

VMAP: A new Interface Standard for Integrated Virtual Material Modelling in Manufacturing Industry

Material Data Exchange Interface Standard Community Web meeting

29 October 2020 at 16:30 (CET), 15:30 (GMT), 11:30 (EDT)

Summary of Meeting

Place: Web meeting

Attendees: Gino Duffett (NAFEMS, VMAP project) - GinoD,
Klaus Wolf (Fraunhofer SCAI, VMAP Project) - KlausW,
Priyanka Gulati (Fraunhofer SCAI, VMAP project) - PriyankaG,
Jean-Marc Crepel (CITRAN) - Jean-MarcC.

11 people in total (VMAP Project 4, External 7)
10 entities in total (VMAP Project 3, External 7)

Apologies: 1 person from 1 entity.

Notes: None.

Documents attached:

[1] "ITEA-VMAP_SC_20201029_Community" the presentation made at the meeting.

1. GinoD welcomed all attendees and outlined the meeting Agenda, see [1] page 2:
 - Summary of final VMAP project review [KlausW, PriyankaG]
 - Summary of VMAP Conference [GinoD]
 - Progress of establishing VMAP SC as an independent association [GinoD, KlausW]
 - VMAP SC membership process [GinoD]
 - Possible VMAP Interoperability Forum [Jean-MarcC]
 - Any Other Business [ALL]
2. As part of the welcome, GinoD presented an overview of the VMAP SC (see [1] page 3):
 - size: 143 entities, 46 with confirmed interest
 - external users: 8 signed User Licence Agreement, 12 potential users

3. KlausW presented a summary of the final project review, held on 22 October 2022 (see [1], page 4). This was very successful and ITEA reviewers were very happy with the project results, reporting their overall conclusion as “This project supported by consortium presenting the full value chain has delivered exceptional results. The value created by the project approach has been well shown by the demonstrations. The commitment of the consortium to continue with the creation of the VMAP community is highly appreciated.”
4. GinoD then presented an overview of the VMAP International Conference on CAE Interoperability that was held online the previous week on 19-20 October 2020; see [1] pages 5-6. Important points were that:
 - There were 548 registrations and 25 presentations (10 presentation withdrawals when the conference was changed from face-to-face to online)
 - There will be a 2nd Conference to be held in 2022.

Action: GD to place VMAP related presentations on the VMAP webpage.
3. GinoD then presented the progress for the creation of the VMAP SC, see [1] pages 7-15. The main points are:
 - The entity has been defined as a legal not-for-profit German association, an e.V.
 - The formal MoU to be signed by project partners enabling VMAP SC to license VMAP is in draft form.
 - The formal OSS (user licence) and CLA (developer licence) are in draft form.
 - The formal Statutes (to be legally registered) and ByLaws (rules and regulations not required to be registered) to control the VMAP SC are in draft form.
 - The formal creation process has been defined: founding meeting planned for 15 December 2020 to agree and sign, legal registration, apply for tax exemption, register trademarks.
 - VMAP SC structure will consist of: Assembly (member’s meetings) Board and Technical Groups.
4. GinoD also presented the membership considerations, see [1] pages 16-17. The main points are:
 - Founder members are defined by the authorised participation at the Founding Meeting. Attendees were invited to join the Founder Group that is still open to any entity wishing to participate.
 - The current VMAP SC database would be invited and other members welcomed but would need to follow the application/acceptance process being defined.

Action: ALL please contact GD if you wish to become a Founder Member.
5. Jean-MarcC then presented his interesting proposal, based on work done for the STEP standard, for creating a VMAP Interoperability Forum, see [1] pages 18-24.

There were some comments:

 - This formal process is required (the VMAP project did this informally) but the decision to use it, or a modified version, should be made after the VMAP SC has been legally created.
 - A similar forum has really proved itself for the STEP standard

Action: GD to place Jean-MarcC’s conference presentation onto the VMAP webpage.
Action: GD to include discussion of Jean-MarcC’s proposal in the first VMAP SC Assembly meeting planned for February 2021.
6. AOB. There were no specific technical or organization questions.
7. GinoD pointed out the next steps/actions to be carried out, (see [1], page 26):
 - Update VMAP SC database on VMAP SC e.V. progress, Nov.-Dec.2020
 - eMailing VMAP SC database regarding membership, Dec.2020, Jan.2021
 - next meeting will be the VMAP SC Assembly meeting in Feb.2021.
8. GinoD and KlausW thanked everybody for their participation in this and all the VMAP SC meetings to date.

KlausW thanked everybody for their support during the project.
Gino D closed the meeting.

