CCWIS DESIGN REVIEW - ASSESSMENT METHODOLOGY AND FINAL RATING CALCULATION

METHOD

Conformance Indicator Assessment Rating

- None (0)
- Little Extent (1)
- Moderate (2)
- Large Extent (3)

Aggregated conformance indicator scores will be calculated for each Category, and these Category Scores will be used to calcu
calculation methodology is presented below. At the end of the calculated Final Rating, the level of conformance is based on a

Final Rating Scale

- Unsatisfactory (< 50%)
- Needs Work (51%-71%)
- Satisfactory (72%-80%)
- Exemplary (> 80%)

A Final Rating below 72% indicates an unacceptable level of conformance that may require the project take corrective measur
information system implementation a non-CCWIS.

The assessment method incorporates ACF-assigned weights, corresponding to relative priority, for each conformance indicato
affect the final conformance rating calculation:

ACF-Defined Priority Factor for Each Conformance Indicator

- Not applicable/not available (0)
- Low (1)
- Medium (2)
- High (3)

ACF also assigned weights, corresponding to relative priority, to each Category:

ACF-Defined Priority Factor for Each Category

- Category 1: 1355.53(a)(1) Modular Design Requirements – 30%
- Category 2: 1355.53(a)(2) Plain Language Requirements – 15%
- Category 3: 1355.53(a)(3) Development Standards Requirements – 25%
- Category 4: 1355.53(a)(4) Share, Leverage, Reuse Requirements – 30%

CALCULATION

Step 1 – Calculate the Category Scores – Multiply each conformance indicator assessment rating in the category by its assigne
Total Assessment Score. Next, calculate the Maximum Possible Score: multiply the total number of indicators assessed by 3 (h

Category Score = Total Assessment Score/Maximum Possible Score

Repeat Step 1 for each category.

Step 2 –Calculate the Weighted Category Scores – Multiply each Category Score by its ACF-defined priority factor for its Weig

Weighted Category 1 Score = Category 1 Score X .30

Weighted Category 2 Score = Category 2 Score X .15

Weighted Category 3 Score = Category 3 Score X .25

Weighted Category 4 Score = Category 4 Score X .30

Step 3 – Calculate the Final Rating – The Final Rating Score is the sum of all four weighted category scores is the automated fu to determine if the automated function complies with CCWIS design requirements.

ITEM #	Subcategory	Conformance Indicators for 1355.53(a)(1) Modular Design; Category 1 Weight = 30%
C1-1	Architectural Pattern	The CCWIS or automated function institutes an architectural pattern that incorporates an 'n-tier' layered design or other structured topology specifying architecture components with clear roles, responsibilities, and relationships.
C1-2	Business Rules	The CCWIS business rules are separated from the core programming.
C1-3	Rules Engine	The agency uses a business rules engine to define the business rules for the CCWIS automated functions.
C1-4	Testing	A set of unit tests are present to verify implementation of business rules.
C1-5	Coupling	The automated function has been designed with clear boundaries.

C1-6	Coupling	The automated function does not require other automated functions to perform its tasks.
C1-7	Coupling	The automated function efficiently communicates with other automated functions within the CCWIS.
C1-8	Coupling	Identified automated function is easily severable from CCWIS.
C1-9	Cohesion	The identified automated function reflects a discrete, easily defined purpose that does not significantly overlap with any other automated function within the CCWIS.
C1-10	Cohesion	The automated function's functionality is designed to meet the needs of a business function performed by the agency.
C1-11	Cohesion	Members from the agency (and their business partners) who perform the business function, being supported by the automated function, were given an opportunity to participate in designing the automated function.
C1-12	Computer Generated	The agency uses automated tools to generate code in the CCWIS.

Notes to Reviewers	Assigned Weight
A traditional "n-tier" layered architecture is a reasonable architectural pattern for states to use in designing their application, but it isn't the only one. Other architectural topologies are also divided into different architectural components with different responsibilities, but use different terminology. A microservices architecture, for example, would have UI, API, and Service Component layers (and the Service Components themselves might have multiple layers).	2
In the context of the overall architectural topology, business rules should be segregated into a separate layer.	2
Implementing a rules engine facilitates separation of business rules from core programming, and facilitates management of rules. Sometimes done with a domain-specific language (DSL), COTS rules engine, or as custom programming against collection of rules	1
Comprehensive test coverage doesn't mean that all methods need to be tested. In fact, most plans aim for about 80% coverage. If this is too high, it can make code refactoring difficult. *Testability is also a function of various architectures (e.g., some patterns are inherently easier to test because other layers can be mocked or stubbed)*	1
Having clear boundaries for the automated function better defines the function itself and makes it easier to sever, replace, independently configure, and share.	3

