To do and not to do, is the question!

Lessons learned from a project in the innovation of scientific information management theme under the supervision of SURF[1].

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Keywords
Human Computer Interaction, Prince 2, Zebrafish, Stakeholders

Project Title
The digital 3D atlas of zebrafish development: the user perspective.

Results
Some of the important results of the project described in this paper can be found at:
http://bio-imaging.liacs.nl

Introduction
This paper reports on the trajectory that was passed during a two years project on the construction of an electronic resource on the development of the zebrafish (Verbeek et al, 1999, 2000, 2002). Zebrafish is used as a model system in developmental and molecular genetics. The project was financially supported by the Netherlands' organization for computer networks and facilities for universities and higher education (SURF). As part of the normal procedure at SURF, this project was monitored in its progress using the Prince 2 methodology, which is commonly used with ICT projects.

The structure of this paper, which deals with describing, in a broader context, the experiences gained with a project on innovation in handling scientific information. The focus of the paper will be on the lessons learned during the run of the project. These lessons are coupled to the underlying structure of the project, i.e. the controlling document. This document is imposed by the Prince 2 method and it describes the aims of the project as well as the deliverables and dissemination of the knowledge acquired in the run of the project.

The theme of the project dealt with the users' perspective in making available the electronic resource. The electronic resource is modeled by a book, which derives from the fact that normally these types of data were published in printed format. In saying that, one immediately may contemplate on the limitations of the printed format and how digital formats of such data have a wide range of possibilities of increasing complexity (cf. §a digital book).

At this point the aim of the project comes into view that is presenting these complex data to the user in a way that is simple and understandable for both the computer literate and the novice user.

A digital book

Here we elaborate on the remark that a printed book modeled our implementation. As one of the aims of this project is to be able present the data in a way the user can easily work with them, our perception on the subject is best described in terms of human computer interaction. From that viewpoint the digital atlas that we are building is really a metaphor for the printed atlas.

The apparent advantages are: that is a (1) dynamic system to which new information can be added in a later stage, (2) that it allows people to make comments on the data that are in the resource, (3) that measurements can be extracted from the data.

Thinking of these advantages the user should be made aware of them and thus the book metaphor will work counterproductive. On the design side one should estimate how well the metaphor can be communicated.

It is merely the added value with which we want to persuade the user to use this electronic resource.

Here we conclude that using metaphors has its limitations and design should not always rely on it. The question one should ask is whether or not the metaphor restricts the exploration of the application domain. This is a design question that should be posed right at the onset of the development. At the same time one should realize that limitations an not always foreseen.

User centered design is a key in developing user interfaces. This should also be the leading motive in the project management. Of course there are goals to be set and deliverables to be accomplished. In the end there will be some software and some data that need to be addressed by users. Knowledge of design of user interaction is essential to the questions we have been addressing. Furthermore, a constant monitoring of the primary and secondary stakeholders to the project helps to filter noise that develops when interests of stakeholders are interchanged.

Management issues

What is the position of the project leader? He has to keep up with the requests put to him by both the the project committee as well as the project personnel. The committee processes strictly along lines set out in the reports whereas in some cases the creative process requires a little flexibility on that part. So, the tight monitoring introduces sometimes a tension in the local management of the project. Looking back on the project as a whole, such tensions happen and can be used to advantage. The benefit of the monitoring exceeds these drawbacks.

What is the position of the project employees? These people have to do the real work and have to sympathize with the product and the process of building the product from the start. As the period of building the product is relatively small, the engagement with the product as well as the product has to develop quickly. This engagement has to be clear to the project leader otherwise conflicts will emerge and insecurities will be fed.

The engagement has to be stimulated by giving the project personnel freedom to make choices. Again, given the time frame, this has to be limited in order to prevent that instead of building the product a whole range of building blocks (software components) are evaluated.

It is important to note that in science projects tend to run over the period of a PhD project; earlier experience is based on such longer trajectories. At the onset of the project we had to realize that this was not a PhD project.

Research such as completed in this project, in general, embedded in a larger research theme. It is not always easy to keep all the sub-projects well separated. For the project management and supervision it is important to realize that there are interdependencies between sub-projects at the moment the project runs. Helping to get that clear improves communication with between organizations a great deal.

The updating to newer software tools must be part of the design from the beginning. Meaning that in the design, a life cycle of the product is taken into account together with the building blocks that are used to build the product. It can be anticipated that newer versions of e.g. web-tools will be released in the run of the project; the product should be designed and build in such modular fashion allowing seamless upgrading to product versions with newer tools (although this never seems to happen). This prevents that too much time is spend on the "nitty gritty" details of the tools rather than a focus on the product. This approach requires the use of a life cycle model such as the spiral life cycle (Preece et al., 1944, 2002), if applied consciously the star life cycle model will also work well. The keyword in both paradigms of software development is the prototype.

In this project the prototyping as proposed in the spiral model provided a good handle to deal with the development and motivation of the project people as well as steering the project by the project leader. If one certain paradigm is chosen it helps that this is communicated to the people involved in the project.

The prototyping approach also helps to monitor the results to the supervisor. The concise project description and careful monitor task as dealt with in the prince-2 project management model do map well with the prototyping approach.

Complexity of data from biomedical studies requires strict organization of key definitions. These are sometimes not well defined. In this project we have started to include ontologies to have a more unified access to definitions. However, we realize that fundamental research in the area of ontologies and using ontologies in data exchanges is very much required. In the research community of bioinformatics this has recently grown to a serious field of research.

Conclusions

The Prince 2 methodology contributes, without high awareness of the project leader, to good and controlled user interface design.

In the end the process turned out to be a well-organized way of finding a good strategy on defining a good user interface. The question now becomes how well does the Prince 2 methodology for ICT project management corresponds with methodology for user interface development. This is an interesting research question for a student project.

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