Information Technology Systems for Fusion Industry and ITER Project

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ITER Information Plant

- Fusion industry has strong needs for modern Information Technology
- The knowledge accumulated in the ITER's data will be the ultimate major result and asset of the project

Therefore, we propose to build a centralized, multi-component, integrated Information System for the ITER project

ITER Information Plant (IIP)

ITER Information Plant will provide a complete information solution for ITER:

- Support of traditional day-to-day operations
- Support of project management
- Access to experimental results for the international fusion community
- Support of scientific research
- Intensification of learning process

The major challenges and development factors:

- Data should be effectively shared between all Parties
- Sophistication and breadth of the international user community
- Different forms of processing should be supported
- The architecture must provide a facility for long term growth and expansion
- Longevity of data
- Standard/proven Information Technologies must be used
- Security measures should be provided for a recognized or potential threat

Lessons learned:

- Integration of the data in the project cannot be an afterthought
- Separation of Operating and Decision Support System areas
- Used of Relational data storages vs. Object-Oriented data storages

ITER Information Plant

Operating System

Operating Marts

Operating Data Store

Decision Support System

Data Marts

Information Data Warehouse

Data Mining Warehouse

Archive

Exploration Warehouse

Integration and Transformation Layer

Data Acquisition Layer

ITER Information Plant

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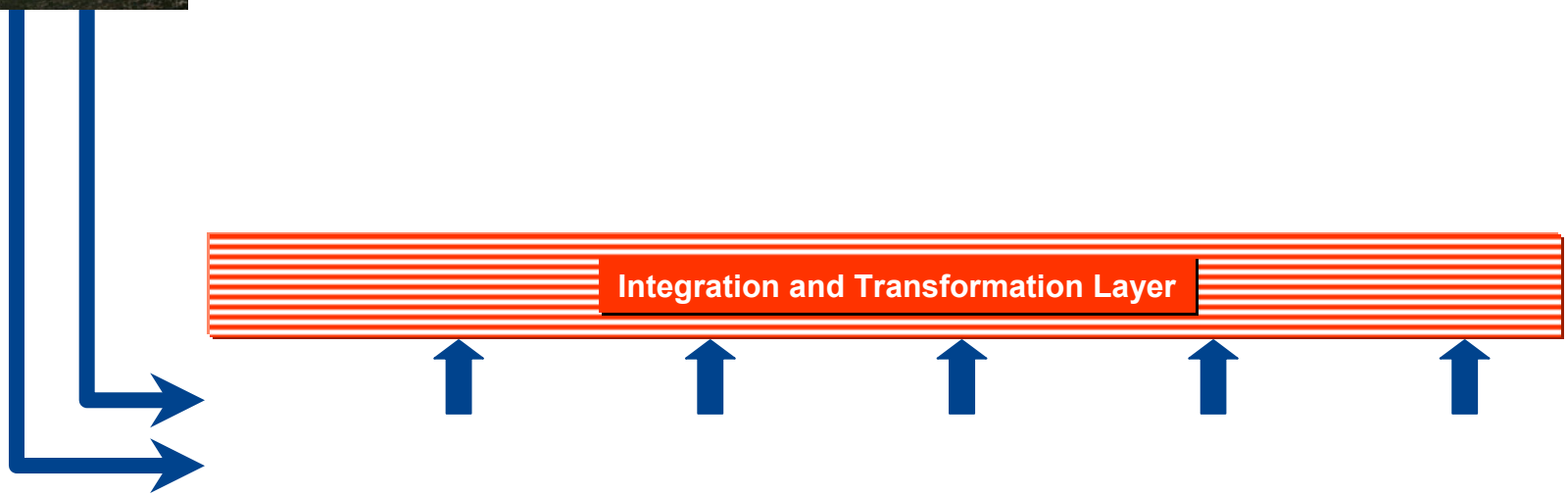
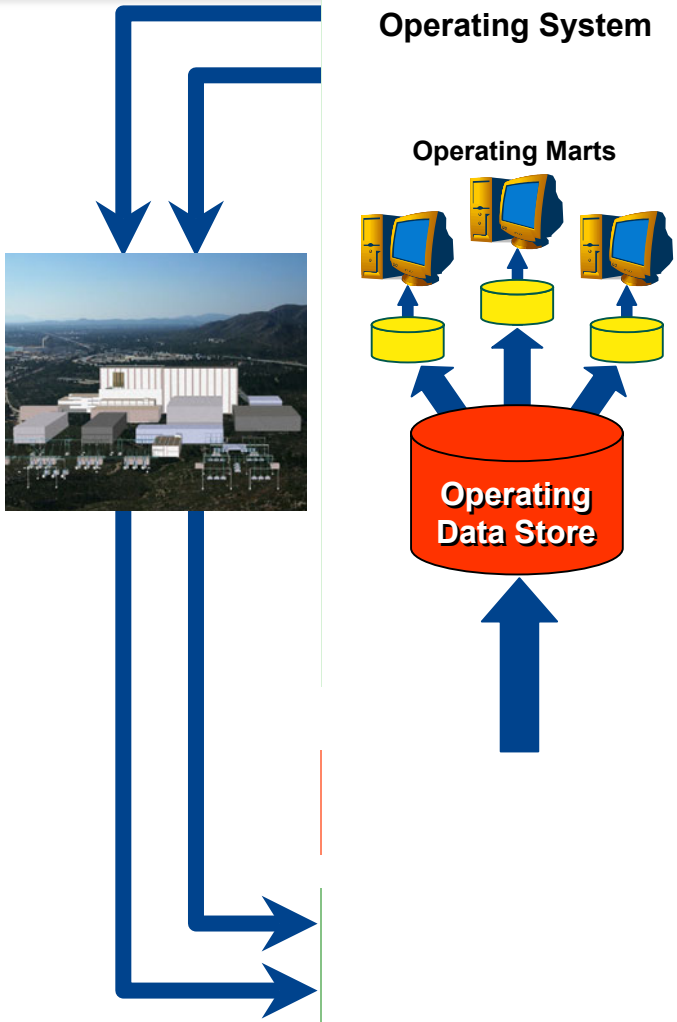


