

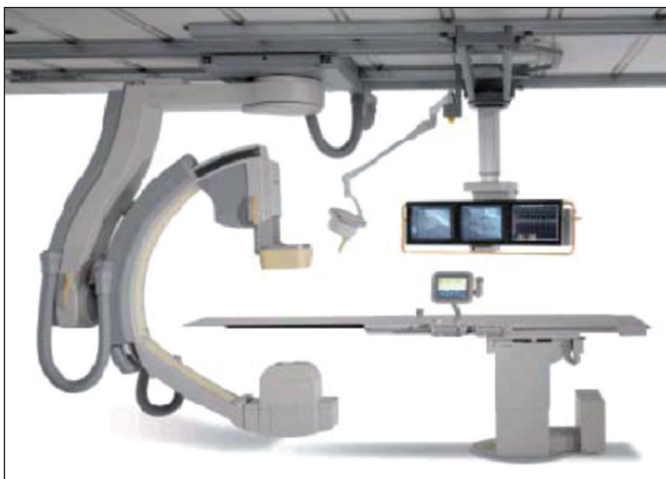


# Philips Medical Systems' Problem

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Philips Medical Systems (PMS) is a global leader in diagnostic imaging systems, healthcare information technology solutions, and patient monitoring and cardiac devices. PMS provides medical devices such as X-ray machines to hospitals all over the world. Increasingly, these devices record events that are distributed via the Internet. For example, the Allura Xper product line consists of X-ray systems designed to diagnose and possibly assist in the treatment of all kinds of diseases, like heart and lung diseases. These machines emit detailed events that are used by Philips to improve the use and quality of their machines. Using process mining, PMS aims to answer questions such as:

- How to test X-ray systems under realistic circumstances?
- How quickly are new features adopted and used in the field?
- How to improve reliability and diagnose recurring problems?
- How to predict failures and do preventive maintenance?



## Process Mining

The goal of process mining is to extract information (e.g., process models) from event logs produced by a wide variety of systems ranging from enterprise information systems to embedded systems (e.g., medical systems, high-end copiers, etc.). Process mining allows for the discovery of processes, e.g., it is possible to automatically generate process models based on event logs expressed in various languages. Moreover, process mining can also be used to discover other aspects such as social networks, organizational structures, decision rules, bottlenecks, etc. without the need for people to model things beforehand.

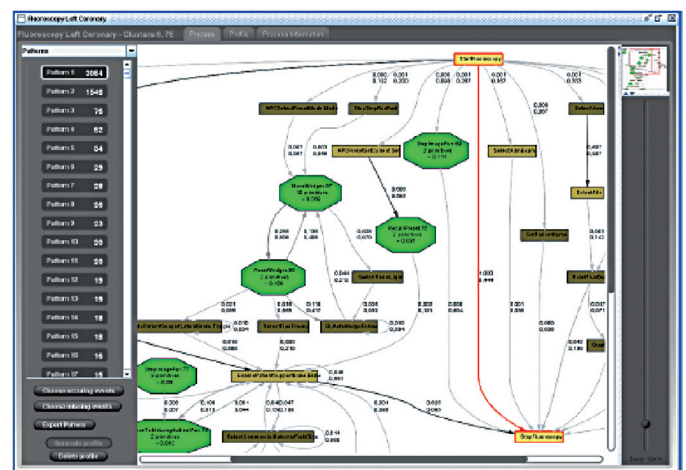
However, if models are present, process mining can be used to check conformance. This way it is possible to see where the actual process deviates from the model and how severe these deviations are. Process mining has emerged as a new and innovative way to analyze processes and systems based on the event logs they produce.

## ProM

ProM is an open source framework for process mining supporting process discovery and conformance checking. It is the leading process mining tool supporting a wide variety of techniques and modeling notations. Using ProMimport it is possible to extract data from different systems. Moreover, ProM interfaces with many other process modeling and analysis tools. In different projects ProM has shown to be able to deal with large event logs and extract meaningful information.

## Results

Using process mining PMS was able to construct test profiles which reflect the actual use of the Allura Xper product line in various parts of the world. This will reduce the time needed to test the systems and improve the quality of testing. Moreover, it provides new insights in how specialists use such systems. In a next step process mining will be used to diagnose reliability problems and to support preventive maintenance.



## More Information

About process mining: [www.processmining.org](http://www.processmining.org)

About ProM: [prom.sf.net](http://prom.sf.net)