24. ERGONOMIC STRATEGIES TO AVOID CLASSICAL HIS IMPLEMENTATION FAILURES—LESSONS LEARNED DURING THE IMPLEMENTATION OF A HIS

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Situation: Selection and implementation of a Hospital Information System HIS is an important and extremely cost-intensive decision [1]. A good preparation within the selection and starting of the new system is essential for avoiding ''significant budget and time overruns, under-delivery of value, and the outright termination of a project before completion'' [2].

A typical characteristic of implementation projects is the usage of an interdisciplinary project team. General participants are IT-companies with their consultants, IT-departments of the hospital and clinical end-users (Figure 1). Every group of its own stands for specific expertise and system comprehension, individual points of view and specific project goals. IT-projects have to integrate those different team players as effective as possible in order to assure a common project basis.

The start of production (SOP) decides on the success of HIS implementation projects (see also Figure 2, which describes the level of system readiness when the new system enters regular operation). Project success can be increased by an adequate HIS configuration, customization or individual software development. The important questions to answer are:

1. Can a standard software and its configuration already meet the user expectations?
2. Is a higher degree of user orientation required (= HIS customization)?
3. Do specific hospital requirements exist, which make an individual HIS development necessary?

Fig. 1. General participants of HIS project teams.

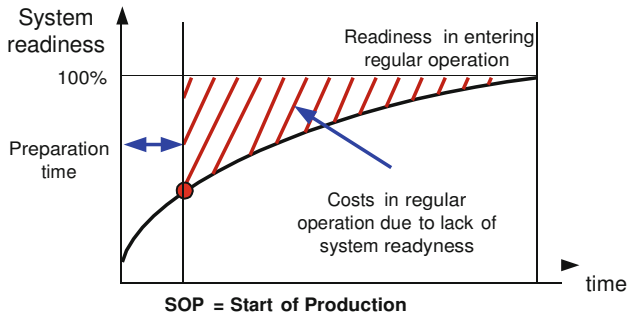

Fig. 2. Costs of a HIS implementations due to a lack of system readiness according to [4].

Problem: At the Start of Production (SOP) the chosen IT System and work processes have to match. If user tasks of daily work and user expectations aren't met in the selection and implementation process, the system readiness is to low.

Subsequent problems are a lack of user acceptance, lack of functionality, mistakes by users in operating the system, additional work to correct wrong inputs and data, etc. The lack of system readiness is then defined as the required readiness minus the readiness when entering the regular system operation (see also Figure 2). After the Start of Production (SOP) troubleshooting and damage repair are the only options left to improve the software and processes [3]. The caused gap of system readiness causes a lack of process efficiency, higher costs in running the system, lack of patient safety due to unavailable data and a staff demotivation caused by working overtime.

IT implementation projects are difficult challenges: IT consultants, IT departments and clinical users usually don't feel responsible to advance organisational changes, what the implementation of a HIS actually means. As separate players they even can't reach that goal. They insert their specific expertises into the project and coop

erate, but the required integration of team expertise needs an additional team management. The situation gets worse when the preparation time in HIS implementation projects is insufficiently planned, which is a typical project condition.

Approach: The HIS selection and implementation projects should be structured in 12 steps grouped in two phases: 1. Process preparation and 2. Selection and implementation of the HIS. The process preparation phase is independent from the system decision and has to be understood as an individual project. Both phases are necessary to optimize processes and the HIS until the start of production (SOP).

Phase of process preparation:

1. Identifying current system users
2. Describing the tasks of daily clinical work
3. Analysing clinical processes with its strengths and weaknesses
4. Describing support of clinical users by current systems
5. Describing future tasks of daily clinical work
6. Finding out how general conditions will change in the future
7. Defining optimized future processes

Phase of selection and implementation of HIS:

8. Identifying alternative HIS concepts, available functionalities and readiness of software modules
9. Selecting the system that meets the system requirements best
10. Adjusting processes and software for each other
11. Adapting the HIS by configuration, customization or individual development
12. Training of users for the optimized processes and system use

To reach the sub-goals of each project step and therefore to be successful at the end of the project the following additional team management approach is required: Within the project a systematic team communication, coordination and knowledge integration is necessary. Communication means transport of knowledge between project members. Coordination is the target oriented delegation and consolidation of results. Knowledge integration supports the building of a common knowledge base [5].

Results: Through guaranteeing a higher level of system readiness significant benefits can be achieved for the regular systemoperation. The system is ready to start and users are well prepared through their new processes and system functionality. They completely understand the interrelation of tasks, processes and system interactions. They are motivated to get involved within the entire change process. Therefore the rate of mistakes decreases and the quality of data increases (Figure 3). Subsequently also the patient safety and overall system efficiency will be improved.

Conclusion: For a successful completion of the 12 project steps described above an additional team manager/ transformer is essential (sea also Figure 4) to support and enhace the team communication, coordination and knowledge integration. A Common knowledge base is the precondition for a real exchange of expertise between all project team members to allow a systematic integration of heterogeneous knowledge for the development of innovative solutions [5].

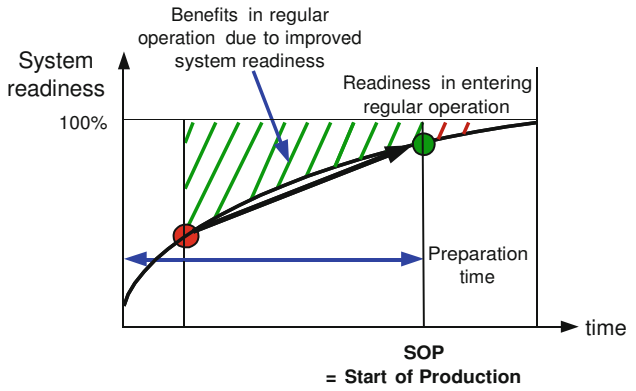

Fig. 3. Benefits of a HIS implementation with optimal system readiness according to [4].

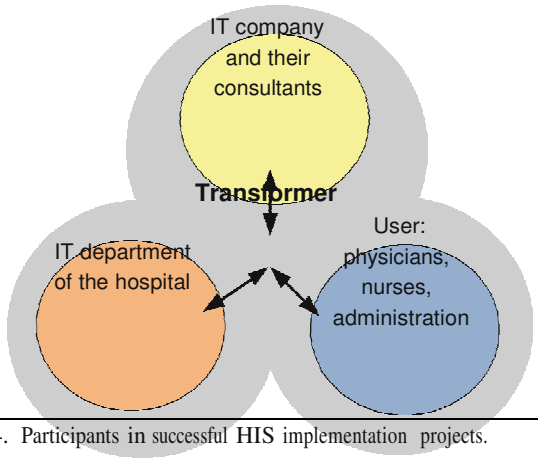

Fig. 4. Participants in successful HIS implementation projects.

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