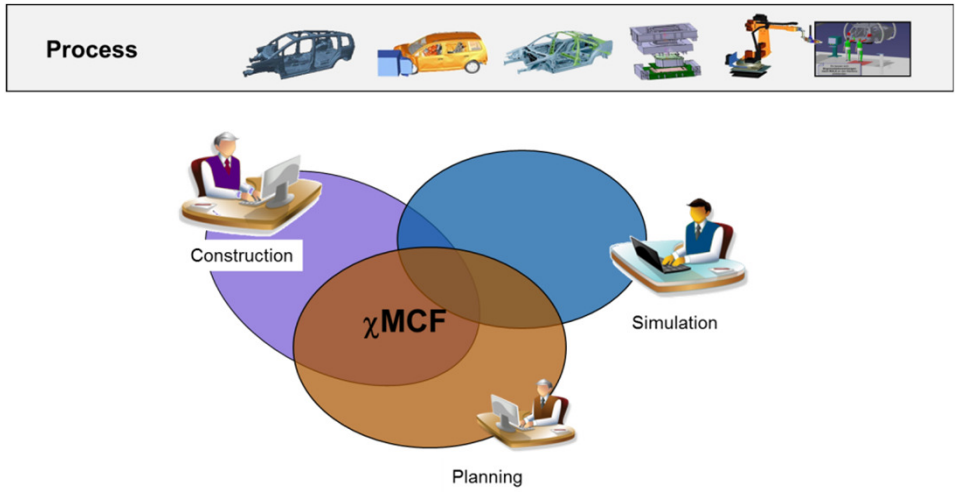
FAT Forschungsvereinigung Automobiltechnik

χMCF – Working Group Meeting

December 10, 2020

Video/Webex Conference



Agenda

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9:30 - Introduction, Welcome (MW)

9:45 - ISO Workstream – Status, Outlook (MW)

10:00 - LOTAR (CF)

10:15 - Updates on Implementation Status

- Beta CAE (NE)
- Altair (TG)
- Magna Steyr
- Siemens

11:15 - 3DExperience Platform / Catia – Gap Analysis & Opp's (LF)

11:45 - Industry Use Case Examples (JB)

- Volkswagen

12:00 - Break (Lunch)

12:30 - Future Development Actions (all)

- Step Welds / Weld Line Extensions
- Weld Nuts vs Clinch Nuts / Weld Bolts vs Clinched Bolts
- Part Catalogue
- Tolerances
- Variant Management

Introduction

High Level Status & Future Strategy / Next Steps

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- χMCF 3.1 published on VDA website
  - https://www.vda.de/en/services/Publications/%CF%87mcf.html
  - Recommended to enable better key words to improve ability to find material in internet searches
- Promotion to ISO Standard
- Further Progress in Software Implementation
- Supporting & Expanding Industry Use Cases
- Continuous Enhancements of the Standard
- Promotion of the Standard (in other Companies, Organizations, Industries)

ISO Workstream

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- TC184/SC4 finally recommended as „home“ for χMCF
  - TC184 = Technical Committee „Automation systems and integration“
  - SC4 = Sub-Committee „Industrial Data“
- χMCF presentations
  - to German representatives of TC184/SC4 (Jun 16) (Meinhold Groepper, VDMA; Max Ungerer, Prostep)
  - to Change Management Forum of the TC184/SC4 (Nov 2)
- TC184/SC4 Feedback
  - Generally positive & supportive; adherence to STEP (ISO10303 AP242) requested
- Required next step: Developing a New Work Item Proposal (NWIP)
  - Ad hoc working group suggested / required (4 volunteers from the Nov 2 meeting)
  - Need support of 5 country representatives (permanent ISO members)
  - Presentation in May `21 (tentatively 10.5.-14.5.)

LOTAR

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- Presentation material attached to minutes

Notes on Implementation Updates

Notes on Success, Needs, …

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- Beta CAE Systems
  - Presentation material attached to minutes
  - List of χMCF features presented that are supported
- Altair
  - Presentation material attached to minutes
- Siemens
  - Presentation material attached to minutes
- Magna Steyr
  - Presentation material attached to minutes
- HBK
  - Implementation currently on hold due to major re-org and Corona

Updates on Use Case from Industry

Notes on Success, Needs, …

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- Volkswagen
  - VW presented use case for model build process improvements (material attached to minutes)

Enhancements

Overview on Intended Enhancement Items

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- Step Welds
- Weld Extensions
- Tolerances
- Variant Management
- Distinction between weldnuts & clinch nuts / weldbolts & clinched bolts
- Part Catalogue
- Others ?

