

PLM Services Standardization - A Leap forward in Product Data Communication

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1. PROSTEP AG and ProSTEP iViP Overview

2. OMG Standard PLM Services

3. Implementation of the PLM Services

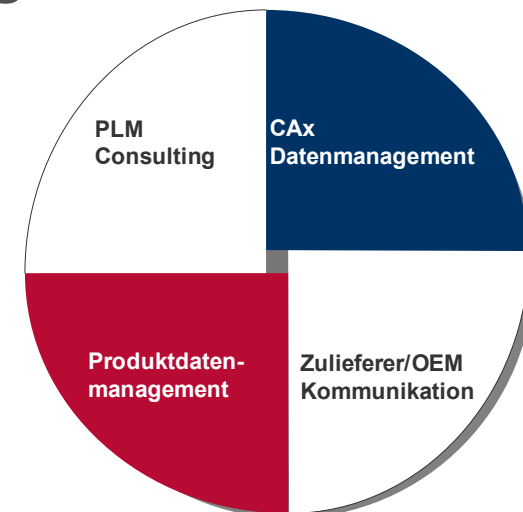
1.

PROSTEP AG Overview

We are...

- a product-independent service provider with a complete range of services in the field of Product Data Integration for manufacturers and suppliers.
- A vendor of complete solutions in the product data exchange sector.

in the business areas ...



- 1993 founding of ProSTEP Produktdatentechnologie GmbH
- Company based in Darmstadt
- Offices in Berlin, Hanover, Munich & Stuttgart
- 2001 change of corporate form (PROSTEP AG)
- Currently 180 employees
- Sales in fiscal 2003: € 15,5 Mio.
- Stockholders:

BOSCH

Continental®
TEVES

DAIMLERCHRYSLER

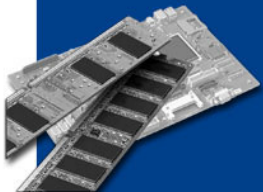
DELPHI

SIEMENS

OPEL

VOLKSWAGEN AG

ProSTEP
iViP



PROSTEP Group

PLM-Consulting

CA-Technologies

PDM-Integration

Supplier Engineering-Communication

Software Development

mySAP/PLM Consulting

PROSTEP
ITS

AeroSpace
Solutions

PROSTEP GIDA
integrate the future

Standard Software
Development

ILC
PROSTEP
The mySAP/PLM
Experts

ProSTEP Association



Responsible for:

- Standardization
- Organization and Implementation
- Worldwide Cooperation Management (VDA, PDES,...)

www.prostep.org

PROSTEP AG



Responsible for:

- Market penetration
- Product development
- Service solutions

www.prostep.com

ProSTEP Association Members worldwide

Industry (Users)

IT Companies (System Vendors)

Universities, Associations

A. AgratiSpA
 ABB Group Services Center GmbH
 Adam OPEL AG
 ADtranz Deutschland
 Alfmeier Präzision AG
 Alias Wavefront Inc.
 Airbus Deutschland GmbH
 Audi AG
 Autodesk GmbH
 AUTOLIV GmbH
 AVL-List GmbH
 Behr GmbH & Co.
 Bentley Systems Europe B. V.
 Bertrandt AG
 BMW Group
 Branson Ultraschall
 Brose Fahrzeugteile GmbH & Co. KG
 Bulheller Consulting Inc.
 CADDORM Engineering GmbH
 Cadform- MSX Engineering GmbH
 Calsonic Technology Centre
 CEFE, FH Augsburg
 CENIT AG Systemhaus
 CERN
 CoCreate Software GmbH
 Computing Suppliers Federation (csf)
 Conti TEMIC microelectronic GmbH
 CONTACT Software GmbH
 CONTINENTAL AG
 Continental Teves AG & Co. oHG
 CSC PLOENZKE AG
 DaimlerChrysler AG
 DaimlerChrysler Aerospace AG
 Dassault Systèmes
 Deere & Company
 DELPHI Automotive Systems GmbH
 Denso Automotive Deutschland GmbH
 Dr. Ing. h.c.F. Porsche AG
 Dunlop GmbH
 Eaton Controls GmbH & Co. KG
 EDAG AG
 Edscha AG
 EIGNER+PARTNER AG
 EPLAN Software & Service GmbH & Co. KG
 EPM Technology
 Faculty of Mechanical Engineering
 Fahrzeugtechnik Ebern (FTE automotive)
 FernUniversität Hagen
 FEV Motorentechnik GmbH & Co. KG

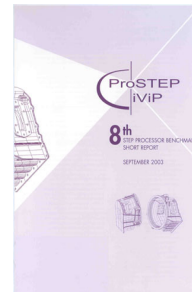
FhG IGD
 FhG IAO
 FhG IPK
 Filterwerk Mann + Hummel GmbH
 fischer automotive systems GmbH
 Ford-Werke AG
 Forschungszentrum Karlsruhe
 Freudenberg Dichtungs- und Schwingungstechnik
 KG
 Friedr. Krupp AG
 FSV e.V.
 FUBA Automotive GmbH
 gedas Deutschland GmbH
 Gerhard-Mercator-Universität, GH-Duisburg
 GETRAG Getriebe- und Zahnradfabrik
 Hermann Hagenmeyer GmbH & Cie
 Geometric Software Solutions, Ltd.
 GPT Gesellschaft für Produktionstechnik
 Dortmund mbH
 HAITEC GmbH
 Hella KG Hueck & Co.
 Hengst Filterwerke GmbH & Co. KG
 Henniges GmbH & Co. KG
 Hochschule Mittweida (FH)
 Holzindustrie Bruchsal GmbH
 Hüller Hille GmbH
 Hülsbeck & Fürst GmbH & Co. KG
 IAV GmbH
 IBB Informationssysteme, Beratungs- und
 Betriebsgesellschaft mbH
 IBM Deutschland GmbH
 ICM Technologies GmbH
 INA Werk Schaeffler oHG
 Inalfa Roof Systems
 Inst. f. Verkadstetknisk Forskning (IVF)
 invenio Engineering Services GmbH
 IRP e.V.
 ISE Innomotive Systems Europe GmbH
 ISE-Industries GmbH Werk Duisburg
 Integral Accumulator KG
 Isringhausen GmbH & Co. KG
 JAMA
 Japan Auto Parts Industries Association
 J. Eberspächer GmbH & Co.
 Johann A. Krause Maschinenfabrik GmbH
 Johnson Controls GmbH
 KEIPER GmbH + Co

