ECV2: Eclipse Plugin for Corroborative Verification and Validation for Autonomous Systems

User Guide

The University of Manchester

1. Introduction

This User Guide explains:

- Prerequisites
- How to install the plugin into Eclipse
- How to use and test it
- How to uninstall it
- Troubleshooting

2. Prerequisites

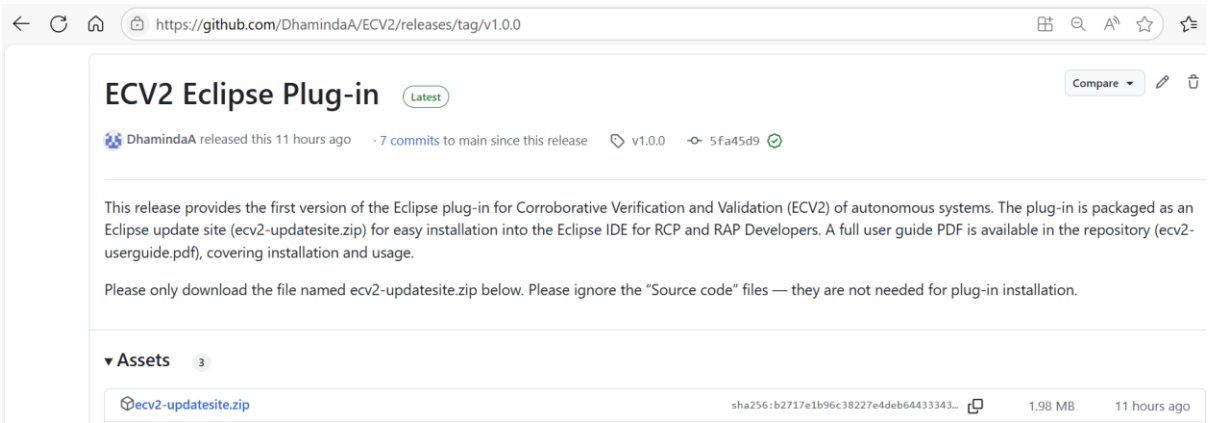
Before installing, please ensure you have:

- **Java 17 or newer (recommended Java 21)**
    - Verify with: java -version
- **Eclipse IDE for RCP and RAP Developers 2025-03 (4.35.0) or newer**
    - Recommended download:
        - https://www.eclipse.org/downloads/packages/release/2025-03/r/eclipse-ide-rcp-and-rap-developers

Note: Using the RCP and RAP Developers package is recommended, because it includes the Plugin Development Environment (PDE) required to install and run Eclipse plugins.

3. Download the Plugin Update Site

1. Go to the project's GitHub release page: https://github.com/DhamindaA/ecv2-eclipse-plugin/releases/tag/v1.0.0
2. Download the update site ZIP file:
    - ecv2-updatesite.zip
3. Save it to any location on your computer.



