Establishing project requirements for the Development of a local health care system in Cameroon

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Abstract

This article illustrates a systematic mind-mapping based approach [1] to developing project requirements for projects in general, and charity projects in developing countries in particular; using a real example project that is concerned with the development of a local health care system in a deprived region of Cameroon. Having completed its feasibility phase in September 2013, this project is currently entering the detailed planning phase. Charity projects in developing countries often face particular challenges; a number of these are discussed in the paper and recommendations are given to appropriately address these challenges.

Project background

The population in the region around the village of Siliyegue, which is about 60 km from the capital of Cameroon Yaoundé (see Figure 1) and surrounded by villages with similar needs, is suffering from multiple diseases; lack of pastoral and spiritual care; lack of secondary education, professional training and employment perspectives; lack of infrastructure such as proper roads, electricity, running drinking water and waste disposal; as well as lack of medical care in case of emergencies, in particular regarding first aid and related transportation capabilities.

Figure 1: Africa and Cameroon
The project considered in this context aims to identify the main underlying needs of the population in the region, and develop a comprehensive local health care system and a secondary school based around a new Salvatorian mission that address the needs identified above; in order to increase the spiritual and physical wellbeing of the local population in general, and thereby improve the average life expectancy and perceived quality of life.

The Salvatorians (Society of the Divine Saviour) are a Roman Catholic religious order that operate globally. Salvatorian priests, sisters and brothers in the Katanga province of the Democratic Republic of the Congo have already been running a number of nurseries, primary schools and secondary schools in the Congo, as well as two missions in Cameroon. At the global level, the Salvatorians are supported by the Salvatorian Office for International Aid (SOFIA), which is based in Rome, Italy, and facilitates financial support of development projects through governmental institutions, charity organizations and even individual donors [2].

The project puts strong emphasis on the protection of the environment and the traditional way of life, and represents a significant and sustainable contribution to the development of the whole area and its population. Following a transition into operation as part of the project, the anticipated local health care system should be run – as far as possible – locally, by locals, with minimum need for on-going outside support.

The health care system does not only consist of buildings. Rather it has to be seen as a complex system of interacting elements, i.e. people, processes, equipment and facilities, that serves to improve the general health of the local population. It needs to be developed and put into operation by means of a project, based on the analyzed needs of the main project stakeholders.

These stakeholders’ needs enable us to develop more detailed functional system requirements and constraints on the overall project and the system, for example in order to qualify for the financial support by particular institutions and private donors. Any conflicts between resulting requirements, e.g. regarding the schedule or budget of the project, have to be negotiated and resolved with the concerned stakeholders throughout the project. The following section looks at a systematic approach based on mind-mapping that has been used in order to develop the requirements for the example charity project.

The approach applied to develop the project requirements

The approach used in the given example is based on mind-mapping, and systematically moves from the identification of the main stakeholders in the project and their high-level needs, via the derivation of goal hierarchies for each such need, to the derivation of project requirements based on the identified root goals in the goal hierarchies. For this particular application the mind-mapping tool MindManager [3] was used.

Figure 2 provides an overview of a typical mindmap that was used following this approach. Starting from the center, one can see one of the identified main stakeholders (white) and their high-level needs (blue). For each of the identified high-level needs, a hierarchy of goals is derived, with each contained goal representing a decision of how we want to satisfy the
identified high-level need. An example could be that if the need is ‘The company needs to increase its profitability from selling product A’ the first level goals in the corresponding goal hierarchy could be ‘Reduce costs of producing Product A’ and ‘Increase price of Product A’.

These goals can then be further broken down until a level is reached where we do not wish to further break down a sub-goal. Such a sub-goal is called a root goal (orange) and will serve as the basis to derive one or several requirements (green).

![Image](image_url)

**Figure 2: From stakeholders and their needs to requirements**

The following section describes how this generic approach was used in order to develop the project requirements for the charity project at hand.

**Developing the project requirements**

In the given example the approach was used following three steps in order to develop the project requirements: (a) identify the main project stakeholders and their needs; (b) derive the goal hierarchies for each identified need; and (c) derive the project requirements based on the root goals of these goal hierarchies.
(a) Identifying the main stakeholders and their needs

Figures 3 and 4 provide an overview of stakeholders in the project that are outside and inside the Cameroon respectively and that have to be taken into account. However, not all of these stakeholders are of equal importance. After initial analysis, the decision was taken to group certain stakeholders and to disregard others.

