



IAI and IFC

State-of-the-art

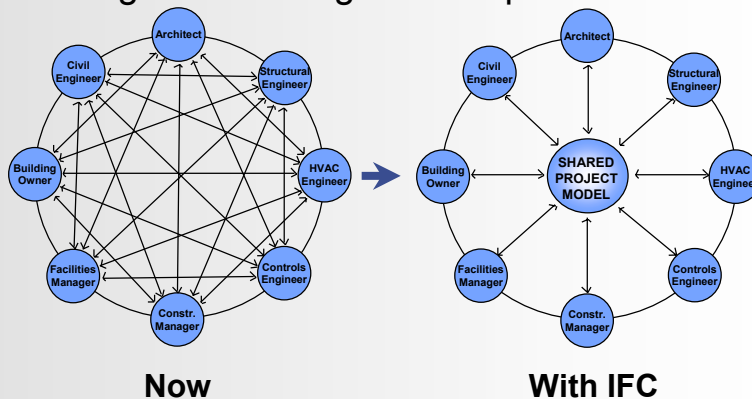
Arto Kiviniemi

Chief Research Scientist
Chairman of the IAI International Council
and Executive Committee



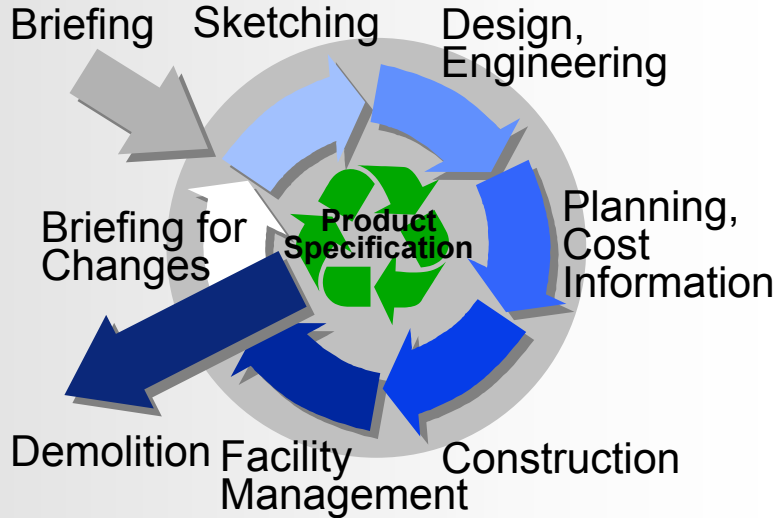
IAI Vision: Integrated Project Model

- Goal: Continuous maintenance of project data through to building management
- Way: Building information rather than drawing data to integrate disciplines



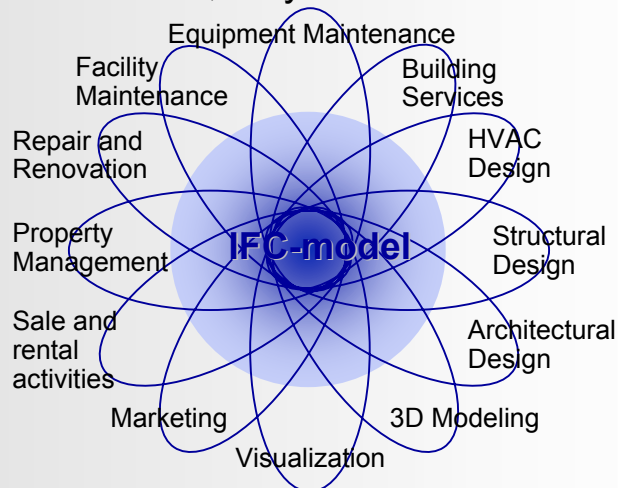


Information Lifecycle



Coverage of the IFC Model

- Many activities in the design and construction and FM tasks only use basic information





IFC Release 1.0

- Final Release 1.0 was published in January 1997
- Very limited scope
 - 5 processes for architectural design
 - 2 for HVAC design
 - 2 for construction management
 - 1 for facilities management
- Main results
 - experiences for further IFC development
 - pilot implementations for demonstration from 17 companies



