

Individual Evaluation Worksheet

This evaluation worksheet is used to summarize the ratings assigned to the specification for each criterion, using the metrics for in Appendix A. Evaluators will assign a rating to the specification under evaluation. After assigning ratings for all criteria, the evaluator should then assign a single rating for Maturity (Section 1) and Adoptability (Section 2). Ratings for each criterion, attribute, and Maturity/Adoptability category should use the following codes.

Rating Codes		
Code	Name	Notes
L	Low	Specification aligns to Low metrics.
M	Moderate	Specification aligns to Moderate metrics.
H	High	Specification aligns to High metrics.
UNK	Unknown	Reviewer cannot make a determination for this attribute or criteria.
NA	Not Applicable	Attribute or criteria does not apply to the specification under evaluation.

A High (H) rating for each criterion or attribute is always positively correlated with a recommendation for National Standards status. A Low rating for each criterion or attribute is always positively correlated with a recommendation for Emerging Standards status.

Evaluator: _____

Specification Evaluated: _____

Date: _____

1. Maturity Criteria

Maturity of Specification		
Criteria Attributes	Rating	Notes / Justification
Breadth of Support		
Stability		
Adoption of Specification		
Overall Rating		

Maturity of Underlying Technology Components		
Criteria Attributes	Rating	Notes / Justification
		NOTE: Please identify the underlying technology component(s) that contributed to your rating.
Breadth of Support		
Stability		
Adoption of Technology		
Platform Support		
Maturity of the Technology Within its Life Cycle		
Overall Rating		

Market Adoption		
Criteria Attributes	Rating	Notes / Justification
Installed Health Care User Base		
Installed User Base Outside Health Care		
Interoperable Implementations		
Future Projections and Anticipated Support		
Investments in User Training		
Overall Rating		

Maturity Rating: _____

2. Adoptability Criteria

Ease of Implementation and Deployment		
Criteria Attributes	Rating	Notes / Justification
Availability of Off-the-Shelf Infrastructure to Support Implementation		
Standard as Success Factor		
Conformance Criteria and Tests		
Availability of Reference Implementations		
Specification Modularity		
Quality and Clarity of Specifications		
Separation of Concerns		
Ease of Use of Specification		
Degree to which Specification Uses Familiar Terms to Describe “Real-World” Concepts		
Runtime Decoupling		
Appropriate Optionality		
Overall Rating		

Ease of Operations		
Criteria Attributes	Rating	Notes / Justification
Comparison of Targeted Scale of Deployment to Actual Scale Deployed		
Number of Operational Issues Identified in Deployment		
Degree of Peer-Coordination of Technical Experts Needed		
Operational Scalability (i.e. Operational Impact of Adding a Single Node)		
Fit to Purpose		
Overall Rating		

Intellectual Property		
Criteria Attributes	Rating	Notes / Justification
Openness		
Affordability		
Licensing Permissiveness		
Copyright Centralization		
Freedom from Patent Impediments		
Overall Rating		

Adoptability Rating: _____

Appendix A: Attribute Metrics

Maturity Metrics

Maturity of Specification			
Attributes	Metrics		
	Low	Moderate	High
Breadth of Support	<ul style="list-style-type: none"> 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'* 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
Adoption of Specification	<ul style="list-style-type: none"> No references (informal blogs to formal papers) identified of the standard's specification in use Existing specification with indications of decline (moved from 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

Maturity of Specification			
Attributes	Metrics		
	Low	Moderate	High
	“Declining” under Maturity of Specification criteria): <ul style="list-style-type: none"> - 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 	organization type.	organization type.
<p>*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</p> <p>** A “voluntary consensus standard” is a standard adopted by a “voluntary consensus standards body.”</p> <p>- Definitions adopted from OMB Circular A-119, Revised. February 10, 1998</p>			

Maturity of Underlying Technology Components			
Attributes	Metrics		
	Low	Moderate	High
Breadth of Support	One or more core technology components have: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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:	Most core technology components have:	All core technology components have:

Maturity of Underlying Technology Components			
Attributes	Metrics		
	Low	Moderate	High
	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
Adoption of Technology	<p>One or more core technology components:</p> <ul style="list-style-type: none"> • Have not been referenced in any other standard identified • Is an existing technology with indications of decline: <ul style="list-style-type: none"> - 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* 	<p>All core technology components have:</p> <ul style="list-style-type: none"> • 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 	<p>All core technology components have:</p> <ul style="list-style-type: none"> • 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	<p>One or more core technology components:</p> <ul style="list-style-type: none"> • Supports only one platform 	<p>All core technology components:</p> <ul style="list-style-type: none"> • Support multiple platforms but require additional effort or expertise 	<p>All core technology components:</p> <ul style="list-style-type: none"> • Support multiple platforms with no or minimal effort
Maturity of the Technology within its Life	<ul style="list-style-type: none"> • The maturity of one or more core 	<ul style="list-style-type: none"> • The maturity of one or more core 	<ul style="list-style-type: none"> • The maturity of all core technology

Maturity of Underlying Technology Components			
Attributes	Metrics		
	Low	Moderate	High
Cycle	technology components is characterized as <u>TRL 7</u> : System prototype demonstrated in operational environment.	technology components is characterized as <u>TRL 8</u> : Actual system completed and qualified through test and demonstration. Technology has been proven to work in its final form and under expected conditions.	components is characterized as <u>TRL 9</u> : Actual system proven through successful mission operations. Actual application of technology in its final form and under mission conditions.
<p>* Technical Readiness Levels:</p> <p><u>TRL 1</u>: Basic principles observed and reported. Research begins.</p> <p><u>TRL 2</u>: Technology concept and/or application formulated. Prototyping begins.</p> <p><u>TRL 3</u>: 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.</p> <p><u>TRL 4</u>: Component validation in a lab environment. Technological components are integrated in “low fidelity” setting.</p> <p><u>TRL 5</u>: Component validation in relevant environment. Technological components integrated with reasonably realistic supporting elements in an increased fidelity and simulated environment.</p> <p><u>TRL 6</u>: System/subsystem model or prototype demonstration in relevant environment. Prototype is tested in relevant and “high-fidelity” simulated environment.</p> <p><u>TRL 7</u>: System prototype demonstrated in operational environment.</p> <p><u>TRL 8</u>: Actual system completed and qualified through test and demonstration. Technology has been proven to work in its final form and under expected conditions.</p> <p><u>TRL 9</u>: Actual system proven through successful mission operations. Actual application of technology in its final form and under mission conditions.</p>			

Market Adoption			
Attributes	Metrics		
	Low	Moderate	High
Installed Health Care User Base	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Detectable references of use outside of developers of pilots within health care market 	<ul style="list-style-type: none"> Numerous users and numerous references to large user bases
Installed User Base Outside Health Care	<ul style="list-style-type: none"> Few users other than the developers of the standard or pilots, or Well established standard, but anticipating decline in 	<ul style="list-style-type: none"> Detectable references of use outside of developers of pilots 	<ul style="list-style-type: none"> Numerous users and numerous references to large user bases

Market Adoption			
Attributes	Metrics		
	Low	Moderate	High
	future use		
Interoperable Implementations	<ul style="list-style-type: none"> 0 - 1 non-coordinated implementations Degree of interoperability is undetermined 	<ul style="list-style-type: none"> 2 - 4 non-coordinated implementations Some indications of interoperability between at least 2 implementations 	<ul style="list-style-type: none"> 5+ non-coordinated implementations Interoperability established for entire standard between at least 2 implementations
Future Projections and Anticipated Support	<ul style="list-style-type: none"> No roadmap, future projections, or announcements 	<ul style="list-style-type: none"> Future announcements of releases and community activities are provided to limited audience on an irregular basis 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Few users investing in training on use of standard 	<ul style="list-style-type: none"> Limited user investment in learning , primarily through indirect means such as discussion boards 	<ul style="list-style-type: none"> Active user investments in training Multiple training modes available, such as code-a-thons, webinars, classroom training

