

Jeffrey Wix Consulting Ltd

30 Northfield Road,
Thatcham,
Berkshire RG18 3ES
UK
Tel: +44-1635 86 4590
Fax: +44-1635 86 0673
email: jeffrey.wix@aec3.com

in association with

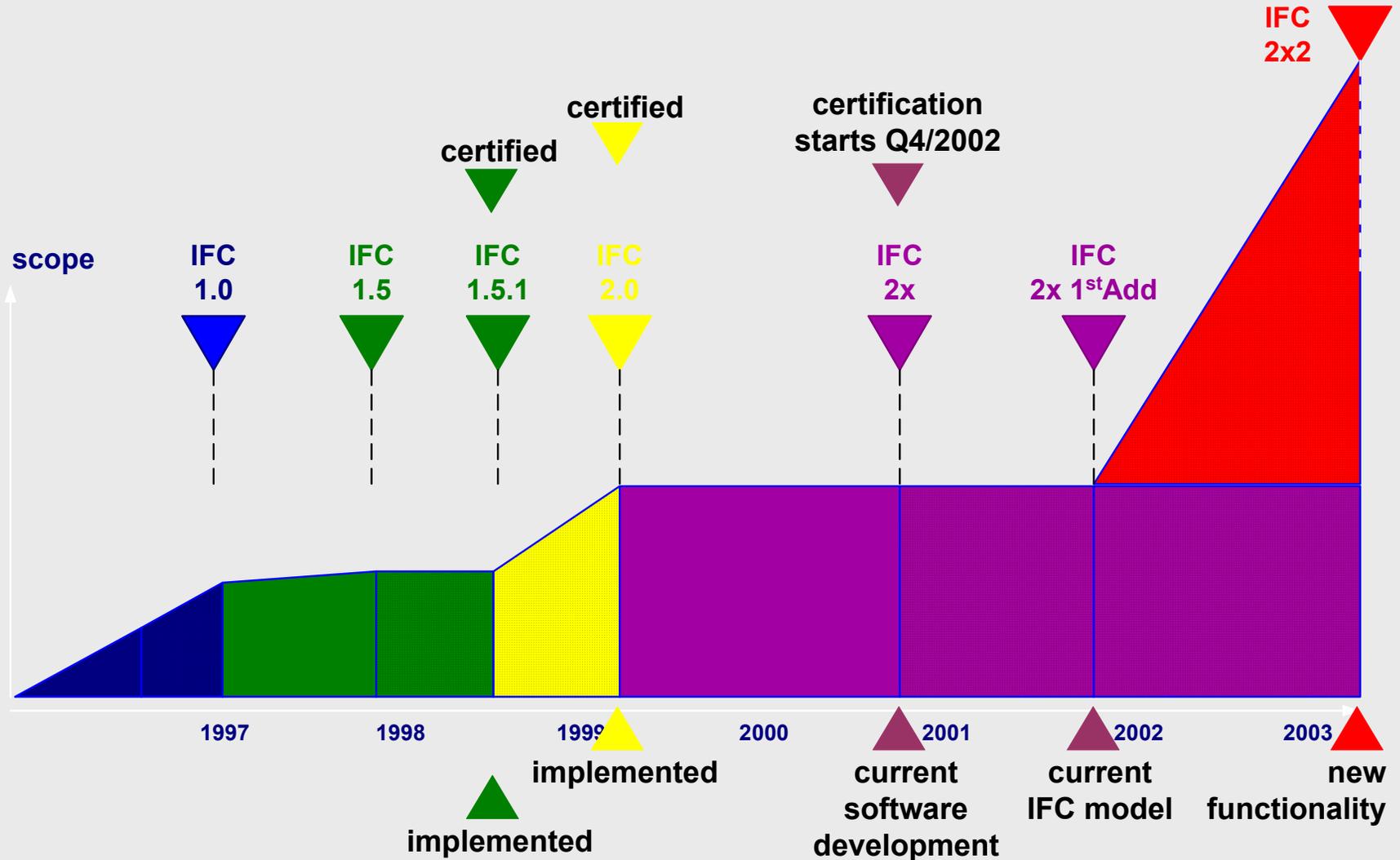
AEC3  **building in the information age**

