aerospacedesignlab

Code Structure & Locally Modifying the Code

SU2 Winter Workshop

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Code Structure

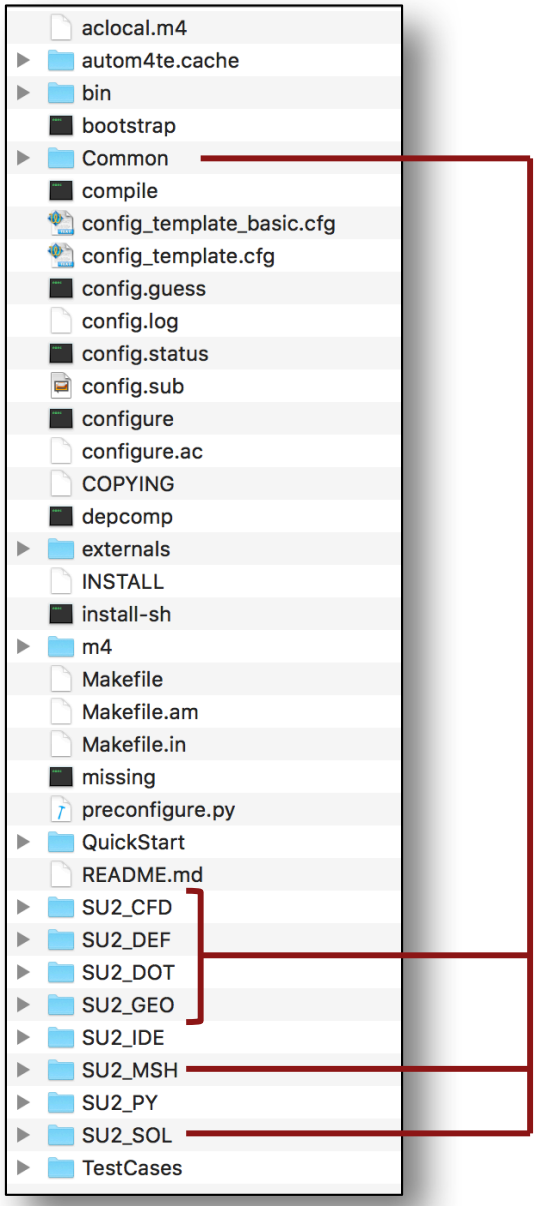
C++ Modules

- **SU2_CFD -> CFD Main Solver**
- SU2_DEF -> Mesh Deformation
- SU2_DOT -> Gradient Projection Code
- SU2_GEO -> Geometry Definition
- SU2_MSH -> Mesh Adaptation
- SU2_SOL -> Solution Export Code

Python Scripts

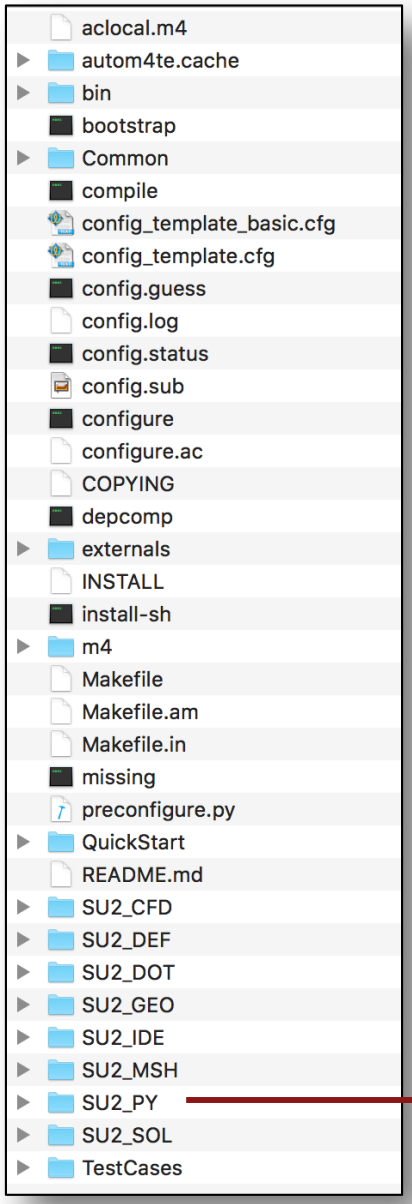
- parallel_computation.py
- mesh_deformation.py
- shape_optimization.py
- continuous_adjoint.py
- discrete_adjoint.py
- finite_differences.py

