Intelligent Imaging

Boost the efficiency of your radiography with improved workflows, reduced physical strain, and intelligent automation

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Introduction

Intelligent Imaging combines artificial intelligence (AI) tools with inbuilt system intelligence and robotics to support you in addressing the major challenges in radiography today – like staff shortage, work overload, or quality issues. To illustrate this, we have investigated with experienced technologists how our solutions optimize workflows ranging from standard thorax X-rays to complex multi-image studies or pediatric imaging.

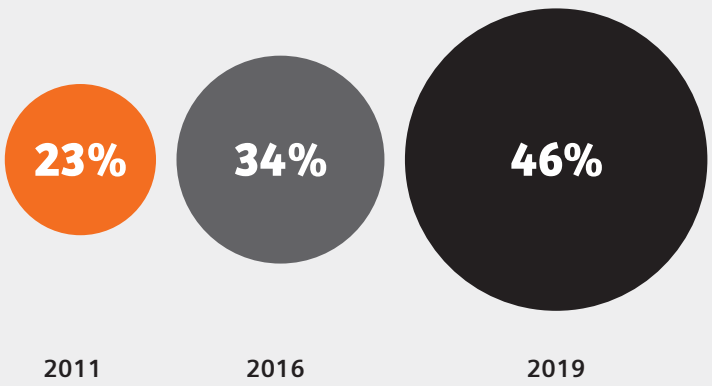
With its ability to empower your entire team to provide the complete radiology exam portfolio at all times and improve the patient focus, Intelligent Imaging not only offers financial gains thorough improved efficiency. It also helps you to improve staff satisfaction, ensure high image quality, and cope with growing workloads.

Contents

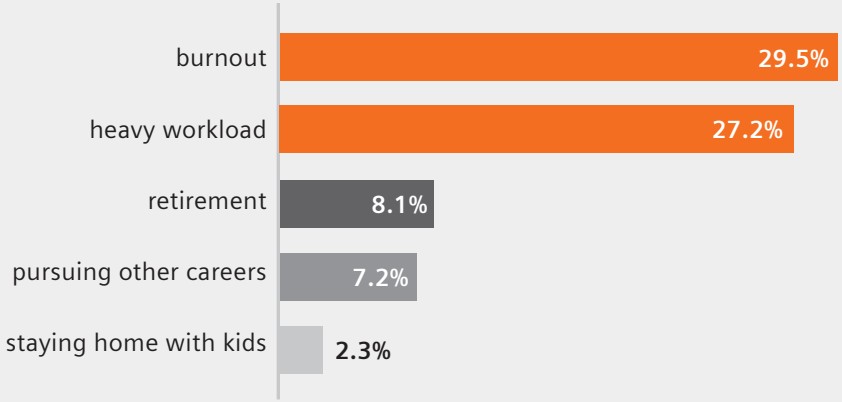
Radiography at its limit

Radiography departments and radiological practices worldwide are currently being pushed beyond capacity by a number of interconnected challenges that form a vicious cycle.
Growing workloads have to be met with fewer and fewer staff. This intensifies quality issues, while physical and mental strain lead to burnout and high absentee rates due to illness among staff. It's a precarious situation that urgently needs to be resolved.

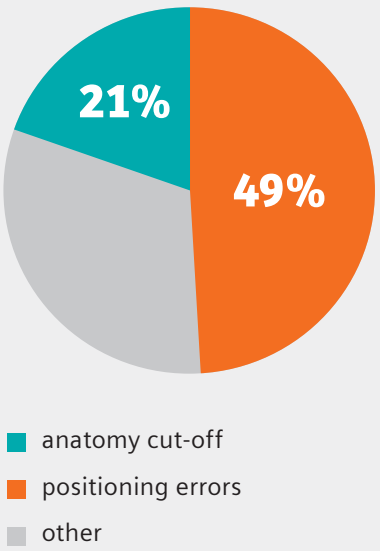
Technologist shortfall in Germany[1]



Factors contributing to technologist shortage[2]