An automated function will often be designed to function within the context of an overall CCWIS architecture. It may also have additional external dependencies, but should generally function independent of other automated functions.	1
	1
	3
There is a trade-off between modularity and duplication; limited overlap of functionality may be justified in some circumstances to reduce coupling and dependencies.	2
	1
	1
	1

Assessment Guidelines	Assessment (0-3)	Assessment Score (Weight x Assessment)
0 = unstructured; no architectural pattern 1 = inconsistently or insufficiently structured architecture 2 = somewhat consistently and sufficiently structured architecture 3 = well-structured architecture with at least three distinct layers (presentation, business logic, and data access) or architectural components		0
0 = business rules not at all separated from programming logic 1 = little separation of business rules from programming logic 2 = some separation of business rules from programming logic 3 = complete separation and independent management of business rules		0
0 = business rules not defined as a collection or otherwise managed distinct from programming logic 1 = little explicit identification and evaluation of business rule collections to determine behavior 2 = some explicit identification and evaluation of business rule collections to determine behavior 3 = integration of business rules engine component/product and associated API, DSL, or GUI		0
0 = no indication of unit testing 1 = inconsistent or insufficient unit test coverage 2 = less than 70% unit test coverage 3 = greater than 70% unit test coverage		0
0 = automated function is not distinctly separated, lacks clear responsibilities, and requires an understanding of other modules 1 = few clear or consitent boundaries between the automated function and other modules 2 = somewhat clear and consistent boundaries between the automated function and other modules 3 = automated function is distinct, with clear responsibilities; no knowledge of other modules is required		0

0 = automated functions cannot function independently, and dependencies not specified 1 = significant dependency on other modules, and dependencies not clearly identified 2 = little dependency on other modules 3 = autonomous, independent automated function, with explicit external dependencies		0
0 = unstructured and unmanaged communication interfaces 1 = some inconsistent or inefficient communication paths 2 = mostly consistent and efficient communication paths 3 = clear and effective interfaces between components		0
0 = no clear means of severing automated function 1 = significant parts of automated function may not be severable 2 = some parts of automated function may not be severable 3 = clear means of severing automated function		0
0 = automated function lacks a well-defined purpose or incorporates substantial unrelated, disparate, or duplicative functionality 1 = automated function includes significant unrelated or overlapping functionality 2 = automated function includes some unrelated or overlapping functionality 3 = automated function has a clear purpose and set of unique functions to support that purpose		0
0 = automated function doesn't address a business need 1 = automated function not well aligned to business needs 2 = automated function mostly aligned to business needs 3 = automated function clearly addresses business needs		0
0 = design occurred without agency and business partner input 1 = agency and business partner users had limited impact on the design 2 = agency and business partner users had significant impact on the design 3 = agency and business partner users were actively engaged in the design		0
0 = no automated code generation 1 = limited automated code generation 2 = some code generation associated with templates and frameworks 3 = extensive code generation associated with well-established, standardized frameworks		0

Maximum Possible Score (Weight x3)	Observations During Review
6	
6	
3	
3	
9	

3	
3	
9	
6	
3	
3	
3	
57	**0.00**

Agency Comments	CB Response

Weighted Category Score = Total Assessment / Maximum Possible

ITEM #	Subcategory	Conformance Indicators for 1355.53(a)(2) Plain Language; Category 2 Weight = 15%	Assigned Weight
C2-1	Plain Writing	Agency staff writes the topic with a familiarity to the audience, defining why the audience needs this document, and for all levels of staff to understand. (Know your audience)	3
C2-2	Plain Writing	The document is organized to provide clear and concise points. (Organize your thoughts)	2
C2-3	Plain Writing	Documentation uses formatting, headings, lists, tables and other visual cues to create a structure that enables easier location of information and better engagement of readers. (Summarize main points)	2
C2-4	Plain Writing	Documentation is comprised of concise sentences. Documentation provides an initial context for the ideas that will be discussed and incorporates definitions into the text. The paragraphs are simple with one topic sentence and one idea developed throughout the paragraph. (Write short sentences and paragraphs)	1

C2-5	Plain Writing	Documentation speaks to the audience (at all levels of expertise) and does not use extraneous words in Documentation construction. (Use every day phrases and words) Documentation does not use extraneous words in Documentation construction. (Use every day phrases and words)	1
C2-6	Plain Writing	Documentation does not include or limits the use of technical jargon, does not use abbreviations and explains acronyms. (Do not include or limit any technical jargon)	2
C2-7	Plain Writing	Documentation is composed with strong subjects and verbs, it uses active voice where possible and keeps the sentence structure simple. (Use strong subjects and verbs)	1
C2-8	Plain Writing	Documentation defines uncommon terms in the body of Documentation as well as within a glossary. (Define uncommon terms)	2

