

Purpose and Structure of Strategic Plans for Information Management in Hospitals

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Abstract. Information management in hospitals requires a strategic plan that gives directives for the construction and development of a hospital information system. The paper describes the purpose and a suggested structure for those strategic plans. This structure is a central component for a guideline that may be used for creating and updating strategic plans.

1. Introduction

In many hospitals strategic plans have successfully been used for information management purposes for several years. German examples are strategic plans for a municipal hospital in Bremerhaven [1] and for university hospitals in Heidelberg [2], Homburg [3], and Leipzig [4].

Information management in hospitals (IM) encompasses the management of information, the management of application systems, and the management of information and communication technology whether computer supported or not [5, 6]. A hospital information system (HIS) is that subsystem of a hospital, which comprises all information processing actions and the concerned human or technical actors in their respective information processing roles. Thus, in hospitals 'information management' and 'management of hospital information systems' are synonyms. Information management has to be done systematically to enable an orderly processing of information coherent with the goals of the hospital.

The general tasks of management are planning, direction, and monitoring [7]. Different management levels have a different perception and interest. With respect to its scope information management in hospitals can be divided into strategic and tactical management:

- Strategic management deals with the hospital's information processing as a whole and refers to the business strategy. An important result of strategic management activities is a strategic information management plan which includes the direction

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and strategy of information management and the architecture of the hospital's information system.

- Tactical management deals with specific components of an information system. Activities in tactical management are usually performed within projects, which were initiated by the strategic management as consequence of the strategic plan. Thus strategic information management is a vital necessity for tactical information management. The result of tactical projects is the hospital's information system with decisions on budgets and allocation of people and means to different departments.

The quality of information management is an important factor for hospitals to gain competitive advantage. In the USA for example, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) includes 10 information management standards in its accreditation process to assess the quality of an organization as a whole. To review the information management standards the healthcare organizations have to present an information management strategic plan [8]. As well, professional consultants on healthcare emphasize the important role of information management [9, 10]. Gardner Group for example recommend a three-document approach for IT planning [10].

The joint 'Methods and Tools for Hospital Information System Management' working group¹⁰ of the German Association for Medical Informatics, Biometry, and Epidemiology (GMDS)¹¹ and the German Informatics Association (GI)¹² aims at developing a guideline for creating and updating strategic plans as a tool for information management in hospitals. The goal of this paper is to report on these efforts. We argue for the need of strategic plans (section 2) and define a basic structure (section 3). Section 4 summarizes the paper with an outlook to a guideline for creating and updating strategic plans in a hospital setting.

2. Purpose of Strategic Plans

Strategic hospital information system planning should be considered with respect to a strategic plan [11] that gives directives for the construction and development of a hospital information system. However the directives are generally valid only for a limited period of time. The strategic plan describes the intended hospital information system's architecture. Because of the temporal limited validity of the strategic plan, planning is a permanent task of strategic hospital information system management.

The different stakeholders¹³ involved in the creation, updating, approval, and use of strategic plans are:

- top management,
- employees, e.g. physicians, nurses, administrative staff,
- clinical, administrative, service departments,
- information management department (IM department),
- funding institutions,
- consultants,
- hardware and software vendors.

These stakeholders may have different expectations on a strategic plan and are involved in different life-cycle phases for strategic plans:

- *Creation*, i.e., writing a first plan,

10 http://www.med-rz.uni-sb.de/med_fak/imbei/sg/www.html

11 <http://www.gmds.de>

12 <http://www.gi-ev.de>

13 The term stakeholder is used to refer to everyone who may have some direct or indirect influence on the system requirements. ([12], p. 80).

- *Approval*, i.e., making some kind of contract among the stakeholders,
- *Deployment*, i.e., asserting that the plan is put into praxis,
- *Use*, i.e., the involved stakeholders refer to the plan when needed,
- *Updating* when a new version is required (because of new requirements, new available technologies, failure to achieve individual tasks, or just leaving the time frame of the plan). After the first version, the creation and update phases merge into a cyclic, evolutionary development of the plan.

IM departments will usually create and maintain proposals for the plans. They are interested in clearly defined requirements for their work, which is very deeply concerned with tactical management issues. Top management is interested in seamless and cost-effective operation of the hospital. They approve the plans (probably together with the funding institutions). Employees should be involved in eliciting the requirements, since they will use the resulting information systems. The actual strategic plans will be used by the IM departments and the vendors of HIS components when constructing or maintaining components of hospital information systems. External consultants may help creating plans, but also be engaged in negotiations for the approval.

