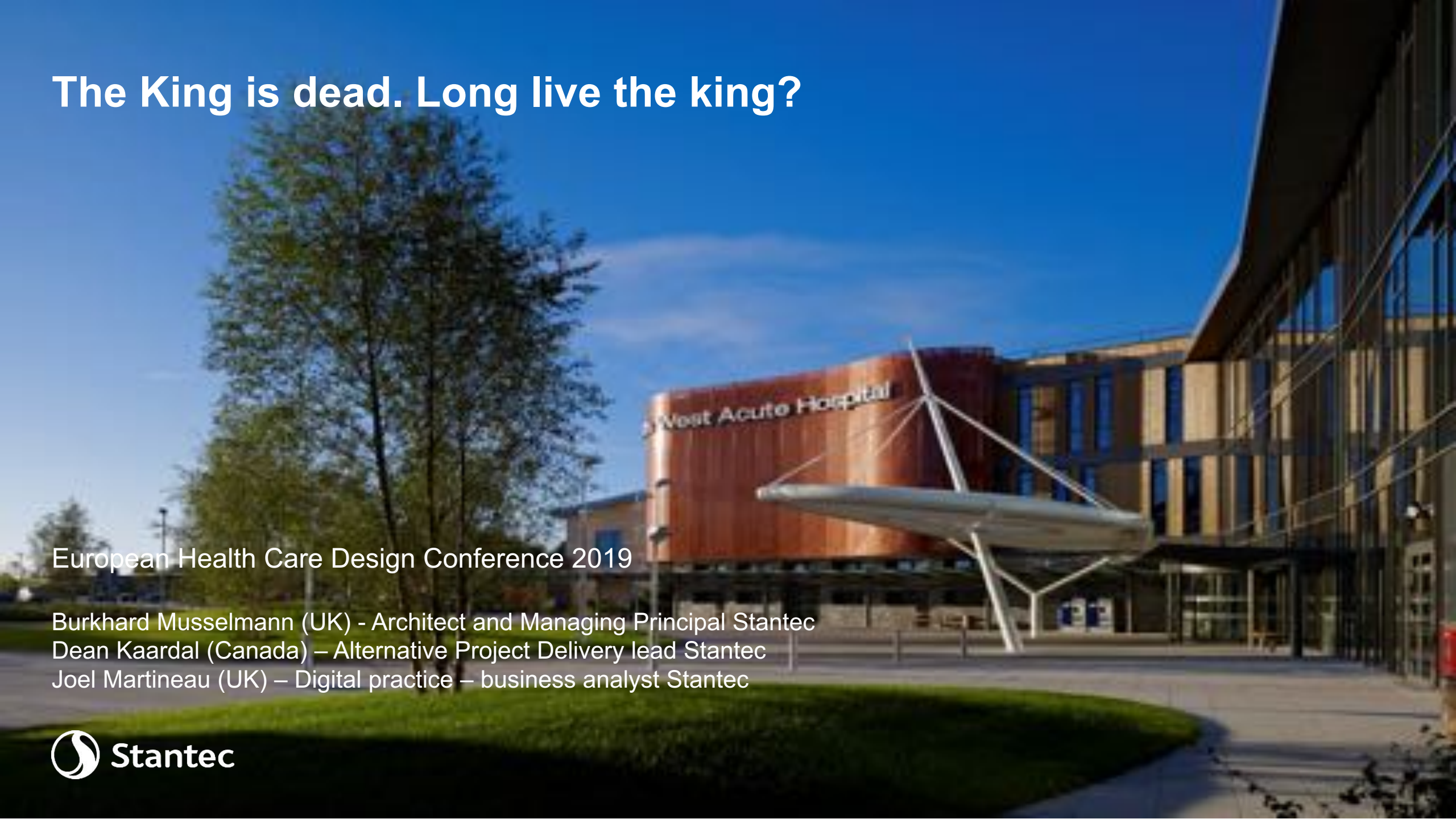
The King is dead. Long live the king?



European Health Care Design Conference 2019

Burkhard Musselmann (UK) - Architect and Managing Principal Stantec
Dean Kaardal (Canada) – Alternative Project Delivery lead Stantec
Joel Martineau (UK) – Digital practice – business analyst Stantec

Stantec

Agenda

1. Case Study UK - How Design Consultants can improve Healthcare schemes under newly emerging PPP models

2. Case Study NA – What we learned from PPP Healthcare schemes elsewhere and how to fix the broken PPP procurement route

3. How BIM can transform the design for PPP procured healthcare schemes in the future

Our experience in designing PPP (PFI) procured Hospitals….

- Central Manchester Hospitals, Manchester
- New Victoria Wing & Great North Children's Hospital Newcastle RVI
- Northern Centre for Cancer Care and Renal Services Centre Freeman Hospital
- Clinical Office Building COB
- Norfolk & Norwich University Hospital
- Bexley Wing, St. James's Institute of Oncology, Leeds
- Tunbridge Wells Hospital at Pembury
- Southwest Acute Hospital, Enniskillen, Northern Ireland


St. James's Institute of Oncology - Leeds

PPP supposed to offer…

- Reduced risk
- Cost & Schedule certainty
- Value for money
- Innovation and take advantage of industry capability
- Better control of stakeholders
- Off balance sheet capital
- Deliver on time and on budget

…current Reputation

- Expensive
- Does not deliver value for money
- Inflexible
- Not transparent
- Long and expensive bidding process
- Reluctance of contractors to engage
- Reluctance to invest

New Victoria Wing – Newcastle

Current PPP - UK

England

Private Finance 2 (PF 2)

Funding competition/Shared profits/Central procurement support/Excludes soft FM services

Lift (Local Improvement Finance Trust)

Pre-procured PPP's with established LIFT providers focus on primary care and community services

Wales

Mutual Investment Model (MIM)

Funding competition /Shared profits/Central procurement support/Minimized soft FM services
60%/40% Private/Public Partnership

Scotland

(None Profit Distribution Model (NPD))

On hold due to ONS decision /(Classed as 'on balance sheet' project)/Currently discussed:
60% private/20% charity/10% Trust/10% public

Hub Initiative

Currently replacement vehicle to NPD/5 regional Initiatives/Covers DB and DBFM/60%/40% Private/Public Partnership

What next….
…everyone's best guess?

