

STEP AND JT IMPLEMENTATIONS AND USAGES AT CORETECHNOLOGIE

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About CORETECHNOLOGIE

- Franco-German group - privately own
- 25+ years of experience in CAD data interoperability
- Small group: ~ 80 employees worldwide,
- but wide coverage: offices in Europe, USA, Japan
- proprietary technology and 100% mastered - strong IP
- Large customer base in the fields of aero, auto, machine, energy, defense, and software edition

Our strategic positioning on standards

1. Our traditional strength: native formats

- Deep mastery of reading and writing native formats
- Native-to-native conversion → greater flexibility
- Potentially less conversion or model adaptation
- No limitations other than our own knowledge

2. Strong demand from the user community

- Long-lasting formats
- Greater interoperability without dedicated conversion

3. Benefits of standards

- Reusability: one file, multiple target systems
- Greater durability
- Legal guarantees
- Less knowledge required — the software recreates the information in the target system

Our objective: the "Digital Thread"

STEP AP242: Capabilities and Use Cases

3D Geometry	3D exact BREP representation	YES	Composite Design	Basic Composite (Ply Laminate Table)	YES
	3D tessellated geometry representation	YES		Rosette (Cartesian, guided by curve, etc.)	PARTIAL
	Polyhedral BREP	PLANNED		Ply Shape 3D exact shape (contour, cut pieces, core solid)	YES
	Presentation (color, layers, transparency, invisibility, etc.)	YES		Ply Shape 3D Tessellated Representation	YES
	Over-riding colors (assembly component instances)	YES		Composite Material	YES
	Alternative Representation for same Shape (e.g., B-Rep / Tessellated)	YES		Composite Validation Properties	YES
	Alternative Part Shapes (e.g., sheet metal before / after stamping)	NO	Kinematics	Mechanism (Low Order Pairs)	N.R.
	Supplemental Geometry (axes, lines, planes...)	YES		Mechanism (High-Order Pairs)	N.R.
	Tessellated Supplemental Geometry	YES		Motion	N.R.
	Geometric Validation Properties	YES		Kinematic Validation Properties	N.R.
3D Product & Mfg. Information (PMI) at Part Level	Graphic Presentation (Part Level)	YES	Properties	User Defined Attributes (UDA) on geometry level	YES
	Semantic Representation (Part Level)	YES		User Defined Attributes (UDA) on part level	YES
	PMI Presentation and Representation linked	YES		User Defined Attributes (UDA) on assembly level	YES
	Saved View (Part Level)	YES		Groups of UDA	NO
	Simple Section View	YES	Persistent IDs	UDA Validation Properties	YES
	Advanced Section View	NO		Part (Product)	YES
	PMI Presentation Placeholder	YES		Part Version	PARTIAL
	Hole Feature definition	NO		Part View (Product Definition)	YES
	Graphic PMI Validation Properties	YES		Assembly Component Instance	PLANNED
	Saved View Validation Properties	YES		Representation	NO
	Semantic PMI Validation Properties	YES		Topological Elements (shell, face, edge)	YES
	Graphic Presentation (Assembly Level)	YES		Supplemental Geometry	PLANNED
	Semantic Representation (Assembly Level)	N.R.		Semantic PMI Elements (dimensions, tolerances, datums, etc.)	YES
3D Product & Mfg. Information (PMI) at Assembly Level	PMI Presentation and Representation linked	N.R.		Semantic Hole Definitions	NO
	Saved View (Assembly Level)	PARTIAL	Manufacturing/Metrology	Properties (property definition and individual values)	PLANNED
	Simple Section View	YES		Saved Views	PLANNED
	Advanced Section View	NO		Bill of Operational Features	PLANNED
	PMI Presentation Placeholder	YES		Model Based Notes	n/a
	Graphic PMI Validation Properties	YES		Parametric Symbol Templates	NO
	Saved View Validation Properties	YES		Surface Texture	NO
	Semantic PMI Validation Properties	N.R.	STEP Compressed File	Semantic Threads	NO
	Single File with Assembly Structure and Geometry	YES		*.stpZ	YES
	Single File with Assembly Structure and references to CAD 3D files	YES		*.stpxZ	n/a
	Nested Assembly files with references to CAD 3D files	YES		*.stpA	NO
Assembly Structure	External Element References (EER)	PLANNED			
	Assembly Validation Properties	YES			

STEP AP242: Capabilities and Use Cases

Supported version: AP242 Ed1-4

Geometry	☆☆☆ > <i>Polyhedral BREP</i>	3D PMI at part Level	☆☆☆ > <i>Advanced Section View</i> > <i>Hole Feature definition</i>
Product structure	☆☆☆ > <i>External Element References</i>	3D PMI at assembly Level	☆
Properties	☆☆☆	Composite Design	☆☆☆
Persistent Ids	☆ > <i>Assembly Component Instance</i> > <i>Supplemental Geometry</i> > <i>Properties</i>	Manufacturing	> <i>Bill of Operational Features</i>

STEP AP242: Capabilities and Use Cases

- **Native interoperability:** native STEP interface in every CAD system, most often included in the base license, it is the most widespread simple exchange format
- **Data exchange with PMI:** AP242 is today's reference standard for exchanges including annotated 3D data (semantic PMI / GD&T) in aerospace and automotive
- **Long-term archiving (LOTAR):** STEP AP242 is the primary format recommended by the LOTAR initiative (EN 9300, driven by AIA and ASD-STAN) for the preservation of CAD models and their semantic PMI over 50+ years

STEP AP242: Capabilities and Use Cases

Trends:

- Digital Thread
- Simple exchange
- LTAR

JT: Capabilities and Use Cases

Supported version: AP242 Ed1-4

Geometry	☆☆☆	3D PMI at part Level	☆☆☆
Product structure	☆☆☆	3D PMI at assembly Level	☆☆
Properties	☆☆☆	Persistent Ids	☆

JT: Capabilities and Use Cases

- **High-performance visualization:** JT is an ISO international standard (ISO 14306-1) for 3D visualization and collaboration, compact and precise, used across the entire product development lifecycle
- **Free, near-complete viewer:** JT2Go is Siemens' industry-leading, no-charge 3D JT viewing tool, available as a comprehensive desktop application as well as iOS/Android mobile apps
- **Native Siemens integration:** JT is natively integrated across Siemens PLM products (NX, Teamcenter, etc.), making it the format of choice whenever one of the exchange partners uses a Siemens product

JT: Capabilities and Use Cases

Trends:

- Digital Thread
- Data exchange when one of the party is a siemens user
- Teamcenter users
- LTAR

AP242 XML: Capabilities and Use Cases

Product structure	☆☆☆	3D PMI at assembly Level	
Properties	☆☆☆	Kinematics	☆☆
Persistent Ids			

AP242 XML: Capabilities and Use Cases

- **Everyone agrees on it.** both JT and STEP users recognize AP242 XML as the right way forward... yet it is unfortunately not yet concretely used enough in real exchanges
- **A promising format.** we truly believe in its usefulness. It is just a question of time. Adoption may simply need more time to mature.
- **The real bottleneck.** a general availability deficit in market software: too few CAD/PLM tools actually support AP242 XML today

What's next?

- PID is the main topic
- Improve PMI support – surface finish, welding, assembly pmi



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Thank you for
your time,
your energy,
and your invaluable insights.