

BIM

What do you think it is?

Presenter

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BIM

- Building Information Models?
- Building Information Modelling?
- Building Information management?

- What is it?

What does it do?

- Better designs
- Quick visualisations
- 3D modelling
- Clash detection
- Cheaper faster drawings
- Construction sequencing, planning
- Better faster estimates

Why are we doing it?

- If the construction industry is perfect
- What problem does it solve
 - Are all our designs complete?
 - Are all our data/drawings accurate?
 - Are all our data/drawings unambiguous?

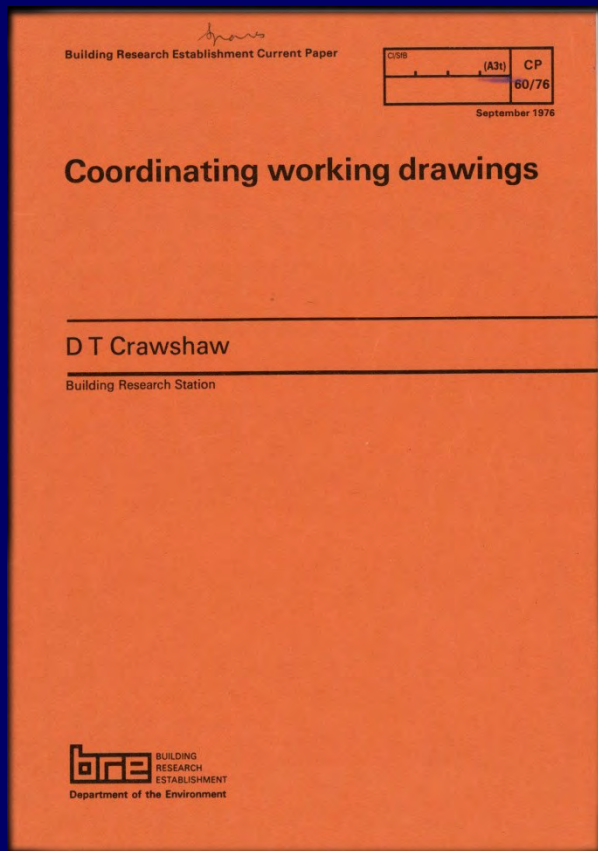
Waste in construction

- The UK Government reports construction capital expenditure per annum is £60bn.

- £10-20bn of waste

- The European Construction Institute 2003 stated that non-quality in European construction represents E80bn of waste per annum.

Recognising Waste

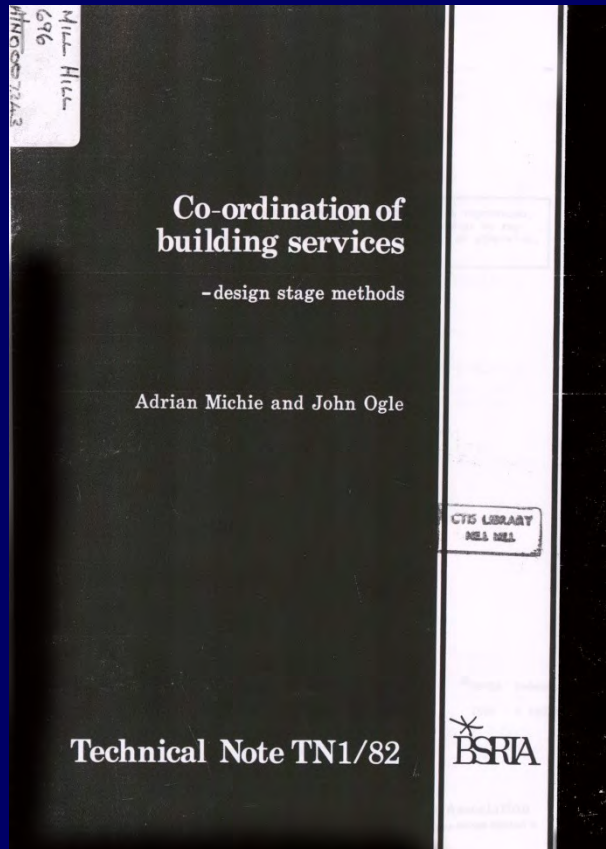


1976 Building Research Establishment

A discrepancy of 10mm in one dimension cost £3,000 and seriously affected the contractors programme.