Figure 3 shows a number of generic stakeholders outside the Cameroon such as institutions, parishes, business companies, charities, schools and private donors, as well as specific stakeholders within the Salvatorian order such as the Generalate (i.e. the global leadership team), SOFIA (the Salvatorian Office for International Aid), and the Congolese Province of the Salvators (i.e. the Salvators who are operating in the Democratic Republic of the Congo and are already running two missions in Cameroon).

Figure 4 takes a look at the stakeholders inside Cameroon, in particular the relevant diocese in the region under consideration, an existing Salvatorian mission north-west of the capital Yaoundé, which is situated about three hours away, local schools in the area, catechists and other spiritual leaders, the village elders, local businesses, local inhabitants, other churches, UN agencies, other NGOs, the Ministry of Public Health, law enforcement, public transport (albeit only private ones), surrounding hospitals, insurance companies, ambulance services, nursing schools, and medical schools or universities.

Once a complete list of project stakeholders has been identified, of which many will be groups of people rather than individuals, and many are generic in a sense that the individuals behind these groups are not necessarily known yet, the list should be reduced to the main stakeholders; those that are directly concerned with the project and are likely to have a significant influence on the success of the project.
In the given example project, four main stakeholders (or rather groups of individuals or organisations) and their high-level needs were identified (see Figure 5). These are the population in the concerned region; institutions, business companies or charities that may financially support the project/system; the Salvatorians; and the Government of Cameroon or relevant governmental ministries. In the following, the high-level needs of the ‘population in the concerned region’ will be considered in more detail.

**Figure 4: Stakeholders inside Cameroon**

**Figure 5: Key stakeholders and their needs**
(b) Deriving the goal hierarchies

Figure 6 displays one part of the goal hierarchy that was developed based on the high-level needs of the main stakeholder ‘The population in the concerned region’, in particular showing how the goal ‘Develop a local health care system (long run)’ is further broken down into sub-goals until root goals can be identified. The decision where to stop the process of breaking down goals within the goal hierarchy depends on the specific project context and the type of requirements that we wish to develop. The underlying assumption regarding the root goals is that if all root goals of a high-level need are satisfied, the high-level need is considered to be satisfied.

![Figure 6: Developing goal hierarchies (example)]
(c) Deriving the project requirements

Figure 7 shows an example view on how the goal hierarchies can be further extended by project requirements (green) that are based on the identified root goals (orange). In many cases the requirements are merely enriched and reformulated versions of the root goal, though in some cases several requirements are needed to cover one root goal.

The resulting project requirements are managed by the project and have to be satisfied by the project itself, as opposed to system requirements that have to be satisfied by the health care system that the project will bring about. Each of these project requirements will lead to a number of specific actions that can be allocated, cost-estimated, planned, risk-managed and tracked within the project team.

Figure 7: From goal hierarchies to requirements (example)
In the following section, we will look at some typical challenges of charity projects in developing countries, since these have to be pro-actively and flexibly addressed by the project in order to deal with them appropriately and increase the chances of the project to succeed.

Some particular challenges of charity projects in developing countries

In the context of charity projects in developing countries there are typically a number of challenges that render project management particularly difficult. These challenges include the volatility of (i) the requirements, (ii) the available resources, and (iii) the available budget; (iv) geographic and cultural distances between members of the project team and project stakeholders; and (v) red tape.

(i) Project and system requirements tend to be volatile for a number of reasons, for example the local needs may change in terms of content, volume or schedule; additional stakeholders may emerge; and laws may change. Also, the priority of the requirements is likely to change over time. For example, if new health and safety legislation were implemented, this would potentially lead to new or modified requirements, or possibly to a change of the priorities of the requirements during the project. All requirements have to be kept up to date, so that if any such changes occurred and had an impact on the requirements, this very fact can be systematically recorded and addressed in the appropriate manner.

