Open Security Controls Assessment Language
What is OSCAL and Who Needs It?

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Why are we all here today?

Information technology is complex
& calls for automation

Regulatory frameworks are burdensome
& Need interop auto GRC tools

Paper-based A&A doesn't scale
& Calls for auto updates

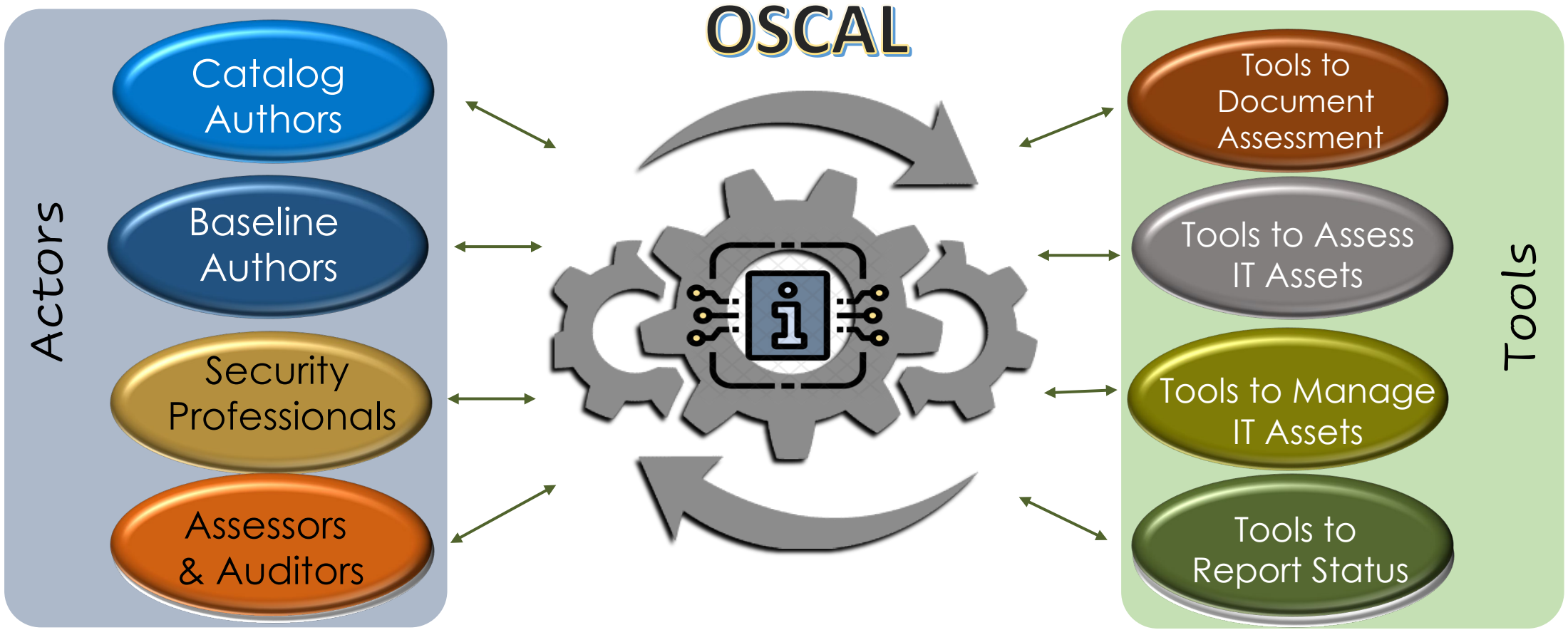
Security vulnerabilities are everywhere
& Calls for auto updates

Risk management is hard
& Experts need automation

DevOps & IaC is hard in multi-clouds
& Calls for interoperability & standardization

What was needed?

A (Cyber) Machine-readable Esperanto that enables actors, tools and organizations to exchange information via automation:

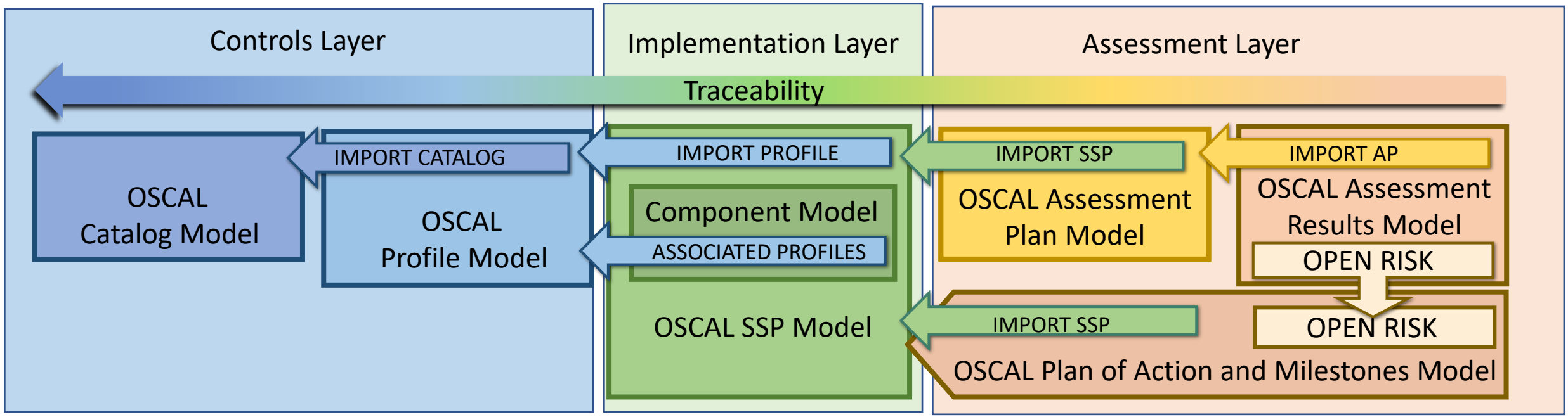


OSCAL sets the foundation for automation and interoperability

What is OSCAL?