The SU2 Folder



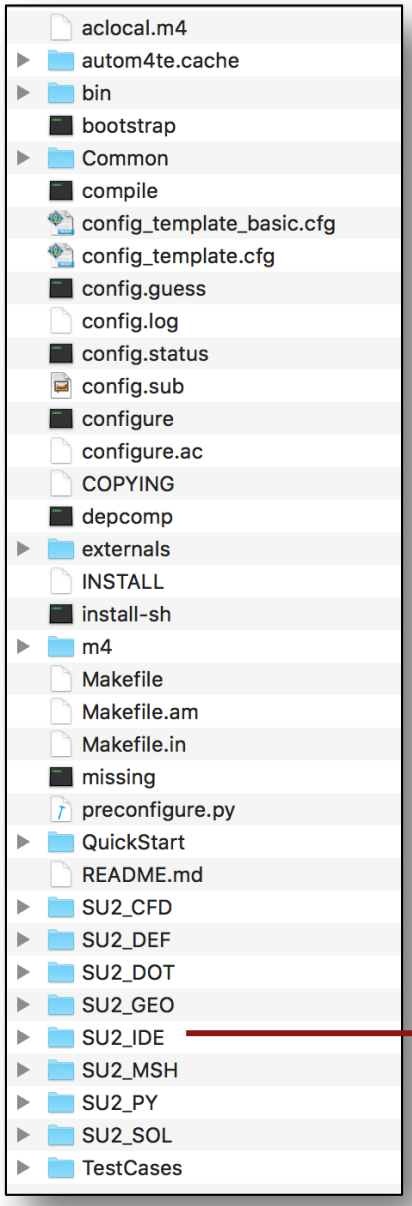
C++ Code - Modules

The SU2 Folder



Python Scripts

The SU2 Folder

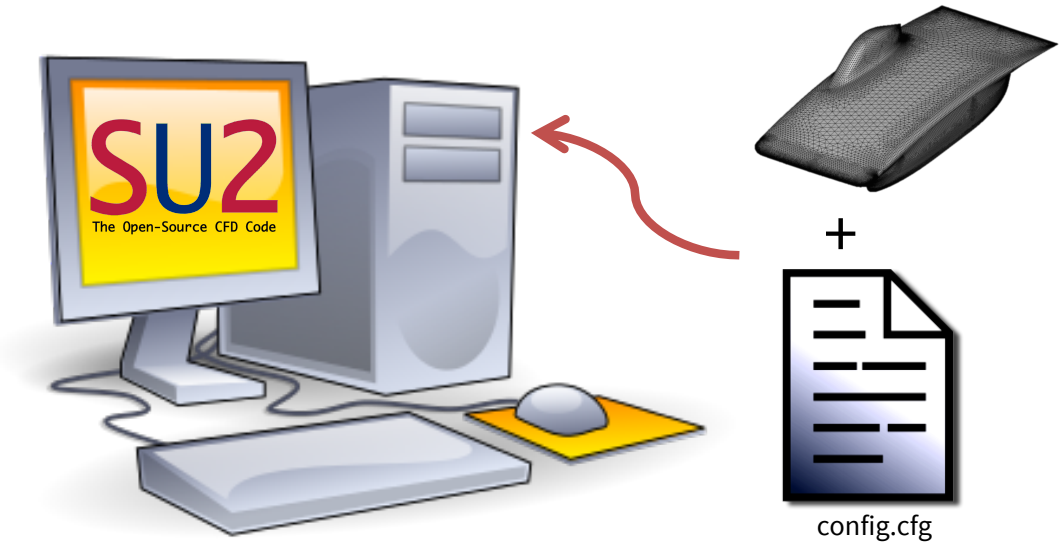


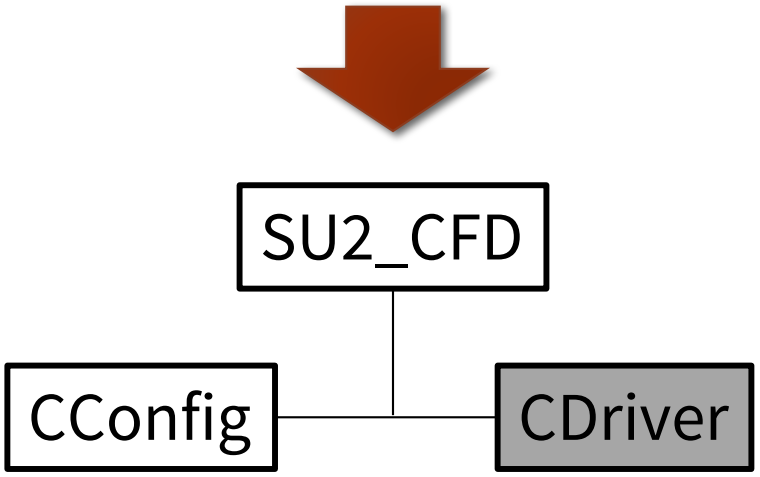
IDE Projects Available

- Eclipse
- Visual Studio
- Wing
- Xcode

Integrated Development Environment Projects

Code Structure





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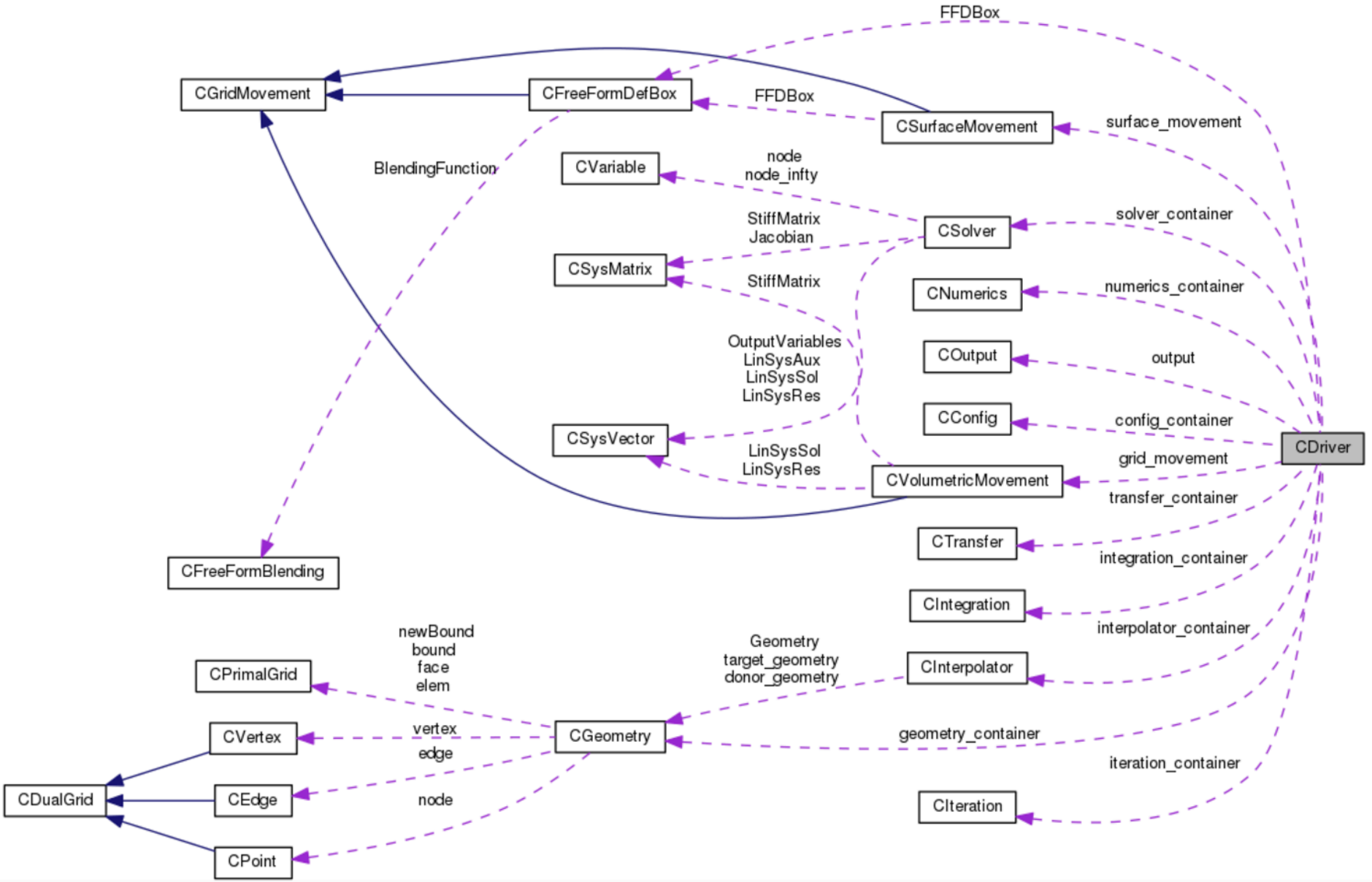
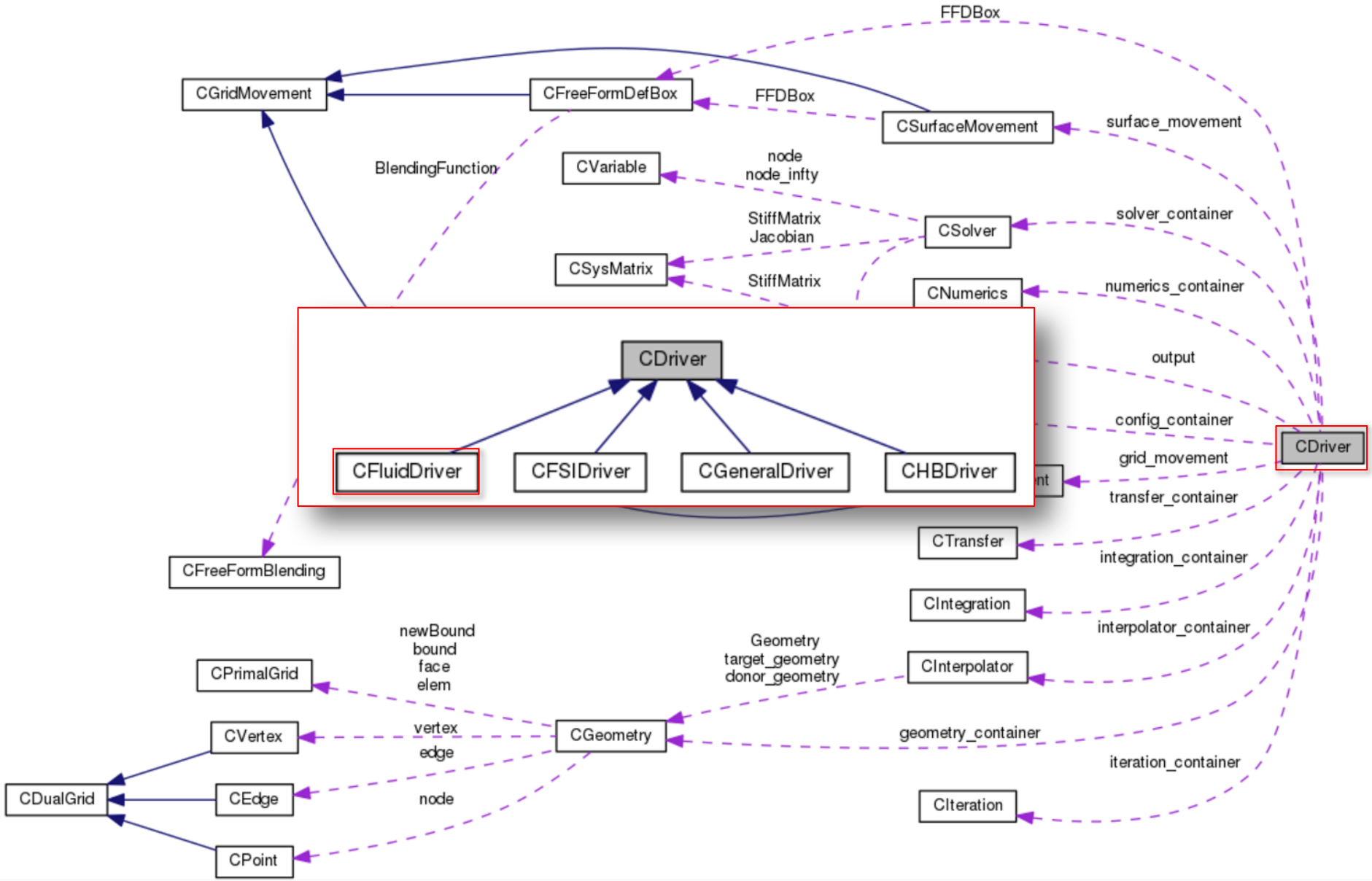


