

Construction a bright future? Part 2

John Dyson –
Head of Global Capital Projects - GlaxoSmithKline



Born and bred in West
Yorkshire



Graduated from University of
Newcastle upon Tyne
Biochemistry & Nutrition



Graduate Scheme –
Eden Vale



Moved to SmithKline Beecham
in 1992 as Line Production
Manager – Horlicks
First Project 1994





Father worked in
Construction –
Modern Art Glass and
Briggs Amasco



Spent holidays
labouring on
construction sites.



- We are dedicated to improving the quality of human life by enabling people to **do more, feel better and live longer.**



Dental health products, over-the-counter medicines and nutritional drinks to millions of people

Treatments for infections, depression, skin conditions, asthma, heart and circulatory disease and cancer.



More than 30 vaccines to prevent potentially life-threatening such as hepatitis A, hepatitis B, diphtheria, tetanus

Total sales in emerging markets now account for 26% of our business and grew 10% during 2012.

Capital Investment has shifted towards emerging markets

But investment in the UK is Strong.

GlaxoSmithKline, Britain's biggest drug-maker, has confirmed plans to invest more than £500m in manufacturing in Britain, creating up to 1,000 new jobs as a result of tax incentives introduced in the Budget.

Because UK has key expertise and capability.

- **Andrew Witty, CEO of GlaxoSmithKline said,**
“The patent box is exactly the sort of active, long-term and creative support that we need from the Government to ensure that the UK remains an attractive place for highly skilled sectors such as pharmaceuticals. For GSK, assuming the new regime will apply to patents currently under development it will have the immediate impact of making the UK a priority area for future investments, particularly in manufacturing.”

