



Design



Build



Inspect

bisco PRO

building
integration
software

BIM in residential construction

**Building Integration
Software Company Ltd**

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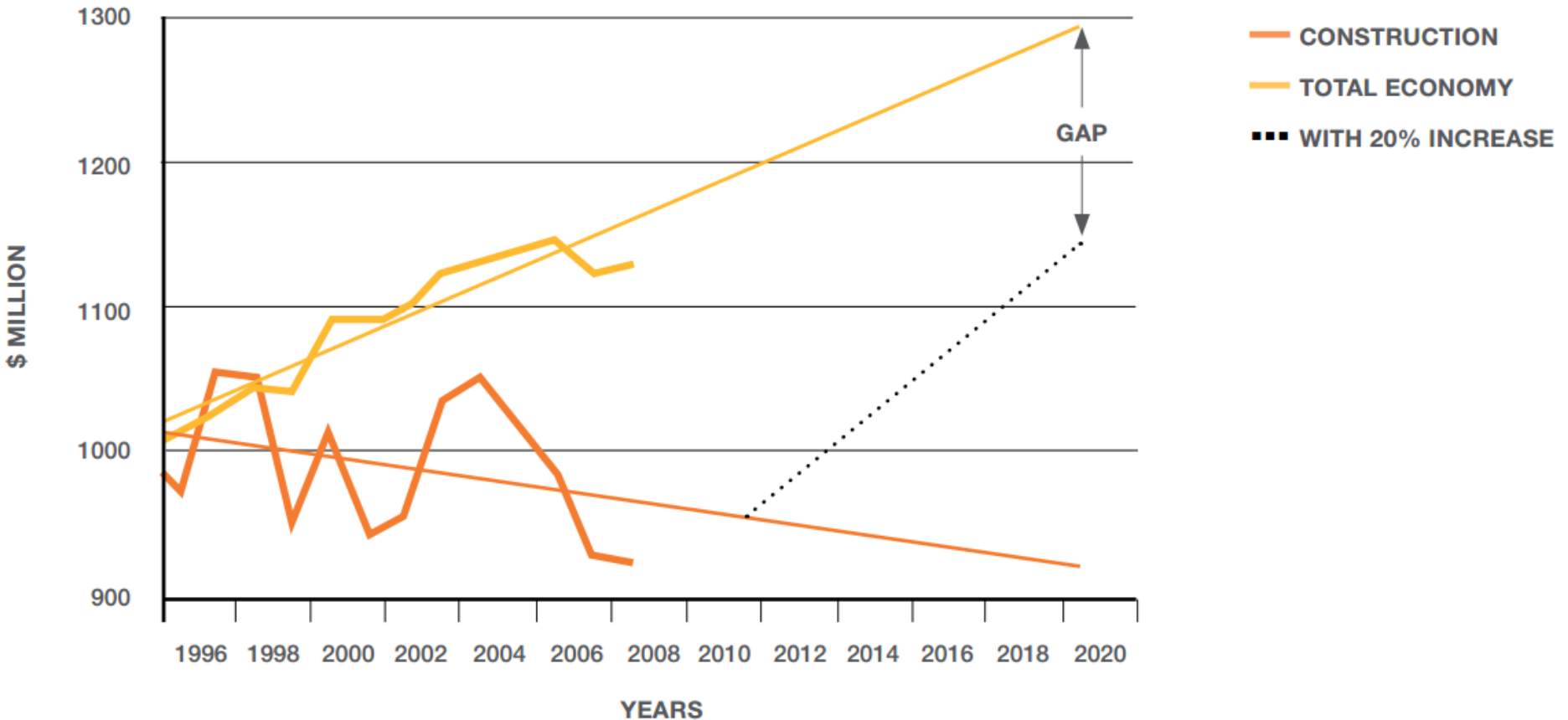
My presentation

- Why IT in construction matters
- Challenges of implementing BIM into residential construction
- See how we've done it

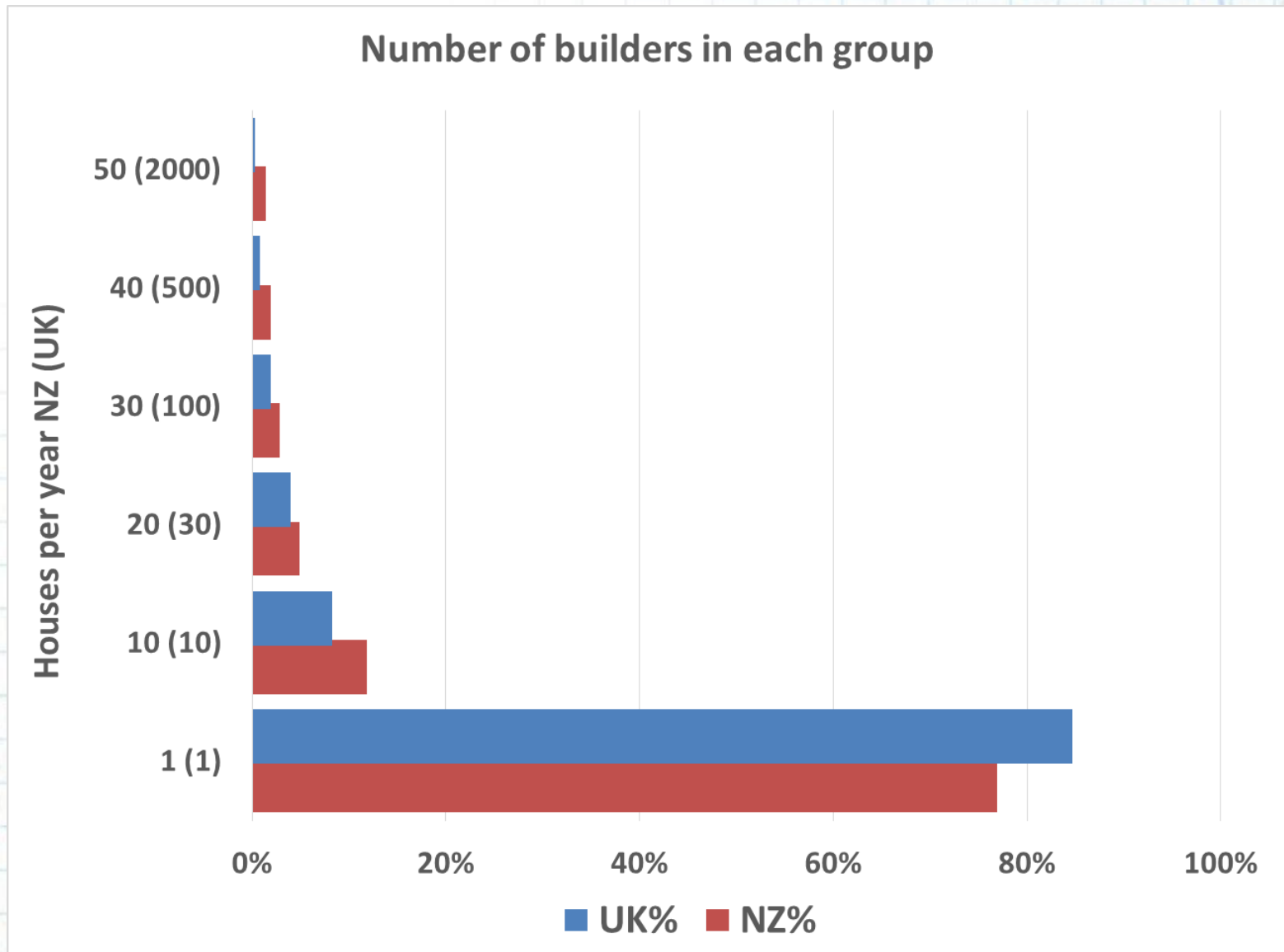
Residential construction is a big deal

Percentage of total revenues by construction sub-sector

MULTI-FACTOR PRODUCTIVITY TRENDS (INDEX 1995 = 1000)



