

Co-operative Working using the CIMsteel Integration Standards



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BASED ON SLIDES FOR "Delivering the Promise": Co-operative Working using the CIS - Slide Number 1

The CIMsteel Project

Computer Integrated Manufacturing for Constructional Steelwork

- **First instigated in 1987 (finished 1998 Q1)**
 - Over 70 Collaborators from 10 European countries
 - » Designers, Steelwork Fabricators, Contractors, Software Houses, Universities and Research Institutes
 - plus links with US, Japan etc.
- **Wide ranging work programmes**
 - enhanced design procedures
 - rationalisation of materials & processes
 - flexible welding cell and MIS
 - world class applications software
 - **CIMsteel Integration Standards (CIS)**



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BASED ON SLIDES FOR "Delivering the Promise": Co-operative Working using the CIS - Slide Number 2

CIMsteel Objectives

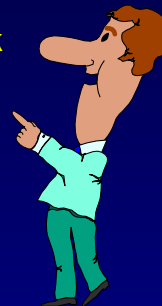
- **To enhance the competitiveness of the European Constructional Steelwork Industry**
 - *through the application of CIM techniques*
- **To integrate the activities throughout the life cycle of a steel structure**
- **To accelerate the development and implementation of European engineering standards and methods**

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CIMsteel Vision

- **Faster design, manufacturing and construction**
- **Improved, cheaper steelwork structures**
- **Growth potential of constructional steelwork realised**
- **The construction industry regarded as a world-class manufacturing industry**



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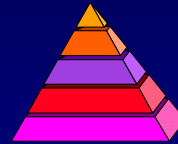
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Requirements for CW

- Required information provided
- Information correct and on-time
- Information in most suitable form
 - digital data
- Support for Concurrent Working
- Goal is Optimal Total Solution
 - contractual drivers
 - shared risk/profit
 - partnering etc.

CIS

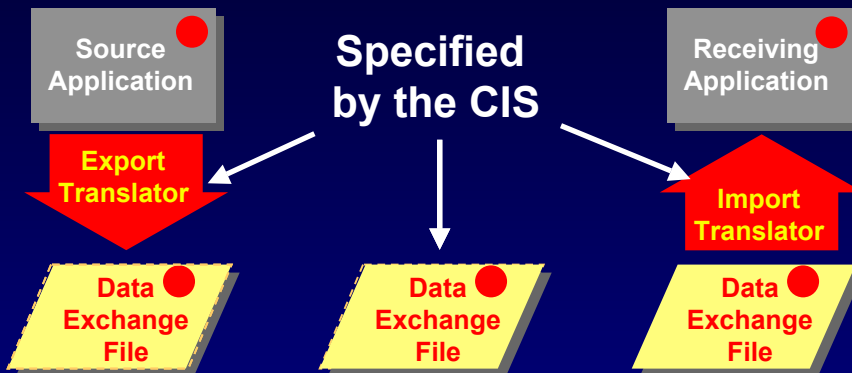
*within and
between
companies*



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Data Exchange Specifications



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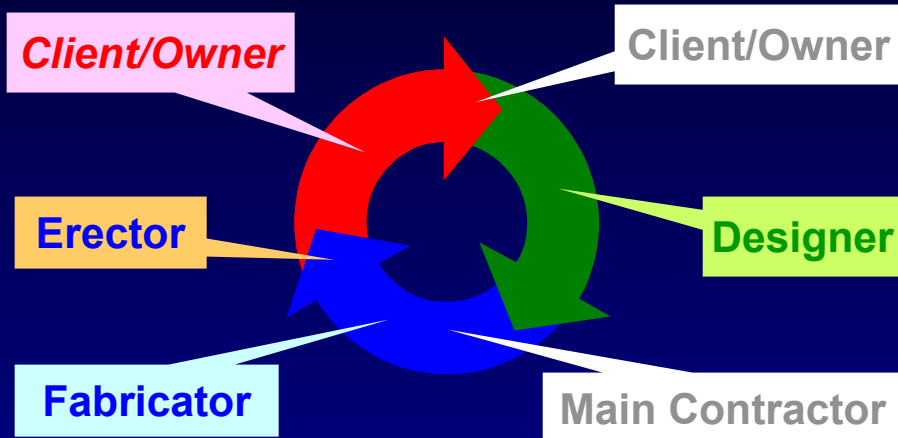
Industrial Objectives

