

SMILE Service Modeling for Impact of evoLution framEwork

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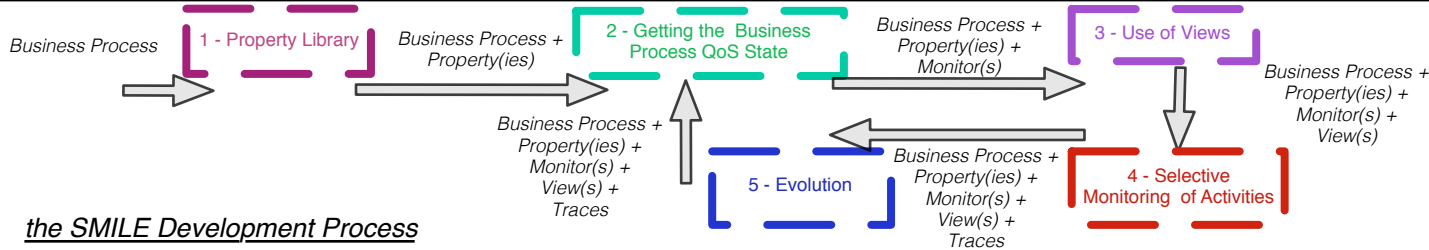
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Motivations

SOA systems are bigger and bigger, and care about QoS. However, making SOA systems evolve implies a full recheck of the complete system to be sure that it still fulfills requirements. We propose a tool named **SMILE**, Service Modeling for Impact of evoLution framEwork. This tool aims at helping BP architect to deal with QoS property throughout the entire development process. To do it, we propose an agile technique that will try to compute property values at design time. If not possible, the tool enriches the BP with monitoring facilities to capture data at runtime. We also propose to predict what will be the effect of an evolution of the BP QoS level.

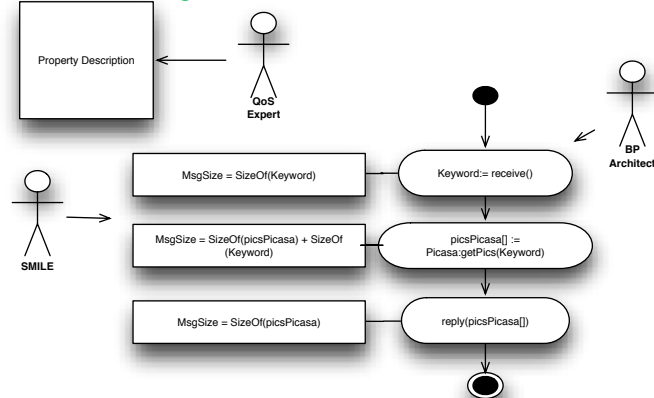
SMILE Overall Approach



1 - Property Library

The QoS expert defines QoS properties to be used from the design to evolution of the system. He/She describes analyses of the Business Process (BP) to evaluate QoS at design, monitor missing information at runtime and handle effect of evolution. These tools are used during the next steps. Since this description is independent of the BP of study, we build a QoS Property library enabling to reuse the description and to apply them automatically using SMILE on every BP.

2 - Getting the Business Process QoS State



The QoS expert chooses the property to study in the property library or expresses its own property. Using these informations, SMILE computes automatically a property value for each element of the Business Process.

4 - Selective Monitoring of Activities

Analysing a BP a design time doesn't give automatically a numerical result. Indeed, some value are only known at runtime. SMILE is able to detect which value are missing, and enrich the BP to automatically monitor missing information at runtime.

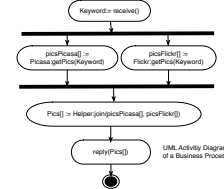


Conclusion

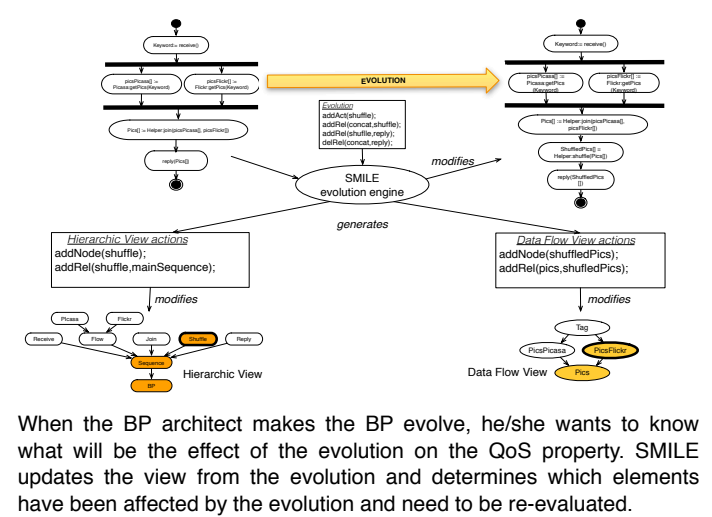
Our approach allows to have a thin-grained QoS analysis of a system from design to evolution, enabling to insure the conservation of QoS along time. This partially automated approach eases the work of QoS expert and BP architect in the handling of QoS. In a close future, we would like to fulfill our library with other properties, to develop the declaration of platform-independent monitors and to integrate SMILE into an self-adaptive loop to plan an evolution to correct potential QoS violation.

3 - Use of Views

To simplify the study of a BP under a specific concern, the Qo expert can choose to abstract the BP from a specific point of view. SMILE enables to generate a specific view from the BP to make abstraction of unnecessary details.



5 - Evolution



When the BP architect makes the BP evolve, he/she wants to know what will be the effect of the evolution on the QoS property. SMILE updates the view from the evolution and determines which elements have been affected by the evolution and need to be re-evaluated.

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