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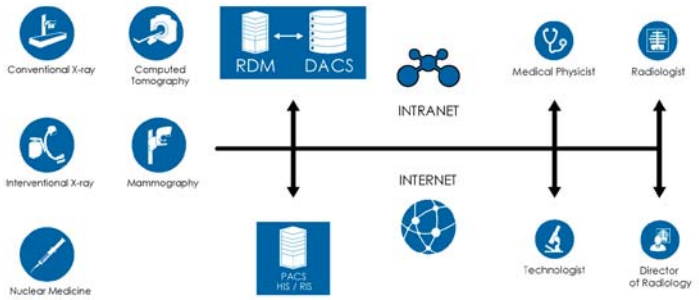
RDM – Radiation Dose Monitor

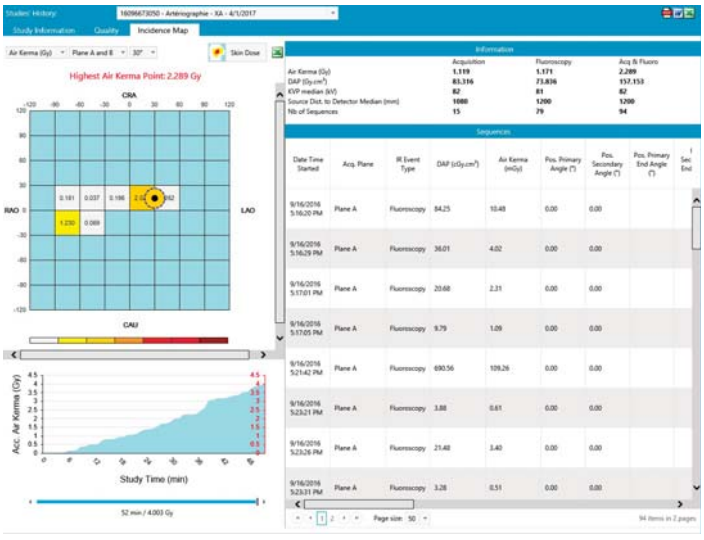
Dose Management

RDM is your essential tool for reducing dose. For patient health and safety, it is imperative for facilities to track all diagnostic, interventional and image-guided surgical ionizing events for its patient population.

Meets Euratom/2013/59 Directive in the EU

RDM is a software solution that allows medical professionals to collect, control, analyze and optimize doses delivered to patients during medical imaging examinations, Image guided surgery, Interventional procedures and Nuclear Medicine. Information collected is stored in the Dose Archiving and Communication System (DACS). Compatible with all types of imaging modalities & PACS from all manufacturers, RDM is designed for all medical professionals responsible for the dose cycle (radiologists, technologists, director of radiology, medical physicists, etc.). Uses a web-based architecture to allow access through out your WAN.





CONTROL: **Real-Time Monitoring/Dose Alert System**

- Display all information relating to patients, examinations and acquisitions.
- Advanced alert systems based on (national and local) Diagnostic Reference Levels (DRL) allows for real-time monitoring of examinations and patients and automatic email notifications based on your criteria.
- Dedicated screen for tracking alerts and finding their causes.
- Incidence map for intervention radiology. Easily identify the Air Kerma point and PDS. Visualize the on-going procedure thanks to a time scale.
- Instant access to patient dose history prior to the exam (an important decision-making tool).
- Advanced pediatric dose management.
- Specific management of high-risk patients (pregnant women, radiation dermatitis, etc.).
- Multi-criteria search by institution, protocol, procedure, equipment, date range, Physician, Technician, etc.
- Attach any file or image to the patients record or study.
- Creation of search filters by population type (woman of child-bearing age, child by age group, weight, etc.).
- Re-evaluation of the Computer Tomography Dose. Index (CTDI) according to the patient's morphology (SSDE – Size Specific Dose Estimate).

RDM, powered by our partner MPTronic.

