

PDM-IF



PDES, Inc.

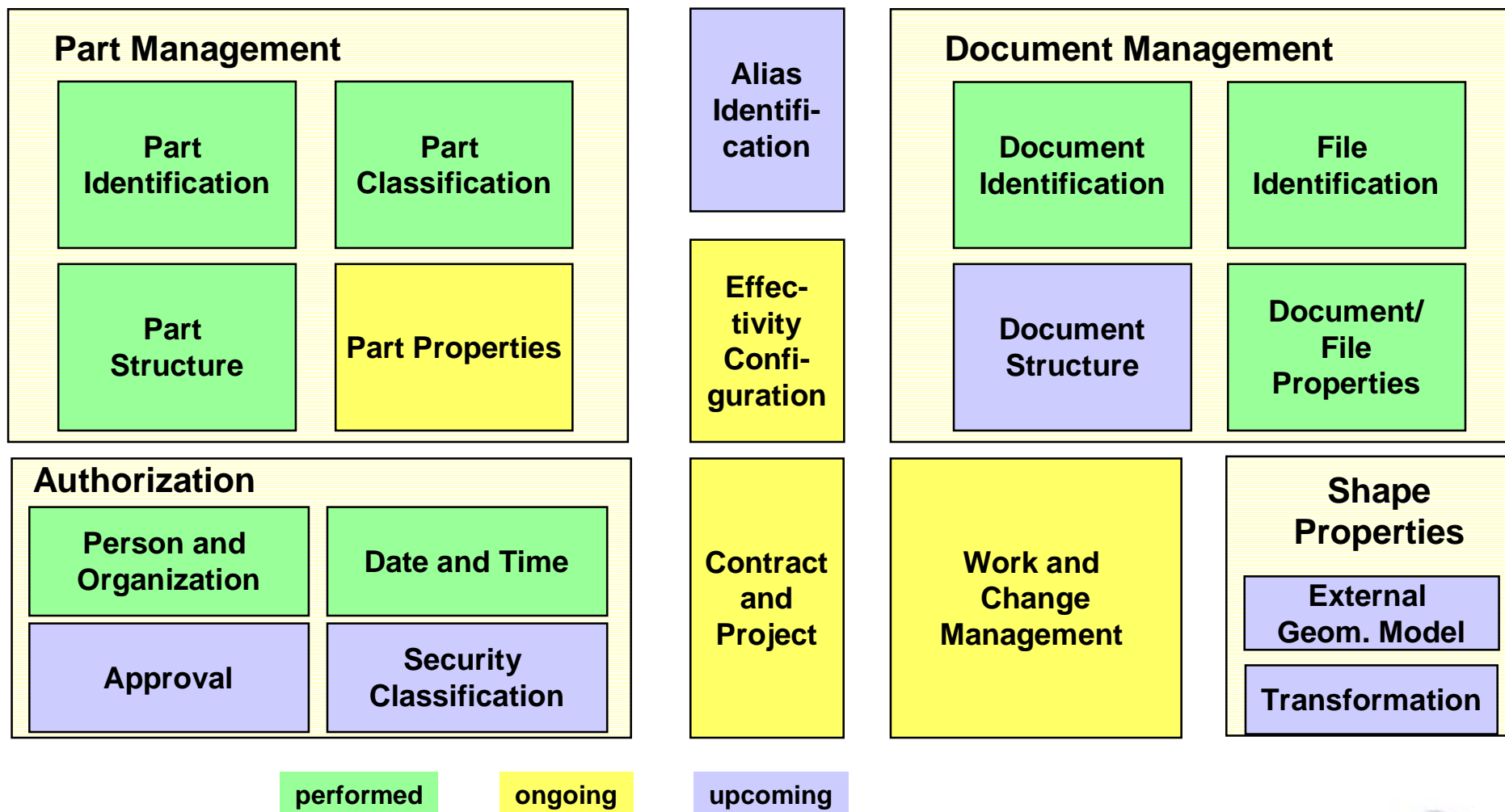


Larry McKee
June 28, 2000

Round 3J Scope (ended March 2000)