Companies that build new houses

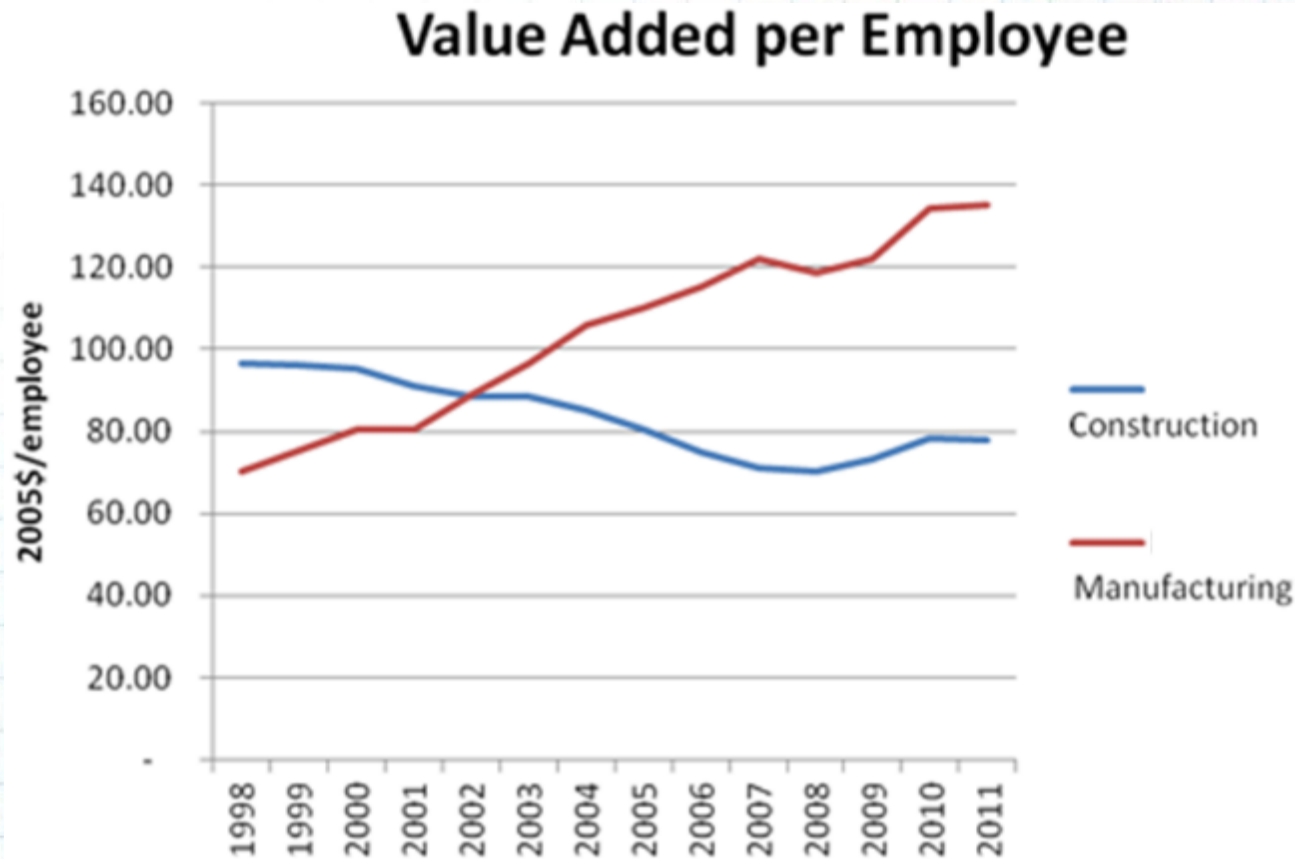


So the typical house builder is small

- Tend to lack sound internal processes
- Have a low adoption of IT
- But represent bigger potential for gains that bigger companies (who do have systems)

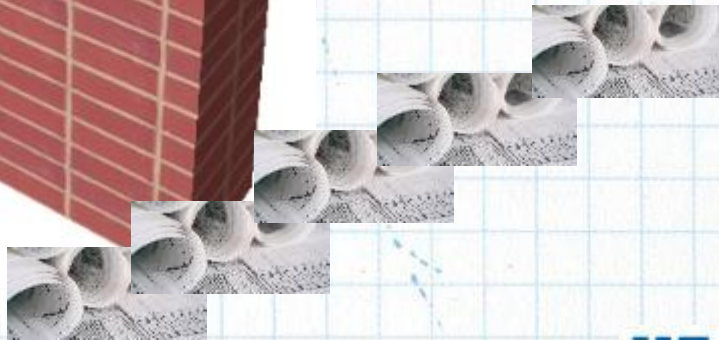
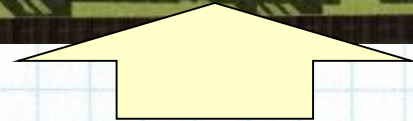


There is a connection between ICT uptake and productivity



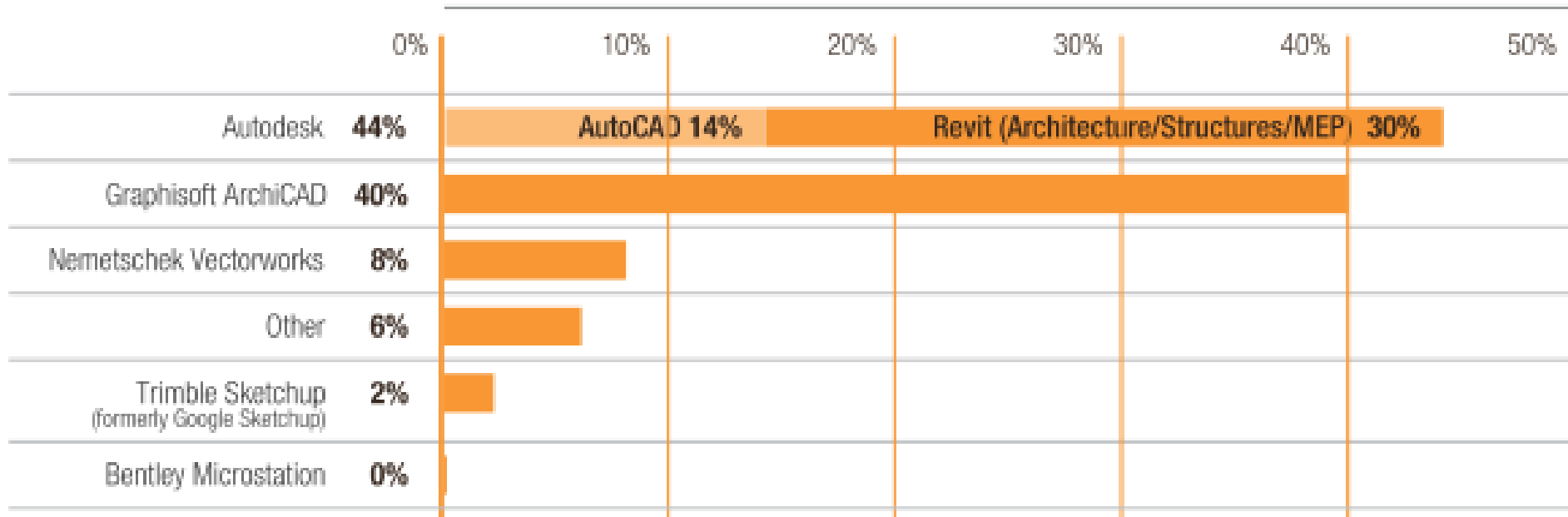
- Chris Hector, researcher in economics at Waikato Management School “but it has a lag in it”