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IFC Release 1.5

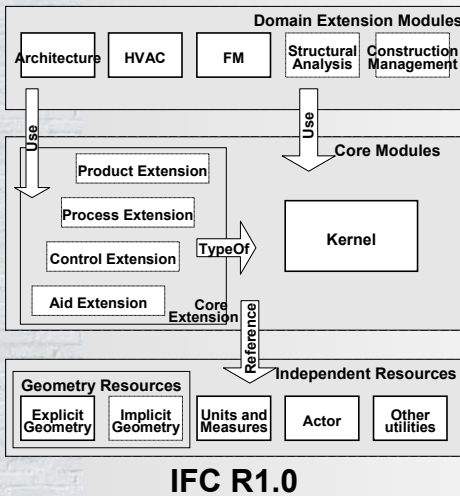
- Final Release 1.5 was published in November 1997
- Scope
 - feedback from the implementers
 - model architecture improvement
 - plug-in extensions
 - improved development tools



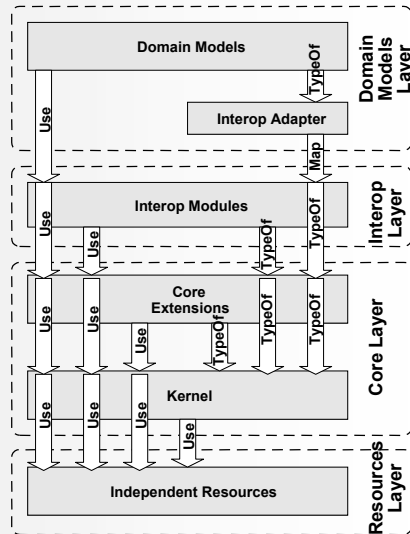
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IFC R1.0 and R1.5 Architecture



IFC R1.0



IFC R1.5



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IFC Release 1.5.1

- Need for some corrections after demo implementations of IFC R1.5
 - Development parallel with IFC R2.0 work
- Final R1.5.1 model was published in September 1998 and documentation in December 1998
- The first commercial products with IFC support are based on R1.5.1



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IFC Release 2.0

- Scope
 - Architecture extensions
 - HVAC systems
 - Code checking
 - Cost estimating
 - FM - Occupant move management, property management
 - General purpose networks
 - External document references
- IFC R2.0 was published in April 1999



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IFC R2.0 Team



Technical Director
Richard See



Yoshinobu Adachi



Robin Drogemuller



Jim Forester



Jiri Hietanen



Juha Hyvärinen



Kari Karstila



Thomas Liebich



Jeffrey Wix



Kevin Yu



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Expected Products - R1.5.1

- Expected products with IFC 1.5.1 support ⇒ 41
- Vendors shipping products with IFC 1.5.1 interface:
 - acadGraph - Alberti for spatial design
 - Autodesk - IFC extension to AutoCAD Architectural Desktop downloadable from web
 - NEC - NcadArc, architectural CAD
 - Nemetschek - IFC interface in Allplan FT
 - Olof Granlund - IFC interface to SMOG and Riuska(thermal performance simulation)
- Vendors announced IFC 1.5.1 products early 1999:
 - AIO Group - IFC interface to PointARXi
 - Fujitsu, architectural CAD
 - Graphisoft - IFC extension to ArchiCAD 6.0
 - M&M - RoCAD, HVAC engineering
 - MB Software - low-cost architectural CAD
 - Sofistik - SofiCAD, structural engineering



Expected Products - R2

- Vendors who have announced IFC 2 support
 - AIO Group - PointARXi, architectural CAD
 - Autodesk - Architectural Desktop 3.0 and CAD platform
 - Bentley - MicroStation and CAD platform
 - DOE-PNNL -energy code checking
 - Graphisoft - ArchiCAD
 - LBNL - visualization
 - NEC - NcadArc, architectural CAD
 - Nemetschek - CAD for architects, CAD and FEM for structural engineers, CAD for contractors and FM software
 - Olof Granlund - SMOG and Riuska (thermal performance simulation)
 - Progman - MagiCAD, HVAC CAD
 - Timberline - cost estimation
 - Visio - 2D-CAD
 - YIT - COVE, process management for contractor