Investments in Construction are a

Risky Business

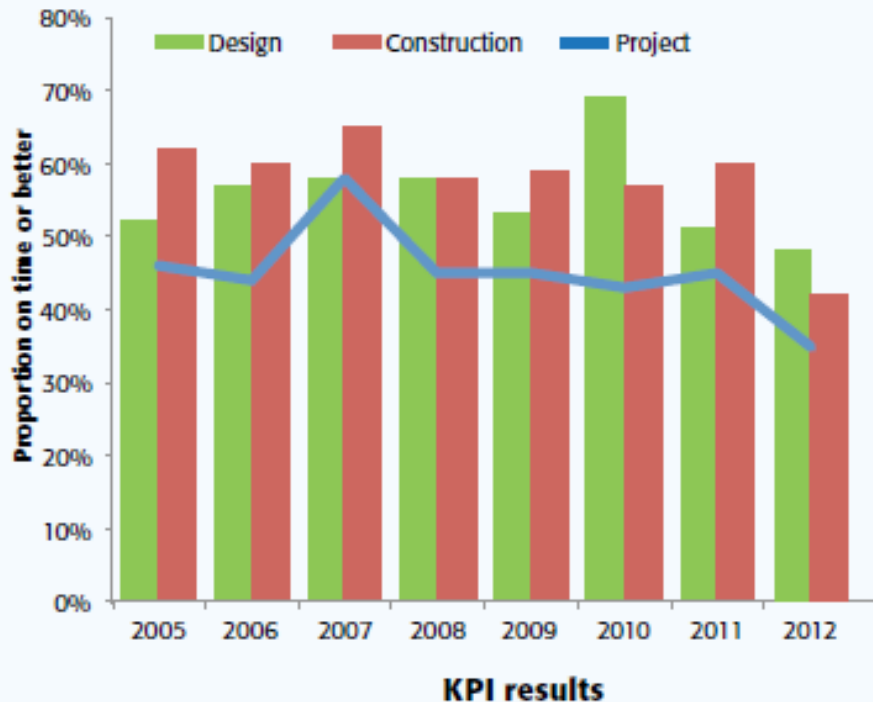
Large investment

Slow returns

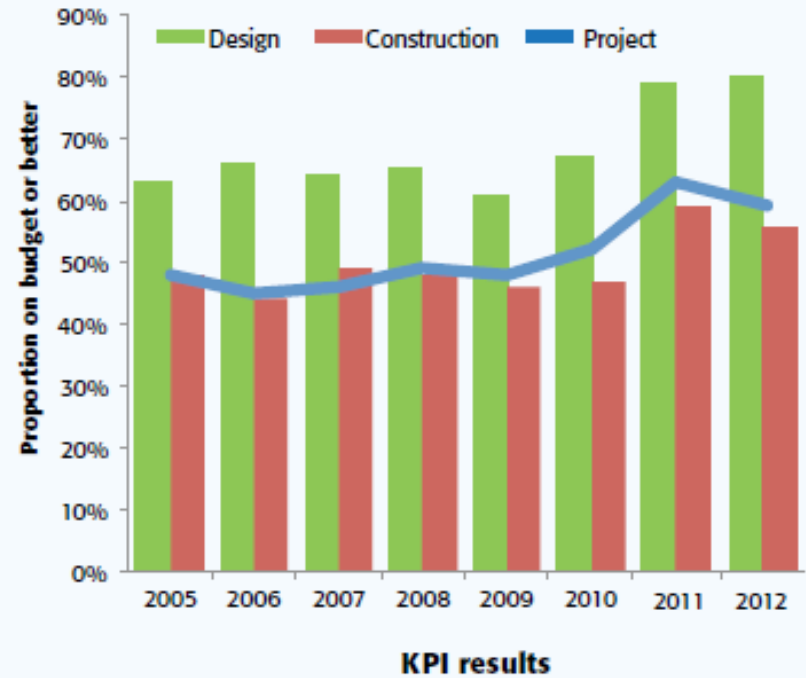
Poor reliability

Construction/Design Benchmark – UK Metrics

Time Predictability



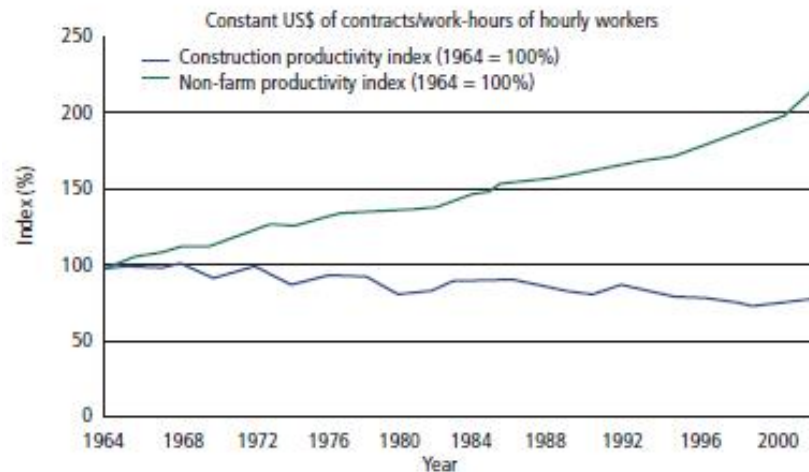
Cost Predictability



N.B. KPI results relate to projects completed during previous year

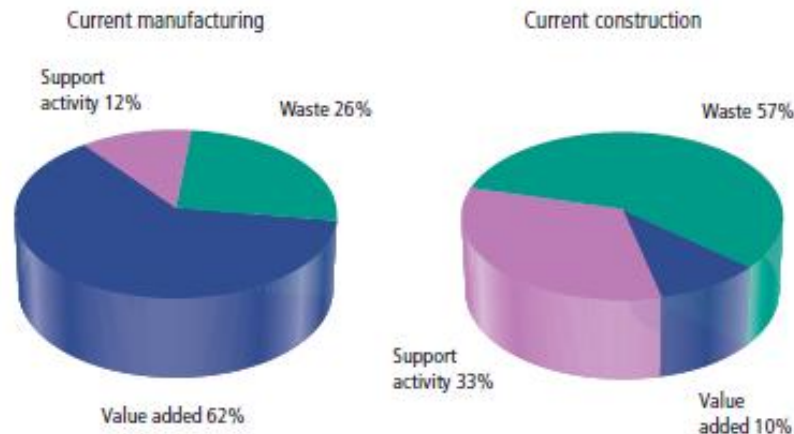
Construction/Design Benchmark – US Productivity Metrics