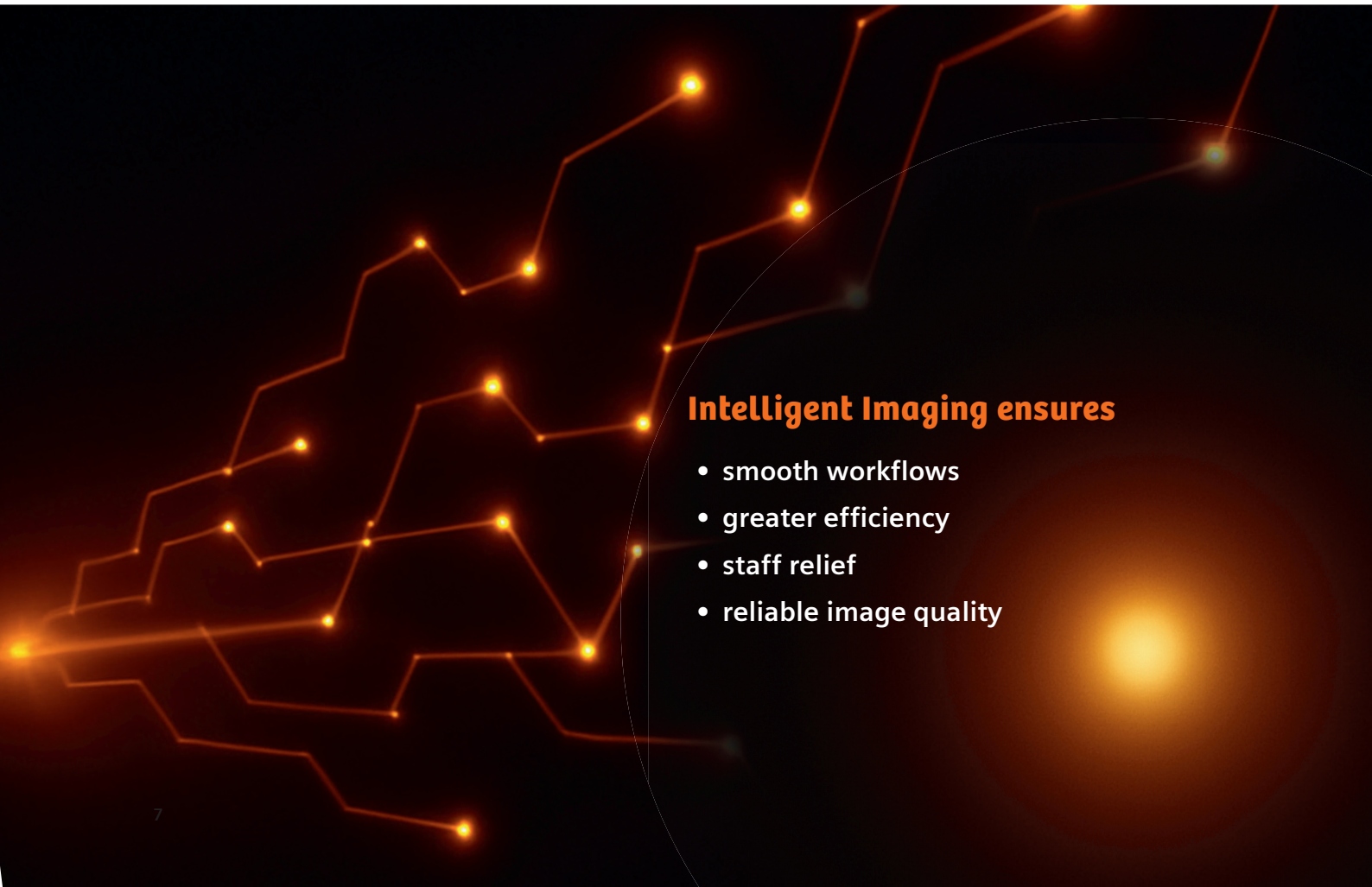
Most frequent reasons for image rejection[3]



The workforce crisis is here to stay. What is the best way to address it?

Breaking the vicious cycle

Advanced technological solutions play a key role in stopping the downward spiral in radiography, because they can be used to address all the prevailing challenges at the same time. Intelligent imaging combines artificial intelligence (AI) tools, system intelligence, and robotics to optimize radiography workflows. This not only offers financial gains through improved efficiency: It's also a major factor in retaining and winning back staff, improving quality, and helping radiology departments and practices cope with growing imaging requirements.