IFC 2x Edition2 New Horizons

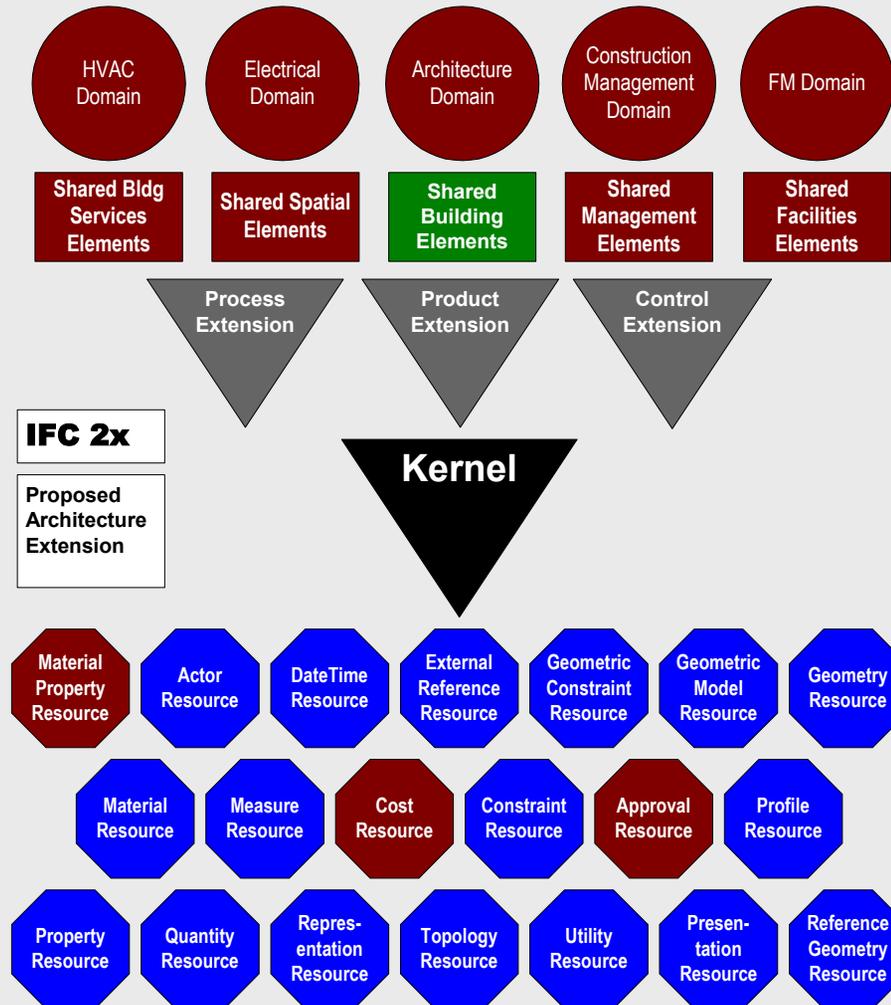
IAI UK Summer Event - London
June 2002

Jeffrey Wix

IFC development timeline



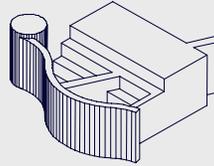
IFC 2x



What IFC 2x can do

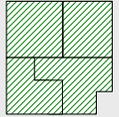


Shape (explicit)



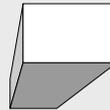
Spaces, Space Structure

space, storey, part, building, site



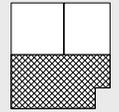
Shape (extrusions)

beams, pipes, ducts, walls etc.



Compartmentation

fire, workstation

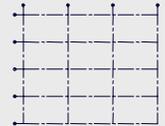


Shape (topology)

line representations for pipe, duct, etc.



Grids



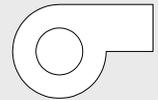
Building Elements

wall, door, window, roof, stairs, etc.



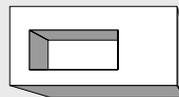
Equipment

chillers, fans, pumps, etc.



