



SIEMENS

[siemens.com/system-services](https://www.siemens.com/system-services)

# Guardian Program™ including TubeGuard

Predicting your tube's lifecycle with continuous  
real-time monitoring.

System  
Services

# Focusing on tube failure prediction

## And ensuring patient safety and image quality

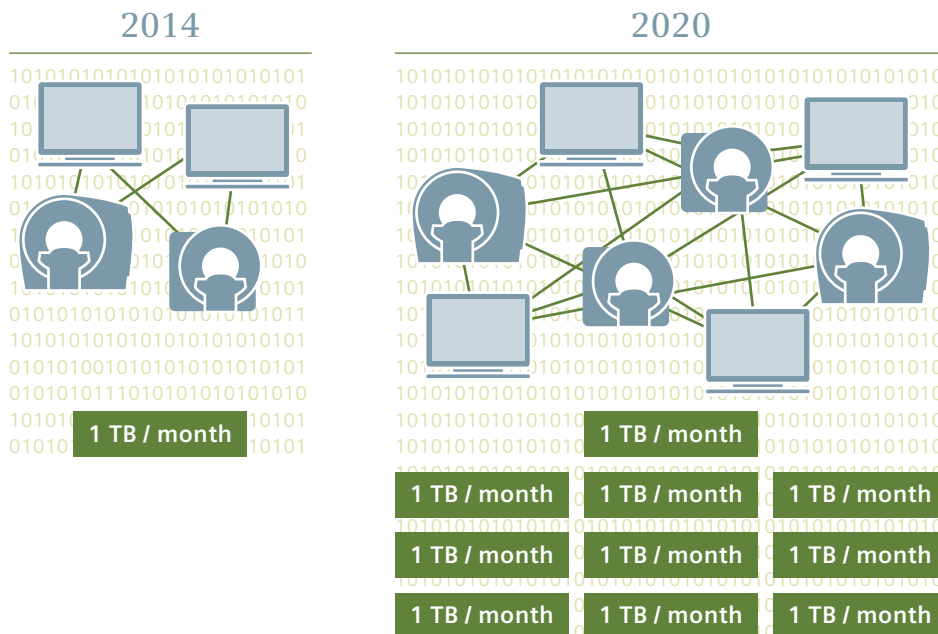
The numbers sound promising: The medical imaging system remote monitoring and maintenance services market is estimated to grow steadily in a forecast period from 2014 till 2020. Some of the key factors driving this growth are the growing diagnostic imaging equipment market, our customers' need to maximize uptime service and minimize the estimated time to repair (ETTR) of equipment, and the steadily rising maintenance costs of this medical equipment. On the other hand, some factors like the high cost of remote monitoring equipment and the lack of multi-vendor device compatibility are restricting the growth of this market<sup>1</sup>.

---

### Our customers' main challenge today: playing an active role in predictive analytics

---

Nevertheless, experts predict a doubling of all connected imaging systems and an exponential growth of data volume by 2020, with the major portion of all data transmission related to medical devices. This sector alone creates data traffic up to the terabyte range each month and is forecast to increase tenfold by 2020<sup>2</sup>.



1 Medical Equipment Maintenance Market Remote Monitoring and Maintenance Services, Forecasts to 2020; <http://www.marketsandmarkets.com/Market-Reports/medical-equipment-maintenance-market-69695102.html>

