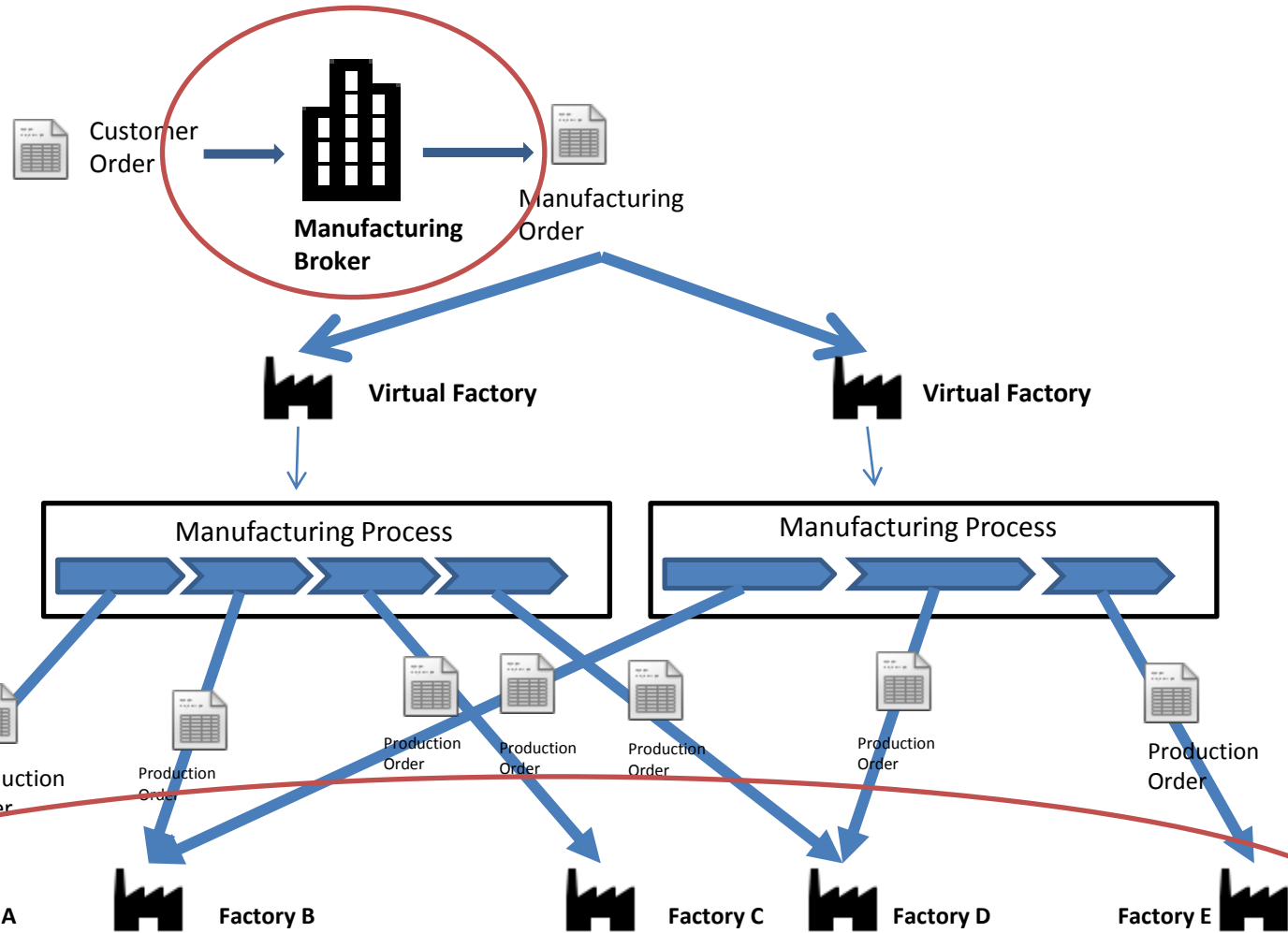


Introduction (conti.)