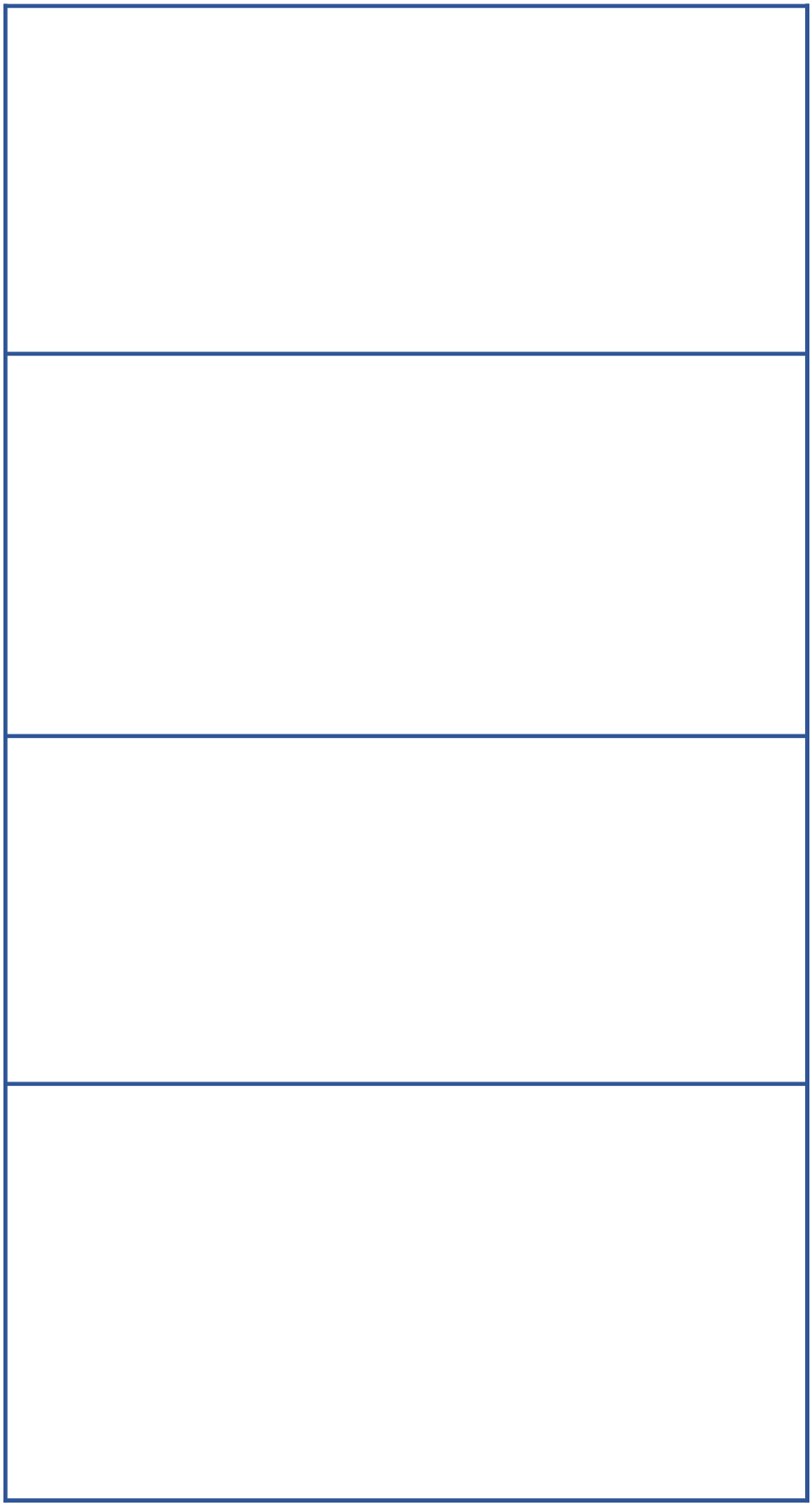
C2-9	Plain Writing	Documentation is free of grammatical error. (Proof-read and editing)	2