Figure 1: Construction and Non-farm Labour Productivity Index (1964–2003)



Source: US Department of Commerce, Bureau of Labor Statistics.

Figure 2: Tremendous Waste in Construction



Source: Construction Industry Institute™.

Delivering
the supply-chains
of the future

TODAY!





14-28 day delivery 1980
1 day delivery 2013

amazon.co.uk[®]

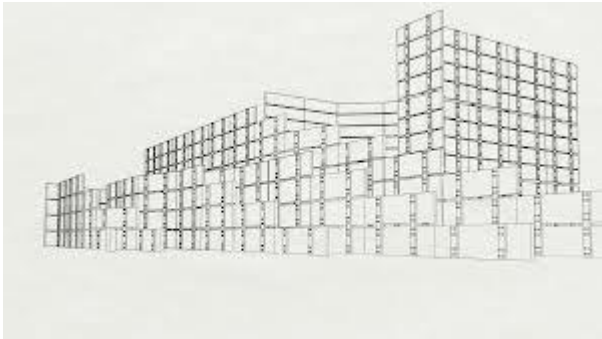


Analogue Brick 1980
4G smart phone 2013



**Will there be a renaissance
in construction?**





Modular design



Construction Logistics

Off site
construction

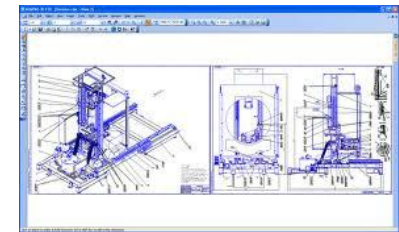


More collaborative
approaches



Construction Know-how

Technology



Pharma
design
expertise



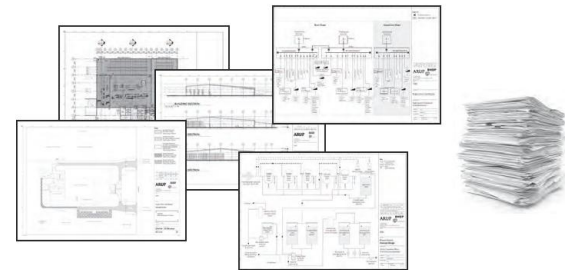
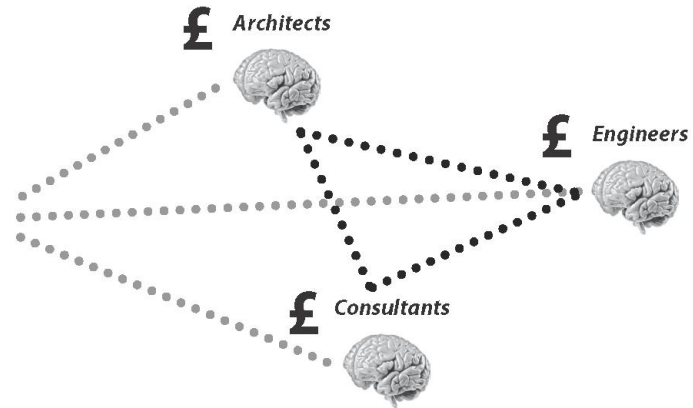
The Front End Factory

A virtual place where people
work together on supply-chain
solutions.

