The Challenges of Software In-Service Estimating

SCAF Workshop
12th April 2011

BMT Reliability Consultants

Introduction

Summary

- Introduction to the Software Support Cost Model
- The Challenges
- Software Support Cost Model Approach
  - Data Collection
  - Data Analysis
  - The Results
- Conclusions

Software Support Cost Model (SSCM)

- SSCM began over 15 years ago.
- SSCM was developed, issued and supported by BMT Reliability Consultants under contract to CAAS and its predecessors.
- The Software Support Cost Model (SSCM)
  - To understand what is meant by software support
  - To quantify the costs and the cost drivers and thereby gain control
  - Founded wholly on UK specific data
- The current model is in regular use throughout DE&S community to predict the cost of system software support.
- As software does not stand still and because SSCM model takes snapshots in time, annual data collection exercises are necessary to keep the data up-to-date.

The Challenges

Acquisition costs and risks are a small part of the Whole Life Cost. Software Support risks and costs are much more difficult to predict.

SSCM Challenges

- Software does not stand still.
- Software support is not visible in contract deliverables.
- Continuity of access to software data.
- Metrics, Data Collection and Modelling.

SSCM Approach - Data

CODE	
A	Informat
B	Informat
C	Informat
D	Training
E	Testing
F	Commur

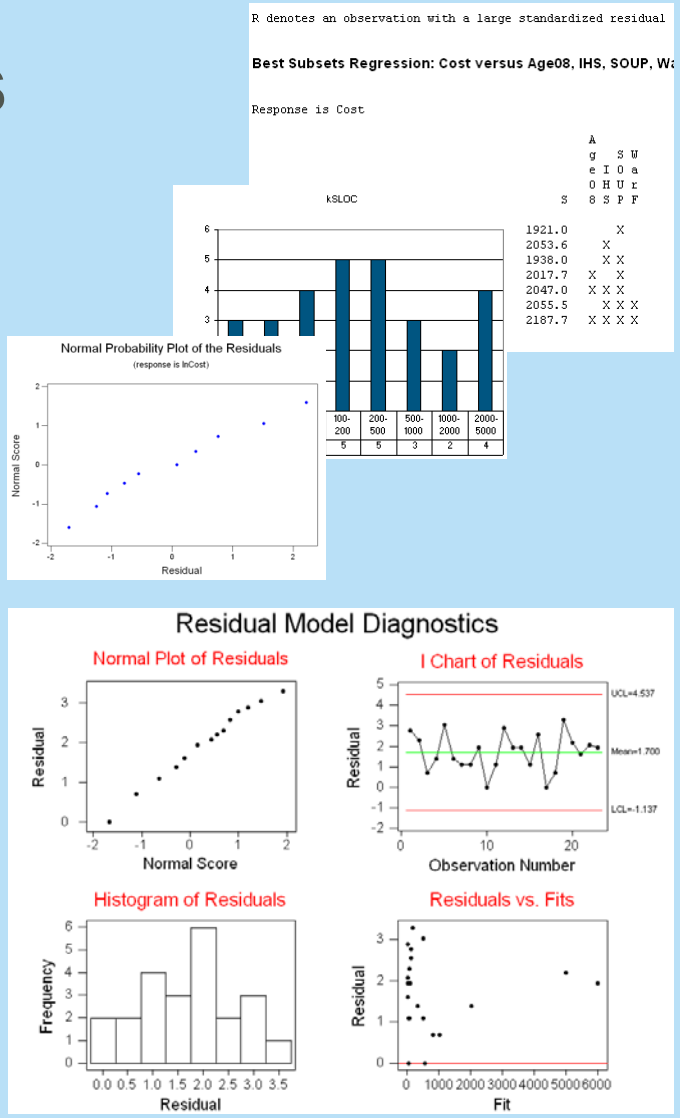
Data Collection

- Phone and Email and Interview for issuing Software Data Forms (Questionnaire)
  - Summary Data
  - Software Characteristics
  - Usage
  - Support/ Support Demands
  - Cost of Software Support
  - Comments and Project Description
- Data prepared for suitable analysis
- Maintain Project Contact Database of Project Teams (100+)

SSCM Approach - Analysis

Data Analysis

- Principal Analysis tool was MINITAB - a Statistical Software Package
  - Best sub-set
  - Regression analyses
- Best Subset is a method to help determine which variables should be included in the regression analysis
- Regression analysis is a statistical tool for the investigation of relationships between variables.
- Spreadsheet Software to demonstrate (pictorially) the quality of fit
- Independent DASA review



Picture Reference: Minitab Statistical Software Release 13, example SSCM data set

SSCM Approach - Results

SSCM Model (2009)

- Two subset relationships.
  1. War Fighting
  2. Non – War Fighting

  (if failure of the software would critically affect the mission e.g., terminate it.)
- Significant Variables
  - Age
  - Size
  - Safety Critical
  - SOUP
  - Application Type