-----end of document-----

ITEA VMAP

A new Interface Standard for Integrated
Virtual Material Modelling in Manufacturing Industry

VMAP Standards Community

Gino Duffett (NAFEMS)

Meeting October 29, 2020



Agenda



1. Welcome [GinoD]
2. Summary of final VMAP project review [KlausW, PriyankaG]
3. Summary of VMAP Conference [GinoD]
4. Progress of establishing VMAP SC as an independent association [GinoD, KlausW]
5. VMAP SC membership process [GinoD]
6. Possible VMAP Interoperability Forum [Jean-MarcC]
7. Any Other Business [ALL]
8. End

1. Welcome: VMAP SC

- Standards Community database
 - 143 entities, 80% external to project
 - 46 confirmed interest, 52% external to project
 - 8 users signed ULA
 - 12 pending ULA signature

- Collaborations
 - European Materials Modelling Council
 - Material ontologies
 - ProSTEP
 - Engineering data standards
 - AFNet
 - Standardization days



We can add your logo onto our webpage if you wish.
Please contact GinoD.



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ITEA 3

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2. Summary of final VMAP project review

- Klaus Wolf
- Priyanka Gulati



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ITEA 3 is a EUREKA strategic ICT cluster programme

VMAP Project Review #3 (Final)

(A new Interface Standard for Integrated Virtual Material Modelling in Manufacturing Industry)

Date: 22 October
Virtual

Reviewers:

ITEA Office	J-F. Lavignon	ITEA Vice-Chairman
ITAC Representative	P. Jaring	ITEA Programme coordinator
	S. Haafs	RVO (NL)
STG Reviewers	T. Ding	DLR (DE)
	M. Sridharan	Bull (FR)
	S. Keller	Thales (FR)
Mentor	M. Rimini-Doering	Bosch (DE)

4. Overall conclusion

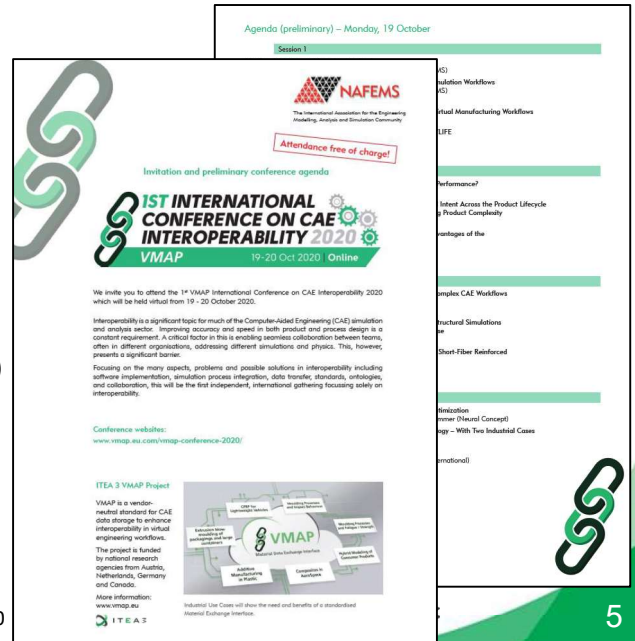
+	This project supported by consortium presenting the full value chain has delivered exceptional results. The value created by the project approach has been well shown by the demonstrations. The commitment of the consortium to continue with the creation of the VMAP community is highly appreciated.
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3. Summary of VMAP Int. Conf. 2020

- Online on 19-20 October 2020
 - Dates and place changed twice
 - 25 presentations (reduced from 35 when changed to online)
 - 548 registrations
 - 68% Europe
 - 15% Americas
 - 16% Asia+ME
 - 1% Africa
- Conference website
 - Use Case videos (see vmap.eu.com/Conference2020)
 - ISV posters (see vmap.eu.com/Tools & Processes)
- 2nd conference to be held in 2022


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Summary of VMAP Int. Conf. 2020

- Brief statistics
 - Average 61 attendees
 - 46 Live
 - 15 On-Demand
 - Max 129, Min 29 attendees
 - 6 Use Case videos
 - Max 62, Min 16 viewings
 - 2 ISV posters (9 + 8 posters)
 - Max 61, Min 27 viewings
- Open until 31 October
 - On-Demand numbers are changing