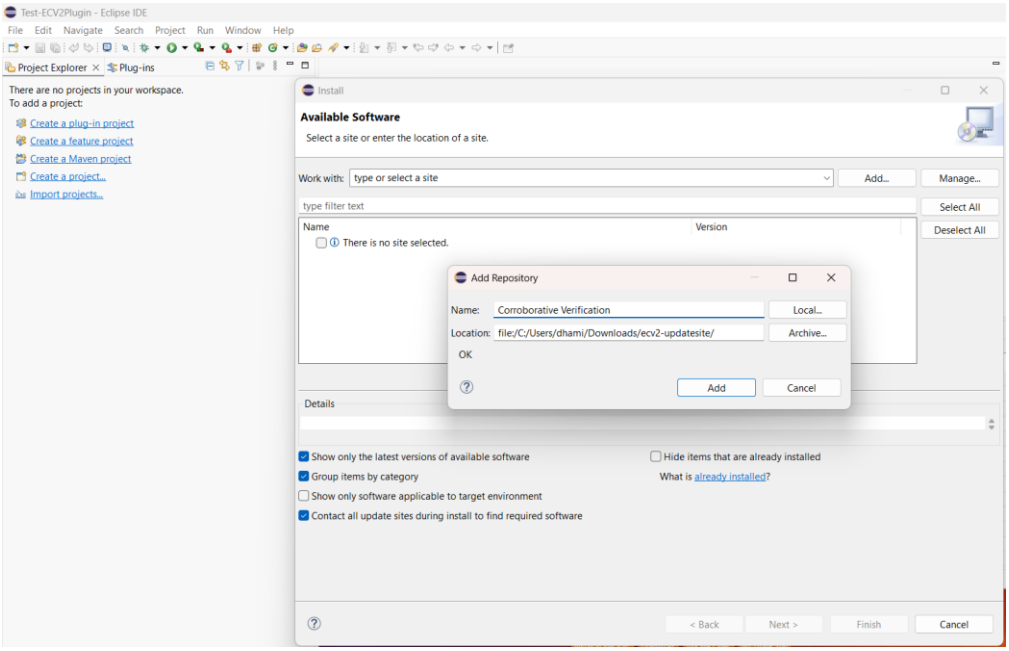
4. Unzip the Update Site

- Unzip the downloaded ZIP file.
- You should see a folder containing:
    - artifacts.jar
    - content.jar
    - features/
    - plugins/
    - site.xml

This folder is your Eclipse update site.

5. Installing the Plugin in Eclipse

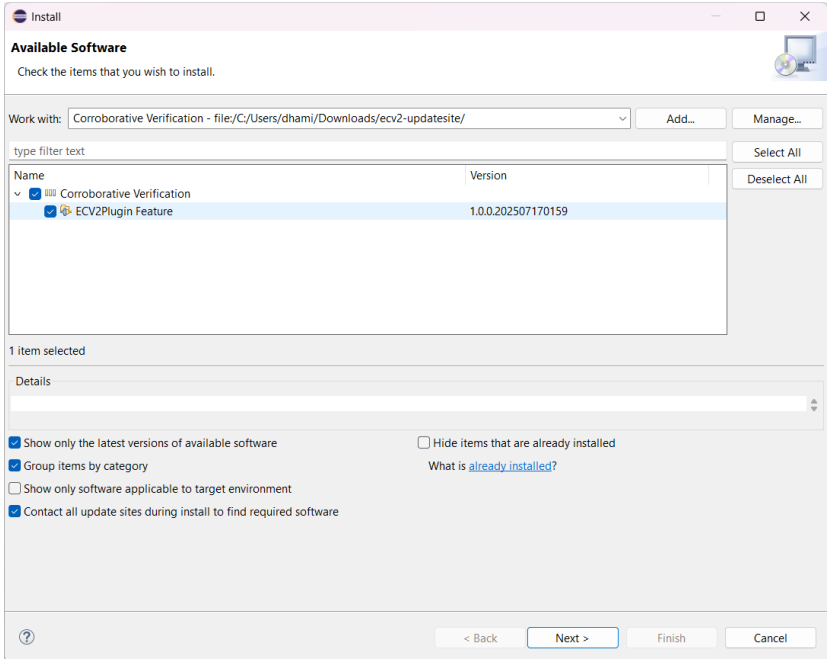
1. Launch **Eclipse IDE for RCP and RAP Developers**.
2. From the top menu, select:
    - Help > Install New Software...
3. Click **Add**...
4. In the **Add Repository** dialog:
    - **Name**: Corroborative Verification
    - **Location**: Click **Local**... and browse to the unzipped folder.
5. Click **OK**.