- To integrate the activities involved - *and the computer applications used* - throughout the life cycle of a steel structure
- To achieve industrial deployment within the lifetime of the CIMsteel project

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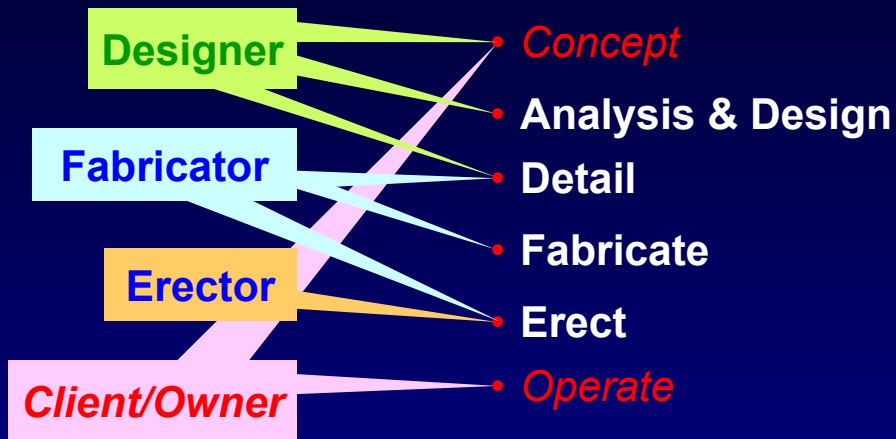
Project Cycle



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Engineering Activities

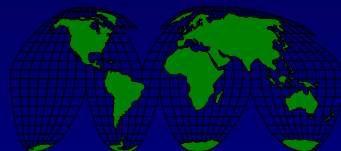


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The CIS Specifications

- **Suitable for Global deployment (EU + Japan + US)**
- **Building type steel frames**
- **Innovative "product model" technology**
- **Support engineering & construction activities**
 - engineering data throughout frame life-cycle
- **Data exchange (CIS/1)**
- **Data management and data sharing (CIS/2)**



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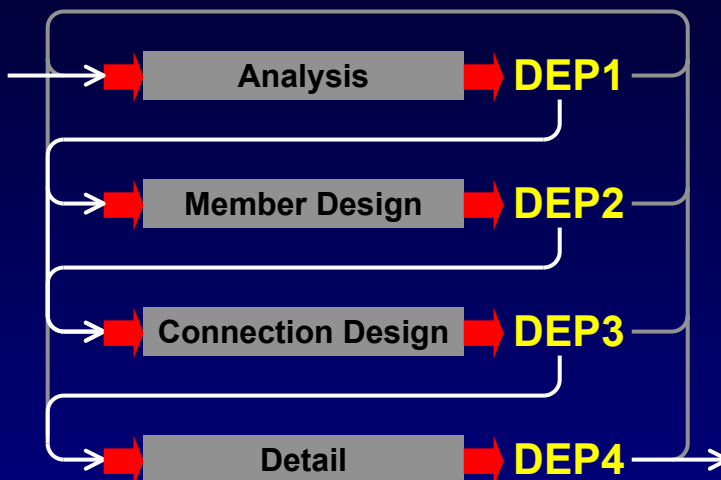
CIS/1: Scope

- **Building-type steel frames**
 - low, medium and high rise
 - domestic, commercial and industrial
- **Aligned with ISO 10303 (STEP)**
- **Four Data Exchange Protocols (DEPs)**
 - defined against common product model

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CIS/1: Data Exchange Protocols



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CIS/1: Implementations

DEP1 Analysis DEP2 Member Design DEP3 Connect. Design DEP4 Detailing



SSC - MIS
(GoData)

Available

Under Development

STRUCAD
(Aeccad)

Planned

XSTEEL
(Tekla)

Space for Windows / STAAD/Pro
(Research Engineers)