OSCAL is the result of NIST and FedRAMP collaboration

- **OSCAL provides** a common/single machine-readable *language*, expressed in XML, JSON and YAML for:
  - multiple compliance and risk management frameworks (e.g. SP 800-53, ISO/IEC 27001&2, COBIT 5)
  - software and service providers to express implementation guidance against security controls (Component definition)
  - sharing how security controls are implemented (System Security Plans [SSPs])
  - sharing security assessment plans (System Assessment Plans [SAPs])
  - sharing security assessment results/reports (System Assessment Results [SARs])
- **OSCAL enables** automated traceability from selection of security controls through implementation and assessment



First OSCAL Release

OSCAL 1.0.0

WAS RELEASED ON

JUNE 7, 2021

https://github.com/usnistgov/OSCAL/releases/tag/v1.0.0

"…First official, major release of OSCAL provides a stable OSCAL 1.0.0 for wide-scale implementation …"

Few of the OSCAL Adopters

2021 presenters

- ❑ FedRAMP
- ❑ Noblis
- ❑ HHS CMS
- ❑ National Renewable Energy Lab
- ❑ GovReady
- ❑ C2 Labs
- ❑ cFocus Software
- ❑ Shujinko
- ❑ Robers Bosch (EU|Germany)
- ❑ Telos
- ❑ KPMG
- ❑ IBM Research

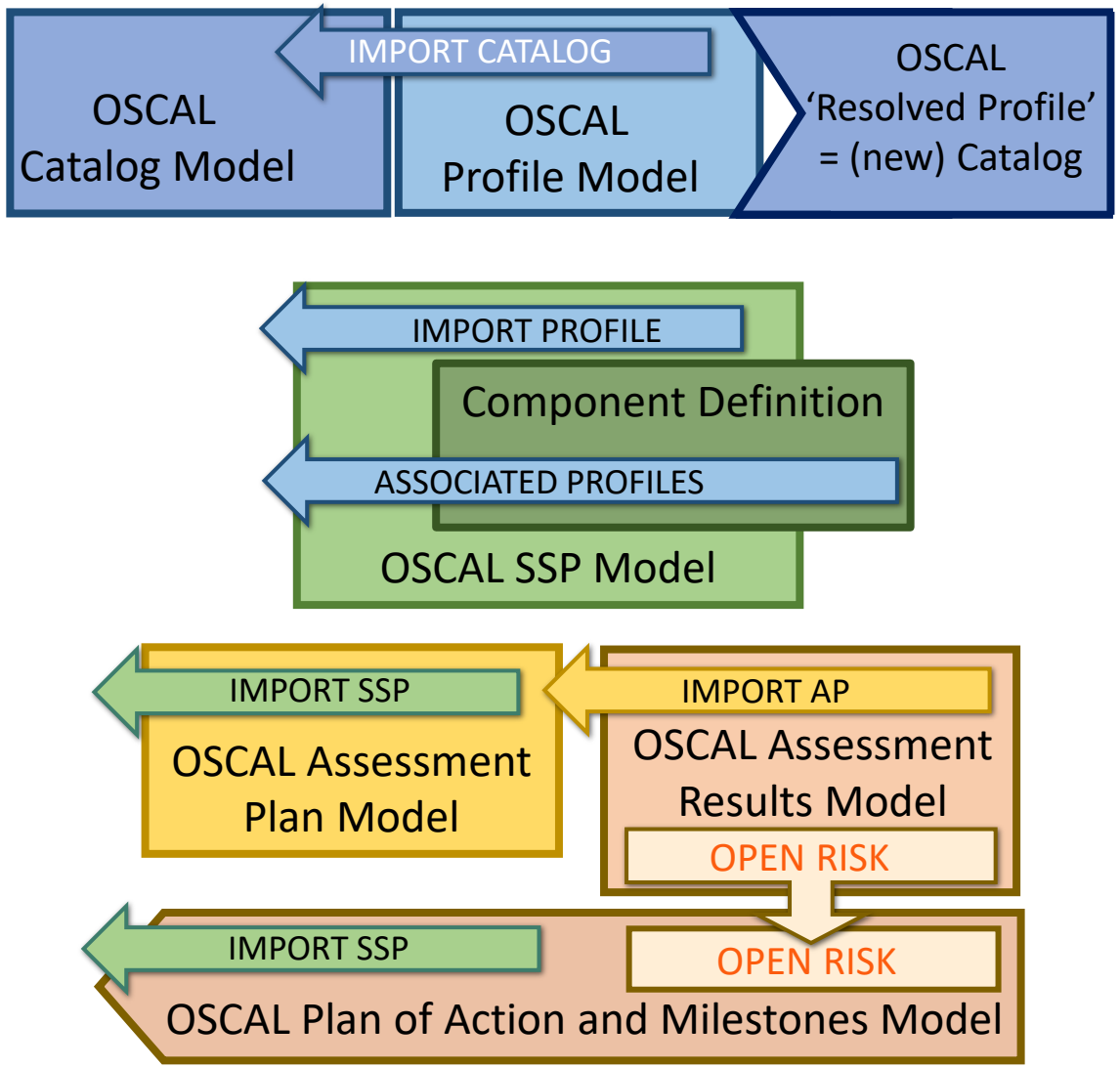
2022 new presenters

- ❑ AWS
- ❑ CSAM
- ❑ Easy Dymanics
- ❑ Volant Associates LLC
- ❑ Secureframe
- ❑ Red Hat
- ❑ Nirmata
- ❑ SunStone Secure

2021-2022 other adopters

- ❑ US AirForce Platform One
- ❑ Booz Allen Hamilton
- ❑ eMASS
- ❑ Microsoft
- ❑ Coalfire
- ❑ Kratos
- ❑ Salesforce
- ❑ Oracle

How is OSCAL different?

