

Transitioning to  
**value-based healthcare**  
Inefficiencies in expensive high-end medical  
imaging equipment are costing millions

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### Services with more grip

Today: Value-based healthcare.  
Delivering value to patients with  
high-quality care and at a lower  
service cost

### The importance of value-based healthcare

→ Rising costs are forcing governments and health insurance companies to base their reimbursements on the quality of care and not just the type of procedure.

### How do we transition to value-based healthcare?

→ With a detailed efficiency assessment of imaging equipment and how it can be improved in the future.

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### Executive overview

As healthcare systems all over the world are struggling with rising costs and inconsistent quality, new and long-term strategies with a focus on sustainability are required urgently: maximizing value for patients, while achieving the best outcomes at the lowest cost. Ultimately, this enables the transformation to real, value-based healthcare. Unfortunately, inefficiencies prevalent in costly high-end medical imaging equipment are stumbling blocks to achieving this goal. Today, healthcare providers are desperately calling for offerings that expose system downtime and non-standardization.

#### Dealing with healthcare organizations' costly CT and MR equipment

Not surprisingly, high-end devices deserve high-end usage. Computed tomography (CT) and magnetic resonance imaging (MRI) scanners are the most expensive pieces of medical equipment in hospitals, each costing between \$1–3 million. With an expected life cycle of seven to ten years, excluding major upgrades, their considerable replacement and maintenance cost, we are looking at up to \$180,000 or more annually.<sup>1</sup>

#### An absolute must: knowing the used system to the last detail

Any system downtime means revenue loss which can have a significant impact on the return on investment (RoI). It is estimated that 20–40% of total health spending is wasted on inefficiency. When it comes to medical equipment, inefficiency can also be attributed to the lack of user training and ineffective technical support.<sup>2</sup> Examined in more detail, non-standardization of scanning protocols and workflow inefficiency lead to slow and inaccurate diagnosis, irreproducible results compromising on the quality of patient outcome.<sup>3</sup>

<sup>1</sup> <http://www.audit.vic.gov.au/publications/20150225-Hospital-Equipment/20150225-Hospital-Equipment.pdf>  
last visited March 6, 2017

<sup>2</sup> [http://www.who.int/whr/2010/10\\_chap04\\_en.pdf](http://www.who.int/whr/2010/10_chap04_en.pdf)  
last visited March 6, 2017

<sup>3</sup> <https://www.advisory.com/research/service-line-strategy-advisor/the-pipeline/2013/10/why-you-need-to-fully-use-your-imaging-capacity>  
last visited March 6, 2017

## Key challenges

- unmasking hidden potential in the usage of MR and CT systems
- identifying experienced consultants who are familiar with your systems and needs, and trusted by your workforce
- maximizing both technical and financial outcomes by evaluating indicators that strengthen knowledge, performance, and confidence

## There are more new opportunities, but first, they must be identified

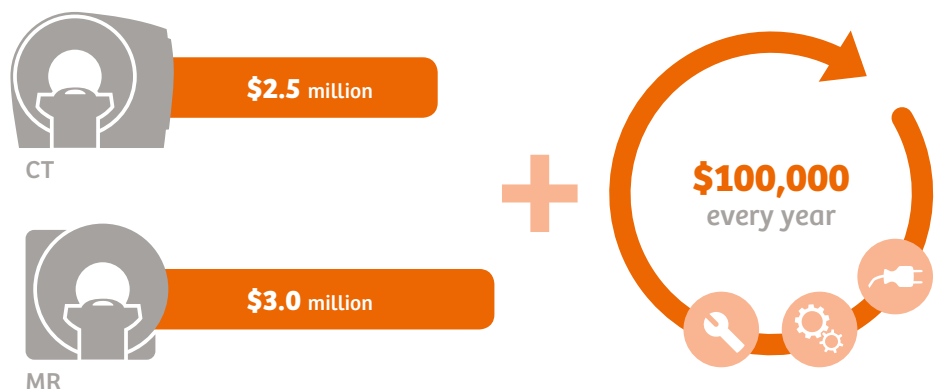
→ So far, many healthcare providers find it challenging to take advantage of new opportunities and to generate additional revenue from them. There are multiple reasons for this.

