HIT Standards Committee
Approved Final Recommendations for Standards Evaluation Criteria

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NwHIN Power Team 2012

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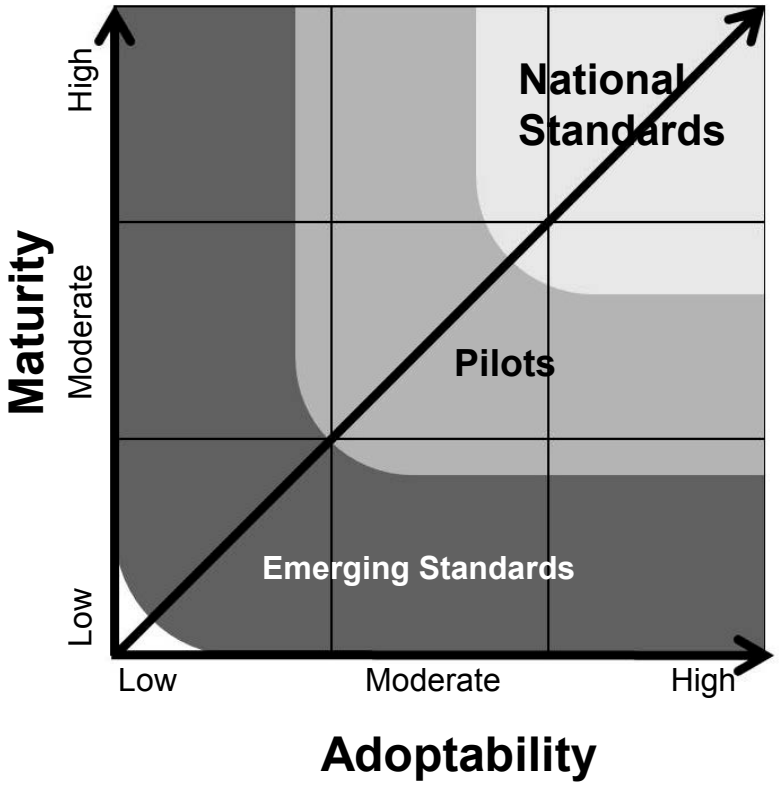
Evaluation and Classification of Technical Specifications

Maturity Criteria:
- Maturity of Specification
- Maturity of Underlying Technology Components
- Market Adoption

Adoptability Criteria:
- Ease of Implementation and Deployment
- Ease of Operations
- Intellectual Property



Changes Made Since Last Meeting* (1 of 3)

- Responses to HITSC discussion
  - Incorporated “voluntary consensus standards body” as metric for *Breadth of Support* attribute of *Maturity of Specification* criterion
  - Changed “Degree of Optionality” to “Appropriate Optionality” as attribute of *Ease of Implementation and Deployment* criterion (no changes to metrics)
  - Under *Ease of Operations* criterion, clarified meaning of “peer-coordination” by changing attribute to “Degree of Peer-Coordination by Technical Experts Needed”
  - Re availability of alternatives (HITSC discussion), we believe this should be considered prior to, and perhaps as part of, a request for a specification evaluation – not as an evaluation criterion or attribute

*See Appendix A for all proposed recommendations

Changes Made Since Last Meeting* (2 of 3)

- Removed *Interoperability among a Number of Independent Implementations* as attribute for both *Maturity of Specification* and *Maturity of Underlying Technology Components* criteria, and added to *Market Adoption* criterion as "Interoperable Implementations" attribute
- Changed attribute names to achieve semantic consistency with a "Low" level of a given attribute being the least desirable and a "High" level the most desirable
- Integrated *Complexity of Specification* metrics into *Specification Modularity* attribute of *Ease of Implementation and Deployment* criterion

*See Appendix A for all proposed recommendations

Changes Made Since Last Meeting* (3 of 3)

