

Logical modelling of the Fdcase (A COSMIC Analysis)

Origin of the FDcase

The FDcase is originated from a remark made by a COSMIC user. This remark, called here the FDcase challenge, is reproduced here below in its own original expression with a view to preserving a reference to the author's idea. A translation is offered here after.

The FDcase challenge - A COSMIC user said
“ . . . mais avec cosmic j'ai du mal de définir clairement les frontières et les processus fonctionnels de fonctions hébergées au sein d'un même calculateur qui utilise en partie ses propres données qu'il produit pour initialiser la fonction. . . . ”

The Fdcase challenge may be re-stated as follows:

“ . . . But with COSMIC, I have difficulties in clearly defining the boundaries and the functional processes of the functions hosted by a computer which uses its own produced data for initialising the function. . . . ”

The problem as we perceive it here is about how to handle a COSMIC functional measurement starting from an initial 'physical' description. It is also to be noted that there is no particular description of 'functional requirement'. We have here a simple application running in a computer and needing data of various origins in order to initialise itself and run.

To illustrate this example, from the information given, we have constructed the fictitious example of application “SoftComp”, passing from a physical to a logical functional description of a 'system' within which a software component “SoftComp-1” needs to be measured.

The FDcase

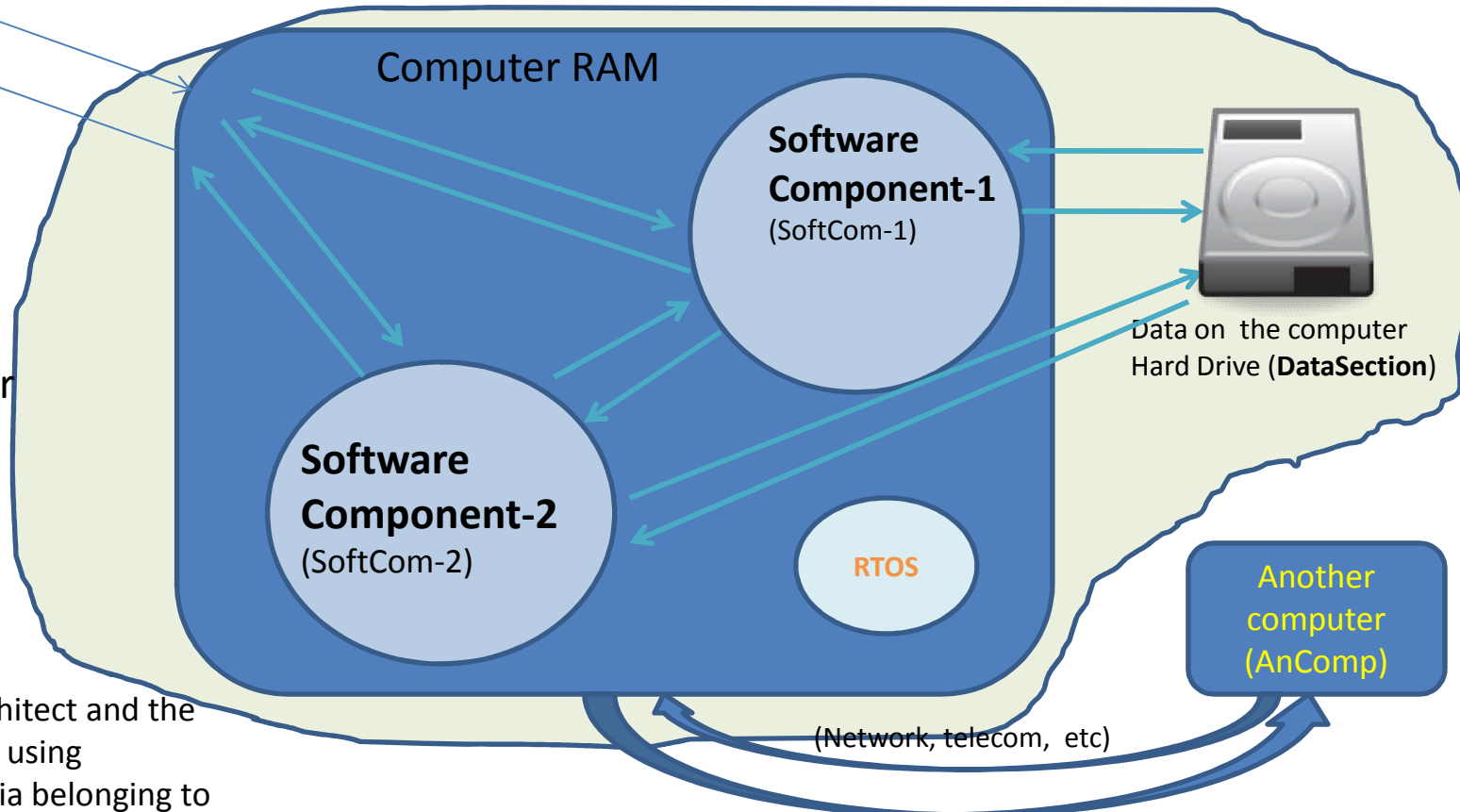


User-1

The computer

Physical Description of the FDcase

Example



The software architect and the project manager, using structuring criteria belonging to their disciplines, have structured the application “SoftComp” into 2 communicating Software components “SoftComp-1” and “SoftComp-2”.

