Experience of Implementing Radiation Dose Structured Reporting for Fluoroscopy System

Saurav Kumar Baidya

Philips Electronics India Ltd

Software Architect
Bangalore, India

PHILIPS

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- **Introduction**

- **Structured Report**

- **Radiation Dose Structured Report**

- **Finding Right Data – A Challenge**

- **Potential Scope of Improvement in Definition**

- **Need of Closer Collaboration**

- **Conclusions**

Introduction

- **Radiation exposure monitoring is an important aspect of radiation based diagnostic imaging equipments.**

- **This presentation talks about various challenges and observations gathered during the implementation of Radiation Dose Structured Reporting (RDSR) for Fluoroscopy System.**

Structured Report

- **Content Items**
- **Content Items Tree**
- **Coded content in addition to plain text**
- **Not presentation guidelines**
- **Templates**
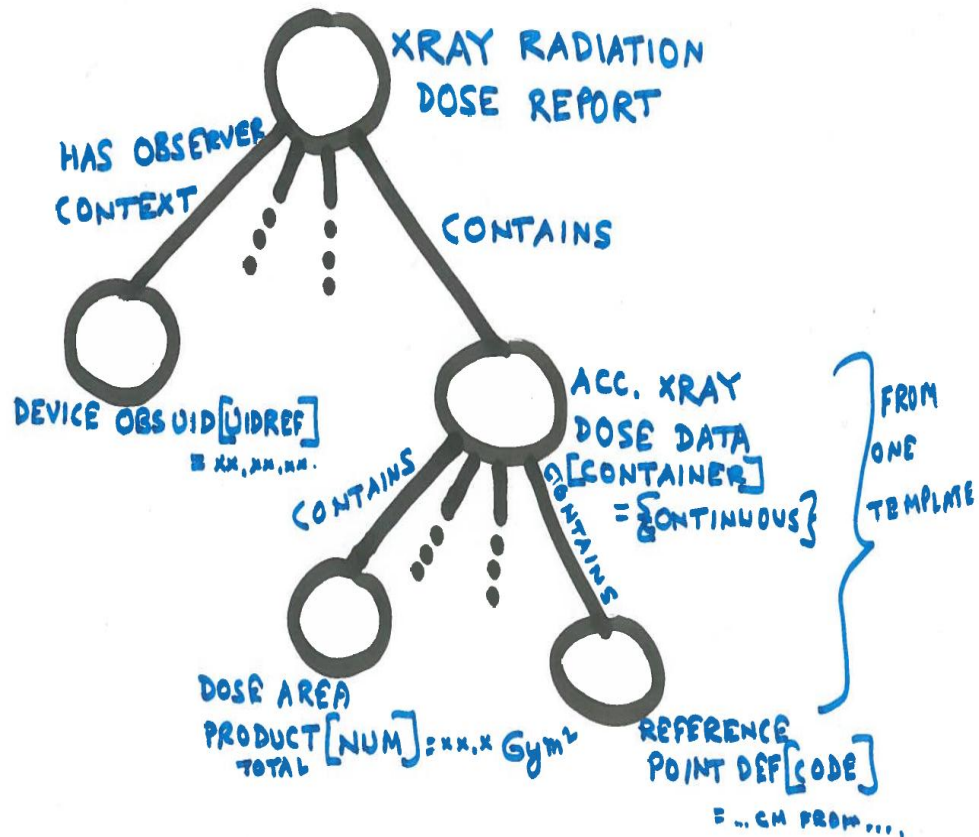
Radiation Dose Structured Report

- **Overcomes weaknesses of MPPS or Image headers as dose monitoring methods**
  - **Both MPPS and Image headers lack important dose details**
  - **MPPS were designed for workflow and are not stored**
  - **Similar gaps if images deleted or not archived**

- **The Radiation Dose Structured Report provide more details in a persistent format**

Radiation Dose Structured Report

TID 10001 (Projection X-ray Radiation Dose)

    * TID 1002 (Observer Context)

        # TID 1004 (device Observer Identifying Attributes)

    * TID 10002 (Accumulated X-ray dose data)