KET Karosserie Entwicklung Thurner
 Kiekert AG
 3K-Warner Turbo Systems GmbH
 KNORR-BREMSE GmbH
 KTH, Woxen Centre
 KUKA Schweissanlagen GmbH
 KUKA Werkzeugbau GmbH
 Küster Holding GmbH
 Leopold Kostal GmbH & Co. KG
 Liebherr-Hydraulikbagger GmbH
 Lisa Dräxlmaier GmbH
 LKSoftWare GmbH
 Lucas Automotive GmbH
 Lunke & Sohn AG
 MAN AG
 MAN B&W Diesel A/S
 MAN Nutzfahrzeuge AG
 MAN Roland Druckmaschinen AG
 MAN Turbomaschinen AG GHH Borsig
 Matra Datavision
 Matrix One GmbH
 Meta Motoren- u. Energie-Technik GmbH
 Modine Europe GmbH
 MTU Friedrichshafen GmbH
 MTU München GmbH
 Mündener Gummiwerk GmbH
 Nexolab GmbH
 Nihon Unisys, Ltd.
 Nissan European Technology Centre Ltd.
 Nord Micro AG
 OVE Arup & Partners

PTC GmbH
 PDTec GmbH
 PlanetCAD
 TAKATA-PETRI AG
 PGAM Industrial Engineering GmbH
 Phoenix AG
 Pierburg AG
 Politechniki Wroclawskiej
 Porsche Engineering Services GmbH
 Preh-Werke GmbH & Co. KG
 ProSTEP GmbH
 RECTICEL BELGIUM
 Rheinmetall Informationssysteme GmbH
 RLE International
 Robert Bosch GmbH
 Rücker GmbH
 SAAB Automobile AB
 SAI Automotive SAL GmbH
 SAP AG
 Scania AB
 SDRC Software & Service GmbH
 Seeber GmbH
 SAINT-GOBAIN SEKURIT GmbH & Co. KG
 Siemens AG
 SMS Schloemann-Siemag AG
 Softlab GmbH
 Steyr-Daimler-Puch Fahrzeugtechnik
 AG & Co. KG
 SupplyOn AG
 Tata Engineering & Locomotive Co. Ltd.

Techno-Chemie Kessler & Co. GmbH
 Tecnomatix Automatisierungssysteme GmbH
 TECOPLAN INFORMATIK GmbH
 Theorem Solutions Ltd.
 Thyssen Industrie AG Maschinenbau
 Thyssen Umformtechnik + Guss GmbH
 TNO Bouw
 Tower Automotive GmbH & Co. KG
 TRW Automotive Safety Systems GmbH & Co. KG
 TRW Fahrwerksysteme GmbH u. Co. KG
 TRW Occupant Restraint Systems GmbH
 T- Systems
 TU Braunschweig - Institut für Regelungs-
 und Automatisierungstechnik
 TU Chemnitz (IWP)
 TU Clausthal - Inst. f. Maschinenwesen
 TU Darmstadt - DIK
 TU München - IWB
 TU München - LS für Informationstechnik im
 Maschinenwesen (itm)
 TU München - LS für Maschinenelemente
 Unigraphics Solutions GmbH
 Uni Jaume I - Dept. de Technologia
 Uni Hannover - (IFW)
 Uni Kaiserslautern - RKK
 Uni Karlsruhe - RPK
 Uni Karlsruhe - WBK
 Uni Metodista de Piracicaba
 Uni Paderborn - Rechnerinteg. Produktion
 University of Cranfield - The CIM Institute
 VA TECH Transport- und Montagesysteme GmbH
 VDMA e.V.
 VDO Car Communication Germany GmbH
 Verband der Automobilindustrie e.V.
 Visteon Deutschland GmbH
 VOLKSWAGEN AG
 Volkswagen Bordnetze GmbH
 VOLVO Information Technology AB
 WABCO Fahrzeugbremsen
 Webasto Informationssysteme GmbH
 Wilhelm Karmann GmbH
 Witte-Velbert GmbH & Co KG
 Witzemann GmbH
 WOCO F. J. Wolf & Co
 WTCM
 WZL der RWTH Aachen
 Zahnradfabrik Passau GmbH
 Zeuna Stärker GmbH & Co. KG
 ZF Friedrichshafen AG
 Zuken GmbH

Benchmarks



Personal Benefits



Public Relations



Our Services



Technical Working Program

Standardization



Implementor Forums



Project Groups



Protection of investment through continuous optimization and enhancement of standards

- Maintenance

Scope: AP214, AP212, Part28, ISO 10303

Participants: EPM Technology, PDTec, T-Systems, Scania, TU Darmstadt, UNIMEP

- Extended Product Data Integration (XPDI)

Scope: PDTnet/ISO10303-based online collaboration

Achievements:

Specification of OMG WEB services standards -

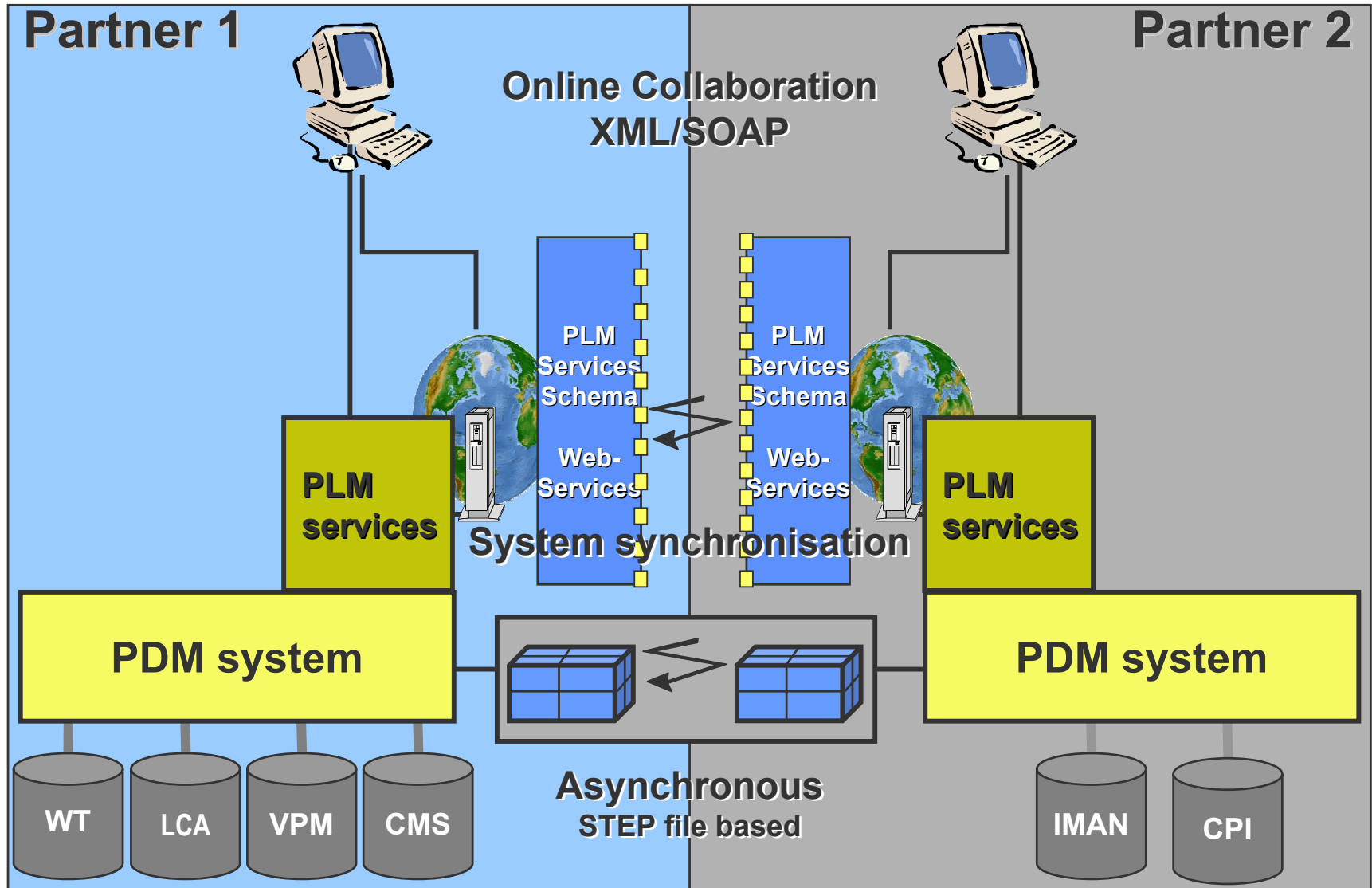
Product Lifecycle Management Services, Version 1.1

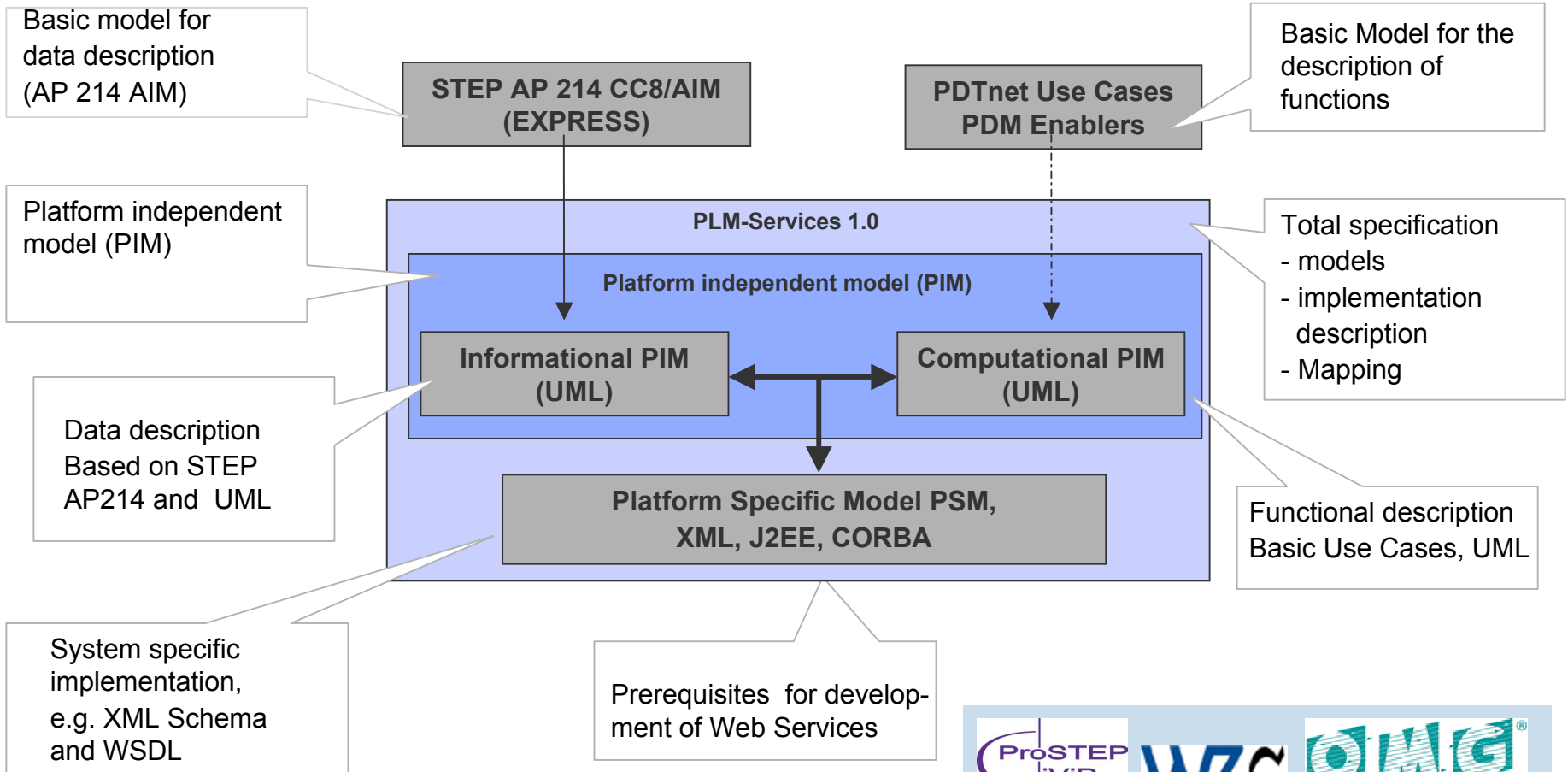
Participants: BMW, Bosch, ContiTemic, DaimlerChrysler, Keiper, PartMaster, PDTec, PROSTEP AG, Scania, T-Systems, Volkswagen