- Revised *Maturity of Underlying Technology Components* metrics to reflect change in approach from separate evaluation of each individual technology component, to single evaluation of the maturity of the complete set of technologies used in the specification, with evaluator identifying those technologies that contributed to assigned ratings (Lesson Learned from Infobutton evaluation exercise)

*See Appendix A for all proposed recommendations

Evaluation Exercise

- NwHIN Power Team selected HL7 “Infobutton” specification to test usability of defined metrics
  - HL7 Version 3 Standard: Context-Aware Retrieval Application (Infobutton), Release 1, July 2010
  - HL7 Version 3 Implemention Guide: URL-Based Implementations of the Context-Aware Information Retrieval (Infobutton) Domain, Release 3, December 2010
- Selection based on
  - Manageable size
  - HITSC interest during NPRM review
- Infobutton standard aims to facilitate the integration of knowledge resources into clinical systems at the point of decision making for clinicians and patients
  - Specification includes only the knowledge request information model

Evaluation Exercise Approach

- Plan
  - Distribute specification and Individual Evaluation Worksheet to evaluators
  - Record individual evaluators' ratings on Team Consensus Evaluation Worksheet
  - All evaluators discuss ratings and agree upon consensus rating for each criterion and for overall classification recommendation
- What actually happened
  - Power Team members were provided the specification and draft Individual Evaluation Worksheet, with a pointer to the Infobutton implementation guide for functional assessment
  - Three members submitted their ratings
  - To encourage participation in the consensus discussion, chair distributed Team Consensus Evaluation Worksheet with 3 evaluators' ratings
  - One additional evaluator submitted Individual Evaluation Worksheet, noting the benefit of seeing others' ratings in areas he was unsure about
  - Team discussion resulted in consensus ratings and classification

Consensus Ratings: Maturity Criteria*

Maturity Criterion	Consensus Rating
Maturity of Specifications	Low - Moderate
Maturity of Underlying Technology Components	Low
Market Adoption	Low
Overall Rating	Low – Moderate

*See Appendix B for evaluators' scores on specific attributes

Consensus Ratings: Adoptability*

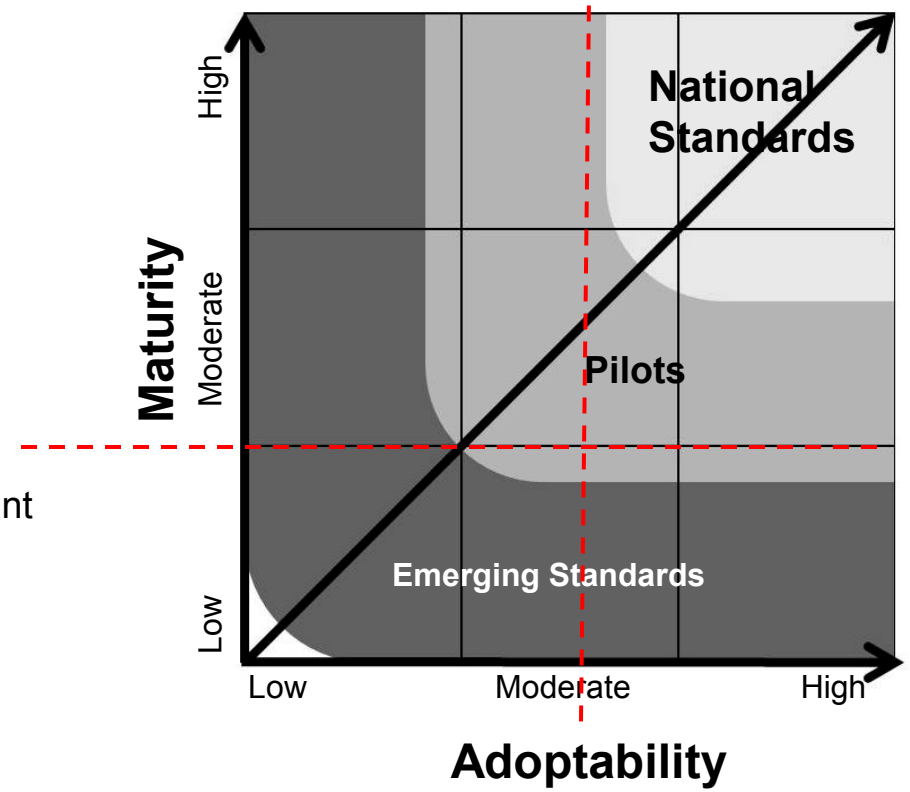
Adoptability Criterion	Consensus Rating
Ease of Implementation and Deployment	Moderate
Ease of Operations	Moderate
Intellectual Property	Moderate
Overall Rating	Moderate

