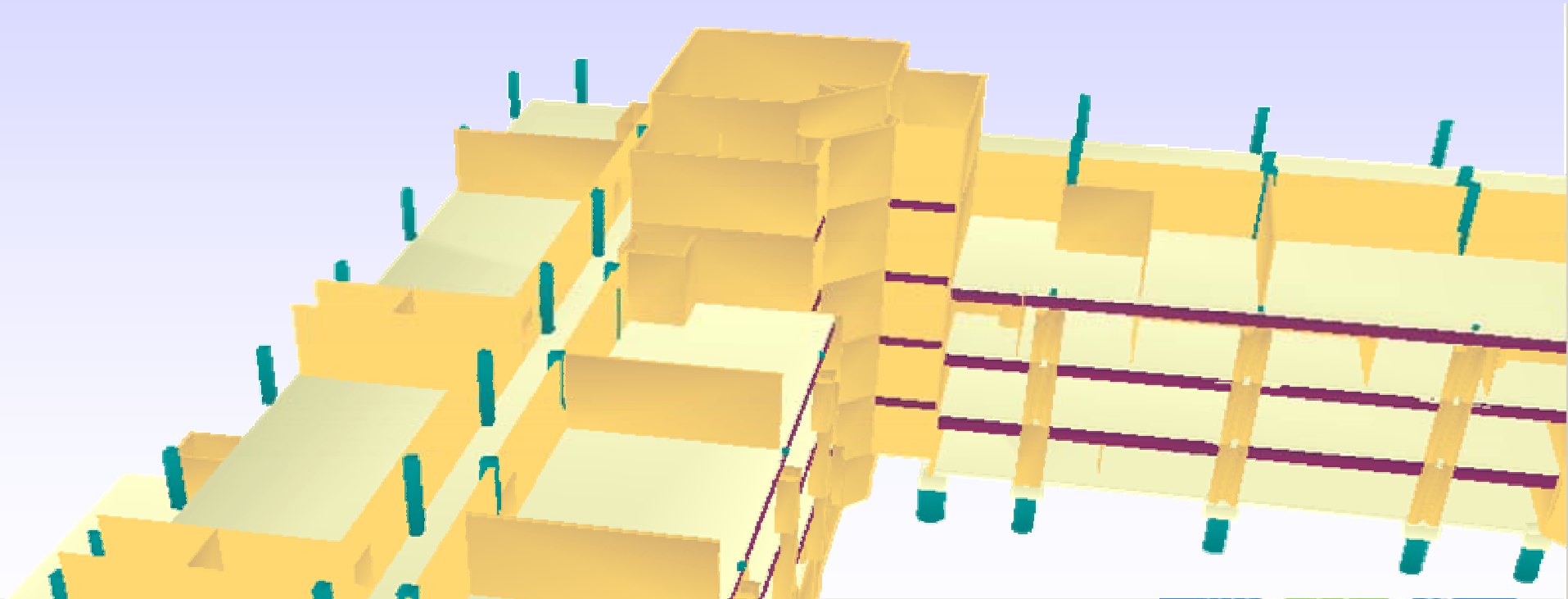


Adding Value with 3D Models

Shawn Foo
CSIRO



What is wrong with 2D?

