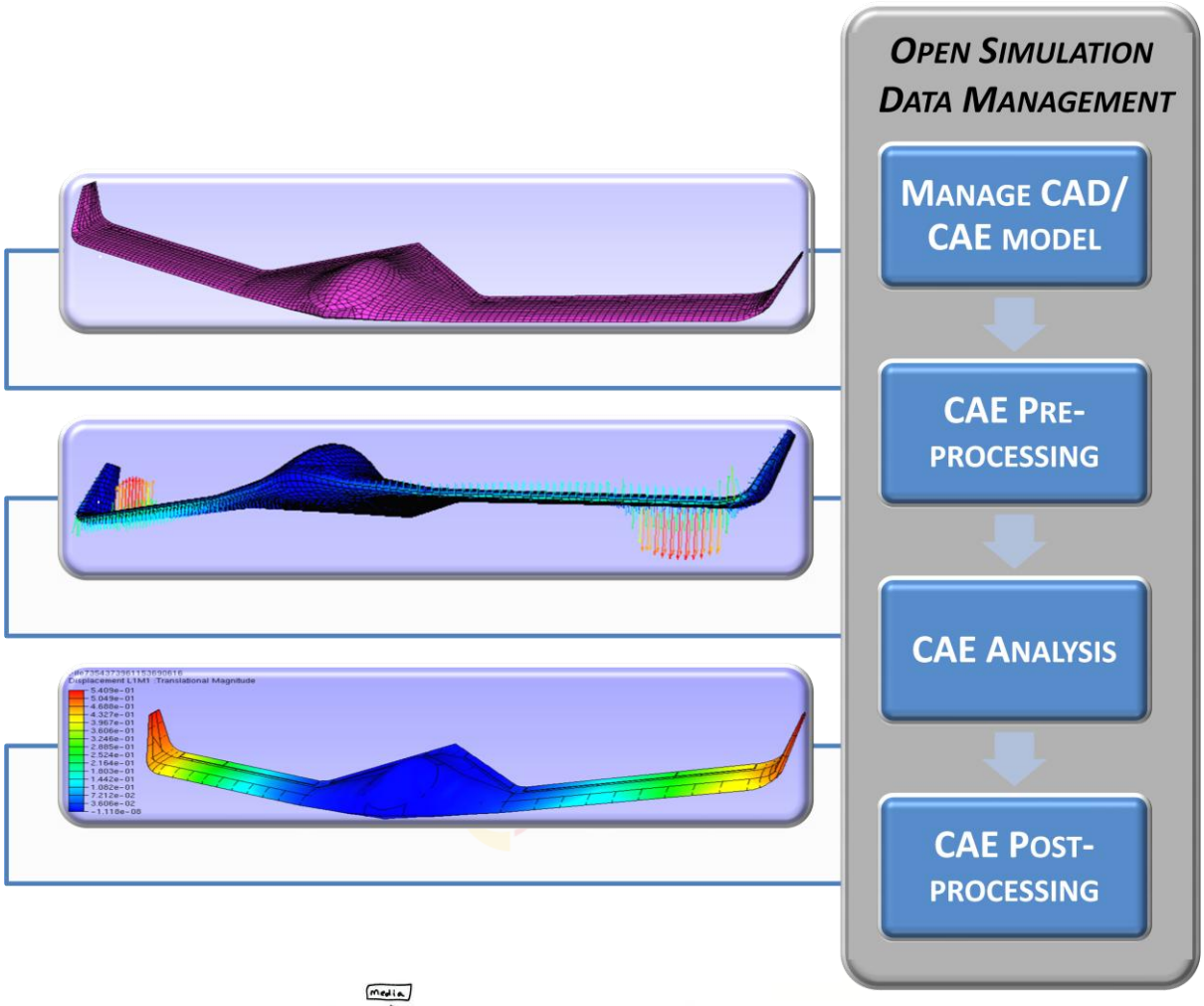
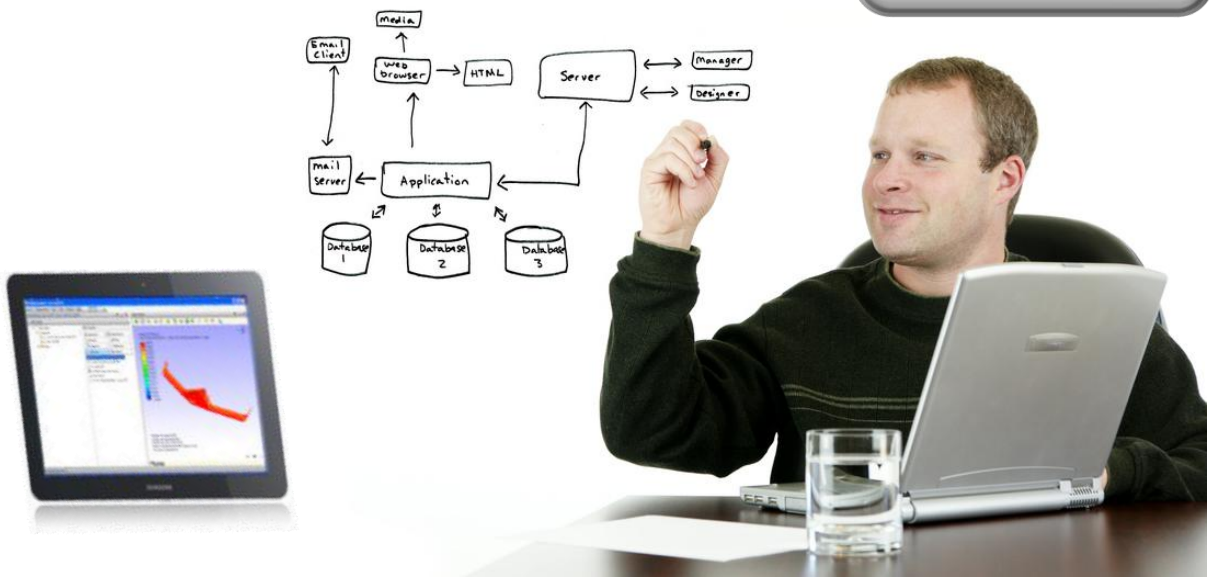
Jotne

