Integrating Process Modeling and Simulation with Benchmarking using a Business Process Management System for Local Government

1. Benchmarking

Data from Municipalities, Operational Parameters, Business Processes

Data — Operational Parameters — Process Reference Models

Municipality Profile → Benchmark of Municipality → Ranking of Municipality

✓ Benchmarking Results & Reports, Ranking of Municipalities

Process model (e.g. D.6.1 Waste collection)

DB2   DB3

Performance Indicators of the Process
(e.g. for Process: D.6.1 Waste collection:
D6.1-I1: Tons of garbage per vehicle
D.6.1-I2: Tons of garbage per route
D.6.1-I23. Mean time of reply in waste collection request

Forum

Υπηρεσίες	7	12
Κατανομή Προϋπολογισμών	5	8
Σχεδιασμός έργων	1	1
Διατύπωση παραπόνων	0	0
Διατύπωση προβλημάτων	0	0
Τεχνικά έργα	1	1
Πράσινο - Περιβάλλον	1	2
Πολιτισμός		
Αθλητισμός		

Διαβούλευση

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WEB – BASED SYSTEM "PSB – DMEP"

1. **Benchmarking**
2. **Management By Objectives (MBO)**
3. **Business Process Modeling and Simulation**
4. **E-Participation**

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4. E- Participation

Information from Citizens, Businesses

Business Processes Implementation

Application of Social Networking

Comments, Remarks

- On line Local Councils
- Participation on project design
- Participation in budgeting
- Evaluation and improvement of Public Services
- Complaints about offered public services
- Data collection about problems in business processes

Employees, Mayor

Stakeholders (Citizens, Businesses, etc)

✓ Comments, Remarks, Feedback

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2. Management By Objectives (MBO)

Values for Parameters, Values for Performance Measures, Benchmarking Results & Reports, National and Local Strategies

MBO Principles — Law Nr. 3230/2004 — Process Models based on Law

Objectives — Programs and Actions

Definition of new Year's Objectives and Procedures

Levels — Knowledge — Objectives
Fine Tuning — Programs
Monitoring of Objectives and Programs — Adaptation of Objectives/Programs

✓ Yearly Objectives (per level), Yearly Programs and Actions Monitoring of Objectives and Programs, Fine Tuning & Adaptations

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Monitoring of Objectives and Indices

Sales Funnel Activity

DB1 Municipality Database

DB2 Central Database of Indices (performance measures, values of parameters)

DB3 E-participation database

Ranking of Municipality

Process model (e.g. D.6.1 Waste collection)

Reengineering Consultant

Process Reference Model

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3. Business Process Modeling and Simulation

Best Practices, Best Processes of other Municipalities, Comments, Remarks, Historical Data, Objectives, Requirements, Parameters

Process Reference Model

Development of Alternative Scenarios for Process Improvement

AS-IS Process

Reengineered process/ System update

Simulation of Alternative Workflows

Performance measure/ Scenario

Best Scenario Selection

✓ New / Improved / Redesigned Process Improved Ranking of Municipality in Benchmarking Sub-System