but…

In the Autumn Statement 2018 Philip Hammond confirmed that he remained…

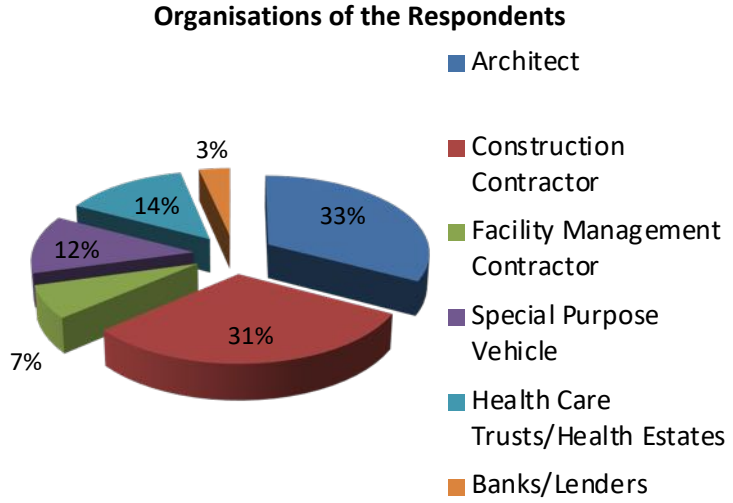
"committed to the use of public-private partnership where it delivers value for the taxpayer and genuinely transfers risk to the private sector"

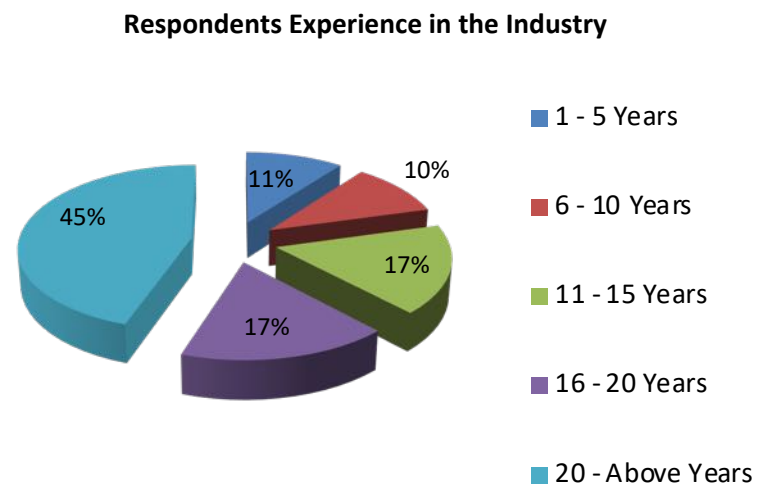
As revenue earned from NHS land sale is often diverted into services it is hard to see how modern and future resilient buildings can be procured without private funding

Case Study

Challenges and Strategies of Architectural Firms designing Healthcare facilities procured through PPP

Questionnaires distribution data	
Number of questionnaires distributed	205
Number of questionnaires returned	65
Number of questionnaires with usable data	58
Number of questionnaires with unusable data	7





Research Methodology

Preliminary Interviews (12)

Literature Review

Qualitative Analysis

Questionnaires

Analysis of survey data received (KMO and Bartlett's Test)

Case Study

Challenges faced by Architectural Firms designing PPP Projects

Top Challenges – Concession period

- Lack of information and commitment to life cycle maintenance improvement by the industry
- Lack of knowledge of life cycle maintenance processes by architectural firms

Life Cycle Maintenance Period of PFI Projects – Challenges	Mean
Life cycle costing and life cycle maintenance is not engrained into architectural teaching	3.87
Industry does not provide warranties suitable for the length of PFI service contract	3.76
Lack of knowledge by architectural firms how a project will be maintained during its life cycle maintenance period	3.67
Lack of reliable research data regarding life cycle costing and its impact onto life cycle maintenance	3.67
Operation/use of facility changes during the life cycle maintenance period	3.58
Architectural firms do not want to take on design responsibility life cycle maintenance requirements	3.49
No guide lines available regarding the design for effective life cycle maintenance	3.36
Service and maintenance processes are complex and hard to understand for architects	3.20
Economic value of design for effective life cycle maintenance is not recognized by stakeholders of PFI Projects	3.11

Top Challenges – Design

- Integration of different requirements of end user, building operator and maintenance supplier into design
- Architect is acting inconsistently with the project objective

Design of PFI Projects - Challenges	Mean
Integration of different requirements of end user, building operator and maintenance supplier into design	4.19
Trust introduced changes to design during all stages of the project	3.98
Architect cannot test design against budget available as construction contractor did not submit cost plan	3.55
Architect too defensive about architectural vision	3.40
Unrealistic design promised to the Trust in order to win bid	3.35
Architects design strategies not adhered to by sub-contractors and installers	3.35
Architectural design intent contradicts life cycle maintenance requirements	3.27
Building materials used in PFI projects are blunt and mass produced due to long life span expectations	2.95
Architects lack of technical knowledge prevents effective design solutions	2.91

Top Challenges – Procurement form

- Poor commitment and long term thinking by supply chain to continuous improvement
- Lack of common goals and understanding amongst shareholders

Design of PFI Projects - Challenges	Mean
Integration of different requirements of end user, building operator and maintenance supplier into design	4.19
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Case Study

Strategies available to Architectural Firms designing PPP Projects

Top Strategies – Concession period

- Promoting collaborate relationships amongst project team participants
- Effective coordination of clients and end user requirements amongst project team members

Top Strategies – Design

- Effective knowledge management and exploration
- Architects commitment to effective design solutions

Top Strategies – Procurement form

- Accommodative best practice in design
- Enhancing quality of design for life cycle maintenance

Life Cycle Maintenance Period of PFI Projects – Challenges	Mean
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Design of PFI Projects - Strategies	Mean
Architect to communicate design strategies clearly to all levels of the project team	4.50
Architect to establish trustful relationship with construction contractor which allows for cost transparency	4.37
Architect to prepare realistic and affordable design for inclusion into the preferred bidder document	4.34
Test architectural vision against expert advice and knowledge gained from lessons learned workshops	4.28
Architect to apply evidence based design	4.23
Use sub-contractors technical design input to its maximum	4.21
Include and highlight 'non cash' benefits which reduce life cycle maintenance requirements into the design	4.21
Defend design strategies agreed in the project agreement and refined during the reviewable design data process	4.19
Respond with design strategies to limited range of architecturally interesting building materials available	3.85