Situation: Two software components (SoftCom-1 and SoftCom-2 – collection of .dll, .exe, .txt, .xml files) run in the RAM of this computer, storing and retrieving data on the computer Hard-drive (DataSection). They are operated by a human user (User-1) and communicate with another computer (AnComp). An operating system (RTOS) enables them to run as expected. They are all ‘physical’ artefacts physically connected.

Problem: COSMIC sizing of SoftCom-1

The FDcase

Prolegomena to the Logical Description

The functionality and the Functional User Requirements:

SoftComp-1 is the label given to a piece-of-software represented in the physical world by a collection of files of the types exe, dll, wml, jar, doc, txt, etc, residing, once loaded, in a computer RAM . The algorithmic behavioural capability of the content of this set of files provides a functionality which, in the logical world , is structured as a collection of Functional Processes (FP) with a view to offering a number of services to Functional Users (FU). This is described in a Functional User Requirements (FUR).

The information processing and the boundary:

The functionality of SoftComp-1 is located within a boundary where the information is processed by means of COSMIC “Data Manipulations”, offered/requested by COSMIC “Data Movements”, and memorized as necessary by Object of Interests (OOI) represented by their transient or persistent “Data Groups” (DG).

Persistency of some information:

Persistent DG reside naturally within the boundary in COSMIC logical “Persistent Storage” (e.g. OOI-01, etc). Their ‘physical’ counterpart reside in the same computer RAM as the software itself.

Functional User:

FU, located outside the boundary, are not properly part of the functionality to be measured, but is a focus point artefact of the functionality by its supplying or requesting of information necessary for exercising the functionality under measurement. FU have a correspondence in the physical world with human user, connected devices (Power ON/OFF), storage units (Hard-drive or RAM itself), etc. Some FU may act after sensing a Triggering Event thus starting one or several FP as described in the FUR.

