



SMAT-AUS and EffortWatch: Scope, Cost and Effort Estimation for SOA Projects

What is the business need?

In recent years, many governments around the world have launched e-Government initiatives. These initiatives aim to:

- provide more responsive, convenient, and easier access to government information and services by citizens;
- reduce the cost and time for business when interacting with government;
- seek efficiency gains across government agencies through rationalisation of systems and increased interoperability.

To support these aims many government agencies are undertaking an Service Oriented Architecture (SOA) Initiative and building and integrating systems using SOA approaches. With the promise of cost-efficiency, agility, adaptability and leverage of legacy investments more and more systems are being developed based on SOA. However one of the main problems faced by an organisation undertaking an SOA based project is what is determining the scope and size of the work that needs to be done and determining the effort and cost of such a project.

As an organisation undertakes an SOA Initiative there are several types of SOA-based projects (or combinations of them) that it may undertake, including:

- Service Mining: identification and mining of services from existing systems;
- Service Development: development of services from scratch;
- Application Development: development of applications from services;
- Service Integration: integration of common/shared services with existing systems;
- SOA Infrastructure: development/acquisition of an SOA infrastructure (including middleware);
- SOA Governance: development of governance policies and procedures (including establishing and monitoring of Service Level Agreements);
- SOA Architecture Analysis: analysis of architectural alternatives; performance, scalability and other QoS requirements for SOA-based systems.

Do existing technologies adequately address this need?

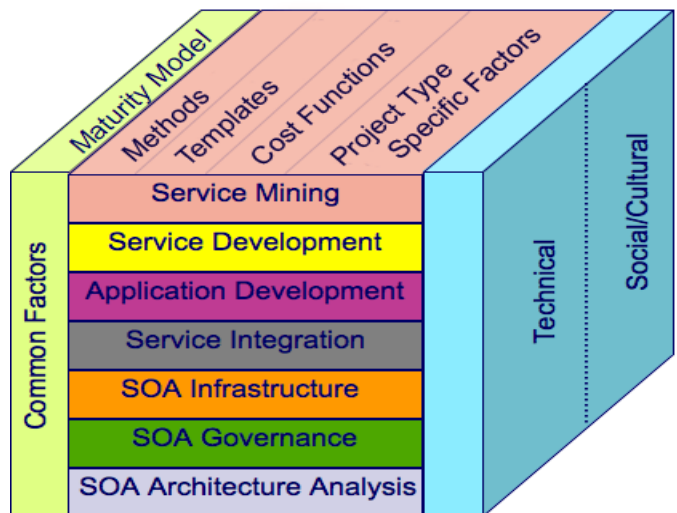
There are currently few approaches to help determine the scope, size, effort and cost of SOA projects. Current approaches involve the project manager talking with developers and architects to make a determination as to what effort would be involved in the development of services or applications. There is little historical data that organisations can use in making a determination of how much effort and cost will be involved.

There is a need for a systematic approach to determining the scope, cost and effort associated with such projects. To this end NICTA is developing the SMAT-AUS Framework and EffortWatch technology.

NICTA's SMAT-AUS Framework

The SMAT-AUS Framework consists of a set of a set of methods, templates, cost functions and project type specific and common cost factors.

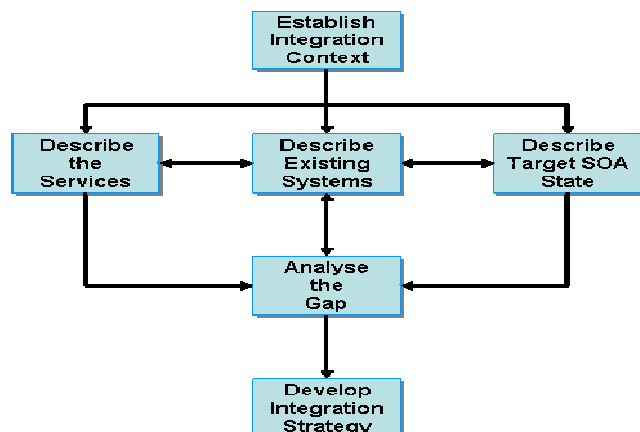
Scope, Cost, Effort Estimation Framework



Methods:

Each project type has one or more methods associated with it to determine the scope, cost and effort of the work that needs to be done.

Method to Determine Scope of Service Integration



Templates:

These are used to capture data about artefacts within an SOA project. These could be items such as legacy systems, services, applications, risks and other issues for each particular type of project.

