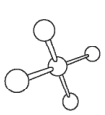

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Clinical BPM

Process Management for Improving Operational Efficiency in Hospitals

White Paper

Population demographics, increasing citizen expectations and a patient's ability to choose together with pressure on budgets is not a new phenomenon in healthcare but it does lead to an ever starker choice: "Improve operational efficiency and be more competitive in terms of cost and patient care or fall by the wayside"

Surviving in this tense environment will be the top issue in the health care sector over the next few years. It is obvious that the current management repertoire – personnel cuts, investment stops, salary reductions, mandatory overtime and collaborations or mergers with other organisations – no longer suffices or cannot be implemented to the extent necessary.

It seems appropriate to take a look at other industries that have faced similar challenges and addressed them successfully. The transition from manufacturer to efficient industrial company is not a question of stricter personnel management but optimised work processes. But what are the business processes of a medical care provider such as a hospital? If you ask this specific question, you tend to get the standard answers – the processes are not clearly defined, are viewed or experienced differently by different colleagues, are not transparent and even less measurable, and consistency cannot be guaranteed. Consequently the key factor to increasing efficiency and profitability will be the targeted improvement of holistically analysed workflows. Done correctly, it not only increases efficiency but also the quality of treatments and care provided. Merely reducing wait times, through planning and process control improvement as well as freeing up personnel time, results in notable improvements for patients. Process-oriented concepts that are already used in other industries will therefore undoubtedly be the basis for the future success of medical establishments as well. Clinical BPM is Business Process Management designed for the health care industry and deals first and foremost with the identification, modelling, simulation, execution and documentation of business processes where all direct and indirect process flows related to the patient's medical care are the subject of optimisation and automation.

The aim is to increase efficiency while simultaneously increasing the process quality and consequently the quality of the treatments provided. As with the introduction of BPM in other industries, the resulting transparency and measurability of the optimized processes play a crucial role, enabling verifiable and sustainable efficiency gains in clinical processes.

Clinical BPM is the right approach for the long overdue modernisation of the everyday business activities of medical service providers.

Processes as a Quality Factor

Process visibility and management is central to the NHS Institute for Innovation & Improvement "productive" series which is designed to maximise quality, improve processes, minimise variation and allow patients to feel safe and well cared for whether in the theatre, on a ward or in their own homes. Documentation of processes by the responsible process manager, does not alone lead to increased efficiency. This can only be achieved by identifying and defining the value-adding process flows, optimising them and then automating them as much as possible while ensuring that each participant is aware of their role within them. Business Process Management (BPM) provides the foundation for this by visualizing the individual process flows and making them transparent, using the industrially tried, tested and widely-used BPMN 2.0 (Business Process Modelling Notation) modelling standard. With an innovative and holistic BPM system, quality management practitioners can then model, simulate, (partially) automate and continuously improve the processes in the hospital.

BPM in the Health Care Industry

- Clinical BPM deals with the identification, modeling, simulation, execution and documentation of hospital processes.
- Process-oriented concepts make it easier to succeed in the tense environment engendered by rising numbers of cases and increasing cost pressure.

Integrating Systems, Orchestrating Processes

The system environments in hospitals have grown heterogeneously. The NHS Connecting for Health programme endeavours to introduce increasing standardisation of core systems with common data but there will be a continuing need for communication & automated data exchange with other systems for some time to come. The data and system integration, i.e. the exchange of data between individual IT systems to avoid multiple entries of data, is generally handled using a communication server.

The current generation of communication servers is primarily based on an approach referred to as an Enterprise Service Bus (ESB). Whilst this approach makes it quite easy to integrate new IT systems into existing system landscapes and to remove those systems being retired an ESB does not in itself support clinical processes, especially those with human interaction like patient admission in a hospital or the planning and scheduling of operations.