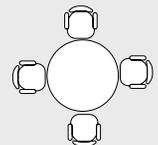
Relations Between Elements

holes, chases, voids, zones



Furniture

inc. system furniture

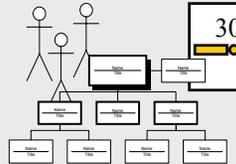


What IFC 2x can do



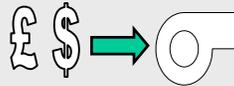
Actors

people, organizations, addresses



Costing

cost planning, estimates, budgets



Work Plans and Schedules

inc. nested schedules, resource allocation



Orders

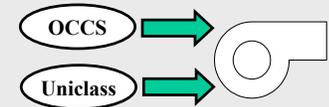
work orders, change orders, purchase orders



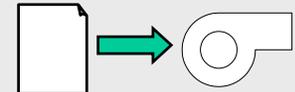
External Data



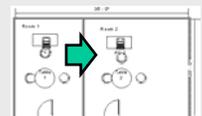
Classification



Associated Documents

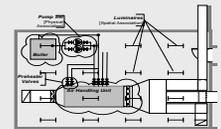


Move Management



Asset Identification

Maintenance History, Inventories



IFC 2x2: Overview



WHY?

- ▶ **There are practical general model issues needing to be addressed**
 - ▶ Draughting exchange (as opposed to model exchange)
 - ▶ Connections in systems, structures, walls etc.
 - ▶ Specification of element types and their occurrence
- ▶ **There are major industry roles not supported properly in IFC 2x including:**
 - ▶ Structural engineering
 - ▶ Electrical engineering
 - ▶ Fire protection
 - ▶ Building automation and control
- ▶ **Some sectors need extra capability (discovered by implementation and practice)**
 - ▶ Architecture
 - ▶ Mechanical engineering
 - ▶ FM

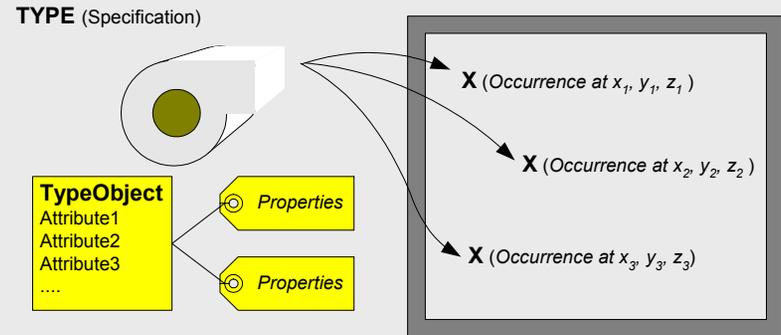
▶ WHAT?

- ▶ **Extension on top of the IFC 2x platform**
- ▶ **Upward compatible with current IFC 2x implementations**

What IFC 2x2 adds: General facilities

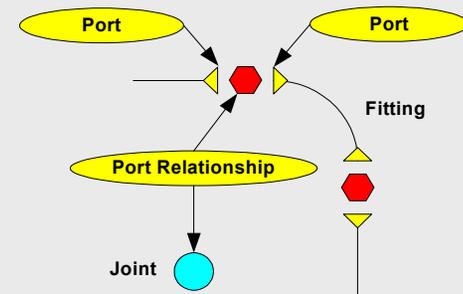


NEW - Use of type specification and occurrences of type
Allows the definition of information once and its reuse by referencing at each point that an object of a given type occurs. Similar in concept to the way that a CAD system uses symbols.



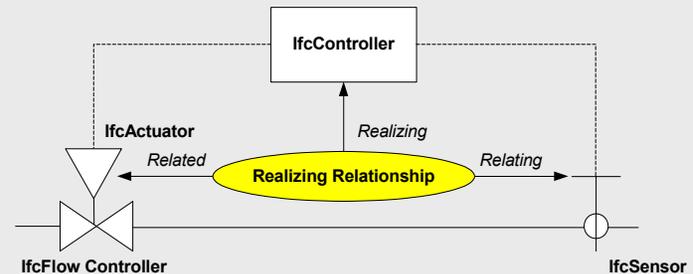
++ Improved description of connections

The capability for describing connections between pipes, ducts, cables, cable carriers etc. has been extensively improved. Includes For extended ability to specify joint types as a realization of the connection.



