

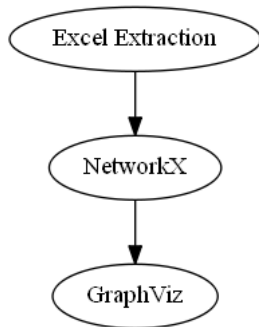
# BMW Precedence Graph Generation

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# Process Overview



# Excel Extraction

The data was first extracted from Excel.



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The extraction converts the TVGs and the precedence information into a list of nodes and edges.



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TVGs with no predecessors have an 'empty' designation in those spots.



# Node and Edge Lists

Example of first 10 TVGs their first predecessors:

S 5176 007 071 A 05	empty
S 5176 006 550 A 04	empty
S 5176 006 050 A 22	S 5176 007 071 A 05
S 5176 007 560 A 05	empty
S 5176 007 060 A 18	S 5176 007 071 A 05
S 5142 001 543 A 04	S 5176 007 071 A 05
S 5142 001 040 A 17	S 0480 001 002 A 10
S 0480 001 002 A 10	S 0480 001 002 A 10
S 0480 001 009 A 09	S 0480 001 002 A 10
S 0480 001 008 A 11	empty



# NetworkX

The lists of nodes and edges are passed to NetworkX.



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NetworkX reads the list in and generates a reverse digraph.



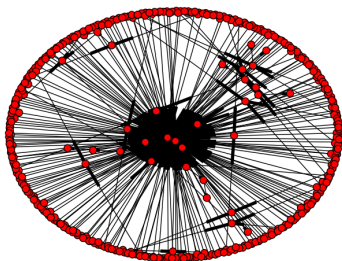


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The graphs generated by Networkx are impossible to read.



# DOT File

NetworkX converts the generated digraph into a DOT file.



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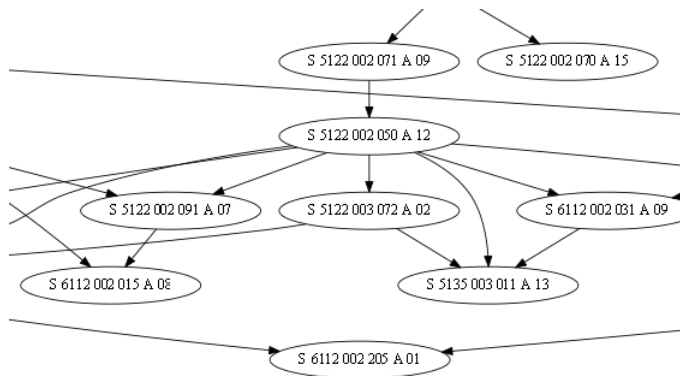
Below is an excerpt from the generated DOT file:

```
strict digraph {  
"S 0480 001 015 A 07  
" -> "S 5121 003 050 A 09  
";  
"S 0480 001 011 A 08  
" -> "S 5122 002 010 A 10  
";  
"S 0480 001 011 A 08  
" -> "S 5122 002 030 A 06  
";
```



# GraphViz

The DOT file is read into GraphViz, which generates a readable precedence graph.



GraphViz allows for more manipulation of the graph data. Some ways are more readable than others.