The industry is still fundamentally paper based



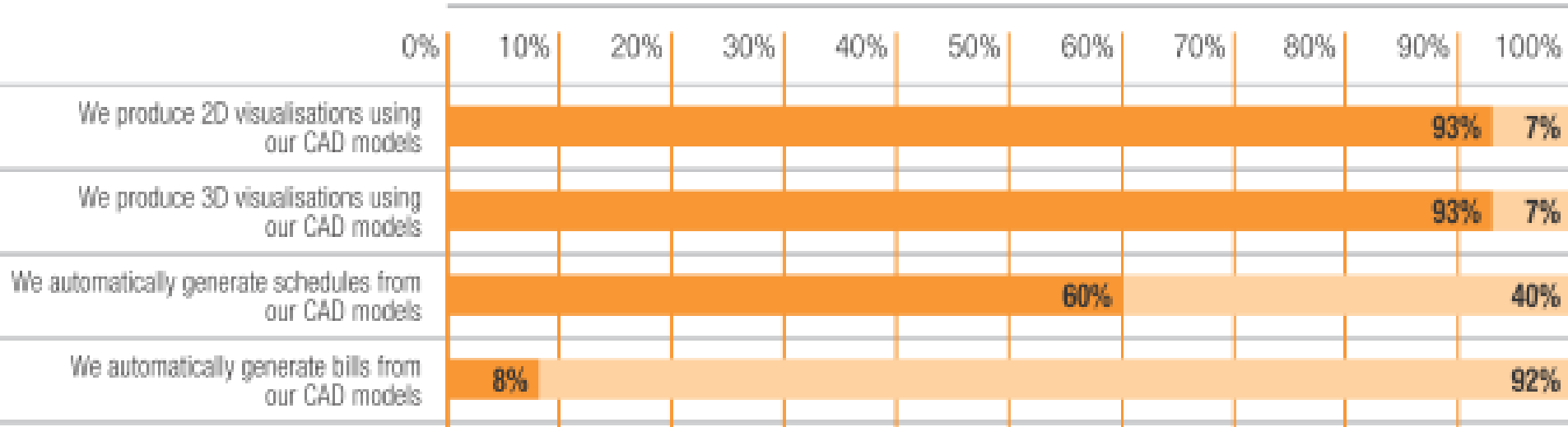
The good thing in NZ is over 50% of NZ houses are designed using BIM capable tools

When producing CAD drawings, which of the following tools do you *mainly* use?



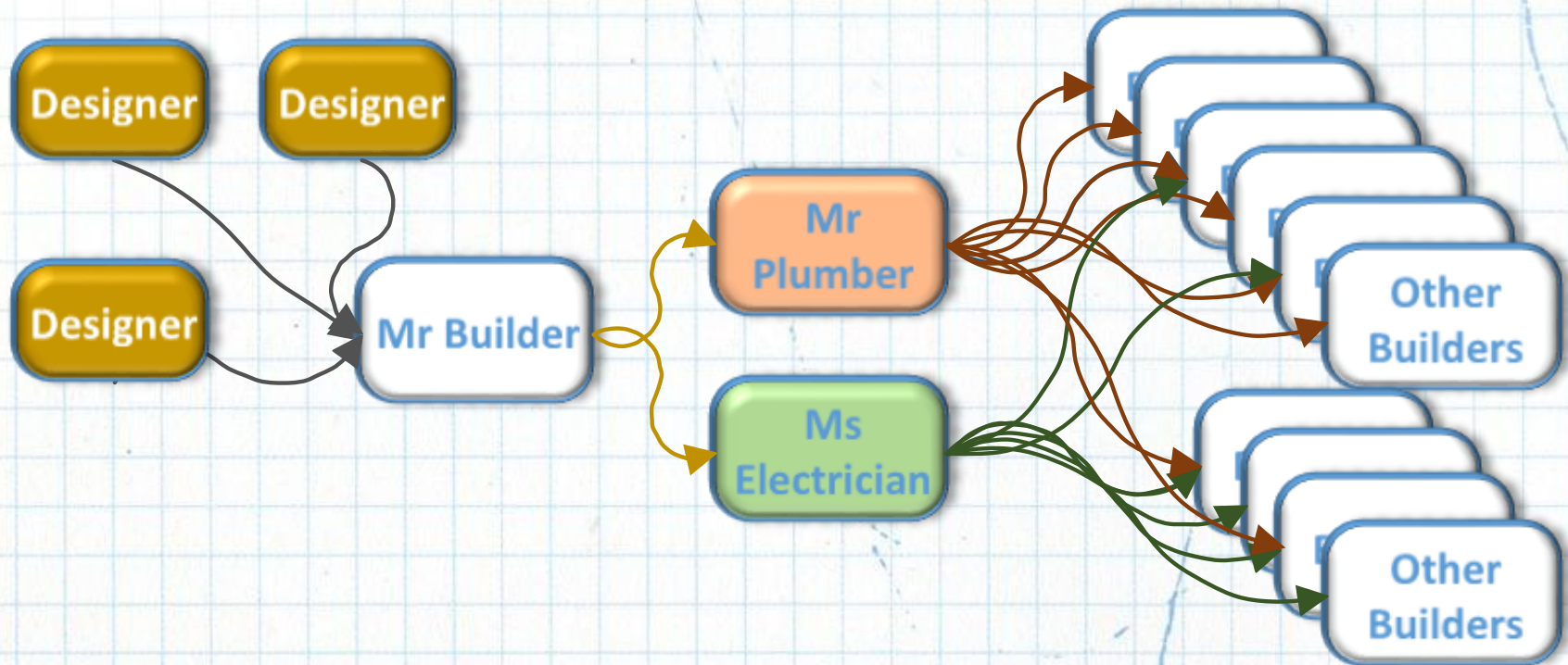
But mostly to produce 2D drawings

For each of the following statements, how would you describe your organisation's use of CAD?



Challenges in Residential

- Often builder isn't known at design phase
- Builders deal with a range of designers
- Often builders regularly use the same trades
- But those trades deal with multiple builders and projects in parallel
- No one invests much in communication