Design of PFI Projects - Challenges	Mean
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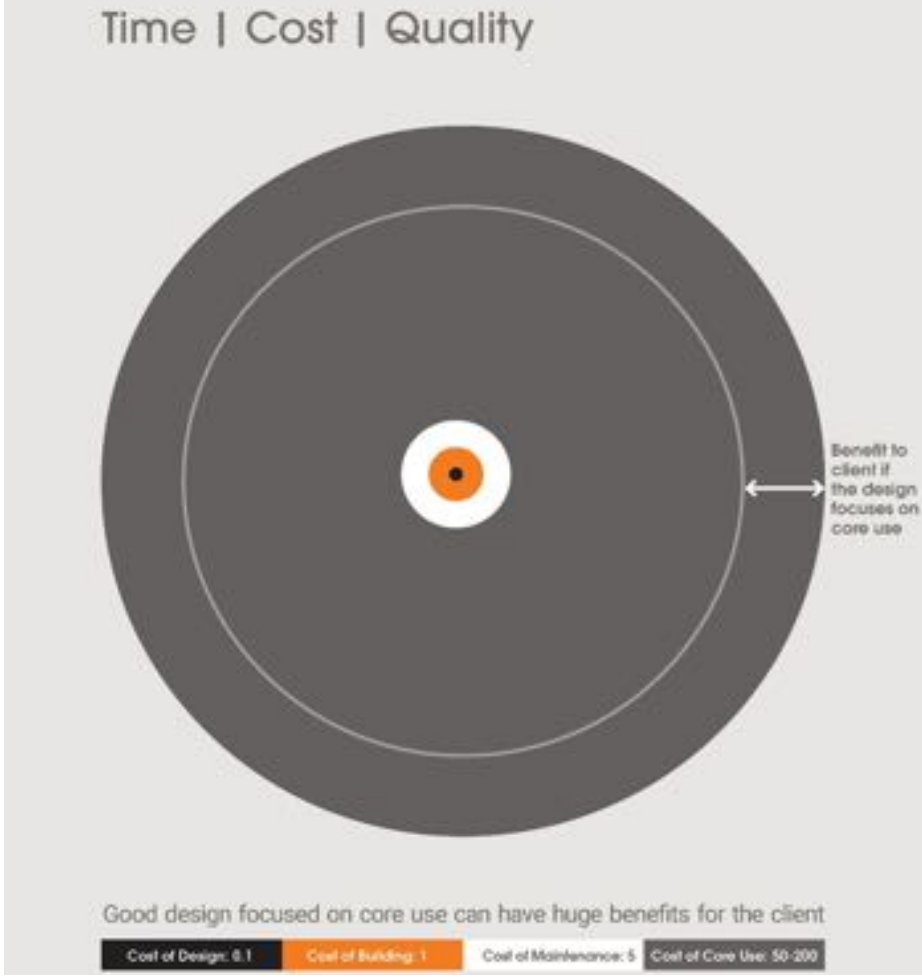
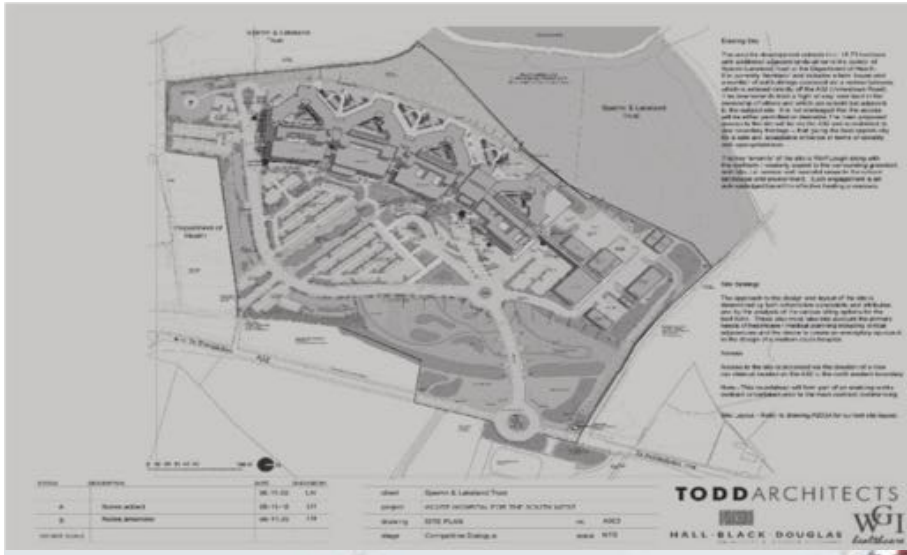
Focus on future operation and life cycle maintenance requirements more effectively…

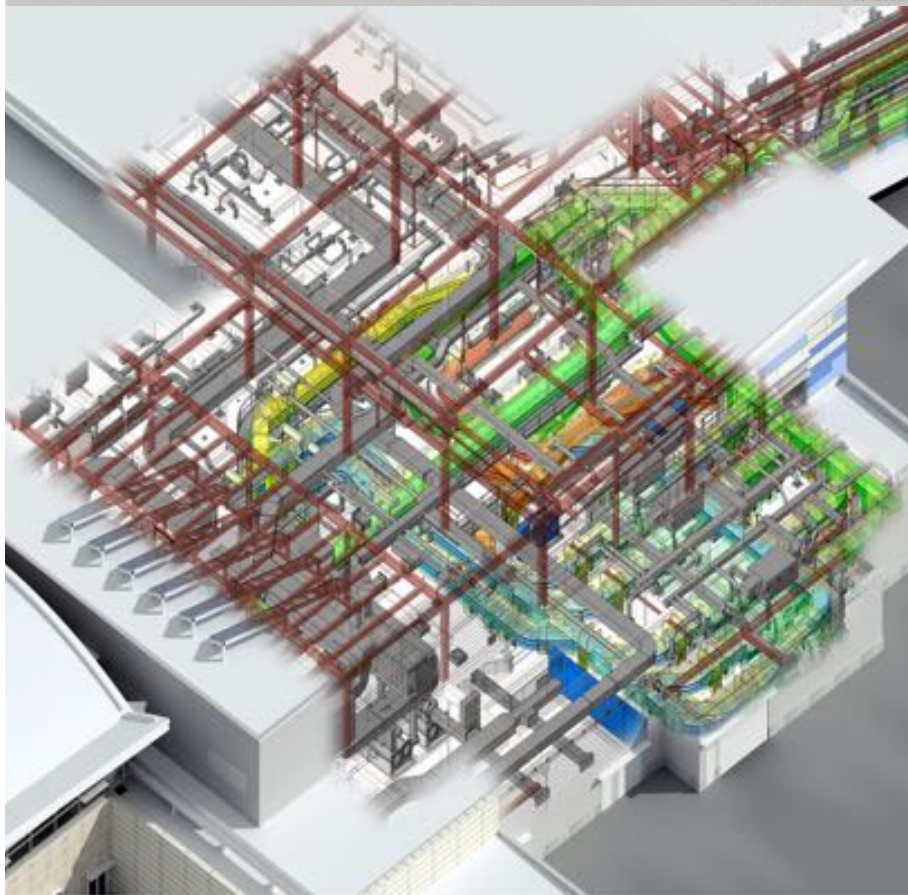
- Early integration of FM provider/Building Operator in design process from the outset and harvest their knowledge effectively
- Through BIM simulate building FM and operational processes driving an optimized design aligned with the life cycle of a project
- Engage in close collaboration between the delivery chain and the private and public partners to fully understand their needs and integrate them into the design process