- Document and File Identification with Properties - DP
- Product Concept and Configuration Identification - CFG
- Project and Contract Identification - PC
- Product Structure and Configuration Effectivity - EFF
- Part Identification with related Work Request and associated Work Order - WM

Scope of the STEP PDM Schema and Test Campaigns (Status: April 2000)



- Dassault/ENOVIAv5
- DaimlerChrysler/debis - GIS V1100.8
- Eigner & Partner/CADIM/EDB V2.3
- ISS/InSync V2.7.5
- ProSTEP (PDM Editor V0.9)
- PTC/Windchill

Activity by participant (totals across all test cases)

participant counts Participant	pre-processing export			import post-processing								import of file exports		import by participant	
	syntax	structure	exports	bw	ds	db	ep	is	ps	pe	ww	total	percentage	total	percentage
w - BMW	7	10	1			1		1	1			3	37.5		
s - Dassault	0	9	2			1	1	2	1			5	31.3	2	9.1
b - Debis	0	2	3				1	3	1			5	20.8	6	27.3
p - Eigner & Partner	0	5	4			1		4	2			7	21.9	6	27.3
s - ISS														21	95.5
s - ProSTEP	3	2	5			2	2	5				9	22.5	7	31.8
e - PTC	1	1	1			1		1	1			3	37.5	1	4.5
w - Volkswagen	1	4	1												
synthetic test case	0	0	5		2		2	5	1	1		11	27.5	#N/A	#N/A
total	12	33	22		2	6	6	21	7	1		43	24.4	43	24.4
percentage	#N/A				9.1	27.3	27.3	95.5	31.8	4.5		43	28.4	43	32.6

Activity by test case (totals across all participants)

test case counts Test Case	pre-processing export			import post-processing								import	
	syntax	structure	values	bw	ds	db	ep	is	ps	pe	ww	total	percentage
lp1		8			1	5		7	5	1		19	29.7
fg1		4			1		3	4				8	25.0
c1		3					2	3				5	20.8
ff1		3						3				3	12.5
vm1		4				1	1	4	2			8	25.0
total		22			2	6	6	21	7	1		43	24.4
percentage		55.0			9.1	27.3	27.3	95.5	31.8	4.5		43	22.6