CONCEPT

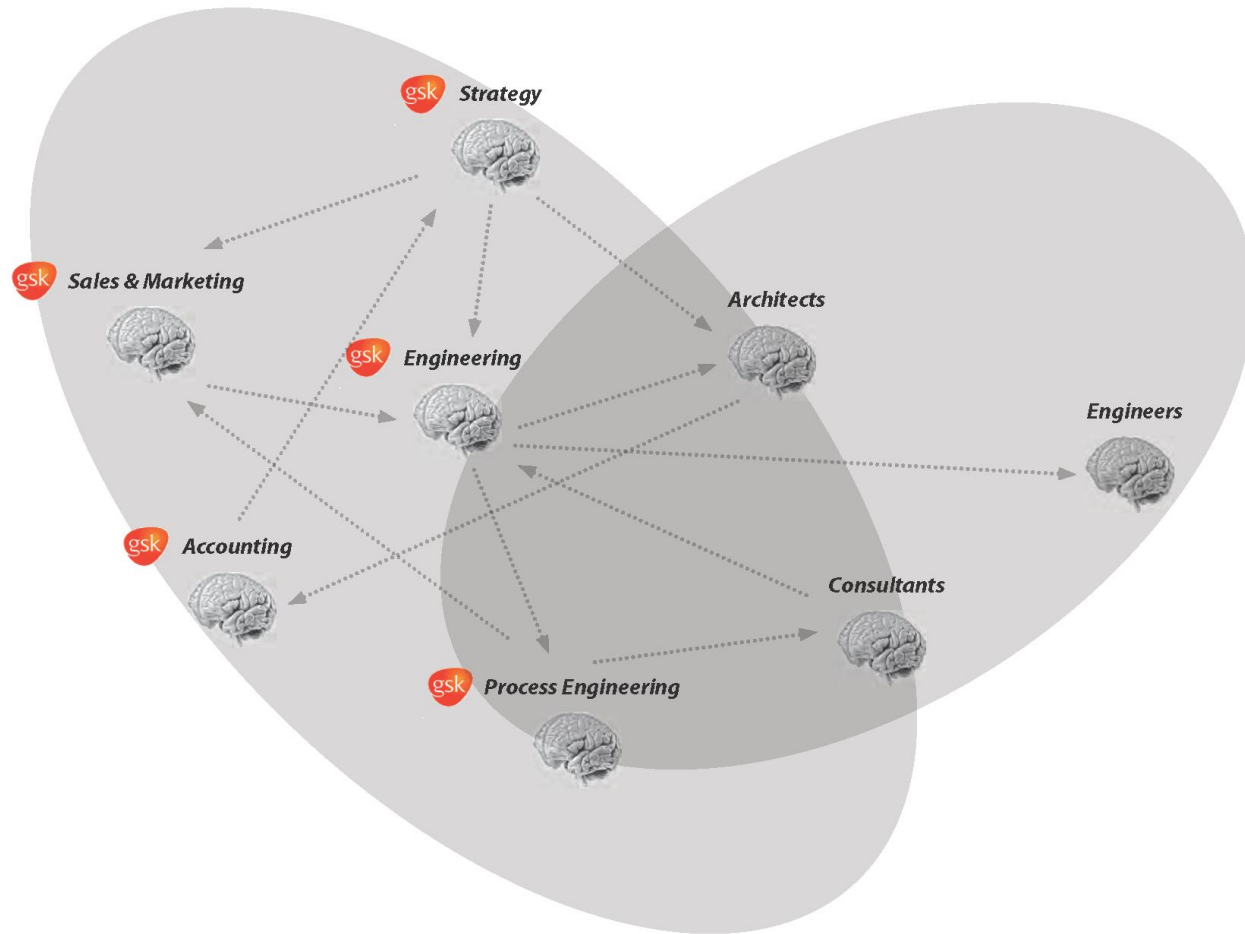
ABOUT FEF

WHY?