…communicate the design approach accurately and comprehensively…

- By providing in house Design Management capabilities to effectively manage the design process
- By using the Virtual reality tools to effectively communicate design solutions and foster a collaborative approach
- Use building information modelling (BIM) effectively to develop and coordinate design between all PPP participants





...and ensure that our design solutions are implemented effectively.

- Provide expert teams focusing on projects procured under PPP and provide good overlap between the bid team and delivery team.
- Provide project management capability from the outset to proactively engage in the project planning and control process with the other project participants.
- Provide project delivery expertise to comprehensively understand and respond to the needs PPP projects during execution stages.

..and we also know that PPP Models are successful if they are….

- **Value for money**
  Design consultants inform the project team to accurately understand the capital and operational costs through the way we now document the design
- **Transparent**
  Design consultants are more transparent about the building design and its future use due to improvements in communication of the design intent
- **Flexible**
  Design consultants are best placed to develop adaptable design providing future flexibility by design.
- **Streamlined**
  Design consultants can contribute to shorten design processes by use of increased BIM, Project and Design Management capabilities
- **Balanced in risk distribution**
  Opportunity for Designers to take more risk and become a more active partner (Integrated Project delivery environment)


Southwest Acute Hospital – Northern Ireland

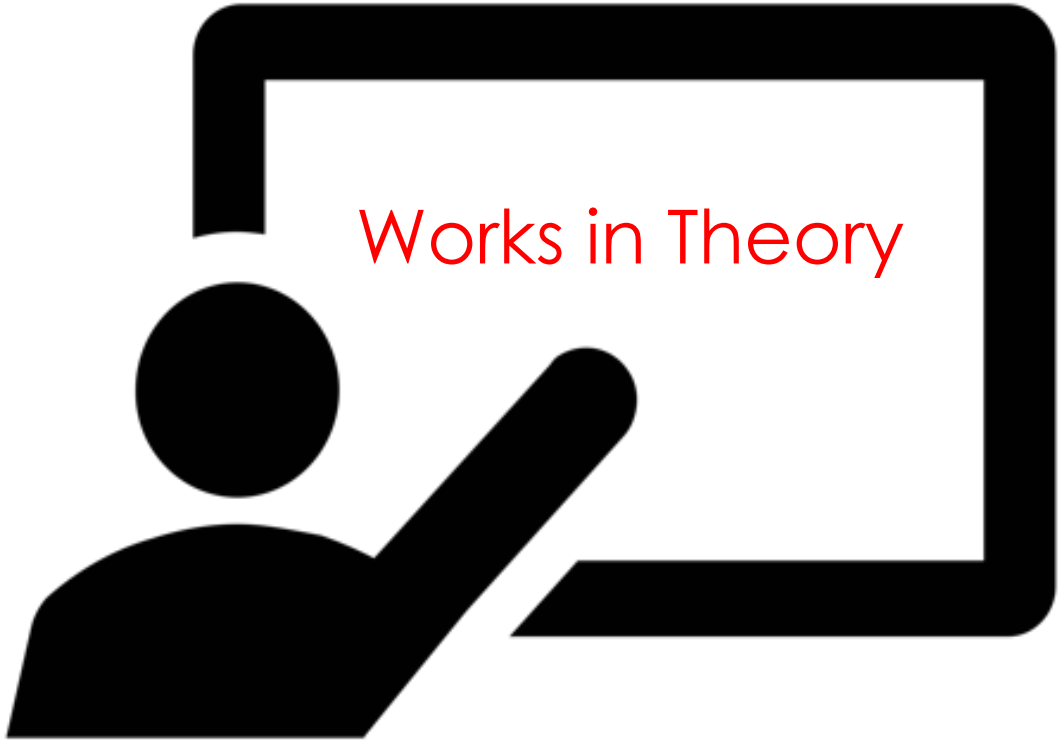
What we learned from PPP Healthcare schemes elsewhere and how to fix the broken PPP procurement route?

- **Public Private Partnership (P3)**
- North Island Hospitals
- Iqaluit International Airport Improvement Project
- RCMP E Division Headquarters Relocation Project
- Kelowna and Vernon Hospital
- St. Paul’s Hospital Ambulatory Care Facility (Owner's Advisor)
- Abbotsford Regional Hospital and Cancer Centre (Owner's Advisor)
- Fort St. John Hospital P3 (Owner's Advisor)
- Prince George Cancer Centre for the North (Owner's Advisor),
- King Edward VII Memorial Hospital in Bermuda (Owner's Advisor)
- Penticton Hospital Patient Care Tower - BID PHASE
- Interior Heart and Surgical Centre - P3 BID PHASE
- Surrey Memorial Hospital Redevelopment and Expansion - P3 BID PHASE
- Surrey Pretrial Services Centre Expansion Project - P3 BID PHASE


Kelowna and Vernon Hospitals

First some benefits

- Forging new partnerships (includes insurers and lawyers)
- Spreads risk for public; private better suited for some roles
- Risk mitigation/Reduction/transfer
- Win-Win
- Encourages experimentation/innovation (in construction and operations)
- Can be “disruptive” in good way
- Speed; quicker process; condensed schedules
- Integration; conflicts minimized because “same team”
- More efficient
- “on time and on budget”
- Life cycle obligations; prioritizes life cycle asset management and preventative maintenance
- High degree of value engineering
- Avoidance of scope creep, cost increases, schedule delays (per traditional models)
- Savings in operation
- Technology enhancements