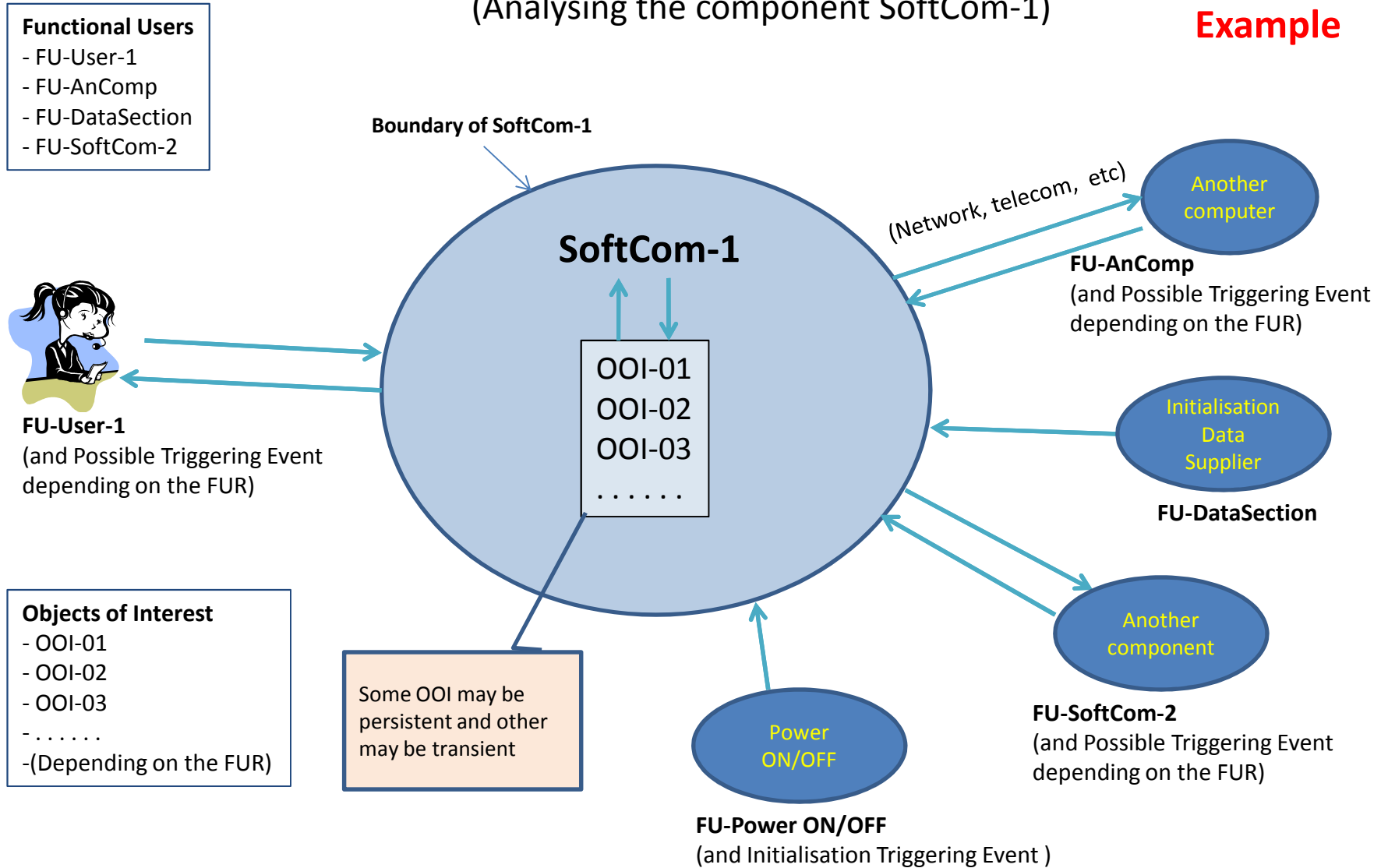
We hope this helps passing from a physical description to a logical one then producing a FUR and a successful COSMIC measurement

Note: If there is any doubt on this text or for more details, please refer to the COSMIC Method Manual V 3.0.1

The FDcase

Logical Description of the FDcase (Analysing the component SoftCom-1)

Example



The FDcase

Reaching Logical Thinking

Difficulties for passing from a Physical to a Logical View

- The Statements Of Requirements (SOR) describes physically the computer system with no special description for the software
- Architects often work on the non-functional level from suppliers' models
- Absence of software structuring strategy: why SoftComp-1 and SoftComp-2 and not simply SoftComp?
- Absence or poor functional specification. Habit of jumping to the design to show some code first
- By lack of software information the measurer runs the risk of working from a conceptual view leading to a flawed size

Recommendations

- Include a software functional requirements in the SOR. At least a 'behavioural' description style
- Ask the architect to provide a structuring strategy for the software functionality
- Ensure the strategy is effected taking care of project management and software performance needs
- Encourage the use of functional specification by any reasonable methods (UML or others)
- The measurer and the specifier are asked to team up at specification time.
- Adopt a logical view that tightly fit the functional requirements ('Behavioural ' description of the dialogs, OOI and Data Groups necessary for the correct handling of the connected devices)
- Non-functional requirements may have an impact on the functional behaviour of the software (Ex: a connected Device of a specific variant may need to be appropriately initialised by the software designed to handle a collection of variants, before exercising the desired functionality)

For comments or questions please email support@telmaco.co.uk mentioning the FDcase or phone +44 7768 588 419