Mantid-Meeting 2007/03/2

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1 Introduction

The purpose of the meeting was to discuss candidate architectures for the system.

2 Architecture

Given the relatively large size of the system, it seems that a layered architecture design, usually refereed to as **n-tier architecture**, would be adapted. A deployment diagram is shown on Fig. 1. Attempt to draw a sequence diagram is shown on Fig. 2

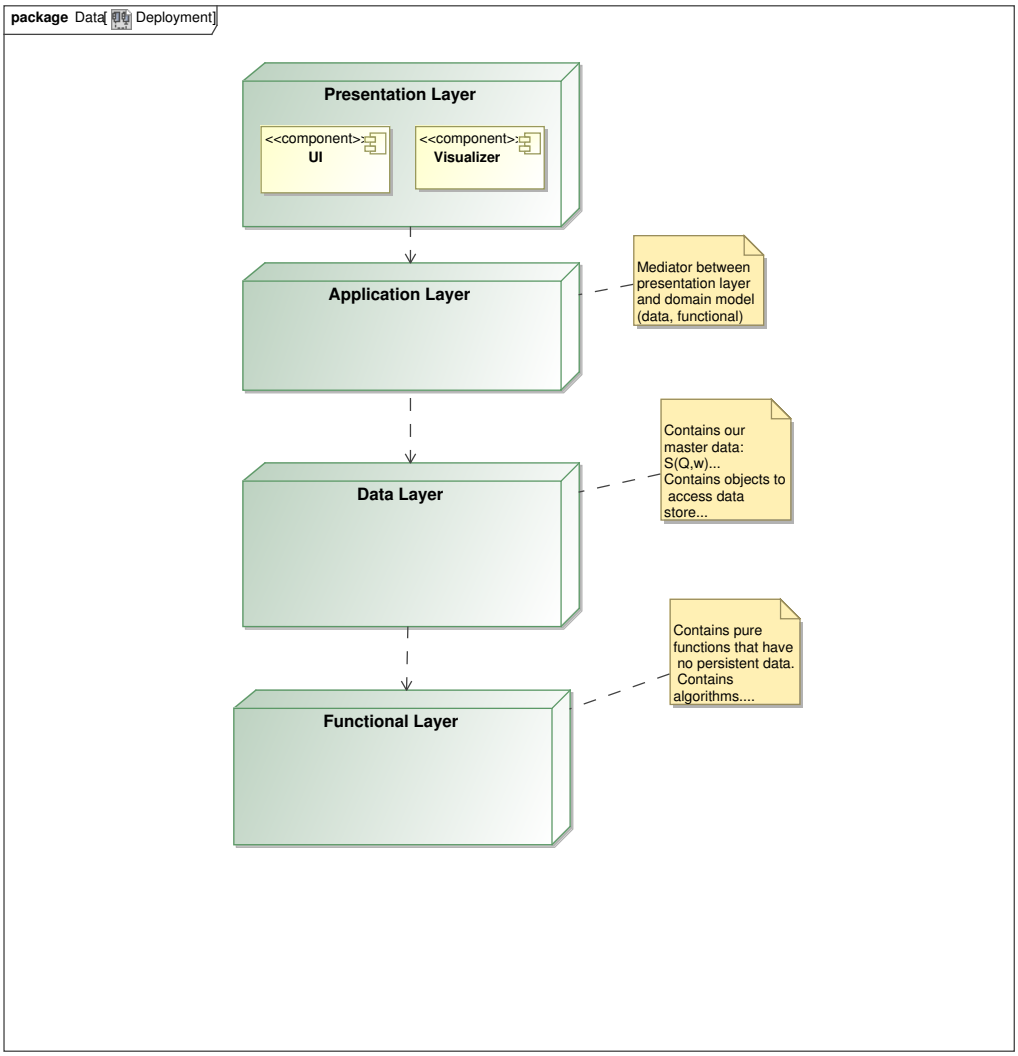

Figure 1: Deployment diagram of the 4-tier architecture system.

This architecture differs form the usual 3-tier architecture in the sense that functional and data layer are separated. In the data layer, only data resides such as S(Q,w) or simply the image of a raw file. This layer contains accessor to "real" data, i.e. coming from the data-store. The functional layer contains all the functionalities, such as algorithms. The Presentation layer is made of two closely related components, the GUI and Graphic Visualizer. The presentation layer send requests to the Application Layer and only receive notifications from it. The role of the application layer is too translate the requests send by the Presentation layer into signal objects that are understood in the domain models (Data and Functional). In fact, for performance, the functional layer can receive requests directly from the application layer.