Enhancements

Step Welds

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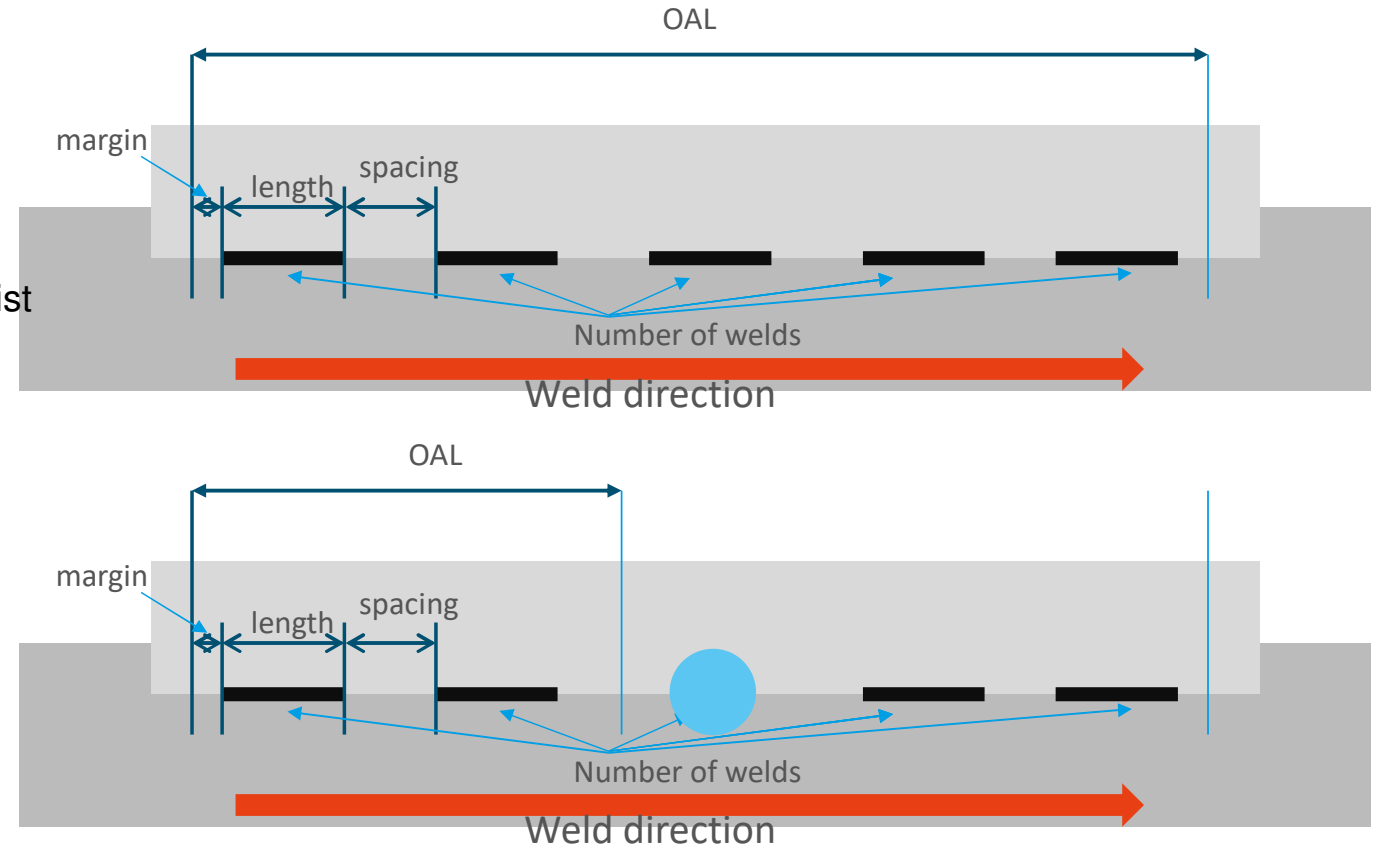
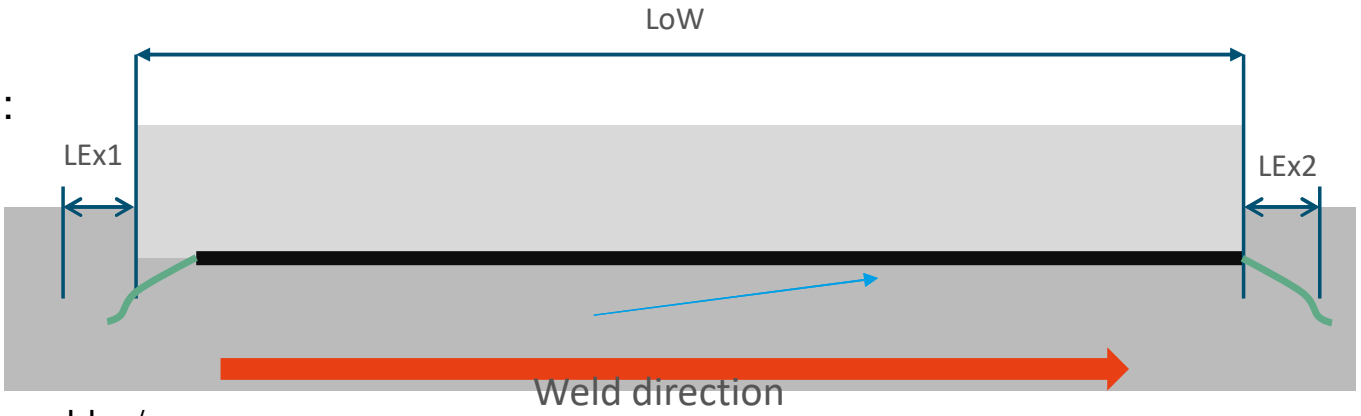
- Option 1:
  - Margin / length / spacing
  - (number of welds)
  - overall length given by loclist
  - Residuum= filled/empty
- Option 2:
  - OAL given by loclist
  - margin1, margin2
  - length / number of welds
  - (spacing)