But…

- Inflexible contracts
- Reputation
- People don’t understand expectations
- Parties view risks differently
- Leaves out smaller developers and contractors who cannot take on the big risks
- Leaves out rural cities; hurts public workers
- Knowledge gap; risk of corruption because of not knowing process vs those taking advantage
- Reluctance to invest
- Constant updating of plans—burn out/takes its toll on consultant/contractor resources (staff)
- Risk-averse culture

- Depending on the APD model, contracts can be complex
- Labour intensive, takes toll on workers
- Owner does not get what they want
- Does not operate the same
- Pay for everything
- Adversarial

Case Study

- **Recently Complete Canadian P3 hospital**

It can work successfully

- There are success stories
- The process is refining
- Maturing
- Getting more sophisticated
- What could be on horizon
- Models getting adapted
- Acknowledgement that we are still learning and there is room to grow
- Share lessons learned and best practices
- Continuous Improvement

Why P3s generally?

As mentioned, there are benefits:

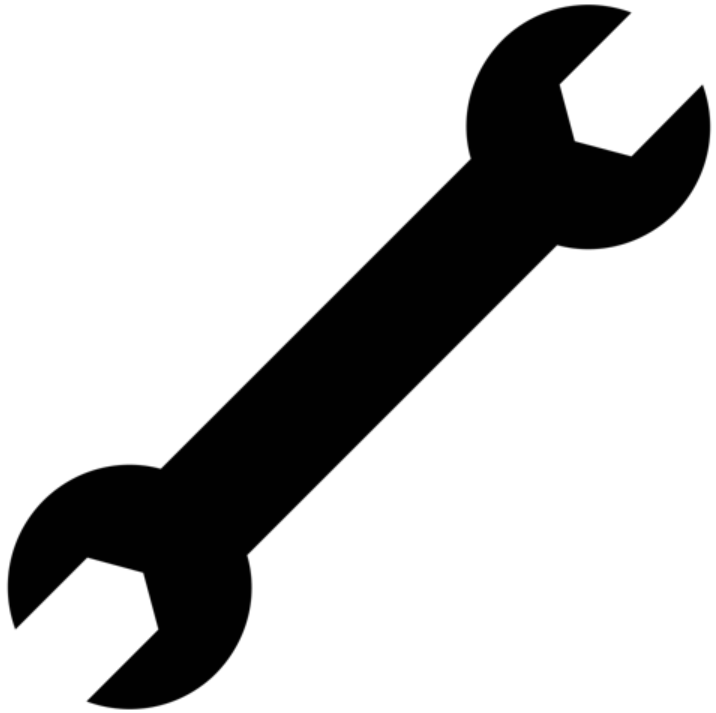
- An alternate public infrastructure tool
- Certainty – on time and on budget
- A way to leverage private industry to assist with the building and upkeep of public infrastructure and institutions—a benefit to all
- Projects completed
- The model excels best where it makes sense: social infrastructure, real estate development, student residences and amenities, government offices, and building and managing infrastructure.

Everyone wants a Smoothly Run Project

- Everyone wants a successful project
- Everyone wants to foster great long term relationships
- Everyone wants happy customers
- Everyone wants it to make financial sense

Improving the Process

- Streamline the process
- Prove out
- Make it measurable
- Make it fair
- Transparency
- Different contracting models



Streamline

- Proper implementation
- Standardize contracts
- Focus on end-to-end management
- Change the scoring system
- Better define quality
- Have contingency to keep it specific
- Beef up operational parameter
- Risk allotted to the appropriate parties—who have incentive to avoid them
- Public owners should have well-structured process/procurement process
- Global best practices

Prove Out

- Prove how the facilities stand the test of time; are better maintained; prove it
- Focus on innovations; prove innovations
- How to prove out? Make it measurable.

Fair

- The process needs to be fair for all
  - Contractors
  - Consultants
  - Owners
  - Tax Payers
- Allow alternatives/ “no time”
- Fair/appropriate contracts; appropriate and fair allocation of risk
- Balance risk with compensation—fairness
- Create incentives, reward innovation

Royal Columbian Hospital Phase One

Different Models

- Or modified models
- Blended P3 models
  - Non-profit partners
  - Government programs
  - Bonds
- Integrated Project Delivery (IPD)
- Modified Design Build
- What does the future look like?