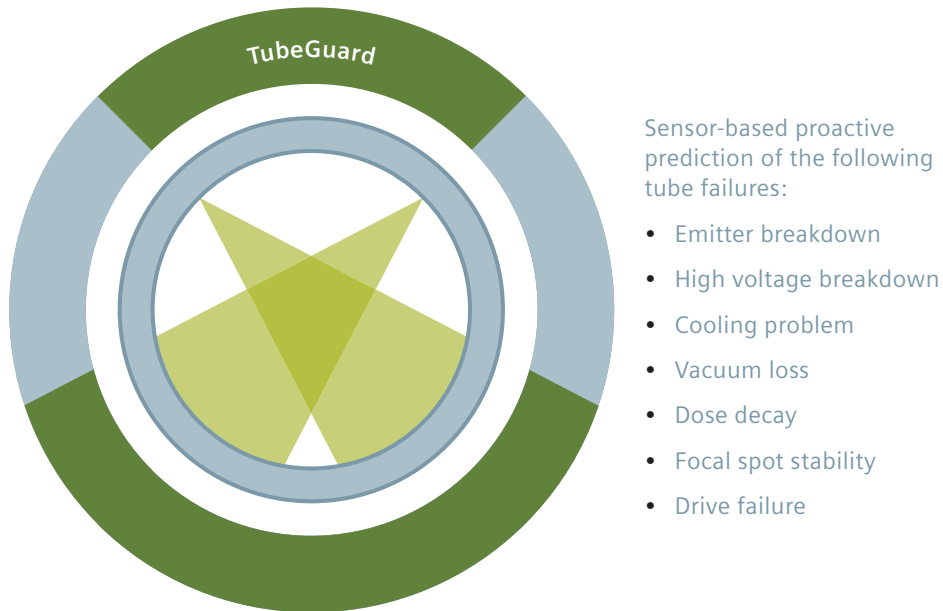
2 <http://www.innovations-report.de/html/berichte/informationstechnologie/fernwartung-der-naechsten-generation-mit-smart-data.html>

---

## Tube failure prediction: the heart of your predictive analytics imaging system landscape

---

Live, real-time, and remote: The Siemens Guardian Program™ ensures your customers' systems workflows by proactively monitoring for deviations from current norms, making it possible to detect and resolve system errors before malfunctions occur. TubeGuard, an additional service in the Siemens Guardian Program, is taking it one step further as it predicts tube failures in dedicated computed tomography and molecular imaging systems, e.g. the SOMATOM Definition family or Biograph mCT systems.



Remote tube lifecycle prediction is the most effective way to eliminate unplanned downtime in the event of detectable tube failure – because it doesn't allow the tube to arrive to this point at all. With the Guardian Program including TubeGuard, you and your patients are always on the safe side and you continue to improve your competitive position – which is essential in the strongly contested healthcare market for imaging systems.

# Valuable measures in times of transition

In the transition to value-based care, all healthcare industry stakeholders are facing various challenges to staying financially viable, including those presented by healthcare reform and consumerism. Many healthcare providers have realized that valuable measures to overcome those challenges and create a sustainable revenue stream often lie within the realms of operational optimization and within strict clinical imperatives. Siemens believes there is great potential to be achieved with Guardian Program including TubeGuard in all three areas of clinical imperatives, operational optimization and financial performance.

---

## Clinical imperatives

---

- Improve patient outcomes with the highest possible level of system availability.

---

## Operational optimization

---

- Increase operational efficiency in your institution – by benefiting from transparent information across your entire equipment fleet in the form of consolidated reports that detail the availability of your systems at all times.
- Reduce staff idle time due to smooth-running workflows and the highest system availability.
- Increase patient satisfaction by providing CT and PET CT examinations on time without having to reschedule appointments due to an unexpected tube failure that leads to unplanned system downtime.

---

## Financial performance

---

- Secure revenue and avoid losses by counting on guaranteed repair times and scheduled maintenance visits according to the operating grade within your department.

# Guardian Program™ including TubeGuard

---

## Trust a pioneer in predictive technology

---

Lifecycle monitoring of the CT and MI tubes is the industry's first predictive technology for such tubes, guaranteeing detectable tube failure prediction<sup>3</sup> – and it works like this: Advanced sensors monitor the tube's functions in real-time and send the data to Siemens Healthcare via our secure remote connection Siemens Remote Service (SRS). Complex software algorithms forecast system utilization and anticipate possible failures. They determine the residual lifetime of the tube and predict the probability of the tube's failure. This allows deviations to be detected proactively – before serious problems occur – and the tube change can be scheduled according to the customer's needs, avoiding any unplanned downtime.

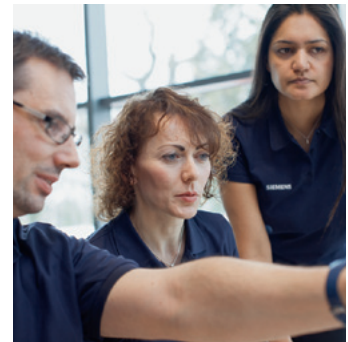
In addition, all data results and reports based on this monitoring are aggregated into LifeNet<sup>4</sup>, the personalized Web-based Siemens Healthcare Service portal for all service-related tasks for fleet managers within a hospital. To sum it all up: With the Guardian Program including TubeGuard, the end of your tube's lifespan can be predicted reliably and workflow interruptions are reduced to a minimum by combining advanced remote technology with trained experts dedicated to protecting your imaging systems – and your bottom line.