Round 3J Results

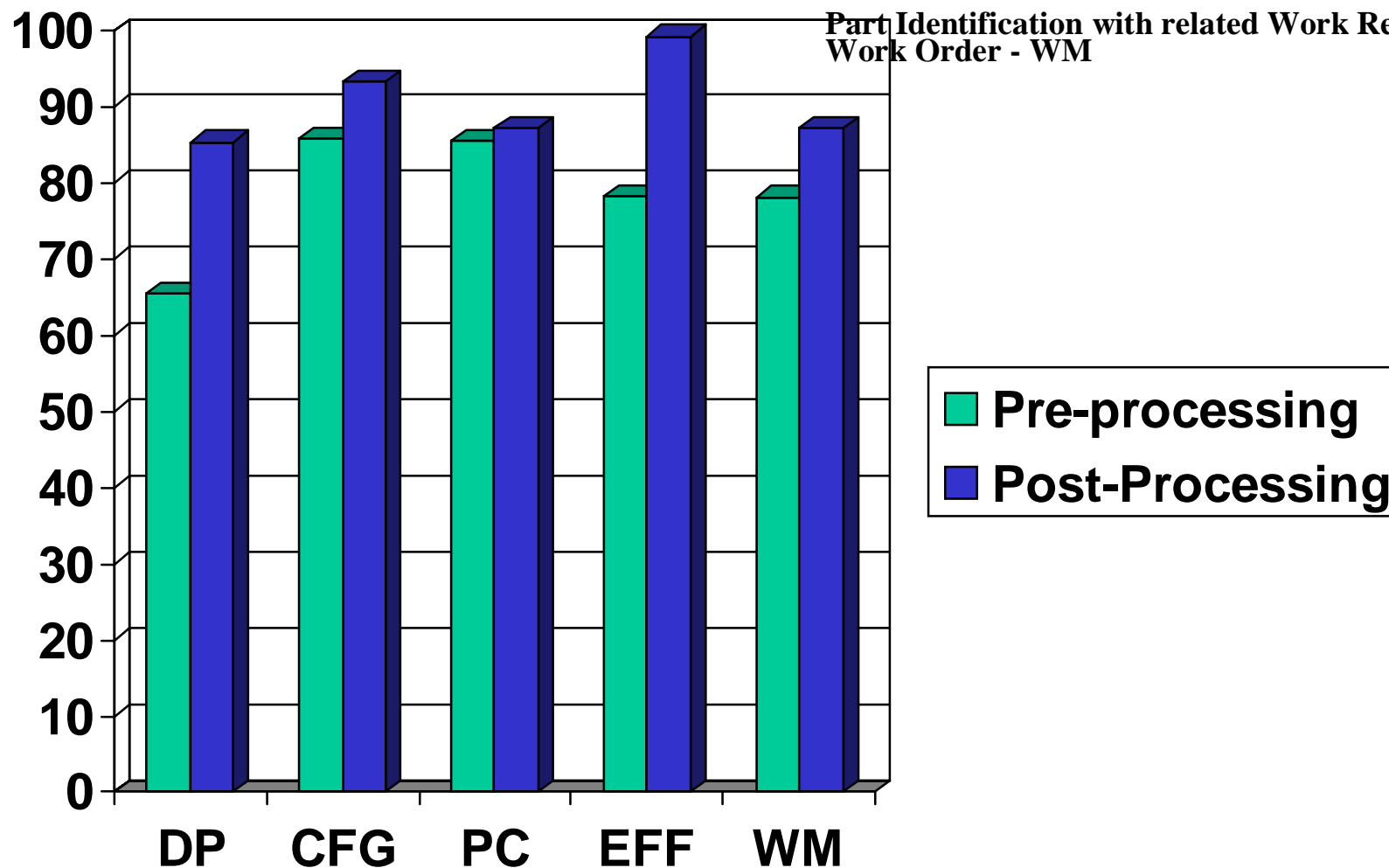
Document and File Identification with Properties - DP

Product Concept and Configuration Identification - CFG

Project and Contract Identification - PC

Product Structure and Configuration Effectivity - EFF

Part Identification with related Work Request and associated Work Order - WM



- Several preprocessors did not export some/all prescribed constructs
 - *No effectivity at all - only product structure exported*
 - *Configuration identification*
 - *Contract*
 - *Work request, work order*
- Value comparison analyzer doesn't penalize for missing constructs
 - *Lower score for mismatched attributes than for entirely missing objects*
- Document properties - several preprocessors exported file properties
 - *Document source property not prescribed but exported for files*
- Part view definition attributes typically not supported by participants
 - *Identification, description*

PDM-IF PDM Implementor Forum Contacts

Implementor	System	Status	Contact
BAE SYSTEMS	ENOVIApm	Prototype	Dr. Rob Bodington
BMW	PRISMA	Prototype	Angelika Tischer
Contact Software	CIMDatabase	Prototype	Dr. Roland Drewinski
Daimler Chrysler/debis	GIS	Released	Helmut Kockelke
DASA M	Metaphase	Prototype	Joseph Vilsmeier
debis Systemhaus	CATIA	Prototype	Hans-Joachim Hospach
Eigner & Partner	CADIM/EDB	Commercial	Martin Boehm
ENOVIA/Dassault Systemes/IBM	VPM	Prototype	Olivier Clop
ISS	InSync	Prototype	Chuck Riehm
Matrix One	Matrix	Planned	Klaus Bruchhagen
Metaphase/SDRC	Metaphase	Commercial	Duane Silkworth
NASA	NED	Prototype	Steve Waterbury
ProSTEP	PDM Editor	Prototype	Dr. Mario Leber
PTC	Windchill	Prototype	Dr. Erik Rieger
Raytheon	Sherpa	Prototype	Ken Buchanan
SAP	R3 PLM	Prototype	Bernhard Iselborn
UG Solutions	iMAN	Prototype	Mitch Silverman
VW	KVS	Prototype	Dr. Hubert Sieverding