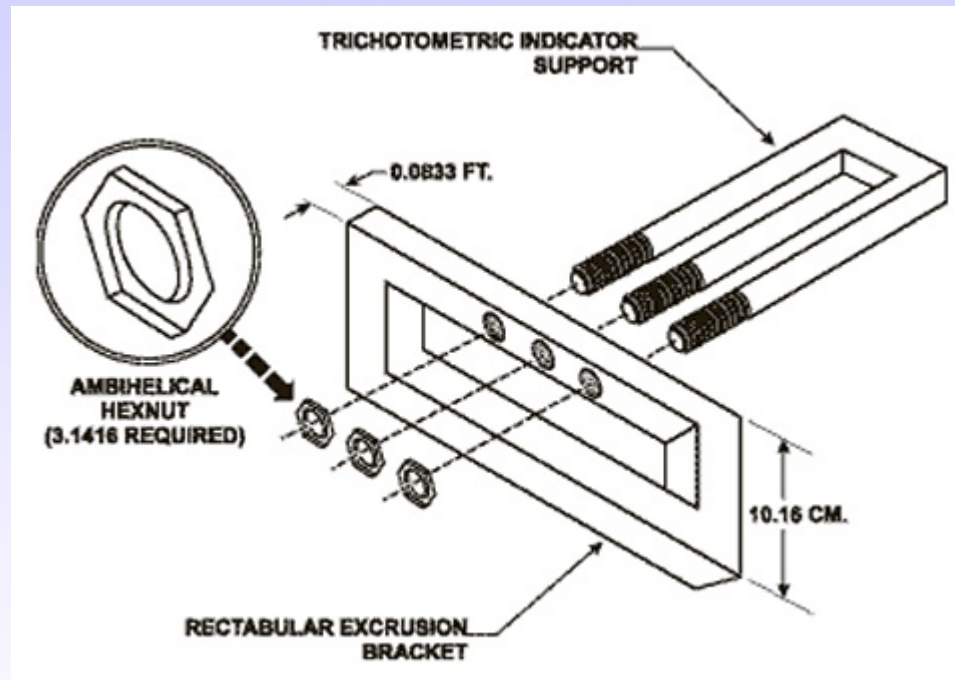
- Objects are defined using basic graphics
 - Lines, arcs, circles
- Users have to apply their own interpretation in order to understand the drawing



What is wrong with 2D?

- Extremely difficult to automate interpretation of drawings
 - 30 years of work : no reliable results
- No explicit relationships between plans, elevations, sections and details

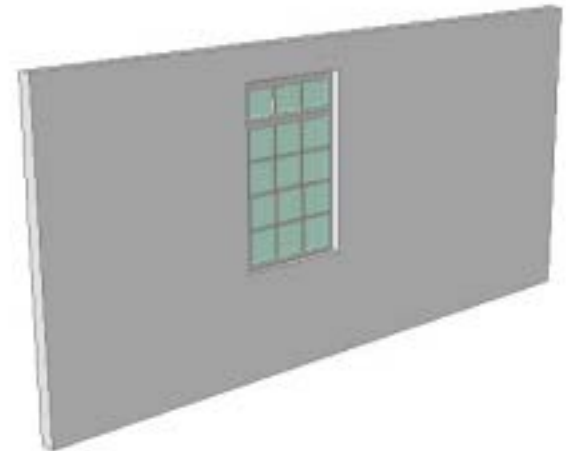
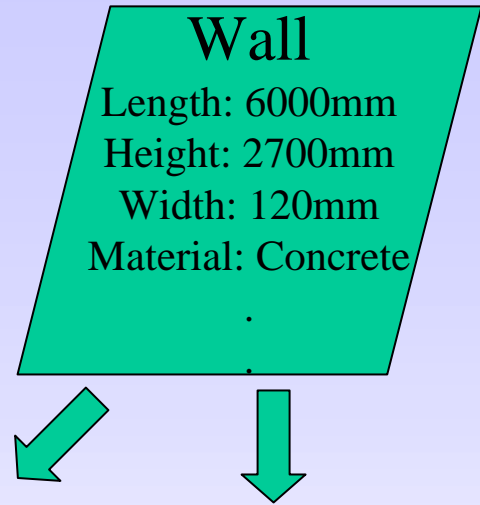
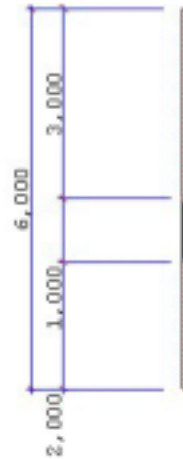
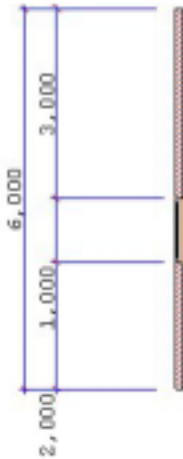
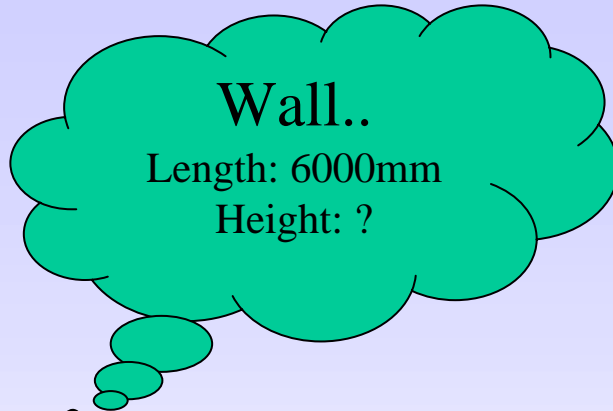
Problems with 2D



What are 3D models?