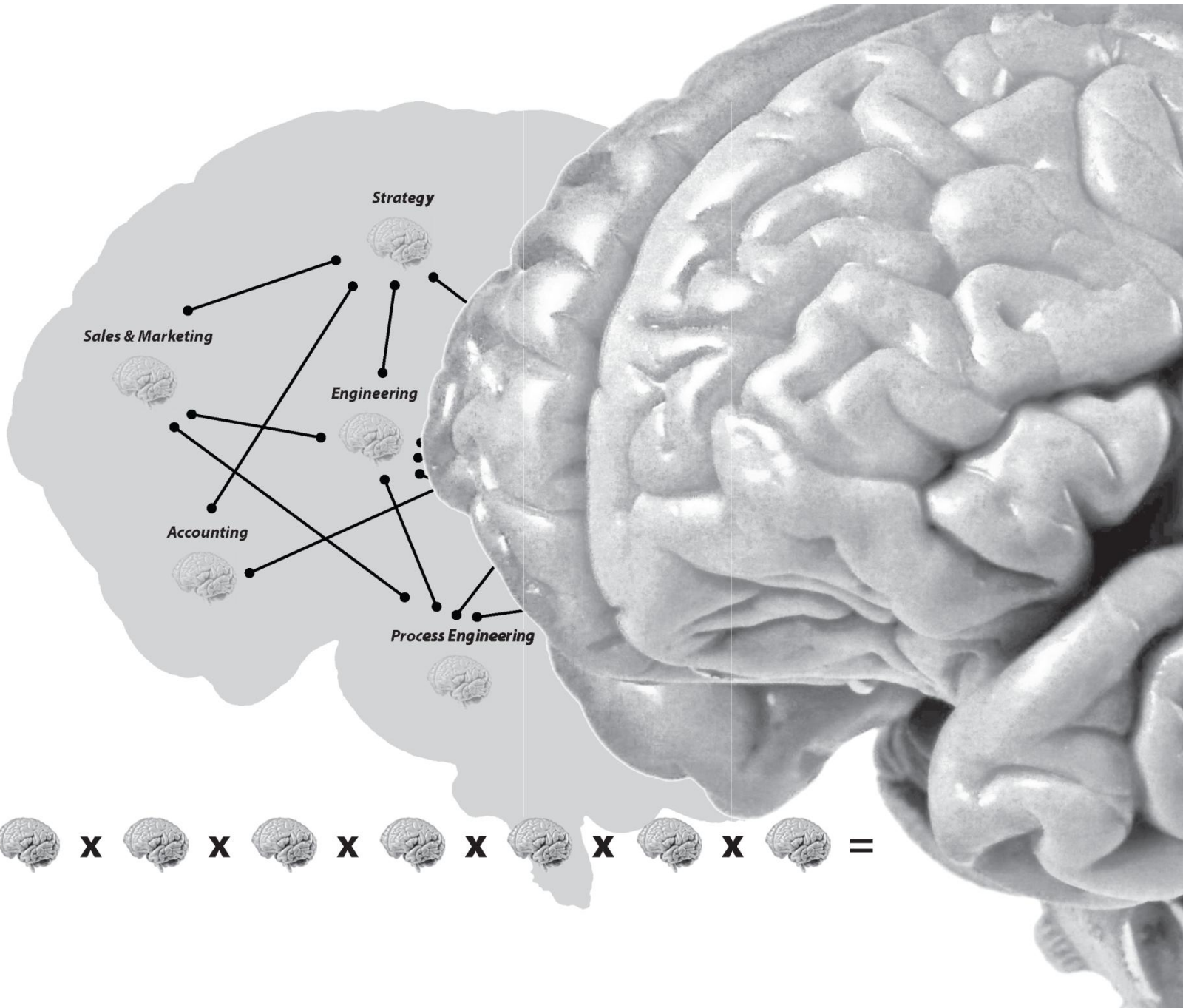
ABOUT FEF

WHY?