Intelligent Imaging ensures

- smooth workflows
- greater efficiency
- staff relief
- reliable image quality

Intelligent Imaging keeps you in the flow

RIS matching and room preparation

- Transfer of exam requirements from the RIS; check at tube or workstation
- System moves automatically to the required position
- Green status light and sound signal indicate system readiness

Patient positioning

- Digital positioning guide
- Simplified positioning with laser light guidance
- Automatic angulation check
- AI-based anatomy recognition

Adjusting the exam parameters

- Predefined age-based protocols suggested based on RIS information
- Simple parameter fine-tuning with the Patient Size Adapter
- Easy adjustment of all parameters on the ergonomically positioned tube-touchscreen monitor

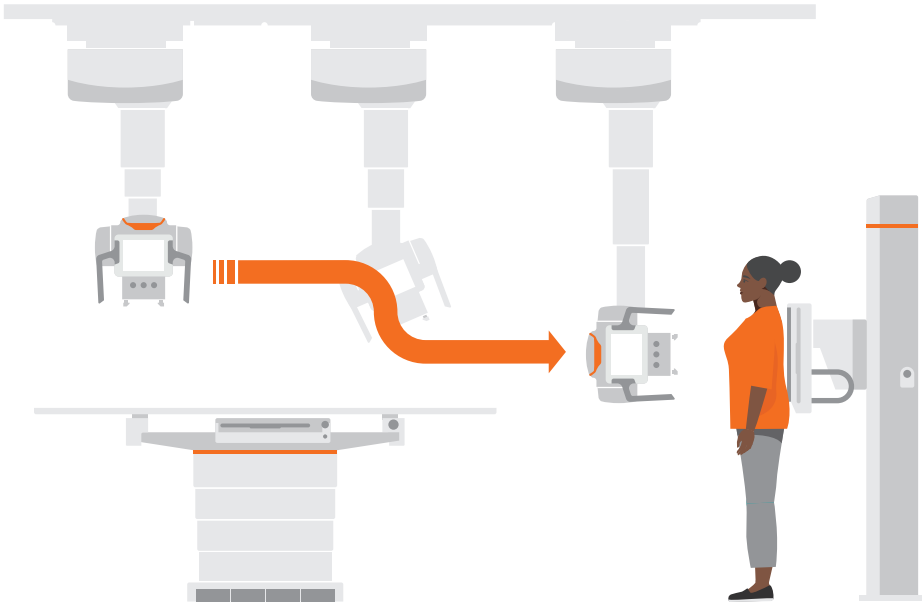
Image acquisition

- myExam 3D Camera gives a full view of the patient from the workstation
- Easy correction of the collimation from the workstation with Virtual Collimation
- Automatic Deviation Index indicates changes for additional images

Post-processing and clean-up

- Automatic image transfer with all exam information
- Predefined Image Flavors can be applied to suit individual reading preferences
- System returns to parking position at the touch of a button

Extremely fast and intuitive



Workflow
28%
faster[5]

2.26
↓
0.99
System interactions halved[5]

"Auto Thorax Collimation helps to increase throughput in a very measurable way. With it, the average 2D chest X-ray takes about 42 seconds in total – and that's from PA to lateral to completion and patient out of the room – which is extraordinarily fast because of the accuracy of the algorithm."

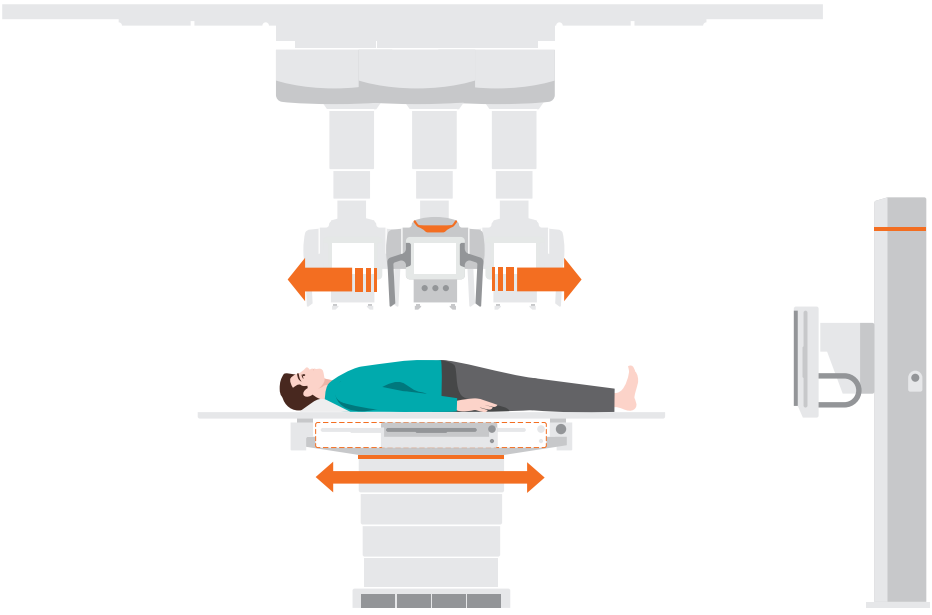
Zachary Carr,
Lead Imaging Technologist

The intelligent thorax workflow

Speed up chest X-ray[4] exams at the Bucky wall stand with Auto Thorax Collimation and other Intelligent Imaging solutions.

