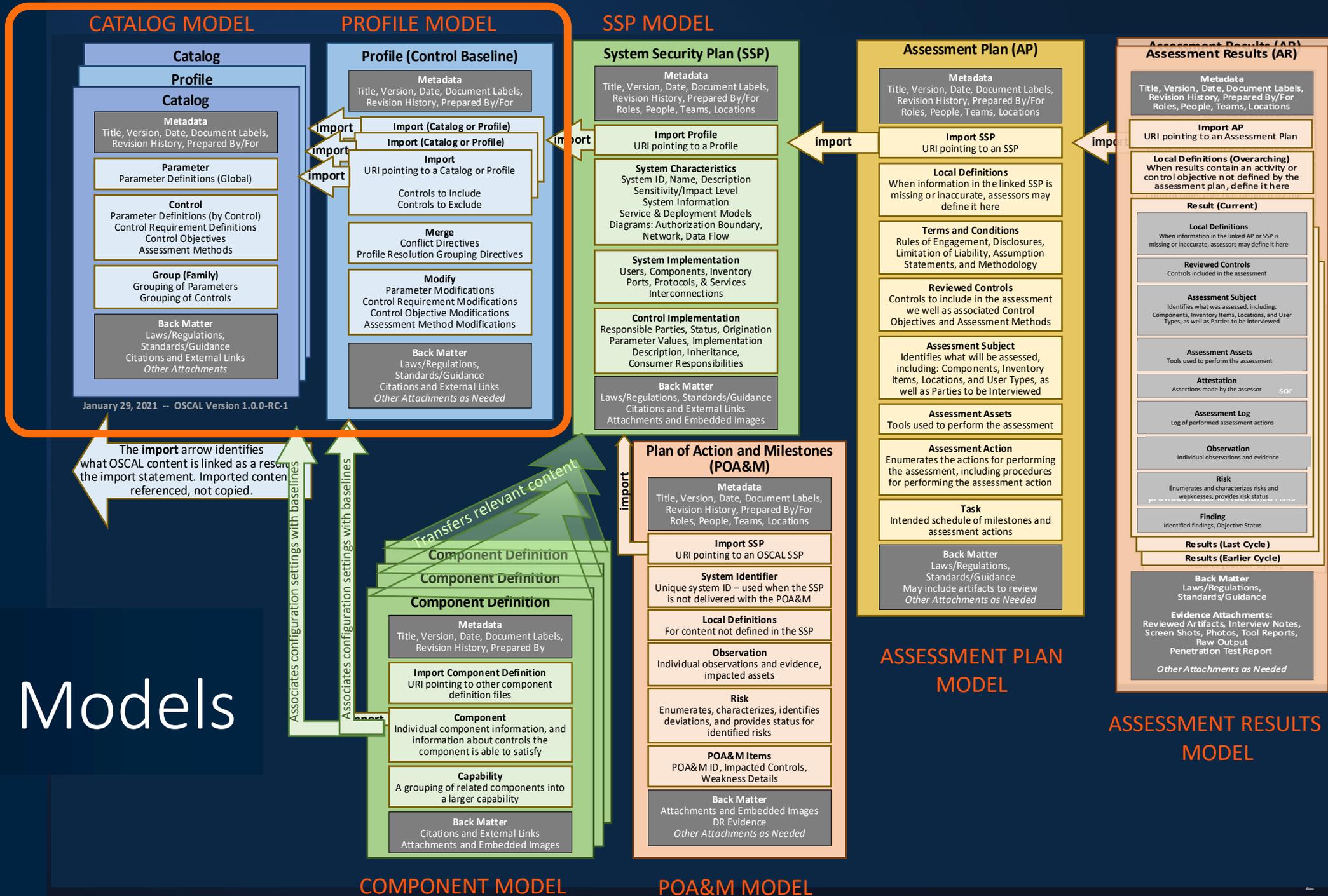
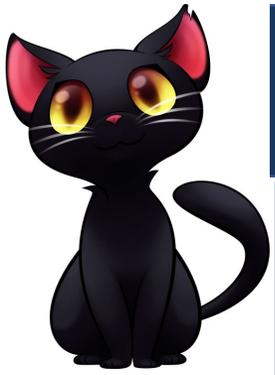