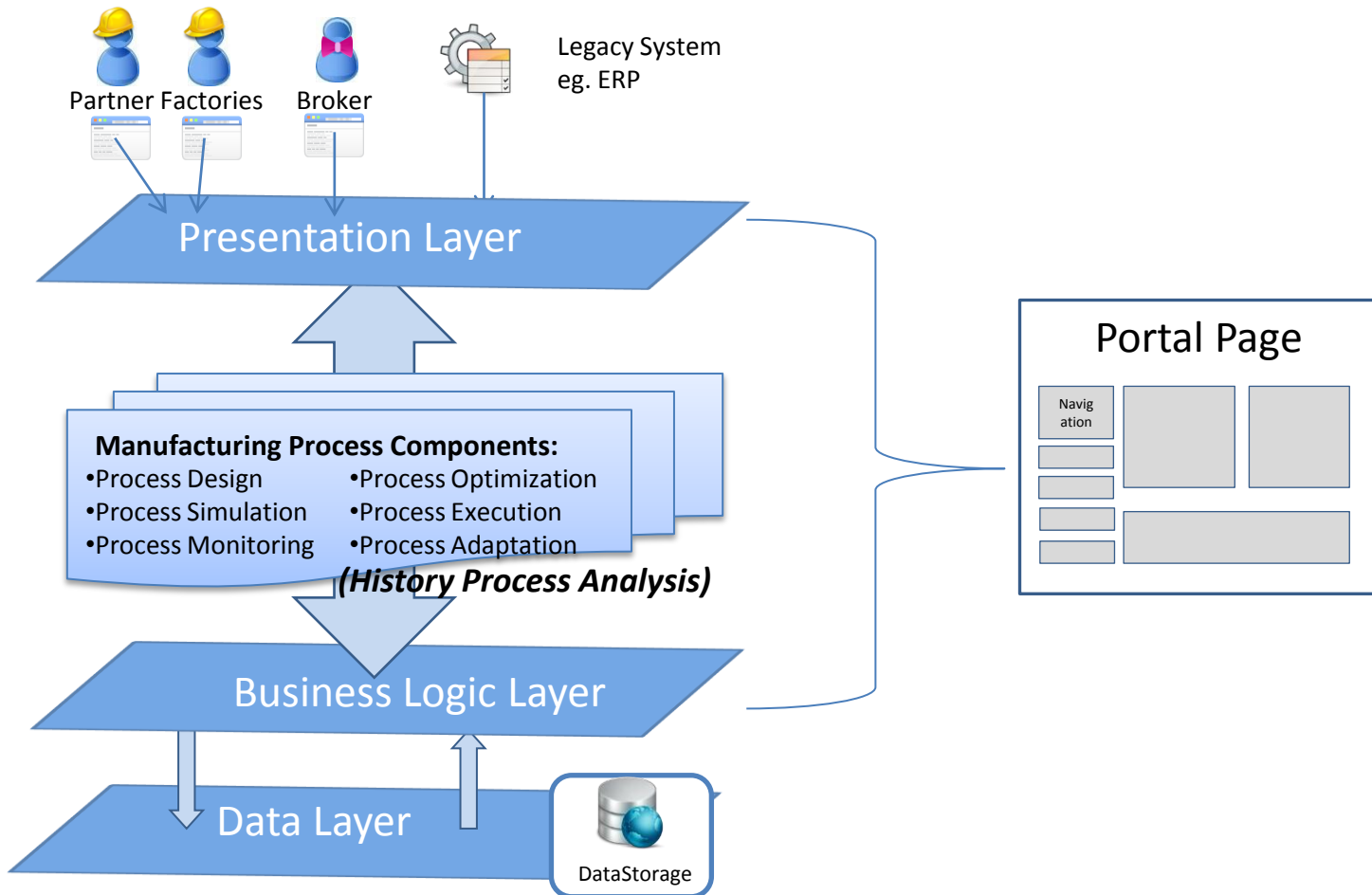
- Our Solution:
 - Design an integrated system to support collaborative manufactories in the form of Virtual Enterprise
 - Enterprise Portal for Virtual Factory (EPVF)
- Challenges:
 - lack of theoretical guidance for Enterprise Portal implementation
 - insufficient methods and tools to support Virtual Factory and other kind of Virtual Enterprise collaboration