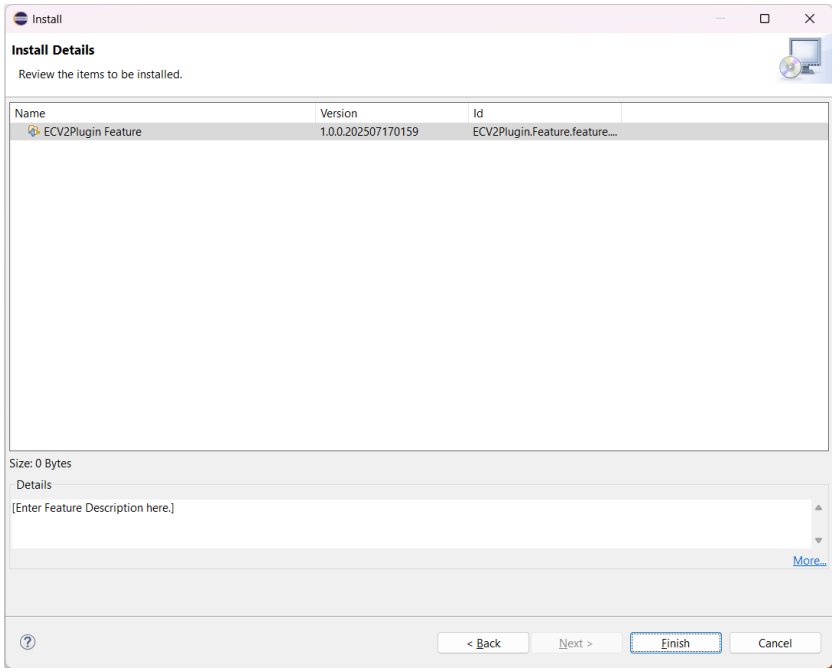


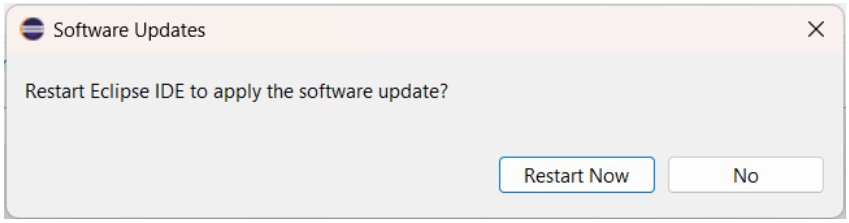
6. Eclipse will scan the folder and display:
    - ECV2Plugin Feature

7. Check the box next to the feature.
8. Click Next, then Next again.
9. Review and accept the license agreement.
10. Click Finish.
11. Restart Eclipse when prompted.

The plugin is now installed.