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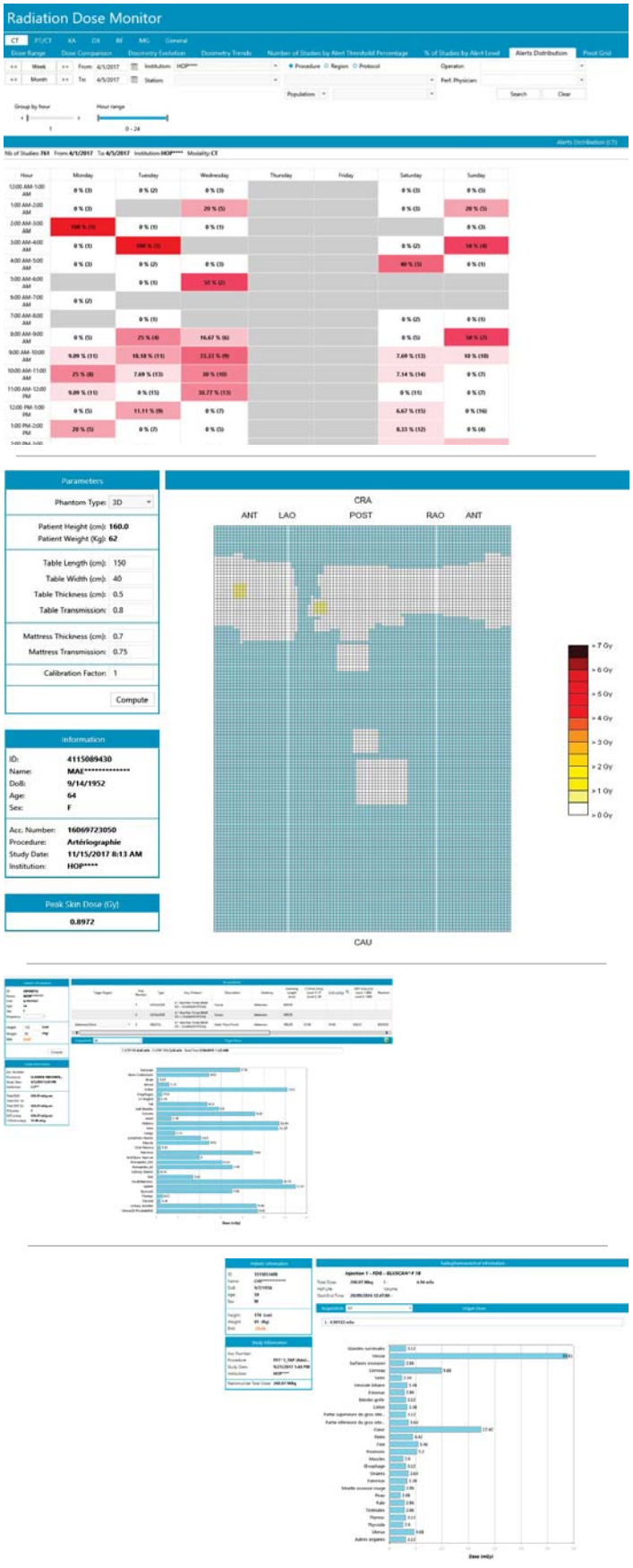
ANALYZE: **Improve Your Practices**

- Display distribution of dose values according to exam type, identify examinations deviating from the reference values.
- Identify all procedures and protocols which help reveal anomalies and which ones could require improvement.
- Track the course of doses delivered to patients over time.
- Assess the level of compliance of your practices.
- Assess your professional practices.
- Keyword tag by medical indication (heart disease, oncology, etc.
- **Peak Skin Dose (PSD):** Full Automatic dose exposure calculation and mapping of the PSD with a 2D or 3D graphic presentation. Display of a certain point in time during exam using time scale.
- **Organ Dose:**
  Nuclear Medicine: Calculation of organ dose based on ICRP-106 and ICRP-128, including management of pediatrics. Calculations are based on the injected radio-pharmaceutical. Multiple injection support for stress testing, etc.

  CT Scanner: SST partnered with Virtual Phantoms for the integration of the organ dose module into the RDM solution. Utilizing the Monte Carlo algorithm calculation mean doses delivered to organs by type of activity using existing dose data. (DLP, CTDI, etc.) This include the estimated dose received by fetus during the different stages of gestation (3, 6 and 9 months). Other items taken into consideration are the weight, height, age, etc. Calculations of organ dose are based on ICRP-103.
- **Effective dose:**
  Nuclear Medicine: Calculation of effective dose and organ based on ICRP-106 and ICRP-128, including management of pediatrics. Calculations are based on the injected pharmaceutical. Multiple injection support for stress testing, etc.

  CT Scanner: Calculation by acquisition of the effective dose. Calculation based on ICRP-103 and ICRP-60.