(ii) Another difficulty is the volatility of the available resources who work on the project. Often project team members do not work under a contract but are volunteers who have to balance their own private work and family commitments, which may lead to discontinuity of certain project activities. In order to address this reality of charity projects, it is very helpful to document project related information well and in a re-usable format, especially project management related information such as requirements, the business case, the schedule, risks and opportunities.

(iii) Also, the budget available for development projects in this context is not usually stable or agreed on and committed early in the project. The exact available budget is often unknown, whereas the needed budget will be far easier to estimate. If certain project or system requirements cannot be met, because fewer donations are received than expected, this does not lead to an automatic deletion of these requirements. What is required is still required. Rather any forms of non-compliance or associated risks due to changes in the available budget have to be systematically identified and managed, based on the validated project and system requirements.

(iv) One typical circumstance for charity projects in developing countries is the geographic and cultural separation between the members of the project team and project stakeholders. This separation by multiple boundaries is likely to add to the project complexity and represents a source for all kinds of communication related problems. Misunderstandings, if not identified quickly, may lead to delays and additional costs, and wrong project decisions. One very important aspect is the establishment of trusting relationships between the people involved in the project in different sites and across different cultural boundaries. This building of trust can be enhanced by face-to-face meetings. Once people trust each other and
understand each other better, misunderstandings are less likely; they can be identified earlier, and clarified more easily.

(v) Depending on the developing country in question, red tape can be a major hindrance or obstacle to overcome. Red tape can be caused by high levels of corruption and certain officials simply wanting to exert money out of the people working on the project; or the administrative procedures and requirements and the governmental organization may be badly designed and inefficient. Whatever the reasons, red tape quickly causes delays and additional costs, because needed materials or pieces of equipment may not arrive on time, or members of the project team may not be able to travel to the sites of the project since they are refused their Visa etc.

Furthermore, multiple constraints are usually placed on such charity projects, among other things by potential donor institutions, business companies and similar entities. Often such entities have specific legal, procedural and strategic requirements that the project has to meet in order to qualify for financial support by these entities. In other words, charity projects in developing countries often have to anticipate such legal, procedural and strategic requirements, comply with them and demonstrate this compliance, prior to actually contacting these entities in order to apply for financial support.

Conclusion

The article illustrated a systematic, mind-mapping based approach to developing project requirements for projects in general, and charity projects in developing countries in particular; using an example charity project that is concerned with the development of a local health care system in a deprived region of Cameroon, and that has just completed the feasibility phase. The project also covers the establishment of a new Salvatorian mission and the construction of a secondary school in the region.

In such charity projects in developing countries, there are typically a number of challenges that have to be addressed appropriately such as the volatility of the requirements, the available resources, and the available budget; geographic and cultural distances between members of the project team and project stakeholders; and red tape. Also it was explained that multiple constraints are implicitly placed on such charity projects by potential donor institutions, business companies and similar entities.

As with development projects in different contexts, the project and system requirements are crucial, since everything that is developed as part of the project is guided by and measured against these requirements. Without having developed good quality requirements for the project, we do not know whether what we are doing will lead us to where we need to be in the end of the project, how long it can be expected to take, and what will be the costs.

Finally, it is hoped that this article will be helpful to other project leaders or managers of charity projects in developing countries who, despite all the difficulties and obstacles that can be expected, strive to bring about concrete improvements of the quality of life of people they may not even know, in one of the many deprived areas of our planet. May their projects succeed and touch many lives in all involved countries.
References


About the Author

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Dr. Mario Kossmann is an experienced Systems Engineer and Capability Integrator for Airbus, having previously worked for Blohm & Voss as Systems Engineer, Technical Manager and Consultant in Services Marketing. He has served as a naval officer with the German and French navies, and was awarded an MEng in Aerospace Technology from the University of the Federal Armed Forces in Munich (Germany), an MBA from the University of Warwick (UK) and a Ph.D. in Requirements Engineering from the University of the West of England. He is the author of the books Delivering Excellent Service Quality in Aviation (Ashgate 2006) and Requirements Management – How to ensure that you achieve what you need from your projects (Gower 2013), as well as numerous research publications in the field of Systems Engineering. Mario is also a certified Project Manager and a Certified Systems Engineering Professional (CSEP). Mario can be contacted at Mario.Kossmann@airbus.com.

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