*See Appendix B for evaluators' scores on specific attributes

Evaluation Exercise: Resulting Classification

Maturity Criteria:
- Maturity of Specification
- Maturity of Underlying Technology Components
- Market Adoption

Adoptability Criteria:
- Ease of Implementation and Deployment
- Ease of Operations
- Intellectual Property



Lessons Learned from Infobutton Exercise (1 of 2)

- Specification package presented for evaluation needs to be “functional” – either a functional specification, or a non-functional specification accompanied by one or more implementation guides
- Need to understand use case(s) for which specification is being evaluated
- Attribute names need to be such that a “Low” level of the attribute is least desirable and a “High” level is most desirable

Lessons Learned from Infobutton Exercise (2 of 2)

- Original approach of separately evaluating the maturity of each technology component used in the specification may be unrealistic and may add unnecessary complexity – however, important to have evaluators identify the core technology components that influenced their ratings
- Sharing of ratings and comments among evaluators is helpful; evaluation and classification process may be well suited for a Delphi-like approach wherein evaluators are asked to assign ratings independently and ratings are shared anonymously, after which evaluators reassign ratings before the final consensus discussion

Recommendations for Evaluation Process (1 of 2)

- The proposed evaluation process and metrics are intended to provide structure and discipline to a qualitative evaluation and classification of technical specifications
  - Metrics should not be used to generate a "score" as input to a numeric "average" or to determine whether a "minimum score" has been attained – metrics are best used to inform and justify a classification decision
- ONC should select specification(s) for evaluation based on industry needs for specific use cases
  - Provide description of use case(s)
  - If specification is non-functional, include implementation guidance in the evaluation
  - If alternative specifications exist, consider asking for comparative evaluation
  - Incorporate process for identifying national standards that may need to be re-evaluated

Recommendations for Evaluation Process (2 of 2)

- Evaluation of a specification against the proposed set of metrics might also serve as a good prediction rule for predicting the future success of a new national standard
  - We recommend that ONC incorporate a process for retrospectively evaluating the validity and power of these metrics for use as a prediction rule – and that these metrics be refined over time, as appropriate

Appendix A:
Criteria, Attributes, and Metrics

Maturity Criteria

- Maturity of Specification
- Maturity of Underlying Technology Components
- Market Adoption

Maturity Criteria: Attributes to be Evaluated

- Maturity of Specification
  - Breadth of Support
  - Stability
  - Adoption of Specification
- Maturity of Underlying Technology Components
- Market Adoption

Metrics: Maturity of Specification (1 of 2)

Attributes	Metrics		
	Low	Moderate	High
Breadth of Support	• No contributing community or without activity • 1 organization supporting authorship and/or review • No support services other than public forums or mail lists • No implementation/ training services • Standard not in formal discussion by a national or international 'voluntary consensus standards body'*	• Existing community with notable activity • 2-5 organizations supporting authorship and/or review • Single organization provides support service • Single organization provides implementation/ training services • Standard is under formal review and/or balloting by a national or international voluntary consensus standards body	• Strong community with numerous contributors and advocates throughout industry • >5 organizations supporting authorship and/or review • Multiple organizations provide support services • Multiple organizations provide implementation/ training services • Standard is a 'voluntary consensus standard'**
Stability	• Unstable with numerous releases generating side effects • Standard has history of several known problems which can be prohibitive for adoption • Age of oldest known conforming implementation is less than 3 months	• Stabilized release process but difficulties with development process to respond to industry required changes • No known history of major problems or crises • Age of oldest known conforming implementation is 3 months – 3 years	• Stabilized releases providing minor corrections to core standard. New core functionality changes in response to industry required changes • No known history of major problems or crises • Age of oldest known conforming implementation is more than 3 years