Open Security Controls Assessment Language Catalog Authoring Tool

a.k.a.
OSCAL
CAT

OSCAL Models

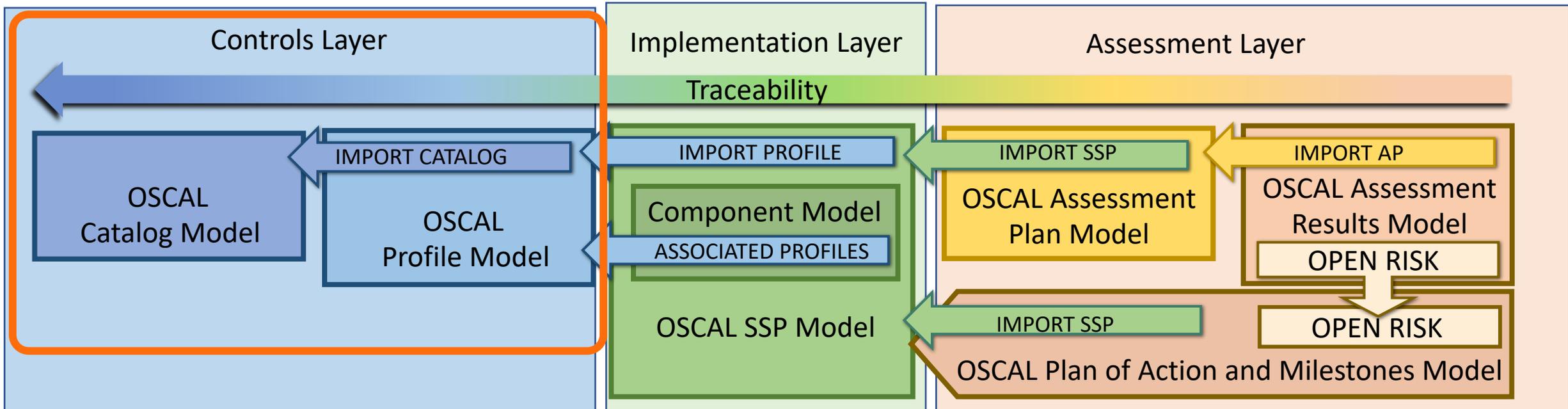




What is OSCAL CAT?

- **CAT** is a proof of concept for an “easy to use” multiplatform OSCAL editing tool for Catalogs and Profiles expressed in JSON.
- **CAT is meant to:**
 - Generate OSCAL Catalogs (after resolution) and OSCAL Profiles
 - Import & Modify OSCAL Catalogs (“tailor controls”)
 - Generate OSCAL Profiles
 - Be connection and platform-independent
 - **TBD**: Resolve Profiles into Catalogs
- **Source will become open repository on GitHub.**

- **CAT is currently not**
 - Yet production-ready
 - Yet working with **multiple Catalogs**
 - Yet ready to add new Controls
 - Yet allow to manage Back-Matter
 - Yet able to do assisted markdown editing
 - Yet completely fool-proof or user-safe





OSCAL CAT Technical Details

Development Toolkit Details:

