Aspect of data communication security in the Central Node of Poland's Schengen Information System and Visa Information System Component

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Data communication security assurance in the Central Node of Poland's Schengen Information System and Visa Information System Component (in polish: Centralny Węzeł Polskiego Komponentu Systemu Informacyjnego Schengen i Systemu Informacji Wizowej – CW PK SIS i VIS) is crucial for building adequate trust of the operation of mechanisms of the Schengen agreement in Poland. Presented in this chapter are the security requirements, agreed by member states of the Schengen agreement, which fulfillment is subject to independent review during periodical SIS/SIRENE evaluations. The essence of law, organizational and technical role means have also been indicated for assuring a high level of SIS and VIS data communication security, which is higher than the standard level required by regulations on the protecting of personal data. Directions for further development of the implementation of the SIS and VIS in Poland have been presented in the conclusion.

Keywords: IT systems, ICT security, Schengen zone, Schengen Information System, Visa Information System

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Use case driven scheduling method of information technology project

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In this article, requirements-oriented project scheduling method is presented. The method is use-case-oriented and shows how to prioritize use cases and schedule realization of information system. The method can be useful for project managers to plan and manage realization of information system.

Keywords: software engineering, requirements, use-cases, project management

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Simulation efficiency analysis method of Java Enterprise Edition application

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In this article efficiency analysis method of Java EE applications was presented. Efficiency's measures of such kind of applications were described. Furthermore, discrete-event simulation modelling method Event Graph and its extension LEGOS were presented as well. Moreover, model of Java EE application was presented. An implementation of proposed model in Java and SimKit package was presented. In the paper, a project of simulation application was also described. The article encompasses description of simulation experiment used in efficiency analysis of Java EE application and example of results from such experiment.

Keywords: software engineering, simulation, enterprise applications, performance

Application of methods for determining flows in networks to military forces manoeuvre planning

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In the paper an application of methods for determining flows in networks to military forces maneuver planning is presented. Model of formal network as environment model for manoeuvre planning based on digital maps is defined. Optimization problem of redeployment planning of K objects from source region to destination one taking into account paths disjointness is considered. The method for finding one of the acceptable solution of considered redeployment problem based on method of solving maximum flow problem is described. The method for finding optimal solution of considered problem based on method of solving minimum cost network flow problem in some substitute network is defined. For both of the methods computational complexity is estimated. Some computational examples of presented methods are shown.

Keywords: manoeuvre planning, disjoint paths, flows in networks

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Using covering and resource allocation models to decision support in rescue actions and crisis management

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The paper deals with analysis of decision support models in rescue actions and crisis management and their using in practical problems. The work is focused to specific covering and resource allocation models. Review of numerous models (allocation, P-median, P-center) relating to single crisis situation as well as set of crisis situations and description of their using is presented. Optimization models of described covering and allocations problems are formulated as well as their computational complexity is estimated. Numeric example of using one of the defined models to optimal reallocate of rescue services based on a set of threats which are source of the hypothetic crisis situation in Warsaw agglomeration is presented.

Keywords: covering and resource allocation models, crisis management systems, decision support in rescue actions

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Constructing unitary matrices for quantum decision algorithm

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Thesis includes description of decision algorithm and a proposal of its quantum implementation. The algorithm is based on four steps, which lead to construct matrix form of quantum operator solving given decision task. To calculate matrix form of mentioned operator, for decision problem with n variables, a system of 2^{2n} equations should be solved – that is why, in this thesis, also a fast method of constructing unitary matrix were presented.

Keywords: decision algorithm, quantum implementation, fast method of calculating unitary matrix