IFC Toolboxes and platforms

- Concad: C++ library for read/write IFC files
- CSTB: SDAI platform
 - a generic STEP platform for any EXPRESS schema (late binding)
 - a dedicated IFC toolbox with the IFC schema (early binding)
- MUIGG: Active-IFC
 - Active-X control to retrieve IFC-files
- Nemetschek: late binding data sharing platform (middleware) called *o/p/e/n*®
- CSIRO: Product modelling tools
- VTT: Promote - IFC browser
 - generates Java classes from any EXPRESS schema and VRML from geometry
 - supports access to distributed models in client/server mode over the Internet



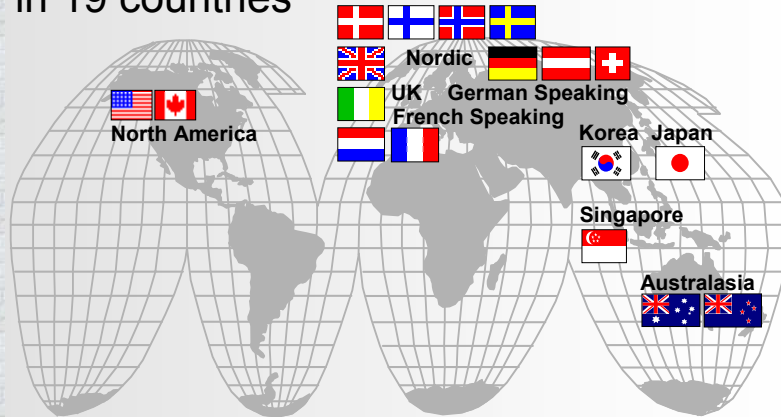
Relation with ISO/STEP

- Liaison status 1997
- MoU in June 1998
- Agreed action items:
 - Joint IAI ITM/STEP meetings
 - Develop links between IFC and Part 225
 - Develop links between IFC and Part 230
 - Joint trial interpretation of elements of IFC Core (as part 106)
 - Collaborate on the CDS and DXF2 drawing exchange developments
 - Review EXPRESS 2 specification
 - Investigate the most appropriate approach to standardisation of IFC
 - IAI documents are publicly available for STEP members



IAI membership

- Currently 9 Chapters
- More than 600 member organisations in 19 countries



Current IAI Organisation

International Council / Executive Committee Chair Arto Kiviniemi	Chair + 2 / Chapter
International Technical Management Temporary Chair Takayori Takamoto	TCs + PM + Leads

Implementation	ISG <i>Implementation Support Group</i> Rasso Steinmann • QA • Certification • Consensus • Prototype • Demonstrations	MSG <i>Model Support Group</i> Thomas Liebich • Architecture • Integration • Issues • Doc support • Hotline	USG <i>User Support Group</i> Robin Drogemuller • Methodology • Info to users • Technical marketing	PM Jeffrey Wix U S
	TAG <i>Technical Advisory Group</i> Vladimir Bazjanak • External Review • Liaison • Academic Development • Roadmap	Domain projects (Lead)		S



IFC Release R2.x and R3.0

- IFC R2.x
 - model improvements based on early implementation
 - core stabilization
 - up- and downward compatibility
 - no new functionalities
 - available in December 1999 or March 2000
- IFC R3.0
 - domain project work is continuing
 - modelling starts in the beginning of 2000
 - available in the end of 2000



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Current Problems

- Main problem is the lack of funding and resources
- Most of the resources available for 1999 were spent in IFC R2.0
- Some different views on R2.x
 - extent
 - scope
 - schedule



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Evidence of Success

- 3 major & 1 minor releases in 3.5 years
- IFC R2.0 on schedule & under budget
- Integrated AEC/FM information model
 - vocabulary of 400 object types
- Requirements of 16 IFC R3.0 domain projects nearly complete with improved quality
- On-going implementation efforts:
 - 33 vendors have demonstrated software
 - 5 software vendors have R1.5.1 products or extension modules available, 6 more will ship later this year
 - 13 software vendors have announced R2 support
 - 6 toolboxes available
- Increasing visibility on many levels:
 - press, research conferences and papers
 - AEC/FM industry customer awareness



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Thank you!



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