## Trends CT and MR equipment can be cash cows – if used to their full potential

In today's pressure-driven healthcare world, the efficiency and effectiveness of high-value equipment like CT and MR scanners play a decisive role, as both medical imaging systems are increasingly utilized to diagnose, manage, and treat medical conditions. They are the first choice when it comes to high-quality images of internal organs and tissues. They are also critical to clinical decisions at key points in a patient's treatment, and can significantly influence patient outcomes, depending on the efficacy of methods that healthcare institutions are deploying in their usage.

Undoubtedly, imaging machines are costly. Each type of imaging device comes in a range of prices, and hospitals recoup those expenditures through imaging charges. The cost of a CT scanner can be as low as \$65,000 for a refurbished machine that produces only small images quickly. A brand-new high-end CT scanner can run as high as \$2.5 million. Prices are slightly higher for MRI machines, running up to about \$3 million for a new machine. For hospitals and imaging centers, the base price for machines is just the beginning. CT and MRI imaging machines usually cost about \$100,000 per year to maintain. As they get very hot, they must have an internal cooling source which requires a lot of energy. Additionally, MRI machines must be placed in suites that protect patients and staff from magnetic waves that can cause problems with pacemakers and other devices. Installation of machines in these suites can run the hospital \$4 to \$6 million.<sup>4</sup>

<sup>4</sup> <http://www.thefiscaltimes.com/Articles/2014/07/21/Why-Your-MRI-or-CT-Scan-Costs-Arm-and-Leg>  
last visited March 6, 2017



## It's time for patient-centric and value-based healthcare

It is completely out of the question that in healthcare the goal should only be focused on improving value for patients. The specific nature of this sector warrants that value should be defined as the quality of patient outcomes relative to the cost of achieving those outcomes.

### There are two sides to every coin

1. Improving value requires either improving one or more outcomes without raising costs, or lowering costs without compromising outcomes, or both.
2. If providers can improve patient outcomes, they can sustain or grow their market share. If they can improve the efficiency of providing excellent care, they will have a strong positioning with regards to contractual discussions.
3. Those providers that increase value will be the most competitive. Organizations that fail to improve value are likely to encounter growing pressure and will not be sustainable in the long run.<sup>5</sup>

Exacerbating the situation, government and health insurance companies are facing significant pressure to reduce costs. They are increasingly basing reimbursements on the quality of care provided and not just the number and type of procedures. As such, healthcare providers need to redesign their business model into one that will be sustainable. This means delivering value to patients with high-quality care and services at lower costs.<sup>6</sup>

<sup>5</sup> <https://hbr.org/2013/10/the-strategy-that-will-fix-health-care>  
last visited March 6, 2017

<sup>6</sup> <https://hbr.org/2015/10/turning-value-based-health-care-into-a-real-business-model>  
last visited March 6, 2017

## Readiness and opportunities

### Focus on efficiency for maximized outcomes

Upon initial investment, many healthcare providers do not have the technicians or knowledge to realize optimal outcomes from CT or MR scanners. Hence, the cost-effectiveness of delivering CT and MR imaging services varies widely across the different healthcare institutions. While some CT and MR imaging services operate at a surplus, others incur losses that can amount to millions each year. Therefore, options to enable the provision of cost-effective imaging services should be considered.

### A major concern: improved staff performance and confidence in system usage

→ Dedicated consultancy offerings with full expert breadth and experience can bring out the best on all sides.

### Key advantages

- advances and optimizes CT and MR scanners' utilization
- individual report with key findings and pinpointing room for improvement at a glance
- replacement and maintenance costs as well as defined ROI goals are secured
- users' knowledge, performance, and confidence are maximized at the same time

### Why can expert consulting be the crucial plus?

Because in times where every minute and every cent counts, it is helping to increase equipment and employee productivity and efficiency. This allows staff to spend time on what really matters: the care of the patients.