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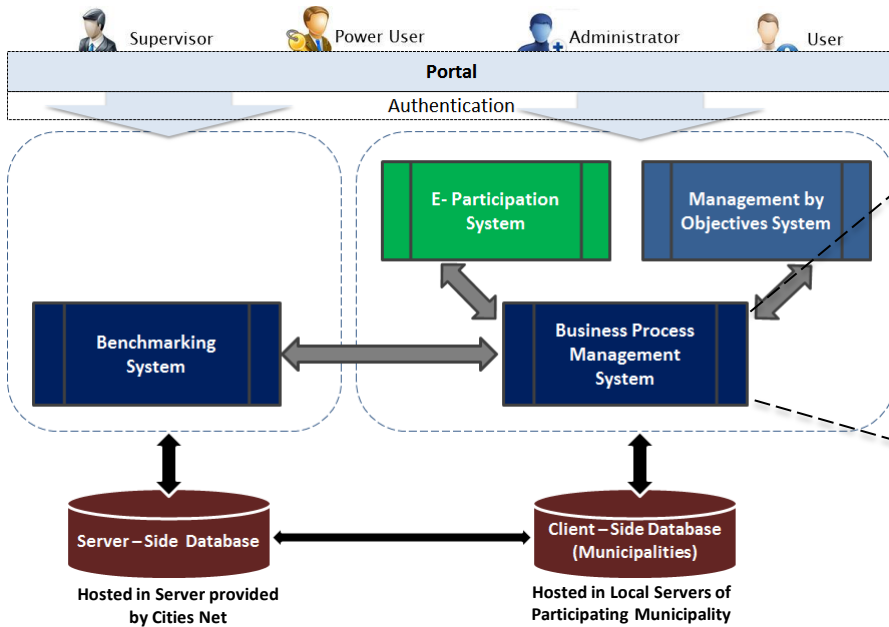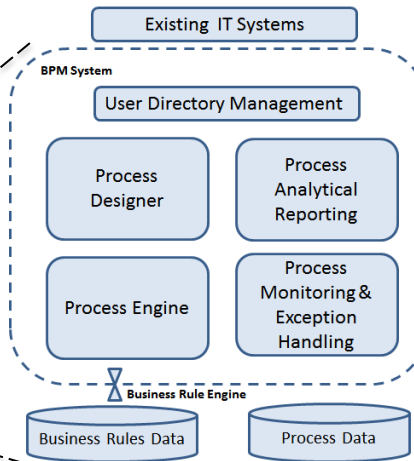
PSB-DMEP Research Project (www.psb-dmep.gr) : Public Services' Benchmarking, Design, Monitoring, & Evaluation Platform
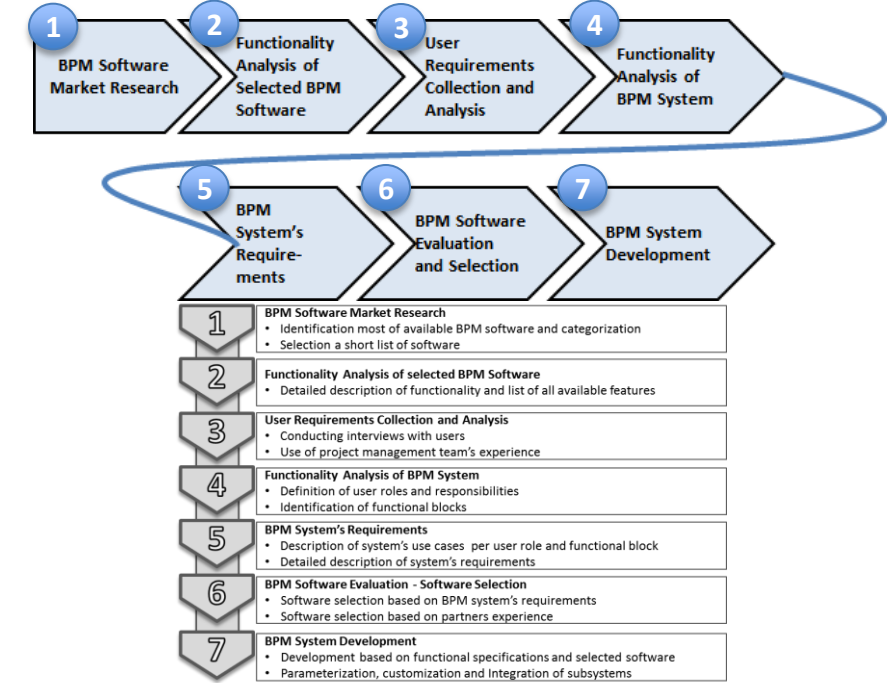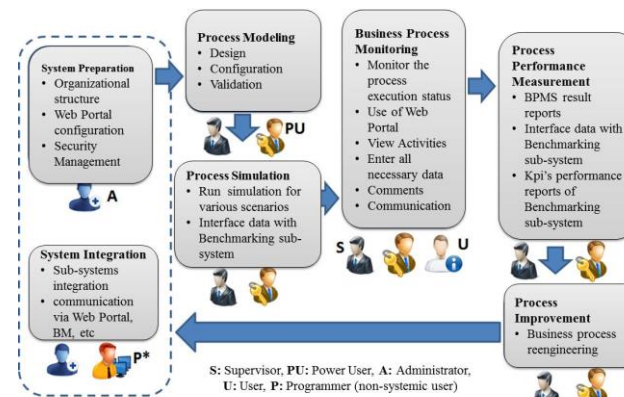
Abstract System Diagram

Supervisor   Power User   Administrator   User

Portal
Authentication

E- Participation System
Management by Objectives System

Benchmarking System
Business Process Management System

Server – Side Database
Hosted in Server provided by Cities Net

Client – Side Database (Municipalities)
Hosted in Local Servers of Participating Municipality

Business Process Management system: is the core system of PSB-DMEP, which will be deployed in Local government (Municipalities). It offers business process modeling and simulation functionality. Alternative scenarios of business processes are executed and performance is measured using same indicators as those measured in benchmarking. Best scenario (of best performance) is selected and process is redesigned.

Benchmarking system : will be used by the Municipalities in order to measure, evaluate and benchmark the performance of their business processes via KPI's. System creates detailed and customizable performance reports about organization's benchmark and ranking.

