

**CASE STUDY**

# UNFORS RAYSAFE & EPAM: DEVELOPING APPS THAT SAVE LIVES

In today's technologically driven world, applications influence practically everything in our lives – from simple, everyday conveniences like shopping or listening to music, to the more serious, taking care of our health and well-being. But can apps really help us with make the world a safer and healthier place, or are they just for fun and games?

Founded in 1994, and headquartered in Sweden, Unfors RaySafe is the leading provider of solutions to measure, monitor and manage X-ray radiation, with offices in the US, the UK, Germany, Singapore, India, Japan and China.

X-ray technology has become a key element in the identification, diagnosis, and treatment of many types of medical conditions. Despite its critical role in saving lives, unnecessary radiation exposure is capable of doing just the opposite. In an effort to combat this problem, radiation dose-management programs exist to track, report and monitor patients' exposure; however, the market offerings have been limited to fragmented, manual solutions. That's where EPAM came in to help Unfors RaySafe create a complete X-ray radiation solution.

Unfors RaySafe had a clear plan for their comprehensive radiation dose management system:

- **Create a first-to-market cloud-based application for radiation dose management**
- **Simplify administrative procedures for X-ray diagnostic services**
- **Streamline processes for reporting to regulatory authorities**

Adopting an iterative approach based on the software development methods of Agile, Scrum, and extreme programming (XP) practices, EPAM delivered the first cloud-based dose management software of its kind, RaySafe S1.

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#### THE CHALLENGE

### CREATE A FIRST-TO-MARKET CLOUD-BASED APPLICATION

In an effort to accelerate market reach and better support healthcare institutions to avoid unnecessary radiation, Unfors RaySafe sought an innovative solution that would lower doses and create a safer environment for patients as well as medical staff.

#### THE SOLUTION

EPAM developed RaySafe S1, the first-ever cloud-based solution for dose management. The solution visualizes patient doses and provides role-based guidelines to help medical staff optimize dose and image quality. The software records patient doses during X-ray procedures, and accesses data from past exams, which hospitals use to develop and implement diagnostic reference levels. These references have been shown to reduce the overall dose and the range of doses observed in clinical practice.

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#### THE CHALLENGE

### SIMPLIFY ADMINISTRATIVE PROCEDURES

Unfors RaySafe wanted to upgrade their antiquated dose-management system to a more streamlined, cost-effective solution.

#### THE SOLUTION

The RaySafe S1 solution replaced the outdated manual procedures with an uncomplicated, effective solution capable of integrating with X-ray equipment all over the world which supports the DICOM (Digital Imaging and Communications in Medicine) standard of exchange and storage of medical images and related information. The solution reduces the number of faulty scans through the improved imaging process, which contributes to long-term cost reduction by reducing waste scans.

## THE CHALLENGE

### STREAMLINE REPORTING PROCESSES

Unfors RaySafe needed to simplify their reporting processes in order to ensure the effectiveness of the overall system.

## THE SOLUTION

EPAM's cloud-based application collects and shares radiology information with different individuals involved in the diagnostic imaging workflow – referring physicians, radiologists, operators, medical physicists, radiation safety officers (RSO), and medical engineers. Through this valuable information exchange, diagnostics services providers can more easily follow the industry safety principles of ALARA (As Low As Reasonably Achievable), which are aimed at minimizing the risk of radioactive exposure while keeping in mind that some exposure may be acceptable in order to further the task at hand.

Moreover, RaySafe S1 can automatically notify medical staff if patient doses deviate from the predefined levels.

These were just some of the challenges faced by EPAM and Unfors RaySafe in their quest to raise public awareness of radiation overexposure during X-ray examinations, while creating a safer environment at the same time.

## THE RESULTS

- **The first-ever comprehensive cloud-based software developed to minimize patient X-ray radiation exposure**
- **Optimization: increased image quality, reduced X-ray dosage and waste**
- **Workflow control: improved productivity, results tracking**

In October 2013, a year after its public launch, RaySafe S1 was recognized with the Red Dot Award for Communication Design, in the Interface Design category. The Red Dot Awards are one of the most sought-after quality marks for excellent design, awarded by the Design Zentrum Nordrhein Westfalen in Essen, Germany.

EPAM and Unfors RaySafe have shown us all that technology can truly make the world a healthier and safer place.