Code Structure



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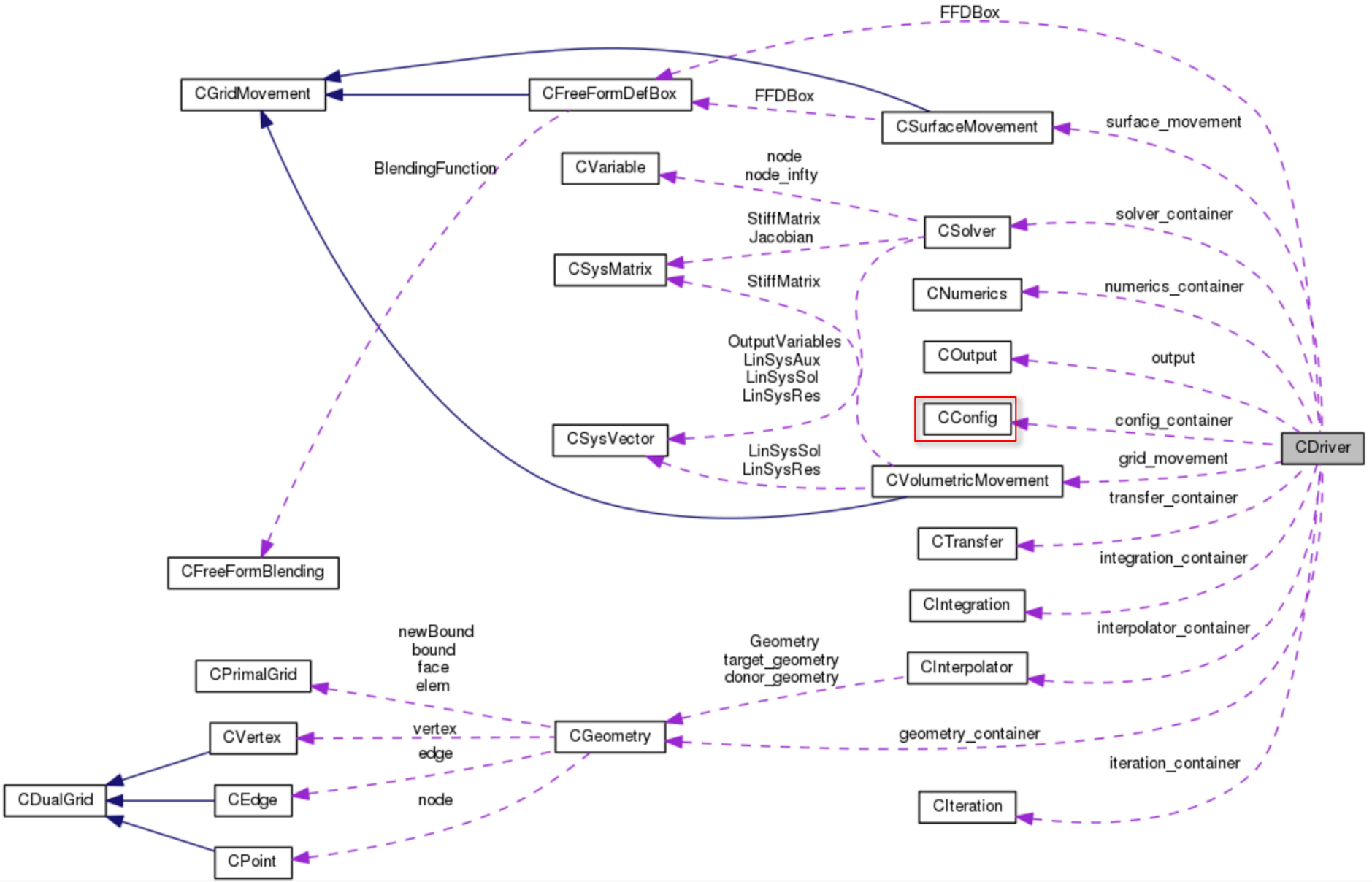