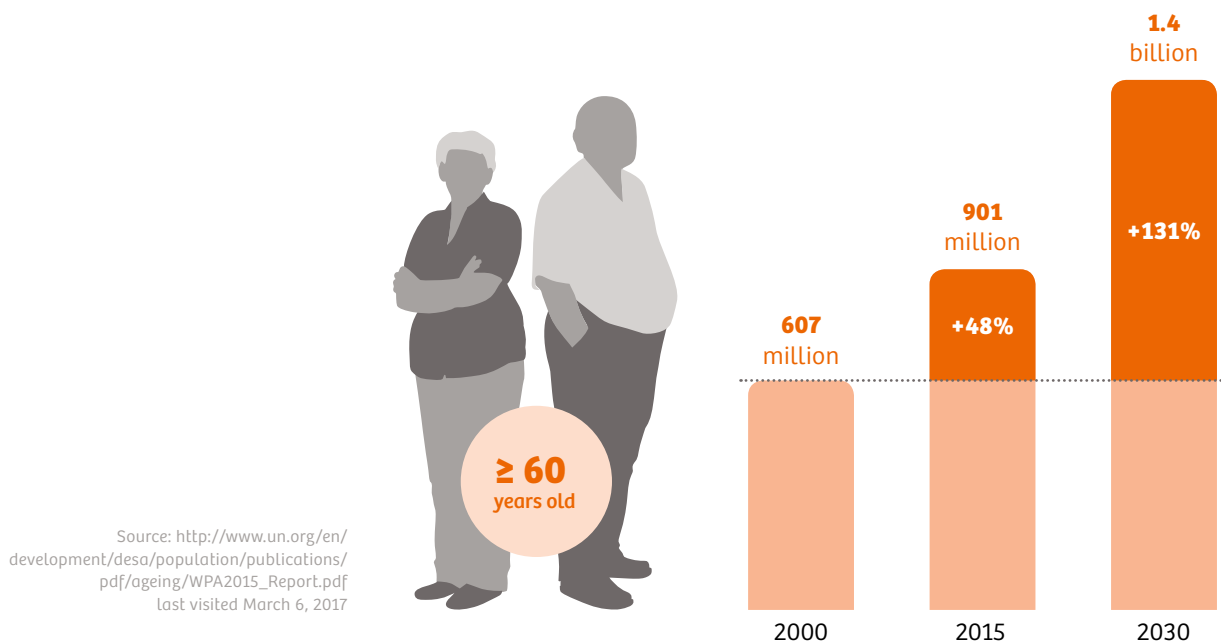
### How to see the value of expert consulting?

By supporting healthcare providers with field-tested ways to utilize their capital investments more efficiently, leading to decreasing operating expenses and a strengthened competitive edge.

## Necessities **The transformation of healthcare is unstoppable, but it can be influenced**

With the current trend in healthcare, the quality of patient outcomes is one of the key priorities of healthcare providers and payers. By ensuring that employees are utilizing capital investments like the CT and MR equipment as efficiently as possible and investing in a continuous clinical workflow improvement process, this will not only optimize patient outcomes, but also reduce system downtime or staff redundancies.

Otherwise, unjustifiable operating expenses could force healthcare management to take drastic measures to reduce costs, such as staff retrenchment or incentive reduction. Current staff may thus be overworked, increasing the potential for mistakes. A decrease in remuneration or incentive can lead to low morale. Both could negatively impact patient outcomes. In addition, patient structures will not become healthier or easier to treat as the global world population is aging and chronic diseases are constantly on the rise. From 2000 to 2015, there has been a 48% increase in the number of people aged 60 years or older. By 2030, this number is projected to grow by an immensely challenging 56%.



## Expertise **There's great pressure, but there are answers and solutions to be uncovered**

It is critical for healthcare management worldwide to address two issues:

1. If demand for healthcare service outstrips supply, we will face an unhealthy population segment and an unproductive workforce group.
2. If healthcare needs are not addressed, this can lead to social unrest and even migration to another country. The latter will have an adverse impact on the country's economy.

Siemens Healthineers therefore pursues the premise of long-term sustainability and cost-effectiveness: utilizing imaging equipment in the best possible way, optimizing operating costs, and managing high patient throughput. This is where efficiency gains become necessary, be it with a detailed analysis of given processes or by taking a closer look at structures, reproducibility, or patient experience.

