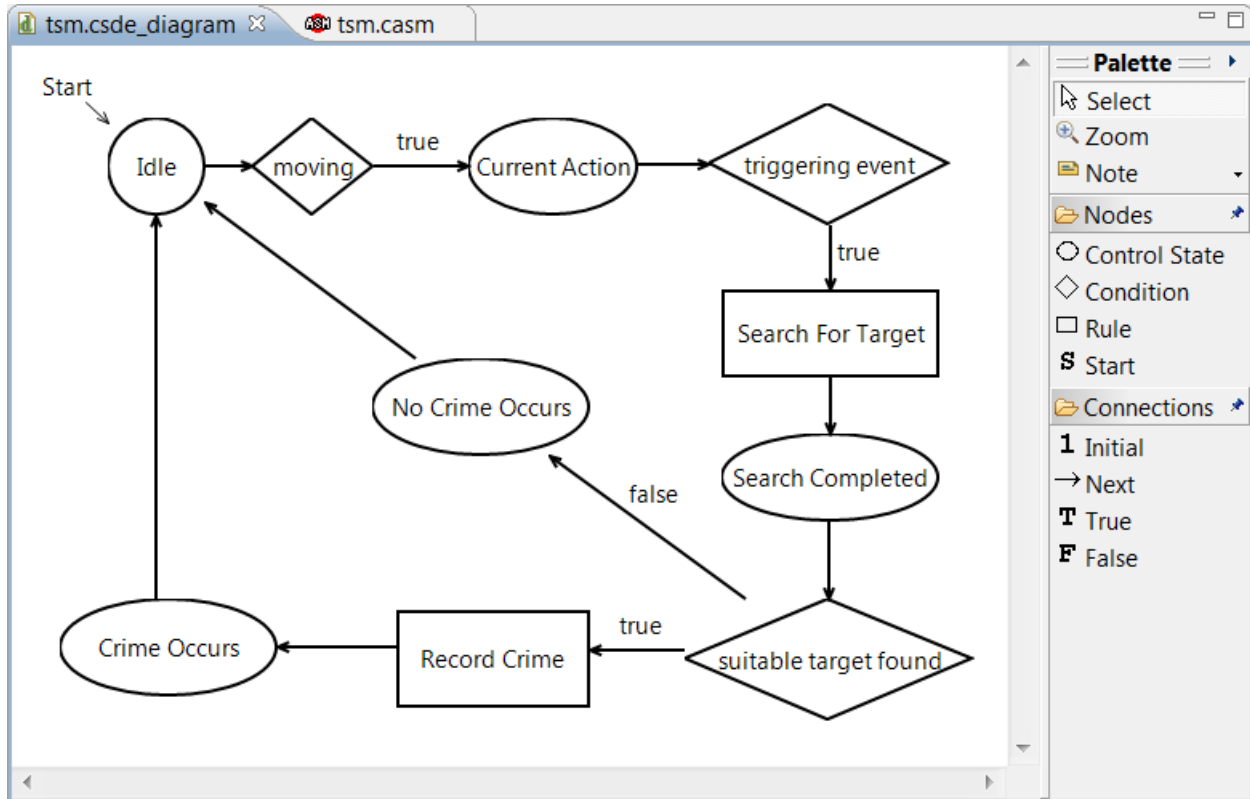


# CSDe: Control State Diagram editor

Manual version 0.1.2, Copyright 2008 Piper Jackson



An example diagram from Mastermind, an interdisciplinary project in Computational Criminology

## What is CSDe?

CSDe stands for Control State Diagram editor. It is a tool for making control flow diagrams that are both simple and formal. CSDe is primarily for capturing domain knowledge in a clear and formal manner in the initial stages of software development, to help bridge the gap between concept and program code.

