

**ACC, HIMSS and RSNA  
Integrating the Healthcare Enterprise**

**IHE IT Infrastructure Planning Roadmap  
June 21, 2005**

# IHE IT Infrastructure Planning Roadmap 2004-2009 and beyond

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## IHE IT Infrastructure Planning Roadmap 2004-2009 and beyond

### Stage 0 – 2003 profile development for 2004 Connectathon

<b>EHR</b>	<b>Security</b>	<b>Common Data</b>
<b>Profiles</b> <ul style="list-style-type: none"> <li>• RID</li> <li>• PIX</li> <li>• PSA</li> </ul>	<b>Profiles</b> <ul style="list-style-type: none"> <li>• EUA</li> <li>• CT</li> </ul>	No content
<b>Standards &amp; Prerequisites</b> <ul style="list-style-type: none"> <li>• CCOW v1.4 Patient Context</li> <li>• HL7 v2.3.1</li> <li>• HL7 v2.4</li> <li>• HTTP</li> <li>• WSDL 1.1</li> <li>• XHTML 1.0</li> <li>• XML 1.0</li> </ul>	<b>Standards &amp; Prerequisites</b> <ul style="list-style-type: none"> <li>• CCOW v 1.4 User Context</li> <li>• Kerberos</li> <li>• NTP</li> <li>• SNTTP</li> </ul>	

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### Stage 1 – 2004 profile development for 2005 Connectathon

EHR Support	Security	Common Data
<b>Profiles</b> <ul style="list-style-type: none"> <li>• Cross-enterprise Document Sharing (XDS)</li> <li>• Patient Demographics Query (PDQ)</li> </ul>	<b>Profiles</b> <ul style="list-style-type: none"> <li>• Audit Trail and Node Authentication (ATNA)</li> <li>• Personnel White Pages (PWP)</li> </ul>	No content
<b>Standards &amp; Prerequisites</b> <ul style="list-style-type: none"> <li>• Stage 0 IHE ITI profiles</li> <li>• CDA r1</li> <li>• HL7 v2.5</li> <li>• ebXML Registry</li> <li>• HTTP</li> </ul>	<b>Standards &amp; Prerequisites</b> <ul style="list-style-type: none"> <li>• IHE Radiology Basic Security</li> <li>• Stage 0 IHE ITI security profiles</li> <li>• RFC 3881 (Audit record schema)</li> <li>• LDAP (RFC 2251-2256)</li> <li>• RFC 2798 (inetOrgPerson schema)</li> </ul>	

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### Stage 2 – 2005 profile development for 2006 Connectathon

EHR Support	Security	Common Data
<b>Profiles</b> <ul style="list-style-type: none"> <li>• Notification of Document Availability (NAV)</li> <li>• Patient Management (PAM)               <ul style="list-style-type: none"> <li>- Includes internal transaction failure management</li> </ul> </li> </ul>	<b>Profiles</b> <ul style="list-style-type: none"> <li>• Cross-Enterprise User Authentication (XUA)               <ul style="list-style-type: none"> <li>- Multi-enterprise-scope</li> <li>- Users</li> </ul> </li> <li>• Document Digital Signature (DSG)</li> </ul>	No content
<b>Standards &amp; Prerequisites</b> <ul style="list-style-type: none"> <li>• Stage 1 IHE ITI profiles</li> <li>• IETF SMTP / MIME</li> <li>• HL7 v2.5</li> </ul>	<b>Standards &amp; Prerequisites</b> <ul style="list-style-type: none"> <li>• Stage 1 IHE ITI security profiles</li> <li>• OASIS SAML 2.0</li> <li>• HL7 v2.6 UAC segment</li> <li>• W3C XML Digital Signature</li> <li>• ITU X.509</li> <li>• ISO/TS 17090</li> </ul>	

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## Stage 3 – 2006 profile development candidates for 2007 Connectathon