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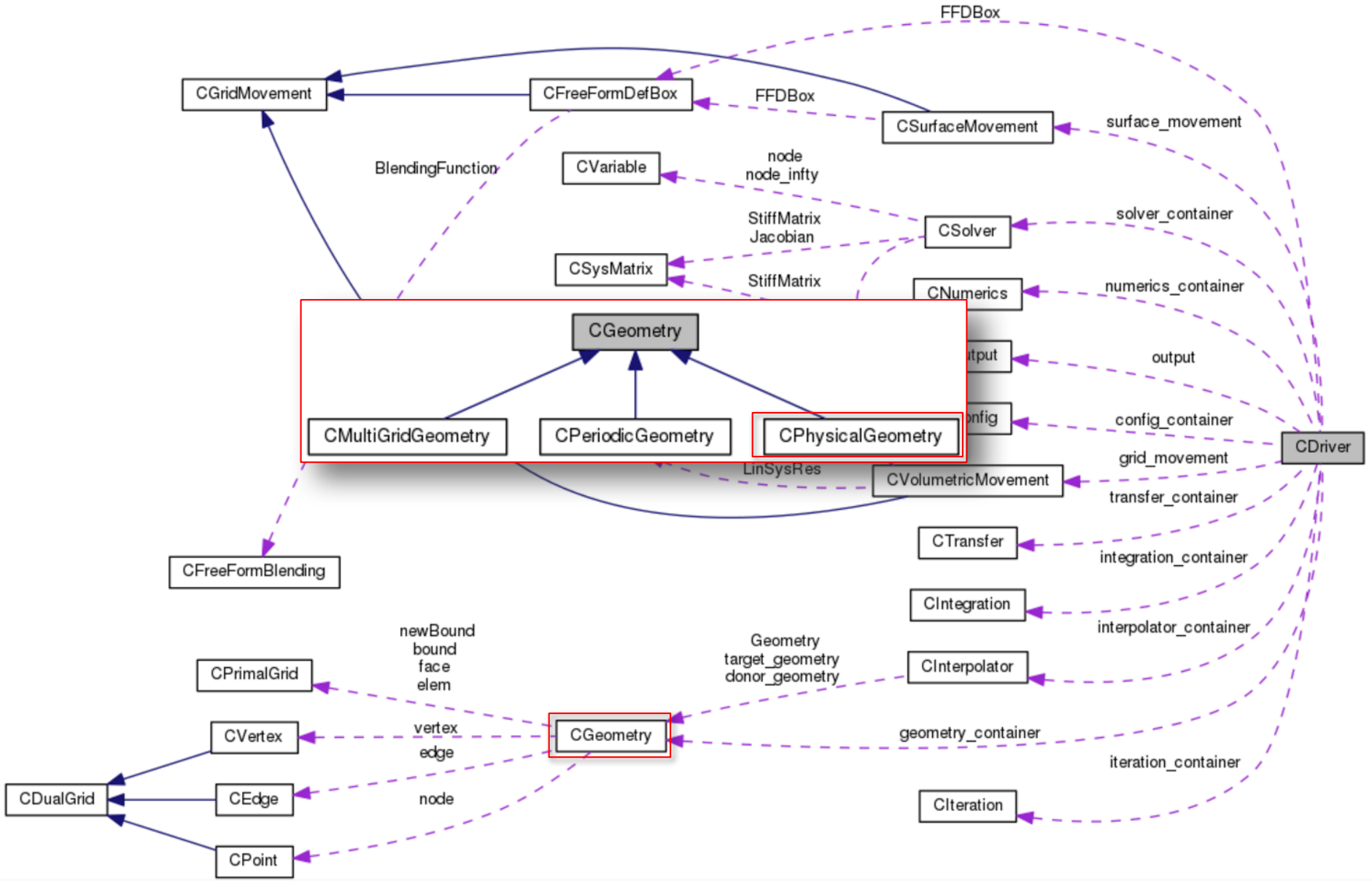

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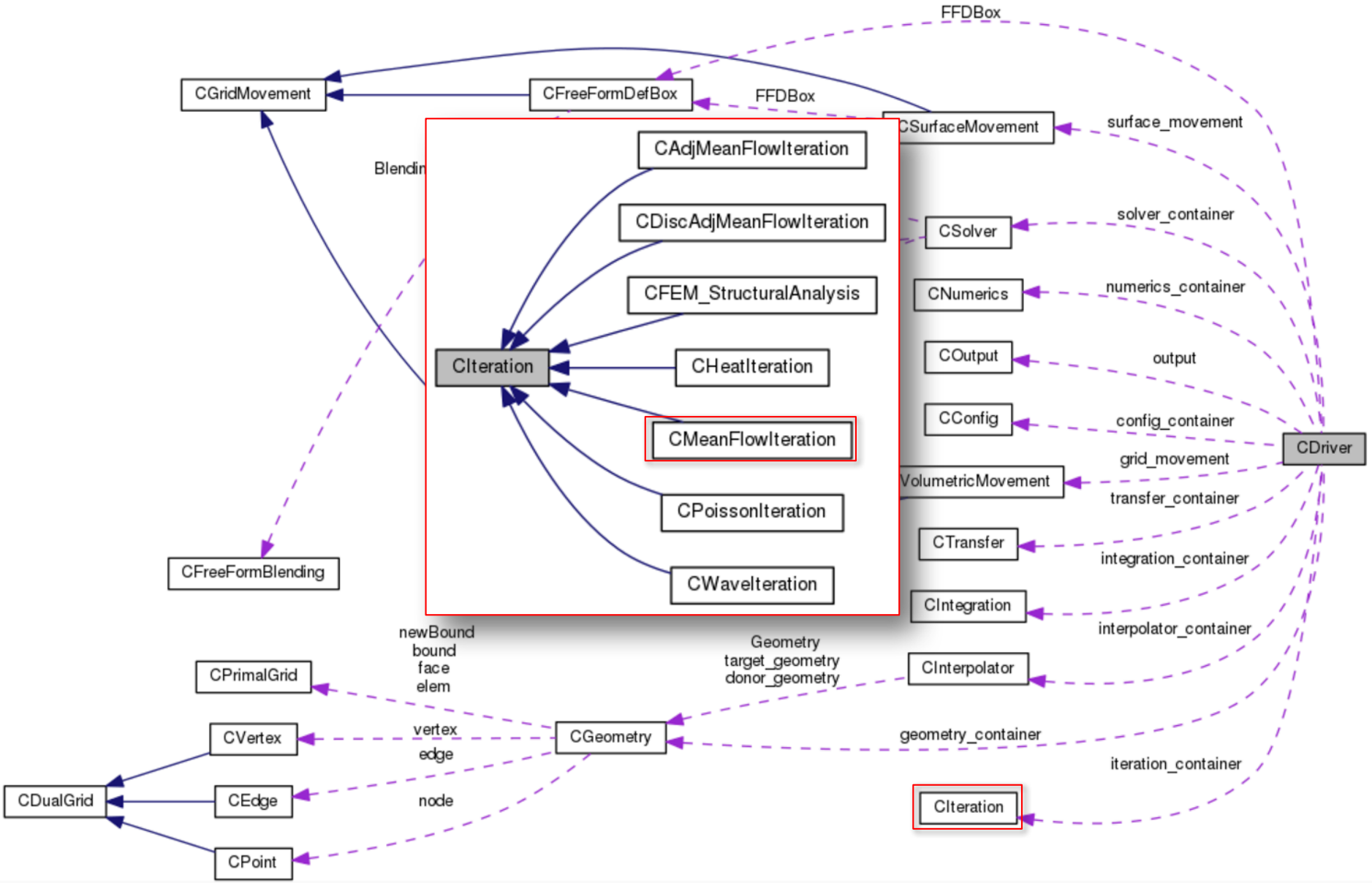