"Congratulations on the successful conference! It was a pleasure to attend and also very interesting. We would very much like to implement VMAP"



https://gateway.on24.com/wcc/eh/2288425/vmap



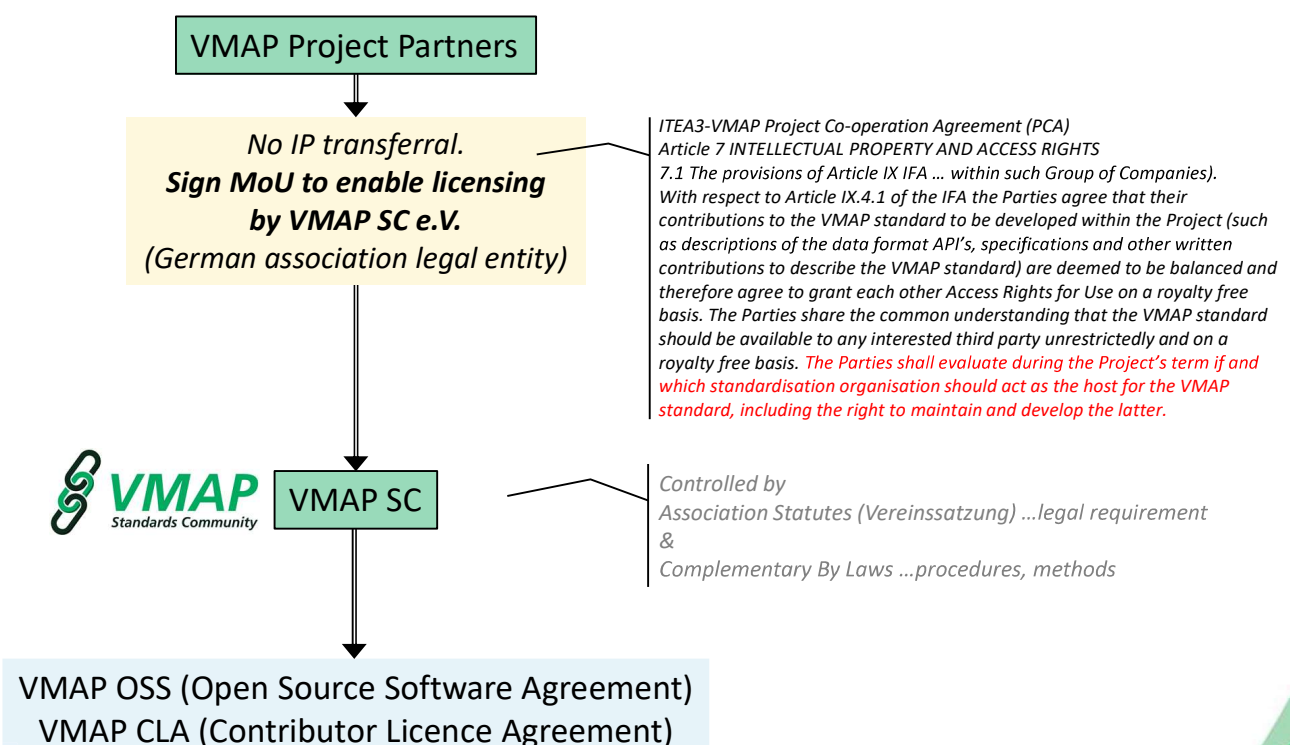
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4. Progress of establishing VMAP SC

- Decide on entity
 - Require legal, secure, long-living community
 - Type, structure, etc.
 - IP
- Define legal documents
 - MoU to enable VMAP SC to license VMAP
 - OSS and CLA for users and contributors
 - Statutes & ByLaws to control the community
- Define legal process
 - Founder meeting
 - Notarize, Register, Apply for tax exemption
 - Register Trademarks
- Generate membership

Licensing of VMAP



Licences

- **VMAP OSS**
(Open Source Software user licence)
- **VMAP CLA**
(Contributor Licence)

VMAP OSS
Open Source Software License

VMAP Open Source License
VMAP Standardization Community e.V.
All rights reserved.

1. INTRODUCTION
The VMAP Interface Standard is a vendor neutral standard for CAE (Computer Aided Engineering) data storage to enhance interoperability in virtual engineering workflows and can be distributed from:

1.1.1. Scope
This license defines and manages information on:

- Mesh and user data
- Geometry and discretization
- Coordinate and unit systems
- Result and input variables
- Parameters for (material) models
- Future versions might support additional types of information

The technical implementation of the VMAP is:

- defined on top of HDF5 (High-performance data management and storage suite) platform
- implemented as an open-source library providing basic capabilities to read and write VMAP conformant files
- and accompanied by a growing set of tutorials and test-cases.

The VMAP:

- was initially realized by the ITA VMAP project consortium (2017-2020)
- and will be further developed and maintained by the VMAP Standardization Community e.V. (created in Dec. 2020)

2. DEFINITIONS
1. Combine Work is any modification of VMAP and larger works which contains VMAP. Licensor claim no rights on Your work or products.