NEW - Inclusion of ability to 'realize' relationships

A new general purpose capability that enables a relationship between objects to be further specified. Used for builders work, control, connection and various other requirements



What IFC 2x2 adds : Architectural/Building



++ Extended compartmentation

Provides support for rising ducts and multi-level compartments e.g. for local electrical distribution and switches in

NEW - Support for lift/elevator shafts

Vertical compartmentation extended to support lift shafts with structural requirements

NEW - Provision for disabled access

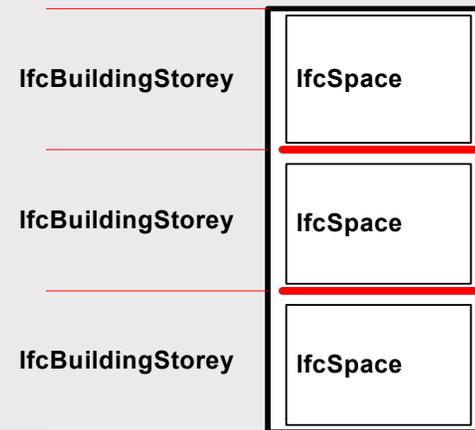
Inclusion of parameters that enable checking of disabled Access according to building codes

++ Extended space capability

Space provision extended to support more detailed exchange of external space requirements including parking

NEW - Provision for 2D drawings

As well as being able to exchange complete models, a specific capability to handle 2D drawing information including layers, text, line style and weight, annotation and dimensioning Is being included



NEW - Harmonization with ISO TC184/SC4 standards

Provision of specifications for mapping structures of the 'stable core of the IFC model to standards including STEP, POSC/Caesar, PLIB within this ISO group

NEW - Harmonisation with ISO 12006 Part 3

Providing particular capabilities that enables the ongoing IFC model development to use dictionaries created according to this language neutral specification as a development resource

What IFC 2x2 adds: Building services

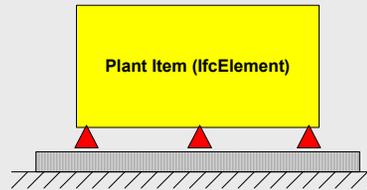


++ Extended range of elements

Many new components, including controls, to meet wider building services needs and to support ideas of simulation and code checking

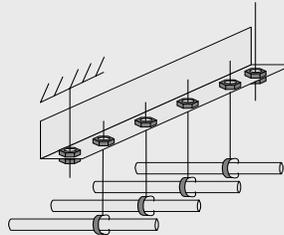
NEW - Holes and Bases

Enables builders work information to be specified Including holes, sleeves, packing, framing, upstands, isolation



NEW - Brackets and Fasteners

Brackets, drop rods, steel sections, bracket assemblies, screws, bolts etc.



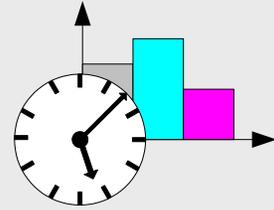
NEW ++ Plumbing services

WC's, urinals, basins, baths, sinks, traps, drainage lines, manholes and chambers.



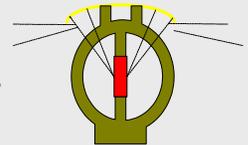
NEW - Time Series

Time related events



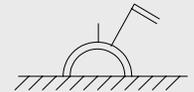
NEW - Fire Protection Elements

Sprinklers, hose reels, hydrants, wet/dry rising mains



NEW ++ Electrical Model

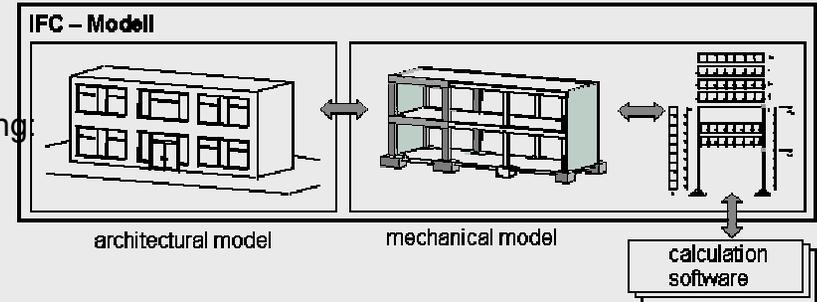
Provision of switches, switchgear, power and communication outlets, transformers, generators, motors, conductors, protective devices, distribution centres, light fittings



What IFC 2x2 adds: Structural analysis



NEW - Material independent structural analysis model, including:
structural members, boundary conditions, connections
supports, loads, load combinations



NEW - Steel structures
Members, profiles, properties, joints, features, surfaces

NEW - Steel fabrication
Handover to NC processing and production preparation

NEW - Reinforced concrete structures
RC members, rebars, joints, properties

NEW - Reinforced concrete foundation design
Including footings and piling

What IFC 2x2 adds: Facilities Management



++ Improved asset definition

Improved allocation of time, cost and work order data

++ Simplified order provision

Improved allocation of time and cost data

++ Extended cost model

Enables costing of any object, with any type of cost, at any and all points in the lifecycle, total lifecycle cost capture, budgets, estimates, cost roll up

NEW - Condition Monitoring

Captures condition data including both measured (by Instrumentation) and assessed (by visual inspection).