**Focus** **Improve clinical performance, maximize patient satisfaction, gain self-esteem**  
 Cost allocations are often based on charges, not actual costs.<sup>7</sup> To determine value, providers must measure costs at the medical condition level, tracking the expenses involved in treating the condition over the full cycle of care. This requires understanding the resources used in a patient’s specific plan of care, including personnel, equipment, and facilities, the capacity cost of supplying each resource, and support costs associated with care, such as IT and administration.

<sup>7</sup> <https://hbr.org/2013/10/the-strategy-that-will-fix-health-care>  
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Only by accounting for all these expenses can the cost of caring for a certain condition be compared with the outcomes achieved. The cost of existing systems can be a measure for overall department budgeting, but they provide only crude and misleading estimates of the actual cost of service for individual patients and conditions.

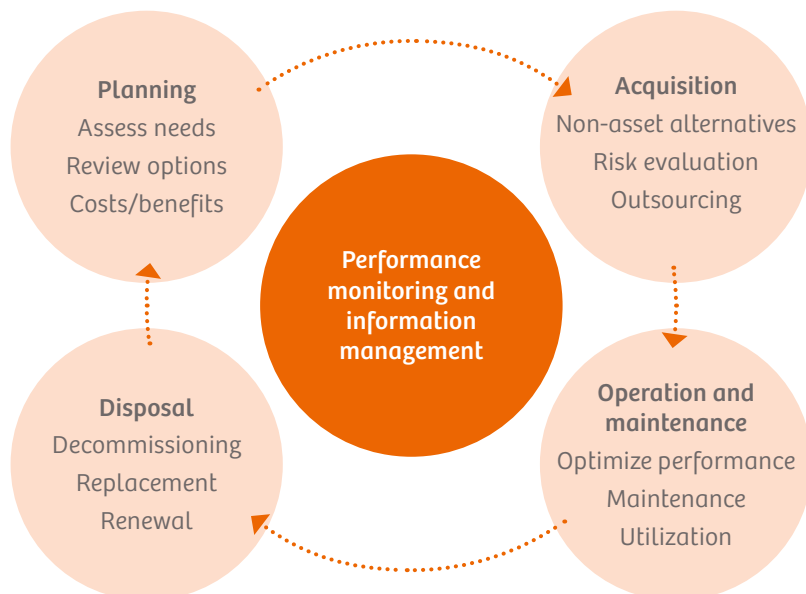


**Equipment, staff knowledge, performance, and confidence are optimized**

→ All in one go: Essential basics like workforce’s know-how and its confidence as well as equipment are used to their full potential. Streamlined protocol and data management enables faster and better diagnosis, and also an improved performance and an excellent reputation.

**Healthcare challenge recognized, challenge averted**

Siemens Healthineers has developed a five-step analysis, Efficiency Consulting, which is based on a combination of quantitative utilization data and observation of day-to-day workflows directly on-site at the customer’s institution. Expertise is offered to address all aspects critical to achieving efficient and cost-effective medical equipment management – from planning, to acquisition, to disposal, to operation, and maintenance as illustrated below.

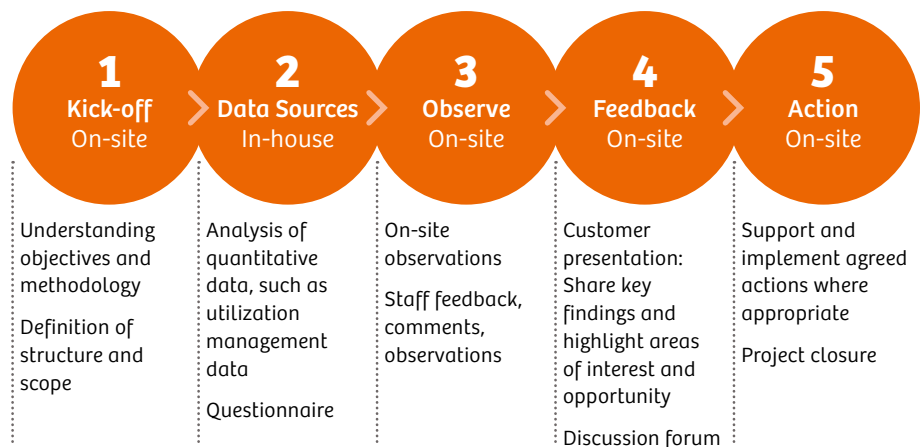


Defining and implementing key phases of efficient and cost-effective medical equipment management, including imaging services, will result in clinically effective and cost-sensible care.