EXPRESS Data Manager

OpenSimDM™

SHARE, EXCHANGE AND ARCHIVE YOUR SIMULATION DATA





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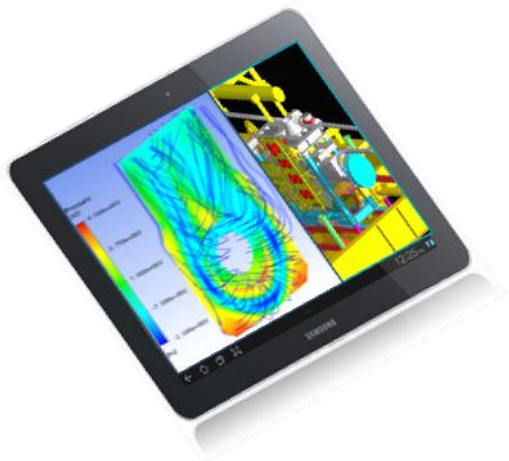
Why OpenSimDM™?

Jotne EPM Technology is a member of the Jotne Group, specializing in Logistics Information Technology. Since 1990 the company has developed database solutions to handle standards such as ISO 10303 STEP, PLCS, ASD 1-5000 series etc. These are open specifications with public availability used by aerospace, space and defence-related industries to manage information about complex systems. Jotne has a staff of about 250 people, and its IT products are used by clients all over the world, including the US Department of Defence and leading aerospace, defence and oil&gas companies.



With our 20 years of experience working with large organizations we have also been exposed to their data management requirements to exchange and share data with the customers, primes, partners suppliers and their various PLM, CAD and FEA systems. The Jotne response to this market is the OpenSimDM application where organizations can access and manage such design and engineering data in a user-friendly way, using ISO standard formats. In addition, the OpenSimDM application serves as an archive repository for your simulation and project data information.

What is OpenSimDM?

OpenSimDM is a scalable solution for engineers that need to manage their PLM/CAD/CAE information using either portable devices, a multi-user server system within the firewall or multi-organization cloud-based subscription services.