EHR	Security	Common Data
<p><b>Profiles</b> – to be decided in November 2005</p> <ul style="list-style-type: none"> <li>• Templates registry               <ul style="list-style-type: none"> <li>- HL7 templates</li> <li>- XML schemas</li> <li>- XSLs</li> <li>- enterprise or cross-enterprise scope, TBD</li> </ul> </li> <li>• Patient Demographics Query - multi-enterprise               <ul style="list-style-type: none"> <li>- PDQ with cross-enterprise patient privacy protections</li> </ul> </li> <li>• Federated XDS registries               <ul style="list-style-type: none"> <li>- Within a RHIO</li> <li>- Multi-RHIO</li> </ul> </li> <li>• Harmonize XDS and RID document retrieval capabilities</li> </ul> <p><b>Referred to IHE PCC domain</b></p> <ul style="list-style-type: none"> <li>• Scheduling – enterprise scope               <ul style="list-style-type: none"> <li>- HL7 schedule-request transactions for ambulatory care scheduling portal support</li> </ul> </li> <li>• Dynamic data for EHR               <ul style="list-style-type: none"> <li>- Lab trending</li> <li>- Medication list</li> <li>- Allergies</li> <li>- Problem lists</li> <li>- Enterprise or cross-enterprise scope, TBD</li> </ul> </li> </ul>	<p><b>Profiles</b> – to be decided in November 2005</p> <ul style="list-style-type: none"> <li>• RBAC – enterprise scope               <ul style="list-style-type: none"> <li>- Potentially, attribute certificates in PKI to support RBAC at enterprise scope</li> </ul> </li> </ul> <p><b>Referred to IHE PCC domain</b></p> <ul style="list-style-type: none"> <li>• Patient consents               <ul style="list-style-type: none"> <li>- Privacy</li> <li>- Medical procedures</li> <li>- Advance directives</li> </ul> </li> </ul>	<p><b>Profiles</b> – to be decided in November 2005</p> <ul style="list-style-type: none"> <li>• Additional LDAP information sources               <ul style="list-style-type: none"> <li>- Clinician directories</li> <li>- Non-volatile patient data</li> <li>- Organization structure</li> </ul> </li> <li>• Transaction Failure Management (TFM)</li> <li>• RID configurability directory               <ul style="list-style-type: none"> <li>- User preferences</li> <li>- Display templates</li> </ul> </li> <li>• Service discovery               <ul style="list-style-type: none"> <li>- Web services</li> <li>- DICOM configuration management</li> <li>- DNS / DHCP / UDDI</li> </ul> </li> </ul> <p><b>Depends on other IHE domains' needs</b></p> <ul style="list-style-type: none"> <li>• Masterfile Maintenance               <ul style="list-style-type: none"> <li>- Generalization of IHE LAB work</li> <li>- HL7 terminology server</li> </ul> </li> <li>• Reference code set maintenance               <ul style="list-style-type: none"> <li>- Distribution</li> <li>- Update?</li> </ul> </li> </ul>
<p><b>Standards &amp; Prerequisites</b></p> <ul style="list-style-type: none"> <li>• Stage 2 IHE ITI profiles</li> <li>• HL7 templates standards</li> <li>• W3 standards for XML schemas and XSL</li> <li>• HL7 scheduling messages</li> <li>• W3C Semantic Web (interoperability and clinical vocabulary standards for assembling dynamic data sources into documents)</li> </ul>	<p><b>Standards &amp; Prerequisites</b></p> <ul style="list-style-type: none"> <li>• Stage 2 IHE ITI security profiles</li> <li>• ISO/TS 21547-1 for certificate archiving</li> <li>• ISO/TS 22600 parts 1 &amp; 2</li> <li>• ISO/TS 21298 for function &amp; structural roles</li> <li>• ASTM E31.20 Privilege Management Infrastructure</li> <li>• Stable HL7 standards for communicating patient consents</li> </ul>	<p><b>Standards &amp; Prerequisites</b></p> <ul style="list-style-type: none"> <li>• Stage 2 IHE ITI Patient Management profile</li> <li>• HL7 v2 Masterfile maintenance</li> <li>• Mature/stable standards for selected masterfile information sources</li> <li>• Suitable LDAP schema definitions</li> <li>• Web services standards</li> <li>• IETF infrastructure</li> <li>• W3C infrastructure</li> </ul>

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### Stage 4 – 2007 profile development candidates for 2008 Connectathon

EHR	Security	Common Data
<p><b>Profiles</b></p> <ul style="list-style-type: none"> <li>• Scheduling               <ul style="list-style-type: none"> <li>- Provider care-workflow planning</li> <li>- Multi-enterprise scope</li> </ul> </li> <li>• Respond to national/regional EHR mandates and initiatives, TBD</li> </ul>	<p><b>Profiles</b></p> <ul style="list-style-type: none"> <li>• RBAC – multi-enterprise scope</li> <li>• Wide-area patient access</li> <li>• Mobile applications               <ul style="list-style-type: none"> <li>- Wireless</li> <li>- Patient active homecare</li> <li>- Mobile providers</li> </ul> </li> <li>• Patient identification based security               <ul style="list-style-type: none"> <li>- Support patient-active homecare use cases</li> <li>- Scheduling use cases</li> </ul> </li> </ul>	<p><b>Profiles</b></p> <ul style="list-style-type: none"> <li>• Workflow management preferences               <ul style="list-style-type: none"> <li>- Configurability based on clinical care role data needs</li> </ul> </li> <li>• SNMP MIBS               <ul style="list-style-type: none"> <li>- Event reports</li> <li>- Equipment calibration changes</li> <li>- Equipment and software change management &amp; tracking</li> <li>- Event trending</li> </ul> </li> <li>• LDAP equipment directory support               <ul style="list-style-type: none"> <li>- Device operating parameters (e.g., Radiology Configuration Management)</li> <li>- Equipment configuration &amp; asset management</li> </ul> </li> </ul>
<p><b>Standards &amp; Prerequisites</b></p> <ul style="list-style-type: none"> <li>• HL7 scheduling messages</li> <li>• EHR-related standards, TBD</li> </ul>	<p><b>Standards &amp; Prerequisites</b></p> <ul style="list-style-type: none"> <li>• Stage 3 IHE ITI security profiles</li> <li>• Stable standards for cross-enterprise RBAC</li> <li>• Stable standards for mobile access security</li> <li>• Stable standards for patient identification</li> </ul>	<p><b>Standards &amp; Prerequisites</b></p> <ul style="list-style-type: none"> <li>• Stable workflow management standards for healthcare use cases</li> <li>• Suitable LDAP schema definitions</li> <li>• IETF MIB standards</li> </ul>

