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A Change Analysis Tool for Service-Based Business Processes

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Abstract. We develop an enabling tool referred to as Service Change Analyzer for analyzing change impact in service-based business processes. The presented tool in this demo is an implementation of our proposed approach for change management which includes a service-oriented business process model, a taxonomy of changes and change impact patterns associated with services and business processes, and algorithms for calculating change impact scopes.

Keywords: Service-oriented computing, Web service, Change management.

1 Introduction

Change management is critical and challenging in the context of service-oriented computing paradigm when multiple services are supported by a single business process [1]. The complex dependencies between services and business processes have not been carefully investigated in the existing work. In particular, it is still lacking of an effective tool to support change impact analysis for coupled services and business processes. In this demo, we present a tool: **S**ervice **C**hange **A**nalyzer (**SCA**) for enabling impact analysis when a change happens. The SCA is built up based on our previous work for change analysis, in which a service-oriented business process model is developed, types of changes associated with services and business processes are identified, and a set of change impact patterns for capturing change effect are specified [2]. The SCA accepts service changes as its input and it can give the detailed analyzed results for the change impact scope and provide suggestions for possible change impact patterns. This tool provides developers a standard practice to change the complicated change management tasks into a series of simple standard procedures. With the help of the tool SCA, the time and cost of change management tasks can be dramatically reduced.

2 System Architecture

The SCA is a JAVA based tool which focuses on a type of dependencies that multiple services are supported by a single business process. The SCA can accept various types of service changes as its input based on our identified change

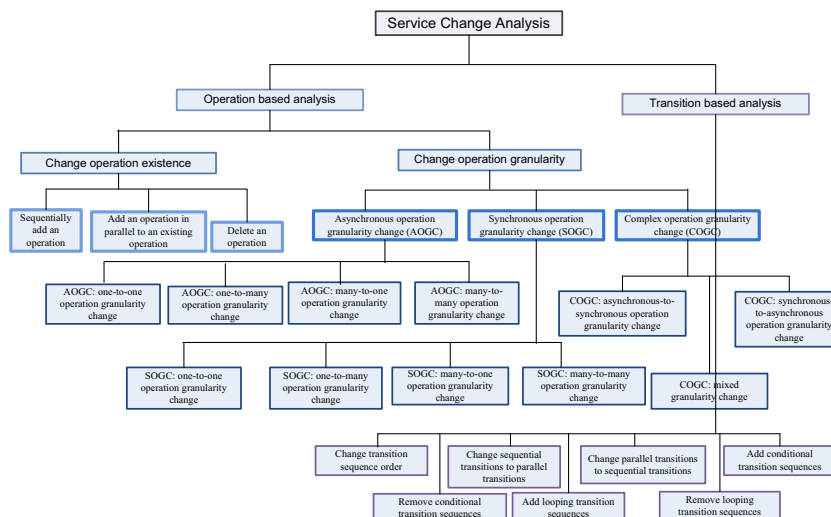


Fig. 1. Hierarchy diagram

taxonomy. For each type of service change, the SCA provides the corresponding interface for users to specify the details of the change. For each input service change, the SCA can calculate the impact scopes and provide suggestions for the potentially used change impact patterns.

The SCA has two major modules as: **operation based analysis** and **transition based analysis** (Figure 1). The **operation based analysis** is realized by: *change operation existence* and *change operation granularity*. The change operation existence module has three sub modules as: sequentially add an operation, add an operation in parallel to an existing operation, and delete an operation. The change operation granularity module consists of three sub modules as AOGC, SOGC, and COGC, which deal with the impact analysis for operation granularity changes. The **transition based analysis** has seven sub modules that handle impact analysis relating to transition changes.

3 Demonstration Overview

This demo will provide a set of running scenarios. The developed service change analyzer accepts 21 types of service changes [2] as its input. For an input change, the analyzer can calculate and show the impact scopes including the affected activities and data connections in the associated business process and the potentially affected services. Possible impact patterns to handle the change are also suggested.

References

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