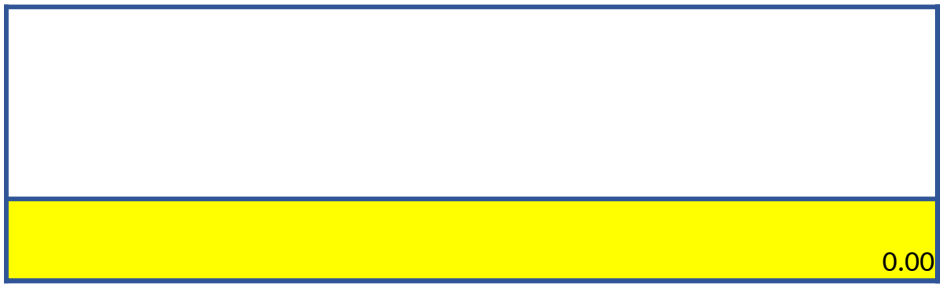
Assessment Guidelines	Assessment (0-3)	Assessment Score (Weight x Assessment)	Maximum Possible Score (Weight x3)
0 = audience not well understood or topic not written for relevant audiences 1 = some audiences not addressed 2 = most audiences identified and effectively addressed 3 = all audiences identified and effectively addressed		0	9
0 = document not clearly organized 1 = multiple parts of document need additional organization 2 = several parts of document need additional organization 3 = document well organized; thoughts		0	6
0 = document not clearly structured; ineffective use of headings and other visual cues 1 = many parts of document need restructuring for effective use of headings and other visual cues 2 = several parts of document need restructuring for effective use of headings and other visual cues 3 = document well-structured using headings and other visual cues		0	6
0 = document sentences and paragraphs poorly constructed 1 = a majority of sentences and paragraphs need editing for effective communication of ideas 2 = some sentences and paragraphs need editing for effective communication of ideas 3 = document sentences and paragraphs constructed effectively for clear and concise communication of ideas		0	3

0 = document is overly verbose and uses uncommon language 1 = document needs significant editing to eliminate verbosity 2 = document needs some editing to eliminate verbosity 3 = document is concise and uses common words and phrases		0	3
0 = document includes extensive abbreviations, and unexplained acronyms, and technical jargon 1 = document needs significant editing to remove jargon and abbreviations, and explain acronyms 2 = document needs some editing to remove jargon and abbreviations, and explain acronyms 3 = document is free of abbreviations, jargon, and unexplained acronyms		0	6
0 = document sentences have unclear subjects and verbs, use passive voice, and complex structures 1 = many sentences need editing for sentence structure 2 = some sentences need editing for sentence structure 3 = document sentences have clear subjects and verbs, use active voice, and simple structures		0	3
0 = document includes no glossary and uncommon terms are used without defining them within the text 1 = document needs many uncommon terms defined within the text and added to a glossary 2 = document needs some uncommon terms defined within the text and added to a glossary 3 = document defines uncommon terms both within the text and in a glossary		0	6

0 = document has extensive grammatical issues 1 = document require significant proof-reading and editing for grammatical issues 2 = document requires some proof-reading and editing for grammatical issues 3 = document is free of grammatical error		0	6
		0	48

Observations During Review




0.00

Agency Comments	CB Response

Weighted Category Score = Total Assessment / Maximum Possible

ITEM #	Subcategory	Conformance Indicators for 1355.53(a)(3) Design Standards; Category 3 Weight = 25%	Assigned Weight
C3-1	Used and Adhered to	The agency developed and conducted a process for evaluating adherence to design and development standards.	3
C3-2	Used and Adhered to	The agency acquired or leveraged autonomous quality management (QM) or independent verification and validation (IV&V) services to monitor the project during development.	1
C3-3	Used and Adhered to	The agency adheres to its design and development standards for the period under review.	2
C3-4	Used and Adhered to	The agency trains staff on what standards are used and where they can be found.	3
C3-5	Used and Adhered to	The agency performs code reviews to determine the quality of the code produced.	2
C3-6	Used and Adhered to	The agency confirms adherence to design and development standards during internal project and code reviews.	3
C3-7	Documentation	The agency maintains written documentation of the software design and development standards used for automated functions designed for the CCWIS.	3
C3-8	Documentation	Data sharing agreements are based on agency data exchange standards.	0

C3-9	Documentation	Standards used for automated functions are based on state, tribal, and/or industry-defined standards.	2
C3-10	Documentation	The agency maintains written documentation of the standards on commercial-off-the-shelf (COTS), or software-as-a-service (SaaS) automated functions, if applicable.	0
C3-11	Efficient/ Economical/ Effective	The automated function functions as designed.	3

Assessment Guidelines	Assessment (0-3)
0 = no developed process for evaluating adherence to standards 1 = partially developed process for evaluating adherence to standards 2 = assessed adherence to standards based on partially developed evaluation process 3 = assessed adherence to standards based on mature evaluation process	
0 = no QM or IV&V services acquired or leveraged 3 = QM or IV&V services acquired or leveraged	
0 = no evaluation, or little to no adherence to standards 1 = inconsistent or low adherence to standards 2 = moderate adherence to standards 3 = high adherence to standards	
0 = no evidence of standards training 1 = inconsistent or incomplete standards training 2 = mostly consistent and effective standards training 3 = highly consistent and effective standards training	
0 = no code reviews 1 = irregular or inconsistent code review process 2 = standardized code review process 3 = mature, standardized, and fully-integrated code review process	
0 = no reviews, or reviews do not evaluate adherence to standards 1 = reviews rarely or irregularly evaluate adherence to standards 2 = reviews often evaluate adherence to standards 3 = reviews consistently and effectively evaluate adherence to standards	
0 = no documentation of standards 1 = some limited or incomplete documentation of standards 2 = signficant documentation of standards 3 = comprehensive documentation of standards	
0 = no explicit data sharing agreements, or data sharing agreements not based on agency data exchange standards 1 = data sharing agreements inconsistent with data exchange standards 2 = data sharing agreements mostly consistent with data exchange standards 3 = data sharing agreements fully consistent with data exchange standards	