NEW - Request Capture

Captures ad hoc requests made for operating and maintenance work and allocation of requests to work orders.

NEW - Service Life Data

Inclusion of capabilities for service life capture and management including reference and expected service life and ISO based service life factors.

NEW - Environmental impact

Capture of environmental impact data for objects allowing impact assessment to be carried out in support of sustainable working.

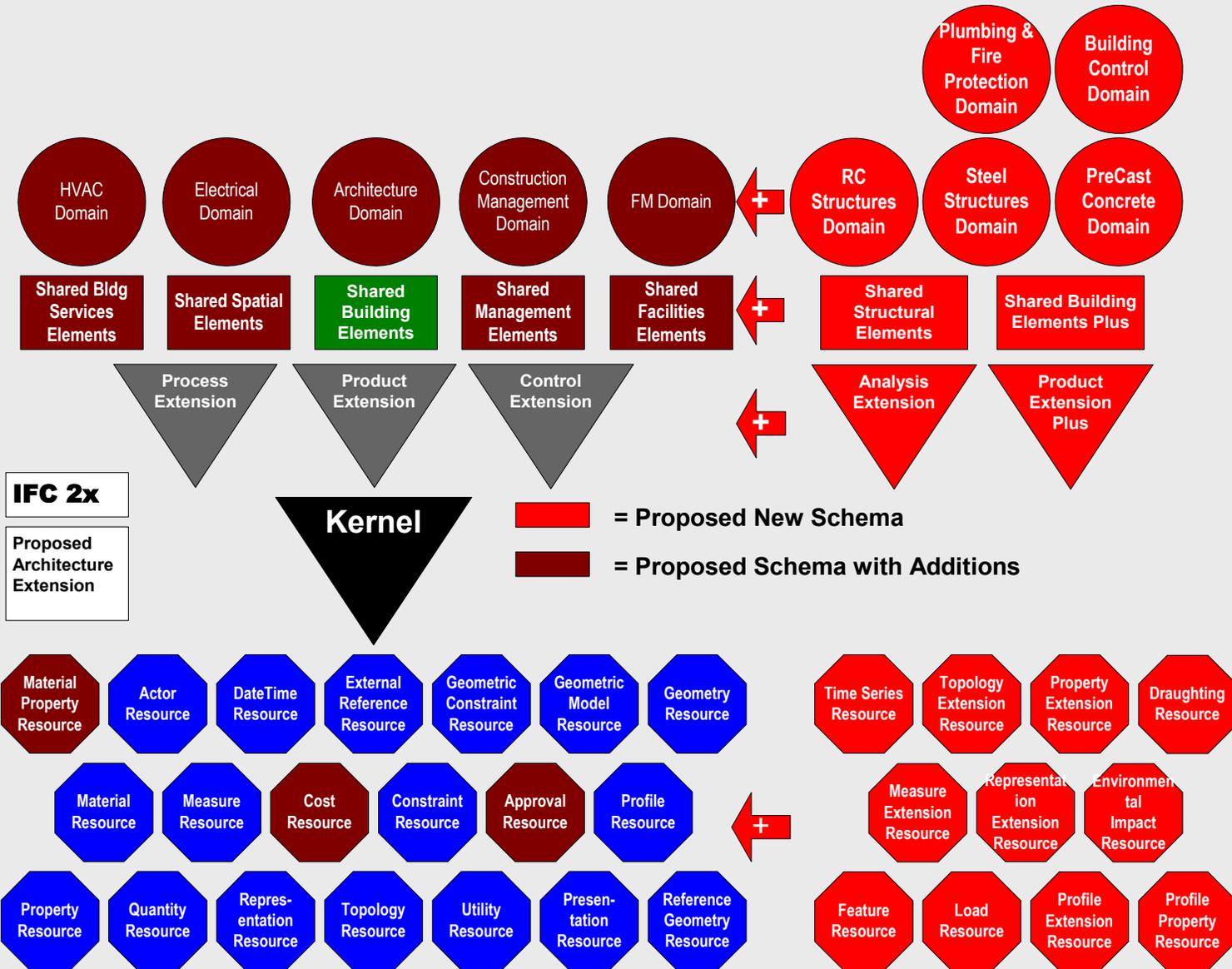
NEW - Permits

Allocation of permits for access, security, work

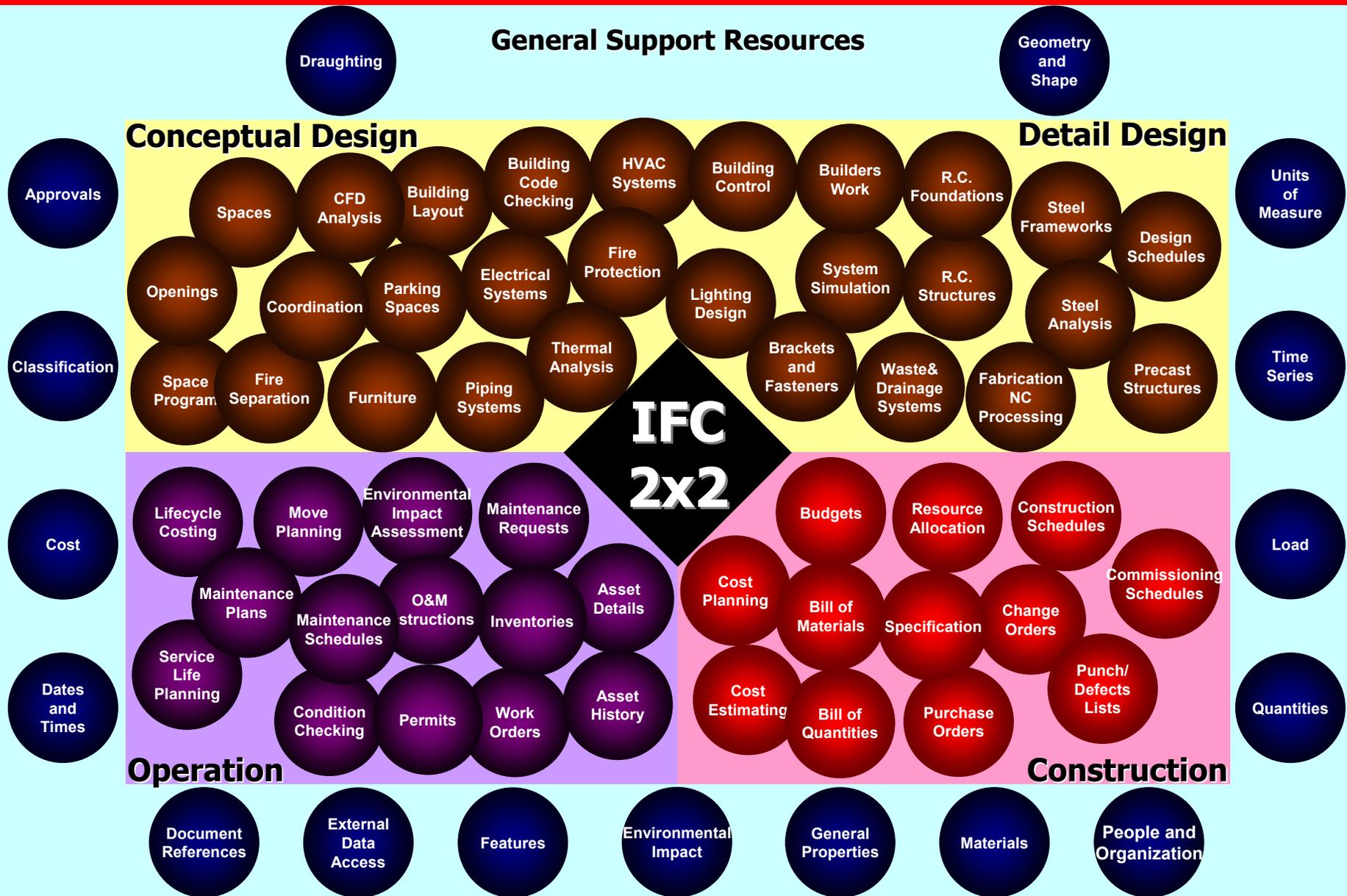
NEW - Operating and Maintenance information

Provision of capability to capture operating and maintenance instruction information based on the US Navy/Dept of Health developed OMSI XML standards

