



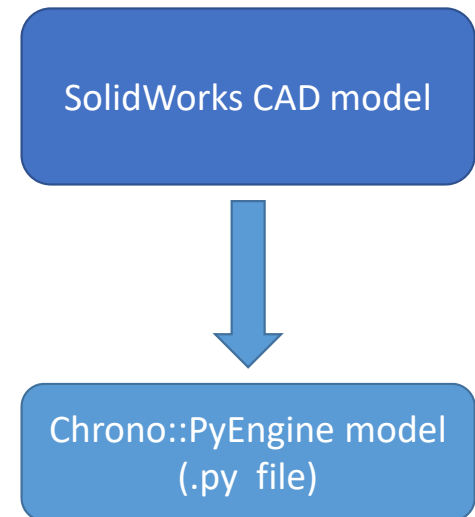
Chrono::SolidWorks

Add-In for Pre-Processing in SolidWorks



Chrono::SolidWorks

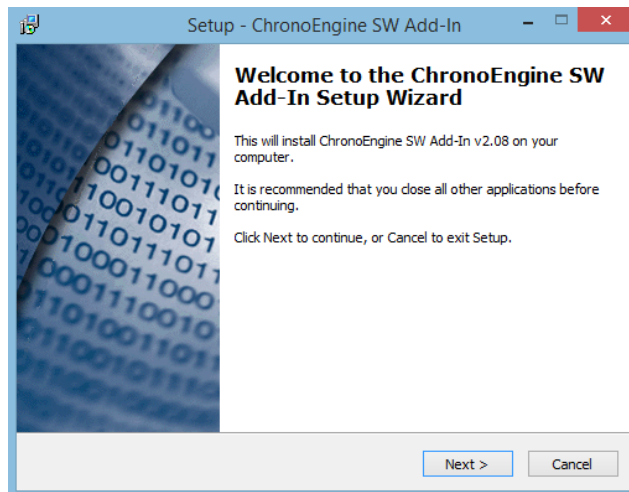
- Chrono:: SolidWorks is an experimental add-in for SolidWorks, it provides a pre-processing GUI
- Developed in C# for SolidWorks API (based on COM architecture)
- Exports models: translates SW **parts + constraints** into Chrono **bodies + links**
- Exports the Chrono model as a .py file (requires Chrono::Python unit to parse it from your C++ program)
- Prerequisites
 - SolidWorks (v. 2013 or later) must be installed on your workstation
 - Chrono::PyEngine (*python* API) must be built/installed
 - Chrono (*C++* API) is optional



Add-in installation

METHOD A (easiest, preferred)

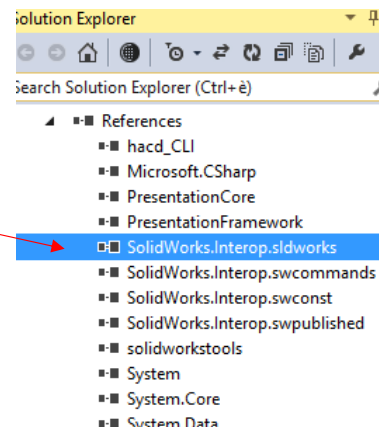
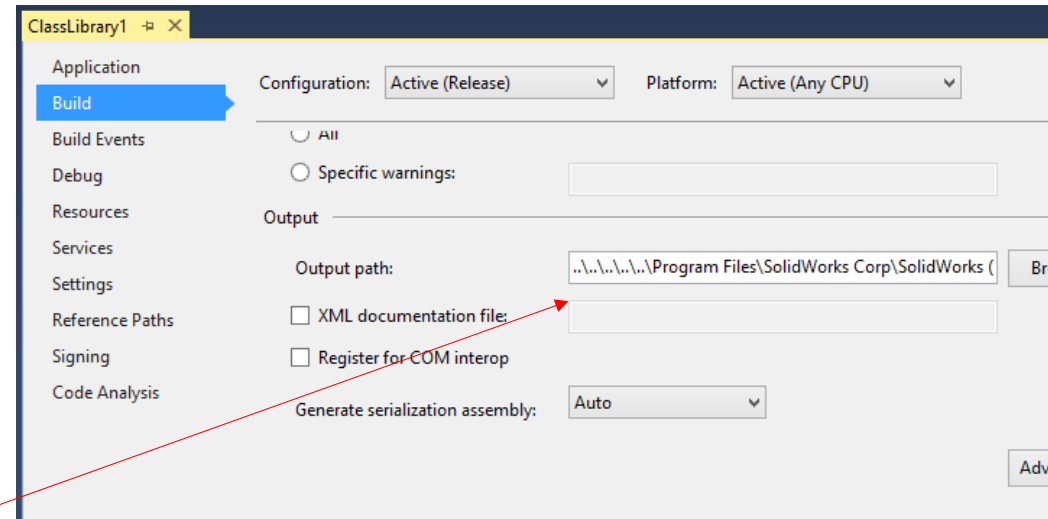
- Download the latest installer from <http://www.projectchrono.org/download/>
- Install it (it should detect you SolidWorks installation)



