DICOM Conformance

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DICOM Conformance is not as for other standards
- When a product is conformant to the DICOM standard it does *not* mean that it conforms to the *entire* standard

DICOM has many items to which you *can* conform
- SOP Classes (in either role)
- Transfer Syntaxes
- Character Sets
- ...

A product only conforms to a *subset* of all options
- This subset of options matches the function of that product
  - E.g. workflow-wise it would not make much sense to have an MR scanner to be able to print ECGs (although technically that would be quite feasible)
The DICOM Conformance Statement (DCS) of a product is a claim of the vendor that declares what options of DICOM are offered by that product.

- When it is not declared, it is assumed that it is not offered.
- When it is offered, it does not mean it has to be used.
  - A PACS may be able to store text encoded in the Thai character set, but in Germany that feature will probably not be used a lot, if at all.

A DCS offers several functions:

- For potential customers: to compare similar systems on their interoperability, or to assess whether a potential new system fits their existing interoperability eco-system.
- For hospital integrators: to configure systems for optimal interoperability during the entire workflow.
- For users: to know and utilize the DICOM related features.
**Integrator Capabilities**

- At a minimum, the hospital integrators need to read SOP Class tables

<table>
<thead>
<tr>
<th>SOP Class Name (SCU)</th>
<th>SOP Class UID</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR Image Storage</td>
<td>1.2.840.10008.5.1.4.1.1.4</td>
</tr>
<tr>
<td>Secondary Capture Image Storage</td>
<td>1.2.840.10008.5.1.4.1.1.7</td>
</tr>
<tr>
<td>Modality Worklist Management - FIND</td>
<td>1.2.840.10008.5.1.4.31</td>
</tr>
<tr>
<td>Modality Performed Procedure Step</td>
<td>1.2.840.10008.3.1.2.3.3</td>
</tr>
</tbody>
</table>

This Application Entity provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCU:

- Compare a product’s SCU table with another’s SCP table
Example

• If you have a printer that is a DICOM SCP for Print SOP Class$_A$ and you want your new scanner to be able to send prints directly to that printer, then this scanner need to be an SCU of Print SOP Class$_A$.

• To achieve the same, you could, alternatively, verify that the scanner can store to your PACS or printing workstation and look for that to be the SCU of Print SOP Class$_A$.

Also assess the workflow!
• Products choose freely which DICOM features to support. DICOM *doesn't* tell them *which* features to implement.

• DICOM *does* tell them *how* to implement the features once they have chosen them.

• Note that some options are mandatory to implement
  – E.g. support of the default transfer syntax (DICOM Implicit VR Little Endian Transfer Syntax)
There is no regulatory requirement to have a DCS
- FDA requirement: unless you claim conformance

But a DCS is typically published on the vendor’s web site
- Also provided to regulators
- Part of the official documentation

Note that DICOM does not maintain a repository or registry of DCSs
Template has been defined in the DICOM standard

1. Overview (support of SOP Classes as SCU and SCP)
2. Table of Contents
3. Introduction
4. Networking
   - Implementation Model
   - AE Specifications
   - Network interfaces
   - Configuration
5. Media Interchange
6. Support of Character Sets
7. Security
8. Annexes

Typically a DCS is 50-250 pages, depending on the functionality of the product. It contains a lot of details and is not a ‘page turner’.
• State of the art
  – Vendors self-assess their conformance claims
    ▪ Is the practice for more than 20 years
    ▪ Is actually a rather effective system
      • Naturally there is liability in case a product does not behave according to the claimed features
  – Product to product testing
    ▪ Can be arranged by mutual agreement
    ▪ Can be arranged during IHE Connectathons, verifying specific use cases

– DICOM defines *no* predefined test approaches / test cases, and there are neither ‘approved’ test tools nor such test sets
  ▪ DICOM WG31 is looking in this area, also related to conformance assessments
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Thank you for your attention!