PDM-IF **Scope of the Test Campaigns 2000**

- **3rd PDM Test Campaign (ended March 2000)**
 - Document properties
 - Engineering change and work management incl. project and contract
 - Effectivity and configuration
- **Common Test Campaign PDM - CAD (4th Round -- ends July 2000)**
 - Geometric model support by PDM processors
 - Product structure with external geometric reference by CAD processors
 - Geometrical relationships also with transformation
 - Shape aspect support
 - Concepts for alias data handling
- **5th Test Campaign (ends November 2000)**
 - Additional part properties (e.g. material, general)
 - Several item structure relationships (e.g. make_from, alternate, substitute)
 - Security classification
 - Robust testing

PDM-IF Implementation of STEP PDM Schema 1.1

(Status: April 2000)

Functional Sections	Test Campaigns				
	Sept. '99	Dec. '99	March '00	July '00	Nov. '00
Part Identification	✓				
Part Classification		✓			
Part Properties		S			
Part Structure and Relationships		✓			
Shape Properties				✓	
Document Identification			✓		
Document Classification					?
Document Properties			✓		
Document Structure and Relationships				✓	
External Files	✓				
Document and File Association to Product Data	✓				
Alias Identification				✓	
Authorization	✓				
Configuration and Effectivity Information			S		
Engineering Change and Work Management			✓		

S = initial

✓ = most constructs



















completing

? = not decided

- **March 29/30 - PDM-IF, USA**
 - Analysis of Test Campaign 3
 - Definition of Test Campaign 4
- **May 5 - Complete test suite available**
- **June 18 - Pre-processing complete**
- **July 9 - Post-processing complete**
- **July 26/27 - PDM-IF, Germany**
 - Analysis of Test Campaign 4
 - Definition of Test Campaign 5
- **August 27 - Complete test suite available**
- **October 1 - Pre-processing complete**
- **October 29 - Post-processing complete**
- **November 16/17 - PDM-IF, Germany**

Back-up Slides

Summary of the Results of the PDM-IF Test Campaigns (Status: April 1st, 2000)

System \ Functionality	Product identification	Date and time	Person and organization	Document identification	Document assignment
BMW PRISMA	 				
Dassault Systems ENOVIAvp	 				
DaimlerChrysler/debis GIS	 				
Eigner+Partner CADIM/EDB	 				
ProSTEP PDM Editor	 				
SAP R3	 				
STAMP	 				
Unigraphics Solutions iMAN	 				
Volkswagen KVS	 				

Key:

Support (Export)

Interoperability



high (81-100%)



medium (51-80%)



low (0-50%)

— no



high (81-100%)



medium (51-80%)



low (0-50%)

— not tested

User Scenarios Supported by a PDM Backbone (Excerpt Based on STEP PDM Schema 1.1)

Organizational data of documents and CAD models
(identification, versioning, authorization, properties etc.)

Organizational data of parts and products
(identification, versioning, authorization, properties etc.)

Relationships between internal and customer's / supplier's view on parts and products, documents and CAD models

Product structure for bill-of-material and relationship to CAD assemblies

Work flow triggers and work management data
(information about work request, work order, project etc.)

