

Project 3 - Technical documentation

3.1 Background

The priorities for the IMS Team over the last few years have been the implementation of the new IMS, rather than the preparation of documentation. The available resources were used to ensure the successful implementation of the contacts database, the rollout of RevMan 5 and the piloting of the workflow and tracking system by 2008.

Documentation was restricted to the preparation of the most important, but still very basic, technical documentation about the IMS. There is a clear and urgent need to set aside resources to prepare more complete documentation. The external IT consultant who evaluated the IMS and the IMSG recommended that this be given high priority.

3.2 Proposal and discussion

We need to extend the current technical documentation and to implement a new organisational structure for this. A substantial degree of essential knowledge about the IMS (both Archie and RevMan) is not recorded, but is known to core IMS Development team members only. This puts the Collaboration at risk of serious disruption in the operation, development and maintenance of the IMS if one or more of the team's core members were to leave. The lack of documentation also means that when new members join the team, they spend longer than necessary becoming familiar with the IMS database structure, technology and architecture, while established members have to spend time teaching their new colleagues about the system. Furthermore, the established members will themselves benefit from the additional documentation when they work in areas of the IMS that are not familiar to them.

The technical documentation needs to consist of structured Technical Guides for Archie and RevMan.

The Technical Guide for Archie should include:

- *Programming environment.* Access to source code. Description of development tools. Target group: developers.
- *Server setup.* Introduction to the different servers and how to access them. Target groups: developers and system administrators.
- *Database structure.* Comprehensive description of the database model. Target groups: developers, system administrators and developers of user documentation.
- *Programming framework.* Description of the system structure, including description of the three system tiers (model, view and controller) and their interactions. Description of central classes and principles for using them. Description of technologies and third-party components. Target group: developers.
- *Application Programming Interface (API).* Information on interfaces used to exchange data between Archie and other systems (including www.cochrane.org, RevMan, Wiley-Blackwell). Target groups: internal and external developers, system administrators.

The Technical Guide for RevMan should include:

- *Programming environment.* Access to source code. Description of programming tools. Target group: developers.
- *Programming framework.* Description of the system structure, central classes and principles for using them. Description of technologies and third-party components. Target group: developers.
- *Review document specifications.* Description of the XML structure of Cochrane reviews. Target groups: developers, publishers and other potential recipients of review data.

The IMS Development team employed a Test and Documentation (TD) Officer (1 FTE) in October 2008. The TD Officer's main responsibilities are to organise testing, prepare technical documentation of new developments, and contribute to end-user documentation. The TD Officer also co-ordinates the technical documentation of existing parts of the system, and contributes where possible to the writing of this documentation.

The efficient preparation of accurate technical documentation will rely heavily on contributions by the IMS developers. This is particularly true for the parts of the system that were designed, programmed and tested without

the participations of the new TD officer. For instance, the developer responsible for programming RevMan is best placed to best describe that system.

In principle, best practice in system development is that time spent on programming should be matched equally with time spent documenting the code. As noted above, the resources available meant this was not possible in the development of the new IMS without causing substantial delays (measured in years) to the implementation of improvements needed to support the rapid growth of the Collaboration and demand for Cochrane reviews. Looking to the future, redressing this imbalance between software development and documentation could mean years of documentation work ahead. However, there is agreement both inside and outside the IMS Development team that the focus of work should be spent on essential areas. Nonetheless, the task at hand is substantial and it would be advisable to limit the number of developer FTE months allocated to the project.

3.3 Summary of recommendations

- The essential technical documentation that would minimise the high risk of severe disruption of IMS development and maintenance should be prepared as described above.
- The TD Officer should continue to work with the developers to ensure their work is documented to keep the Technical Guides up to date. The IMS Team should take this into consideration when estimating and allocating resources for future projects. It is recommended that the developers' time on new projects should be divided in the ratio 4:1 between coding and contributing to documentation.
- 1 FTE developer is needed on an ongoing basis to maintain the IMS and address bug fixes. With the current level of developer resources available to the IMS Team, this leaves 1 FTE developer to work on both new developments and technical documentation (of both past and future development). This raises the possibility of a situation where there would be insufficient resources for new developments, and, so, additional resources need to be identified. The alternatives are to reduce the proportion of time spent on preparing technical documentation and to spread this over a longer period of time to allow core developments to continue or to switch more resources to documentation and slow down core developments.

3.4 Resource implications

Initially, approximately half of the TD Officer's time is spent on co-ordinating and contributing to completion of the Technical Guides described above. In addition, a total 40 FTE weeks of a developer is needed for work on the Technical Guides.

The IMS Team will keep the Steering Group informed of progress on documentation, in the bi-annual reports.

3.5 Impact statement

By recording the extensive knowledge of the core members of the IMS Development team, the Technical Guides will considerably reduce the risk of serious disruption in the operation, development and maintenance of the IMS and consequently of the CRGs and The Cochrane Collaboration if one or more of the team's core members left.

The time spent by established IMS team members to introduce new staff members to the system will be reduced, and new members will be able to work effectively sooner. It will also be easier to contract external developers to work on add-on modules to the IMS, or for someone to work on systems that should interface with the IMS.

Established team members will save time when working on areas of the system that they infrequently maintain by utilising the Technical Guides as reference tools. This will increase flexibility within the team.