ITER Information Plant



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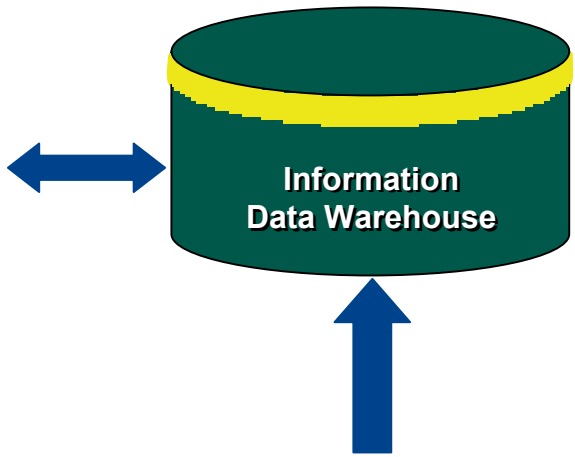

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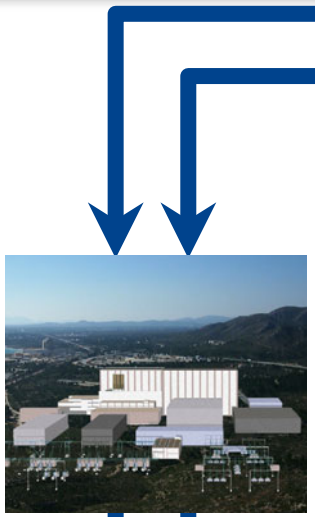
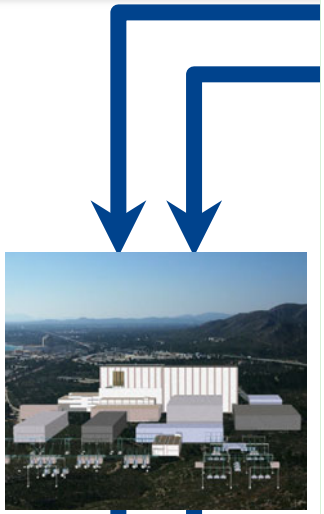
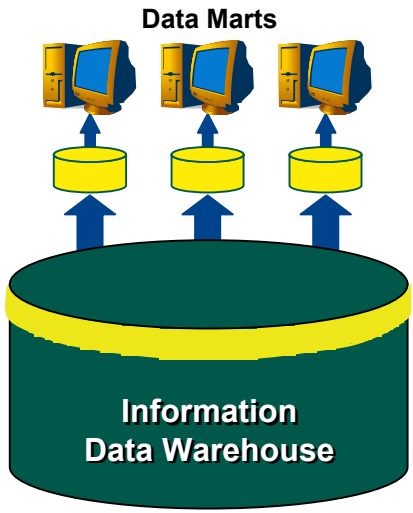


ITER Information Plant





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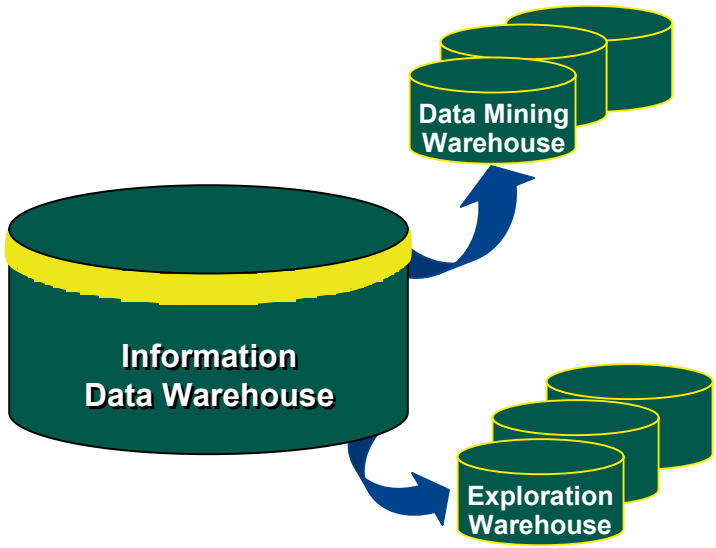

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Phases of Development of the IIP

- Build a prototype of the IT system based on data model for the project, data flow analysis, and existing BRs &TRs
- Build documented prototypes of Data Storages (Databases, Data Warehouses, Data Marts) and maintain them current during fabrication, construction and operation phases of the project
- Follow the construction adding and modifying the BRs/TRs, upgrading the models of storages, and working out the BRs/TRs for applications
- Develop application codes later when sufficient BRs/TRs are formulated

Summary

Integration of the data in the project cannot be an afterthought

Building ITER Information Plant will need joining expertise in fusion and information technology

Being successfully implemented IIP could be used as a prototype of IT system for future national and international fusion projects