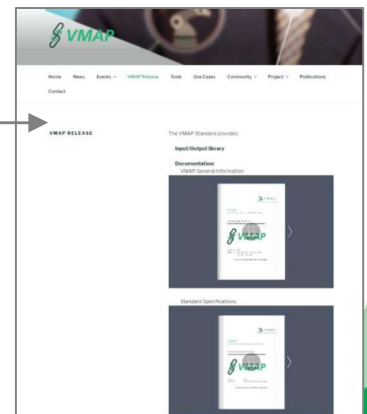
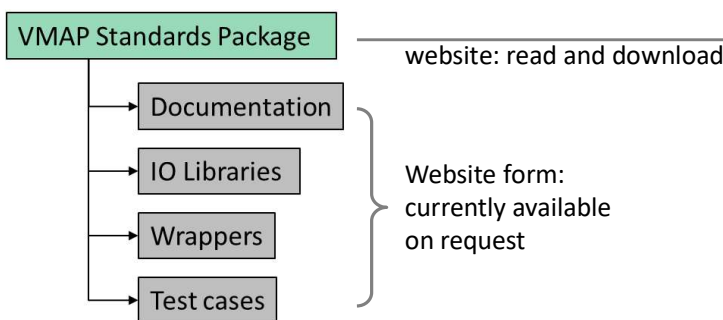
Core is the VMAP IO Library as described in VMAP Specification manual ...

VMAP CLA
Contributor Licence Agreement

To the extent that You hold a copyright interest in Your Contribution, You grant the VMAP SC a worldwide, non-exclusive, no-charge, royalty-free, directly and indirectly sub-licensable copyright license for the whole duration of such copyright protection, with the right to copy, publish, and distribute the Contributions in the Work, accompanying documents, publications, illustrations, designs and marketing materials, and to prepare derivative works that are based on or incorporate all or are part of the Contribution solely for the purpose of developing, promoting and distributing the Work.

You are not expected to provide support for Your contributions, except to the extent that You desire to provide support. You may provide support for free, for a fee, or not at all.

Definitions, **Grant of Copyright licence, Grant of Patent Licence, Representation, Authorship, Support Contributions, Authorized employees, Claims, Governance Agreement signature**
Schedule A: List of Past Contributions
Schedule B: Initial or Updated list of designated employees



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VMAP SC e.V. (eingetragener Verein)



- e.V. (eingetragener Verein) German association legal entity
 - Details
 - Name: VMAP Standards Community (VMAP SC) e.V.
 - Seat: D-85567 Grafing b. München, Germany
 - “Gemeinnützigkeit” – not for profit organisation
 - Statutes must clearly reflect not-for-profit status
 - **Controlled by**
 - **Statutes** (Vereinssatzung) must follow specific legal rules for associations and must be lodged at the official registration office (can only be changed via legal process)
 - **Complementary ByLaws** can be decided during assembly meeting and need not be lodged at the registration office (can be changed)



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- **1. The purpose of the association is the dissemination of the VMAP Standard and its further development, including the assurance of a uniform library standard.** This comprises the coordinated standardization and development of software technology and methods in the area of engineering and other data and information management and analysis within Computer Aided Engineering (CAE) processes.
- In particular, VMAP SC
 - will be responsible for the adaptation and extension of the VMAP specifications through VMAP technical working groups and decisions in the VMAP assembly
 - will evaluate and initiate actions, if and how VMAP Standard could be extended to further technological domains,
 - will maintain and extend the VMAP IO Software Libraries following the latest VMAP specifications,
 - will distribute VMAP specification documents and related software to any interested party on a royalty free base,
 - will provide additional engineering support to interested parties in adopting the VMAP standard to their own software solutions,
 - will organise public events and seminars to promote the VMAP Standard to the worldwide engineering community.
- **2. The association is dedicated to altruistic advancement of the general public. It does not primarily pursue its own economic objectives.** Funds of the association may only be used for purposes in accordance with the statutes. The members do not receive any allowances from the funds of the association. No person may be favoured by expenses that are not in line with the purpose of the association or by disproportionately high remuneration.