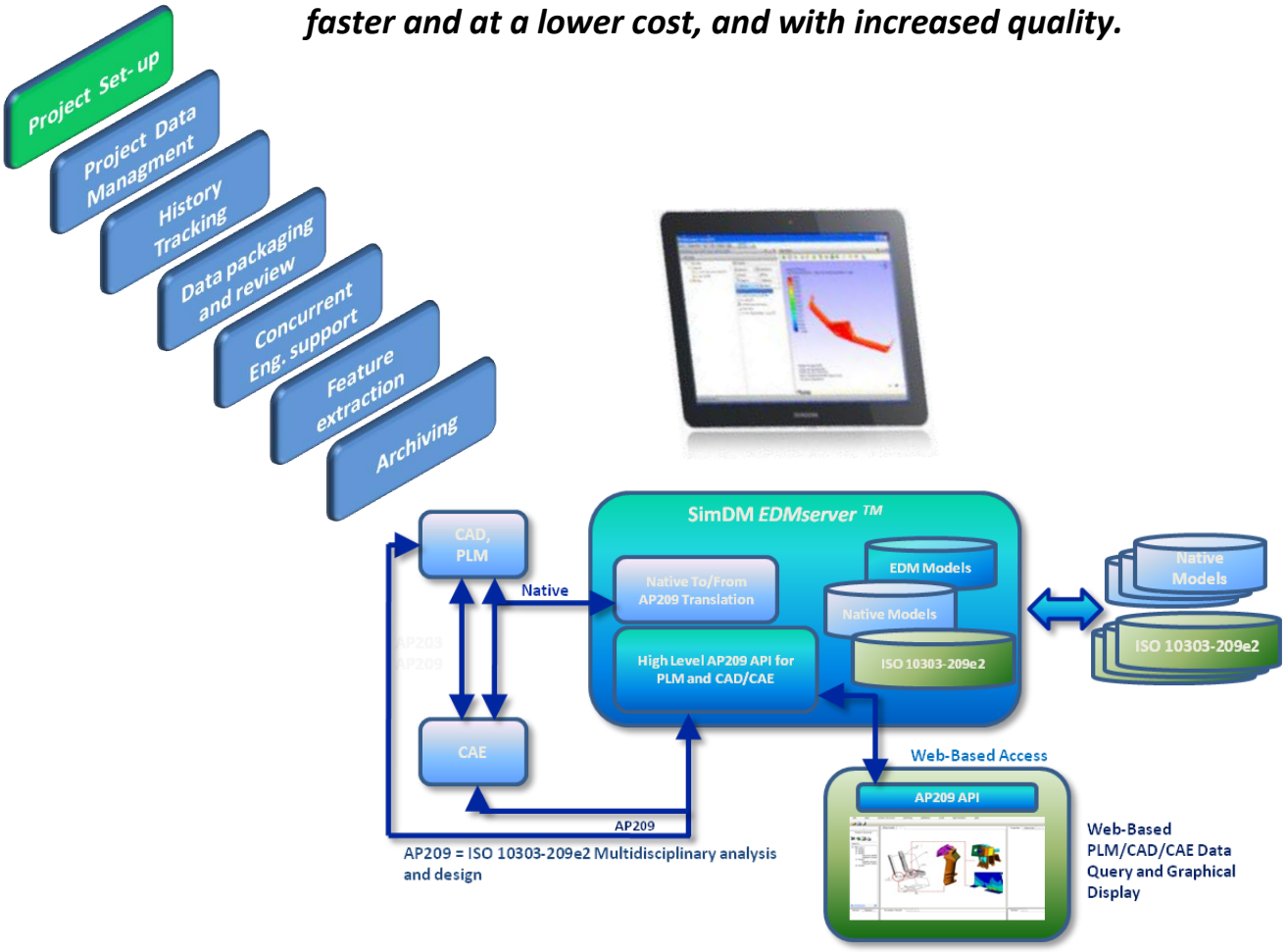
Large and complex products such as aircraft, vehicles, oil and gas installations and ships depend on accurate engineering information for their successful operation and maintenance throughout a life cycle often measured in decades. This life cycle normally depends on a wide diversity of computer systems and information formats, which itself becomes a barrier to effective communication of engineering information across the supply chain. By using a common standard we can eliminate the unnecessary cost of manually converting or re-entering information between different computer systems. The ISO STEP (Standard for the Exchange of Product Model Data) standard and specifically ISO 10303-209, Multidisciplinary analysis and design, covers the widest cross section of engineering applications. ISO 10303 STEP has been in use for almost two decades to facilitate the flow of engineering information in both civil and military environments.

The OpenSimDM solution has been designed to assist companies in their concurrent engineering strategies.