### Dedicated offerings ensure healthcare professionals stay abreast of changes

The objectives and methodology are explained:

1. In a dedicated **(1) kick-off meeting**. Structure and scope of the upcoming project phases will be defined.
2. As the next step, in the **(2) data source phase**, Utilization Management (UM) data of the systems will be analyzed as well as further information about the department that are used to understand the situation to date on-site.
3. Afterwards, **(3) in the observe phase**, on-site observations as well as interaction with the staff follow, and all information and data gathered will be analyzed.
4. As the next step, **(4) a customer presentation** is prepared in which the key findings and highlights of interest and opportunity will be shared. During the final presentation on-site, these findings are shared and discussed with the customer.
5. And in the last step, **(5) the action phase**, the customer gets direct help concerning the implementation of the agreed actions.



### Clinical imperatives

#### To create a sustainable revenue stream

Improving the productivity of imaging equipment is not just about minimizing system downtime. It is also about achieving the best patient outcomes. To achieve this, clinical staff will need to be trained on how to optimize scanning protocols which can lead to more accurate diagnosis, reproducible results, and standardization of quality patient care.

### Operational optimization

#### Enabling better care, prevention, and treatment services

- To improve the productivity of the imaging equipment, there is a need to analyze the current utilization of the system and resources. Maximization of the system and resources can minimize redundancies and ensure that patients have access to the required medical imaging services.
- Improving the skills of the employees can also improve operational workflow and increase patient throughput.

### Financial performance

#### The investment is a large part of the total cost of ownership

It is no surprise that maximizing the return on investment is a target for many healthcare executives.

## Customer testimonial

The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

“ It has been really useful to have experts from Siemens look at our processes and the way we do things with a fresh pair of eyes. As with any organization, norms become established and it can become difficult to know when and where things need to change. The observation stage of the Efficient CT Service has brought things into focus and provided valuable knowledge and insight for our development, with specialists asking challenging questions based on how other clinical sites are operating. ”

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Alice Turner,

Principal Radiographer, Royal Stoke University Hospital, Stoke-on-Trent, UK

## In a nutshell

A detailed efficiency assessment

- helps to maximize the RoI on expensive imaging equipment by optimizing workflows
- improves staff's performance and confidence in system usage
- enables financial viability and excellence reputation
- results in clinically effective and cost-sensitive patient care

## The strategy that targets and fixes equipment efficiency

→ Cost-efficient healthcare not only means more rapid diagnosis, but above all cost-effective use of diagnostic equipment and highly skilled staff.

### The path to a greater overall performance?

The quality of patient outcomes is one of the key priorities of healthcare providers and payers worldwide. But this value-based healthcare demands that equipment and staff operate at an affordable, reliable, and efficient level – anytime and anywhere. Efficiency Consulting not only paves this way, but it will also accompany the healthcare provider from start to finish.

For a field in which high cost is an overarching problem, the absence of accurate usage and cost information is a disaster. Few clinicians have any knowledge of what each component of care costs, much less how costs relate to the outcomes achieved. In most healthcare organizations, there is virtually no accurate information on the cost of the full cycle of care for a patient with a particular medical condition, which is not acceptable any more.

Efficiency Consulting can be an answer: By ensuring that employees are utilizing capital investments as efficiently as possible and investing in a continuous clinical workflow improvement process, not only could patient outcomes be optimized, but system downtimes or staff redundancies could also be reduced. This ensures that healthcare organizations are ideally positioned for the demanding transformation to a value-based care that is challenging healthcare players worldwide.

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## Thinking for the future.

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Profitable in the long-term. From a technological healthcare leader.  
This is Siemens Healthineers Services.

## Want more insights for healthcare leadership?

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