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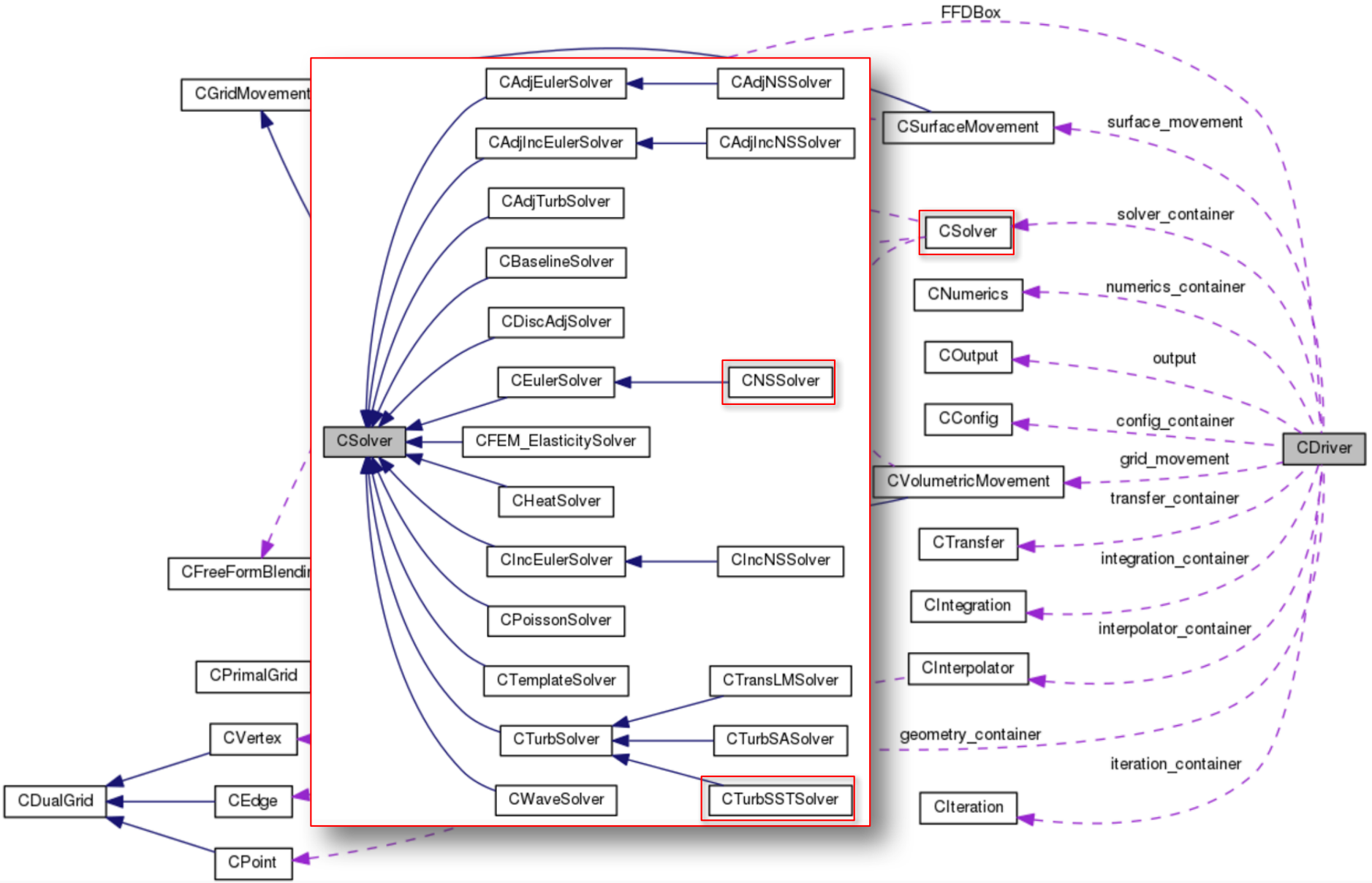

