

HULA Improves Processes and Patient Care with Process Mining



VIEW

Of end-to-end patient journey

ALERTS

Enabled through pattern discovery

Challenge

With over 800,000 consultations a year, HULA had a plethora of patient data to manage. Disparate data sources made it difficult for professionals to access and integrate information. Additionally, the process of re-tracing a patient's medical journey was time consuming and costly; patient data files often cover many years and can describe several and potentially unrelated health issues. Doctors had to wade through complex processes and overcome process bottlenecks to access patient information and assess patient concerns.

Further, the hospital wanted to use data to improve departmental decisions and increase efficiency. HULA needed a platform that could help find and eliminate unnecessary processes and trigger early alerts for patients while making all this information usable by doctors, not just data scientists.

Transformation

HULA partnered with the TIBCO LABS group on a process mining technique that can find common patterns in the patient healthcare journey. The HULA staff chose TIBCO because they wanted to collaborate with a company that has the flexibility of a start-up and the resources of a large organization. The TIBCO LABS program is designed to allow TIBCO customers and partners to actively participate and collaborate in the next wave of digital business capabilities.

Hospital Universitario Lucus Augusti (HULA)

Based in Spain, Hospital Universitario Lucus Augusti (HULA) is a care center, part of a wider hospital network in the Galician Health Service. HULA performs around 19,000 surgeries annually, 75 percent scheduled and 25 percent urgent.

Using TIBCO's Connected Intelligence Platform, HULA can integrate information extracted from multiple departmental databases for maximum insights. Structured data (like dates and patient IDs) are combined with unstructured data (like doctor notes and patient files) for a complete view of a patient's health journey. Advanced mapping, needed for process mining, is also part of the platform.

Keys to improving patient outcomes can be found using the process mining tool, which uses algorithms and visualizations for easy understanding of grouped and individual patient healthcare journeys. The tool helps doctors and management personnel analyze data and understand why a diagnosis of the same disease took one year in some cases and less than three weeks for others. Examples are previously undetected common patterns in symptoms and/or administrative bottlenecks. Analyzing these longer waiting times allows the team to learn about early detection signs and ways to make processes more efficient, so patients can receive treatment earlier.

For example, TIBCO Spotfire analytics (Figure 1) can visualize the time elapsed between a start activity (Oncology signaling the onset of diagnostic activities) and a target activity (Radiotherapy signaling the start of treatment).



Figure 1. Case selection based on times between activities.

Spotfire users, such as doctors and analysts, can drill down and make one or more selections, for example, to group patients with similar characteristics. Figure 2 shows an example of a shortlist with the central plot displaying parallel activity timelines for the marked patient. The patients are grouped according to those diagnosed in 2019, those with long times to diagnosis, then those with the longest times before treatment was started.

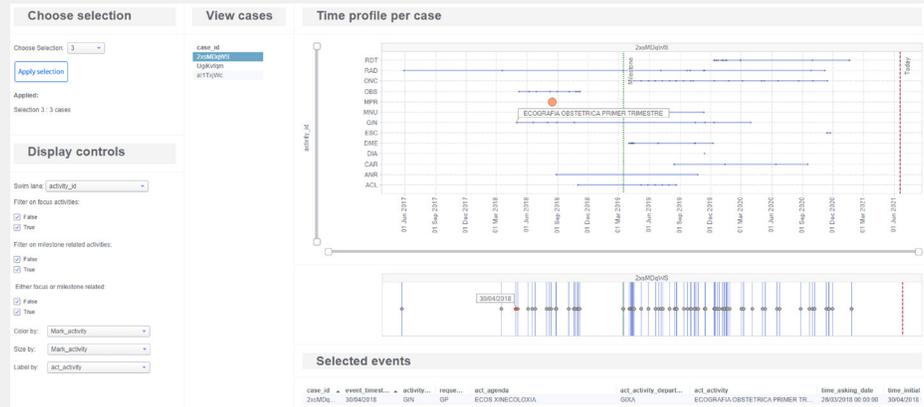


Figure 2. Path journey view for selected patient.

According to David Baltar Boilève, HULA data scientist, “We were able to integrate a lot more necessary information regarding patients, like keywords extracted from diverse sources including pharmaceutical usage, or results from lab tests. Most importantly, we were able to include clinical protocols, ensure we follow the ideal path, and understand where deviations happen.”

Benefits

With HULA’s new process mining solution, doctors have insights into better diagnostic protocols and early detection methods. Process mining directly improves and saves patients’ lives by increasing the speed at which doctors can diagnose patients, allowing them to intervene earlier and improve the patient journey.

Process mining can also help lower the price of treatment. Treatment of cancer diagnosed in its early stages is often five times less expensive than treatment starting in later stages, sometimes almost a \$40,000 difference.

With its new solution, HULA has improved the patient experience and lowered the cost of treatments—all made possible by TIBCO.

What can TIBCO make possible for you? Talk to an expert today at tibco.com/contact-us/sales



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