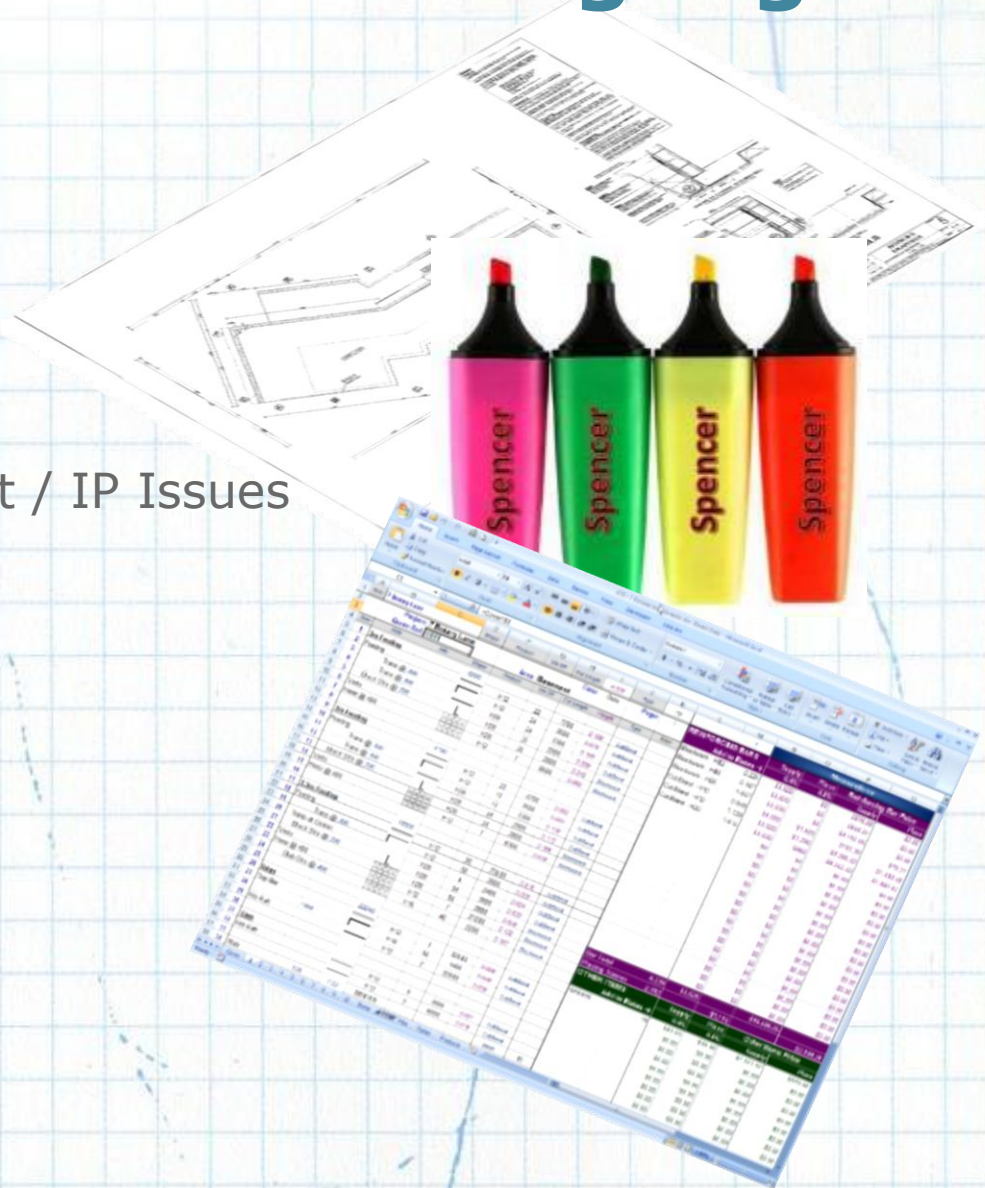


So industry standard costing method is still the spreadsheet and highlighter

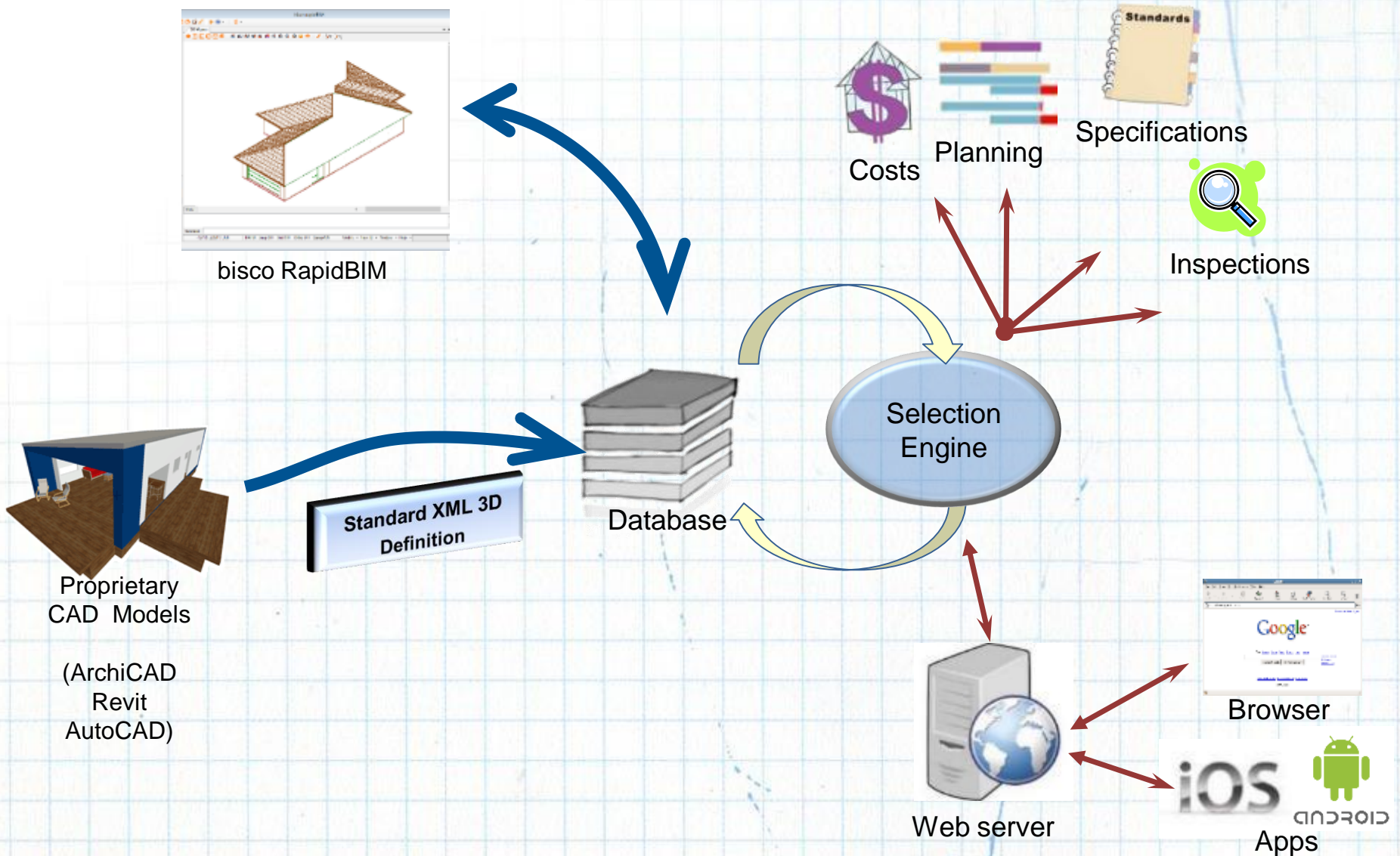
- Human error prone
- Time consuming
- Skilled resource required
- Difficult to scale
- Spreadsheet Guru dependent / IP Issues

Typical errors

- Translation to spreadsheet
- Missed items
- Scaling
- Typos / Overtyping formulas