0 = automated function standards are not established or are not based on state, tribal, and/or industry standards 1 = automated function standards inconsistently or partially based on state, tribal, and/or industry standards 2 = automated function standards mostly based on state, tribal, and/or industry standards 3 = automated function standards derived and mapped to referenced state, tribal, and/or industry standards	
0 = no standards maintained for applicable COTS or SaaS components 1 = standards inconsistently maintained, or maintained for few applicable COTS or SaaS components 2 = standards maintained for most applicable COTS or SaaS components 3 = standards consistently maintained for all applicable COTS or SaaS components	
0 = functionality not at all consistent with documented design 1 = some functionality not consistent with documented design 2 = most functionality consistent with documented design 3 = functionality fully consistent with documented design	

Assessment Score (Weight x Assessment)	Maximum Possible Score (Weight x3)	Observations During Review
0	9	
0	3	
0	6	
0	9	
0	6	
0	9	
0	9	
0	N/A	

0	6	
	N/A	
0	9	
0	66	0.00

Agency Comments	CB Response

Weighted Category Score = Total Assessment / Maximum Possible

ITEM #	Subcategory	Conformance Indicators for 1355.53(a)(4) Shared, Leveraged, and Reused; Category 4 Weight = 30%
C4-1	Share	Automated function is easily identifiable via a unique name that does not conflict with an existing project and does not infringe on trademarks.
C4-2	Share	The source, contributor, and points-of-contact for the identified automated function are clearly specified.
C4-3	Share	Product status, version information and release notes for the automated function are provided.
C4-4	Share	Automated function licensing information is provided.

C4-5	Share	A product README file and links to more comprehensive documentation for the automated function are provided. (A README file is usually a simple plain text file that contains information about other files in a directory or archive of computer software.)
C4-6	Share	Automated function is accompanied by information describing the process and plans for maintaining, updating, and ending support for code.
C4-7	Share	An issue queue is available to view and track progress on known bugs, enhancement requests, and other issues.
C4-8	Share	Communication channels and feedback mechanisms are available to allow automated function recipients to query maintainers and get answers to questions.

C4-9	Share	Identified automated function subsumes features that may be enabled, disabled, configured, or removed.
C4-10	Share	Identified automated function is accompanied by evidence, such as test plans and results, of comprehensive testing.
C4-11	Leverage	Automated function is accompanied by comprehensive documentation on features and functionality.
C4-12	Leverage	Automated function is accompanied by reports describing the results of performed vulnerability testing.
C4-13	Leverage	Automated function is assessed against relevant security and privacy controls such as the National Institute of Standards and Technology Special Publication 800-53 (NIST SP 800 53).
C4-14	Leverage	Automated function is accompanied by a software installation plan (SIP) or other documentation detailing system requirements and installation procedures.

C4-15	Leverage	Automated function is accompanied by documentation detailing required and recommended configuration information.
C4-16	Leverage	Available documentation details external interfaces and integration points to allow system integrators to incorporate and leverage the automated function.
C4-17	Leverage	Automated function is accompanied by an administration manual or procedures to facilitate effective system administration.
C4-18	Reuse	Automated function is architected to leverage established software frameworks and established, industry-standard underlying design patterns.

Notes to Reviewers	Assigned Weight
	3
This information might be included in documentation or provided as reference data C-SWAP. This indicator considered N/A until procedures are available established for C-SWAP.	0
	1
Typically included as a text file along with the code. It's not required for public domain code. Libraries typically have a license file as well. For example, Lesser GNU Public License (LGPL) type information used for open source code	1

The README should provide an overview of the automated function's purpose, architecture, design, system requirements, installation, and configuration. Links to various artifacts such as system design documentation, user guides, administration manuals, roadmaps, and API documentation may be included.	3
Typically included in roadmap or similar documentation.	3
This indicator considered N/A until procedures are available established for C-SWAP.	0
This indicator considered N/A until procedures are available established for C-SWAP.	0

	3
This conformance indicator ensures that those receiving the shared automated function can ascertain the degree to which it is well-tested, and can understand where existing problems remain.	1
Typically included in the form of end-user documentation, reference guides, and administration manuals.	2
	1
Adjusting since SP 800-53 is a federal rather than state requirement	1
	3

	3
	3
	3
May include application frameworks based on high-level design patterns (e.g., MVC and MVVM).	2