Lack of coordination demonstrates Waste at 10-20%

Recognising Waste- BSRIA

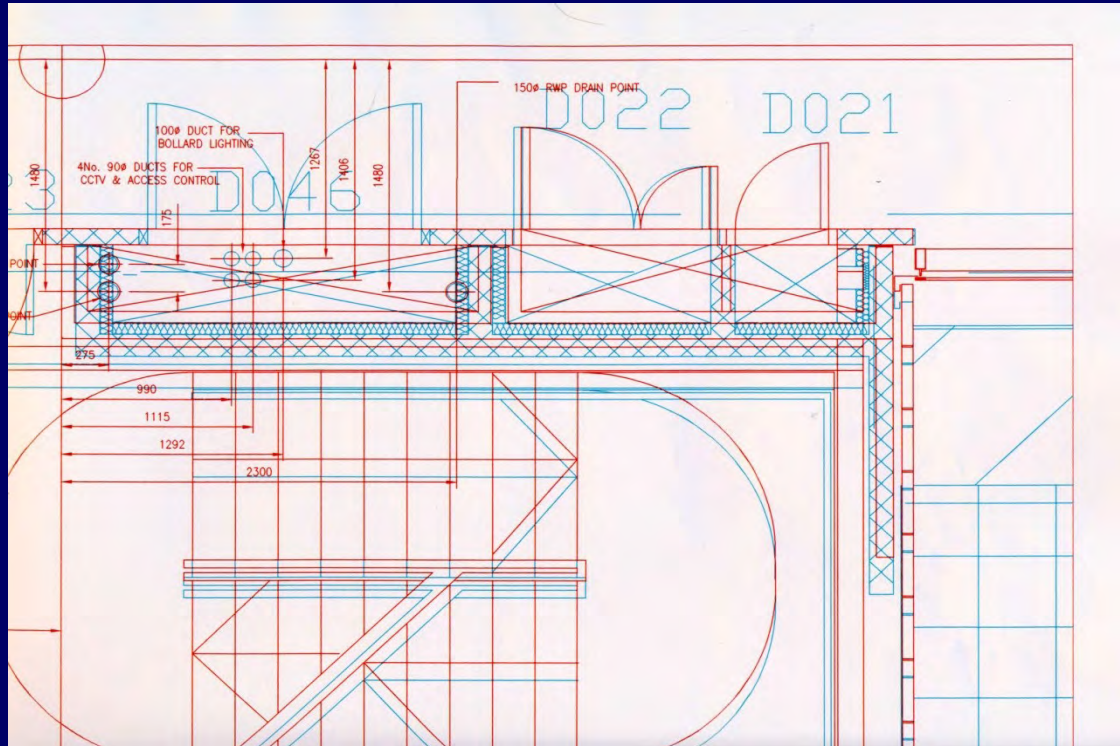


1982

'Spatial Coordinated services methods developed to eradicate waste in uncoordinated MEP documentation.'