*A "voluntary consensus standards body" is a domestic or international organization that plans, develops, establishes, or coordinates voluntary consensus standards using agreed-upon procedures, and that adheres to the principles of openness, balance of interest, due process, appeals process, and consensus

** A "voluntary consensus standard" is a standard adopted by a "voluntary consensus standards body."

- Definitions adopted from OMB Circular A-119, Revised. February 10, 1998

Metrics: Maturity of Specification (2 of 2)

Attributes	Metrics		
	Low	Moderate	High
Adoption of Specification	• No references (informal blogs to formal papers) identified of the standard's specification in use • Existing specification with indications of decline (moved from "Declining" under Maturity of Specification criteria): - Existing community but no or little activity in last year - Reduced organizations supporting authorship - No new implementations - Critical programs analyzing replacement or upgrades options - Lacking support for new or emerging technology or products	• Few references of specification's use on non-critical programs (i.e. in pilot) • Current adopters of specification represent the intended adopter organizations in terms of size and organization type.	• Numerous references of specification's use in production for critical programs • Current adopters of specification represent the intended adopter organizations in terms of size and organization type.

Maturity Criteria: Attributes to be Evaluated

- Maturity of Specification
- Maturity of Underlying Technology Components – with evaluator identifying component(s) contributing to rating
  - Breadth of Support
  - Stability
  - Adoption of Technology
  - Platform Support
  - Maturity of the Technology Within its Life Cycle
- Market Adoption

Metrics: Maturity of Underlying Technology (1 of 3)

Attributes	Metrics		
	Low	Mod	High
Breadth of Support	One or more core technology components have: • No contributing community or an inactive community • 1-2 individuals leading development or not clearly defined • Fewer than 3 developers or not clearly identified • No support services other than public forums or mail lists • No implementation/ training services	Most core technology components have: • Existing community with notable activity • 3-5 individuals leading development • 3-7 developers or more, but turnover high • Single organization provides support services • Single organization provides implementation/ training services	All core technology components have: • Strong community with numerous contributors and advocates throughout industry • >5 individuals leading development • >7 developers with low turnover • Multiple organizations provide support services • Multiple organizations provide implementation/ training services
Stability	One or more core technology components: • Are unstable with numerous releases generating side effects • Have a history of several known problems that can be prohibitive for adoption • Have no known implementations in operation for more than 3 months	Most core technology components have: • A stabilized release process but development process is incapable of responding to industry requirements. • No known history of major problems or crises • Known implementations in operation from 3 months – 3 years	All core technology components have: • A stabilized release process and a development process that implements new core functionality changes in response to industry requirements. • No known history of major problems or crises • Multiple known implementations in operation for over 3 years

Metrics: Maturity of Underlying Technology (2 of 3)

Attributes	Metrics		
	Low	Mod	High
Adoption of Technology	One or more core technology components: • Have not been referenced in any other standard identified • Is an existing technology with indications of decline: - Existing community but no or little activity in last year - Reduced development staff with high turn over - No new implementations - Critical programs analyzing replacement or upgrades options - Lacking support for new or emerging technology or products - Technology readiness stalled or stopped before TRL-9*	All core technology components have: • Been implemented only in non-critical programs (i.e. in pilot) • Been implemented for use cases similar to those addressed by the specification under evaluation	All core technology components have: • Numerous references of use in production for critical programs • Been implemented for use cases similar to those addressed by the specification under evaluation
Platform Support	One or more core technology components: • Supports only one platform	All core technology components: • Support multiple platforms but require additional effort or expertise	All core technology components: • Support multiple platforms with no or minimal effort