Stakeholder Engagement

One common goal, very different needs

- Owner
- Project Manager
- User Groups
- Patients
- Facilities Management

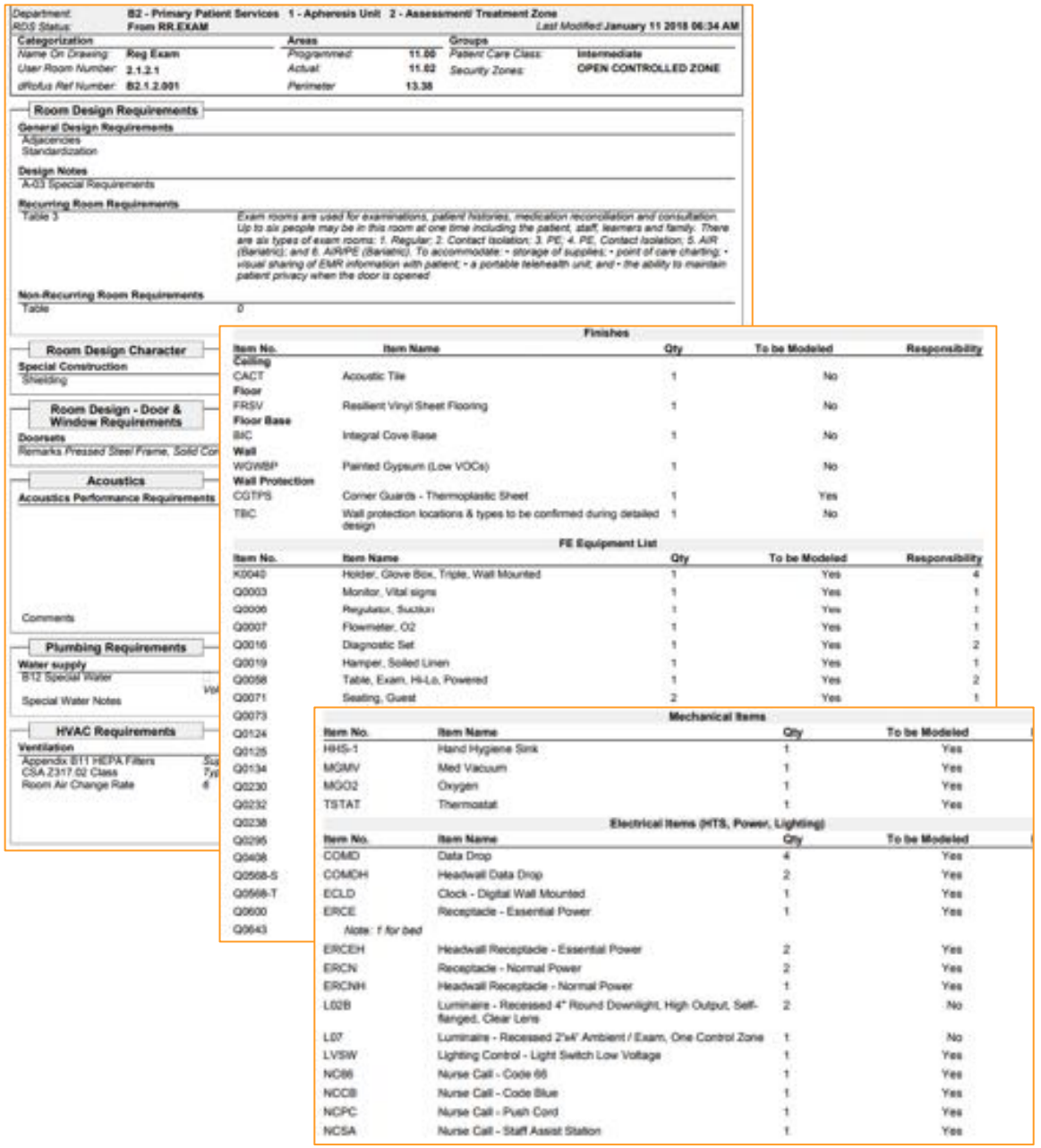
- Operator
- Contractor
- Design Team

Design Process

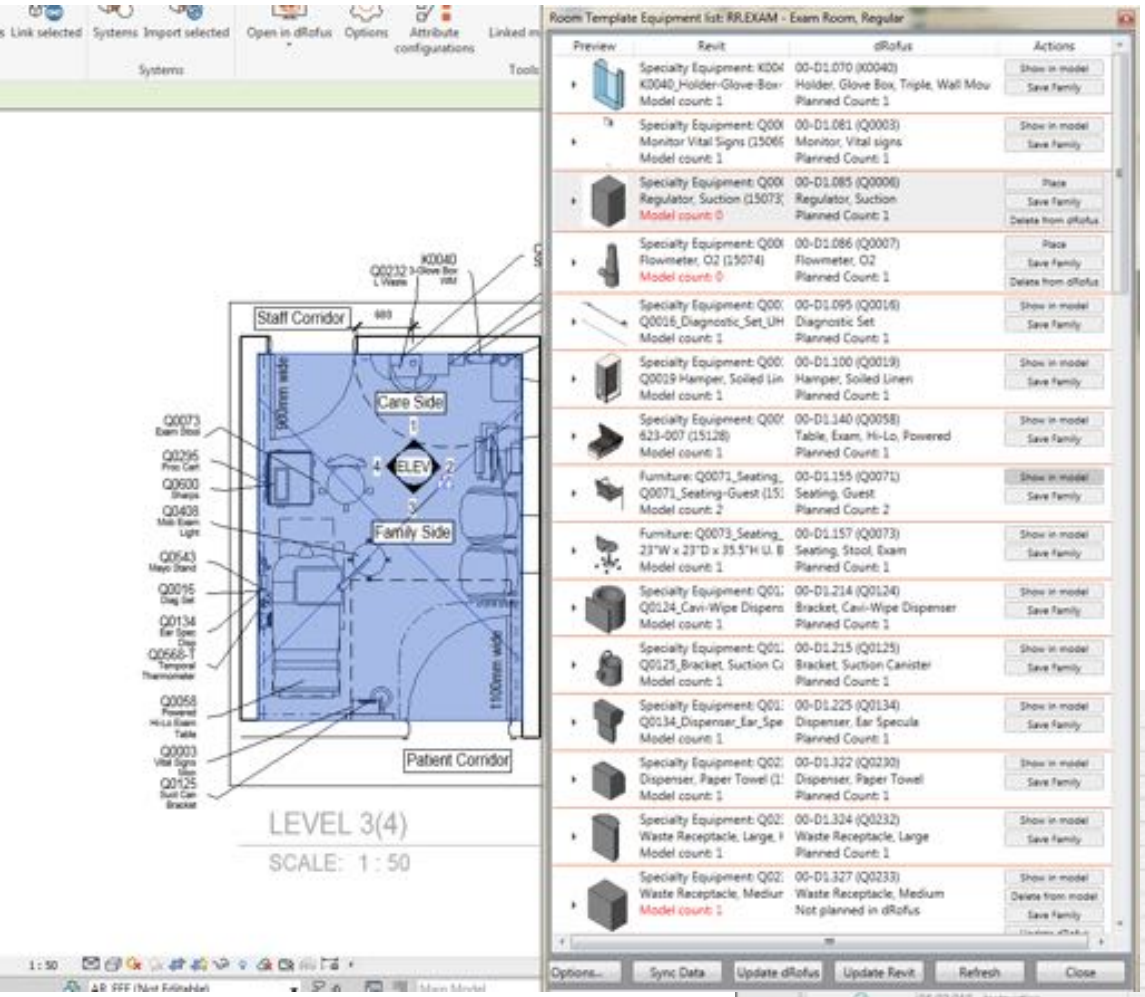
- Not everyone understands how to read a drawing
- Clearly communicate design intent
- Ensure alignment with goals
- Easily communicate changes during value engineering exercises