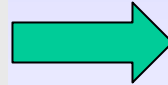
- Our major interest is in the “objects” within the model
- Objects encapsulate all the information about an element
- Using objects allows
 - Packaging of information
 - relationships to be defined
 - Automatic generation of plans, sections, etc from internal 3D model

Using 3D models



Why use models?

- Visual feedback

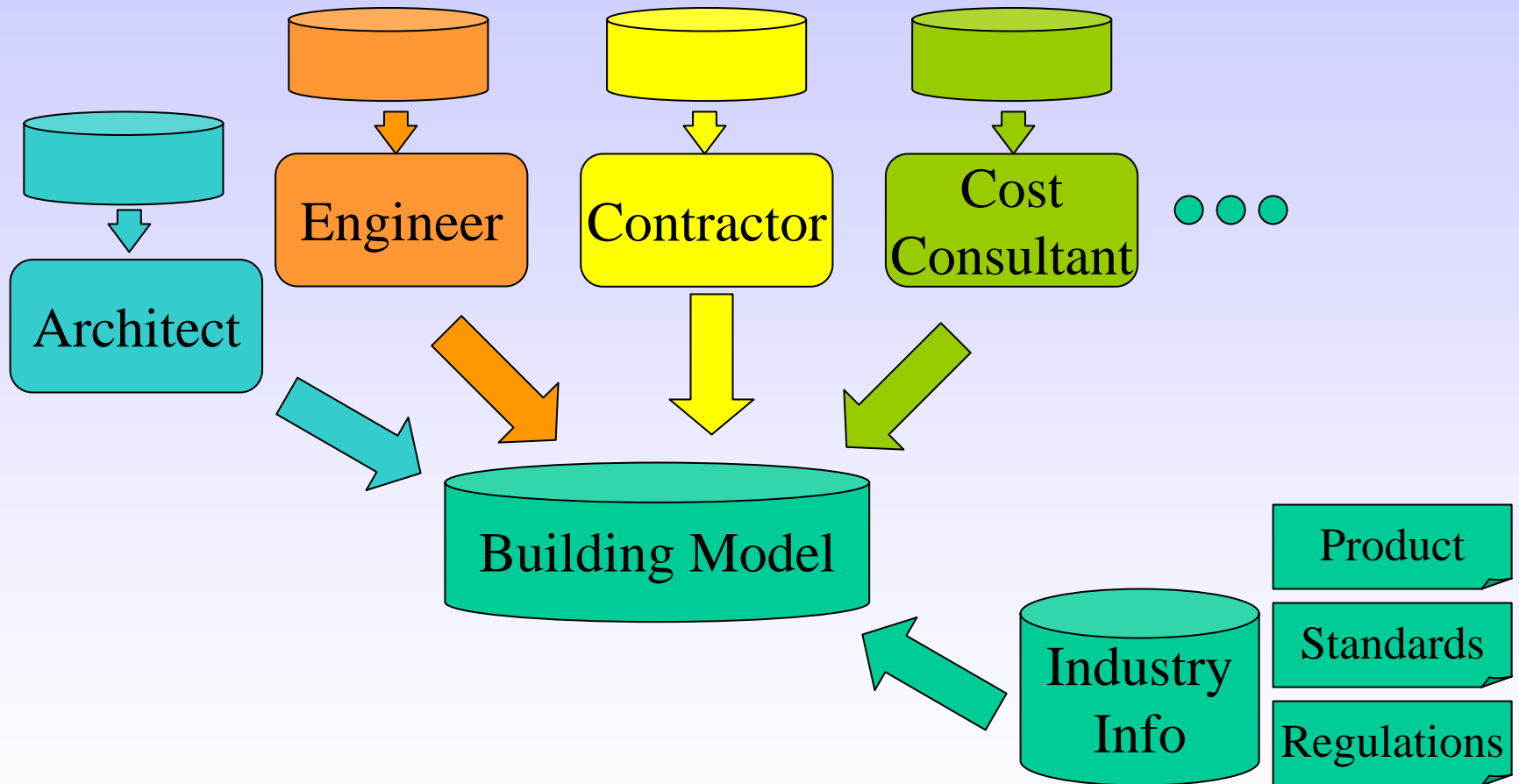


Why use models?