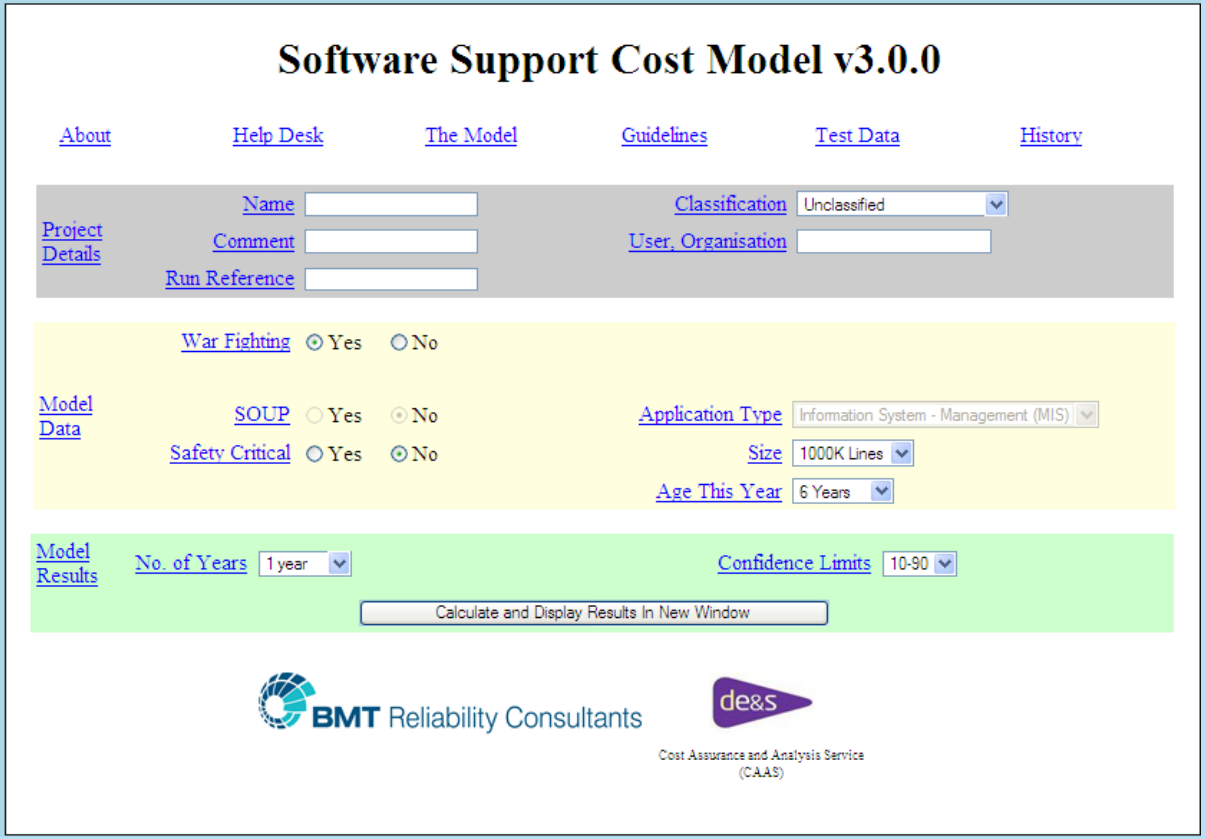
Model Issue

- Offered free of charge to project teams in the UK Ministry of Defence
- Issued on a CD with documentation
- Provision for accompanied visits to demonstrate the use of the model

The Software Support Cost Model (SSCM)

Existing Model v3.0.0

The tool is unique: because the model is built on recent snapshots taken from a large range of military systems, it reflects what actually happens in practice for in-service military software.



The Software Support Cost Model (SSCM)

Unclassified *Unclassified* *Unclassified*

Software Support Costs for

Model Data	
War Fighting	No
Age This Year	6
Application Type	Information System - Management (MIS)
Size (K lines)	N/A
Safety Critical	N/A
SOUP	No

Annual Cost (excl. VAT) in 2010/2011 values.

Year	FY	Low (10%)	Point	High (90%)
6	2010	£12k	£51k	£214k
7	2011	£14k	£58k	£241k
8	2012	£16k	£65k	£272k

Generated from SSCM 3.0.0 by test123 on Tuesday, March 1, 2011 at 09:59:38

Printing Saving Results Graph Plots Sensitivity Analysis Calculated Costs

Unclassified *Unclassified* *Unclassified*

SSCM in a Changing Commercial World

Commercial World Challenges

- Software does not stand still
- Software support is likely to become less visible in contracts
- Access to software data and support costs will become more difficult
- Ownership and Application of the data and techniques will become less clear
- New equipment and support practices will require new models

Conclusions

- There is no certainty that there exists a universal law concerning software support costs: if it does exist, it has not yet been identified despite the years of analyses undertaken on different data sets.
- Software Support Cost Model directs effort to model what happens rather than seeking the universal law.
- In a changing commercial world, access to, and identification of, software support costs is likely to become more difficult.
- The SSCM fulfils a need now: will that need continue into the future more commercialised support environment?

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