The transition from data and system integration to process integration can be achieved only with end-to-end BPM. A Business Process Management System (BPMS) with the capacity to manage the flow of data between existing IT systems AND automate process flows can provide a powerful technology foundation for such a transition. The BPMS automates the process flows previously defined and modelled by quality or process specialists without being constrained by the boundaries of individual IT systems. This makes it possible to actively integrate all parties involved into the processes, optimally automate and standardise processes between cooperation partners in the health care sector, speed up process flows and continuously monitor and improve them.

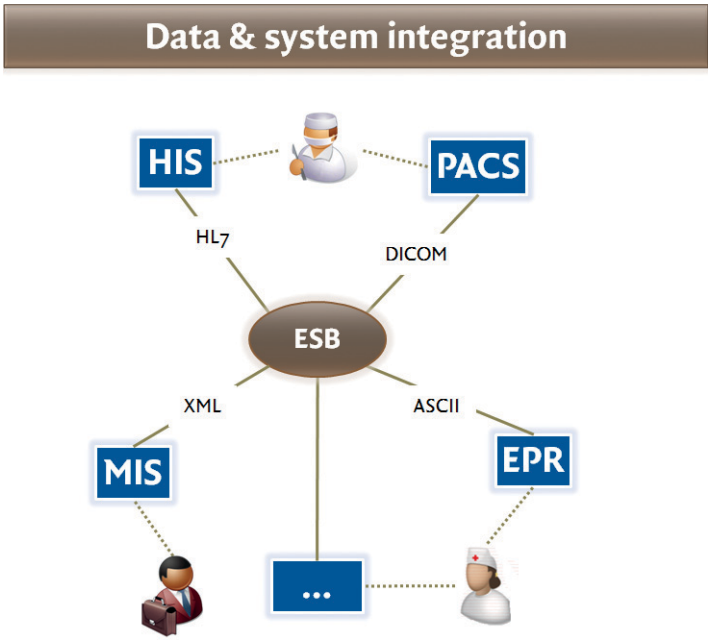
Clinical BPM with "Karl Storz OR*chestrion*"

As is well known, the primary value chain process in hospitals consists of the subprocesses of admission, diagnostics, therapy, care and discharge.

Process flows in therapy are particularly important since when an operation is required specific (and expensive) resources in terms of people, theatre suites, equipment and instruments must all to come together in particular combinations. The efficient scheduling and use of these resources can increase the number of surgical procedures that can be performed, reduce the risk of slippages and prevent the growth in waiting lists. Using "KARL STORZ OR*chestrion*" makes it possible to reduce running costs by up to 30 percent by optimising operation scheduling and management. The changeover time (transition time between two successively scheduled operations) is particularly well suited as a key measurable factor for measuring the optimisation achieved. With the use of OR*chestrion* it can be reduced from the current industry standard of 45-60 minutes to less than 15 minutes.

As a browser-based and modular system, the integrated OR*chestrion* process and resource management service supports the entire process from diagnosis, treatment planning and logistics to the actual operation, including the preparatory and post-operational activities. The modular system structure can be tailored to the individual requirements of a hospital and offers a dynamic platform for successively integrating future developments and improvements.

—> *Central connection of all relevant IT systems using an Enterprise Service Bus (ESB)*