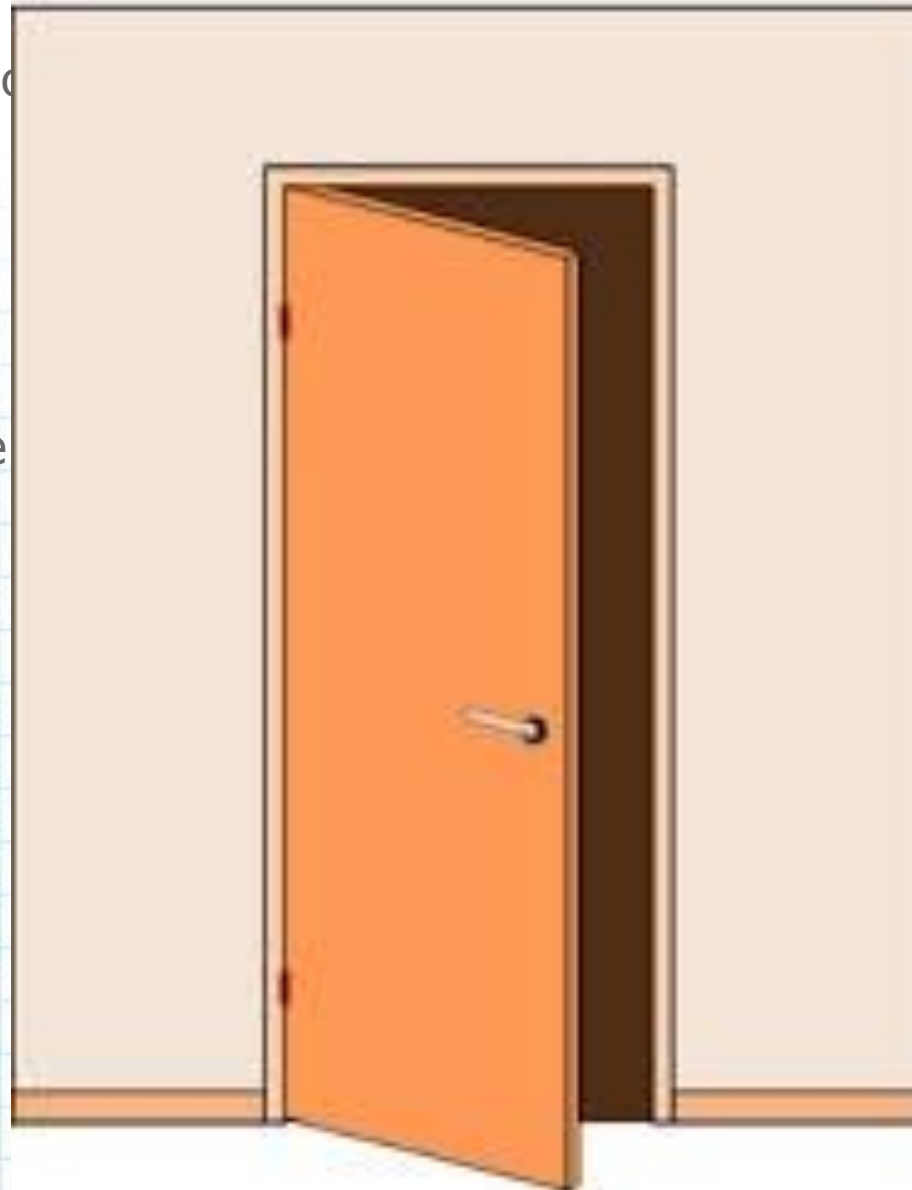


Our solution is biscoPro™



Recipes are a common approach

- Stores a recipe of
- Recipe contains
- Any change in e



cipe

chopped
il, oregano &
ter until tender, about 15
for last 5 minutes to barely
owl). Add onion and pepper to
ingredients and pour over potato
let sit at room temperature about 1
4.

We use a parametric methodology

- Elements have properties and property sets
- Reuse as many decisions from the 3D CAD BIM model as possible
- Use the properties to make decisions about the element

The screenshot shows a software window titled "Editing 'Door Interior'". It contains several input fields for configuring a door element:

- Name: Door Interior
- Colour: Green
- Level: 0
- Phase: C10 Interior Doors, Interior Trim
- Start Date: 1/01/1900
- Stop Date: 1/01/1900
- Family: Unknown Family
- ☒ Use Mapped Properties
- Update to Mapped

Below these fields are tabs for "Properties", "Notes", "QS", and "Reference Image". The "Properties" tab is active, showing a "Property Set" dropdown and a table of values. The table has two columns: "Property" and "Value".

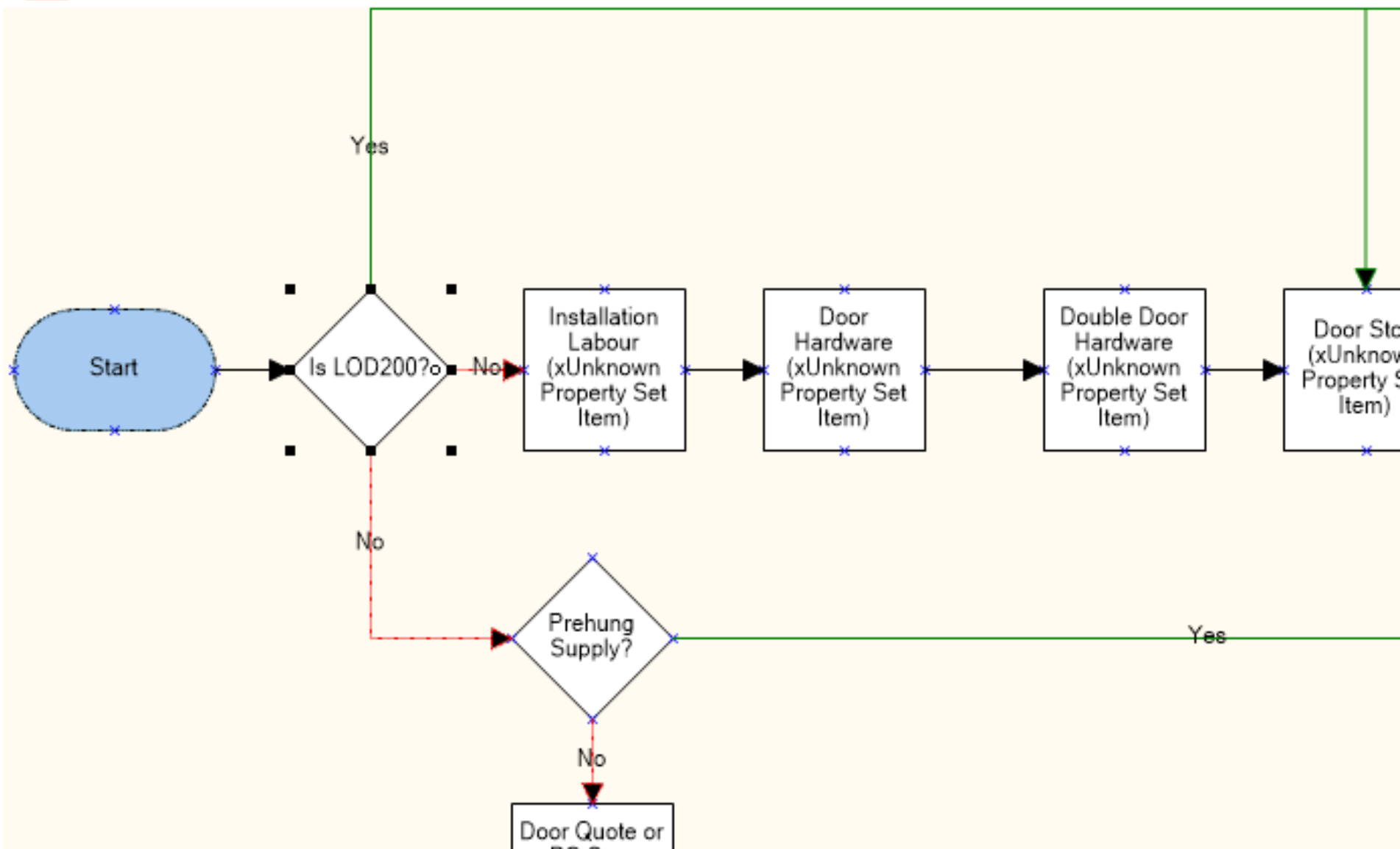
Property	Value
Door Interior	
Door Interior Type	Standard
Door Leaf Material	MDF Hollow Standard
[*Door Supply Method]	[Pre Hung]
Door Hardware Type	Passage
[*Architrave Type]	[MDF 40x10]
Door Reveal	
[*Reveal Material]	[Timber]
Reveal Thickness	25
[*Reveal Type]	[Standard]
Reveal Width	100
Level of Detail	
[*Level of Detail]	[LOD200 Approximate]
Variables	
Height	2100
Head Height	2100
Width	900