- Encapsulating the information
- Geometry is not as important as many people assume
 - Need geometry to infer other data for other uses
 - Feasibility and early design do not even use geometry
- Useful through all phases from planning to demolition

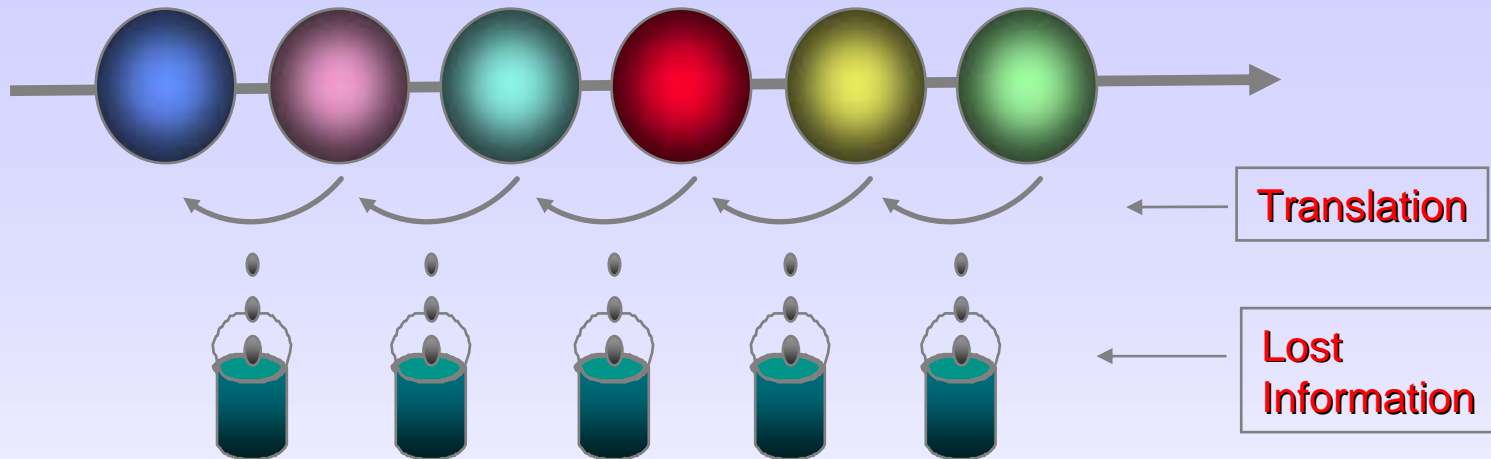


Goal: Information sharing

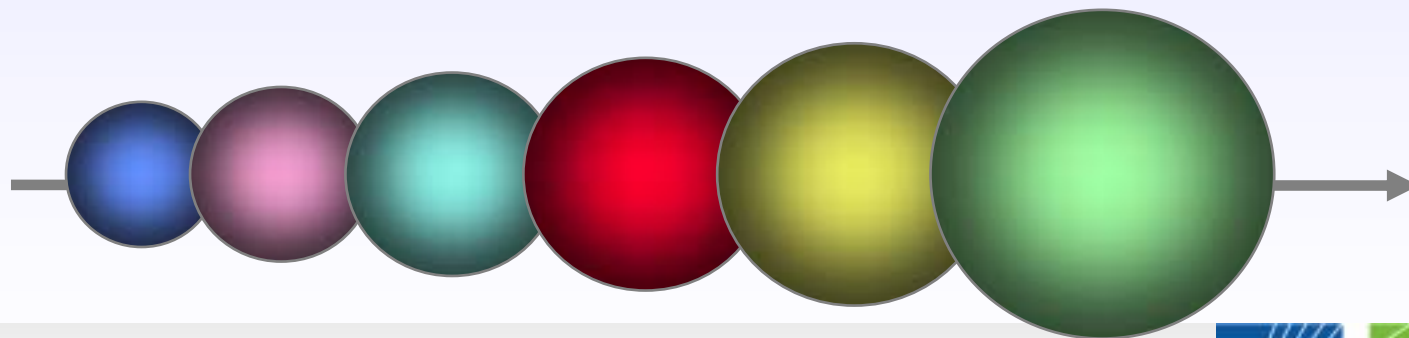


Goal: Information retention

Current Model:



Model with Interoperable Solutions:



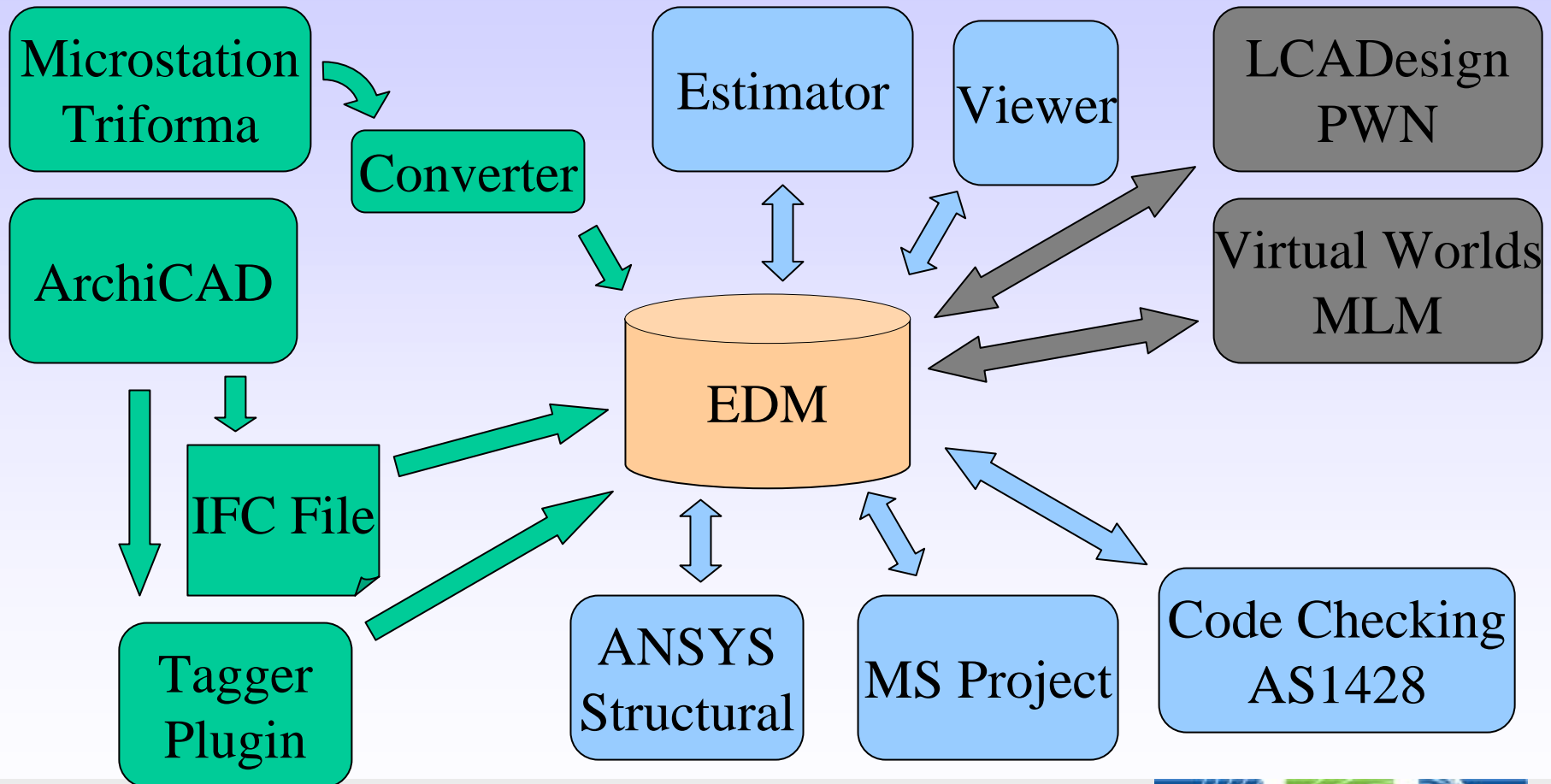
Planning / Schematics / Design / **Analysis** / Construction / FM