We think that this architecture present a number of advantages, in particular reuse of many objects in the system. More importantly, it seems to divide the work into "natural" boundaries between layers. The scientists involved in the projects will be able to focus their efforts in the domain model (data and functional layers), which is essential for the success of the project. In particular, it is almost impossible to leave coding in the functional layer to a non-scientist.

To do :

- Need software architect as soon as possible to validate/modify designs.
- If this architecture is approved, decide possible contributors for the presentation layer. It is crucial in particular to involve a party providing the Graphic Visualizer early on in the project,as the need for complex/interactie graphics is high. One possibility would be to liaise with e-science and discuss possible integration of VTK and other toolkits.
- Design within the functional layer is a high priority. A relatively large part of the work consists in integrating legacy code. However, there is also a large number of tools to develop from scratch, for example a Monte-Carlo engine for absorption and multiple scattering corrections, high-level geometry package...

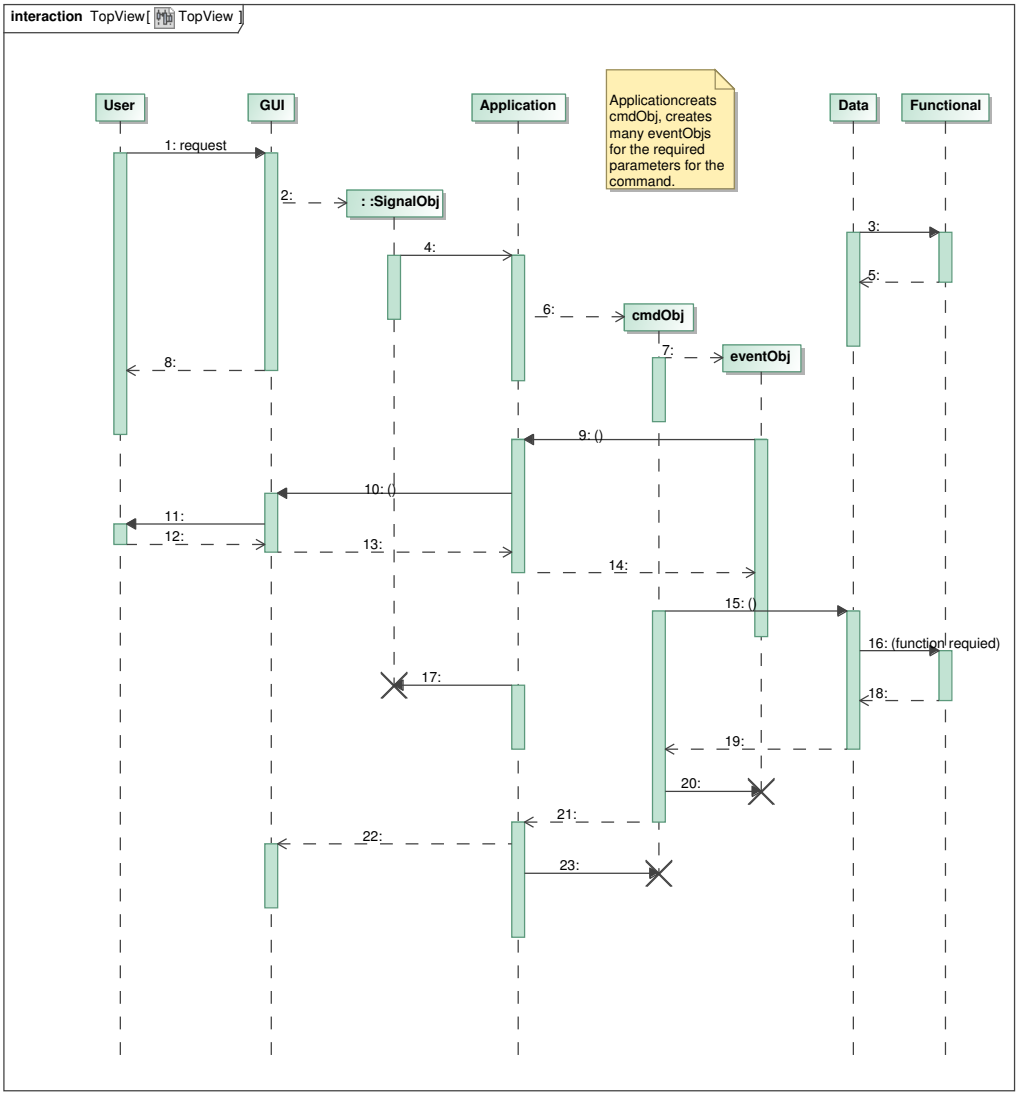

Figure 2: Sequence diagran of the 4-tier architecture system.