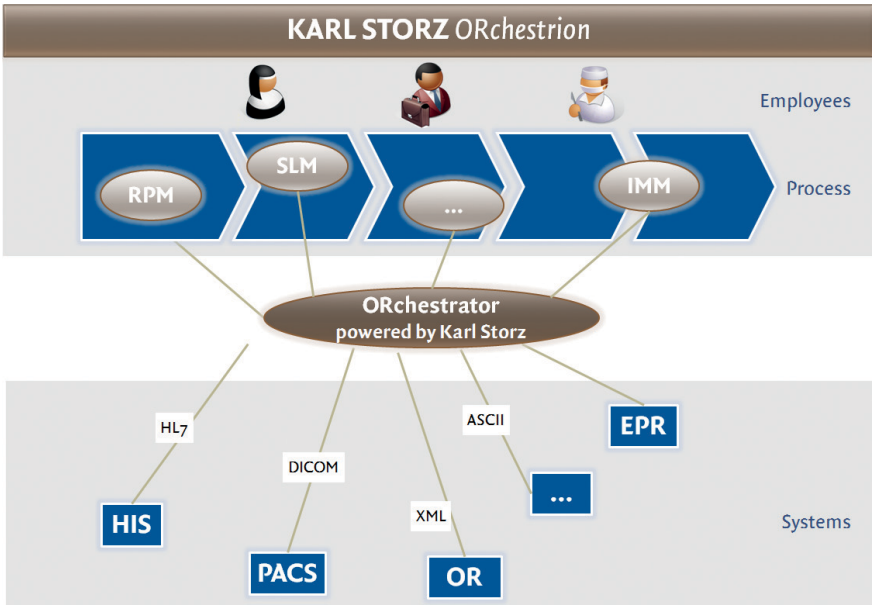


"KARL STORZ OR*chestrion*" is based on OR*chestrator*, an enhancement of the inubit BPM-Suite that provides for the specific requirements of BPM in hospitals. OR*chestrator* is the central process engine that acts as the "operating system" and technological base for holistic process management in hospitals. With more than 70 system connectors, it is an ESB that provides very powerful integration and communication functions. For OR*chestrion* the processes RPM (Resource Planning Module), SLM (Steering & Localization Module) and IMM (Instruments Management Module) are currently available. RPM focuses on medical history as well as the efficient planning of treatments, and the use of personnel, rooms, devices and instruments. In combination with a real-time location tracking system, SLM ensures that the planned paths, as well ad-hoc planning of urgent procedures and the location of the resources used are monitored and controlled. IMM is responsible for the hospital's internal inventory management and the optimisation of the use of instruments, where assignments to cases as well as sterilization and service cycles are recorded automatically. Additional processes from Karl Storz, inubit and third party providers such as AMM (Anaesthetic Management Module) and DMM (Document Management Module) will soon become available for this hospital operating system.

In addition to preconfigured, standardised processes as in OR*chestrion*, the OR*chestrator* can be licensed and used for holistic modelling, control, monitoring and optimisation of all hospital processes. Those responsible for quality and process management can record and optimise all the processes they need themselves. As the central process platform, OR*chestrator* brings together all crucial hospital processes and actively integrates operating theatre managers, doctors, anesthetists, and nurses as well as IT systems and their associated data into the process flows and enables complete "end-to-end" process management with continuous improvement and implicit documentation.

Introduction of Clinical BPM

As has already happened in other industries, correctly introduced BPM significantly improves and changes the workflows in hospitals as well. Boundaries between departments and units are broken down and the staff start to progressively work and think in terms of the predefined processes and clinical paths. As end-to-end



As a web-based modular system, "KARL STORZ" ORchestrion accompanies every step of the value creation chain of the operating theatre

processes become more clearly understood any interruptions to the patient journey through “the system” will become more evident; organisational structures can evolve to make the journey smoother and more predictable, reducing stress for all those involved. We therefore recommend a gradual approach when introducing Clinical BPM; change management should be taken into account right from the start and a pilot project selected. “Think global, act local” is the motto for ensuring success for all the stakeholders. The process identified for the pilot project should be of sufficient importance to the value chain that optimising and automating this process alone can increase efficiency enough for all to see. At the same time it must be ensured that the implementation and introduction can take place alongside ongoing hospital operations. inubit staff will work alongside you through the exercise to enable your staff to focus on the solution rather than the technology; the mix of resources can be blended to achieve the best outcome.

Once this pilot process and the related change management have been implemented successfully, it is then easy to identify other process flows that are suitable for the next BPM project.

Conclusion

Quality management is an important basis for increasing operational efficiency in the health care industry. Documented processes are a prerequisite for introducing and using BPM, for identifying the core processes with the biggest effect on the value chain and optimising them holistically. However, it is not possible to implement BPM without change management – structures and process flows that have developed over time can only be broken down when all process participants are involved. One thing is certain though: Considering the increasing cost pressure in health care, Clinical BPM will play a central role.

Dr. Torsten Schmale (CEO of inubit AG)