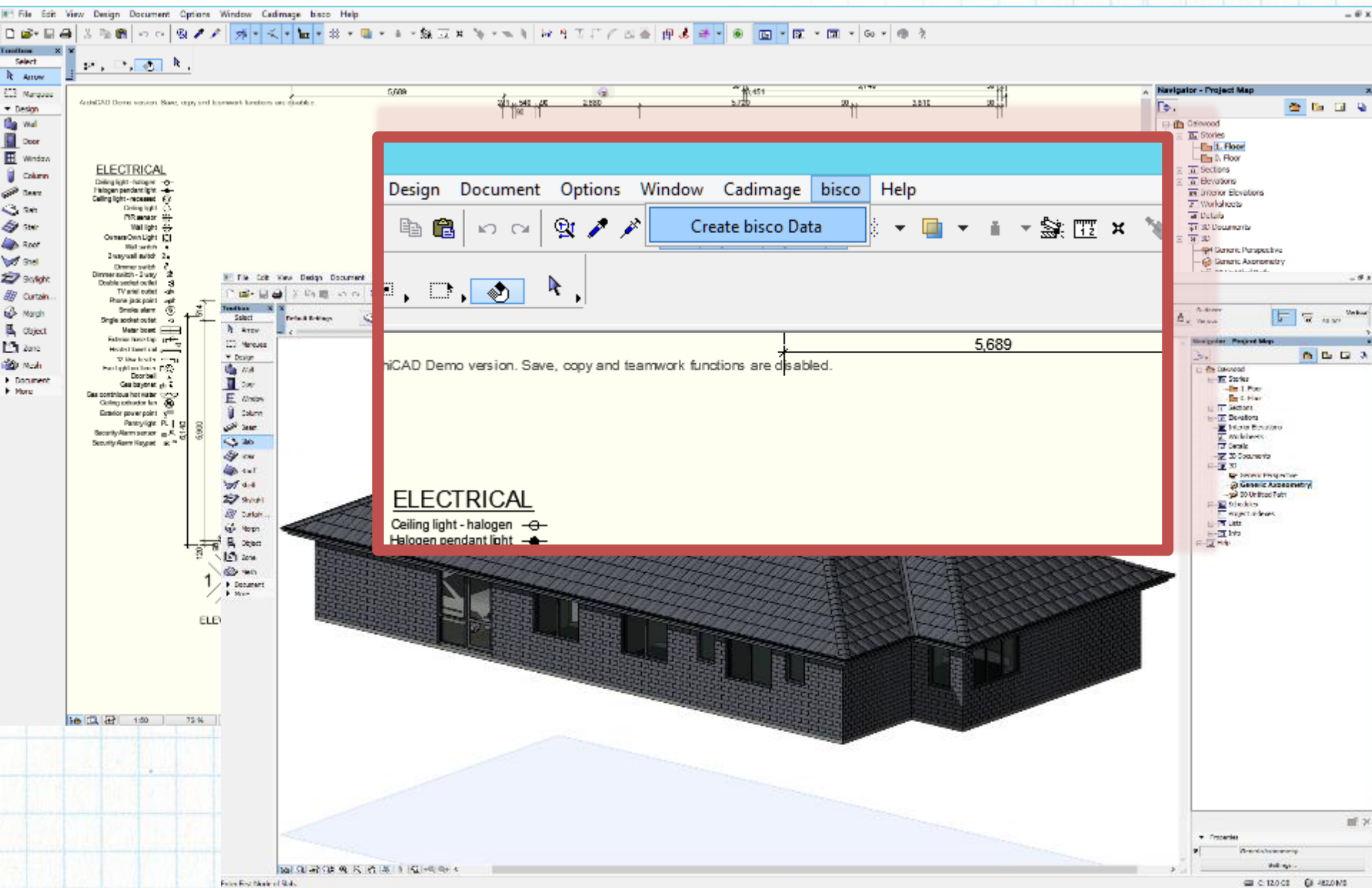
The "bisco PRO" logo and "building integration software" text are visible in the top right corner of the Properties tab.

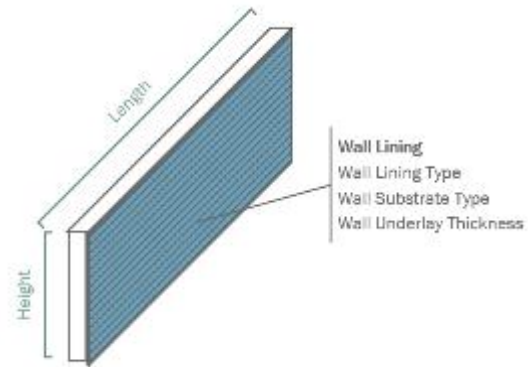
Decisions represented as a flow chart



Edit Assembly Element "Door Interior"





Name Colour Level Phase Start Date Stop Date ☒ Enable all Property Mappings

Properties | Notes | QS | Reference Image | Sheet Cladding Details | Weatherboard Details | Wall Lining Details | Brick Details

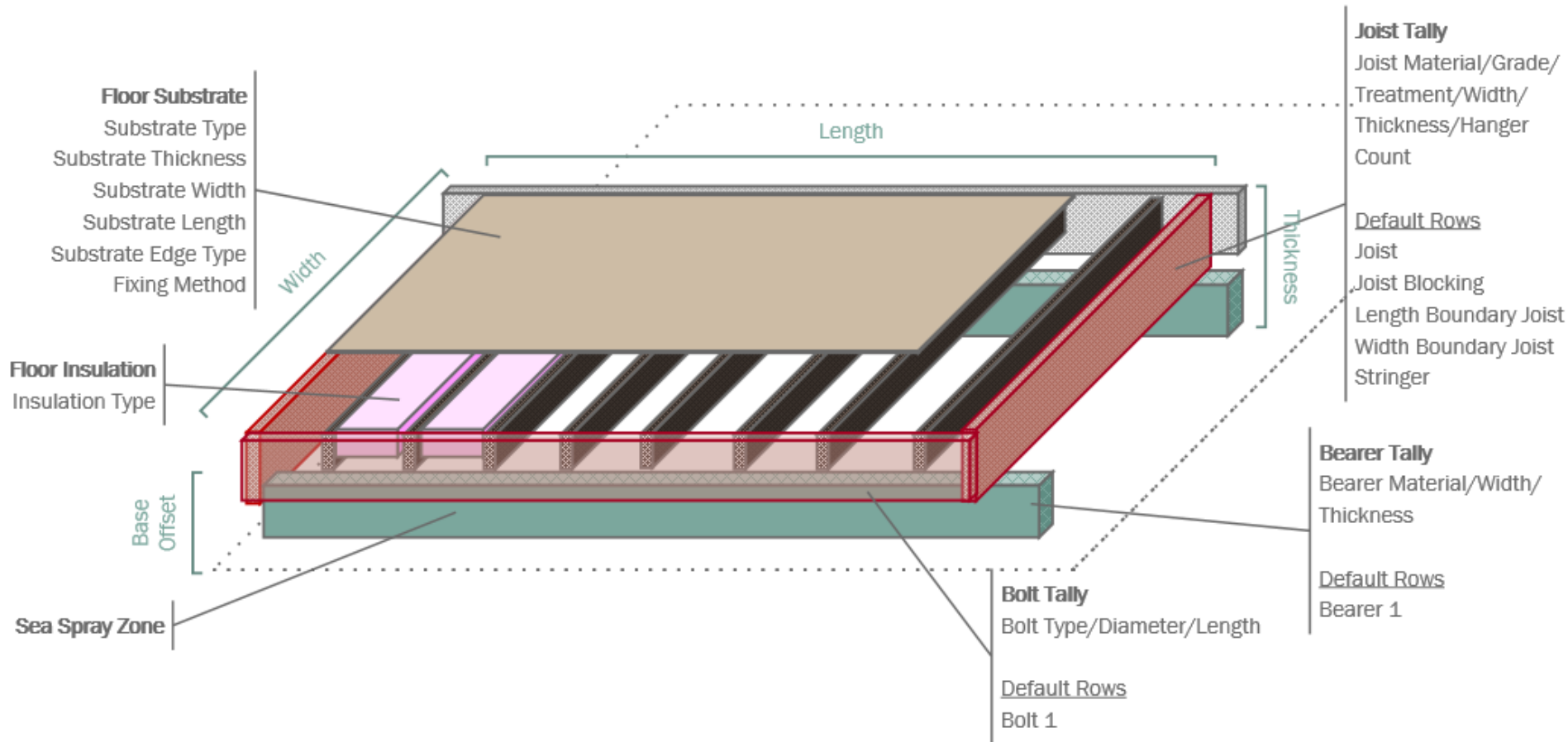
Property Set

bisco PRO building integration software

Property	Value
Perimeter	11.8745584
▼ Level of Detail	
[*Level of Detail]	LOD200 Approximate
▼ Site Environment	
[*Earthquake Zone]	Medium
[*Sea Spray Zone]	Zone 1
[*Snow Zone]	Zone 1
[*Geology Type]	Standard
[*Wind Zone]	High
[*Site Setting]	Town
▼ Wall Cavity Batten	
Cavity Batten Material	Plastic
▼ Wall Structure Details	
Floor Substrate Material	Concrete
Is Secondary Cladding	No
Stud Spacing	300
Wall Insulation Type	Fibreglass R1.8
I Wall Framing Type	Reframe Timber