OpenSimDM will help its users to:

Provide single access to product structure, CAD models and CAE simulation data for your integrated teams	*Allow your customers access to simulation information for maintenance and support*	*Perform user friendly product data management tasks in the engineering analysis phase*
Support concurrent processes and manage resources for engineering tasks	*Support information longevity by data archival in an open standard format, AP209*	*Improve Information Quality Management*
Prepare approved program analyses for long time archival	*Improve communication with contractors and partners, using open and public available standards*	*Reuse engineering information*

Project Managers and Engineers need to interact with many stakeholders to complete their innovations and bring better products to the market, both faster and at a lower cost, and with increased quality.



Today's manufacturing industries are under continuous pressure to deliver competitive products faster. At the same time they must reduce the development cost and the cost of product ownership. In addition, they have to protect their intellectual property while working in shared environments and sustaining business growth and competitiveness. In order to achieve these goals, collaboration across the product development lifecycle is critical. Unfortunately, collaboration introduces many complications that must be addressed in order to ensure the integrity and consistency of product development information. These product development processes now also span increasingly complex business environments that bring together multiple companies, each with their own systems and processes.

The Jotne approach to this problem is to establish and use a common or master data unified repository in which product and process information from many sources (such as systems, companies, etc.) can be merged and consolidated. The OpenSimDM repository is designed to handle many product versions and configurations and to distinguish between information packages received from multiple suppliers and partners delivered to many customers. Using the ISO 10303 standards the Jotne solution addresses your requirements of interoperability, and Long Term Archiving and Retrieval (LOTAR) as defined by the AIA/ASD standardization effort of the same name.

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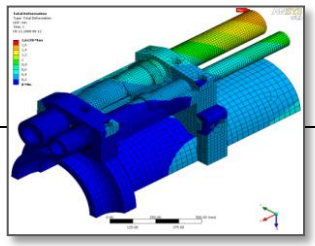
User requirements addressed by OpenSimDM

General system objective: *The system provides, in a product-structure-based way, project data sharing, design and engineering integration, and long-term archiving tools.*

Project lifetime scope: *The application supports the project activities across all the phases from conceptual design until launch and deployment.*

Configuration control tool: *It is possible to use the software system as a configuration control tool to manage the different versions of the system structure and of the data related to it.*

Presentation of system data in tree structures: *The system data is always related to the product structure tree, and is presented in such a tree structure.*



Traceability of the history of data*: The system tracks the history of the different versions submitted to the system during the development of the project.*

Archival of project data: *The following archiving capabilities are supported:*

- *archival of integrated life cycle data in a standard representation;*
- *long term storage of structured system data.*

Integration with specific project tools*: For viewing and editing the specific data contents, it is possible for users to open files from OpenSimDM in the file-type specific applications.*

Locking of in-work data: *The system functionality avoids that two users modify and submit the same information, to avoid that modifications are accidentally overwritten.*

Versioning of data*: The system supports versioning of project data.*

Search for system data*: The system supports finding system and project data.*

User access control: *Access to the system is limited by a login system. Access to the projects and project data is limited according to the type of users and permissions required and assigned to him or her.*

Date exchange and sharing: *The system needs to exchange data using ISO and other industry standards.*

Simulation data queries: *The system enables pre-defined queries into AP209 formatted simulation data.*

Baselines*: The system allows creation of baselines of all or of parts of the project data at any time.*

Project data contents: *The system allows storing of project data that are in files, including documents, software, manuals, structured documents, etc.*

Data dependency representation: *The system allows managing of dependencies between documents and data, in order to identify, check and correct the possible effect of changes in project data.*

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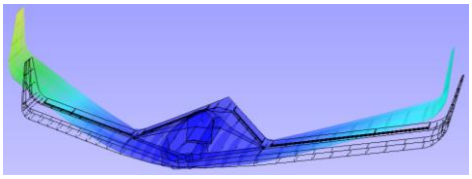
OpenSimDM offers

Archival and retrieval of data packages

- *Export an entire product structure or parts of it as "Data package"*
- *Export baselines*
- *Archive for the long term according to LOTAR standards*
- *Import product structures from STEP files*
- *Import archived programs and baselines*
- *Validation and verification of ingest/retrieval processes*