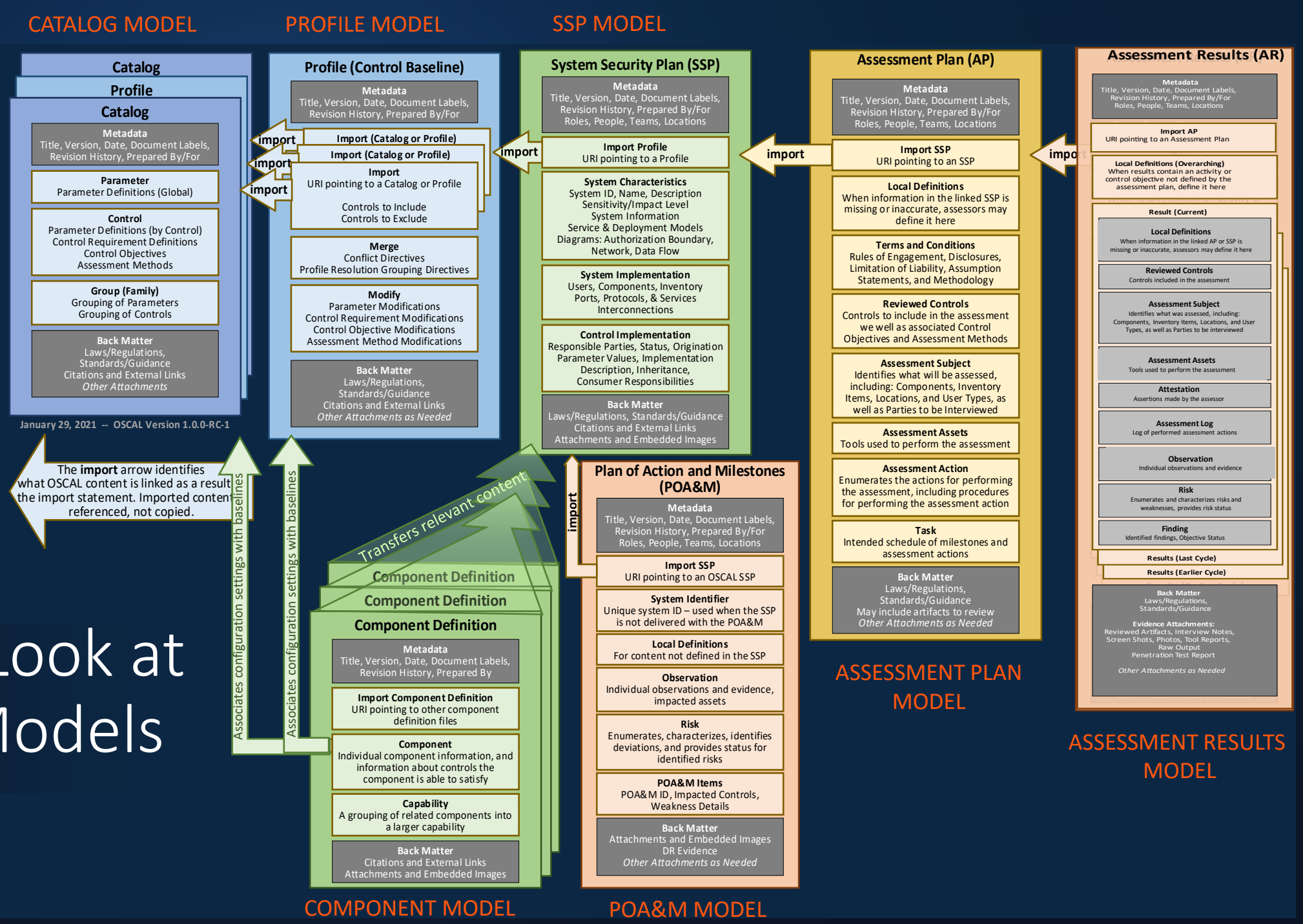


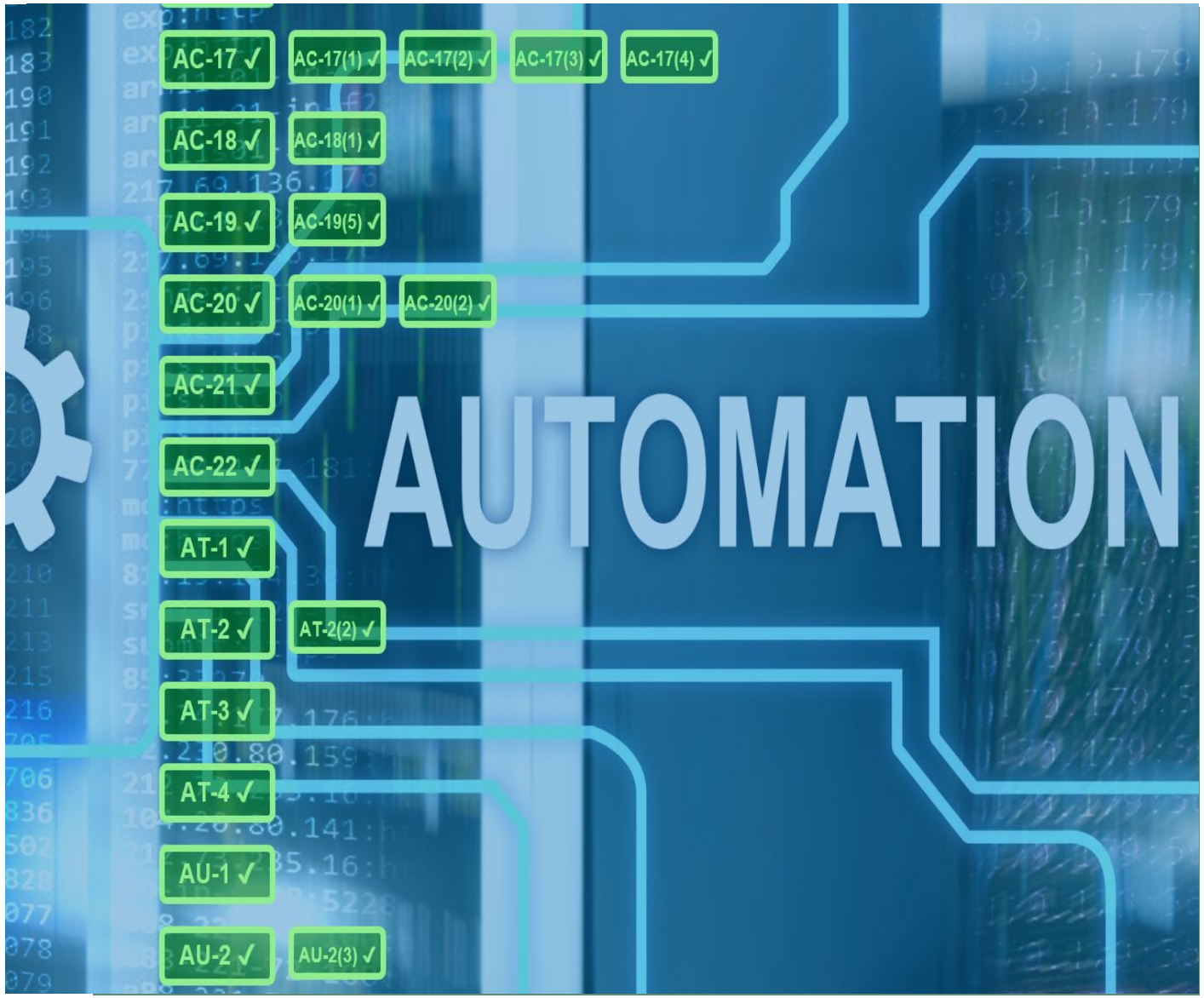
- No information needs duplication
- Custom granularity (controls can be decomposed into statements)
- Unique identifiers for parameters and statements

- Vendors can document their products
- Systems' security implementation can be decomposed