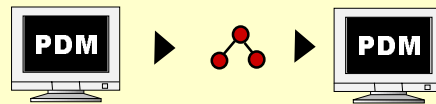
CAD assembly structures including transformations to support Digital Mock Up (DMU) processes

Key Scenarios for the Exchange of Product Geometry and Structures

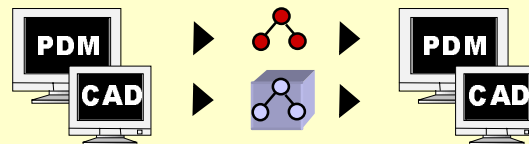
1. CAD -> CAD



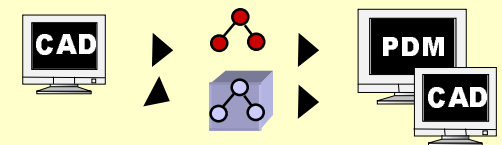
2. PDM -> PDM



3. PDM/CAD -> PDM/CAD



4. CAD -> PDM/CAD

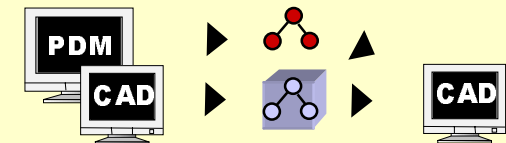


- main structure visible in the PDM system
- geometry relevant sub-structure visible in the CAD system

4.a Special case: no „PDM file“

- interactive input of meta data of „document“ in PDM system
- structures only visible in CAD system (without splitting)

5. PDM/CAD -> CAD



- main structure will be lost in CAD system
- geometry relevant structure visible in the CAD system

5.a Special case: no „CAD file“

- only a template including meta data for CAD
- usually no structures



Geometry file(s)



CAD relevant structures



PDM relevant structures and document meta data
optional including CAD structure

PDM-IF Major CAx / PDM Integration Scenarios

Case	Sender	Receiver	Scenario	Possible Bottlenecks
3	CAD/PDM	CAD/PDM	Packages of PDM and CAD files are exchanged	Agreement on details of structuring
4	CAD	CAD/PDM	CAD sends PDM file and referenced CAD files	Consistency between meta data in PDM and CAD files
4a	CAD	CAD/PDM	CAD sends integrated file; PDM manages single part	Correct meta data for managing the complete CAD model
5	CAD/PDM	CAD	CAD/PDM sends package of PDM and CAD files	CAD has to store relevant meta data persistently
5a	PDM	CAD	PDM only sends „CAx meta data template“	CAD has to create a new CAD model (incl. Case 5)

PDM-IF Product Structure vs. Geometry Structure

Reasons for structuring CAD models :

- ❶ Model splitting:
 - Size is too large > 5 MB
 - Different modelling methods (e.g. brep, wireframe, csg...)
- ❷ A (specific) assembly structure
- ❸ Necessity of specific checks (e.g. model space defined for installation investigation)
- ❹ Differences between external and internal structure regarding the supplier
e.g. starter from Bosch -> Request for documentation (overall model) as opposed to supplier documentation (a number of single models)
- ❺ Differences between external and internal structure regarding the customer
- ❻ Additional structuring of CAD partial models (one part, but several models)

Key result: The model structure may only be the same as the product structure in case ❷

Company	System	Status	Company	System	Status
BMW	Prisma	In pilots used	NASA	NED	Prototype
Contact Software	CIM Database	Prototype tested	PTC	Windchill	Prototype tested
Daimler Chrysler	GIS	Released	Raytheon	Sherpa	Protoypte tested
Debis Systemhaus	CATIA	Prototype	SAP	R3 PLM	Prototype tested
Eigner + Partner	CADIM /EDB	Commercially available	SDRC / Metaphase	Metaphase	Commercially available
Enovia/ Dassault/IBM	ENOVIAvpm	Prototype tested	Unigraphics Solutions	IMAN	Prototype tested
Eurofighter	Metaphase Enovia/pm	In pilots used	VW	KVS	In pilots used
ISS	Insync	In pilots used	ProSTEP	PDM Editor*	In pilots used
Matrix One	Matrix	Planned			



Commercial PDM Systems

* PDM STEP file viewer/editor