Formal VMAP SC Founder meeting

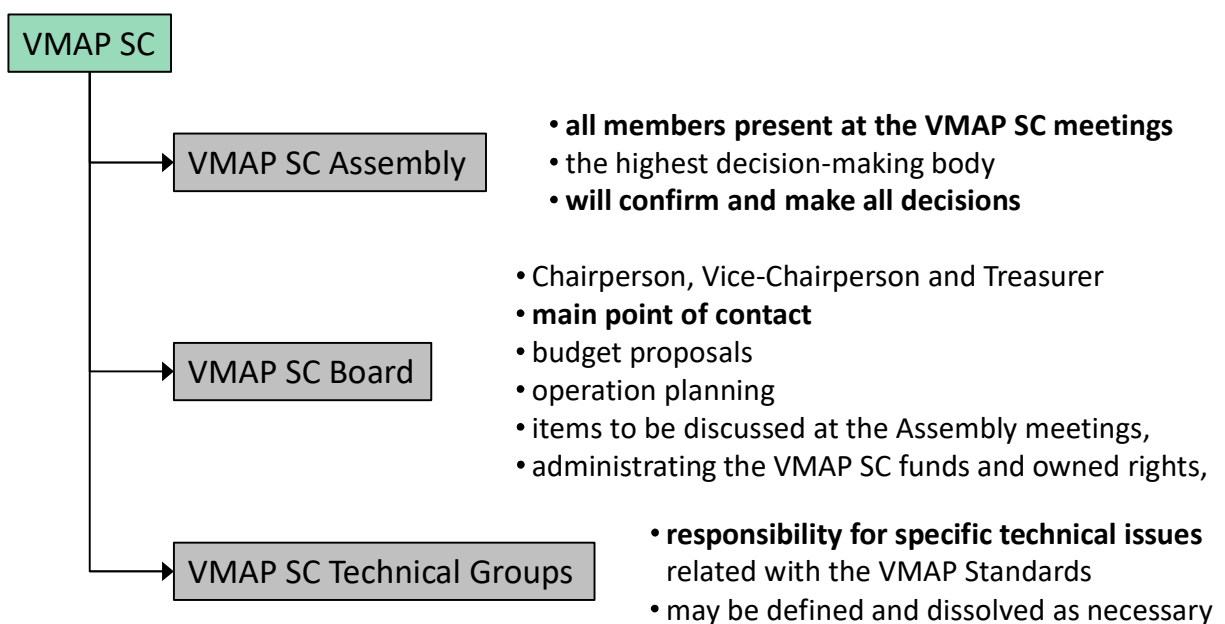
- Web meeting to formalise creation on **Tuesday 15 Dec 2020**
 - At least 7 founder members, any nationality, must attend
 - Proposed “Founder members” who will sign the initial creation
 - Fraunhofer SCAI, NAFEMS, Robert Bosch, Philips, 4a, BETA CAE, Reden, KIT, Dynamore, Hagen Stiftung, Convergent, Simcon (project members)
 - Transvalor, KeyToMetals, PART Engineering (3rd parties evaluating VMAP)
 - Participants must have a sufficient power of attorney to sign (online)
 - Formal votes on
 - Statutes/ByLaws
 - Board definition (Chairperson, vice-Chairperson, Treasurer)
 - Member fees
- Post meeting
 - Notary will complete registration process
 - Apply for tax exemption at local tax office

VMAP – The Material and Engineering Data Exchange Interface

- To be registered once VMAP SC e.V. has been created
 - EU, US definitely (check Canada)
 - JP and CH possibly