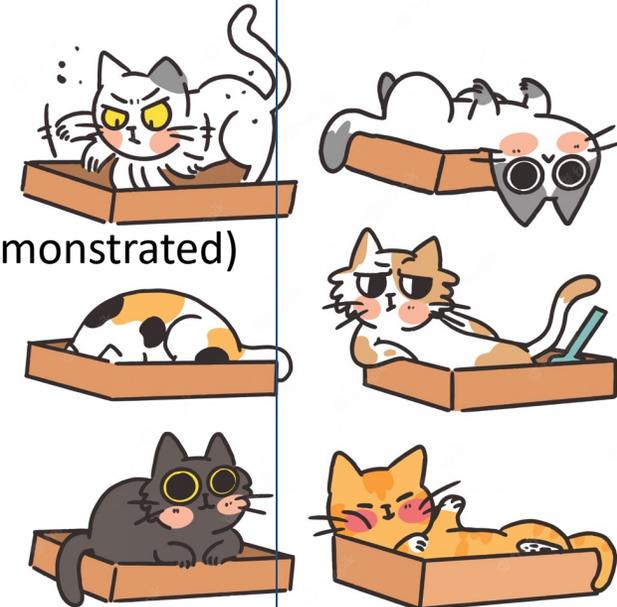
- **CAT** is based on the Ionic 6 (6.19.1) – Angular 13 (13.2.2) multi-platform library.
- **CAT** code mainly consists of TypeScript/HTML/CSS-SCSS /JSON
- **CAT** is also currently using:
 - **QuickType** to generate TypeScript Interfaces from OSCAL JSON-Schema
 - **AJV** to validate downloaded entities' compliance to corresponding JSON-Schema
 - **Shell-scripts (MAC)** for some occasional and day-to-day tasks
- **CAT** currently uses **Ionic Storage** for persistence. Ionic Storage can decide to use IndexedDB or local-storage.
- In some environments ionic can even use SQLite with a driver & a native build

Application Packaging Options :

- **CAT** can be packaged as a **desktop app** using **Ionic-Electron**
- **CAT** can be served as a **locally-served** or **web-hosted application** in a browser (demonstrated)
- **CAT** can be compiled for iOS/Android as a native app

Application Source :

- **CAT source** will become open, when the project is ready
- **CAT source** is currently stored in a private repository on GitHub.





OSCAL CAT Technical Details

Authoring Mode:

localhost:8100/cat-begin

OSCAL Catalog Authoring Tool (CAT)

CATALOG PARTS

- Authoring Mode**

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings

Authoring Mode

Select Authoring Mode

Start new profile with a catalog, or continue previously saved session.

Start with a Known OSCAL Catalog

- Catalog 800-53 Revision 4
- Catalog 800-53 Revision 5

Continue with the Previously Saved Work

- Profile Draft Based on 800-53.Rev-4 [a87d568d-fde9-4741-bd66-8f7e61669172]
- Profile Draft Based on 800-53.Rev-5 [e904e64a-9602-44d6-b7dd-df0d0ab00af0]



OSCAL CAT Technical Details

Authoring Mode – Update Cat-Files Rev4 (New):

localhost:8100/cat-begin

OSCAL Catalog Authoring Tool (CAT)

Authoring Mode

Select Authoring Mode
Start new profile with a catalog, or continue previously saved session.

CATALOG PARTS

- Authoring Mode
- Meta Info
- All Controls
- Selected Controls
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings

Start with a Known OSCAL Catalog

- Catalog 800-53 Revision 4
- Catalog 800-53 Revision 5

Catalog Baselines [REFRESH SELECTED](#)

Baselines: Low **L** Moderate **M** High **H**

Continue with the Previously Saved Work

- Profile Draft Based on 800-53.Rev-4 [a87d568d-fde9-4741-bd66-8f7e61669172]
- Profile Draft Based on 800-53.Rev-5 [e904e64a-9602-44d6-b7dd-df0d0ab00af0]



OSCAL CAT Technical Details

Authoring Mode – Update Cat-Files Rev5 (New):

localhost:8100/cat-begin

OSCAL Catalog Authoring Tool (CAT)

CATALOG PARTS

- Authoring Mode
- Meta Info
- All Controls
- Selected Controls
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings

Authoring Mode

Select Authoring Mode
Start new profile with a catalog, or continue previously saved session.

