AN AGILE PLATFORM FOR THE DEVELOPMENT AND MAINTENANCE OF SERVICE-BASED SOFTWARE SYSTEMS FOR THE OPTIMIZATION IN TRANSPORT PROCESSES

Krzysztof Juszczyszyn, Adam Grzech, Paweł Stelmach, Łukasz Falas, Paweł Świątek
Agenda

• Introduction

• Business Process Optimization Methodology (BPOP)

• Business Process Optimization Platform (BPOP)

• Conclusions – unique features of the proposed approach
Introduction

• We propose Business Process Optimization Methodology for selection and development of analysis, planning and optimization methods for resource management in the information systems.
• Methodology is dedicated to the domain of transport and logistics.
• We introduce the Business Process Optimization Platform (BPOP), which is an implementation of the proposed Business Process Optimization Methodology (BPOM) logic.
• We have developed an innovative approach to the identification of decision making problems in transport companies, the description of these problems with the domain ontologies and the development of the formal models leading to the dedicated algorithms which are delivered as complex Web services.
• The BPOP products may be directly integrated into software products.
Introduction

A key research need addressed in the framework of the Methodology is the development and integration:

- methods of description, modeling, processing and optimization of business processes and the transport tasks being performed,
- algorithms for solving real-world optimization (decision making) problems,
- methods of flexible and adaptive composing adaptive of service-oriented making decision support systems in the context of a universal platform, which, in particular, will be used as a generator of domain-specific information systems.
Four use cases

• Path1: Solution is found
• Path2: New model of task is required
• Path3: Task class modification required
• Path4: New task class required
BPOP – domain ontologies

- tree or list of ontology concepts

Decision making class' description

- Consistency rules
  - Concept translation tables
Business Process Optimization Platform

What is the Platform?

– It is a set of components implemented as Web services
– Components are logically integrated and run on virtual machines
– They have unified user interface (Web-based)
– It is dedicated to fast definition and description of real-life optimization problems in order to support agile software development
Business Process Optimization Platform
Integration component
Algorithm implementation management
Kryteria

- Całkowity czas przejazdy trasy ma być minimalizowany
- Długość trasy ma być minimalizowana
- Koszt przejazdu trasy jest minimalizowany
- Koszt realizacji wszystkich kursów w każdej służbie (koszt przejechania dystansu wszystkich kursów i przejazdu między nimi)
- Maksymalizacja zysku z realizacji zleceń transportowych suma przychodów z zarealizowanych zleceń minus koszty przejazdu autotransporterów

Właściwości pojęcia

Koszt realizacji wszystkich kursów w każdej służbie (koszt przejechania dystansu wszystkich kursów i przejazdu między nimi)

Opis:
Brak

Określenie przez (atrybuty):

Powiązane z innymi pojęciami:
Task modeling
Task class repository

Dashboard

Klasy zadań VRP

Wymagana definicja klasy

Klasa zadań decyzyjnych

Dodaj

Edytuj klasę zadań decyzyjnych

VRP

PDVRP

PDPVRP (gen)

PDPVRPTW

PDPVRPTWC

Model MPK

Main  Modeler  Repozytorium  Słownik  Inter

Innowacyjna Gospodarka

Wrocław University of Technology

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Conclusions

- 16 case studies of real-life optimization problems
- 6 software prototypes
- Domain vocabularies for transport domain and 20 problem classes developed
Conclusions

The Platform has the functionality unknown in the current market solutions in the field of manufacturing of complex information systems, and supports:

• Software reusability (algorithms as services)
• Rapis service application development
• Domain knowledge accumulation
Thank you