The most essential purpose is to improve a hospital's information system in a way it better contributes to the improvement to the hospital's goals. This purpose should determine the structure of strategic plans, i.e., it should show a path from the current situation to an improved situation, in which the hospital's goals are achieved as far as possible and reasonable.

3. Structure of Strategic Plans

A strategic plan should encompass the hospital business strategy or strategic goals, the resulting information management strategies, the current state of the hospital information system, and an analysis on how far the current information system fits to the strategies. The planned architecture should be derived as a conclusion of this analysis.

The strategic plan also has to deal with the resources needed to realize the planned architecture, and has to include a strategy for the operation of the resulting hospital information system and a description of appropriate persistent organizational structures. Examples for resources are money, personnel, soft- and hardware, energy, rooms for servers and (paper based) archives, and for training. The resources should fit to the architecture and vice versa.

The general structure of strategic plans for information management in hospitals can be summarized as follows:

1. Strategic goals of the hospital and of the information management
2. Description of the current state of the hospital information system
3. Analysis and assessment of the current state of the hospital information system
4. Description of the planned state of the hospital information system
5. Path from the current to the planned state

This is only a basic structure that may be adapted to the specific requirements of individual hospitals. Particularly, a short management summary and appendices describing the organizational structure, personnel resources, the building structure, the network architecture, etc. are likely to complement a strategic plan.

3.1. *Strategic goals of the hospital and of the information management*

Hospitals aim at providing health care. However, these goals may be further refined. For instance, specific goals could be to increase the number of outpatients, to decrease the average duration of inpatient stays, to perform best quality patient treatment, to improve collaboration with healthcare institutions in the nearer region, to be more competitive by an image of being a modern hospital with all the latest technical means, to offer wholesome

patient care by less technical but more personal engagement, to increase profit, and so on. Obviously those very different and partly conflicting goals have to result in equivalently different information management strategies and different architectures of hospital information systems.

3.2. *Description of the current state of the hospital information system*

Before any planning is commenced, the hospital information system's current state should be described. This may require some discipline, because some stakeholders may be more interested in the planned (new) state than in the current (obsolete) state.

The description of the current state will be the basis for identifying those functions [13] of the hospital that are supported well – e.g. by information technology – and those functions that are not (yet) well supported. Thus, application systems as well as existing information and communication technology have to be described including their contribution to the executability of the hospital's functions. The functions having to be considered here can be derived from the goals of the hospital.

Problems in information processing do not always only have technical reasons, but there may also be shortcomings in organizing information management [14]. Thus the description of the current state should be completed by the description of the current organizational structure of information management.

3.3. *Analysis and assessment of the current state of the hospital information system*

When the current state is described, it should be analyzed with respect to the achievement of the information management strategies. Note that missing computer support for a certain function may not be assessed in all cases as being a bad support for that function. For example missing computers in patient rooms and in consequence a paper-based documentation of clinical findings may be more conforming to the goal of being a human and friendly hospital than the use of computers and handheld digital devices in this area.

3.4. *Description of the planned state of the hospital information system*

Based on the analysis of the current state, a new state should be described that achieves the goals better than it is the case in the current state; provided that the current state does not already achieve the hospital's goals. Note that besides of technical aspects also organizational aspects have to be discussed. In many cases this is an opportunity for introducing a chief information officer (CIO) or to clarify its role respectively.

3.5. *Path from the current to the planned state*

This section should describe a step-by-step path from the current to the planned state. It should include assigned resources, i.e. personnel, estimated investment costs as well as future operation cost, etc., and concrete deadlines for partial results. This path could also assign priorities to individual tasks as well as dependencies between tasks.

4. Conclusions

Typical questions related to strategic plans are:

- How detailed should the strategic plan be?
- How much effort should be spent for the strategic plan?
- How long should the strategic plan be valid?
- Who is responsible for creating and updating the strategic plan?
- Is it allowed to depart from the strategic plan after it has been approved?

A more detailed guideline for constructing and updating strategic plans should give answers to those questions. The working group mentioned above is currently developing

such a guideline as a tool for strategic information management in hospitals. As an initial result, this paper discusses the purpose and structure of the plans.

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