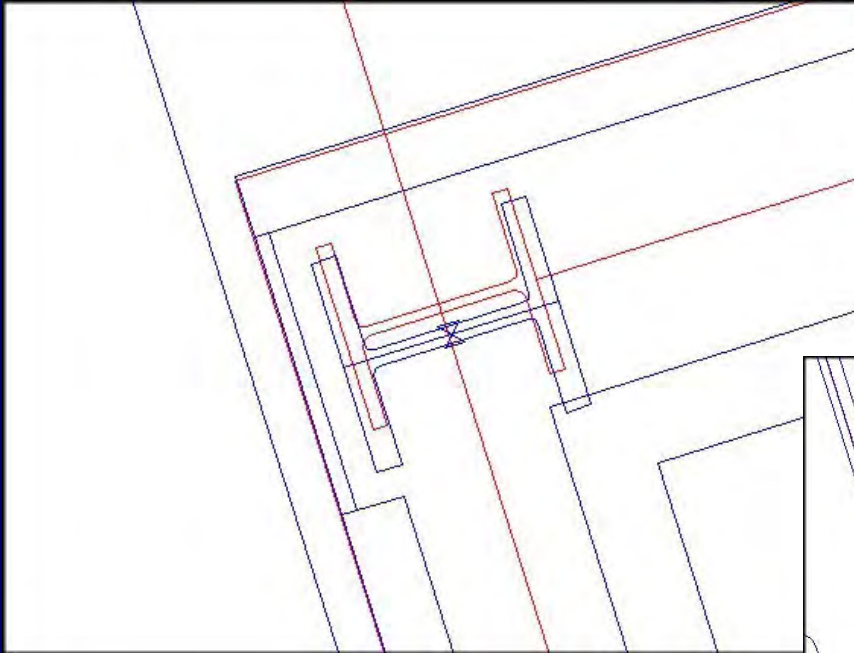
Cost overruns 40%

Lack of co-ordination



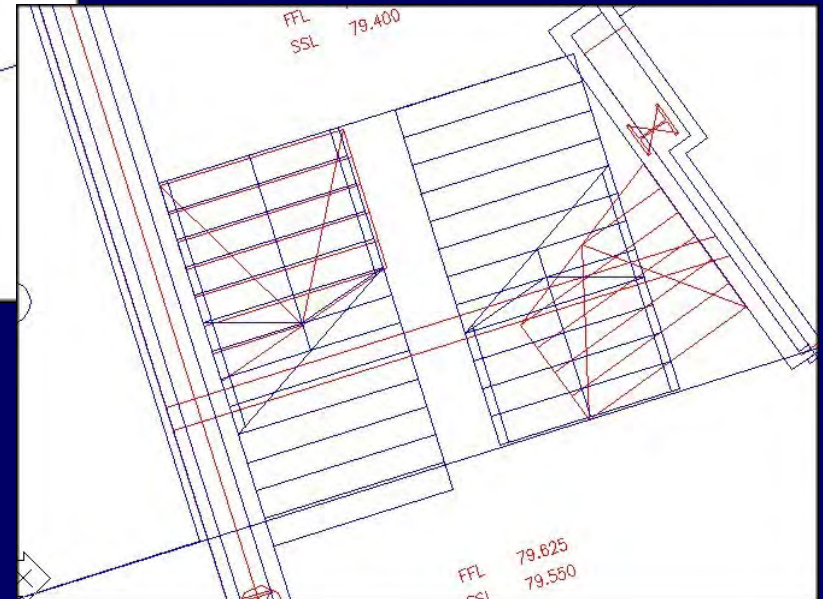
The BRE and BSRIA Research and other Case Studies showed that nothing had changed with the advent of CAD.