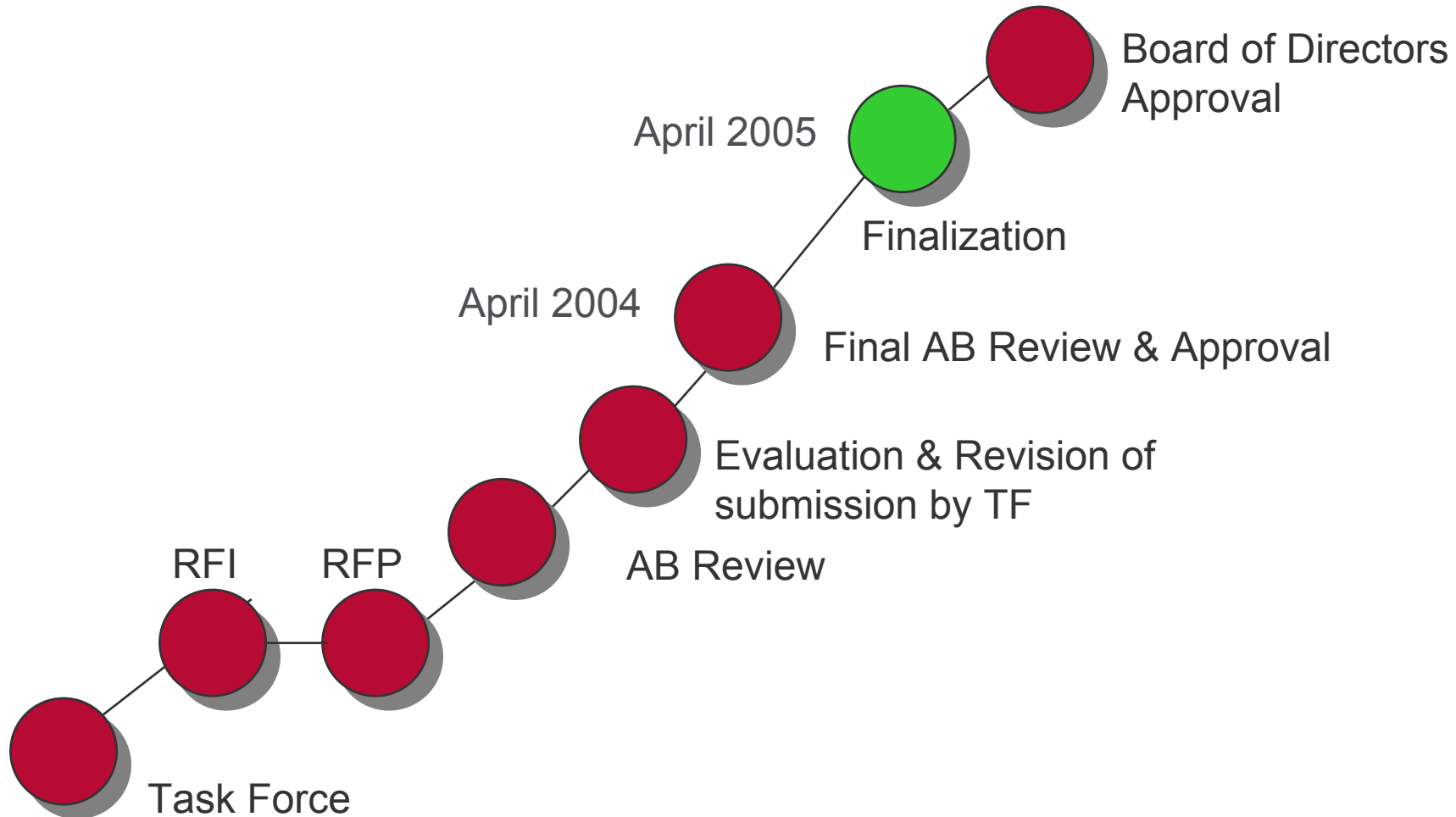
2.

OMG Standard PLM Services

- Define a Platform Independent Reference Model for Product Lifecycle Services
- Extend and revise the PDM Enablers as a MDA specification
- Linking that PIM with the STEP Information Model
- Supporting compatible implementations on multiple platforms
- Standardizing a WebServices binding based on the PDTnet Schema