* Technical Readiness Levels defined on next slide

Metrics: Maturity of Underlying Technology (3 of 3)

Attributes	Metrics		
	Low	Mod	High
Maturity of the Technology within its Life Cycle	• The maturity of one or more core technology components is characterized as TRL 7: System prototype demonstrated in operational environment.	• The maturity of one or more core technology components is characterized as TRL 8: Actual system completed and qualified through test and demonstration. Technology has been proven to work in its final form and under expected conditions.	• The maturity of all core technology components is characterized as TRL 9: Actual system proven through successful mission operations. Actual application of technology in its final form and under mission conditions.

* Technical Readiness Levels:
TRL 1: Basic principles observed and reported. Research begins.
TRL 2: Technology concept and/or application formulated. Prototyping begins.
TRL 3: Analytical and experimental critical function and/or characteristic proof of concept. Active R&D initiated, including analytical studies and lab studies to physically validate technology.
TRL 4: Component validation in a lab environment. Technological components are integrated in “low fidelity” setting.
TRL 5: Component validation in relevant environment. Technological components integrated with reasonably realistic supporting elements in an increased fidelity and simulated environment.
TRL 6: System/subsystem model or prototype demonstration in relevant environment. Prototype is tested in relevant and “high-fidelity” simulated environment.
TRL 7: System prototype demonstrated in operational environment.
TRL 8: Actual system completed and qualified through test and demonstration. Technology has been proven to work in its final form and under expected conditions.
TRL 9: Actual system proven through successful mission operations. Actual application of technology in its final form and under mission conditions.

Maturity Criteria: Attributes to be Evaluated

- Maturity of Specification
- Maturity of Underlying Technology Components
- Market Adoption
  - Installed Health Care User Base
  - Installed User Base Outside of Health Care
  - Interoperable Implementations
  - Future projections and anticipated support
  - Investments in User Training

Metrics: Market Adoption

Attributes	Metrics		
	Low	Mod	High
Installed health care user base	• Few users other than the developers of the standard or pilots within health care market, or • Well established standard, but anticipating decline in future use	• Detectable references of use outside of developers of pilots within health care market	• Numerous users and numerous references to large user bases
Installed user base outside of health care	• Few users other than the developers of the standard or pilots, or • Well established standard, but anticipating decline in future use	• Detectable references of use outside of developers of pilots	• Numerous users and numerous references to large user bases
Interoperable implementations	• 0 - 1 non-coordinated implementations • Degree of interoperability is undetermined	• 2 - 4 non-coordinated implementations • Some indications of interoperability between at least 2 implementations	• 5+ non-coordinated implementations • Interoperability established for entire standard between at least 2 implementations
Future projections and anticipated support	• No roadmap, future projections, or announcements	• Future announcements of releases and community activities are provided to limited audience on an irregular basis	• Roadmap and future announcements of releases are tightly coupled and are provided to a broad audience (members and public) on regular basis • Standard in broad use, projecting to continue
Investments in user training	• Few users investing in training on use of standard	• Limited user investment in learning , primarily through indirect means such as discussion boards	• Active user investments in training • Multiple training modes available, such as code-a-thons, webinars, classroom training

Adoptability Criteria

- Ease of Implementation and Deployment
- Ease of Operations
- Intellectual Property

Adoptability Criteria: Attributes to be Evaluated

- Ease of Implementation and Deployment
  - Availability of off-the-shelf infrastructure to support implementation
  - Standard as Success Factor
  - Conformance criteria and tests
  - Availability of reference implementations
  - Quality and Clarity of Specifications
  - Specification Modularity
  - Separation of Concerns
  - Ease of Use of Specification
  - Degree to which Specification uses familiar terms to describe “real-world” concepts
  - Runtime Decoupling
  - Appropriate Optionality
- Ease of Operations
- Intellectual Property

Metrics: Ease of Implementation and Deployment (1 of 3)