- System moves automatically into the predefined position
- Simplified patient positioning with laser light projection
- AI-based thorax detection with Auto Thorax Collimation
- Option to adjust collimation at the workstation with Virtual Collimation
- Choice of two different Image Flavors for post-processing
- Easy transition to additional exams in the same position, e.g., hemithorax; system repositions itself automatically

Horizontal flow



"When we do bedside exams, I get additional support from the system. It contains a gyroscope and shows how the tube is positioned in relation to the detector. This means that I can directly check and adjust the angulation in the exam room and don't have to walk in again."

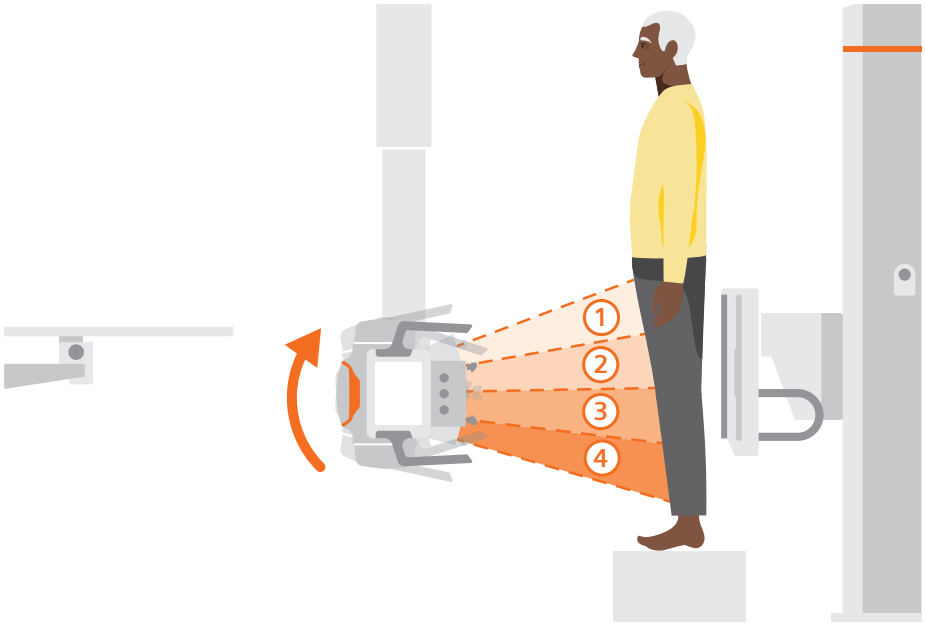
Christian Schramm,
Technologist Radiology/Trauma Radiology,
Universitätsklinikum Erlangen, Germany

Recumbent or bedside exams with Intelligent Imaging

If a patient can't stand up, exams can get complicated and time-consuming – but not with Intelligent Imaging, which fully supports your workflow.

- Easy change from Bucky wall stand to table if the patient cannot stand – system changes position automatically
- Simple patient positioning with easily adjustable table height and floating table top
- Automatic tube tracking – detector under the table automatically moves into position
- For bedside imaging: system indicates angulation to simplify correct alignment of tube and detector
- Full control of system positioning via remote control

Making complex exams easy



13%
7%
Retake range reduced[5]

Range adjustments
63%
faster[5]

"Smart Virtual Ortho and Virtual Collimation save an incredible amount of time. I have yet to meet anybody that does not like the Smart Virtual Ortho function."