Lack of collaboration

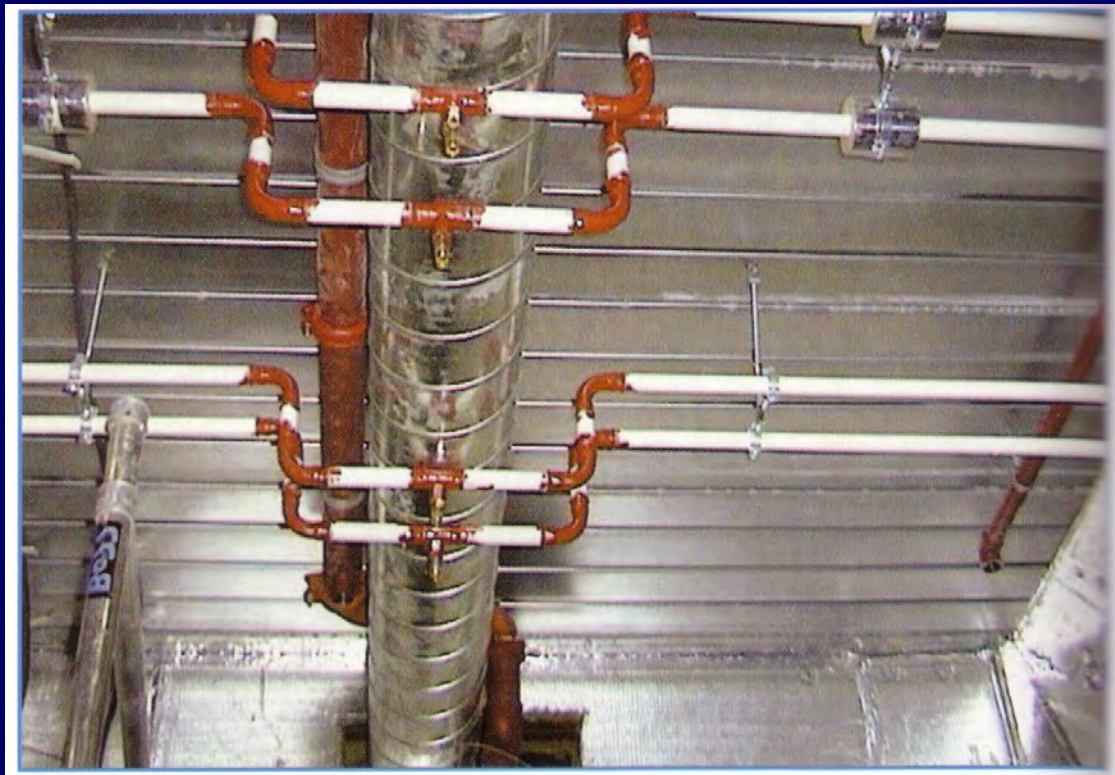


Clashes and lack of registration

Lack of Change Management

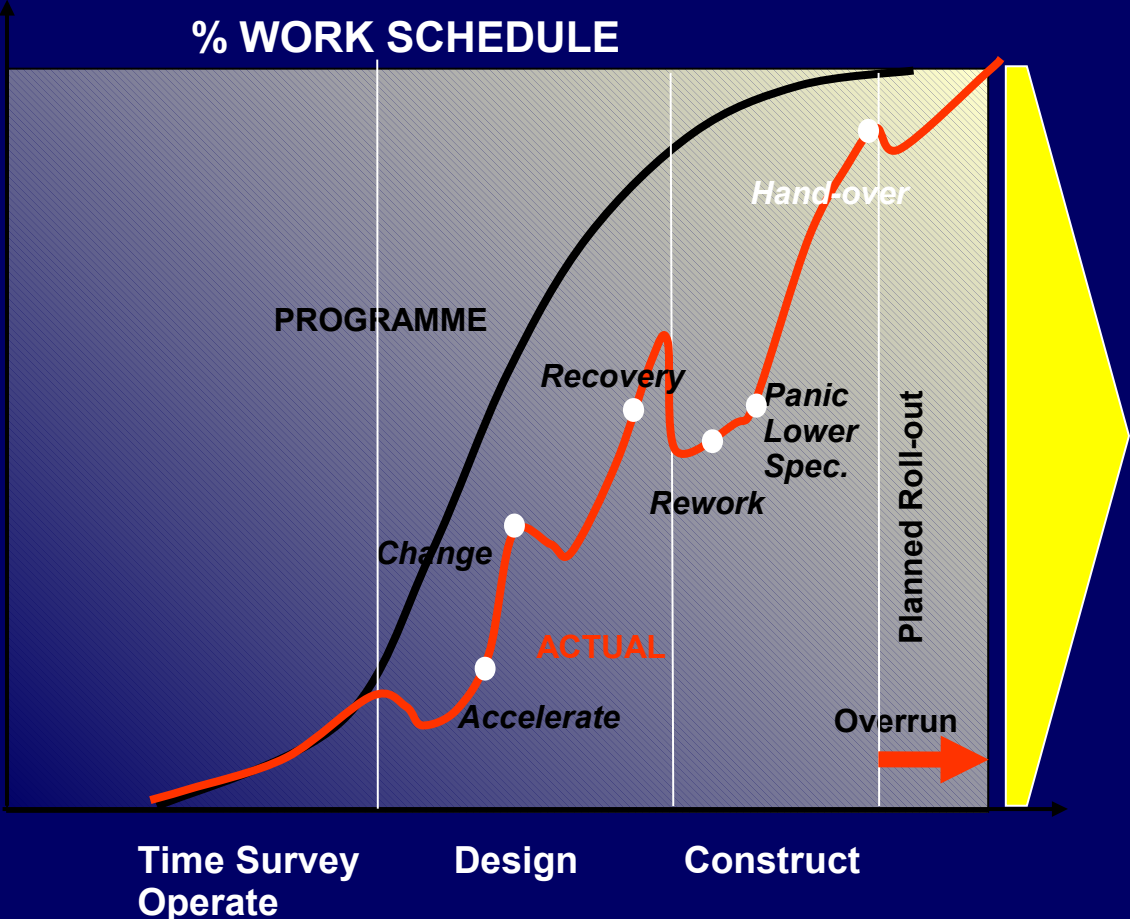


Generates Waste

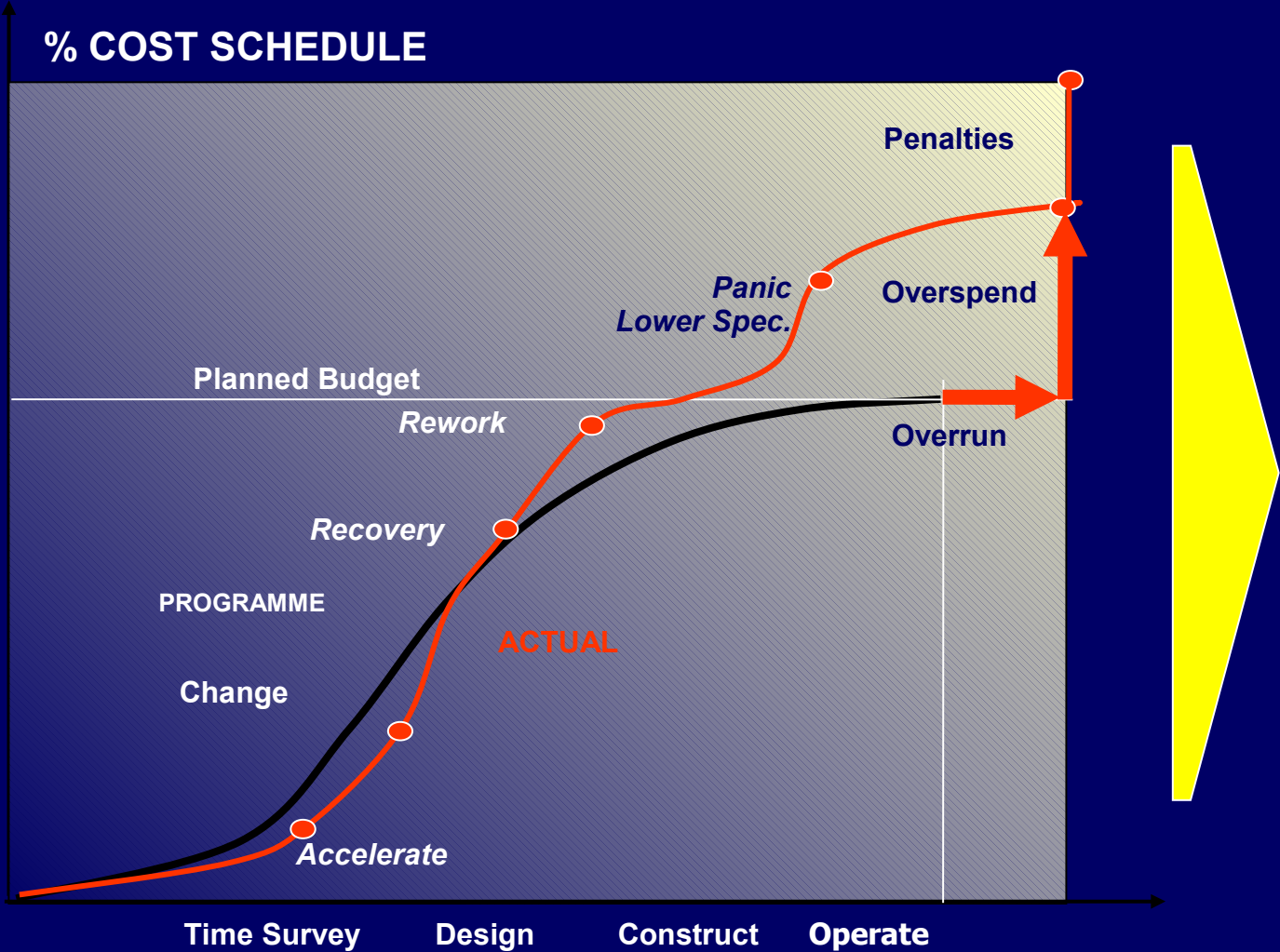


That will need fixing on site

Risk - Time Overrun



Risk - Cost Overrun



Recognising Waste

- Waste in construction – cost and time overruns are normal and nothing has changed since 1976 or with the advent of accurate CAD tools.
- Will the BIM tools be used any better?