Attributes	Metrics		
	Low	Mod	High
Availability of off-the-shelf infrastructure to support implementation	• Few off-the-shelf infrastructure components are available or can be purchased to support implementation	• Some of supporting infrastructure components can be purchased off-the-self	• Most of supporting infrastructure components can be purchased off-the-self
Standard as Success Factor	• Many deployed implementations cite standard as a challenge to deployment • Few cite standard as success factor	• No consensus view among deployed implementations on whether standard is a success factor or challenge to deployment	• Many deployed implementation cite standard as a success factor • Few cite standard as challenge to deployment
Conformance Criteria and Tests	• Incomplete conformance criteria • Conformance tools and/or methodology not applied in any setting • No automated tests available	• Complete conformance criteria • Conformance tools and/or methodology applied in a lab or demo setting • Automated tests exists for at least some part of standard.	• Complete conformance criteria • Conformance tools and/or methodology applied to at least one operational implementation. • Significant automated test support
Availability of Reference Implementations	• No reference implementations	• Well-established reference implementations on a limited set of platforms	• Multiple reference implementations on multiple platforms

Metrics: Ease of Implementation and Deployment (2 of 3)

Attributes	Metrics		
	Low	Mod	High
Specification Modularity	•Monolithic specification that cannot be decomposed into smaller parts without some loss of context; or • Modularity exists but does not align well with the business problem	• Specification is somewhat modular but requires additional references for context; or • Specification is modular, but modules are unevenly aligned with the business problem	• Specification is composed of one or more modules • If large, specification can easily be decomposed to simpler smaller parts • Modularity aligns well with the business problem, and parts are unambiguously identified
Quality and Clarity of Specifications	• Semantics not well defined and no evidence of interoperability • Inconsistent or ambiguous terminology within standard • Low terminology coherence with referenced or dependent standards	• Defined semantics but evidence of some difficulty interoperating with other systems or networks • Consistent, unambiguous terminology within standard • Ad-hoc terminology alignment with any referenced or dependent standards	• Precisely defined semantics and providing evidence of interoperability with other systems or networks • Consistent, unambiguous terminology within standard • Explicit terminology alignment with any referenced or dependent standards
Separation of Concerns	• Competing standards. Referenced standards solve the same business problem as the standard under evaluation.	• Partial overlap. Referenced standards solve part of the business problem as the standard under evaluation.	• Clean separation. Referenced standards do not solve the same business problem as the standard under evaluation.

Metrics: Ease of Implementation and Deployment (3 of 3)

Attributes	Metrics		
	Low	Mod	High
Ease of use of specification	• Requires highly specialized expertise in multiple technologies to read and understand specification • Specification not appropriate as a starting point for maintenance	• With moderate effort specification can be used as a starting point for maintenance	• Easily read and understood by domain experts • Easily used as a starting point for maintenance activities • Navigation links provided or indexed
Degree to which specification uses familiar terms to describe “real-world” concepts	• Few concepts in standard are based on terminology currently used in industry • Concepts are not defined in business language	• Some to majority of concepts in standard are based on terminology currently used in industry • Concepts are loosely defined in business language	• Most concepts in standard are based on terminology well established in the industry • Concepts in specification expressively described in business language
Runtime Decoupling	• Tightly coupled to one or more externally defined interfaces. Content or Common Coupling with one or more systems.	• Mix of tight and loose coupling to externally defined interfaces.	• Loosely coupled to externally defined interfaces. Message and Data coupling only.
Appropriate Optionality	• Standard requires the implementer to choose from among alternatives to meet interoperability use cases • No or limited optionality to support compatibility with earlier or later versions • Implementers cite optionality as a barrier to interoperability.	• Interoperability use cases partially met by implementations that ignore (at runtime) or do not implement (at design time) optional elements	• Interoperability use cases met by implementations that ignore (at runtime) or do not implement (at design time) optional elements • Optional elements support compatibility with earlier or later versions • Implementers cite optionality as aiding interoperability.