Start with a Known OSCAL Catalog

- Catalog 800-53 Revision 5

Catalog Baselines [REFRESH SELECTED](#)

Baselines: Low **L** Moderate **M** High **H** Privacy **P**

Continue with the Previously Saved Work

- Profile Draft Based on 800-53.Rev-4 [a87d568d-fde9-4741-bd66-8f7e61669172] 🗑️ ✎️
- Profile Draft Based on 800-53.Rev-5 [e904e64a-9602-44d6-b7dd-df0d0ab00af0] 🗑️ ✎️



OSCAL CAT Technical Details

Meta-Data Edit (Validation):

localhost:8100/cat-meta

OSCAL Catalog Authoring Tool (CAT)

Meta Info

Metadata
Provides information about the publication and availability of the containing document.

Title

Last Modified Date
Sep 7, 2022 @ 02:14 (GMT-04:00) ⌚ SET TO NOW 📅 SET AUTO-UPDATE LATER

Catalog Version **OSCAL Version**

Parties [6]

| | | |
|-------------|----|---|
| Adam | 🗑️ | ✎ |
| Eve | 🗑️ | ✎ |
| Lucy | 🗑️ | ✎ |
| Bad.Org | 🗑️ | ✎ |
| Good.Org | 🗑️ | ✎ |
| Creator.Org | 🗑️ | ✎ |

Roles [4]

| | |
|-------------------------------------|------|
| Content Expert [prepared-by] | ✎ |
| Content Sponsor [prepared-for] | ✎ |
| Content Approver [content-approver] | ✎ |
| Creator [creator] | 🗑️ ✎ |

CATALOG PARTS

- Authoring Mode
- Meta Info**
- All Controls
- Selected Controls
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings



OSCAL CAT Technical Details

Meta-Data Edit (Validation):

localhost:8100/cat-meta

OSCAL Catalog Authoring Tool (CAT)

Meta Info

Metadata
Provides information about the publication and availability of the containing document.

Title

Last Modified Date
Sep 7, 2022 @ 02:14 (GMT-04:00) ⌚ SET TO NOW 📅 SET AUTO-UPDATE LATER

Catalog Version **OSCAL Version**

Parties [6]

| | | |
|-------------|----|----|
| Adam | 🗑️ | ✍️ |
| Eve | 🗑️ | ✍️ |
| Lucy | 🗑️ | ✍️ |
| Bad.Org | 🗑️ | ✍️ |
| Good.Org | 🗑️ | ✍️ |
| Creator.Org | 🗑️ | ✍️ |

Roles [4]

| | |
|-------------------------------------|-------|
| Content Expert [prepared-by] | ✍️ |
| Content Sponsor [prepared-for] | ✍️ |
| Content Approver [content-approver] | ✍️ |
| Creator [creator] | 🗑️ ✍️ |

CATALOG PARTS

- Authoring Mode
- Meta Info**
- All Controls
- Selected Controls
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings



OSCAL CAT Technical Details

Meta-Data Edit (Validation):

localhost:8100/cat-meta

OSCAL Catalog Authoring Tool (CAT)

CATALOG PARTS

- Authorina Mode
- Meta Info**
- Selected Controls
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings

Meta Info

Metadata

Provides information about the publication and availability of the containing document.

Title
My best shot at picking important controls

Last Modified Date
Sep 7, 2022 @ 02:14 (GMT-04:00) SET TO NOW SET AUTO-UPDATE LATER

Catalog Version
VERSION-1

OSCAL Version

Parties [6]

| | | |
|-------------|--|--|
| Adam | | |
| Eve | | |
| Lucy | | |
| Bad.Org | | |
| Good.Org | | |
| Creator.Org | | |

Roles [4]

| | |
|-------------------------------------|--|
| Content Expert [prepared-by] | |
| Content Sponsor [prepared-for] | |
| Content Approver [content-approver] | |
| Creator [creator] | |



OSCAL CAT Technical Details

Select Controls – Highlight Baseline (New):

localhost:8100/cat-select-async

OSCAL Catalog Authoring Tool (CAT)

All Controls

Select controls to be included in profile.