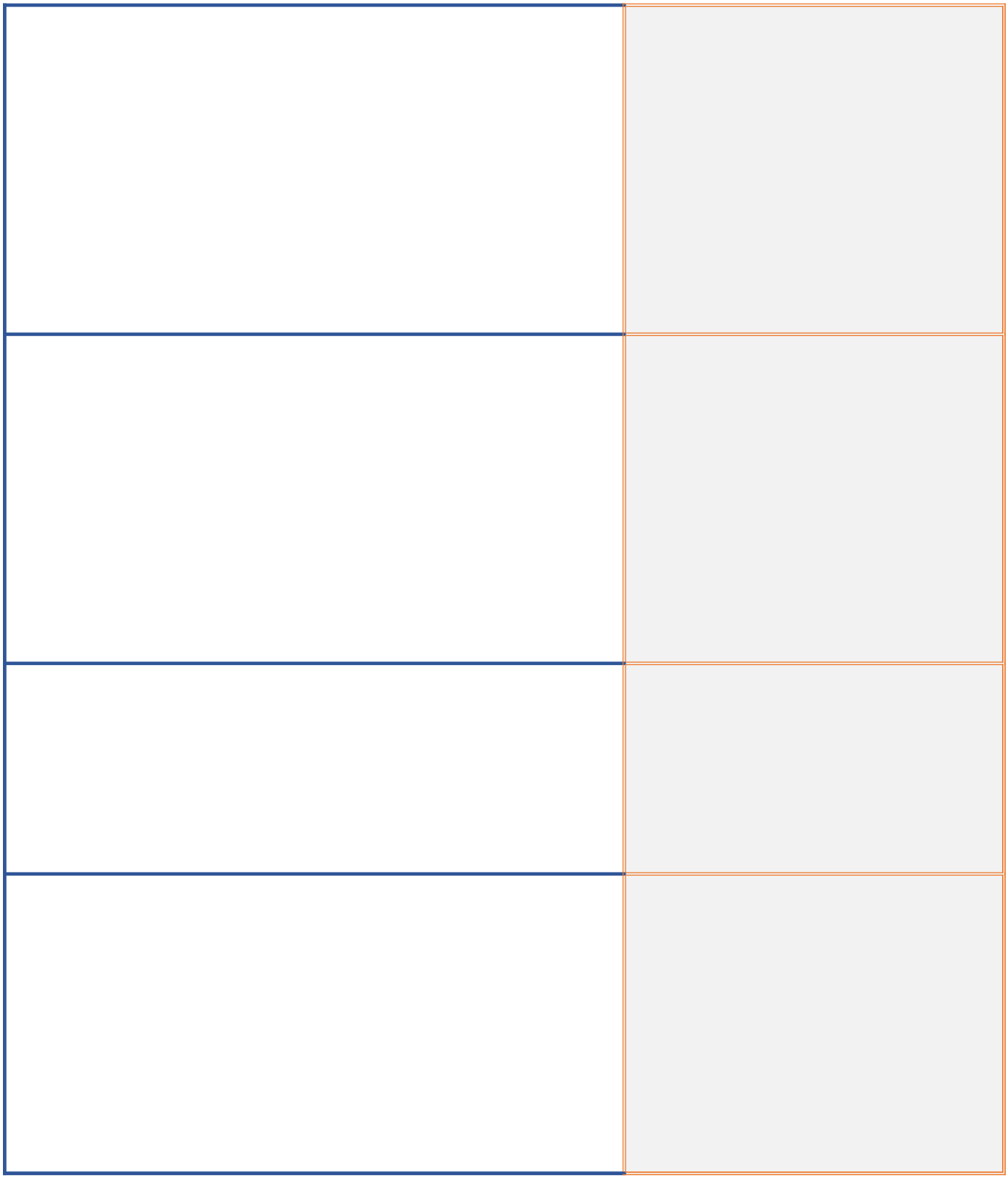
Assessment Guidelines	Assessment (0-3)	Assessment Score (Weight x Assessment)	Maximum Possible Score (Weight x3)
0 = automated function not clearly identified 1 = name of automated function clearly identified 2 = name of automated function clearly identified, but may conflict with or be confused with that of another project 3 = automated function clearly and uniquely identified		0	9
0 = source, contributors, or POCs not identified 1 = limited source, contributors, or POCs identified 2 = most source, contributors, or POCs identified 3 = source, contributors, and POCs fully identified		0	N/A
0 = status, version, and release notes not specified 1 = limited status, version, and release information provided 2 = most status, version, and release information provided 3 = status, version, and release notes fully and clearly specified		0	3
0 = no licensing information provided 1 = limited licensing information provided 2 = licensing information provided for most components 3 = licensing information provided for all components		0	3