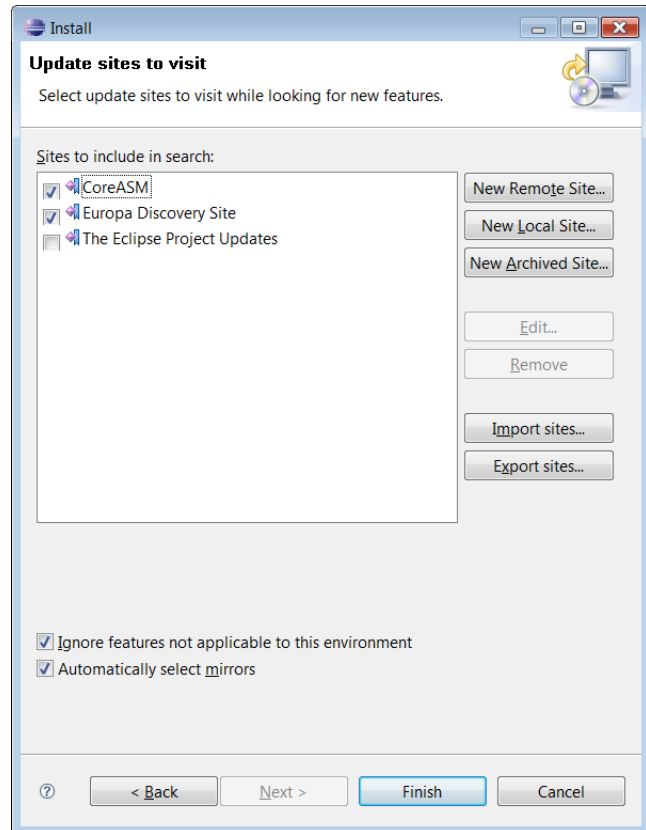
CSDe has been developed as a plugin for the Eclipse development environment. It can automatically convert CSDe diagrams to CoreASM code.

# Installation

This plug-in requires the Eclipse Graphical Modelling Framework (GMF). In order to install GMF at the same time as CSDe, select both the CoreASM update site as well as the Europa Discovery Site when looking for new features.

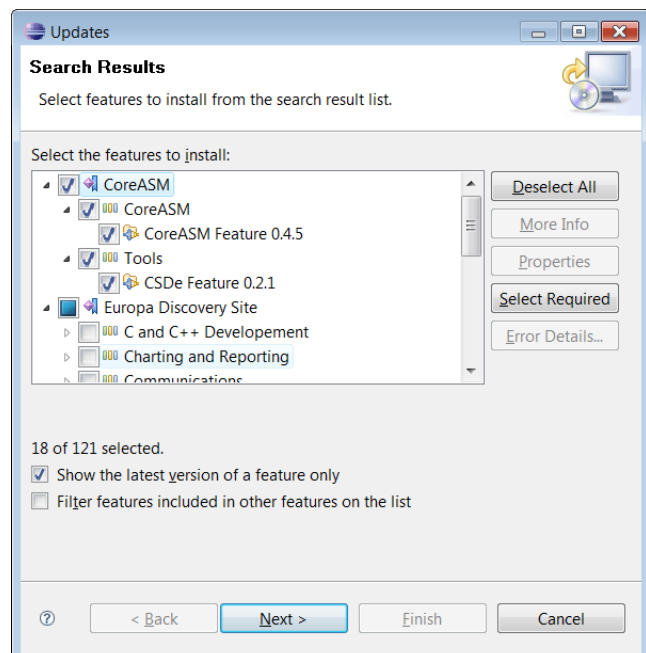
If you need to add the CoreASM update site, hit **New Remote Site...** and input this information:

- **Name:** CoreASM
- **URL:** <http://www.coreasm.org/eclipse/update-site>



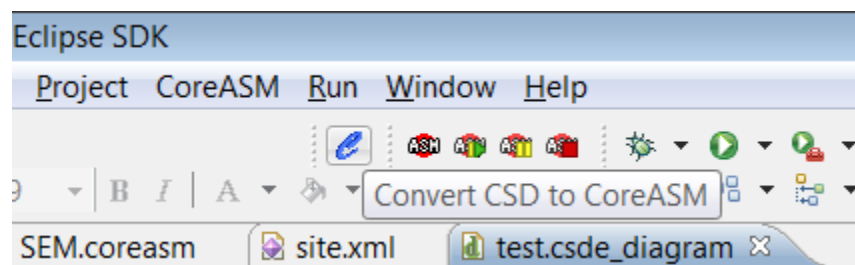
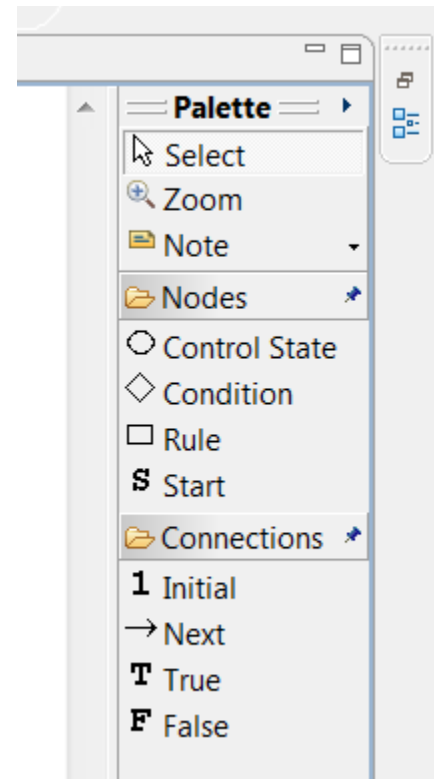
In the next window:

1. Select the CSDe feature, or simply select the CoreASM site. This will install both CSDe and CoreASM. The CoreASM plugin is not required to run CSDe, but it is highly recommended. It allows you to work with the coreasm code generated by CSDe.
2. If you do not have GMF installed yet, open up the Europa Discovery Site tree by clicking on it and then hit the **Select Required** button. The necessary features from the Europa Discovery Site will be automatically selected.



## How to use CSDe

- **To create a new diagram:** Right-click on the target project and select *New -> Example....* Select *CSDe Diagram*, and then name your new file (it must end with *.csde\_diagram*). A *.csde* file will also be generated at this time: you can give it a identifying name at this time, or just hit finish if the default name is fine, e.g. if you will not be moving the diagram file from this folder.
- **To add a node:** Click on the appropriate button on the CSDe Palette. Click the location in the diagram where you would like the node to be. You will then have the option of entering in the text immediately. This text can be later added or altered by right-clicking on the diagram field and selecting "Show Properties View", then selecting the target node. Once the node is in the diagram, it can be dragged around and resized by clicking on it.
- **To add a connection:** Click on the appropriate button on the CSDe Palette. Select the origin node for the edge and while holding the left mouse button down, drag the edge to the destination node. Note the following requirements for the different connection types:
  - *Initial:* From a *start* node to a *control state* node.
  - *Next:* From a *control state* or *rule* to a *control state*, *rule*, or *condition*.
  - *True/False:* From a *condition* to a *control state*, *rule*, or *condition*.
- **To Convert to CoreASM code:** Hit the **Convert CSD to CoreASM** (the blue C) button in the main toolbar. The CoreASM file will be made in the same directory as the diagram file. If the file already exists, it will be overwritten. The CoreASM file will pop up in the editor.



Notes:

- Each diagram must have exactly one *start* node and exactly one *initial* connection.
- Note that CSDe is built upon the GMF framework, and still contains some built-in functionality that does not work well with CSDe. For example, it appears that connections can be made by simply clicking on nodes without using the Palette. Also, alternate shapes can be drawn using right-click->Add, but they are purely decorative and will not interact with the control state diagram.

## What are control state diagrams?

Control state diagrams (CSDs) are similar to UML action diagrams or process flow models. They show the flow of control through a system, usually a program. The focus in CSDs is on simplicity and flexibility of representation. CSDs are part of the Abstract State Machine (ASM) paradigm, and as such, aim at producing a model at the most natural level of detail. We believe that CSDs provide a good meeting ground for all people working on a project to evaluate and modify design proposals, regardless of their skills, backgrounds or specialization.

## What is CoreASM?

CoreASM is an extensible and executable ASM programming language. For more information, [click here](#).

## Tips

- All the elements (nodes & connections) in a diagram can be selected at the same time by dragging a selection box over everything, or by pressing Ctrl+A on the keyboard (in Windows).
- Right-clicking on a selected element or elements gives several useful options. In particular, the *Format* menu allows the font or line colour to be changed.
- Right-clicking, then selecting *File -> Save as Image File...* allows the diagram to be saved in one of several image formats.
- In the GMF section of the main toolbar, there are several useful functions, such as *Arrange All* and *Align*.

**Contact Info:** Please send any questions, ideas or comments to [csde@coreasm.org](mailto:csde@coreasm.org)