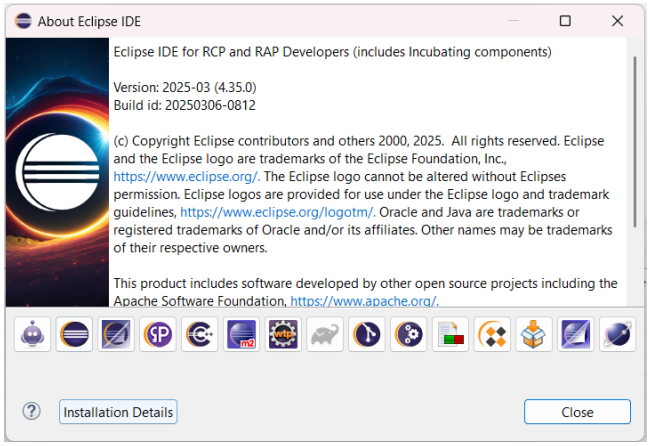


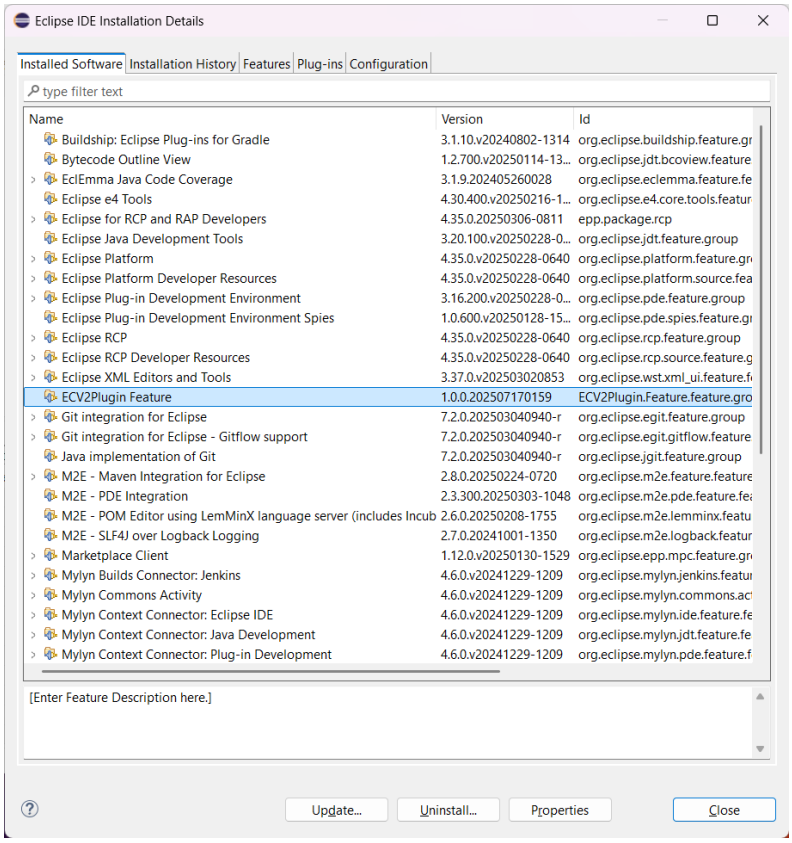


6. Verifying Installation

After Eclipse restarts:

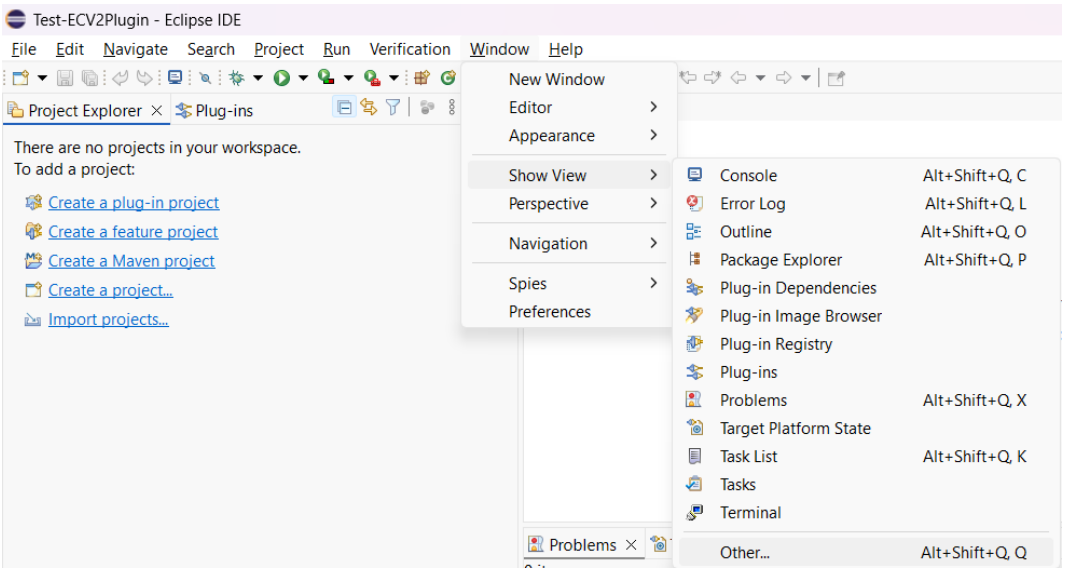
- Go to:
    - Help > About Eclipse IDE > Installation Details
- Verify that **ECV2Plugin.Feature** is listed.

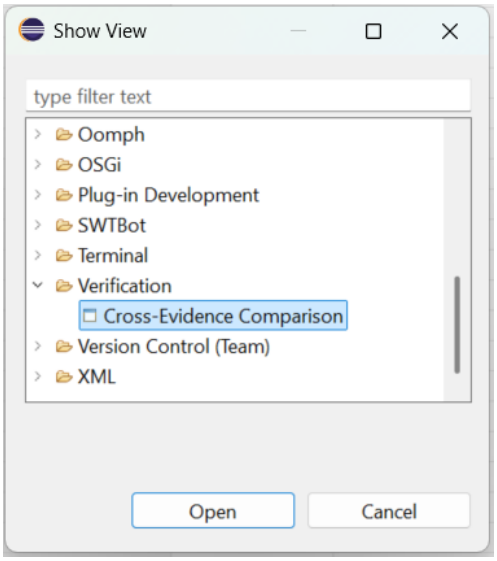




Invoking the main interface or view of the plugin:

- Go to:
    - Window > Show View > Other...
- In the Show View dialog box, look for **Cross-Evidence Comparison**

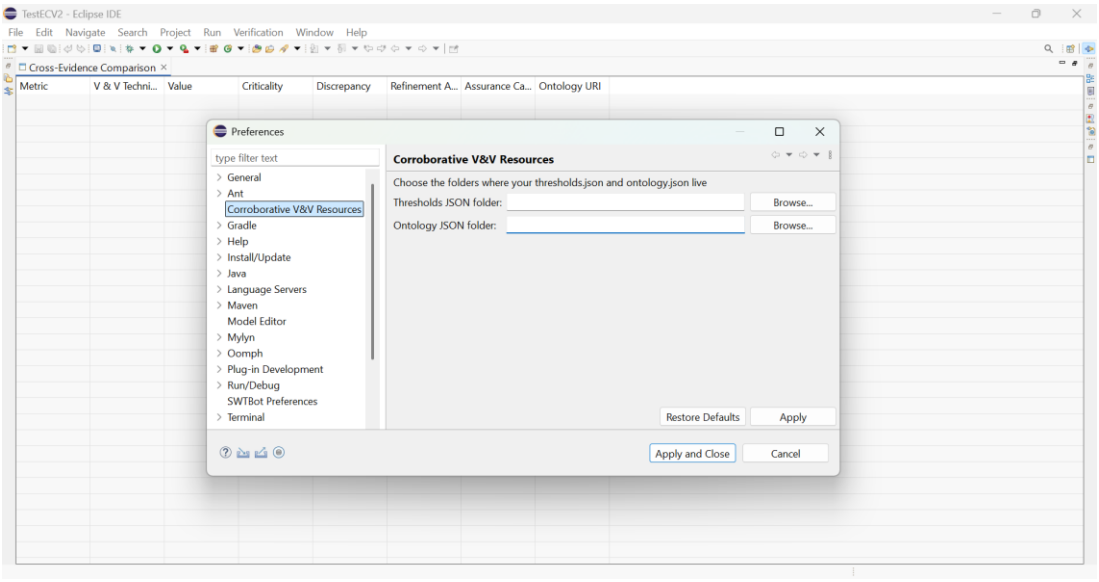




7. Using the Plugin

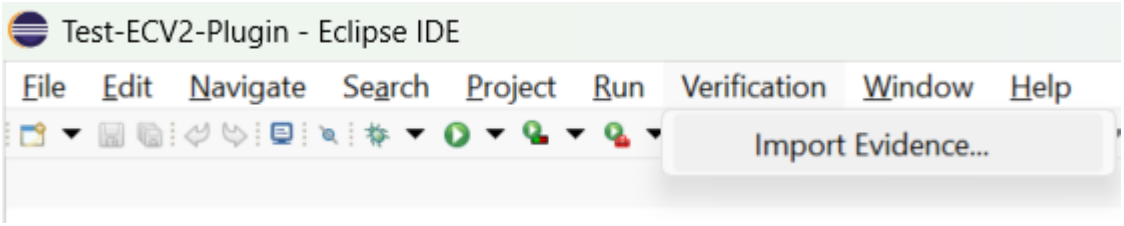
Linking Assurance Case Thresholds and Ontology URIs:
In this step, the user selects the folder where the json files containing assurance case thresholds and links to ontology descriptions exist for all measurements.

1. Download the provided threshold values and ontology URIs from GitHub (see the zipped folder *Resources* [https://github.com/DhamindaA/ecv2-eclipse-plugin/blob/main/resources.zip], which contains thresholds.json and ontology.json).
2. Save them anywhere on your computer.
3. From the Eclipse menu bar, select:
   a. **Window > Preferences > Corroborative V&V Resources** (in the left pane of the dialog box).
   Note: The exact location of the Eclipse Preferences menu may vary depending on your OS and Eclipse version.
4. Provide the folder path where the json files are stored on your computer (for example: C:\Users\username\resources).
5. Click **Apply and Close**.