IFC 2x2: Preview



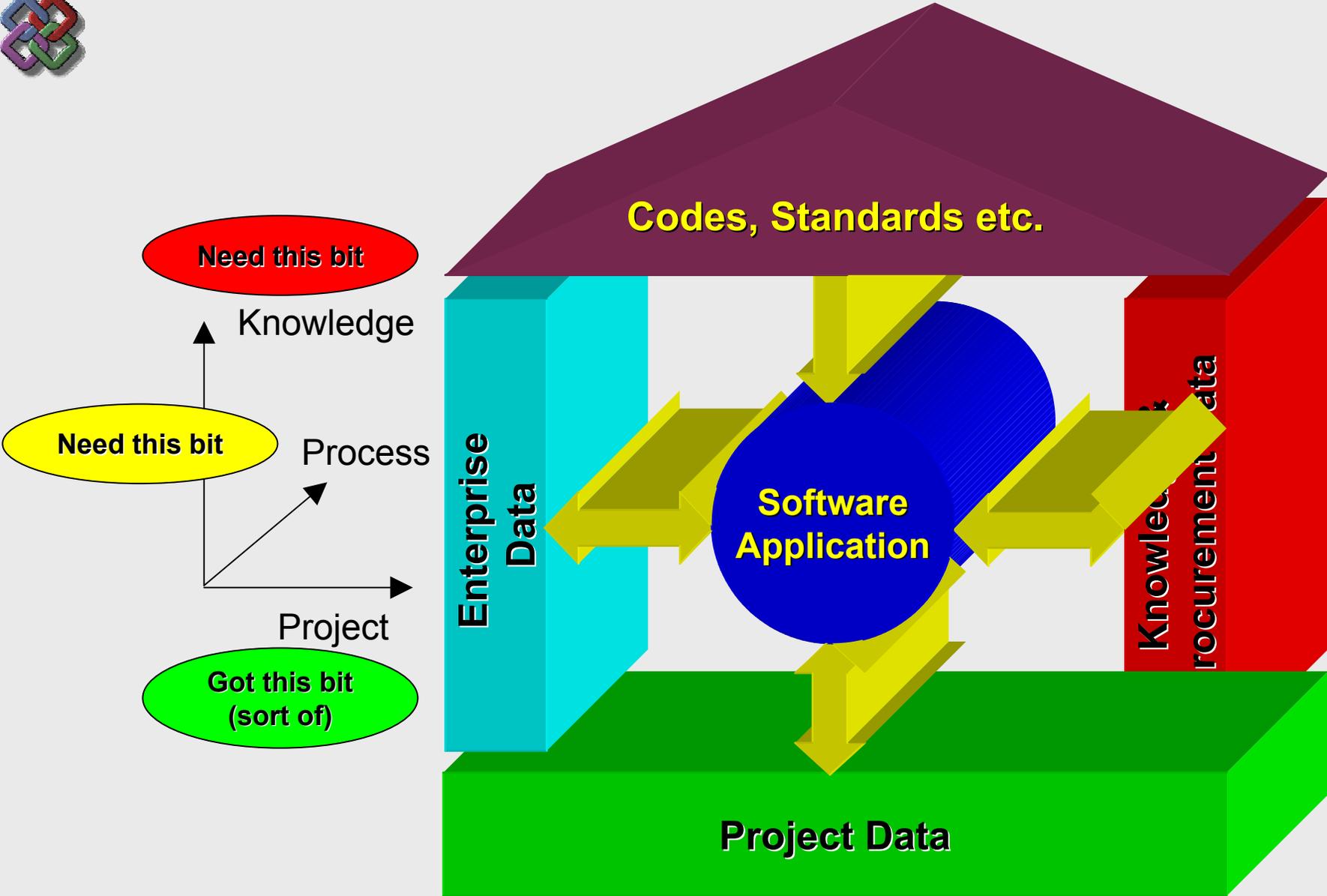
IFC 2x2: Business Case Support



Prerequisite: software support



Requirements



IAI/IFC Achievements



- ▶ IAI has become a truly global effort in building/construction
- ▶ IFC has become the most recognized standard for building models
- ▶ IFC is supported by most global CAD software vendors
- ▶ IFC is supported by many downstream applications
- ▶ Many real and pilot projects are currently testing IFC with international coverage

more information

www.iai-international.org