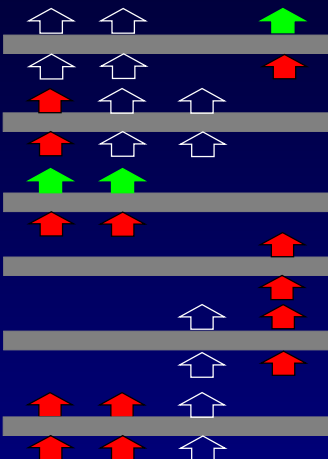
FRAMEWORKS
(Intergraph)

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CIS/1: Implementations

DEP1 Analysis DEP2 Member Design DEP3 Connect. Design DEP4 Detailing



FASTRACK Portals for Windows
(CSC)

RM SPACEFRAME
(TDV)

STRAP
(ATIR)

StBrowser
(Finnish Constructional Steelwork Association)

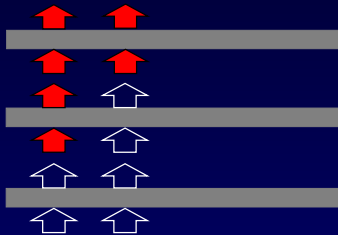
DSCsteel
(DSC)

ROBOT 97
(RoboBAT)

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DEP1 DEP2 DEP3 DEP4
Analysis *Member* *Connect.* *Detailing*
Design *Design* *Design*



CIS/1: Implementations

SAP2000, ETABS, FLOOR
(Computers & Structures Inc.)

GSA
(Oasys)

StruCAD*3D
(Zentech Inc)

Recent CIS Registered Developers

- Fluor Daniel Inc (USA)
- Interstate Iron Works Corp (USA)
- BOCAD (Germany)
- Butler Manufacturing Co (USA)

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CIS/1: Today

- **Conformance Testing**
- **Reference Sites**
- **A first for Construction!**

**The first product model based
standard that addresses the full
engineering process to be deployed
by industry**

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The CIMsteel Integration Standards

CIS/2: Enhanced Industrial Solution

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CIS/2: Scope

- **Substantially extended product model**
 - complex members
 - members curved in 3D
 - tolerances etc.
 - any building frame plus process plant etc.
- **More closely aligned with ISO 10303**
 - hybrid ARM/AIM + multiple conformance classes
- **Data exchange + management and sharing**

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CIS/2: Open Data Management



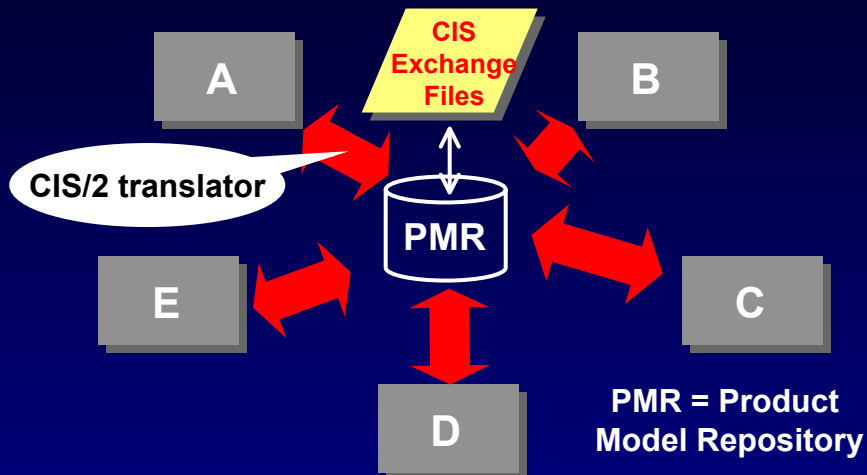
Engineering revisions!