Enhancements

Weld Extensions



- Standard runout geometries:
  - Straight
  - Curved by radius x
  - (Free form)
  - Straight w/ angle
  - Extensions connect to seam weld w/o gap
- Free form not yet considered by the tools
  - Loclist for weld extensions / runouts required
  - Extensions connect to seam weld w/o gap
  - Option: free form defined outside of specific connection
    (file scope definition of extension patterns; intrinsic catalogue; approach could be used for other elements like contacts as well)
- To be discussed investigated further (small group to develop a proposal)

Enhancements

Variant Management

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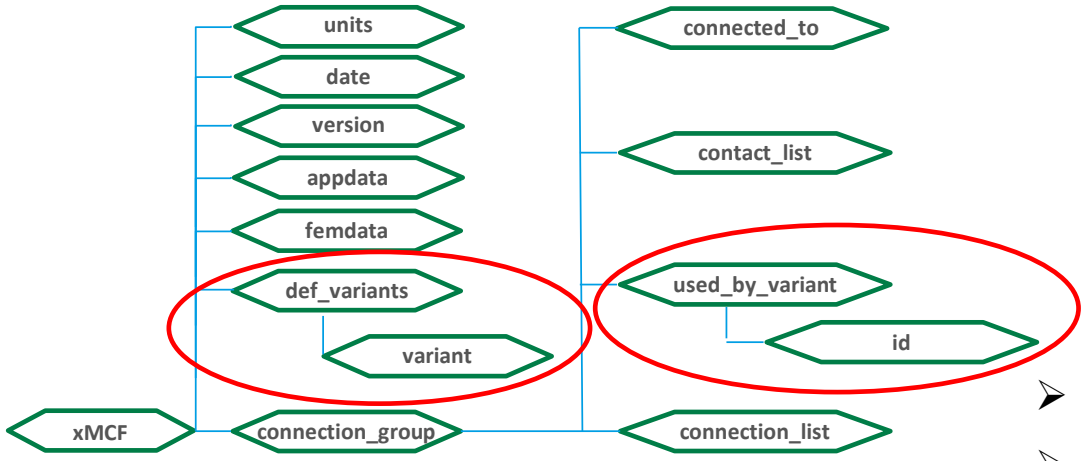
- First Question: Do we want to include this functionality in χMCF?
- Possible options for discussion:




```
<xMCF>
....
<def_variants>
   <variant id=1> sedan <variant/>
   <variant id=2> wagon <variant/>
<def_variants/>
....
<connection_group>
   <used_by_variant>
      <id> 1 <id/>
      <id> 2 <id/>
   <used_by_variant/>
<connection_group/>
```

- <def_variants> & <used_by_variant> optional
- No <used_by_variant> means *all variants*

Enhancements

Variant Management

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- First Question: Do we want to include this functionality in χMCF?
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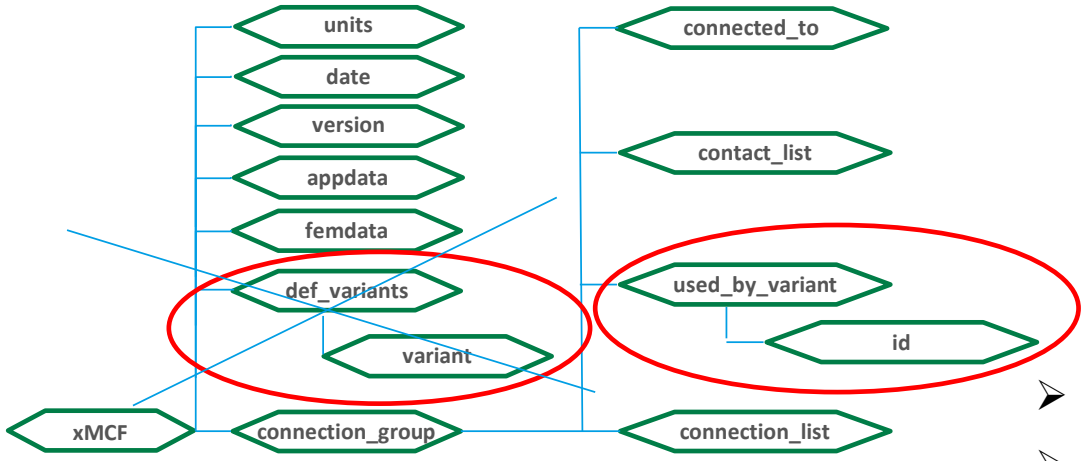