VMAP SC structure



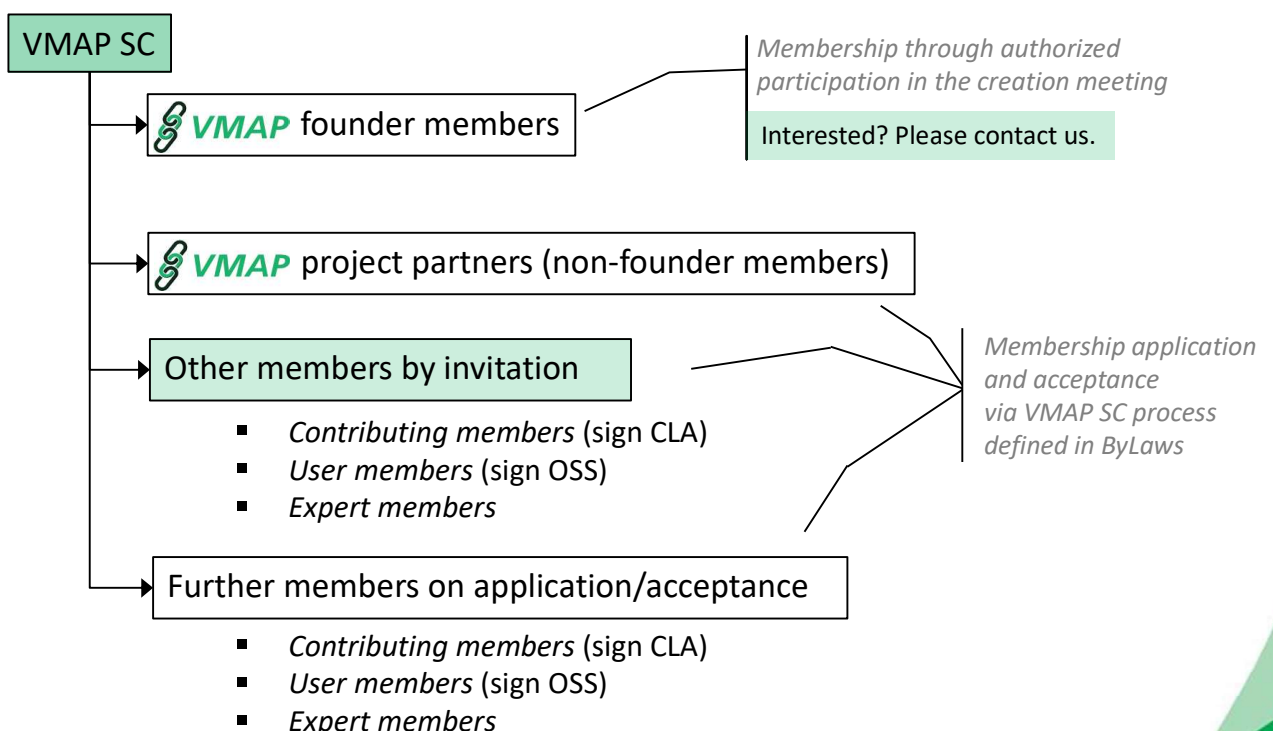
Timescale VMAP SC creation

18 March 2020	Agreed VMAP Standards distribution to 3rd parties	AGREED
31 March 2020	Confirm VMAP Package, Distribution tasks	DONE
April 2020	Distribute VMAP Package to initial users ·Transvalor ·Zemax, ·MTC ·Magmasoft , Lasso, ...	CONTINUING
31 May 2020	Decide IP ownership ·Partners need to sign MoU to enable VMAP-SC to licence	DONE
August 2020	Legal issues to create VMAP SC ·e.V. (German association) ·Shell legal entity (Partnership/JV) ·NAFEMS WG	DONE
September 2020	Agree: Statutes, ByLaws, Annual fee, 2021 budget Define legal process and Documents	PROGRESSING
October 2020	Partners sign MoU to VMAP SC End of project	PROGRESSING
December 2020	Formal VMAP-SC creation meeting	
January 2021	Other VMAP partners join VMAP SC Start collecting 2021 membership fees Invite new members into VMAP SC	
February 2021	First VMAP SC Assembly meeting	



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5. VMAP SC membership process



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- Application and Acceptance

- Application form will be available on VMAP SC website
- Process definition in ByLaws: Approval by Board plus Confirmation by Assembly

DRAFT

- Annual membership fee

- start for 2021 (Jan-Dec)
- to be agreed at Founder meeting
- to be defined in ByLaws
- could be changed at Assembly
- no payment, no vote

Proposal (01/10/2020)

VMAP SC annual membership fee	(DRAFT)	Oct.2020
Organization type	Size ⁽¹⁾	General
Individual ⁽²⁾		100 €
Company	1-9	300 €
	10-24	600 €
	25-49	900 €
	50-99	1.200 €
	100-249	2.500 €
	250 and above	5.000 €
Non-profit association		600 €
Research & Non-profit ⁽³⁾	per institute	600 €
Research & Non-profit ⁽⁴⁾	per Organisation	4.500 €

(1) Employees of entire group including affiliates and sub-entities.
 (2) Fee may be waived by the Assembly due to work done for the VMAP-SC.
 (3) Institute at a University, Department of a Non-profit Organisation, etc.
 (4) Whole university, Whole Non-profit Organisation.

DRAFT



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6. Possible VMAP Interoperability Forum

- Jean-Marc Crepel



VMAP

How to make an interoperability standard a tool for performance

JM Crepel - CITRAN

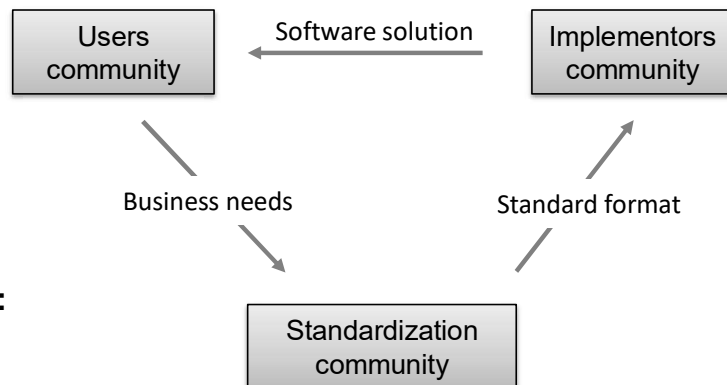
VMAP International Conference on CAE Interoperability 2020 organized by NAFEMS