- Download on <http://www.prostep.org/en/projektgruppen/pdm-if/plmservices.htm>

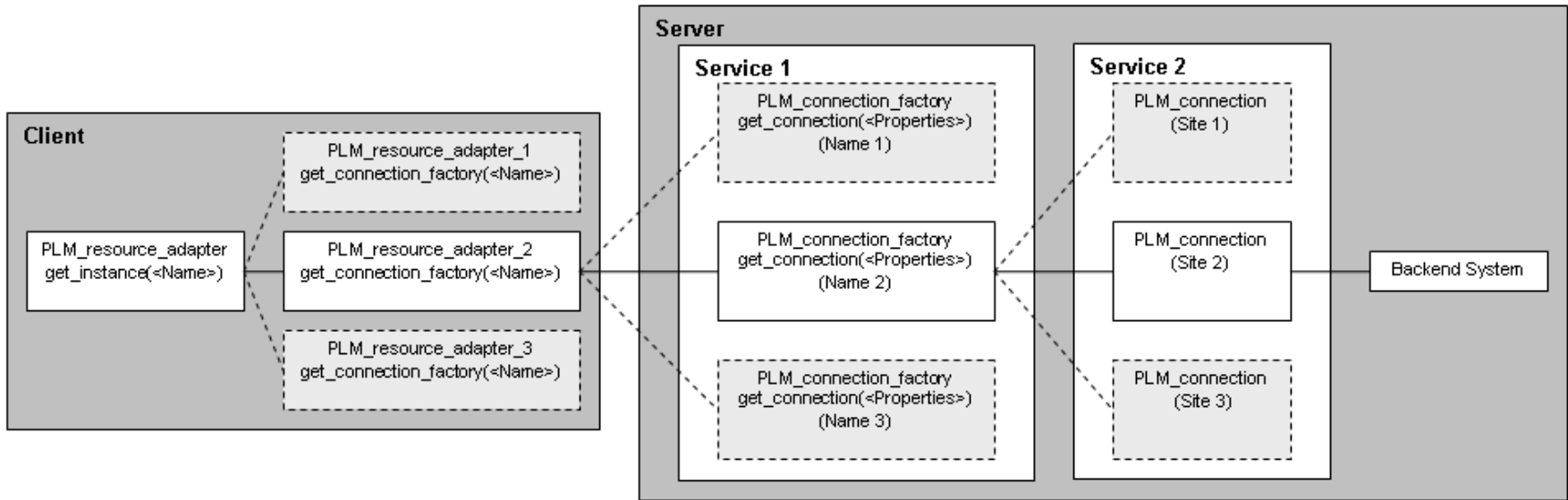
- Download of PLM Services Specification
 - PLM Services 1.0 Final Adopted Specification
 - PLM Services (WSDL specification)
 - PLM Informational Model (XML Schema)
 - PLM Computational Model (XML Schema)
 - PDTnet Queries (XML Schema)
- Presentation concerned with PLM Services
- PLM Services Reference Implementation

3.

Implementation of the PLM Services

- ProSTEP iViP Reference Implementation
 - Client and server software
 - PartMaster
 - PROSTEP
- Bosch and Keiper
 - PLM services as their internal company PDM data model. Delphi Automotive and BMW
 - Evaluation of PLM Services within collaboration scenarios for Engineering Change management
- DaimlerChrysler
 - Use PLM Services for their inhouse communication backbone
- PROSTEP AG
 - OpenPDM is based on PLM services
 - Together with IBM the integration of this product into the WebSphere

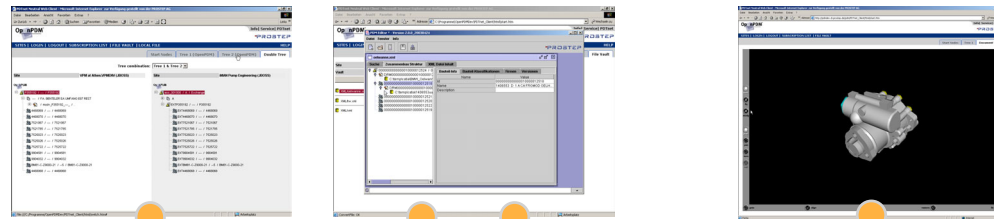
Architecture of the Reference Implementation



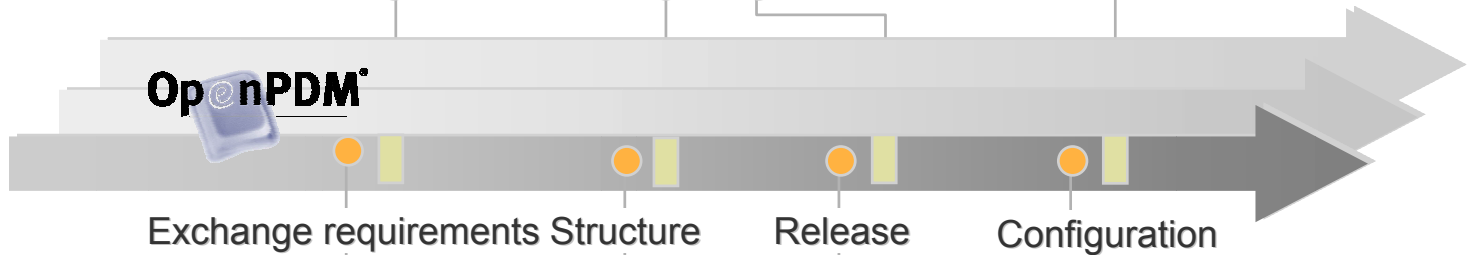
OpenPDM® Integration Platform

OpenPDM® supports the integration of company and partner processes and uses web services to realise flexible **event-oriented** engineering scenarios.

