**CDP4 Additional Software Development: Matlab Application For Database Interactions**

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# Introduction

Skoltech Concurrent Design Facility (also known as Concurrent Design Engineering Lab – CEDL) has been established and operating ([1] – [3]) since 2014. This work has been built based on previous experience developed at the Space Center in the Ecole Polytechnique de Lausanne (EPFL) [4] – [6].

Concurrent Design Frameworks (i.e. CDP4, Model Centre) depend heavily on domain specific tools. Space domain requires a number of engineering suites to be used for mechanical (i.e. SolidWorks, CATIA), thermal (i.e. ANSYS), control (i.e. MathWorks Matlab©), celestial mechanics (i.e. AGI STK, GMAT) and other disciplines. For the moment, most Concurrent Design tools have poor interface connections with domain-specific tools, hence the learning curve for Concurrent Design is steep and overall process takes longer time.

# Work aims and approaches

In this work the development of the CDP4 – MathWorks Matlab© interface plugin is presented. The add-on was developed using different methods of interactive .NET library access in MathWorks Matlab© programming environment. This plugin allows to bring all the main functionality of the C# CDP4-SDK (Software Development Kit) to MathWorks Matlab©, meaning that functions for data transfer from a specific workspace in MathWorks Matlab© directly to the database operated by CDP4 are created directly inside of the MathWorks Matlab© programming environment. The goals of this work were:

1. the development of MathWorks Matlab© application itself for easy data transfer

2. improvement of C# CDP4-SDK for the plugin needs.

Moreover, a similar approach can also be utilized for other domain-specific software systems such as Solidworks and STK.

# References

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