Viewing of design and engineering data

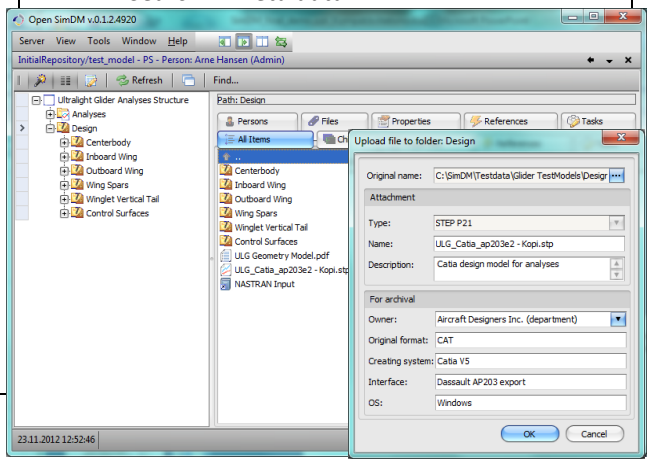
- *Browse in product structures like in folders*
- *Execute textual queries into AP209e2 data*
- *Run survey queries to find critical spots in analyses*
- *View files with your favorite tools*
- *Browse analysis data, native and AP209e2, graphically with the 3D Viewer*

Access Control

- *Login access control*
- *Separation of responsibilities into manager, editor and reader*
- *Locking of product structures*
- *Open Standard API and Web services*
- *Customized access control for*
  - *product structures and their elements*
  - *low level assignment of roles*

Management of CAD and Simulation Data

- *Multi-user collaborative environment*
- *Organize your program data in repositories and models*
- *Manage files on product structure level*
- *Create multiple product structures, automatically from STEP-files or manually*
- *Link design and analysis items by drag-and-drop*
- *Assign properties to product structure items*
- *Upload and download files*
- *Create automatically meta data, like timestamp and author*
- *Add files to design and analysis items*
- *Read structured data from various file formats, including AP203, AP209, AP214, AP242*
- *Manage distributed and local files in database*
- *Assign resources and methods to tasks*
- *Provide task feedback*
- *Peer approval and final approval*
- *Version items in product structures*
- *Create baselines for all or parts of a structure*
- *Validate data provided in STEP-format*
- *Search in meta data*



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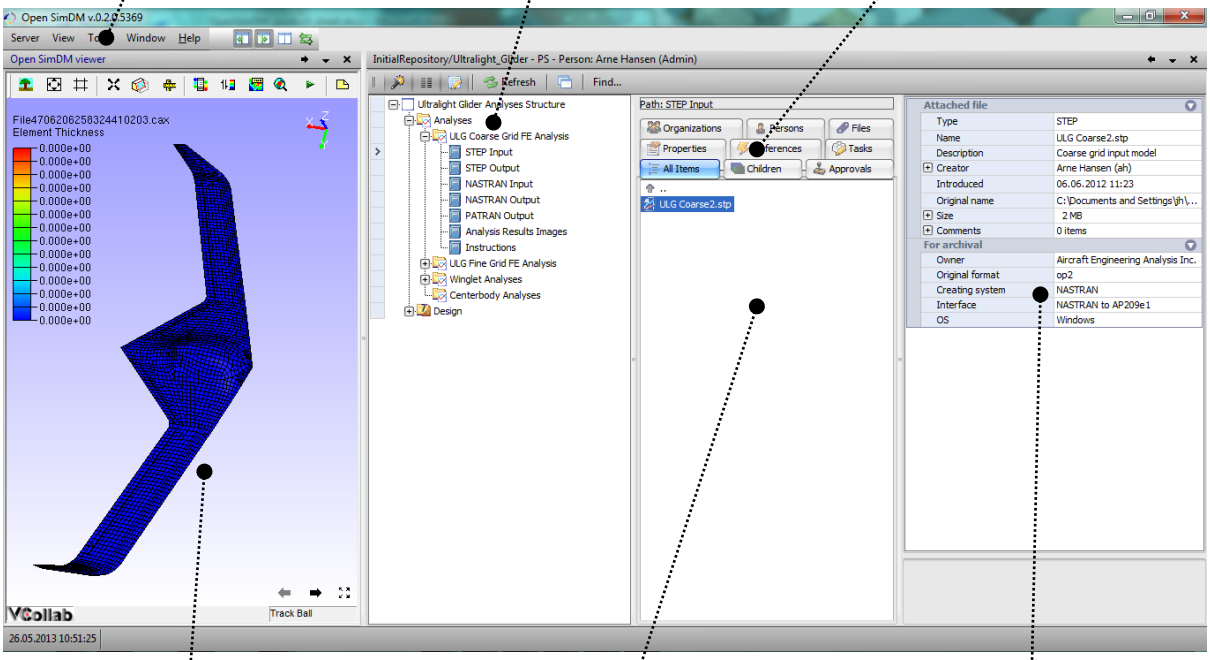
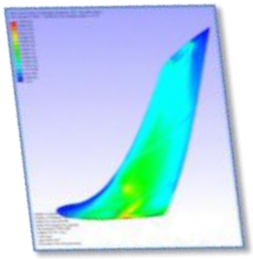
OpenSimDM user interface example