Add-in installation

METHOD B

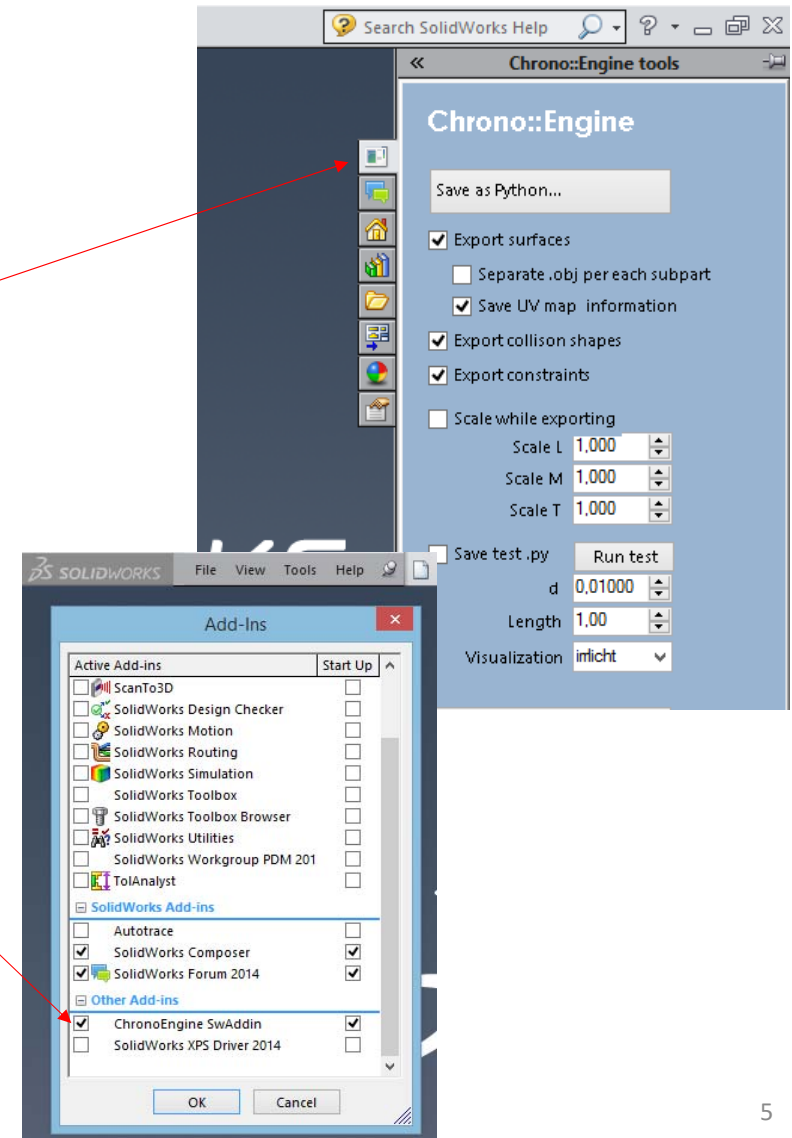
- Clone the C# source from GIT:
<https://github.com/projectchrono/chrono-solidworks>
- Open VisualStudio as administrator
- Load the .sln in VisualStudio
- Set the Output path to your SolidWorks binaries in the Build tab:
- You may need to edit the dll paths by hand in the References editor:
- Run “Build/Build solution” menu,
(Note: at the end of build, the add-in assembly will be automatically installed to your SolidWorks)



Add-in installation

Check if the add-in is correctly installed:

- See if this panel is visible:
- If not, check if the add-in is registered and activated, using the menu “Tools/Add-ins..”



Example



Create falling columns



- Make a part in SolidWorks:

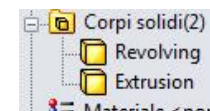
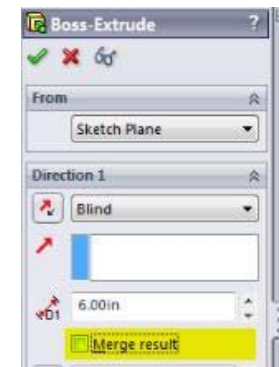
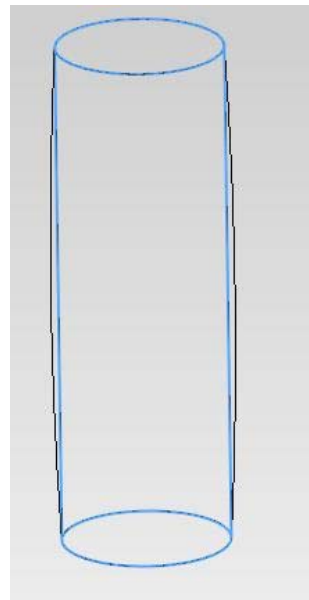


Example



- Make a simplified collision shape: a cylinder.