Enterprise Portal for Virtual Factory

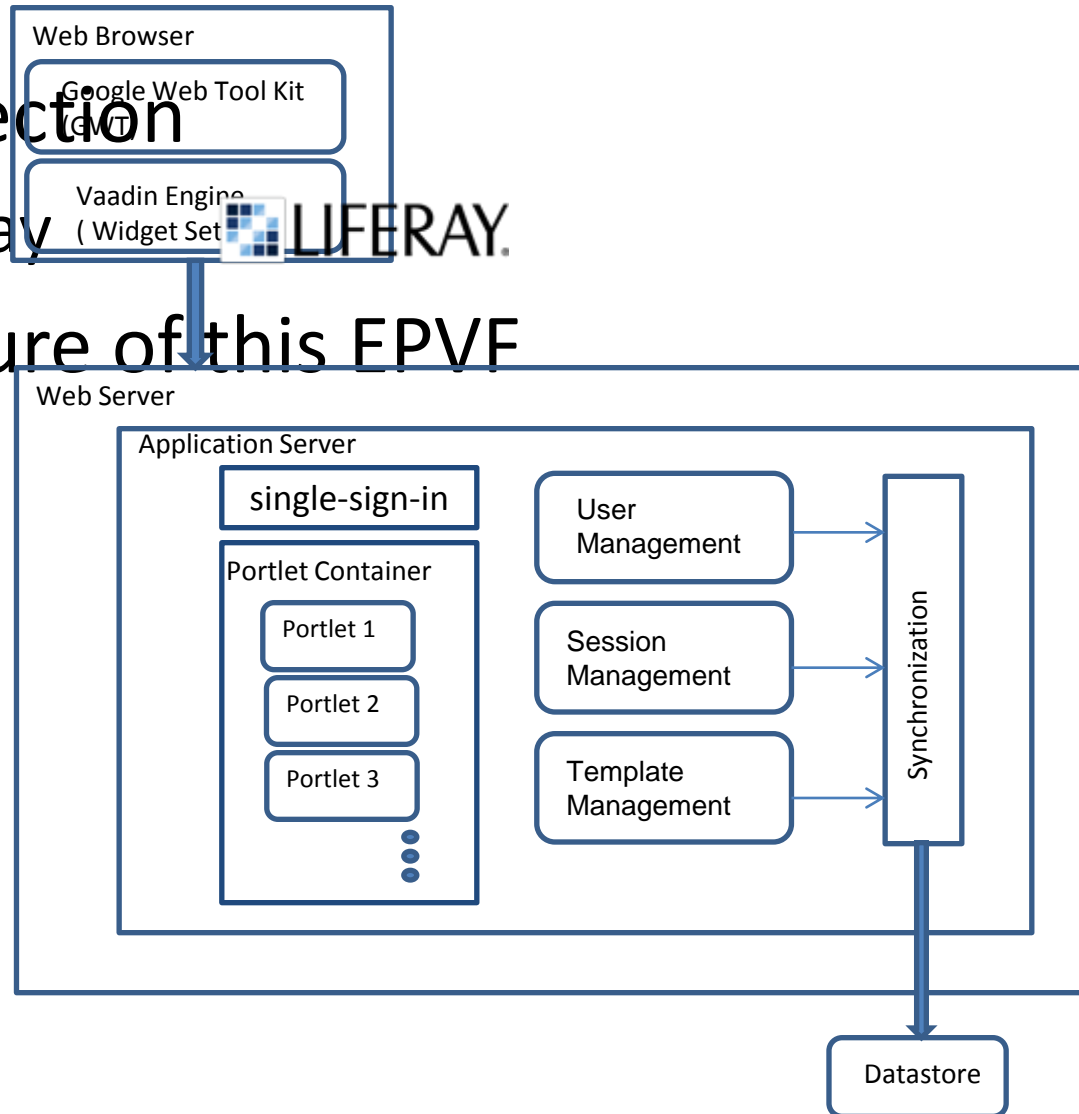


Enterprise Portal for Virtual Factory



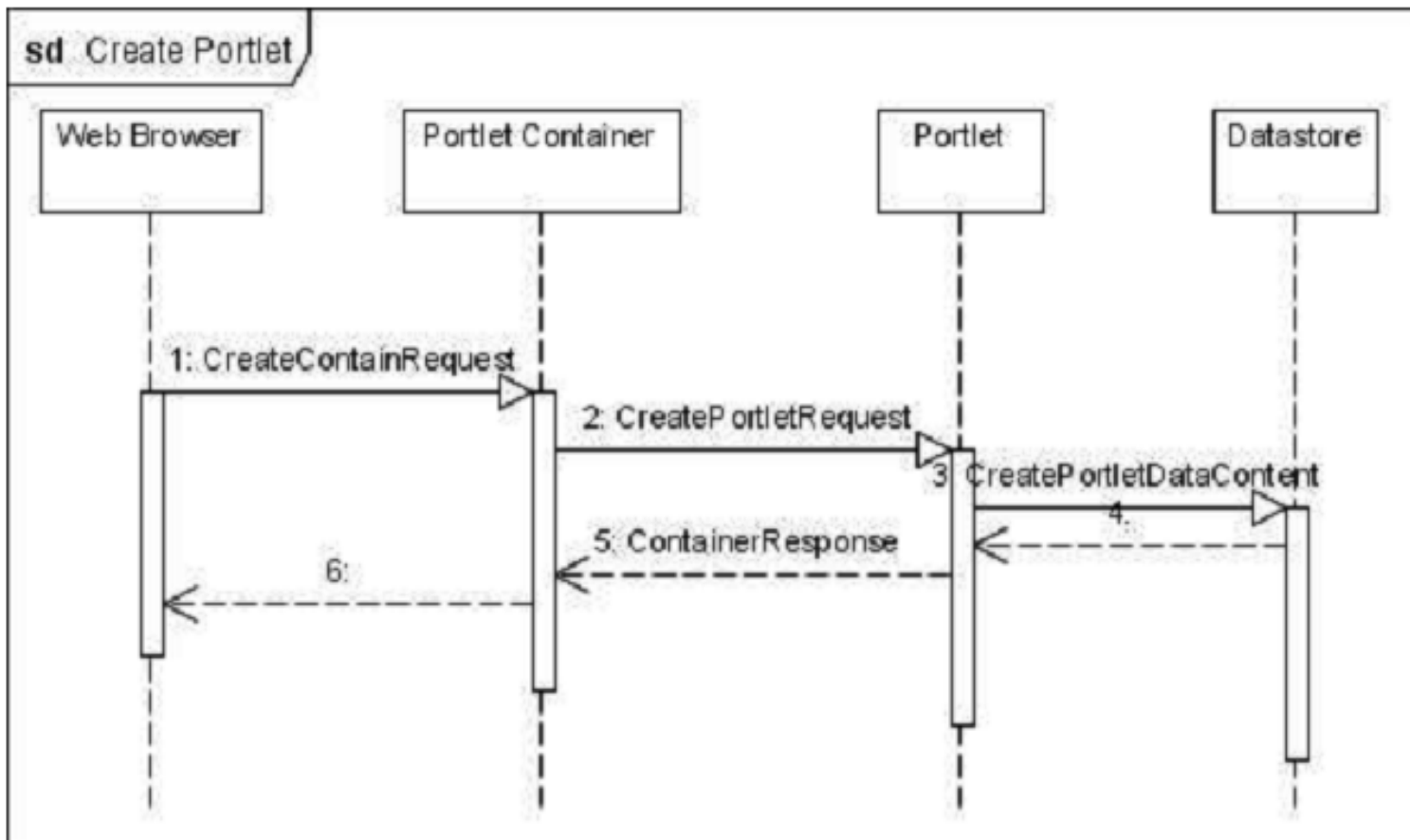
EPVF Prototype implementation

- EP selection
 - Liferay (Widget Set) 
- Structure of this EPVF



EPVF Prototype implementation (conti.)

- Internal Sequence Diagrams (Create Portlet)



EPVF Pro

- Internal

tion (conti.)

Portlet)

The screenshot displays the EPVF Pro interface with a search bar at the top and a list of applications below. A red box highlights the 'Virtual Factory' category, which includes sub-items like 'Process Design', 'Process Optimization', 'Process Simulation', 'Process Execution', 'Process Monitoring', and 'Process Adaptation'. Another red box highlights a message box that says 'Drag a portlet to place it on the page.' Below this is an 'Install More Applications' button. On the left, a diagram shows a 'Web Browser' portlet connected to a 'Datastore' portlet. On the right, a 'Community Overview' panel lists various communities such as 'ADVENTURE', 'Energy Chain', and 'SATEK'. At the bottom, an 'Order Summary' table is visible.

Customer ID (Based on ordered price €)	Order ID
.....	199506



EPVF Prototype implementation (conti.)

- Usage Scenario

Liferay Portal

The screenshot displays the 'Adventure' simulation software interface. At the top, there is a toolbar with 'Add', 'Manage', and 'Toggle Edit Controls' options. Below the toolbar is the 'Adventure' logo and the tagline 'The Plug-and-Play Virtual