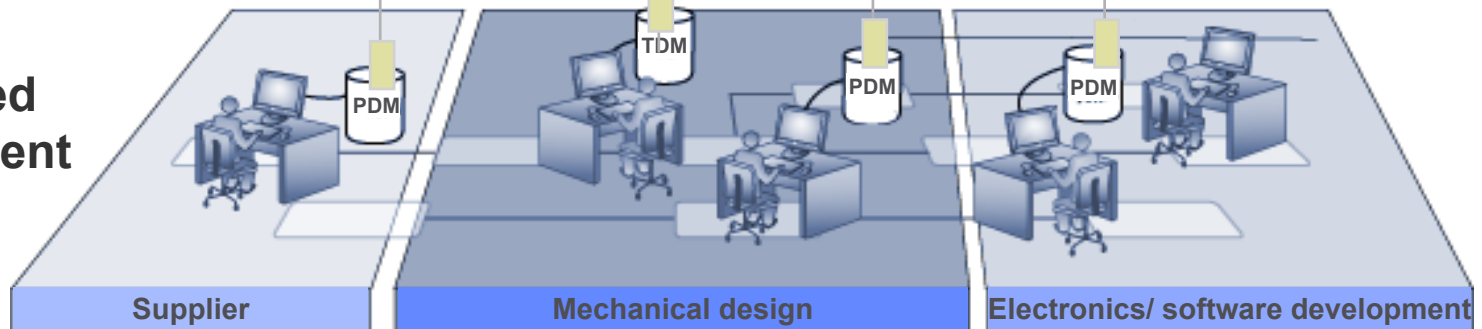
Role-based user interfaces

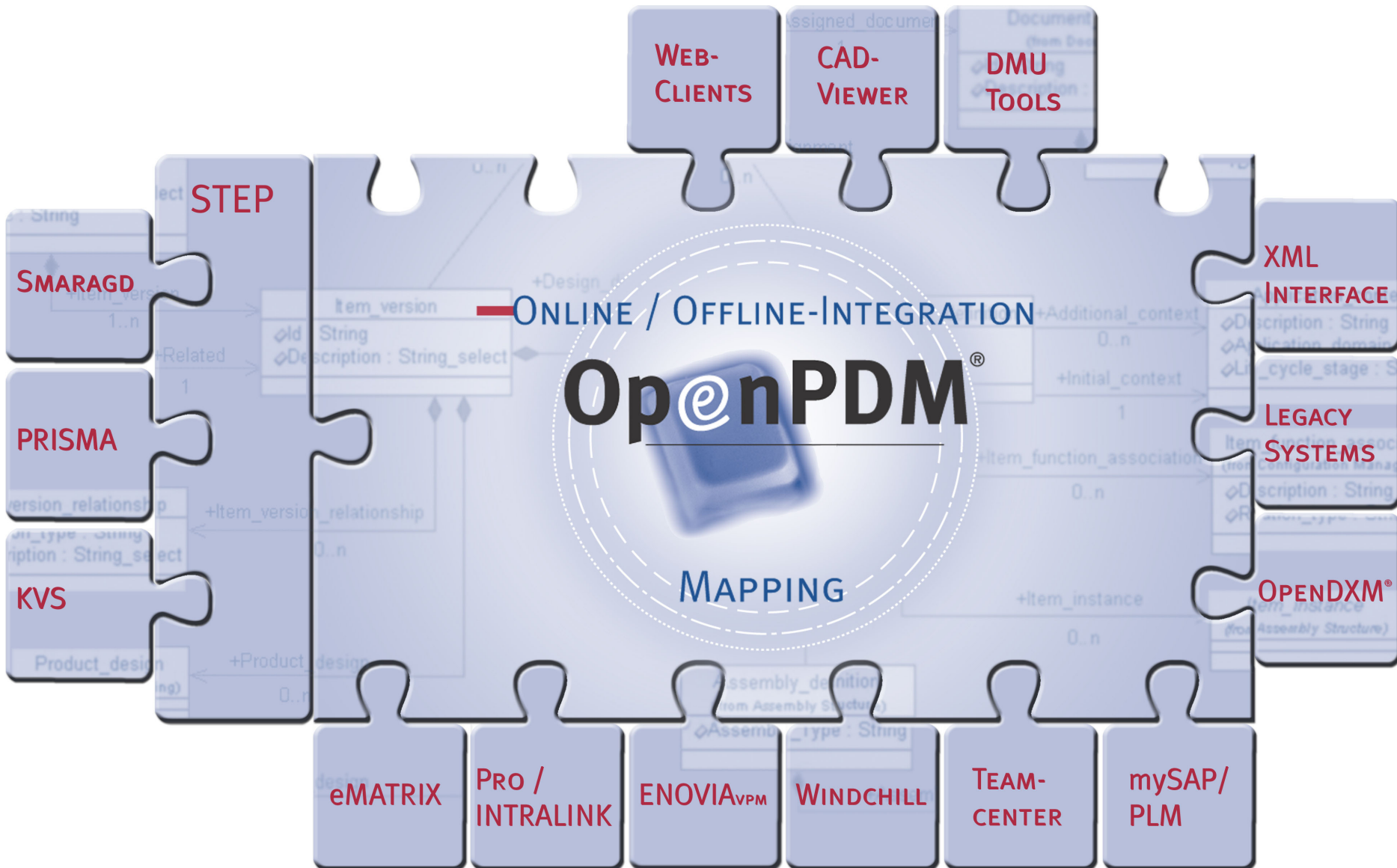


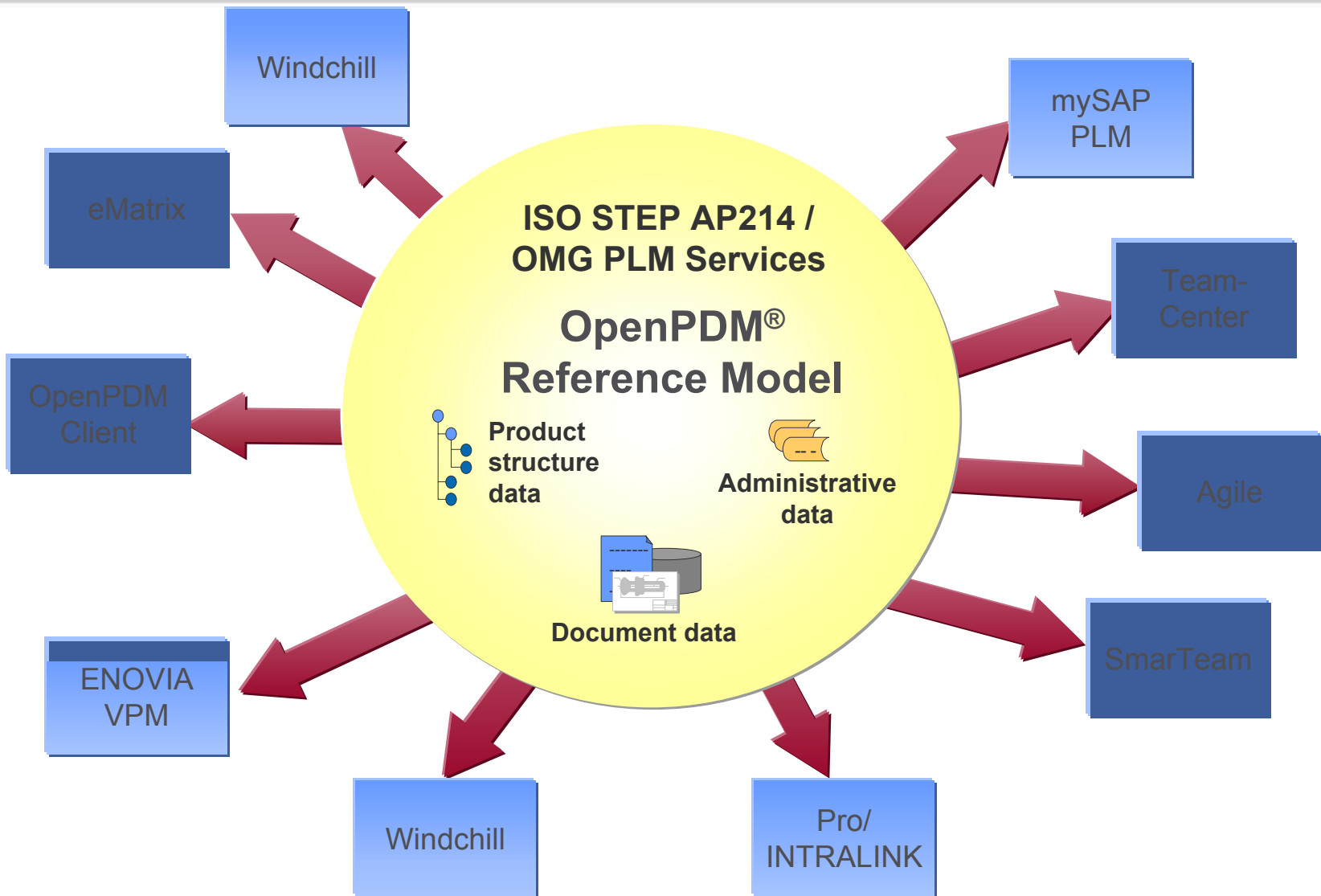
Integrated business scenarios