12-14 May 2020, Cambridge, Germany



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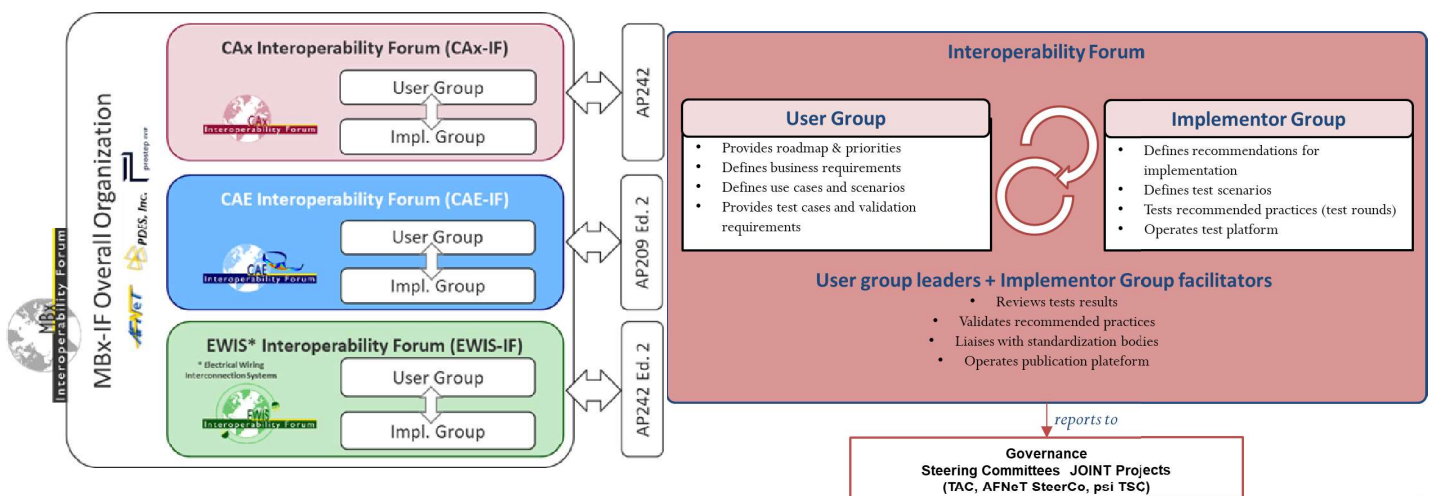


Some questions to be addressed :

- Are the users needs correctly considered/prioritized ?
- Is the standard format accurate ?
- Is the standard correctly implemented ?
- How far is the confidence in the software solution(s) ?
- How to anticipate future needs ?

*How to secure this process ?
How to speed up this process ?*

MBx Interoperability Forum organization applied to the STEP standard



The MBx-IF is a joint testing forum hosted by AFNeT, PDES, Inc. & prostep ivip associations

Goals of the MBx Interoperability Forum

www.cax-if.de / www.cax-if.org / www.cax-if.eu

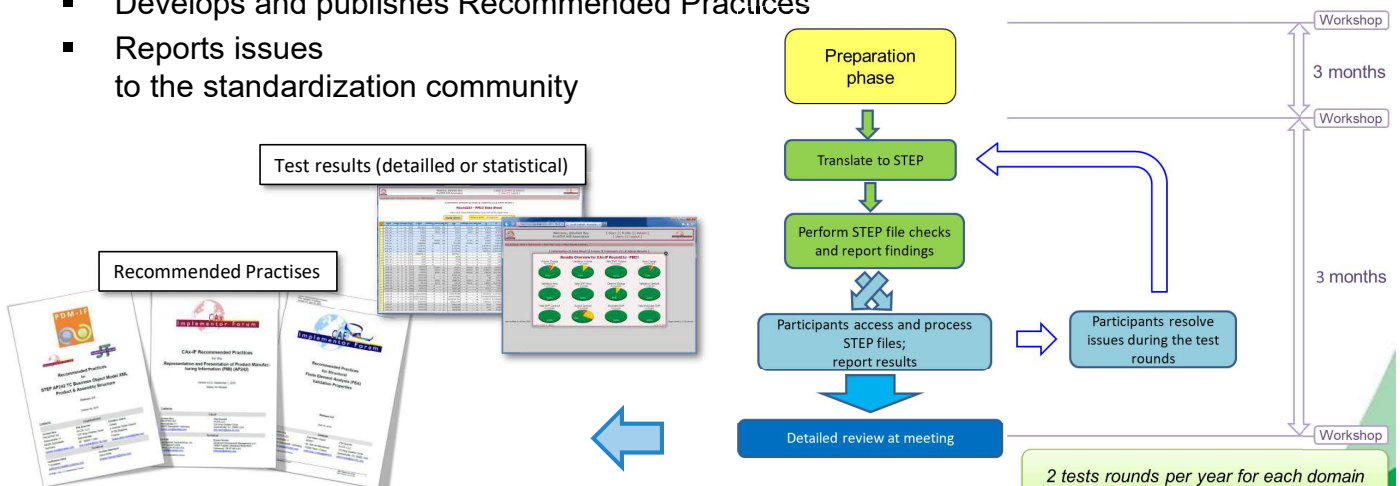
- Accelerate MBx translator development
- Ensure that users' requirements are satisfied
- Implement functionality for today's needs
- Identify functionality for tomorrow's needs
- Avoid roadblocks by establishing agreed upon approaches
- Increase user confidence by providing system and interoperability testing
- Ensure new functionality does not adversely impact existing implementations