- “Data Management Conformant” translators
 - Origin and history of all data tracked
 - Incremental import translators possible

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CIS/2: Open Data Sharing



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CIS/2: Latest News

**CIS/2 Beta Release CD-ROM
issued to software developers
for comment in July 1998**

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The CIMsteel Integration Standards

***AP230: Future ISO
Standard***

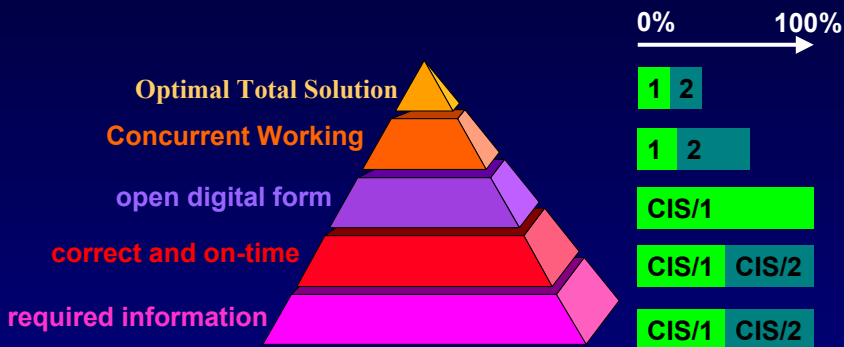
ISO 10303 (STEP) - Part 230

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Co-operative Working

within and between companies



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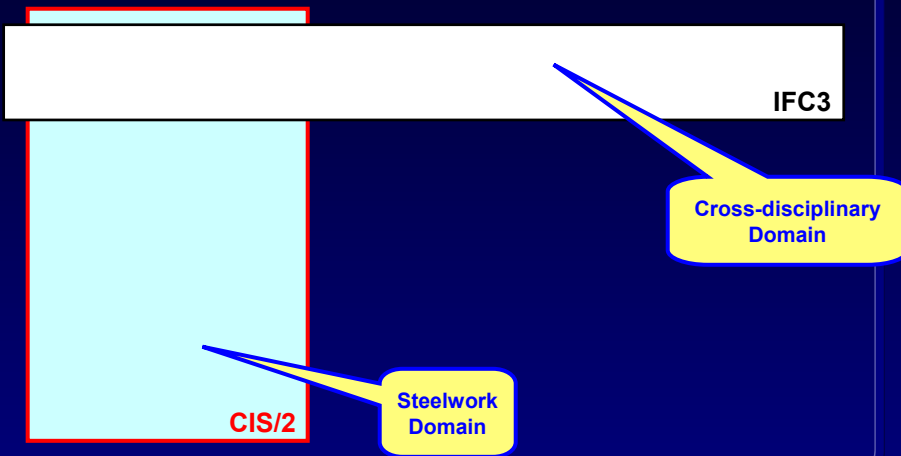
CIS <> IFC

- Working title for UK project proposal to establish two-way information mappings between:
 - CIS Steelwork Domain
 - IFC Cross-discipline Domain
- Two stage:
 - CIS/2 <> IFC3 : Shape Representation
 - CIS/2 <> IFC4 : Technical Information
- Collaborations:
 - SteelBase + IAI ST-1
 - Esprite ProCure

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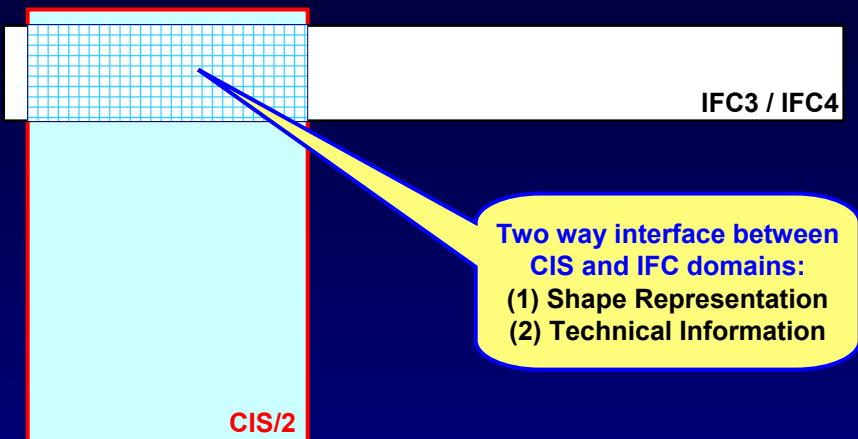
CIS <> IFC



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CIS <> IFC



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The CIS

- **Driven by Industrial Objectives**
- **Innovative Technology**
- **“Open” Standards**
- **Pragmatic and Incremental**



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