Main menu	Product / project structure	Meta data



3D design and analysis models	Documents	Properties



ISO International Organization for Standardization
ASD
AIA AEROSPACE INDUSTRIES ASSOCIATION

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The OpenSimDM™ suite of products

OpenSimDM™ *- Simulation data management collaboration server, described in this product sheet*

EDMconverter™(NASTRAN-to-AP209) *- Converter from NASTRAN™ to AP209*

EDMconverter™(Abaqus-to-AP209) *- Converter from Abaqus™ to AP209*

EDMinterface™(C++/AP209) *- C++ Application Programmers Interface for writing AP209 converters*

NASTRAN - a finite element analysis program originally developed for NASA

Abaqus Unified FEA software suite – a finite element analysis and computer-aided engineering program, now under the Dassault Systems Simulia portfolio

The EXPRESS Data Manager™ suite of complimentary products

Jotne EPM Technology has established itself as one of the leading providers of solutions for product data technology – the open paradigm for the 21st century. Our product suite EXPRESS Data Manager is designed to meet the needs of engineering and manufacturing enterprises to accurately and reliably exchange and share technical data with colleagues, customers, subcontractors, suppliers and other business partners. The products fully implement the EXPRESS data-modelling language which supports most international product data technology standards - including ISO 10303. EXPRESS Data Manager can be used for data-modelling, application development, data management and quality assurance. Our product suite is under constant development to adapt to changes in customer needs as well as international and industry standards. Contact us for the latest news.

EDMserver™ *A Product Model Server capable of storing all data for complex systems, including native support for the ISO STEP/PLCS/IFC Data Models. The unified database system uses a model-driven architecture to manage the life cycle of products and systems.*

EDMdeveloper™ *A comprehensive package of tools for all EXPRESS users – application developers, system integrators, data modellers, etc.*

EDMvisualExpress™ *A complete tool for creating and visualizing data models based on the graphic notation EXPRESS-G.*

EDMmodelConverter™ *Quickly and easily uses EXPRESS-X to convert data from one EXPRESS schema to another.*

EDMmodelChecker™ *Validates a data set and ensures that it conforms to all rules and constraints defined in one or more EXPRESS schemas.*

TruePLM™ *A collaboration tool to manage through life product versions and configurations and support the review of information packages received from multiple suppliers and partners. Interoperability and archival are resolved by use of the ISO 10303/PLCS standard.*

EDMmodelServer™(ifc) *Model server for Building Information Models and Virtual Design Centers using a model driven and buildingSMART open standards compliant architecture.*

Business Partner Program *Our commitment to our partnership with you includes training and educational services, customer support and consulting services.*

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Enabling Open Information Systems

Organizations of any size achieve high performance by making timely, effective and efficient decisions. All decisions rely on a fundamental input: information. Organizations require capable people to make decisions, but must also invest in the processes and technology that generate fit-for-purpose information. Such investment has led to information becoming a key enabler of the globally competitive market place and, thus, the world entered the Information Age. Every information set possesses characteristics that determine the success of the decisions possible using the information content. Of these characteristics, the most critical are timeliness, accuracy, completeness and provenance. These are the characteristics of high-quality information.

High-quality information is most typically achievable through computer-based solutions. These solutions benefit from implementations using an information model that rigorously defines the information content.

Support for ISO 10303 standards

ISO International Organization for Standardization

Core data functionalities	*The challenges of the Information Age*
data exchange *– use of computer files to transfer data between software applications*	***interoperability*** *of information technology, addressed by data exchange & sharing solutions*
data sharing *– use of a single common repository to provide data access to more than one software application*	*common enterprise-wide views of information, addressed by* ***data integration*** *solutions*
data archiving *– storage of data for possible later retrieval by software applications (either through computer files or a data repository & potentially by software applications that do not even exist at the time of creating the data)*	*obsolescence of information technology, addressed by* ***data archiving*** *solutions*
	freedom from vendor lock-in, addressed by ***open data*** *solutions*
	multiple viewpoints, addressed by solutions embodying ***data independence***

Jotne

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