Management by Objectives (MBO) system: supports the application of MBO methodology in Greek local government, as it is described in the existing legislative framework.
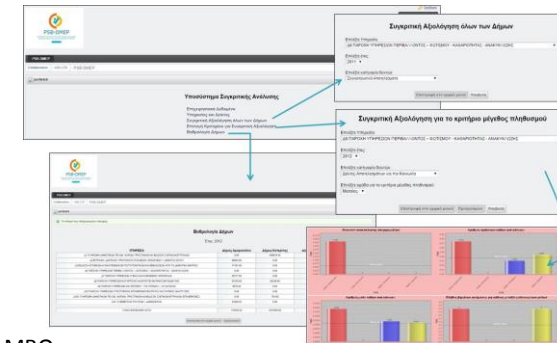
e-Participation system: supports the documentation, communication and social networking, acting as the integrated system's central point of communication with citizens and businesses, emphasizing on their feedback for public services improvement.
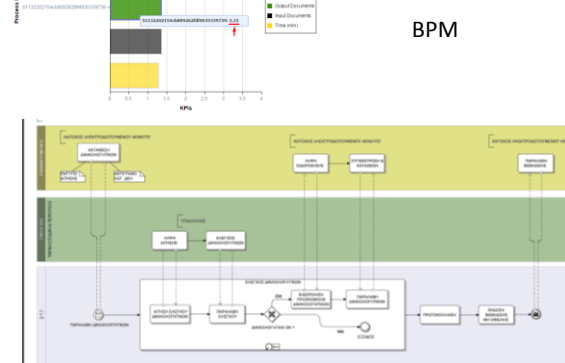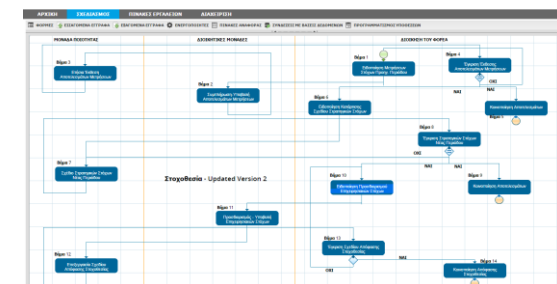
Partners:
1) National Technical University of Athens (NTUA) (www.ntua.gr),
2) Advanced Services Group Ltd (ASG) (www.asg.gr),
3) Bee Group IT and Consulting (www.bee.gr),
4) Municipality of Amarousion (www.maroussi.gr),
5) CitiesNet : digital cities of Central Greece (www.dccg.gr)

*This work is part of the research project "Public Services' Benchmarking, Design, Monitoring & Evaluation Platform (PSB-DMEP)" in research action: "Synergasia", which is implemented under the **Operational Programme: Competitiveness and Entrepreneurship (OPCE II), NSRF 2007-2013** and is co-funded by European Union (European Regional Development Fund) and Greek Government.*

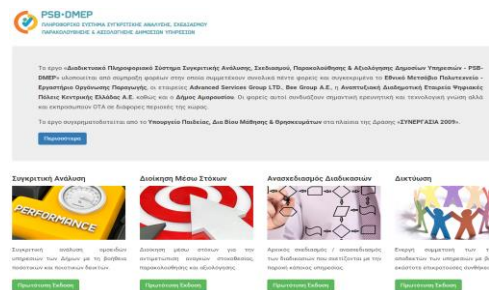## BPM System Architecture

Existing IT Systems

BPM System

User Directory Management

Process Designer
Process Analytical Reporting

Process Engine
Process Monitoring & Exception Handling

Business Rule Engine

Business Rules Data   Process Data

Functional Blocks and Roles of BPM System

System Preparation
• Organizational structure
• Web Portal configuration
• Security Management

Process Modeling
• Design
• Configuration
• Validation

Business Process Monitoring
• Monitor the process execution status
• Use of Web Portal
• View Activities
• Enter all necessary data
• Comments
• Communication

Process Performance Measurement
• BPMS result reports
• Interface data with Benchmarking sub-system
• Kpi's performance reports of Benchmarking sub-system

Process Simulation
• Run simulation for various scenarios
• Interface data with Benchmarking sub-system

System Integration
• Sub-systems integration
• communication via Web Portal, BM, etc

Process Improvement
• Business process reengineering

S: Supervisor, PU: Power User, A: Administrator, U: User, P: Programmer (non-systemic user)

System's Screens

BPM System Development Process

1 BPM Software Market Research
2 Functionality Analysis of Selected BPM Software
3 User Requirements Collection and Analysis
4 Functionality Analysis of BPM System
5 BPM System's Requirements
6 BPM Software Evaluation and Selection
7 BPM System Development

1 **BPM Software Market Research**
• Identification most of available BPM software and categorization
• Selection a short list of software

2 **Functionality Analysis of selected BPM Software**
• Detailed description of functionality and list of all available features

3 **User Requirements Collection and Analysis**
• Conducting interviews with users
• Use of project management team's experience

4 **Functionality Analysis of BPM System**
• Definition of user roles and responsibilities
• Identification of functional blocks

5 **BPM System's Requirements**
• Description of system's use cases per user role and functional block
• Detailed description of system's requirements

6 **BPM Software Evaluation - Software Selection**
• Software selection based on BPM system's requirements
• Software selection based on partners experience

7 **BPM System Development**
• Development based on functional specifications and selected software
• Parameterization, customization and Integration of subsystems

Benchmarking

BPM

MBO

Reference Models for 20 Processes of 7 Public Services

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