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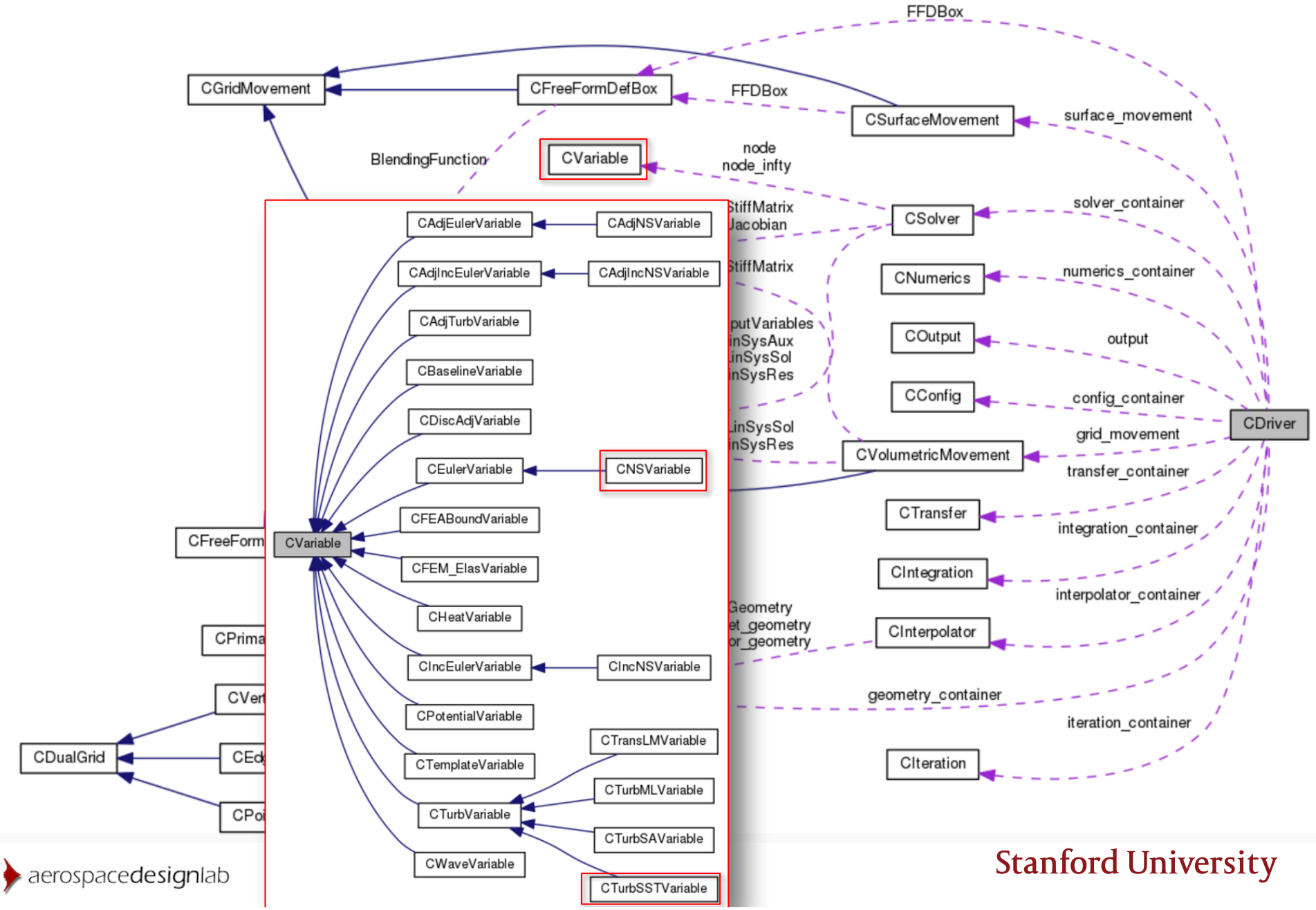

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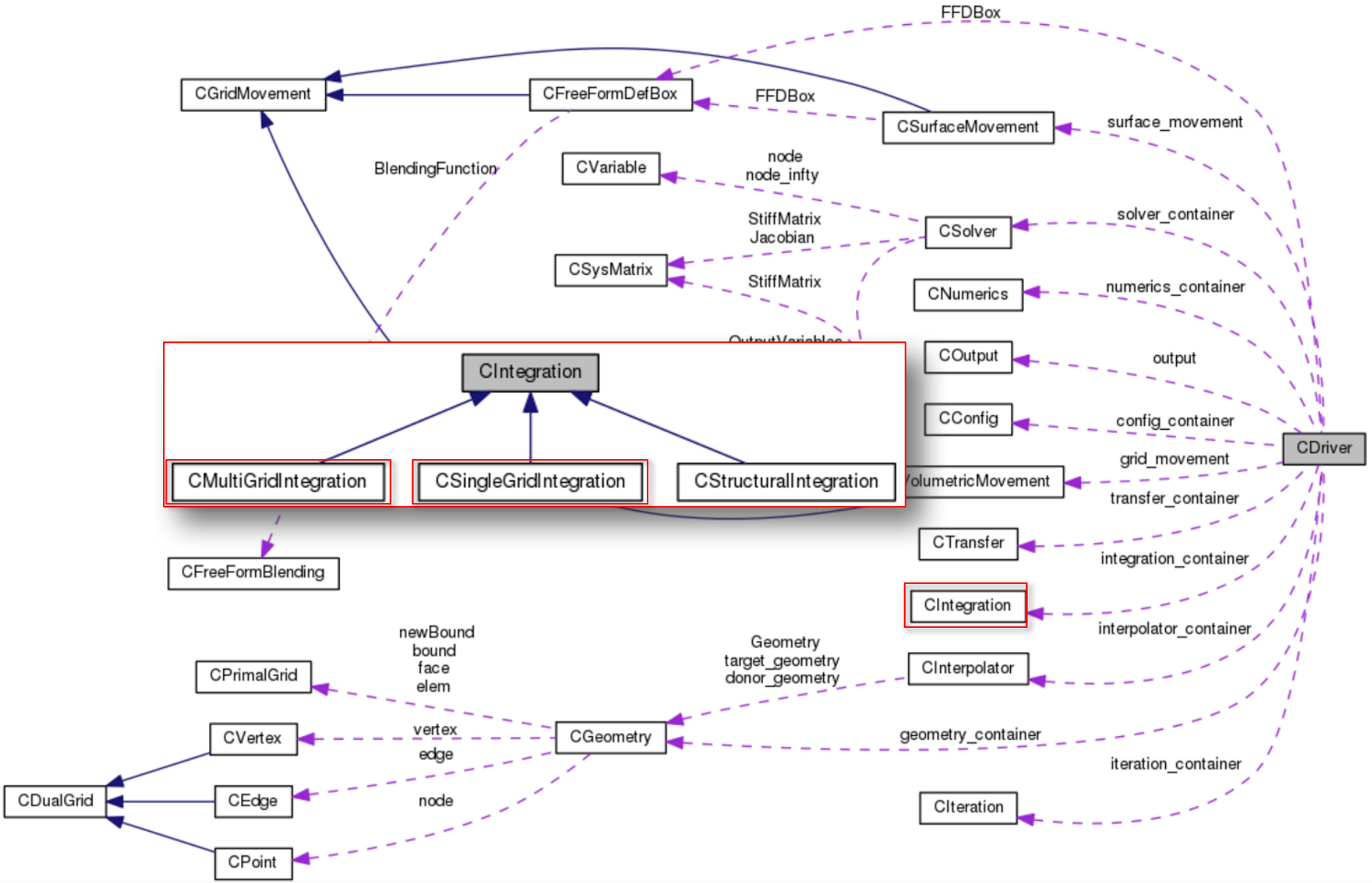