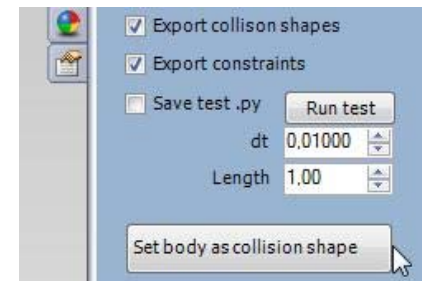
It is 'overlapping' to the visualization surface (use the 'solid body' feature of SolidWorks)



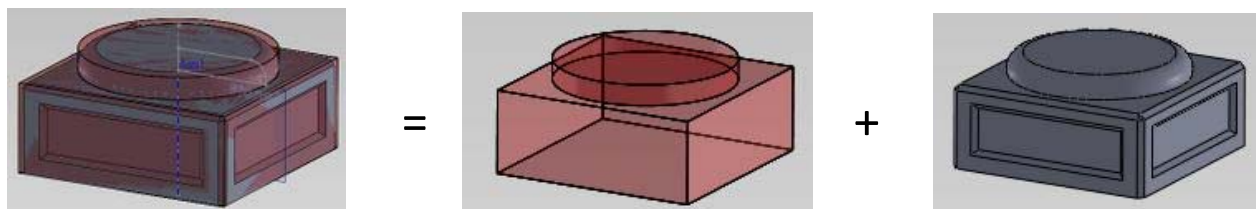
Example



- Select the cylinder as collision shape using the SolidWorks Chrono Add-In panel:



Example

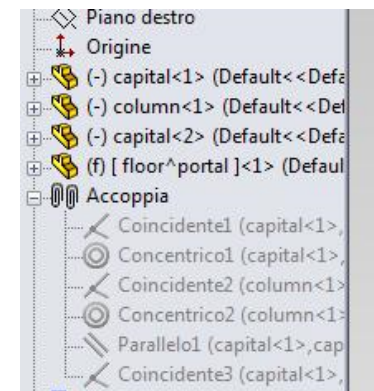
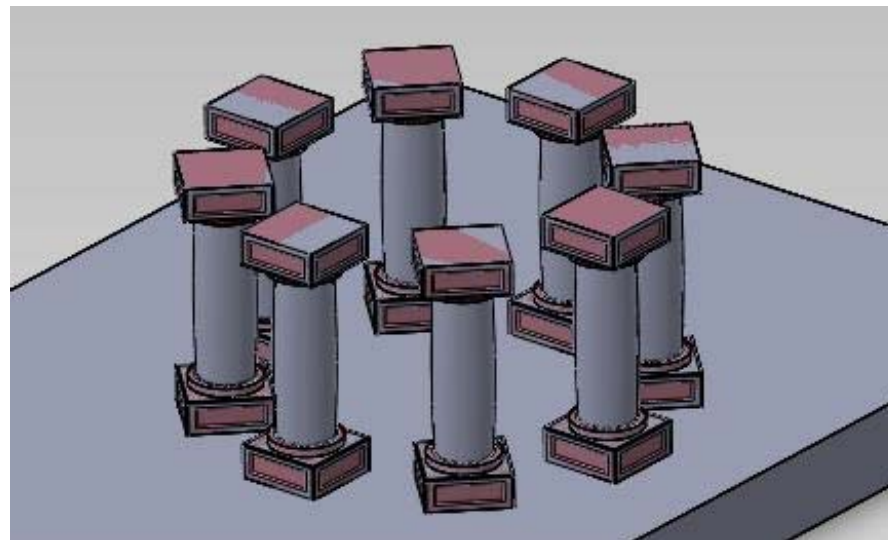


- Same procedure for capitols, where the collision shape is one or more simplified primitives
 - Cube
 - Sphere
 - Cylinder
 - ...

Example



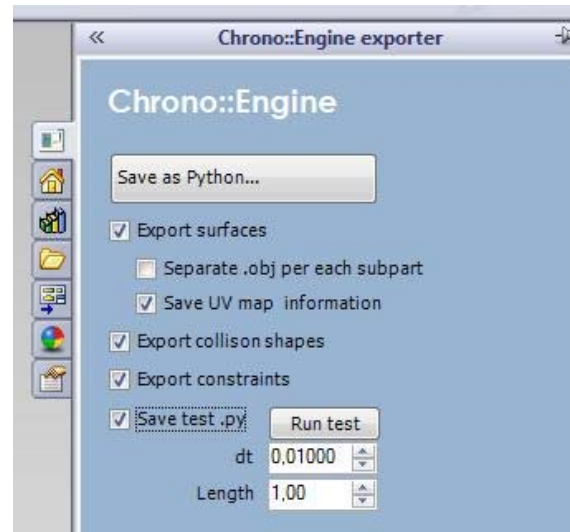
- Replicate parts:



Example



- Export to Python file:



Example



- Import the .py file from your C++ program
- Modify object properties, if needed (ex. friction coeff.)
- Add additional objects, if needed (ex a ChLink to make earthquakes)
- Run the Chrono simulation and postprocess the results



Notes:

- Mass properties are automatically computed and exported from SolidWorks
- Most relevant mate constraints are exported as ChLink objects in Chrono