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Matthias Weinert
Ford – Body Engineering FoE

Enhancements

Welded Nuts vs Clinch Nuts / Welded Bolts vs Clinched Bolts

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- Nut (clinched vs welded)
  - Current approach: attributes „clipped_to“ and „fixed_to“ referring to the relevant joining partner/sheet id
  - Definition of clipped_to vs fixed_to needs clarification (is clipping for clinch nuts?)
  - If clipping does no refer to clinch nuts, then an approach to differentiate between weld nuts and clinch nuts
  - Link to V3.1: sec 7.5.5.
- Bolt (clinched vs welded)
  - Welded bolt vs clinched bolt needs clarification
  - Is clipping referring to clinch nuts? to be clarified and/or confirmed
  - Distinction against *Clinch Rivet Studs* required
  - Link to V3.1: sec 7.5.6.
- Explanatory pictures recommended for clinch nut & weldnuts as well as for bolts (welded vs clinched)

Enhancements

Tolerances

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- Are tolerances required to be defined on connection element level?
- Are tolerances defined in general specifications?

Enhancements

Part Catalogue

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- Do we need / want a catalogue?
- What is the (efficiency) gain if the file is written by a software tool?
- What should be part of the catalogue? Which items?
- What attributes / parameters can be generalized?
- Tags or attributes defined in the part catalogue to be seen as additive only, i.e. parameter in the cMCF file overrule catalogue definitions or add to them?
- Do we need even three levels of description?
  - Level 1 – by part_code automatically (general part/fastener specification)
  - Level 2 – by part_code or id in catalogue (adds to / overrules level 1)
  - Level 3 – in χMCF (adds to / overrules level 1 and 2)
- Potential example for discussion: Rivets

Enhancements

To be added to backlog

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- Any additional type of connection element to be defined?
- Any parameter missed either during software implementation (SW Vendors) or process implementation (Industry Customers)

Clarifications / Bug Fixes

Observations on potential ambiguities / errors

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- Open items:
  - Terms of Use
  - Process Codes American Society of Welding
  - Material used (Electrodes)
  - References to jt files or similar for a used fastener

Promotion of χMCF

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- Any opportunity for further promotion?

Next Meeting(s) / Other Support Needs

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- Full WG meeting
  - Proposal wk 20/2021 (17.5.-21.5.) >> 19.5; **20.5.**
- Support for potential ad hoc ISO Working Group?
  - CF, NE, …
- Support for further document enhancements (review, xsd-development, example files)
  - …

Participants

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Name	Company / Organization	Att.
Bruns, Juergen	Volkswagen	Yes
Dotter, Jan	FAT	Yes
Economidis, Nick	Beta CAE Systems	Yes
Eiler, Lars	Volkswagen-Osnabrück	Yes
Ells, Volker	GNS	No
Feuvrier, Luc	Dassault	Yes
Fox, Ulrich	Ford	Yes
Franke, Carsten	Prostep	Yes
Gaier, Christian	Magna Steyr	No
Guirguis, Timothy	Altair	Yes
Hack, Michael	Siemens	No
Himmelsbach, Nils	BMW	No
Huebsch, Wolfgang	Magna Steyr	Yes

Name	Company / Organization	Att.
Kalotai, Lorand	Ford	Yes
Kaps, Lothar	Volkswagen	Yes
Koenen, Daniel	Volkswagen-Osnabrück	No
Runcianu, Catalin	Siemens	Yes
Schilling, Robert	Ford	Yes
Schmidt, Halvar	BMW	Yes
Trahan, Simon	Dassault	No
Troendle, Karin	Volkswagen	Yes
Tryfonidis, Michael	Beta CAE Systems	No
Sauer, Michael	Dassault	Yes
Vervoort, Stephan	HBK	No
Weinert, Matthias	Ford	Yes
Gourgounis, Kosmas	Beta CAE Systems	Yes
Haas, Stephan	Magna ECS	Yes

Thank you!