Adoptability Metrics

Ease of Implementation/Deployment			
Attributes	Metrics		
	Low	Moderate	High
Availability of Off-the-Shelf Infrastructure to Support Implementation	<ul style="list-style-type: none"> Few off-the-shelf infrastructure components are available or can be purchased to support implementation 	<ul style="list-style-type: none"> Some of supporting infrastructure components can be purchased off-the-self 	<ul style="list-style-type: none"> Most of supporting infrastructure components can be purchased off-the-self
Standard as Success Factor	<ul style="list-style-type: none"> Many deployed implementations cite standard as a challenge to deployment Few cite standard as success factor 	<ul style="list-style-type: none"> No consensus view among deployed implementations on whether standard is a success factor or challenge to deployment 	<ul style="list-style-type: none"> Many deployed implementation cite standard as a success factor Few cite standard as challenge to deployment
Conformance Criteria and Tests	<ul style="list-style-type: none"> Incomplete conformance criteria Conformance tools and/or methodology not applied in any setting No automated tests available 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Complete conformance criteria Conformance tools and/or methodology applied to at least one operational implementation. Significant automated test support
Availability of Reference Implementations	<ul style="list-style-type: none"> No reference implementations 	<ul style="list-style-type: none"> Well-established reference implementations on a limited set of platforms 	<ul style="list-style-type: none"> Multiple reference implementations on multiple platforms
Specification Modularity	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Specification is somewhat modular but requires additional references for context; or Specification is modular but modules are unevenly aligned with the business problem 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Semantics not well defined and no evidence of interoperability Inconsistent or ambiguous terminology within 	<ul style="list-style-type: none"> Defined semantics but evidence of some difficulty interoperating with other systems or networks Consistent, 	<ul style="list-style-type: none"> Precisely defined semantics and providing evidence of interoperability with other systems or networks Consistent,

Ease of Implementation/Deployment			
Attributes	Metrics		
	Low	Moderate	High
	standard <ul style="list-style-type: none"> • Low terminology coherence with referenced or dependent standards 	unambiguous terminology within standard <ul style="list-style-type: none"> • Ad-hoc terminology alignment with any referenced or dependent standards 	unambiguous terminology within standard <ul style="list-style-type: none"> • Explicit terminology alignment with any referenced or dependent standards
Separation of Concerns	<ul style="list-style-type: none"> • Competing standards. Referenced standards solve the same business problem as the standard under evaluation. 	<ul style="list-style-type: none"> • Partial overlap. Referenced standards solve part of the business problem as the standard under evaluation. 	<ul style="list-style-type: none"> • Clean separation. Referenced standards do not solve the same business problem as the standard under evaluation.
Ease of Use of Specification	<ul style="list-style-type: none"> • Requires highly specialized expertise in multiple technologies to read and understand specification • Specification not appropriate as a starting point for maintenance 	<ul style="list-style-type: none"> • With moderate effort specification can be used as a starting point for maintenance 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Few concepts in standard are based on terminology currently used in industry • Concepts are not defined in business language 	<ul style="list-style-type: none"> • Some to majority of concepts in standard are based on terminology currently used in industry • Concepts are loosely defined in business language 	<ul style="list-style-type: none"> • Most concepts in standard are based on terminology well established in the industry • Concepts in specification expressively described in business language
Runtime Decoupling	<ul style="list-style-type: none"> • Tightly coupled to one or more externally defined interfaces. Content or Common Coupling with one or more systems. 	<ul style="list-style-type: none"> • Mix of tight and loose coupling to externally defined interfaces. 	<ul style="list-style-type: none"> • Loosely coupled to externally defined interfaces. Message and Data coupling only.
Appropriate Optionality	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Interoperability use cases partially met by implementations that ignore (at runtime) or do not implement (at design time) optional elements 	<ul style="list-style-type: none"> • 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

Ease of Implementation/Deployment			
Attributes	Metrics		
	Low	Moderate	High
	<ul style="list-style-type: none"> Implementers cite optionality as a barrier to interoperability. 		<ul style="list-style-type: none"> Implementers cite optionality as aiding interoperability.

