VMAP enabling interoperability in integrated CAE simulation workflows

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Keywords: interoperability, standards, manufacturing simulation, software interfaces, data mapping, material models, simulation workflows

VMAP is a vendor-neutral standard for CAE data storage to enhance interoperability in virtual engineering workflows. Some of the features of VMAP include:

- Meta and user data
- Geometry and discretization
- Coordinate and unit systems
- Result and state variables
- Parameters for (material) models
- Based on HDF5 (High-performance data management and storage suite)
- Software library available to read/write VMAP data files
- Tutorials and test cases

VMAP provides a library of IO routines to help engineers speed-up the creation of their workflows thereby removing the emphasis for considering data formats. It enables easier and more flexible data transfer, use of different software for different simulations and the creation of re-useable processes that can be easily adapted to include more or different data. It enables software interoperability for pre- & post-processing and data manipulation. The VMAP Standard Specifications aim to provide best-practice guidelines for the community. These specifications form the core of the standard. Since, VMAP is driven by industry and software vendors, the main focus of VMAP has been to align the CAE data in a form which is generic and at the same time encompasses all aspects of it. During the project, we have aligned the data into groups and found commonalities among many softwares to build the standard. Keeping this in mind, the VMAP storage structure defines the four main groups which form the essence of any simulation – GEOMETRY, VARIABLES, SYSTEM and MATERIAL. Within these four main groups, the CAE data is sorted into datasets and attributes.

The VMAP standard is based on HDF5 a widely accepted implementation platform for many IO related applications. The freely available SWIG wrapper tool can be utilised to bind the VMAP IO software library into software written in any other programming or script language, see Figure 1. As such the VMAP IO library is universally available. Many ISVs, both large and small players, have already implemented the VMAP Standard directly within their software to extract the maximum speed and efficiency

With the implementation a series of simple test cases are supplied within the release pack so that implementations can be quickly verified.

In summary a complete VMAP Package release includes:

- defined VMAP Standard (document),
- use case descriptions and background information (document),
- IO software library (software),
- a set of text cases to verify any implementation (files),
- contact information for the VMAP Standards Community (document).

To date the VMAP Standard has been implemented in many Commercial Off the Shelf (COTS) software.

All information about the VMAP Standard can be found on the website vmap.eu.com

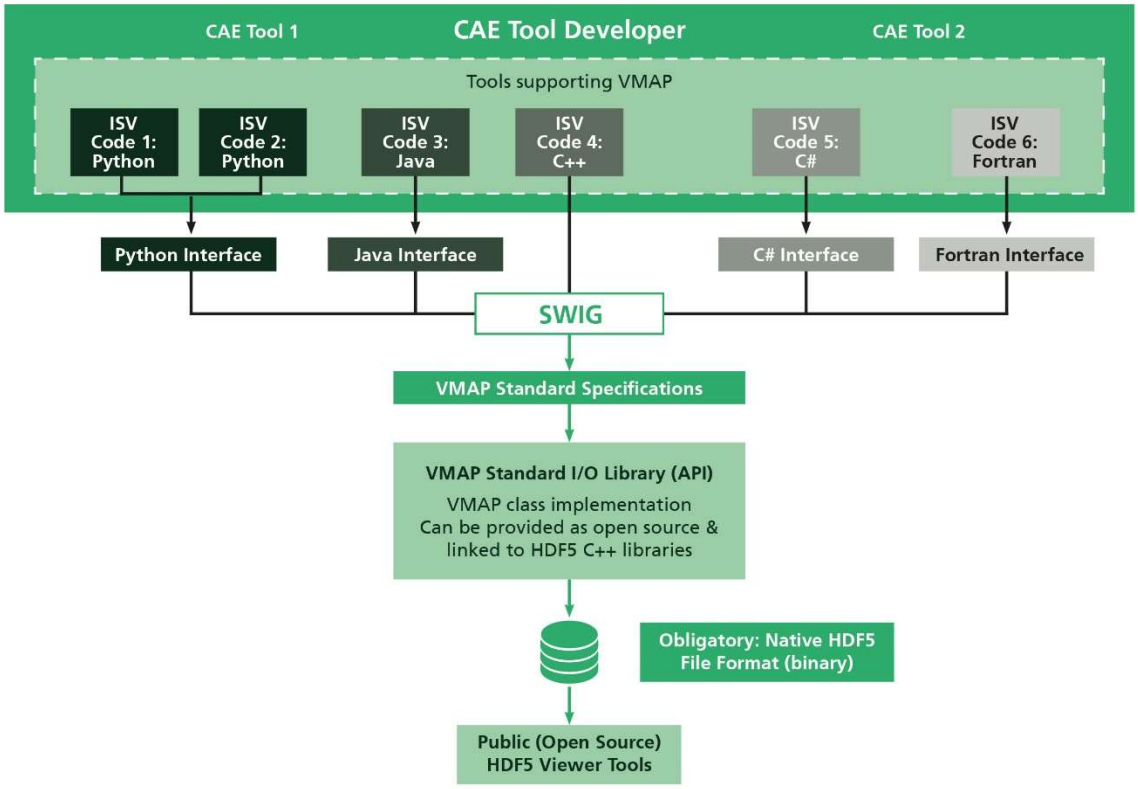

Figure 1 VMAP Software Architecture