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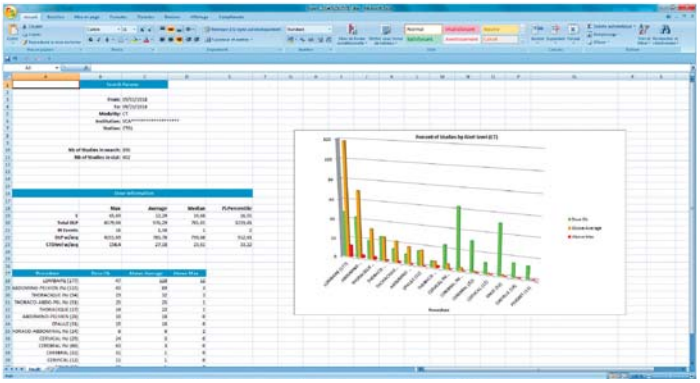

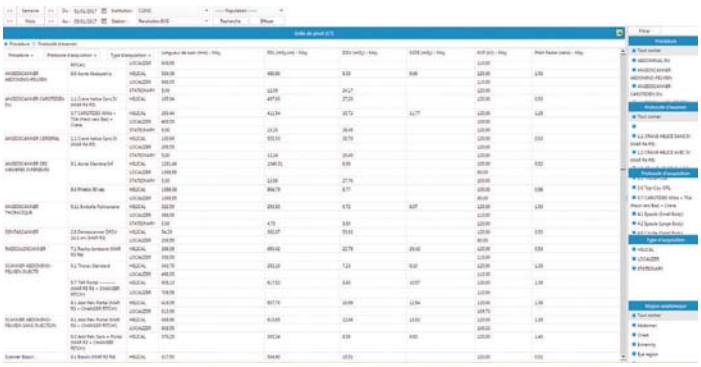

OPTIMIZE: **Assessment & Optimization of Practices**

- Complete export of all screen data and dose analysis reports in PDF, Word or Excel format.
- **Pivot table:** Create custom tables to facilitate interpretation and relevance of dose data. based on Age, Procedure, Acquisition protocols, Acquisition types, Anatomical, regions, Institutions, stations, etc. Which facilitate interpolation and relevance of dose data. Provides the ability to analyze and perform quick statistics. Export results into Excel with one click.
- Automatic transfer of reports to HIS, RIS, PACS, etc.
- Custom call to RDM from your IT systems (HIS, RIS, PACS). - REST API and/or Web contextual call.
- **Comparison Module:**
  Advanced statistical tool enabling cross-data comparison based on identical or different periods of time between, Modalities, Institutions, Protocols, Procedures, Group of Procedures, Anatomical region, Group populations, Operators, etc. Comparison for up to four data sets.
- Real-time access to RDM web interface externally (internet/VPN) and internally (intranet).
- Collection of DRLs and automatic transmission to the national authorities.

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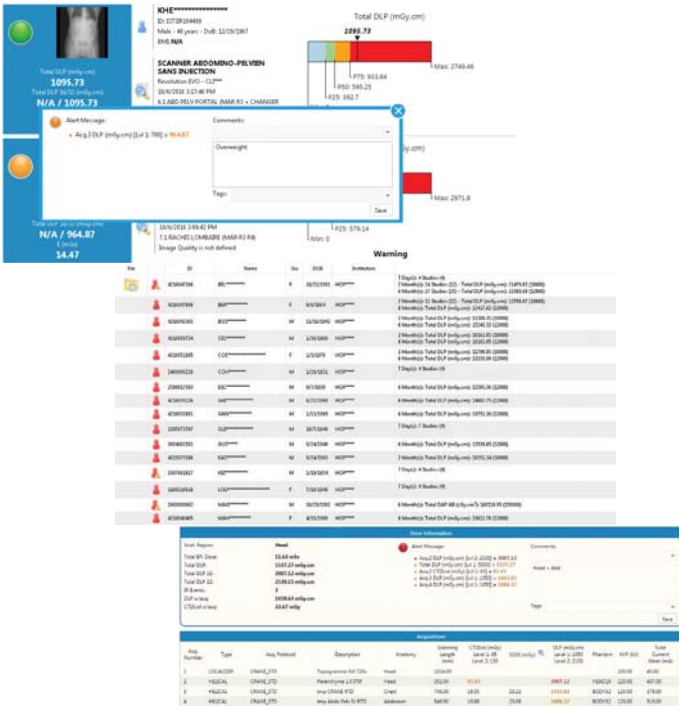
- **Automatic Dose reporting:**
  Customized reports can be sent directly to the person or persons responsible for the review of the dose cycle. Two Report types are available. Statistical report based on modalities and/or procedures providing Percent of conformity per dosimetry type, Dose range per Dosimetry type, Alerts distribution, dosimetry evolution per dosimetry type and Dose comparison per patient BMI. Patient report based on Patient demographics, Alerts (both patient and study level) and Patient care statistics (justification, reassignment, etc,)



- **Powerful alert rules & distribution:**
  Implementation of specific alerts regarding a patient and/or studies, including ability to show alerts over a specified time period, automatic email alerts. Patient alerts can be based on dose data such as cumulative DLP, DAP, Air Kerma, Glandular dose, MBq activity, etc. Study alerts based on patient age, weight, sex, etc. And alerts based on procedures, study protocols, acquisition protocols, anatomical region, etc.