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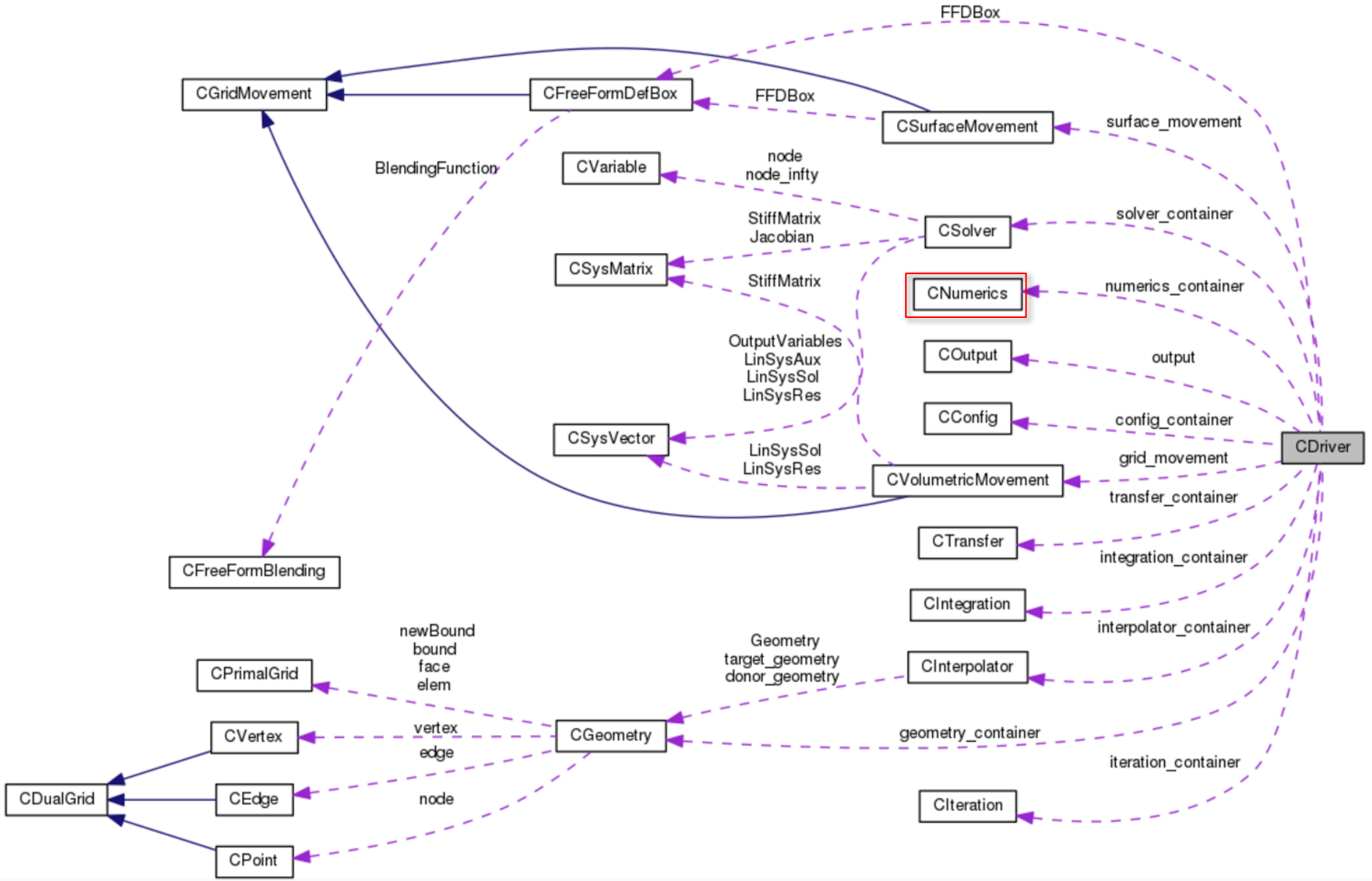

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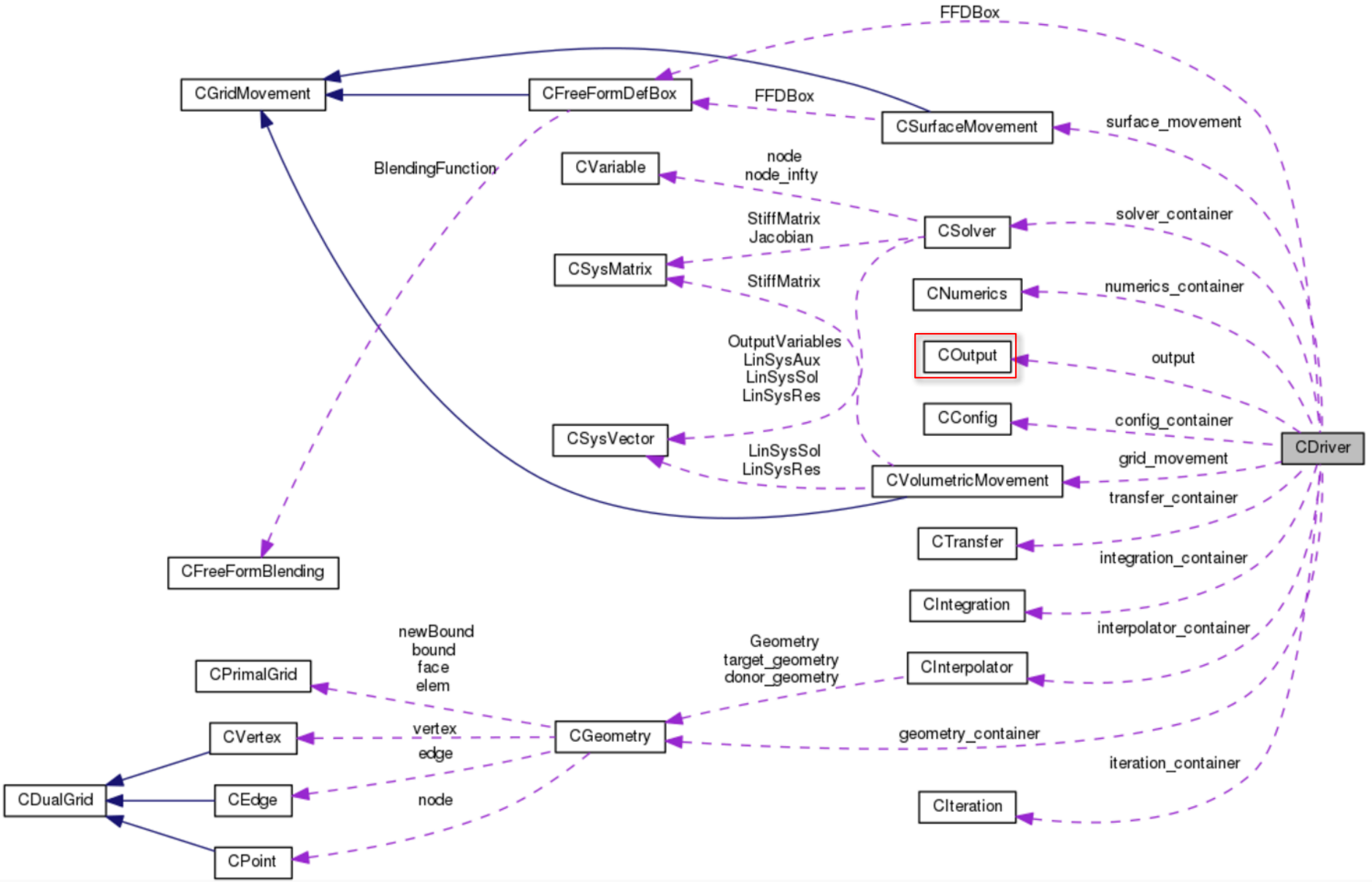
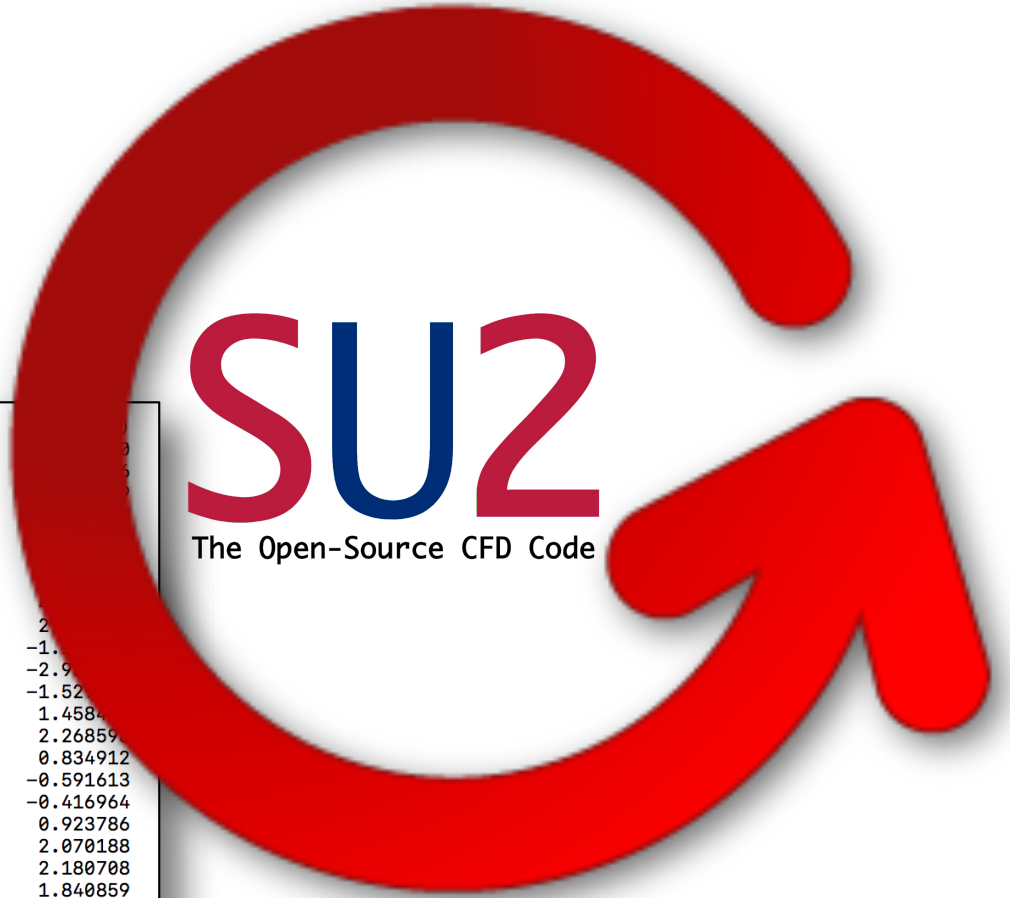