- Capture assessment Plans and Activities with custom cadence, & only for selected components
- POA&M conveys open risks aligned with the SSP capabilities and controls

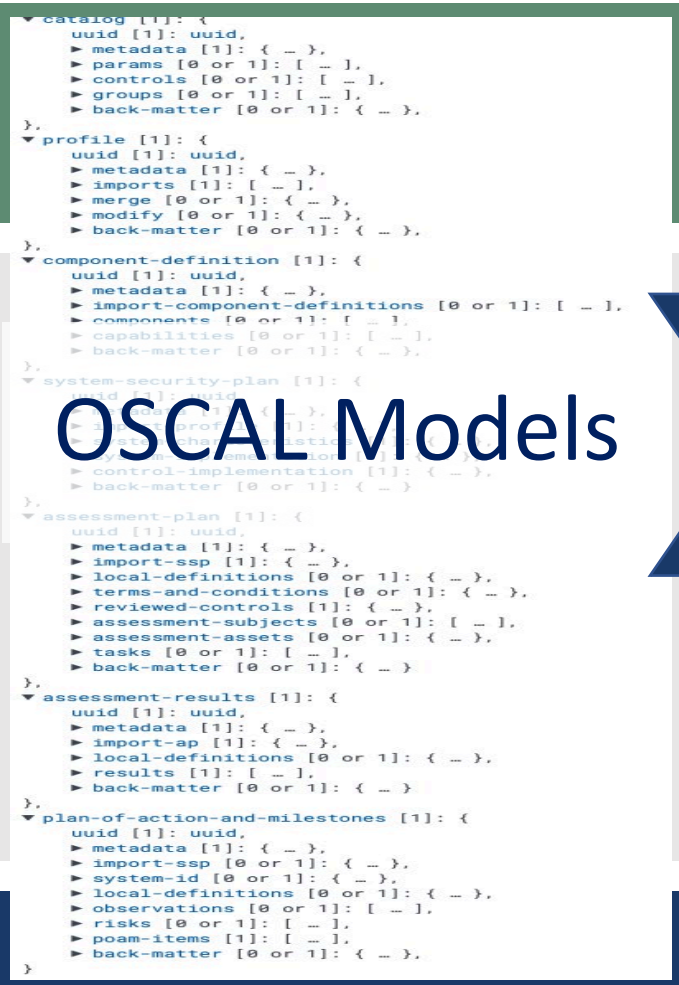
A Closer Look at OSCAL Models





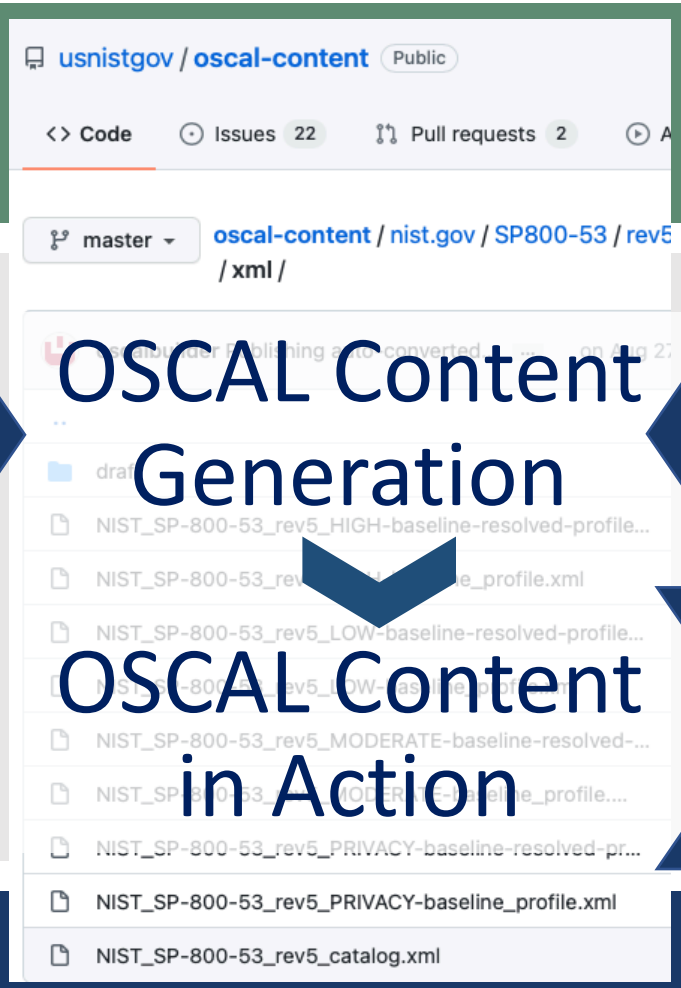
What can you do with the OSCAL models?