Factory'. A navigation menu includes 'Process Design', 'Process Management', 'Partner management', 'About', and 'Application Management'. The breadcrumb trail shows 'technobothnia.fi > ADVENTURE > Process Design > Simulation'. The main window, titled 'Web Content Display', shows 'Process_1 > Simulation Details'. On the left, a process flow diagram features nodes labeled with Greek letters (alpha, sigma, gamma, delta, epsilon, zeta) and letters (m, n). A green arrow points to a node labeled 'Currently Simulated'. On the right, simulation parameters are listed for three partners:

- Partner 1: finished**
Quantitative Parameters: 7.2 days (O), 9.1 days (M), 10.2 days (P)
Qualitative Parameters:
Set 1: Probability 0.4
x: 17
y: 3
Set 2: Probability 0.6
x: 12
y: 1
- Partner 2: finished**
Quantitative Parameters: 7.2 days (O), 9.1 days (M), 10.2 days (P)
Qualitative Parameters:
Set 1: Probability 1.0
x: 17
y: 3
- Partner 3: in progress**

At the bottom right of the window, it says 'created with Basso4q Mockups - www.basso4q.com'. The system tray at the bottom left contains icons for a pencil, a gear, and a plus sign.



Conclusions

- EPVF:
 - all the functionalities to facilitate VF activities
- Contributions:
 - Scientific contribution: provide an approach for dispersed factories integration in the sense of Virtual Factory
 - Practical contribution: enable dispersed factories collaborate seamlessly by providing them with a consolidated web-based EPVF platform



- Thanks for your attentions!