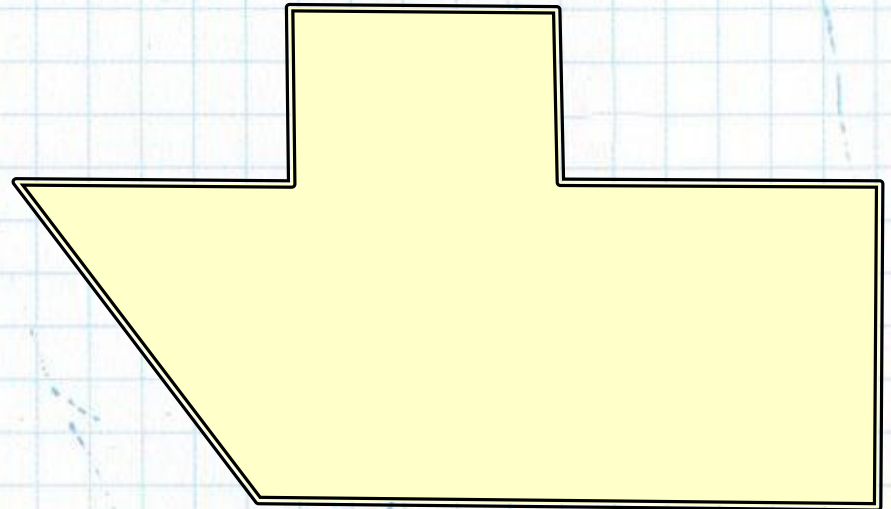
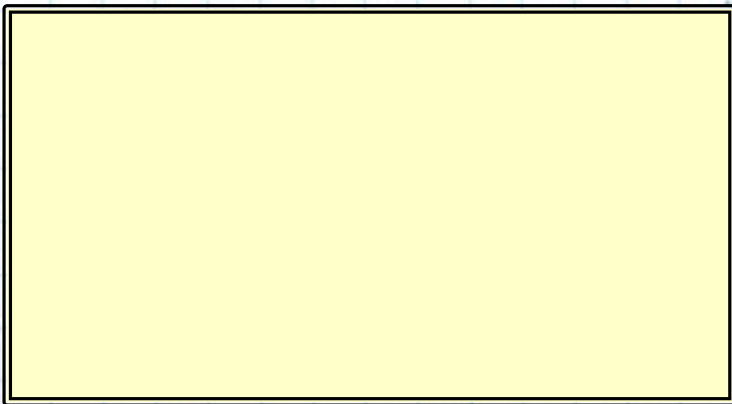
A 3 CAD floor slab might look like this

but using properties biscoPro can interpret it into this...