OSCAL Models >>> OSCAL Content >>> OSCAL Tools



OSCAL Models

https://github.com/usnistgov/OSCAL



OSCAL Content Generation

OSCAL Content in Action

https://github.com/usnistgov/oscal-content

Name	Provider/Developer	Description	Type
Compliance trestle	IBM	A python SDK and command line tool which manipulates OSCAL structures and supports transformation of data into OSCAL.	open source
OSCAL Java Library	NIST OSCAL Project	A Java-based programming API for reading and writing content conformant to the OSCAL XML, JSON, and YAML based models.	open source
OSCAL React Component Library	Easy Dynamics	A library of reusable React components and an example user interface application that provides a direct UI into OSCAL.	open source
OSCAL [illegible] API	[illegible]	[illegible] systems might manipulate catalogs, profiles, components, and SSPs.	[illegible]
XSLT Tooling	NIST OSCAL Project	A variety of [illegible] Stylesheet [illegible] transformations [illegible] Sheets (CSS), and related utilities for authoring, converting, and publishing OSCAL content in various forms.	open source
XML Jelly Sandwich	Wendell Piez (NIST)	Interactive XSLT in the browser includes OSCAL demonstrations.	open source
Xacta 360	[illegible]	Xacta 360 is a cyber risk [illegible] system security plans (SSPs) in OSCAL format. Future OSCAL capabilities [illegible] forthcoming as the [illegible]	[illegible] license
Atlasity: Continuous Compliance Automation	C2 Labs	[illegible] runs in any environment and supports the development of OSCAL v1.0 content for Catalogs, Profiles, System Security Plans and Components. Additional detail can be found in this blog post: Atlasity Delivers Free Tools to Create OSCAL Content.	community edition

OSCAL Editorial Tools

OSCAL GRC Tools

https://github.com/usnistgov/oscal-tools

OSCAL Supports Continuous Authorization to Operate (ATO)

- System Assessment Automation -

National Institute of Standards and Technology
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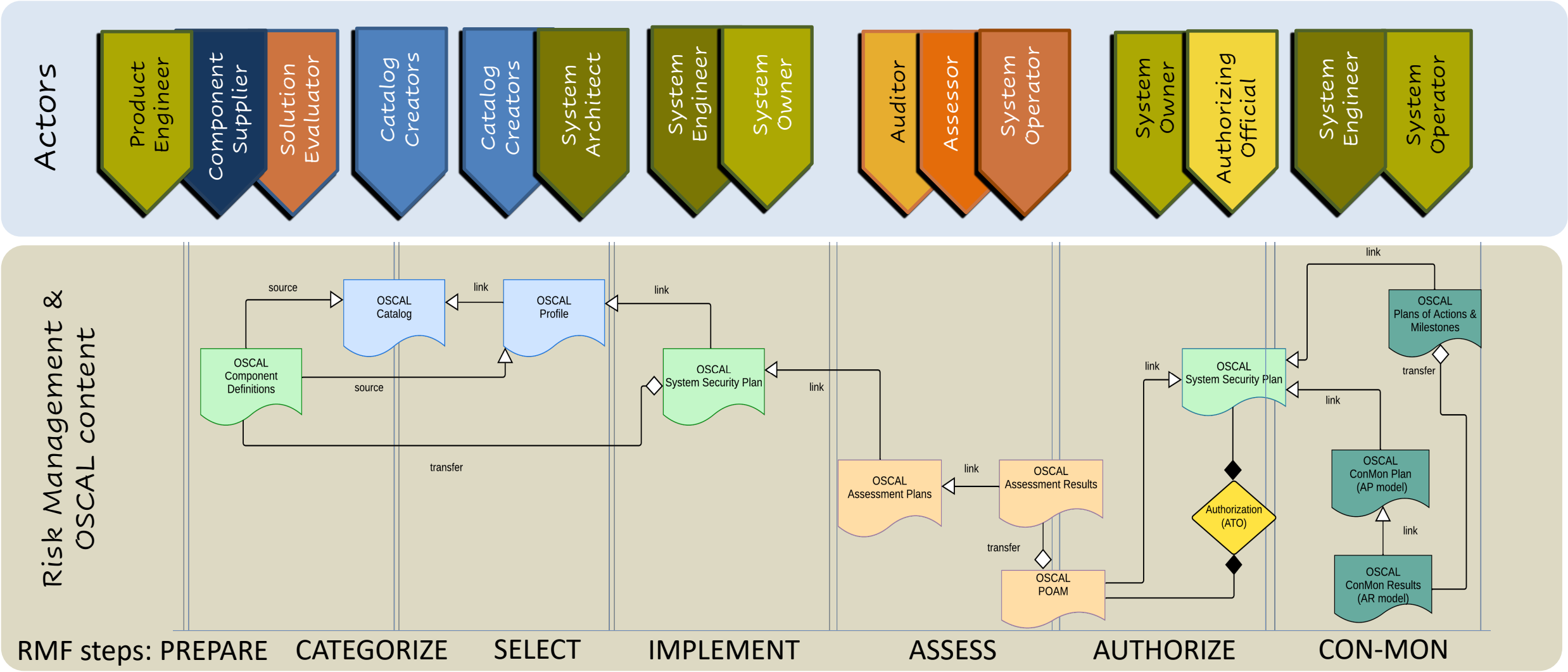
Who Can Benefit & How ?