TAILOR BASELINES Mark All Baselines Pre-Check Baseline ... Cut-Out Baseline ... All Controls (Default) **MARK ALL BASELINES**

800-53 Rev5 Catalog 18 Groups In INFO

Access Control (AC) 25 Controls In INFO

| | | | | | | |
|---|----|----|----|----|----|------|
| Access Control Policy and Procedures (AC-1) | Lo | Md | Hi | Pr | In | INFO |
| Account Management (AC-2) | Lo | Md | Hi | Pr | In | INFO |
| Access Enforcement (AC-3) | Lo | Md | Hi | Pr | In | INFO |
| Information Flow Enforcement (AC-4) | Lo | Md | Hi | Pr | In | INFO |
| Separation of Duties (AC-5) | Lo | Md | Hi | Pr | In | INFO |
| Least Privilege (AC-6) | Lo | Md | Hi | Pr | In | INFO |
| Unsuccessful Logon Attempts (AC-7) | Lo | Md | Hi | Pr | In | INFO |

CATALOG PARTS

- Authoring Mode
- Meta Info
- All Controls**
- Selected Controls
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings



OSCAL CAT Technical Details

Select Controls – Pre-Check Baseline (New):

localhost:8100/cat-select-async

OSCAL Catalog Authoring Tool (CAT)

All Controls

Select Controls

Select controls to be included in profile.

TAILOR BASELINES | Mark All Baselines | **Pre-Check Baseline ...** | Cut-Out Baseline ... | All Controls (Default) | **PRE-CHECK BASELINE ...**

Choose Pre-Check Baseline ... | Low **L** | Moderate **M** | High **H** | Privacy **P**

800-53 Rev5 Catalog | 18 Groups | In | INFO

Access Control (AC) | 25 Controls | In | INFO

| | | | | | | |
|---|----|----|----|----|-----------------------------|------|
| Access Control Policy and Procedures (AC-1) | Lo | Md | Hi | Pr | In <input type="checkbox"/> | INFO |
| + Account Management (AC-2) | Lo | Md | Hi | Pr | In <input type="checkbox"/> | INFO |
| + Access Enforcement (AC-3) | Lo | Md | Hi | Pr | In <input type="checkbox"/> | INFO |
| + Information Flow Enforcement (AC-4) | Lo | Md | Hi | Pr | In <input type="checkbox"/> | INFO |
| Separation of Duties (AC-5) | Lo | Md | Hi | Pr | In <input type="checkbox"/> | INFO |
| + Least Privilege (AC-6) | Lo | Md | Hi | Pr | In <input type="checkbox"/> | INFO |

CATALOG PARTS

- Authoring Mode
- Meta Info
- All Controls**
- Selected Controls
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings



OSCAL CAT Technical Details

Select Controls – Cut-Out Baseline (New):

localhost:8100/cat-select-async

OSCAL Catalog Authoring Tool (CAT)

All Controls

Select controls to be included in profile.

TAILORED BASELINES | Mark All Baselines | Pre-Check Baseline ... | **CUT-OUT BASELINE ...** | All Controls (Default)

Choose Cut-Out Baseline ... | Low **L** | Moderate **M** | High **H** | Privacy **P**