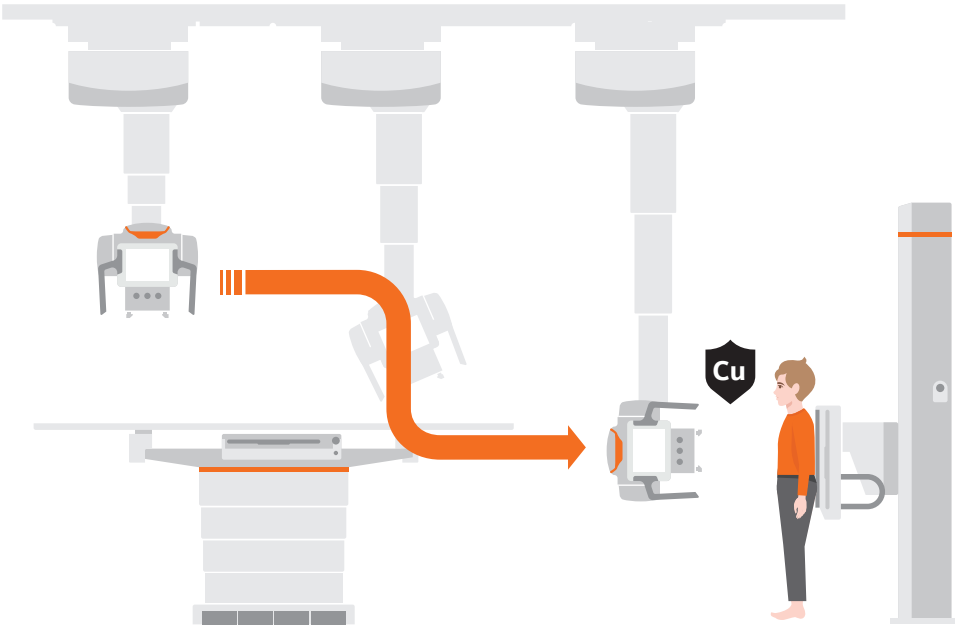
Zachary Carr,
Lead Imaging Technologist

Multi-image studies with stitching

Complex exams like long-leg or full-spine imaging[6] are fast and reliable with the help of Intelligent Imaging solutions.

- Easy positioning of imaging aids
- Automatic system movement into predefined positions for multi-image exams
- AI-based anatomy detection with Auto Long-Leg/Full-Spine Collimation[7] and calculation of the minimum number of individual images required
- Easy adjustment of the imaging start and end points on the touchscreen at the workstation with Smart Virtual Ortho
- Automatic acquisition and stitching of the required images
- Easy to store single images: for example, knee

Special care for special patients



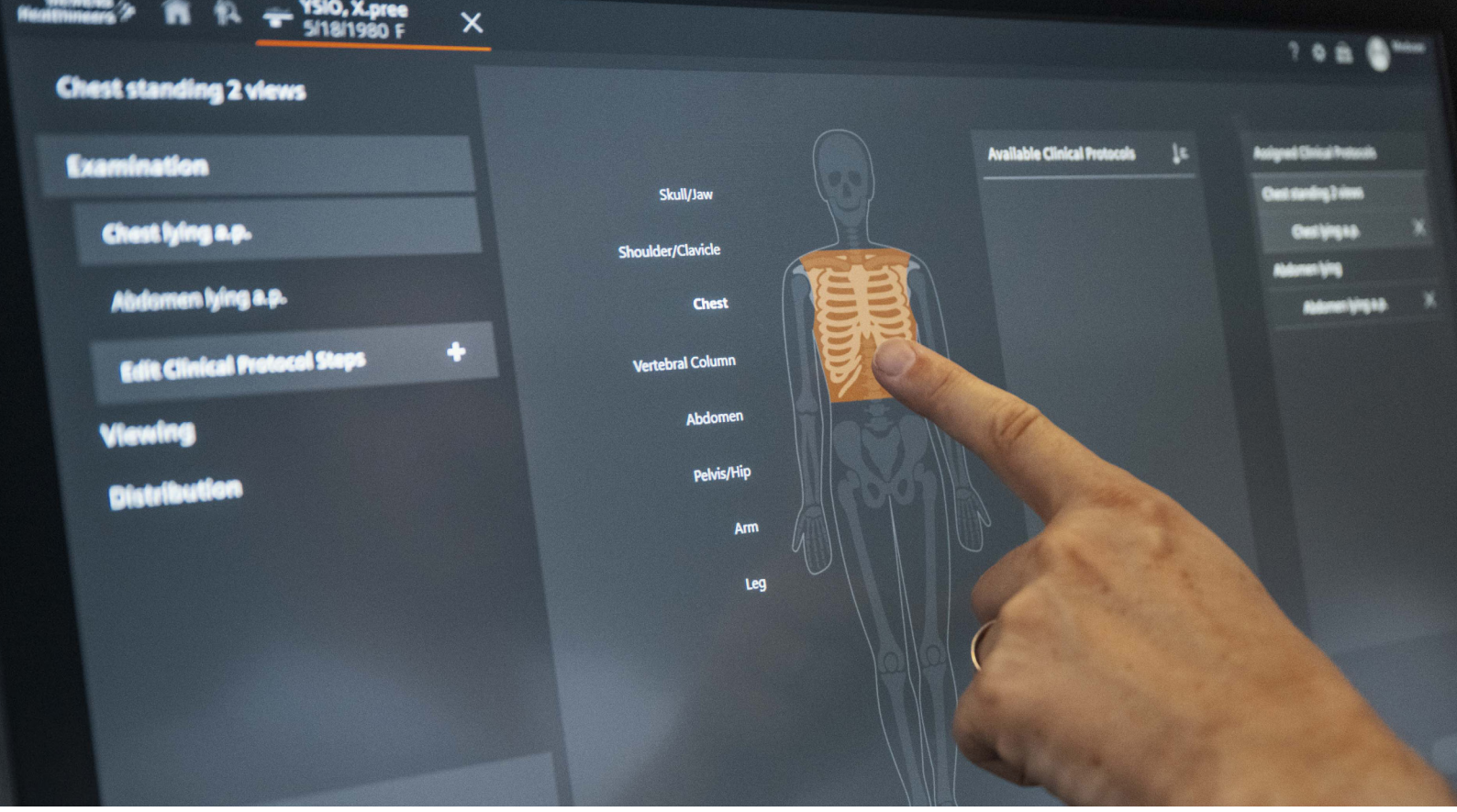
"We have defined various smaller field sizes on the system for children, depending on their age group. This means that the collimation gets adjusted automatically and I only have to finetune it in the exam room."