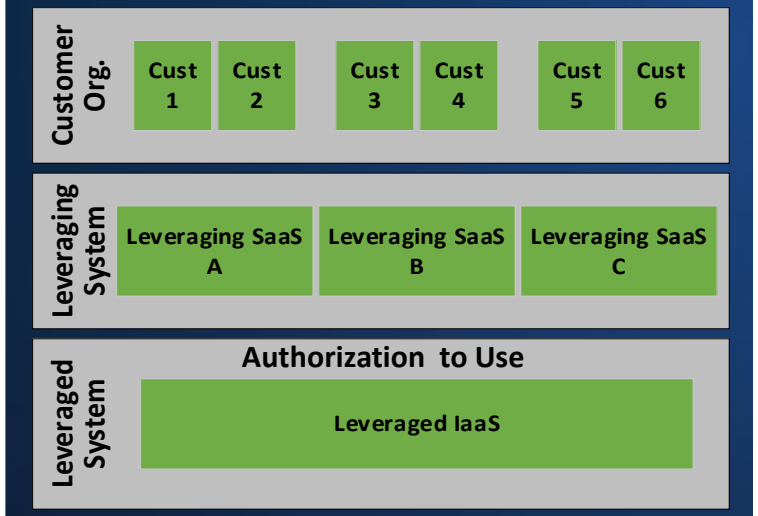


OSCAL Supports Complex Systems

Authorization to Operate (ATO)
Authorization to Use (ATU)
Common Control Authorization

Common Control Authorization & Authorization to Use

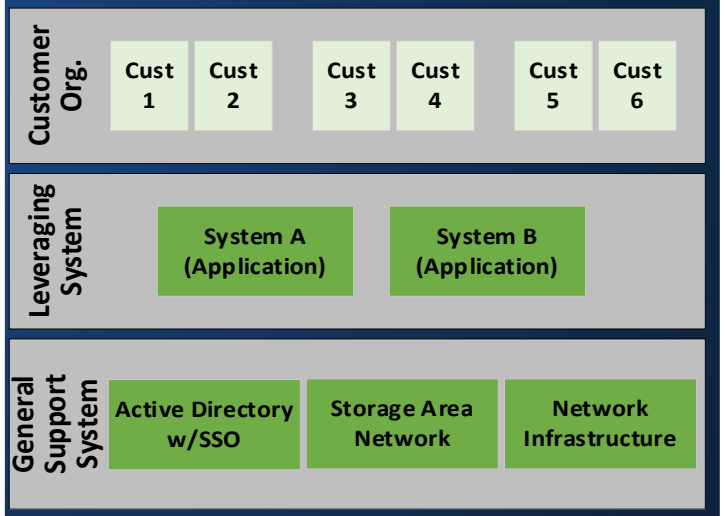
Yes



Cloud (SaaS on IaaS)

Cloud: Several SaaS systems running on a separately authorized IaaS.

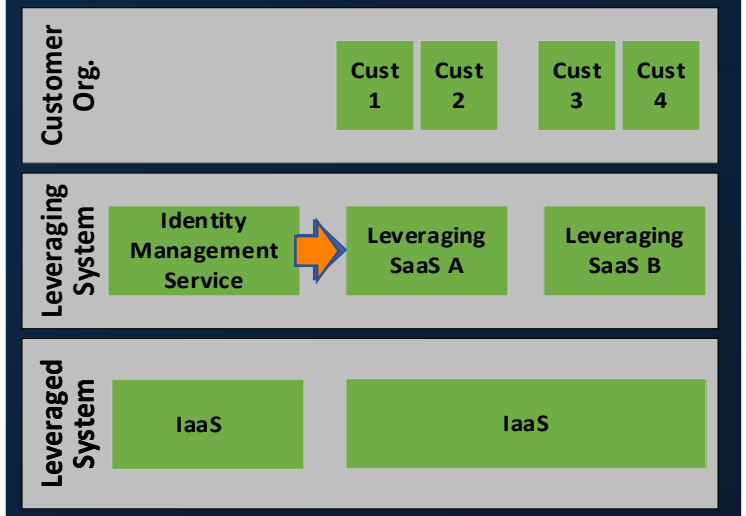
Yes



Data Center (System on GSS)

Data Center: Several systems relying on a separately authorized storage array or other general support system (GSS)