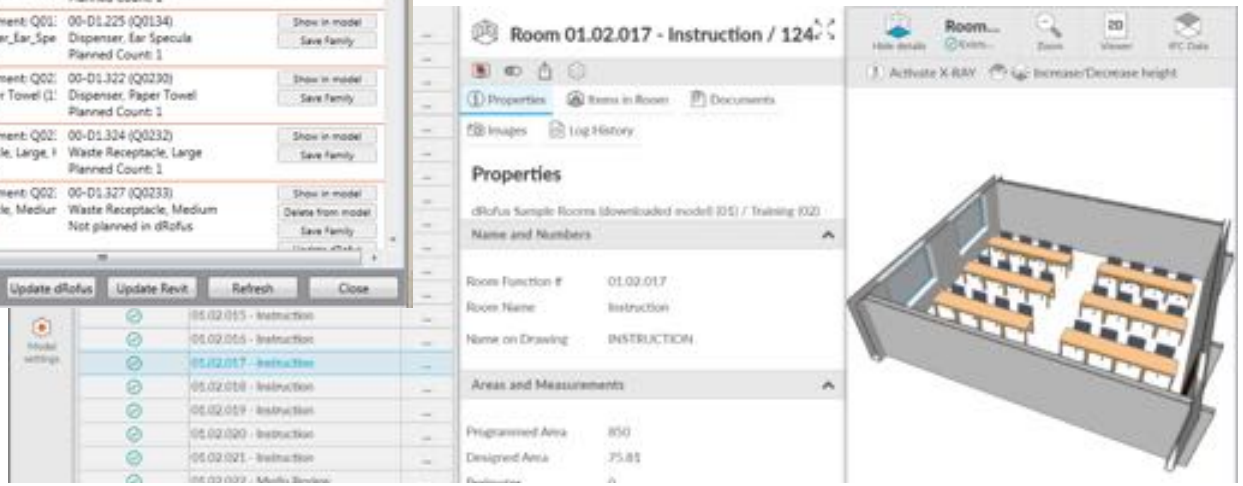
Leverage the “I”

- Use data management tools to assist with the complex requirements for hospitals
- Provide a source of truth
- Provide detailed equipment reports
- Improves early stage quantity take-offs and cost estimates

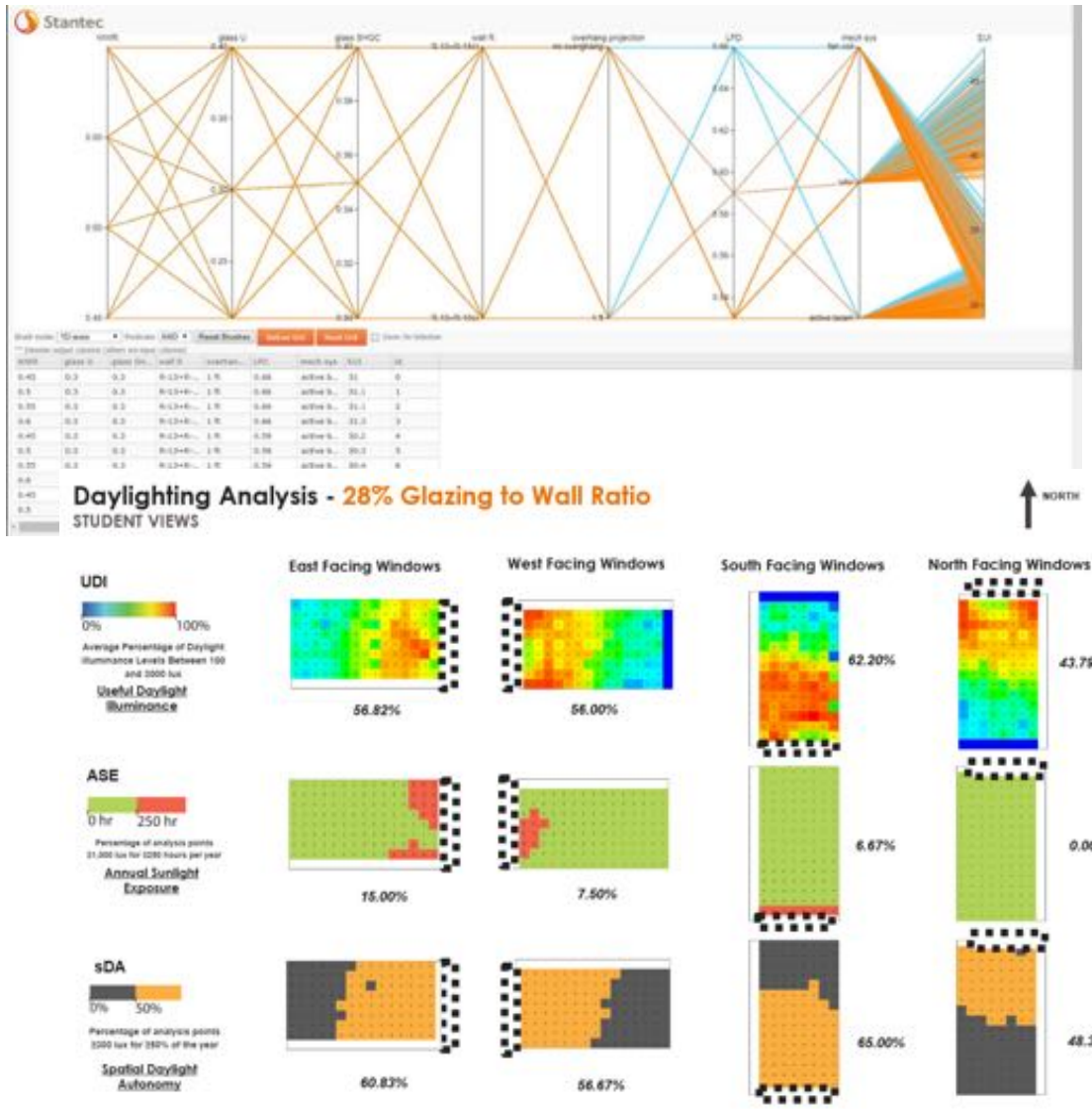


Validation





- Link data between external sources and models
- Track changes to SOA/ Room requirements
- Determine that models are in compliance
- “Democratize” access to information