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### Stage 5+ – 2008+ profile development candidates for 2009+ Connectathon and beyond

<b>EHR</b>	<b>Security</b>	<b>Common Data</b>
<p><b>Profiles</b></p> <ul style="list-style-type: none"> <li>• XDS composite documents from multiple clinical domains.</li> </ul>	<p><b>Profiles</b></p> <ul style="list-style-type: none"> <li>• Remote service access</li> <li>• Anonymization</li> <li>• Pseudoanonymization</li> <li>• Patient-controlled access</li> </ul>	<p><b>Profiles</b></p> <ul style="list-style-type: none"> <li>• Equipment discovery               <ul style="list-style-type: none"> <li>- Automatic provisioning</li> </ul> </li> <li>• RID and XDS configurability               <ul style="list-style-type: none"> <li>- Optimization of user interfaces based on workflow and procedure instances</li> <li>- User preferences, e.g., style sheets, display device specific requirements, localization</li> </ul> </li> </ul>
<p><b>Standards &amp; Prerequisites</b></p> <ul style="list-style-type: none"> <li>• Stage 3 IHE ITI profiles</li> <li>• Clinical domains' XDS document profiles</li> </ul>	<p><b>Standards &amp; Prerequisites</b></p> <ul style="list-style-type: none"> <li>• Stage 4 IHE ITI security profiles</li> <li>• Stable healthcare data model standards</li> <li>• Stable standards for labeled data access rules</li> </ul>	<p><b>Standards &amp; Prerequisites</b></p> <ul style="list-style-type: none"> <li>• Stage 3 IHE ITI common data profiles</li> <li>• Stable standards for user interface optimization, e.g., DICOM “hanging protocols”</li> <li>• XDS clinical application domains' content profiles</li> </ul>

# IHE IT Infrastructure Planning Roadmap 2004-2009 and beyond

## Acronyms

<b>Term</b>	<b>Definition</b>
ASTM	ASTM International, previously "American Society for Testing and Materials"
CCOW	HL7 context standard, previously "Clinical Context Object Workshop"
CDA	HL7 Clinical Document Architecture
CT	Consistent Time
DICOM	Digital Image Communication in Medicine
DSG	Document Digital Signature
E31.20	ASTM Healthcare IT committee, Security and Privacy subcommittee
EHR	Electronic Health Record
EUA	Enterprise User Authentication
HL7	Health Level Seven
HTTP	Hypertext Transfer Protocol - IETF RFC 2616
IETF	Internet Engineering Task Force
IHE	Integrating the Healthcare Enterprise
ISO	International Standards Organization
ISO/TS	ISO Technical Specification
ITI	Information Technology Infrastructure
ITU	International Telecommunications Union
Kerberos	IETF RFC 1510
LDAP	Lightweight Directory Access Protocol
MIB	Management Information Block
NAV	Notification of Document Availability
NTP	Network Time Protocol - IETF RFC 1305
PAM	Patient Administration Management
PCC	Patient Care Coordination
PIX	Patient Identifier Cross-Reference
PKI	Public Key Infrastructure
PSA	Patient Synchronized Applications
RAD	IHE Radiology domain
RBAC	Role Based Access Control
RFC	Request for Comment, an IETF standards document
RID	IHE IT Retrieve Information for Display profile
SAML	Security Assertion Markup Language
SNMP	Simple Network Management Protocol
Sntp	Simple Network Time Protocol - IETF RFC 2030
W3C	Worldwide Web Consortium
WSDL	Web Services Description Language
XDS	Cross-Enterprise Document Sharing
XHTML	Extensible Hypertext Markup Language
XML	Extensible Markup Language
XUA	Cross-Enterprise User Authentication