No



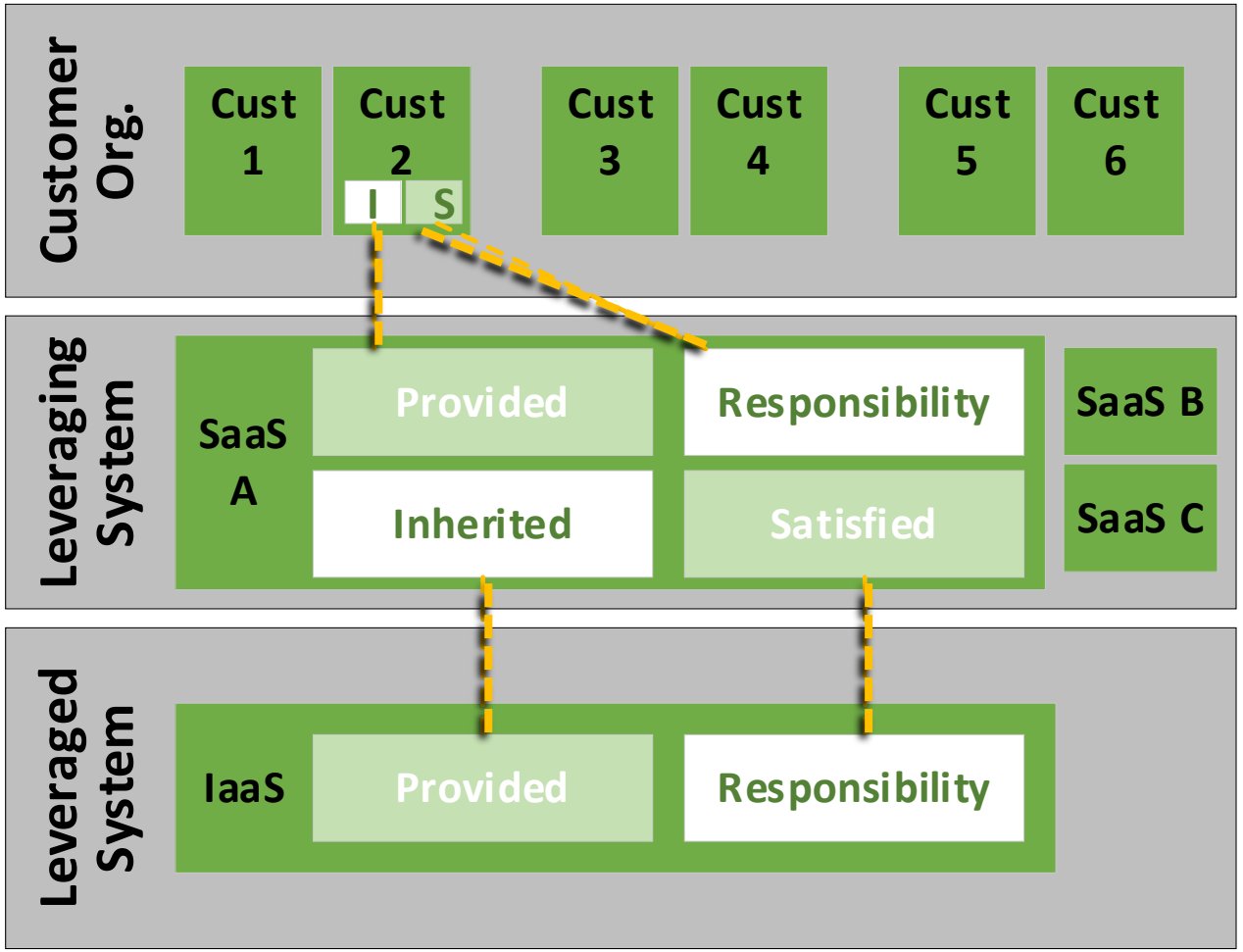
External Service or Interconnection

Interconnections or External Services are not leveraged authorizations

- Even if they have an authorization
- SaaS A handles the Identity Management Service as a system component

OSCAL supports this, just not as a L.A.

OSCAL supports leveraged ATOs of complex stacked systems



Leveraging System:

The leveraging system's SSP should:

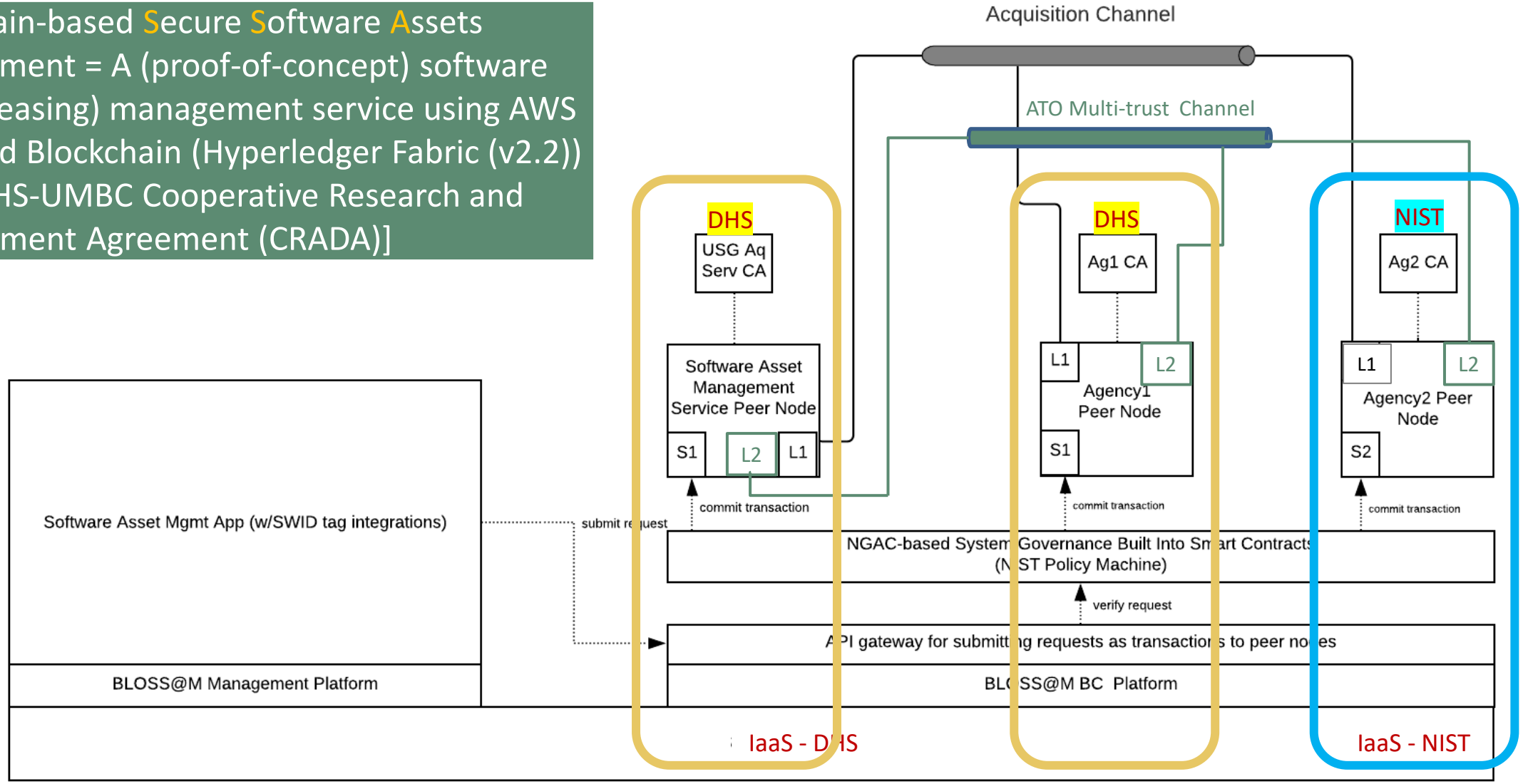
- identify what is inherited from a leveraged system
- identify any addressed responsibilities (as identified by the leveraged system)