800-53 Rev5 Catalog 18 Groups In INFO

Access Control (AC) 25 Controls In INFO

| | | | | | | |
|---|-----------|-----------|-----------|-----------|-----------------------------|-------------------|
| Access Control Policy and Procedures (AC-1) | Lo | Md | Hi | Pr | <input type="checkbox"/> In | INFO |
| Account Management (AC-2) | Lo | Md | Hi | Pr | <input type="checkbox"/> In | INFO |
| Access Enforcement (AC-3) | Lo | Md | Hi | Pr | <input type="checkbox"/> In | INFO |
| Information Flow Enforcement (AC-4) | Lo | Md | Hi | Pr | <input type="checkbox"/> In | INFO |
| Separation of Duties (AC-5) | Lo | Md | Hi | Pr | <input type="checkbox"/> In | INFO |
| Least Privilege (AC-6) | Lo | Md | Hi | Pr | <input type="checkbox"/> In | INFO |

CATALOG PARTS

- Authoring Mode
- Meta Info
- All Controls**
- Selected Controls
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings



OSCAL CAT Technical Details

Select Controls – Pre-Check Baseline (Activated):

localhost:8100/cat-select-async

OSCAL Catalog Authoring Tool (CAT)

CATALOG PARTS

- Authoring Mode
- Meta Info**
- All Controls**
- Selected Controls
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings

All Controls

Select Controls

Select controls to be included in profile.

TAILOR BASELINES | Mark All Baselines | **Pre-Check Baseline ...** (Activated) | Cut-Out Baseline ... | Default Cat | **PRE-CHECK BASELINE ...** (Checked)

Choose Pre-Check Baseline ... | Low **L** | Moderate **M** | High **H**

| Control Name | Lo | Md | Hi | Pr | In | Info |
|--|----|----|----|----|-------------------------------------|------|
| 800-53 Rev5 Catalog | | | | | <input type="checkbox"/> | INFO |
| Access Control (AC) | | | | | <input type="checkbox"/> | INFO |
| Access Control Policy and Procedures (AC-1) | Lo | Md | Hi | Pr | <input checked="" type="checkbox"/> | INFO |
| Account Management (AC-2) | Lo | Md | Hi | Pr | <input checked="" type="checkbox"/> | INFO |
| AC-2 Enhancement: Automated System Account Management (AC-2.1) | Lo | Md | Hi | Pr | <input checked="" type="checkbox"/> | INFO |
| AC-2 Enhancement: Removal of Temporary / Emergency Accounts (A...) | Lo | Md | Hi | Pr | <input checked="" type="checkbox"/> | INFO |
| AC-2 Enhancement: Disable Inactive Accounts (AC-2.3) | Lo | Md | Hi | Pr | <input checked="" type="checkbox"/> | INFO |
| AC-2 Enhancement: Automated Audit Actions (AC-2.4) | Lo | Md | Hi | Pr | <input checked="" type="checkbox"/> | INFO |



OSCAL CAT Technical Details

Modify Controls – Only Selected Controls:

localhost:8100/pro-edit

OSCAL Catalog Authoring Tool (CAT)

CATALOG PARTS

- Authoring Mode
- Meta Info
- All Controls
- Selected Controls**
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings

Selected Controls

Modify Selected Controls

You can modify selected control to tailor them to your profile.

| | | |
|---|-------------|--------|
| 800-53 Rev5 Catalog | 1 Groups | MODIFY |
| Access Control (AC) | 25 Controls | MODIFY |
| Access Control Policy and Procedures (AC-1) | | MODIFY |
| Account Management (AC-2) | 13 Params | MODIFY |
| AC-2 Enhancement: Automated System Account Management (AC-2.1) | | MODIFY |
| AC-2 Enhancement: Removal of Temporary / Emergency Accounts (AC-2.2) | | MODIFY |
| AC-2 Enhancement: Disable Inactive Accounts (AC-2.3) | | MODIFY |
| AC-2 Enhancement: Automated Audit Actions (AC-2.4) | | MODIFY |
| AC-2 Enhancement: Inactivity Logout (AC-2.5) | | MODIFY |
| AC-2 Enhancement: Dynamic Privilege Management (AC-2.6) | | MODIFY |



OSCAL CAT Technical Details

Download Profile/Settings – Unfinished(Left)-Build Profile(Right)

localhost:8100/save

OSCAL Catalog Authoring Tool (CAT)

Save Active OSCAL Catalog Snapshot In-App or Locally

Save your current profile locally (when ready or to keep it), or save workspace until the next time.