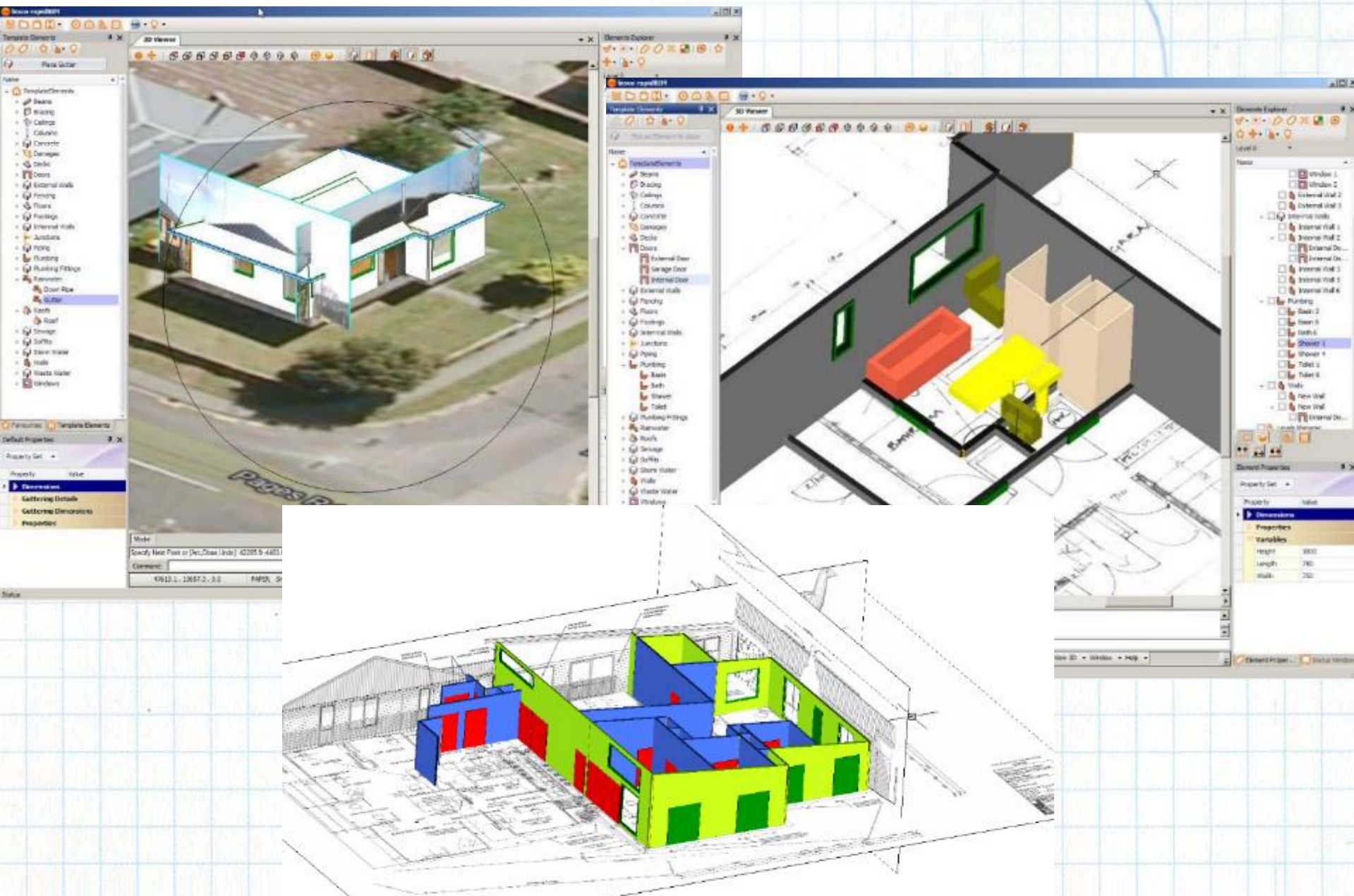


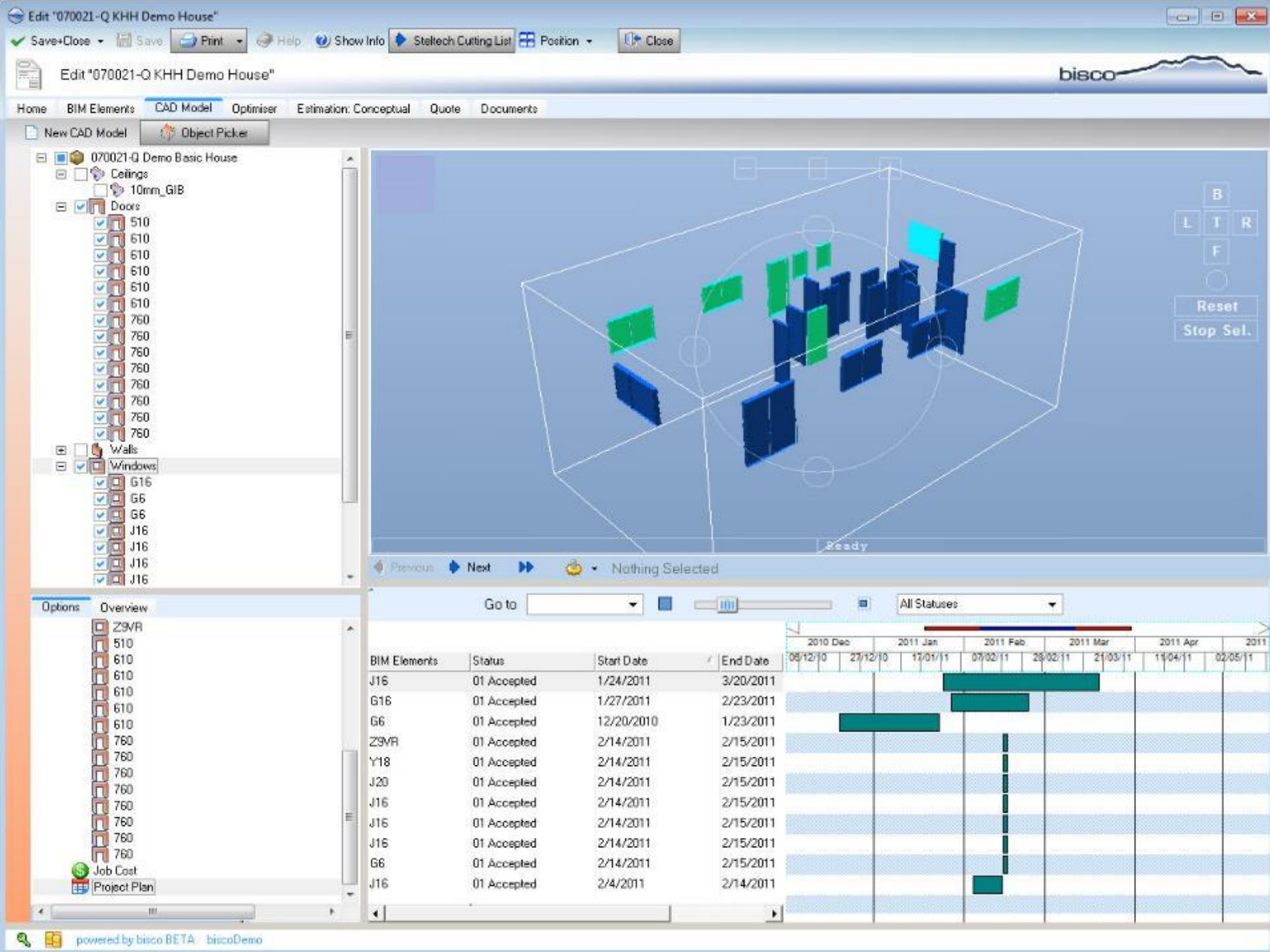
Allows for activity based costing

- Using square meter or linear metre labour rates are only an average
- Activity based costing looks at what attributes drive the tasks and labour times
- Much more sensitive to design differences



Creating BIM from 2D





Residential Builder



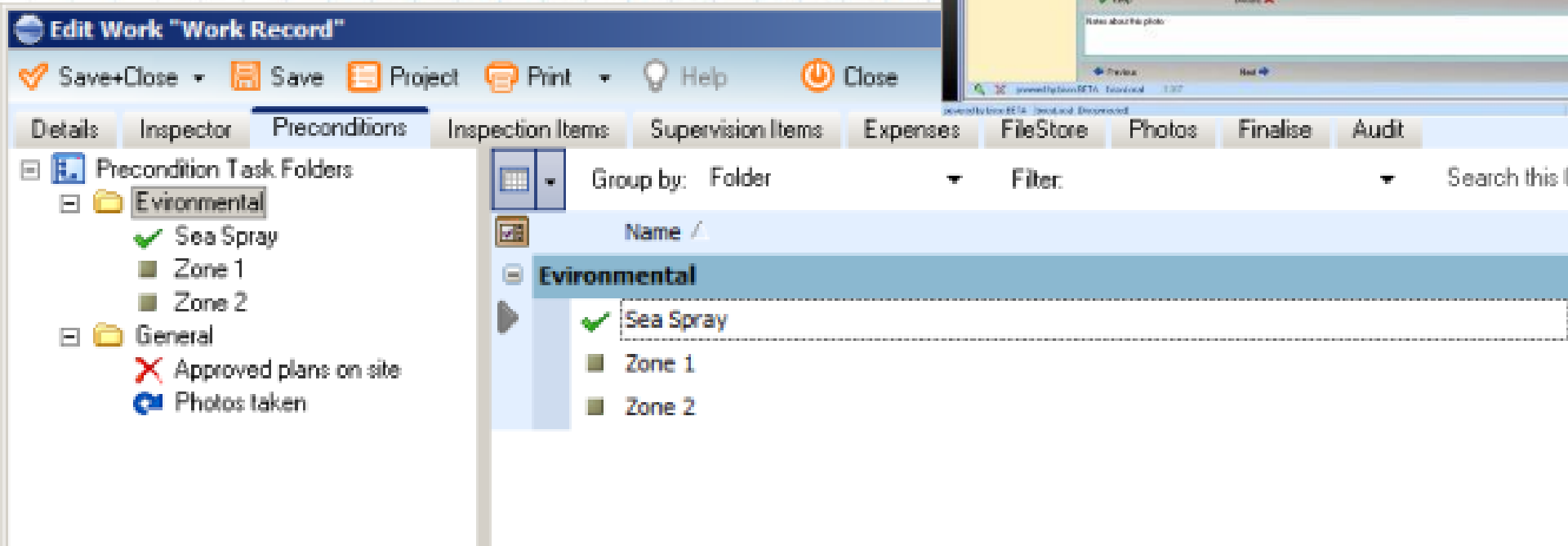
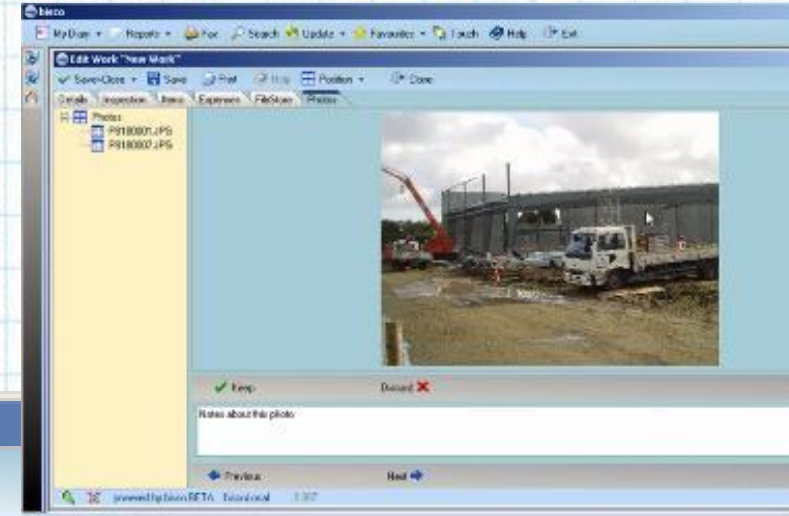
- Mid sized residential builder
- Been using our job cost management system for 5 years
- Reckon it was worth about \$2,000 per house
- Reduced administration staff





Building Consent Inspection

- Diary for each inspector
- Inspection check lists based on BIM Elements
- Photos capture actual details
- Captures who did what for LBP data



Thanks for your time

- Adoption of BIM is vital to improving productivity
- Using BIM in residential construction is possible
- And it does add value

Questions?

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