0 = no README or equivalent information included with automated function code 1 = limited README information included with automated function code 2 = README information and linked information included with automated function code 3 = automated function includes effective README with links to comprehensive documentation code		0	9
0 = no planning information is included with automated function code 1 = limited planning information provided with automated function code 2 = significant planning information provided with automated function code 3 = comprehensive planning information provided with automated function code		0	9
0 = no means of viewing or tracking issues 1 = limited issue information provided 2 = significant issue tracking capability available 3 = detailed issue tracking system available for automated function		0	N/A
0 = no communication channels or feedback mechanisms available 1 = limited communication channels or feedback mechanisms (e.g., published email address) available 2 = multiple communication channels or feedback mechanisms available 3 = multiple, clear, and effective communication channels and feedback mechanisms		0	N/A

0 = no clear means of enabling, disabling, configuring, or removing features 1 = limited ability to enable, disable, configure, or remove features 2 = ability to enable, disable, configure, or remove many features 3 = extensive ability to enable, disable, configure, or remove features		0	9
0 = no evidence of testing 1 = limited test information available 2 = significant test information available 3 = extensive test information available, including evidence of comprehensive test coverage		0	3
0 = no information on features and functionality is provided 1 = limited information on features and functionality is provided 2 = sigificant information on features and functionality is provided 3 = comprehensive information on features and functionality is provided		0	6
0 = no evidence of vulnerability testing 1 = limited vulnerability-testing information available 2 = significant vulnerability-testing information available 3 = extensive, detailed vulnerability test information available		0	3
0 = no evidence of controls assessment 1 = limited evidence of controls assessment 2 = significant controls assessment information available 3 = evidence of comprehensive security and privacy controls assessment		0	3
0 = no SIP or similar documentation 1 = limited installation information provided 2 = significant installation information provided 3 = comprehensive SIP or similar documentation included		0	9

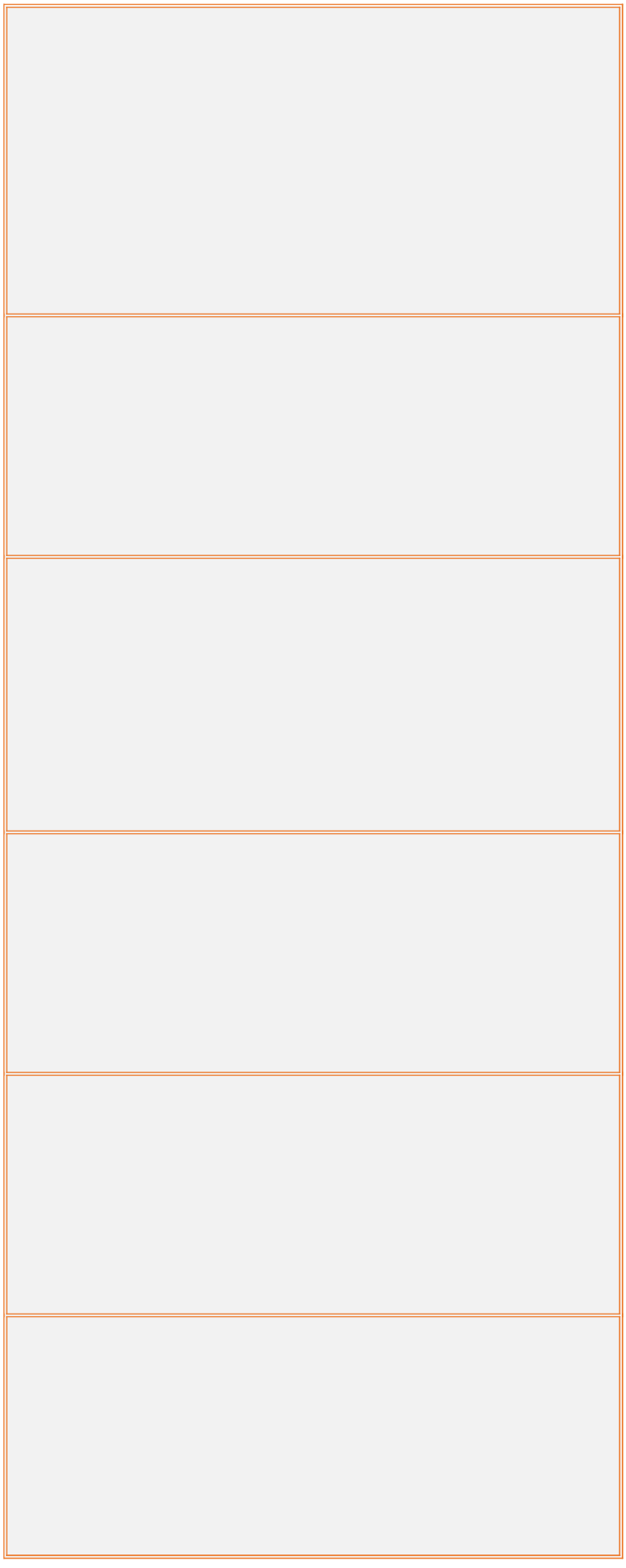
0 = no configuration information provided 1 = little configuration information provided 2 = significant configuration information provided 3 = comprehensive configuration documentation included		0	9
0 = no external interface information provided 1 = limited information on external interfaces provided 2 = significant information on external interfaces provided 3 = comprehensive documentation of external interfaces and integration points included		0	9
0 = no administration procedures provided 1 = little administration information provided 2 = significant administration information provided 3 = comprehensive administration information included		0	9
0 = no use of established software frameworks; no clear design patterns, or antipatterns 1 = limited use of frameworks and design patterns 2 = significant use of frameworks and design patterns 3 = effective and appropriate use of established frameworks and design patterns		0	6
		0	99