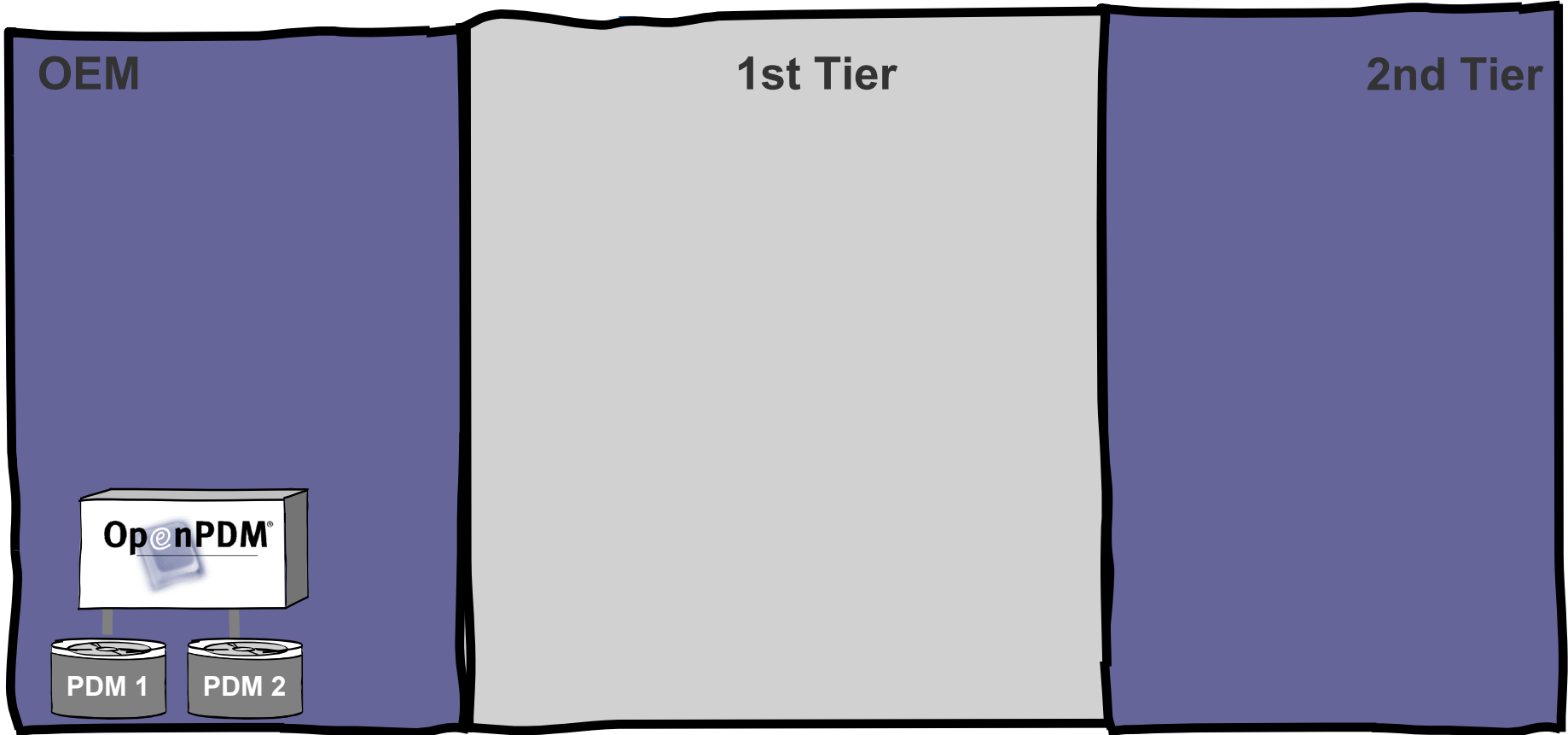


Specialized development tasks



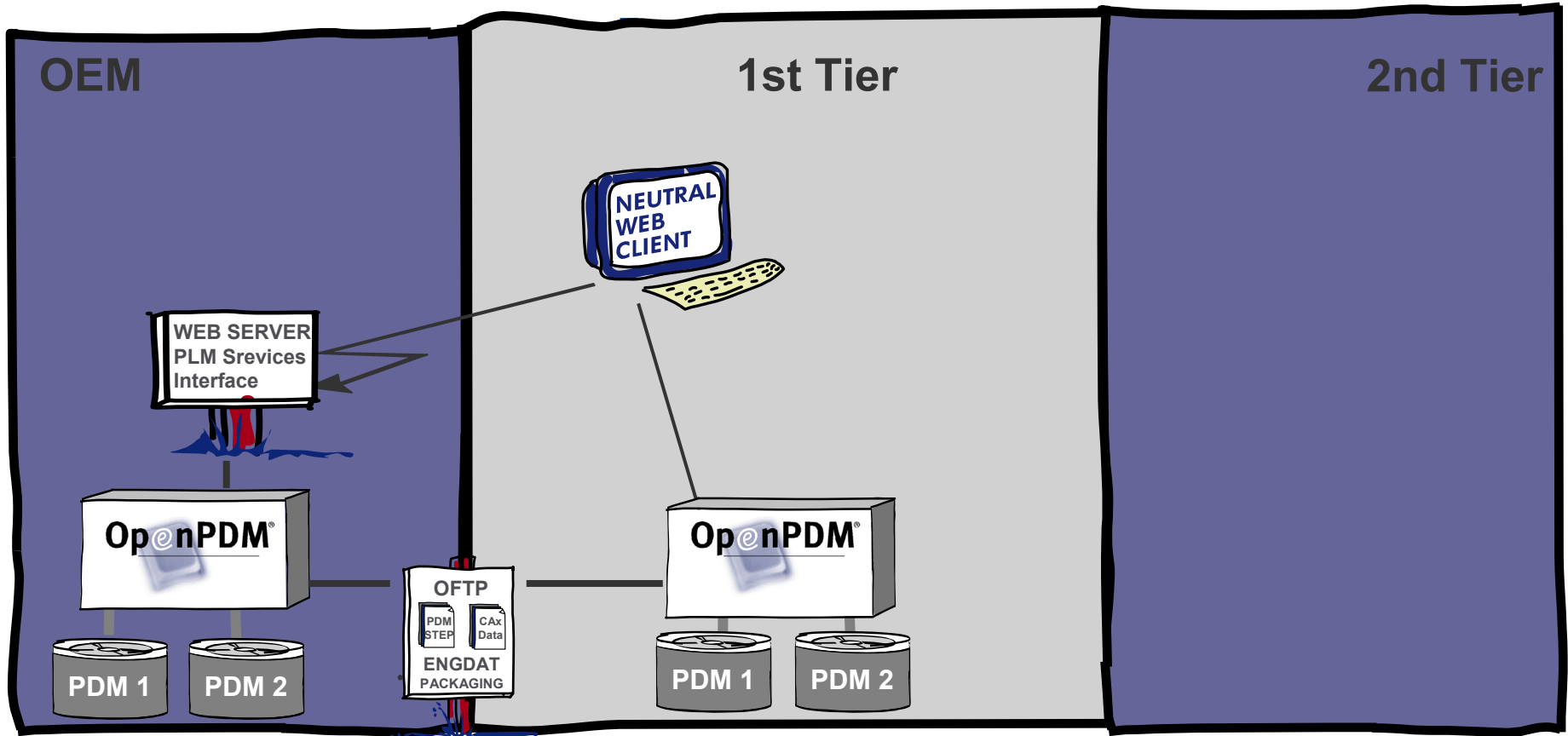






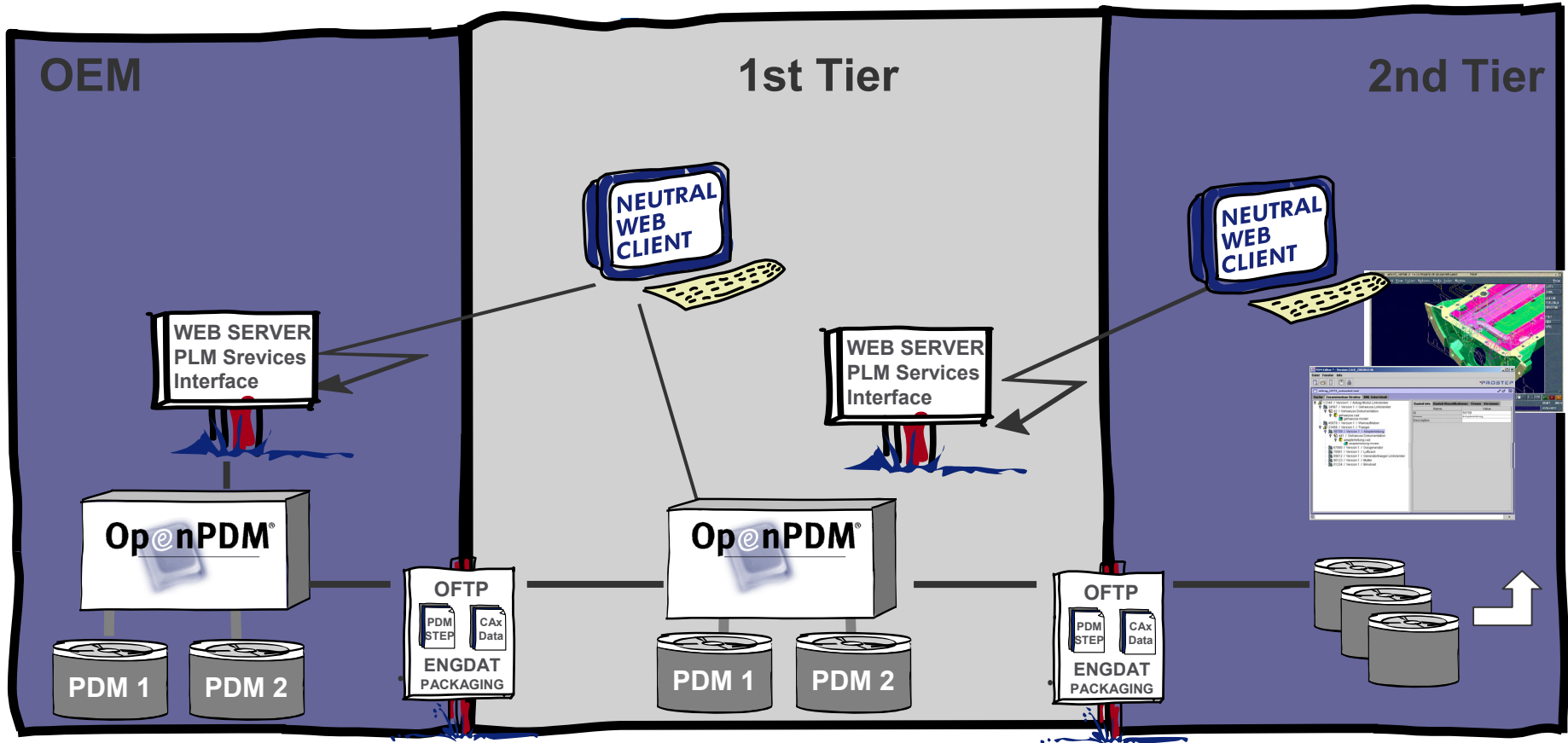
1

Enterprise PLM Integration



2

Supplier OEM Bridge



3

Supplier Portal for OEM and Supplier

PROSTEP

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