Adoptability Criteria: Attributes to be Evaluated

- Ease of Implementation and Deployment
- Ease of Operations
  - Comparison of targeted scale of deployment to actual scale deployed
  - Number of operational issues identified in deployment
  - Degree of peer-coordination needed
  - Operation scalability (i.e., operational impact of adding a single node)
  - Fit to Purpose
- Intellectual Property

Metrics: Ease of Operations

Attributes	Metrics		
	Low	Mod	High
Comparison of targeted scale of deployment to actual scale deployed	• No documented or advertised scale at which standard is intended to be deployed	• Scale is documented in standard but no evidence that the scale as been achieved in operations	• Scale is documented in standard and evidence that scale has been achieved or exceeded in operations
Number of operational issues identified in deployment	• Several critical issues identified during deployment and are high risks to operations	• Several issues identified during deployment but all mitigated through operational activities	• Few issues identified during deployment
Degree of peer-coordination of technical experts needed	• Peer-coordination of technical experts required on daily basis	• Peer-coordination of technical experts on frequent periodic basis	• Minimal peer-coordination of technical experts required on as-needed basis
Operational scalability (i.e. operational impact of adding a single node)	• Addition of nodes creates exponential impacts to operational effort or complexity for either implementers or users	• Addition of nodes creates linear impacts to operational effort or complexity for either implementers or users	• Addition of nodes has little to no additional impacts to operational effort or complexity for either implementers or users
Fit to Purpose	• Some target use cases are met by the standard and specifications • For met use cases, some main and/or alternative flows for high priority target use cases not met	• A majority of target use cases are met by the standard and specifications • For met use cases, main and alternative flows for high priority target use cases met	• All or nearly all target use cases are met by use of the standard and specifications • Main and alternative flows for high and medium priority target use cases met

Adoptability Criteria: Attributes to be Evaluated

- Ease of Implementation and Deployment
- Ease of Operations
- Intellectual Property
  - Openness
  - Affordability
  - Licensing Permissivness
  - Copyrights Centralization
  - Freedom from Patent Impediments

Metrics: Intellectual Property

Attributes	Metrics		
	Low	Mod	High
Openness	• Closed to few individuals or entities	• Limited to only members or contributing organizations	• Open to public
Affordability	• Fees associated with accessing standard specifications • High costs for use and documentation which are deemed prohibitive for high adoption	• No fee for accessing standard specifications but fees or restrictions on referenced specifications (e.g. Vocabularies) • Nominal costs to use standard and documentation	• No fees for accessing standard or referenced specifications • No costs to use standard and standard documentation
Licensing Permissiveness	• License places one or more restrictions on runtime usage of conforming implementations	• License required to develop implementation, but no runtime restrictions. • Derivative works restricted • Negotiated agreement for use (i.e. SNOMED)	• Unrestricted for any use (commercial, academic, governmental) • Perpetual use rights • Derivative work allowed • Unlimited number of users or instances
Copyright Centralization	• Rights held by numerous individuals	• Rights held by a few individuals or entities	• Rights held by a single legal entity
Freedom from Patent Impediments	• Patent encumbered: Known or anticipated patented methods required for conformance to standard	• RAND terms: Contributors to standard agree to reasonable and non-discriminatory (RAND) terms for their contributed material	• No known or anticipated patents required to implement any portion of the specification, or • Patents to protect openness: Contributors to standard make patented methods available with zero royalty (RAND with zero royalty) available to all implementers (open license)

Appendix B:
Evaluation Exercise Ratings

Maturity Ratings (1 of 2)

Maturity of Specifications	Rating (L/M/H)									
Criteria Attributes	**Evaluator 1**	**Evaluator 2**	**Evaluator 3**	**Evaluator 4**	**Evaluator 5**	**Evaluator 6**	**Evaluator 7**	**Evaluator 8**	**Evaluator 9**	**Consensus**
Breadth of Support	M	M	M	L						
Stability	M	L-M	L	M						
Adoption of Specification	L-M	L-M	L	L						
Overall Rating	**M**	**M**	**L-M**	**L-M**						**L-M**