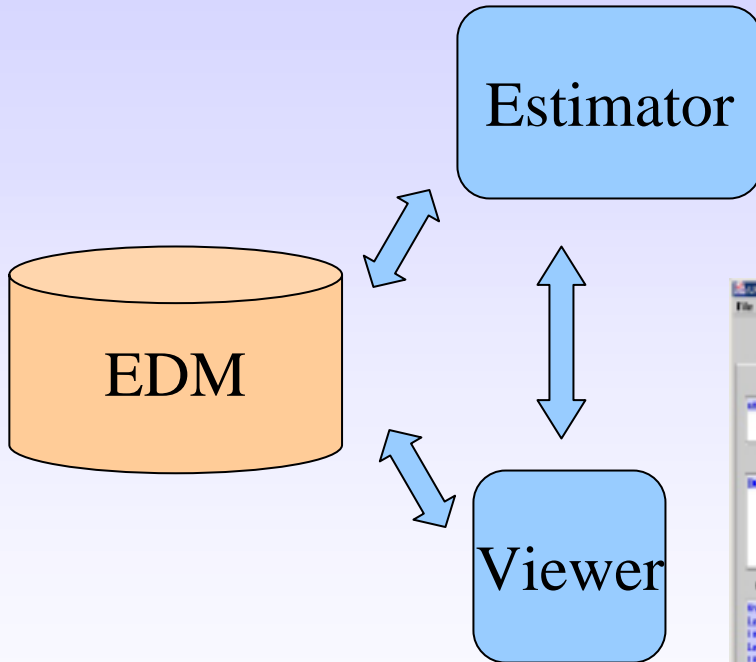
CRC Construction Innovation
BUILDING OUR FUTURE

What have we achieved?

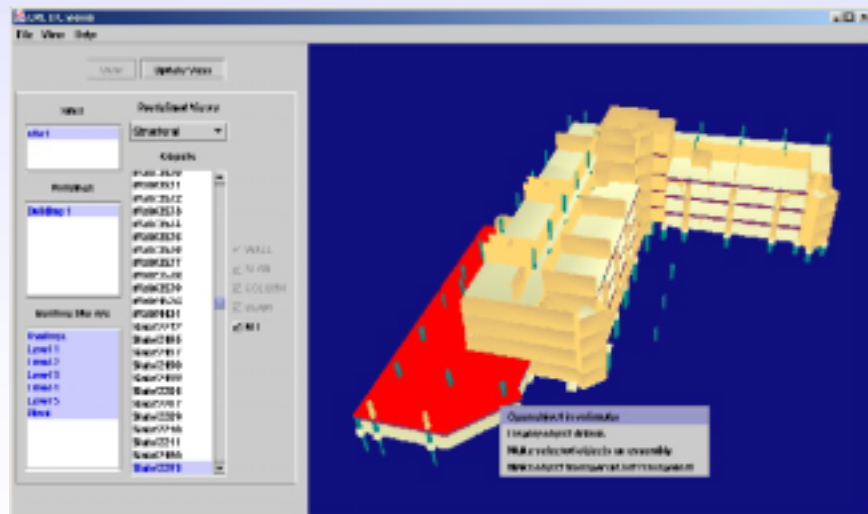
For detailed design:



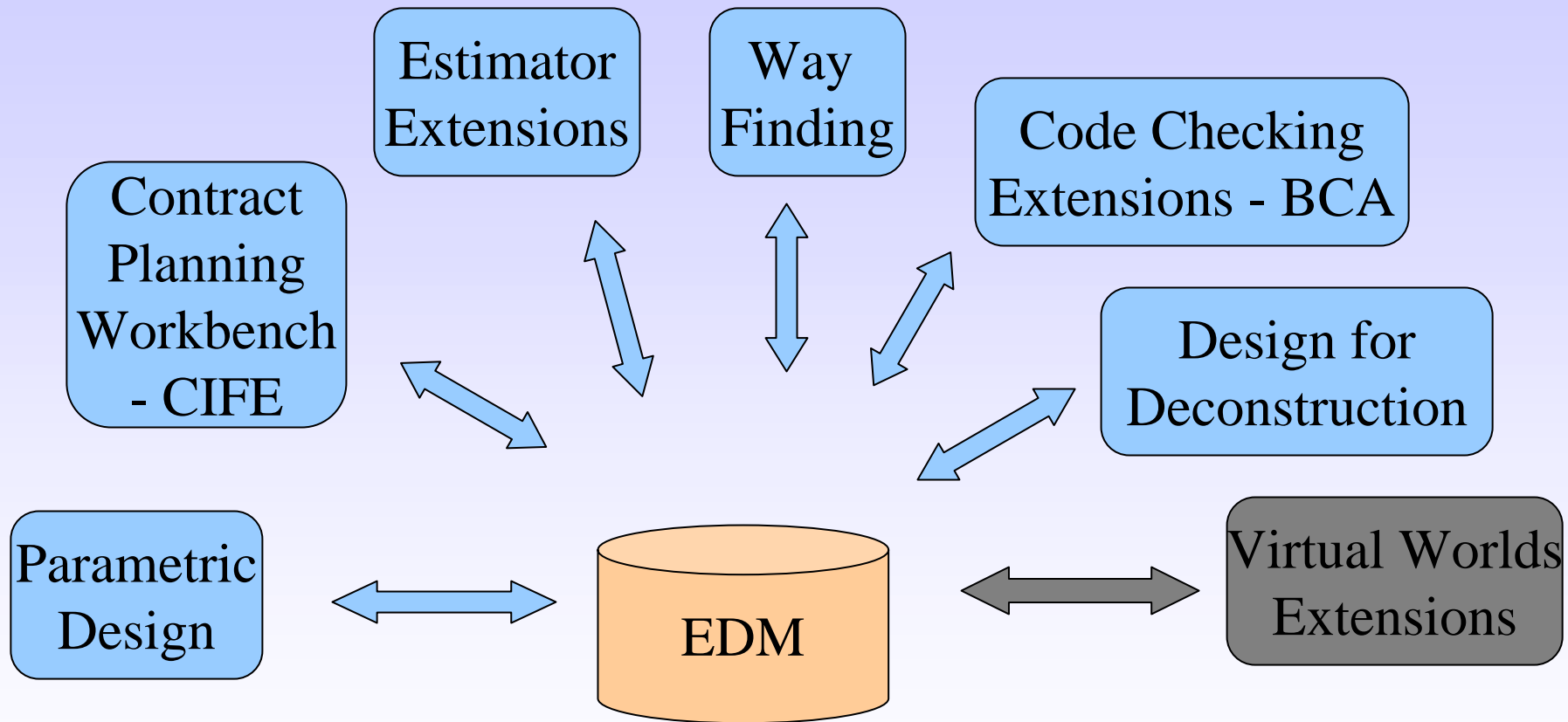
What have we achieved?



Project Quantity and Last Estimation				
File View Help				
Concrete Framework				
Description	Units	Quantity	Unit Price	Cost
Slab on ground over 200 and up to 400mm thick and attached thickening, ground beams, etc., permanently cambered	m ³	0.0	170.0	0.0
Slab on ground over 200 and up to 400mm thick and attached thickening, ground beams, etc.	m ³	458.18886	180.0	82478.984
Slab on ground over 200 and up to 400mm thick and attached thickening, ground beams, etc., laid to slopes up to 15 degrees from the horizontal	m ³	0.0	170.0	0.0
Slab on ground over 200 and up to 400mm thick and attached thickening, ground beams, etc., laid to slopes over 15 degrees from the horizontal	m ³	44.238618	170.0	7520.5644
External paving slab on ground up to 200mm thick and attached thickening, ground beams, etc., permanently cambered	m ²	0.0	180.0	0.0
External paving slab on ground up to 200mm thick and attached thickening, ground beams, etc.	m ²	0.0	17.8	0.0
External paving slab on ground up to 200mm thick and attached thickening, ground beams, etc.				
Trade Total:		502.42746	Current Total: 91,699,548.71	



New & proposed projects



Risk - Leading edge versus Bleeding edge

- Using IFC standard for information exchange
 - Supported by major CAD platforms
- Significant effort in Scandinavia
 - Finland – US\$35M over 5 years
- HUT project
 - Extension to Alvar Alto designed auditorium



Information is a source of learning. But unless it is organized, processed, and available to the right people in a format for decision making, it is a burden, not a benefit.

- William Pollard