Cost Functions:

With the variety of SOA project types there is not going to be a single cost function that covers all of the effort and cost estimation of the entire project. As a result several cost functions are needed and some of these may be specific to a particular project type. For example the effort and cost of developing policies and service level agreements would be specific to an SOA Governance project and these would be quite different to the effort and cost estimation of a Service Development project.

Cost Factors:

Factors of cost and effort specific to each type of project are captured within the framework. Specific factors for a SOA Infrastructure project would be the acquisition and customisation of a particular technology such as an Enterprise Service Bus.

Dimensions of the SMAT-AUS Framework:

There are two main dimensions to determining the scope, cost and effort of SOA projects. These are:

- Technical – the technical dimension deals with the technical aspects of SOA projects including development of services, hardware, software, licenses, etc.
- Social/Cultural – the social/cultural dimension deals with the people and organization issues such as management of stakeholders, personnel training on new technology and processes, upskilling of developers and architects, etc.

An additional factor that has to be taken into consideration is the organisation's ability to undertake and successfully complete an SOA project. The SOA Maturity Factor is an aggregate of certain factors that could have an impact on the cost and effort required for a project. Some of the factors include:

- Maturity of the Enterprise Architecture
- Skills level of architects and developers in SOA technology
- Organizational experience in undertaking SOA projects

The list of factors is still being developed and it is hoped to be able to distil these down to some coefficient of a cost function.

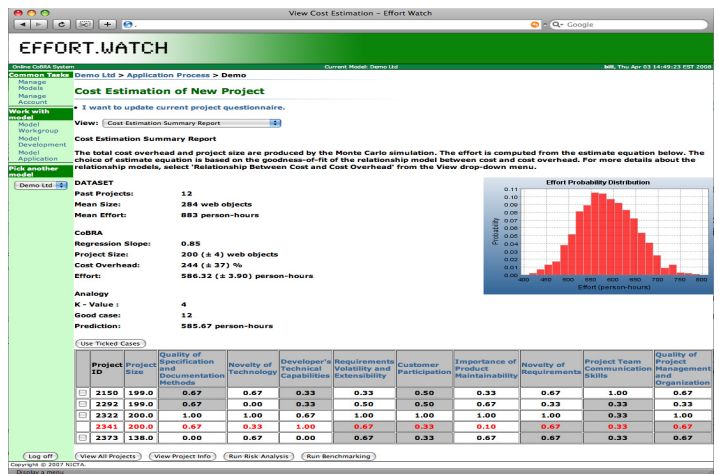
NICTA's Effortwatch

NICTA's software engineering group has developed the EffortWatch™ Software Cost estimation technology. EffortWatch provides quick and accurate cost estimation, which is crucial to deliver realistic bids and remain competitive in the software development market. Effortwatch has the following features:

- Automates building and use of prediction models
- Provides accurate cost estimates, benchmarking and risk analysis
- Intuitive web-based user interface
- EffortWatch has adopted the following approaches:
- Wideband Delphi supports collaborative estimations
- Simulation is used for model building and predictions

- Cross validation confirms prediction model performance
- Case Based Reasoning is used for cross checking
- Open-source graphical library is used for visualization

Usage of EffortWatch



What does the technology deliver?

The SMAT-AUS Framework provides a systematic approach to estimating the scope, size, cost and effort associated with a single SOA project or collection of projects. The Framework is still under development and we anticipate deployment of this technology in early 2009. The EffortWatch technology is available now as an advanced prototype. We are currently seeking organisations that are undertaking or have completed SOA projects to contribute data that can be used for tool calibration.

Who should be interested?

The NICTA e-Government Initiative is currently developing several technologies of different stages of maturity. These technologies provide solutions to common business needs in government and in other sectors such as financial, resources, and media. NICTA technologies are developed in collaboration with public and private sector partners who are prepared to trial prototype versions of technology in significant projects and production systems. In the case of SMAT-AUS and EffortWatch technologies we are looking for opportunities to engage with government agencies and other organisations to gather data from SOA projects and work with them on scope cost and effort estimation for their projects.

Contact Us

Information about NICTA's research and projects can be found on the website www.nicta.com.au. For further information about the e-Government Initiative or enquiries about specific technologies and engagements mentioned in this flyer, contact the e-Government Project Leader, Dr Jonathan Gray:
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