Production Information

**CPIC - A Code of
Procedure for the
Construction
Industry 2003**

- **Conveyed by specifications, drawings, bills of quantities or schedules of work.**
- **Independent of forms of contract, procurement route or who employs the designers.**
- **Must be complete, accurate and unambiguous for satisfactory realisation of construction projects**

Current Business Process

- First past the post wins
 - Lowest price at any cost
- No fully checked data and drawings
 - ‘Checking costs money’
 - Issue the drawings with a disclaimer
 - User beware, information used at your risk.
- No reuse of the data and drawings
 - ‘Its not checked I will have to redraw it’.
 - ‘No spatial coordination’
 - ‘That's a special set of drawings. Extra fee required’

Current Business Process

- No full estimates and cost plan

- Cannot be achieved

- Drawings are

- Inaccurate

- Ambiguous

- Incomplete

- Lowest price at any cost

- Offsite Fabrication

- Not fully achievable as the building is designed on site

- The plant will not fit in the building

- Additional cost due to rework on site.

- Construction on time and to cost

- All at risk

Construction Industry Culture

- Einstein – Madness

- ‘Is to continually do the same thing in the hope that the outcome will be different’

Sir John Egan-Accelerating Change



Report 2002
By the end of 2004, 20% of construction projects by value should be undertaken by integrated teams and supply chains to increase to 50% by 2007 . Suggested saving min 10% year on year. (25% target)

Collaboration and 3D modelling

- Methods and procedures have been developed and have been tested and measured on live project over the last ten years.

Avanti & BS1192:2007

- A framework for collaborative working.
- A foundation process for BIM delivery.
- A foundation for iBIM

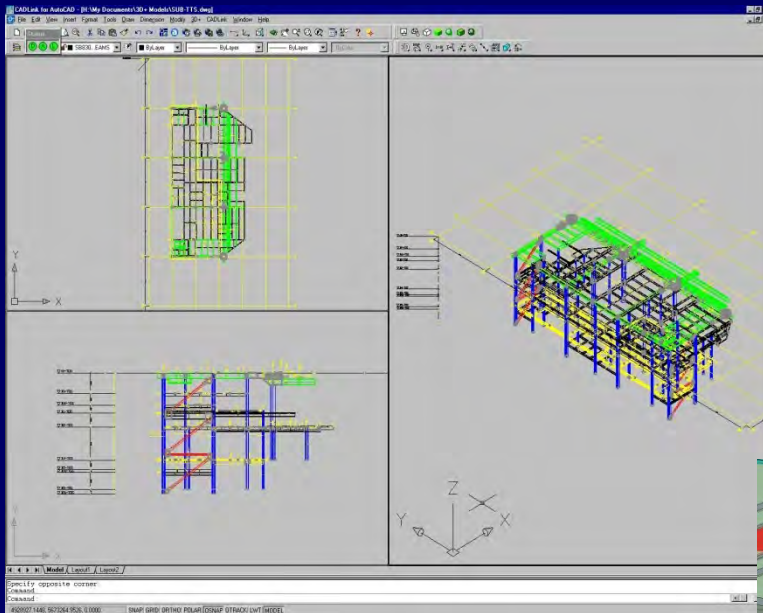
3D Architectural



To adequately provide accurate and unambiguous construction information is not feasible within a 2D drawing environment.