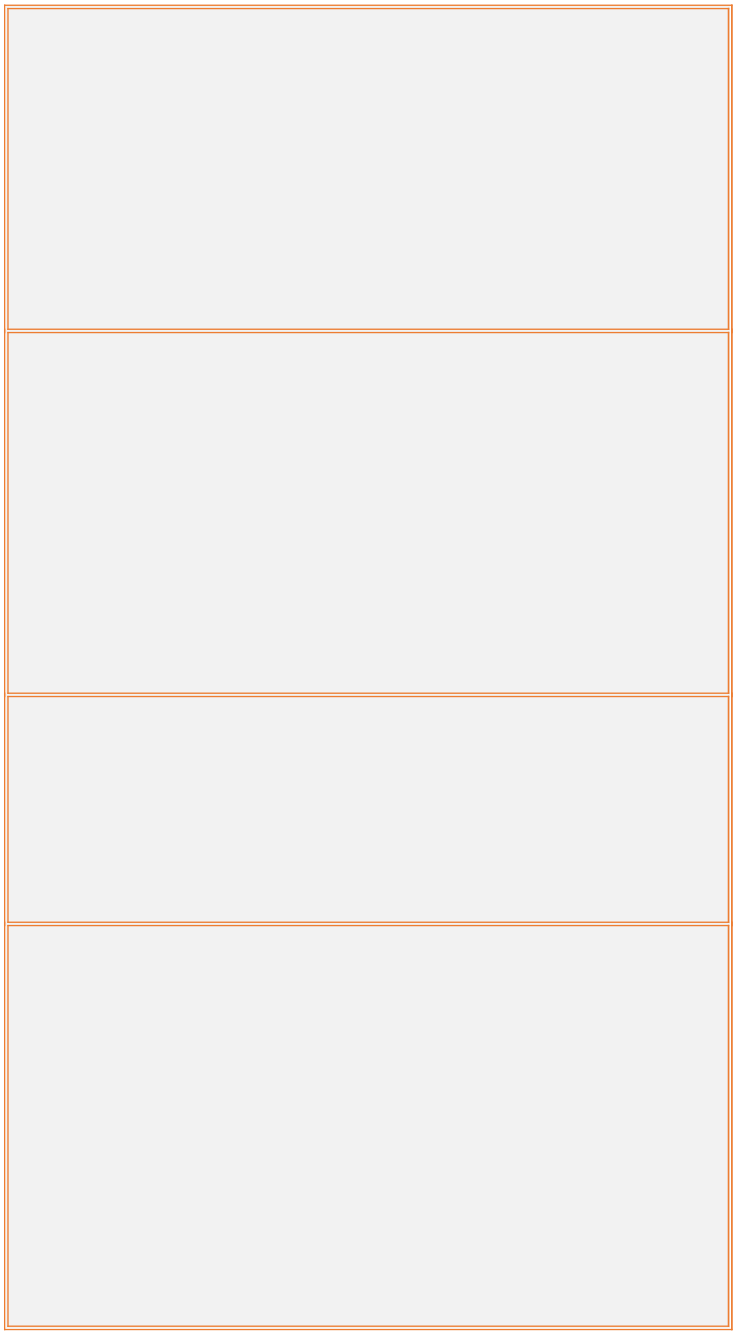
Observations During Review	Agency Comments



0.00	Weighted Category Score = Total Assessment / Maximum Possible

CB Response





FINAL RATING

Category	Category Score (Column 1)	ACF Defined Priority Factor for each Category (Column 2)
1	0.00	0.30
2	0.00	0.15
3	0.00	0.25
4	0.00	0.30
Final Rating Score:		

Final Rating Scale:

- Unsatisfactory (< 50%)
- Needs Work (51%-71%)
- Satisfactory (72%-80%)
- Exemplary (> 80%)

Calculation (Column 1 x Column 2)		
0.00		
0.00		
0.00		
0.00		
0.00	or	**0%**