Workspace represents the collection of the objects and their states.

The objects reflect selections, actions, and transitions that modified catalogue or baseline, while while you were working with the application. The

[SAVE WORKSPACE \(IN APP SPACE\)](#) [SAVE WORKSPACE \(ON YOUR DISK\)](#)

Final file is a sample of the profile you had tailored in the application

The final file will contain JSON representation of an OSCAL Catalog, or OSCAL Profile. The file will have all your changes.

[SAVE FILE \(IN APP SPACE\)](#) [SAVE FILE \(ON YOUR DISK\)](#)

CATALOG PARTS

- Authoring Mode
- Meta Info
- All Controls
- Selected Controls
- Regroup Controls

CATALOG FILES

- [Download File](#)
- Upload File

CONFIGURATION

- Settings



OSCAL CAT Technical Details

Parametral Settings – Moved to UI from Code (New) In-Progress Big Time

localhost:8100/settings

OSCAL Catalog
Authoring Tool (CAT)

Application Settings

Application Settings

Offer to Update Catalogs, Profiles, and Schemas in: 0.0009 hours [SAVE EXPIRATION INTERVAL](#)

Extend Functionality in Meta for Demo: false False True [SAVE DEMO FLAG](#)

Clear OSCAL-CAT storage (!!!This will wipe out all settings and previously persisted work!!!) [CLEAR STATE STORE](#)

CATALOG PARTS

- Authoring Mode
- Meta Info
- All Controls
- Selected Controls
- Regroup Controls

CATALOG FILES

- Download File
- Upload File

CONFIGURATION

- Settings



OSCAL CAT Technical Details

Originally Envisioned Features:

- Choose Catalog
- Edit metadata information (common across all models)
- Make profile: select controls (import), modify, regroup
- Use “future JSON tool(s)” to resolve profile

```
/**
 * A collection of controls.
 */
export interface Catalog {
  backMatter?: BackMatter;
  controls?: Control[];
  groups?: ControlGroup[];
  metadata: PublicationMetadata;
  params?: Parameter[];
}
/**
 * A globally unique identifier
 * with cross-instance scope for
 * this catalog instance. This
 * UUID should be changed when
 * this document is revised.
 */
uuid: string;
```

Resolve Profile

Tailor Profile

```
/**
 * Each OSCAL profile is defined by a
 * ⚡
 */
export interface Profile {
  backMatter?: BackMatter;
  imports: ImportResource[];
  merge?: MergeControls;
  metadata: PublicationMetadata;
  modify?: ModifyControls;
}
/**
 * A machine-oriented, globally unique
 * identifier used to reference this profile elsew
 * where. The
 * UUID of the profile can be used
 * to reference an imported OSCAL instance). This
 * identifier should be consistently used
 * throughout the
 * document.
 */
uuid: string;
```



OSCAL CAT Technical Details

Planned Features & Enhancements:

Ongoing:

- **Fix Bugs**
- **Make the application faster (or at least make it feel faster)**
- **Optimize browser memory footprint, where possible**
- **Enhance usability and add user-safety protections.**

Metadata, Controls, Prose, and Parameter Selection and Editing:

- **Find acceptable plugin for markdown editing and rendering**
- **Regroup Controls Page: Add drag-n-drop for UI simplification**
- **Add possibility to start with an empty Cat and build it up from scratch**
- **Add profile resolution using either Saxon and JSON->XML conversion or do it in JSON**
- **Add possibility for user to upload their own catalogs with auto-validation by the schema**
- **Add possibility for user to upload own profiles with auto-validation by the schema**
- **Add possibility for user to upload own profiles, validate them and resolve, resulting in catalog**

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!

