Service-Oriented Applications Design Tool

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Abstract: **Paper presents tool for service-oriented applications design, which will improve the overall efficiency and reduce the time for development and adaptation of such applications in constantly changing environment.**

Keywords: **Business-process modeling, service-oriented applications, design tool.**

I. INTRODUCTION

Modern Internet-based information systems are based on multi-module service-oriented applications (SoA), operating a large number of functions and supporting interaction of many geographically distributed users in real time [1]. Due to the continuously changing requirements to the service and business environment, SoA require continuous reengineering and adaptation during their runtime, which leads to the complexity of their design and functioning support. Analysis of existing SoA design tools (BPWin, Enterprise Architect, etc.) has shown that they do not provide the formalization of computational independent workflow (CIWf) design at requirements analysis stage, and do not provide automated transformation of computational independent into computing workflows (CWf). This makes SoA design and re-engineering time- and costs-consuming. Thus, existing SoA design tools requires improvement.

II. SOFTWARE DESIGN TOOL

Due to analysis of existing software design tools, considering their extension ability and easiness, the Dia [2] was selected as the basis for proposed design tool development – BPMA (business process modeling and analysis).

BPMA provides formalized description of CIWf, their analysis in order to plan provided services, considering both functional and non-functional workflow parameters, automate CIWf transformation into CWf, and implements the workflow design method, proposed in [3].

BPMN [4] for CIWf formalized description was extended. CIWf analysis algorithms [5] allow to find minimal time of workflow execution.

BPEA consists of a few modules (Fig. 1). Module "init" is the central part of the tool. It is responsible for interaction with the user and Dia, builds user interface, verifies the data correctness and sufficiency, and runs the appropriate BPMA functions. "Props" module maintains and modifies properties of the workflow diagram and its objects (works, data, etc.). "Bplyzer" module implements algorithms for CIWf analysis [5]. Module "transform" provides workflow diagrams transformation [6]. "Reports" module generates reports and other information concerning workflows design and analysis. There are two service modules: "lang" contains language translations of the user interface, "errors" provides errors handling and output of information about errors.

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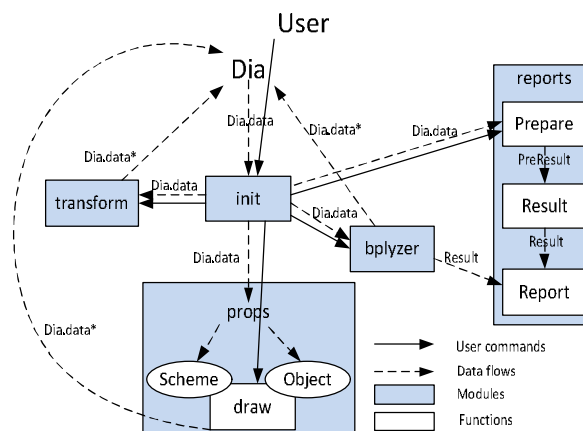E-mail: maxevgen@gmail.com

Fig. 1 BPMA work scheme

BPMA provides the possibility to save intermediate results of workflow modeling and analysis, allowing fast workflow design and re-engineering process.

III. CONCLUSIONS

Presented design tool supports computational independent workflow formalized description, their analysis and transformation into computing workflows, providing automation of SoA design by linking its all stages and reducing design and re-engineering time and costs.

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