The industry's first predictive technology for dedicated Computed Tomography and Molecular Imaging tubes that guarantees detectable tube failure prediction

Before serious problems can occur, the tube change is scheduled according to the customer's needs and timeline

The most innovative way to eliminate unplanned downtime and to improve your competitive situation

Reliable and professional workflows can lead to higher patient throughput and enhance your institutions' reputation



---

<sup>3</sup> Arcing may be, but is not, an indicator of a possible impending fatal tube failure. Therefore, tube arcing is not a reason for a tube exchange under a TubeGuard contract.

<sup>4</sup> Until the global LifeNet rollout is available through intranet CS Reporting; this means that someone from Siemens needs to send them to the customer.

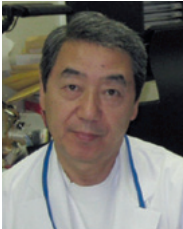
# Monetizing care value

The following examples are based on generic assumptions. They are intended to trigger a general discussion and thought exchange on how continuous education in care providing environments, or the lack thereof, can substantially influence a healthcare institution's profit and loss statement.

## Radiology department with 1 CT

Without TubeGuard		With TubeGuard	
Number of tube downs per year (results in 2.5 lost days of operation and 25 lost patient examinations per day)	0.5	Number of tube downs per year (results in 0.5 lost days of operation and 12 lost patient examinations per day)	0.5
Average downtime or lost time (e.g. rescans) per tube down (in hours)	60	Average downtime or lost time (e.g. rescans) per tube down (in hours)	12
Reimbursement per case	180 €	Reimbursement per case	180 €
Lost examinations per day	25	Lost examinations per day	12
<b>Lost reimbursement per year</b>	<b>5,625 €</b>	<b>Lost reimbursement per year</b>	<b>1,080 €</b>
<b>Staff idle times because of system hard down</b> Allocated staff per CT: 1.5 Average hourly rate per Tech: 150 €	<b>6,750 €</b>	<b>Staff idle times because of system hard down</b> Allocated staff per CT: 1.5 Average hourly rate per Tech: 150 €	<b>1,350 €</b>
<b>Total negative impact per unplanned tube exchange</b>	<b>12,375 €</b>	<b>Total negative impact per planned tube exchange</b>	<b>2,430 €</b>

# Transformation through partnership: working with you to drive success



**Terakado Hideji, Chief Radiologist**  
Jichi Medical University Hospital, Japan

---

“For our University Hospital, high system reliability and availability are essential to provide the best possible care for our patients. That’s why the opportunity to limit unplanned system downtime with the Siemens Guardian Program™ including TubeGuard is a valuable solution for clinicians, clinical management and administrative staff alike.”

---



## Jichi Medical University Hospital

Jichi Medical University Hospital, which opened in 1974, plays a pioneering role in ensuring community medicine and is equipped with advanced medical facilities in order to put the university’s educational philosophies and principles into practice.



1,132 beds in total



Siemens imaging systems:  
ACUSON X300 PE, ARCADIS Orbic Gen2, BIOGRAPH 16,  
MAGNETOM ESSENZA, MAGNETOM Skyra, SOMATOM Definition AS,  
SOMATOM Definition Flash



Specialties:  
anesthesiology, cardiology, dermatology, hematology,  
neurosurgery, ophthalmology, pediatrics, psychiatry, radiology,  
surgery, teaching hospital, urology

---

## Next steps

---

---

---

---

---

---

---

---

---

---

---

## Related offerings

---

LifeNet

Optimize CARE CT

Siemens Guardian Program™

Siemens Performance Plans

Siemens Shared Services

The products/features and/or service offerings (here mentioned) are not commercially available in all countries and/or for all modalities. If the services are not marketed in countries due to regulatory or other reasons, the service offering cannot be guaranteed.

Please contact your local Siemens organization for further details.

© Siemens Healthcare GmbH, 2016

### **Siemens Healthcare Headquarters**

Siemens Healthcare GmbH  
Henkestrasse 127  
91052 Erlangen  
Germany  
Phone: +49 9131 84-0  
[siemens.com/healthcare](http://siemens.com/healthcare)