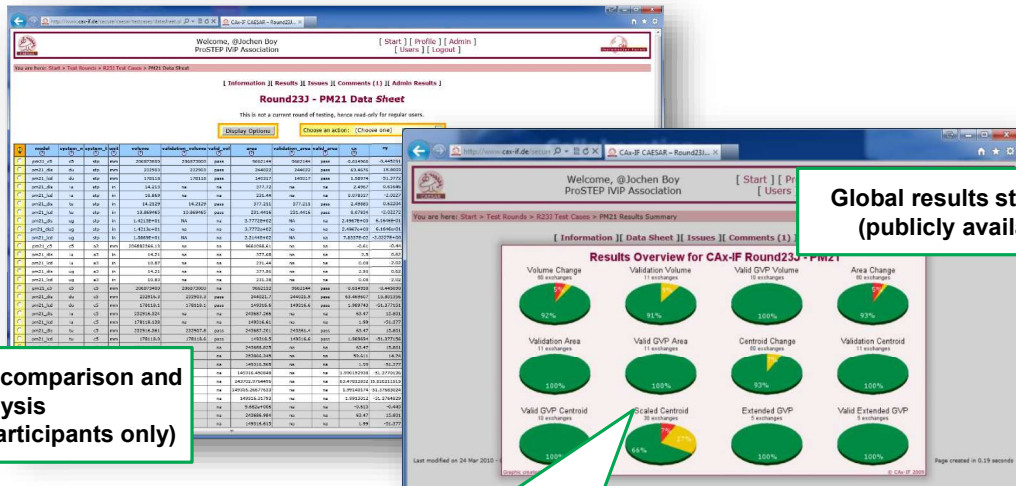
The MBx-IF is a joint testing forum hosted by AFNeT, PDES, Inc. & prostep ivip associations

What is the Implementor Group?

- Composed of CAX vendors as well as translation and validation software developers providing STEP translators in a dedicated domain (CAD, CAE, ...)
- Performs two test rounds per year for each domain
- Presents summary results to the user community
- Develops and publishes Recommended Practices
- Reports issues to the standardization community



Implementor group: a trusted test environment



Detailed results comparison and analysis (implementor participants only)

Global results statistics (publicly available)

ROG scale :
 - G: Successful exchange
 - O: Problem but may be usable
 - R: Exchange failed

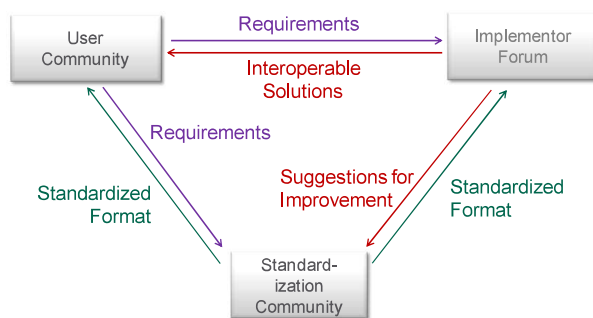
How Industry benefits from the MBx-IF

Member / Vendor Benefits

- Testing in a closed, trusted environment
- Early detection of errors leads to faster development cycles
- Beta-testing with other systems enhances product interoperability and robustness even before production release
- User requirements can be communicated, and common implementation approaches agreed.

User / Customer Benefits

- Stability of new capabilities
- Early feedback on requirements concerning feasibility, and timeframe for support in various tools



What about the VMAP-IF ?

7. Any Other Business

LinkedIn VMAP Group

www.vmap.eu.com



Contact/Download

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Gino Duffett (NAFEMS)
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8. Next steps / End

- Information regarding VMAP SC e.V.
Nov, Dec 2020
- Membership emailing
Dec 2020, Jan 2021
- VMAP SC Assembly meeting
Feb 2021

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