This is a test case for coupling instances of **dsmcFoamPlus** to **mdFoamPlus**.

This example case does the following:

1. Runs an instance of dsmcFoamPlus and mdFoamPlus simultaneously (each either in serial or parallel).
2. Each instance solves its part of the overall domain (see systemOverview.pdf).
3. Each instance is considered to be a seperate domain (named dsmcDomain and mdDomain respectively).
4. Two MUI coupling interfaces are created (ifs_1 and ifs_2) and each solver connects to them at the start.
5. Data will be transferred via the controller framework and coupling boundary in each solver (polyCouplingController or dsmcCouplingController) through the connected MUI interface and utilised by the corresponding solver.

There are a number of scripts in the base of the case to ease running, you should look at these to understand what they are doing, however their descriptions are:

1. **Allclean:** This completely cleans the cases in the three case folders.
2. **AllcleanCreateParallel:** This completely cleans and then creates the cases in the three case folders for parallel execution (by default 2 MPI ranks per solver).
3. **AllcleanCreateSerial:** This completely cleans and then creates the cases in the three case folders for serial execution (this will still use MPI to connect the three solvers together using MPI).
4. **runParallel:** This exeutes the coupled case with each solver executed in parallel (default 2 MPI ranks per solver). Please note that console output is redirected to files contained in the folder “Logs”, please look into the script to see what is contained where.
5. **runSerial:** This exeutes the coupled case with each solver executed in serial but MPI is still used to connect the solvers tgoether using MUI. Please note that console output is redirected to files contained in the folder “Logs”, please look into the script to see what is contained where.

The two pertinent control dictionaries are located at system/couplingDict (this is described in greater detail in the README-MUI document in the base of the repository) and system/controllersDict, where an entry for the new "polyCouplingControllers" or "dsmcCouplingControllers" control type can be found.

A typical useage scneario would be:

./AllcleanCreateParallel
./runParallel &

And then to follow each log file for the master rank of each solver in the “Logs” folder (e.g. “tail -f coupledCase.1.0” for dsmcDomain; “tail -f coupledCase.1.2” for mdDomain)