Let the Fun Begin



Iter	Time(s)	Res[Rho]	Res[kine]	Res[omega]	CL(Total)	
0	1.791899	-5.237577	-2.486786	3.267755	-0.961913	
10	1.941690	-5.965958	-7.417600	0.139904	-2.032346	
20	1.896162	-6.148408	-8.089440	-0.392092	-0.708139	
30	1.908317	-5.929752	-8.348467	-0.263608	1.445436	
40	1.916548	-5.526593	-8.505032	-0.335271	2.157480	
50	1.922092	-5.328816	-8.338761	-0.426216	0.335103	
60	1.948916	-5.325736	-7.956542	-0.273429	-3.013136	
70	1.939311	-5.135129	-8.311600	-0.087236	-4.575761	
80	1.974332	-5.526748	-7.961097	-0.027336	-1.035087	2
90	2.032104	-5.340963	-8.476771	0.026821	1.790817	-1.
100	2.093165	-5.563652	-8.483267	-0.004648	2.882447	-2.9
110	2.128070	-5.762210	-8.402715	0.028219	0.162363	-1.52
120	2.108917	-5.485616	-8.899545	-0.027371	-4.878284	1.458
130	2.097332	-5.461603	-8.456542	-0.178611	-5.543389	2.2685
140	2.102567	-5.684398	-8.318638	-0.183220	-1.208570	0.834912
150	2.112184	-5.600426	-8.448354	-0.146340	4.335569	-0.591613
160	2.098103	-5.541467	-8.806128	-0.152563	5.900509	-0.416964
170	2.082585	-5.722650	-8.321453	-0.183287	3.017671	0.923786
180	2.071023	-5.701605	-8.441849	-0.205105	-0.965180	2.070188
190	2.064276	-5.674596	-8.657958	-0.199842	-2.530307	2.180708
200	2.063016	-5.751074	-8.676508	-0.252016	-1.710359	1.840859
210	2.052034	-5.587688	-8.419714	-0.237609	-0.349873	1.826067
220	2.040685	-5.689643	-8.239806	-0.207056	0.033565	2.244383
230	2.036146	-5.736369	-8.368620	-0.308997	-0.845070	2.543828
240	2.061214	-5.650124	-8.612579	-0.279000	-1.613889	1.936536
250	2.103906	-5.707872	-8.405488	-0.233377	-1.338734	0.666840
260	2.129611	-5.793523	-8.335694	-0.344938	-0.277704	-0.295947
270	2.141061	-5.883220	-8.339555	-0.275127	0.568493	-0.554645
280	2.143013	-6.060178	-8.367567	-0.360015	0.655153	-0.187968
290	2.135868	-6.191540	-8.383212	-0.349949	0.389253	0.250195
300	2.127647	-5.969145	-8.372820	-0.293388	0.081951	0.057173
310	2.117222	-5.826091	-8.388407	-0.251719	0.167371	-0.536194
320	2.110546	-5.775250	-8.388639	-0.329863	0.234635	-0.590608
330	2.104203	-5.827724	-8.366620	-0.370121	-0.075000	0.207301
340	2.097838	-6.005831	-8.333663	-0.358087	-0.547409	1.568441
350	2.096477	-6.034762	-8.350672	-0.307324	-0.624055	2.605240
360	2.090009	-5.931384	-8.403144	-0.305295	-0.308536	2.547996
370	2.095851	-6.116087	-8.388021	-0.333959	-0.087797	1.936696
380	2.108685	-6.295158	-8.372739	-0.341296	0.107156	1.406435
390	2.119855	-6.327394	-8.354471	-0.368607	0.103137	1.162460

```
------------------- Local Time Stepping Summary -------------------
MG level: 0 -> Min. DT: 4.58733e-07. Max. DT: 0.312363. CFL: 5.
MG level: 1 -> Min. DT: 4.68064e-07. Max. DT: 0.415394. CFL: 4.90147.
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```

SU2

The Open-Source CFD Code

Thanks a lot for your attention!

Questions & Answers

For more details:

su2.stanford.edu/

github.com/su2code/SU2/wiki