Maturity of Underlying Technology Components	Rating (L/M/H)									
Criteria Attributes	**Evaluator 1**	**Evaluator 2**	**Evaluator 3**	**Evaluator 4**	**Evaluator 5**	**Evaluator 6**	**Evaluator 7**	**Evaluator 8**	**Evaluator 9**	**Consensus**
Breadth of Support	L-M	L-M	L	L						
Stability	L-M	L-M	L	H						
Adoption of Technology	L	L-M	H	L						
Platform Support	M	H	H	L-M						
Maturity of the Technology Within its Life Cycle	L	H	H	H						
Overall Rating	**M**	**M-H**	**H**	**L**						**M**

Maturity Ratings (2 of 2)

Market Adoption	Rating (L/M/H)									
Criteria Attributes	**Evaluator 1**	**Evaluator 2**	**Evaluator 3**	**Evaluator 4**	**Evaluator 5**	**Evaluator 6**	**Evaluator 7**	**Evaluator 8**	**Evaluator 9**	**Consensus**
Installed Health Care User Base	L	L	L	L						
Installed User Base Outside Health Care	L	L	L	L						
Interoperable Implementations	M	M	M	M						
Future Projections and Anticipated Support	M	M	M	M						
Investments in User Training	L	L	L	L						
Overall Rating	L	L	L	L						**L**

Adoptability Ratings (1 of 2)

Ease of Implementation and Deployment	Rating (L/M/H)									
Criteria Attributes	**Evaluator 1**	**Evaluator 2**	**Evaluator 3**	**Evaluator 4**	**Evaluator 5**	**Evaluator 6**	**Evaluator 7**	**Evaluator 8**	**Evaluator 9**	**Consensus**
Availability of Off-the-Shelf Infrastructure to Support Implementation	L	M	M	L						
Standard as Success Factor	M	M	M	H						
Conformance Criteria and Tests	L	M	L	L						
Availability of Reference Implementations	L	M	L	L						
Specification Modularity	M-H	L	M	M						
Quality and Clarity of Specifications	M	H	M	H						
Separation of Concerns	H	??	H	L						
Ease of Use of Specification	M	L	M	L						
Degree to which Specification Uses Familiar Terms to Describe “Real-World” Concepts	L	H	H	H						
Runtime Decoupling	H	NA	L	M						
Appropriate Optionality	M	M	L	M						
Overall Rating	**M**	**M**	**M**	**M**						**M**

Adoptability Ratings (2 of 2)

Ease of Operations	Rating (L/M/H)									
Criteria Attributes	**Evaluator 1**	**Evaluator 2**	**Evaluator 3**	**Evaluator 4**	**Evaluator 5**	**Evaluator 6**	**Evaluator 7**	**Evaluator 8**	**Evaluator 9**	**Consensus**
Comparison of Targeted Scale of Deployment to Actual Scale Deployed	M	NA	NA	NA						
Number of Operational Issues Identified in Deployment	UNK	NA	NA	NA						
Degree of Peer-Coordination of Technical Experts Needed	M	M	M	M						
Operational Scalability (i.e. Operational Impact of Adding a Single Node)	UNK	H	H	H						
Fit to Purpose	M	M-H	H	H-M						
Overall Rating	**M**	**M**	**M**	**M**						**M**

Intellectual Property	Rating (L/M/H)									
Criteria Attributes	**Evaluator 1**	**Evaluator 2**	**Evaluator 3**	**Evaluator 4**	**Evaluator 5**	**Evaluator 6**	**Evaluator 7**	**Evaluator 8**	**Evaluator 9**	**Consensus**
Openness	M	M	M	M						
Affordability	M	L-M	M	H						
Licensing Permissiveness	H	H	M	H						
Copyright Centralization	H	H	H	H						
Freedom from Patent Impediments	H	H	H	H						
Overall Rating	**H**	**M**	**M**	**M**						**M**