Ease of Operations			
Attributes	Metrics		
	Low	Moderate	High
Comparison of Targeted Scale of Deployment to Actual Scale Deployed	<ul style="list-style-type: none"> No documented or advertised scale at which standard is intended to be deployed 	<ul style="list-style-type: none"> Scale is documented in standard but no evidence that the scale as been achieved in operations 	<ul style="list-style-type: none"> Scale is documented in standard and evidence that scale has been achieved or exceeded in operations
Number of Operational Issues Identified in Deployment	<ul style="list-style-type: none"> Several critical issues identified during deployment and are high risks to operations 	<ul style="list-style-type: none"> Several issues identified during deployment but all mitigated through operational activities 	<ul style="list-style-type: none"> Few issues identified during deployment
Degree of Peer-Coordination of Technical Experts Needed	<ul style="list-style-type: none"> Peer-coordination of technical experts required on daily basis 	<ul style="list-style-type: none"> Peer-coordination of technical experts on frequent periodic basis 	<ul style="list-style-type: none"> Minimal peer-coordination of technical experts required on as-needed basis
Operational Scalability (i.e. operational impact of adding a single node)	<ul style="list-style-type: none"> Addition of nodes creates exponential impacts to operational effort or complexity for either implementers or users 	<ul style="list-style-type: none"> Addition of nodes creates linear impacts to operational effort or complexity for either implementers or users 	<ul style="list-style-type: none"> Addition of nodes has little to no additional impacts to operational effort or complexity for either implementers or users
Fit to Purpose	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

Intellectual Property			
Attributes	Metrics		
	Low	Moderate	High
Openness	<ul style="list-style-type: none"> Closed to few individuals or entities 	<ul style="list-style-type: none"> Limited to only members or contributing organizations 	<ul style="list-style-type: none"> Open to public

Intellectual Property			
Attributes	Metrics		
	Low	Moderate	High
Affordability	<ul style="list-style-type: none"> • Fees associated with accessing standard specifications • High costs for use and documentation which are deemed prohibitive for high adoption 	<ul style="list-style-type: none"> • No fee for accessing standard specifications but fees or restrictions on referenced specifications (e.g. Vocabularies) • Nominal costs to use standard and documentation 	<ul style="list-style-type: none"> • No fees for accessing standard or referenced specifications • No costs to use standard and standard documentation
Licensing Permissiveness	<ul style="list-style-type: none"> • License places one or more restrictions on runtime usage of conforming implementations 	<ul style="list-style-type: none"> • License required to develop implementation, but no runtime restrictions. • Derivative works restricted • Negotiated agreement for use (i.e. SNOMED) 	<ul style="list-style-type: none"> • Unrestricted for any use (commercial, academic, governmental) • Perpetual use rights • Derivative work allowed • Unlimited number of users or instances
Copyright Centralization	<ul style="list-style-type: none"> • Rights held by numerous individuals, making relicensing very difficult 	<ul style="list-style-type: none"> • Rights held by a few individuals or entities 	<ul style="list-style-type: none"> • Rights held by a legal entity whom the community trusts and relicensing process is clear and streamlined
Freedom from Patent Impediments	<ul style="list-style-type: none"> • Patent encumbered: Known or anticipated patented methods required for conformance to standard 	<ul style="list-style-type: none"> • RAND terms: Contributors to standard agree to reasonable and non-discriminatory (RAND) terms for their contributed material 	<ul style="list-style-type: none"> • 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)