In addition to:

- identifying what **may be** inherited by the leverag**ing** system's customers
- any responsibilities the leverag**ing** system's customers must address to fully satisfy a control

Proof of Concept: OSCAL in Action – BloSS@M's ATO

Blockchain-based Secure Software Assets Management = A (proof-of-concept) software assets (leasing) management service using AWS Managed Blockchain (Hyperledger Fabric (v2.2)) [NIST-DHS-UMBC Cooperative Research and Development Agreement (CRADA)]



OSCAL

https://nist.gov/oscal

NIST

OSCAL: the Open Security Controls Assessment Language

Get involved | Contact Us | Github

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Providing control-related information in machine-readable formats.

NIST, in collaboration with industry, is developing the Open Security Controls Assessment Language (OSCAL). OSCAL is a set of formats expressed in XML, JSON, and YAML. These formats provide machine-readable representations of control catalogs, control baselines, system security plans, and assessment plans and results.

Open-Source Tools and Libraries

https://pages.nist.gov/OSCAL/tools/#open-source-tools-and-libraries

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Compliance trestle	IBM	A python SDK and command line tool which manipulates OSCAL structures and supports transformation of data into OSCAL.	open source
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OSCAL React Component Library	Easy Dynamics	A library of reusable React components and an example user interface application that provides a direct UI into OSCAL.	open source
OSCAL REST API	Easy Dynamics	An initial OpenAPI definition of an OSCAL REST API that describes how systems might manipulate catalogs, profiles, components, and SSPs.	open source
XSLT Tooling	NIST OSCAL Project	A variety of Extensible Stylesheet Language (XSL) Transformations (XSLT), Cascading Style Sheets (CSS), and related utilities for authoring, converting, and publishing OSCAL content in various forms.	open source
XML Jelly Sandwich	Wendell Piez (NIST)	Interactive XSLT in the browser includes OSCAL demonstrations.	open source
Xacta 360	Telos	Xacta 360 is a cyber risk management and compliance analytics platform that enables users to create and submit FedRAMP system security plans (SSPs) in OSCAL format. Future OSCAL capabilities are forthcoming as the standard evolves.	license
Atlasity: Continuous Compliance Automation	C2 Labs	Atlasity CE (release 2.0) runs in any environment and supports the development of OSCAL v1.0 content for Catalogs, Profiles, System Security Plans and Components. Additional detail can be found in this blog post: Atlasity Delivers Free Tools to Create OSCAL Content.	community edition
control_freak	Risk Redux	This tool seeks to provide folks with a searchable and easy-to-navigate reference for NIST SP 800-53 Revision 5. It is an open-source application from the Risk Redux project, built using parsed content directly from the OSCAL repositories.	open-source

How to Contribute?

OSCAL is a community-driven effort.

Your participation directly impacts OSCAL's success.

https://github.com/usnistgov/OSCAL

Integrate support for OSCAL in your tools

Implement OSCAL-based tools in your enterprise.

Contribute to the development of OSCAL on GitHub.

https://github.com/usnistgov/OSCAL/blob/main/CONTRIBUTING.md

Attend the bi-weekly community meetings hosted by NIST.

https://pages.nist.gov/OSCAL/contribute/#community-meetings

Publicly Available Resources

Please visit Community's:
OSCAL Club/awesome-oscal:
https://github.com/oscal-club/awesome-oscal

Documentation:

Catalog, Profile, Component, SSP, SAP, SAR, POA&M:
https://pages.nist.gov/OSCAL/documentation/

Example:

Generic examples:

https://github.com/usnistgov/oscal-content/tree/master/examples

NIST SP 800-53 R4 and Rev5 catalog and baselines (XML & JSON):
https://github.com/usnistgov/oscal-content/tree/master/nist.gov/SP800-53

FedRAMP Automation:

Repository (FedRAMP catalog and baselines (XML & JSON) included) :
https://github.com/GSA/fedramp-automation

https://www.fedramp.gov/using-the-fedramp-oscal-resources-and-templates/

Tools

OSCAL Java Library: https://github.com/usnistgov/liboscal-java
XSLT Tooling: https://github.com/usnistgov/oscal-tools/tree/master/xslt
OSCAL Kit: https://github.com/docker/oscalkit
OSCAL GUI: https://github.com/brianrufgsa/OSCAL-GUI
OMB'S OPAL: OSCAL Policy Administration Library (OPAL): https://github.com/EOP-OMB/opal

Questions?

Contact us at: oscal@nist.gov

Chat with us on Gitter: https://gitter.im/usnistgov-OSCAL/Lobby

Collaborate with us on GitHub: https://github.com/usnistgov/OSCAL

Join our COI meetings: https://pages.nist.gov/OSCAL/contribute/#community-meetings

Thank you!