        # TID 10004 (Accumulated Projection X- ray Dose)
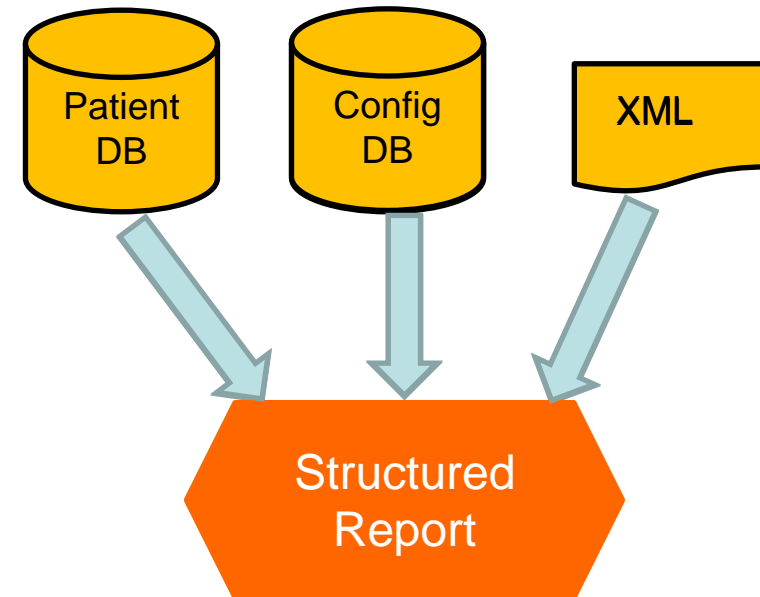
    * TID 10003 (Irradiation Event X-ray Data) (one or more)

        # TID 1020 (Person Participant) (optional)

        # TID 1021 (Device participant)

Finding Right Data – A Challenge

- **Interpretation of information**
  - **Different dose calculations**
  - **Different positioner primary angles**

- **Different sources of data**
  - **Patient database**
  - **Configuration database**

Potential Scope of Improvement in Definition

- **Template 10003 row 21 has a 1-n multiplicity**
  - **Rows 22, 23, 24 and 25 are sub elements of 21**
  - **Parent child relationship not clearly defined with respect to the parent with 1-n multiplicity**
  - **Rows 22, 23, 24 and 25 should be combined into a new template**

TID 10003
IRRADIATION EVENT X-RAY DATA
Type: Extensible

21	>	CONTAINS	CONTAINER	EV (113771, DCM, "X-Ray Filters")	1-n	U	
22	>>	CONTAINS	CODE	EV (113772, DCM, "X-Ray Filter Type")	1	U	DCID (10007) X-Ray Filter Types
23	>>	CONTAINS	CODE	EV (113757, DCM, "X-Ray Filter Material")	1	U	DCID (10006) X-Ray Filter Materials
24	>>	CONTAINS	NUM	EV (113758, DCM, "X-Ray Filter Thickness Minimum")	1	U	Units = EV (mm, UCUM, "mm")
25	>>	CONTAINS	NUM	EV (113773, DCM, "X-Ray Filter Thickness Maximum")	1	U	Units = EV (mm, UCUM, "mm")

Need of Closer Collaboration

- **Collaboration with other standards bodies**
- **Spreading radiation dose structured report feature awareness**

Conclusions

- **RDSR implementation is important and experience therefrom is valuable**

- **More collaboration with other bodies will strengthen RDSR acceptance**

- **Need to spread radiation dose structured report feature awareness**

- **Take potential scope of improvement as Correction Proposal**

References

DICOM   http://dicom.nema.org/

IEC   http://www.iec.ch/

IHE   http://www.IHE.net/

Author Contacts

Saurav Kumar Baidya

- saurav.baidya@philips.com
- Philips Innovation Campus , Manyata Tech Park, Nagawara Circle, Outer Ring Road , Bangalore – 560045 (Karnataka, India)

Daniel Bauhaus

- daniel.bauhaus@philips.com
- Philips Healthcare, Roentgenstrasse 24, Hamburg, Germany

Mathias Kanitz

- mathias.kanitz@philips.com
- Philips Healthcare, Roentgenstrasse 24, Hamburg, Germany

Thank you for your attention !