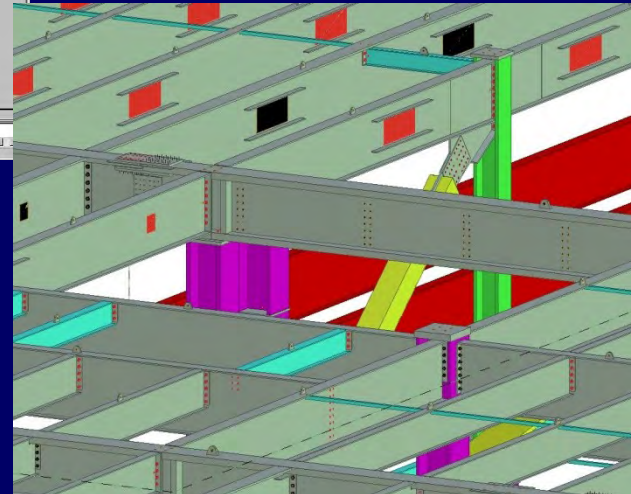
2D plans and typical sections cannot convey the amount of detail required to produce a fit first time construction process.

3D Structural Steelwork

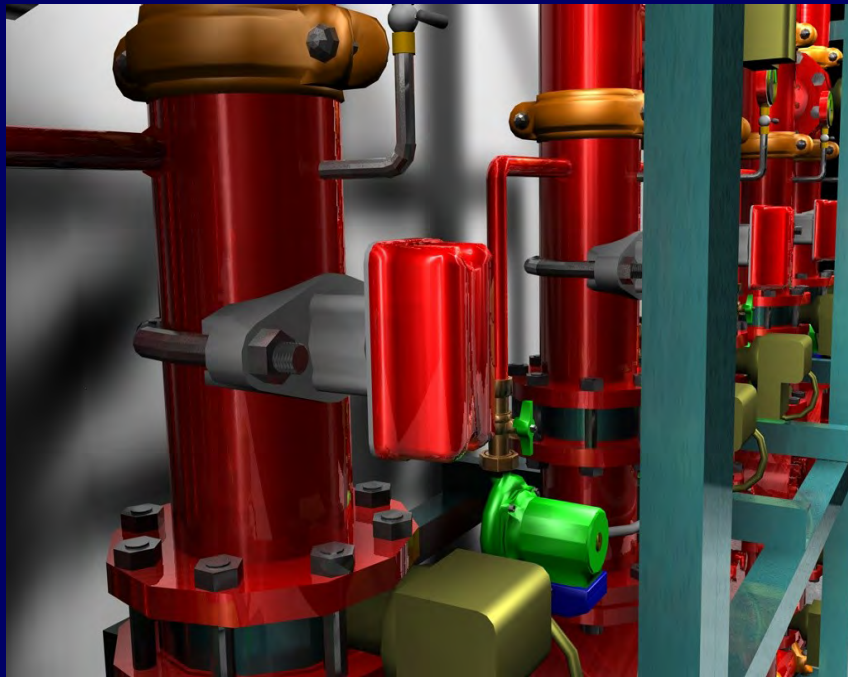


Analysis/design to 3D
Design model.
Design to manufacturer.
Virtual construction
Model.
Full spatial coordination

Detail design production
drawings reduced by 60%.
Waste reduced in the factory
faster build – reduced rework



3D for the MEP



For the MEP engineers and fabricators who are using manufacturing principles to provide the off-site prefabrication. Greater assurance, that the delivered product will fit into the building, is provided by designing the prototype within a virtual construction 3D model.

Construction Industry Culture

- Zig Zagler: If we want something different we have to do something different.

A standard process and procedure

- BS1192:2007
- To enable teams to collaborate and integrate their designs they must all speak the same language.
- If they use an agreed industry standard within their offices then they will be able to speak to one another in a project team.

But do they?

- 'I have my version of BS1192:2007 because it suits the way I work'
- My version is better.
- I will have to retrain if you want me to do it your way.
- Who is going to pay?
- The client has not asked for it.

So can 'iBIM' become a reality?

- Do we have the contractual documents and appointments? (IPD)
- Have we agreed on the level of detail? (MPS, LOD)
- Have we agreed on our responsibilities?
- Do we have the right resource?
- Do we understand the value?

The 'State' of BIM today

- iBIM is not a reality.
- BIM is not a reality. We have various definitions.
- CAD technicians are afraid of the future.
- Designers are afraid they will become CAD technicians.
- Fear and a lack of understanding is holding us back.