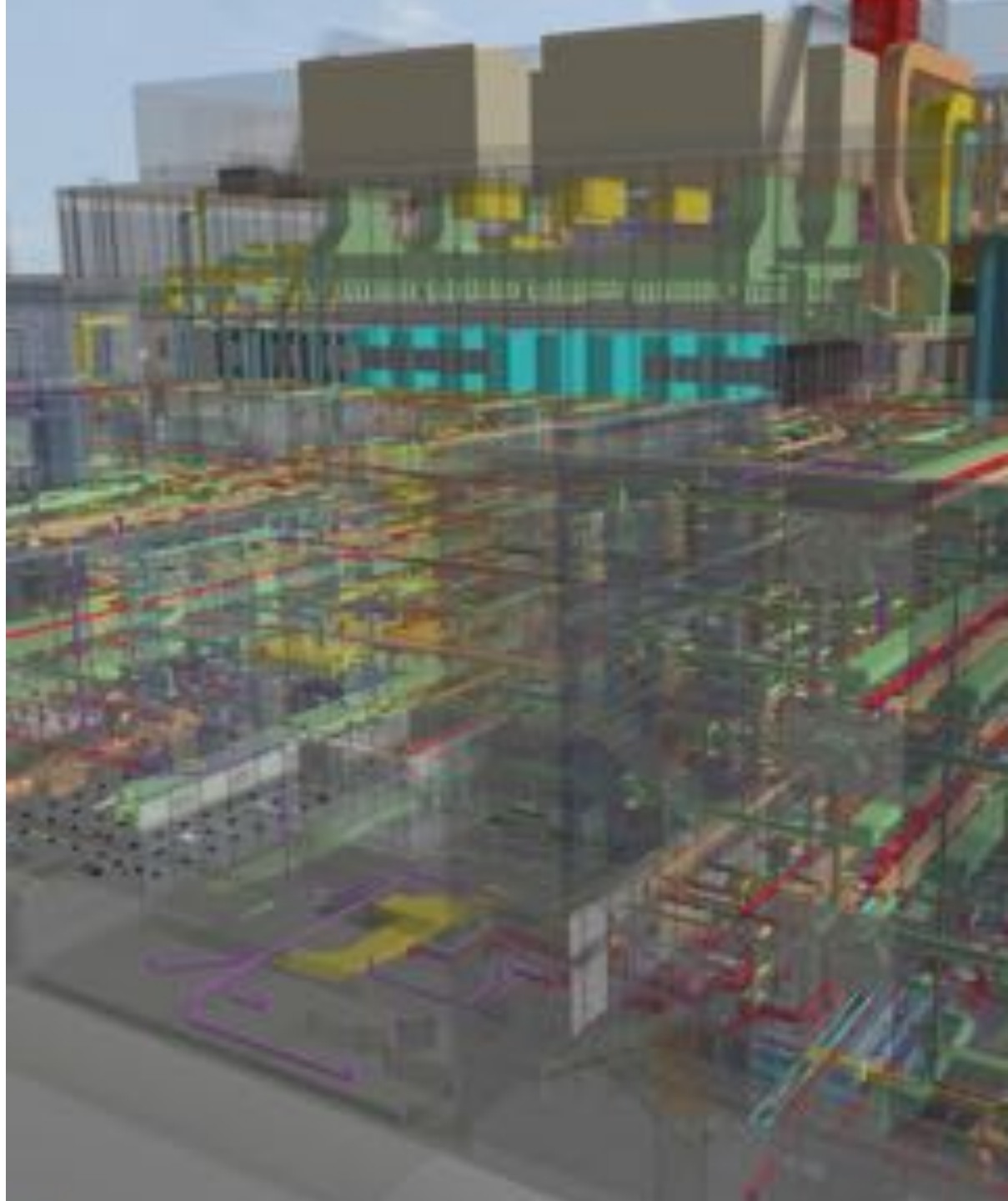


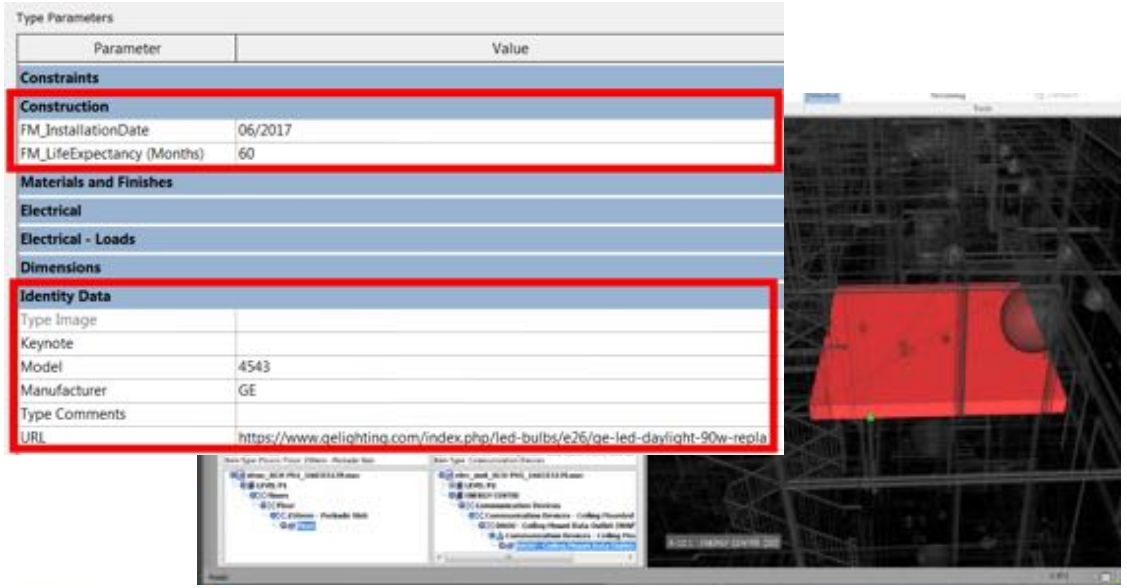
Building Performance

- Integrate other tools into the design process
- Ability to simulate various scenarios
- Understand impact of design decisions on life cycle costs and user experience
- Better data to predict energy usage

Supply Chain

- Early engagement of Tier 2 suppliers in the design process; knowledge of local market and practices
- Participate in the virtual construction process by providing models
- More accurate depiction of building systems likely to be used
- Improved basis for estimating project costs





Asset Management

- Develop models with life cycle in mind
- Operator and Facility Management provider are integral to the design process; engage them!
- Embed data in objects that is helpful for maintenance e.g. installation date and expected life of lamps
- Understand how to connect to owner / operator FM procedures
- Basis for future planning

Operations

- Understand how building systems function prior to installation
- Simulate the process of maintenance procedures
- Improved health and safety
- Use model to verify requirements for replacement of complex equipment such as MRI machines

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