Christian Schramm,
Technologist Radiology/Trauma Radiology,
Universitätsklinikum Erlangen, Germany

Easy pediatric imaging

Children have special imaging needs, and standard parameters and procedures often need to be modified under time pressure. In these critical exams, you can enjoy significant benefits with the support of Intelligent Imaging.

- Automatic modification of system position for pediatric exams based on age information from the RIS
- Automatic adaptation of imaging parameters based on predefined pediatric exam protocols
- Automatic activation of copper filter and warning to remove the anti-scatter grid
- myExam 3D camera allows you to check for patient movement from the workstation
- Easy adjustment of collimation at the workstation with Virtual Collimation
- Fast and seamless workflows that are especially helpful for children



Empower your team with Intelligent Imaging

Fast onboarding

Intuitive system operation enables steep learning curve for new team members.

Complete exam portfolio at all times

Even less experienced users can manage complex exams on their own: for example, during night shifts.

Improved patient focus

Efficient workflows allow more time for patient interaction and help prevent mistakes.

Efficient work-sharing

An experienced technologist can supervise parallel exams and adjust parameters at the workstation while a colleague takes care of the patient in the exam room.

"The system is so easy to operate that you'll have no problem learning the basics in a week. After that, it's mainly a matter of gaining experience with all the different examinations. But thanks to Intelligent Imaging, we can now fully train new colleagues within three weeks."

Christian Schramm,
Technologist Radiology/Trauma Radiology,
Universitätsklinikum Erlangen, Germany

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Christian Schramm receives financial support from Siemens Healthineers for collaborations.

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[1] *Blum, K. Fachkräftemangel und Fachkräftebedarf in MTA-Berufen. Projekt des Deutschen Krankenhausinstituts (DKI) im Auftrag des Dachverbandes für Technologen/-innen und Analytiker/-innen in der Medizin Deutschland (DVTA), Düsseldorf, 2019*

[2] *Advanced Health Education Center (AHEC). Radiology Staffing Shortages Nation Wide? AHEC online blog. September 27, 2021*

[3] *Atkinson S, Neep M, Starkey D. Reject rate analysis in digital radiography: An Australian emergency imaging department case study. J Med Radiat Sci. 2020 Mar;67(1):72-79*

[4] *A chest X-ray examination is defined as the time between patient positioning on the Bucky wall stand and images being displayed on the workstation.*

[5] *White paper (2023): YSIO X.pree – How intelligent imaging assures an efficient and patient-centered radiography workflow.*

[6] *Range adjustments for long-leg and full-spine examinations are defined as the time between setting the upper and lower limits of the desired field of view.*

[7] *Option, only for Bucky wall stand examinations*

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Published by Siemens Healthineers AG · ©Siemens Healthineers AG, 2025