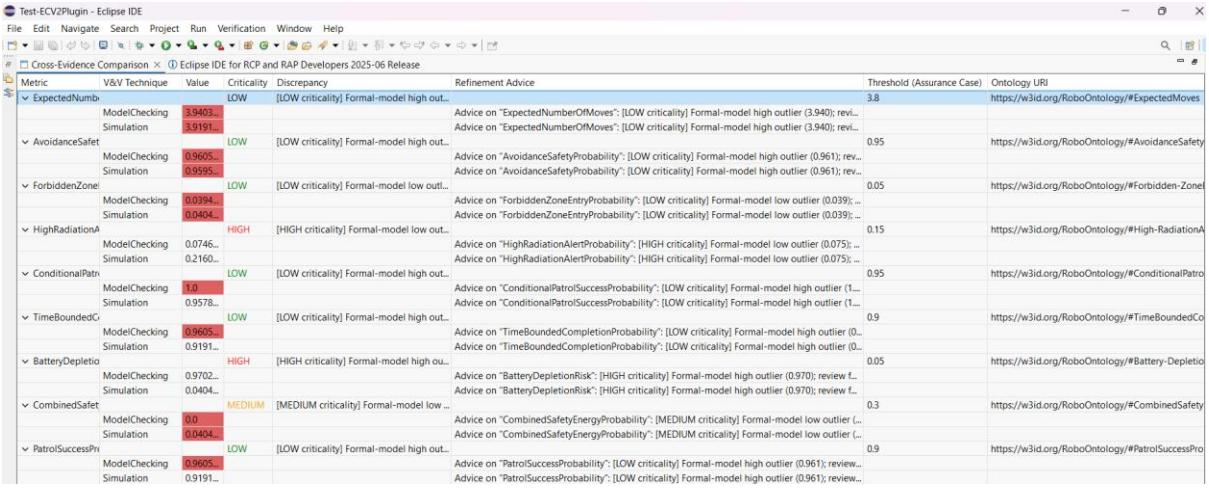
Importing Evidence
In this step, the user selects evidence files to analyse discrepancies.

1. Download the provided evidence files from GitHub (these include FormalModelChecking.json and ROS_Simulation.json): https://github.com/DhamindaA/ecv2-eclipse-plugin/blob/main/evidence.zip
2. In Eclipse, click on the **Verification** menu and select **Import Evidence…**



Viewing Cross-Evidence Comparison

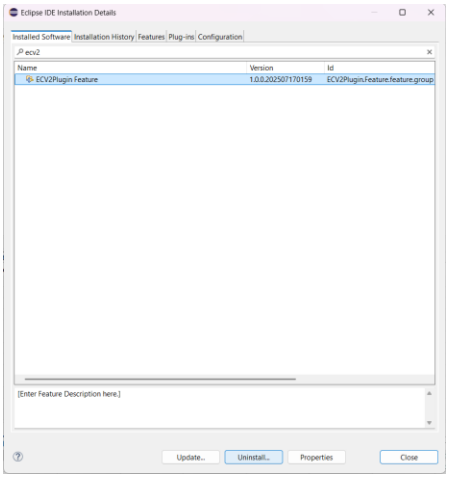
After importing evidence, use the plugin's comparison view to analyse discrepancies across different verification methods.



8. Uninstalling the Plugin

If you want to remove the plugin:

1. Go to:
    - Help > About Eclipse IDE > Installation Details
2. Locate ECV2Plugin Feature
3. Select it and click **Uninstall**.
4. Restart Eclipse when prompted.



9. Troubleshooting

Problem: Nothing shows in Install New Software dialog.

- Make sure you selected the **unzipped update site folder**, not the zip file.
- The folder must contain:
    - artifacts.jar
    - content.jar
    - features/
    - plugins/
    - site.xml

Problem: Eclipse says “Cannot satisfy dependency.”

- Make sure you're using **Eclipse IDE for RCP and RAP Developers 2025-03** (4.35.0) **or newer** (recommended: 2025-03)
- Ensure **Java 17 or newer** is installed (recommended: Java 21).

Problem: Plugin doesn't appear after installation.

- Restart Eclipse.
- Check **About > Installation Details** to verify installation.

10. Support

For any questions, please contact: Dhaminda.Abeywickrama@manchester.ac.uk