RDM Modules

Worklist. Retrieves list of daily exams. Allows radiologist to access patient dose history together with the dose accumulated per anatomical region prior to the exam.

HL7/RDSR Sender. RDM collects the dose reports using different techniques (MPPS, screen captures, etc.). The HL7/RDSR Sender module transforms and automatically sends dose reports to the RIS/HIS and/or PACS in DICOM SR or HL7 format.

HL7 IHE Integration. Enables HL7 messages sent by HIS/RIS to RDM to ensure the integrity of patient/examination data (fusion, update, etc.).

RDM Modality. Designed for old systems incompatible with DICOM using a external ionization chamber. Connects to Worklist server to retrieve list of daily exams. Exam data can be entered manually and sent to RDM.

Dose Reports Export. Easy generation of dose reports to send to local, state or federal authorities in the required format. Past submissions are recorded and logged.

PACS History. Queries PACS, automatically retrieves dose values from former patient examinations and calculates accumulated dose per anatomical region – a decision-making tool for the radiologist before performing an exam.

Email Alerts. Automatically sends an email to each recipient defined when dose threshold defined in RDM is exceeded, includes detailed information about the alert and the exam.

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JUST LIKE IT TAKES A VILLAGE TO RAISE A CHILD, IT TAKES ALL STAKEHOLDERS IN THE DOSE CYCLE TO PARTICIPATE IN ORDER TO REDUCE DOSE AND CONTROL THE IONIZING DOSE OF A PATIENT POPULATION.

EASY, ERGONOMIC AND INTUITIVE INTERFACE - WITH A CLEAR DEFINITION OF EACH PERSON ROLE.

- Automatically send email alerts by modality.
- Listing of patients with alerts and at risk.
- History of maintenance and quality control of the modalities.

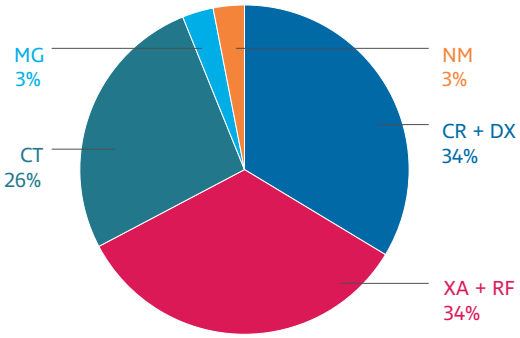
- Insertion of weight, size pregnancy status.
- Easy justification of Alerts.

- Ability to attach and file or image to the patients record.
- Order appropriate exam based on dose history

- Rating image quality

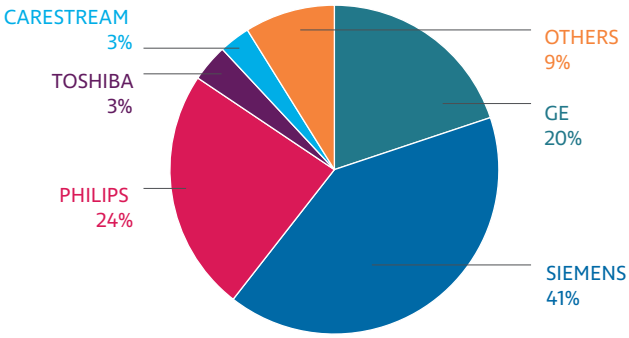
SOME STATISTICS ON OUR DEPLOYMENT

Percentage of modalities connected



- Digital and Conventional Radiology
- Interventional Radiology & Radio-fluoroscopy modalities
- Computed Tomography
- Mammography
- Nuclear Medicine (PET/SPECT)

Percentage of manufacturers connected



- Siemens
- Philips
- GE
- Carestream
- Toshiba
- Others: Canon, EOS, Fuji, Hitachi, Hologic, Primax, Samsung, Stephanix, Ziehm

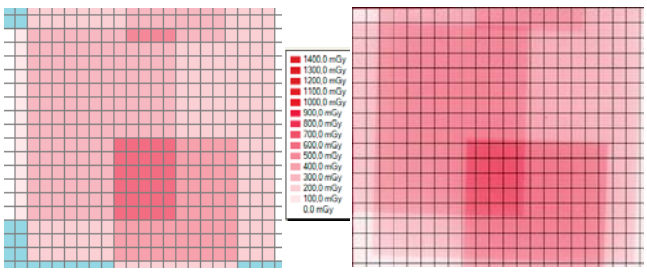
RDM PEAK SKIN DOSE VALIDATION

RDM calculation vs Gafchromic® films measurements 2D comparison.

Phantom 4 Fields PA – FOV 30, 20, 16 and 12 cm

Innova IGS530

RDM: PSD = 718 mGy FILM: PSD = 694 mGy



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