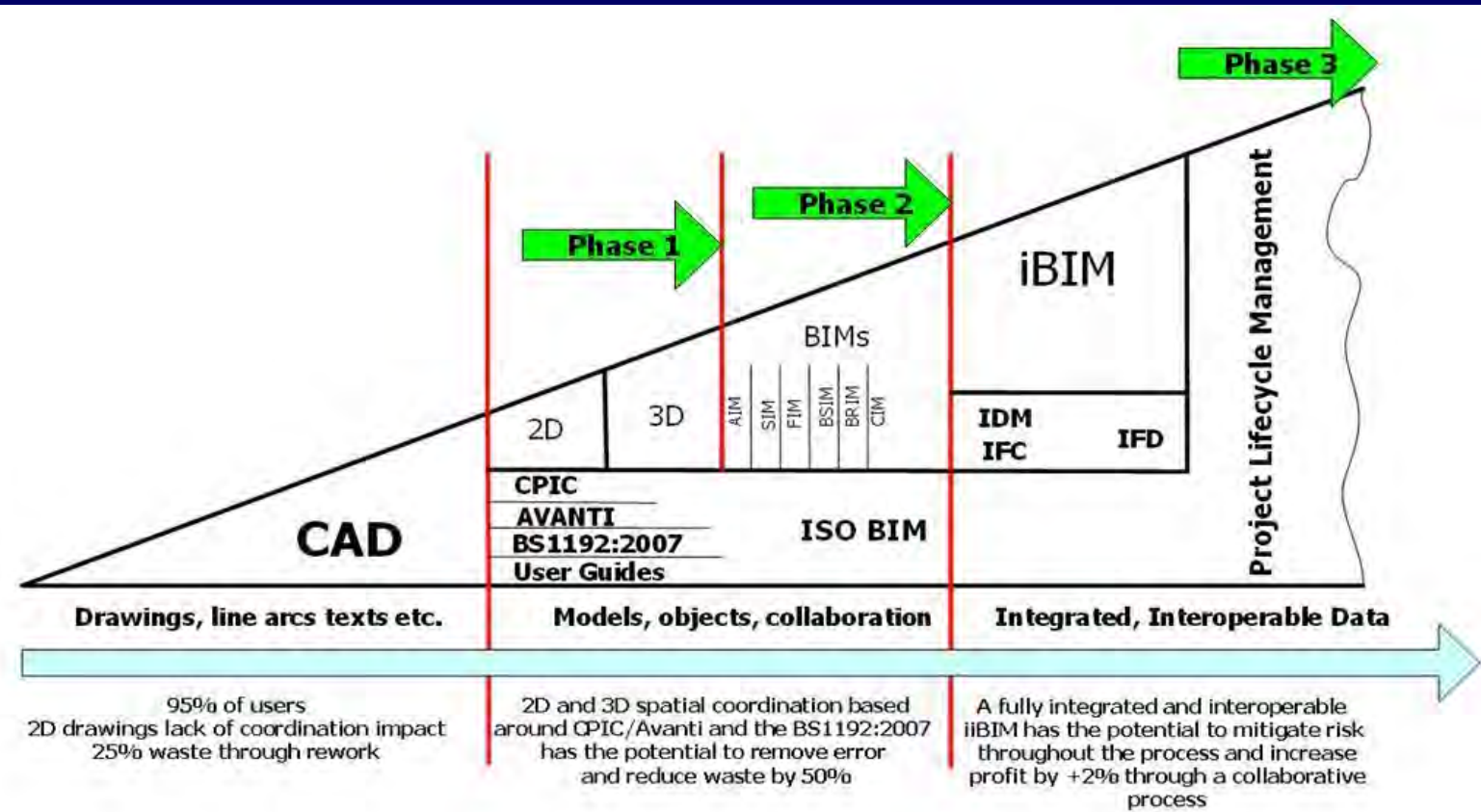
The 'State' of BIM today

- Businesses see this as cost not value.
- Businesses want to remain in there silo's'.
 - Do what we always did just different technology.
- Cannot accept change is inevitable to survive.
- Lack of leadership will slow the change.

BIM is a journey?

- We need to train the generators of information.
- We need to train the users of information, greater re-use of data
- We need to educate ourselves
- We need to educate our clients
- We need to educate the software suppliers
- We need new forms of contract
- We need new incentives, fee change

Where are you?



Have a safe journey