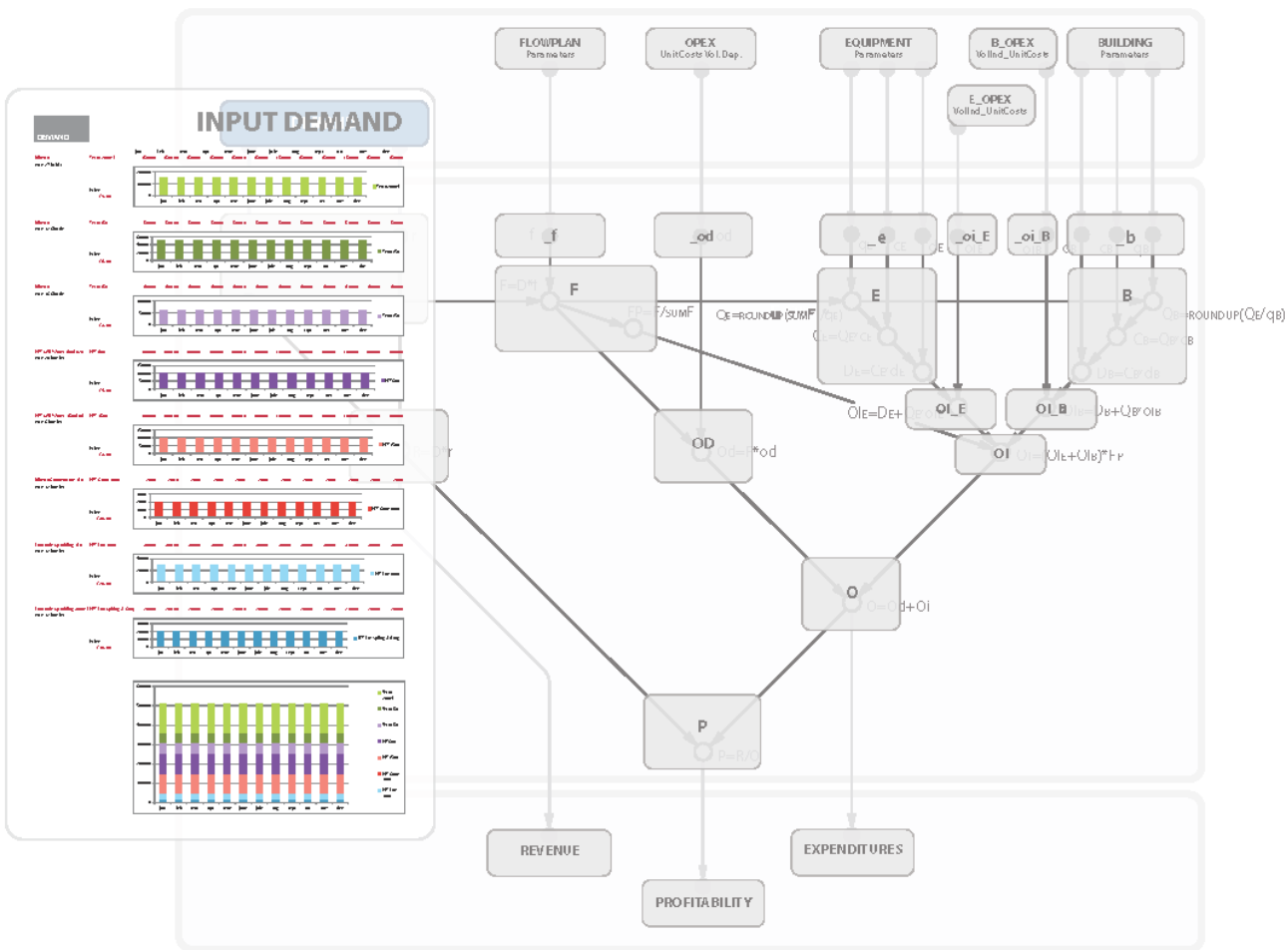
ABOUT FEF

WHAT?



BUSINESS DRIVEN & LEAN

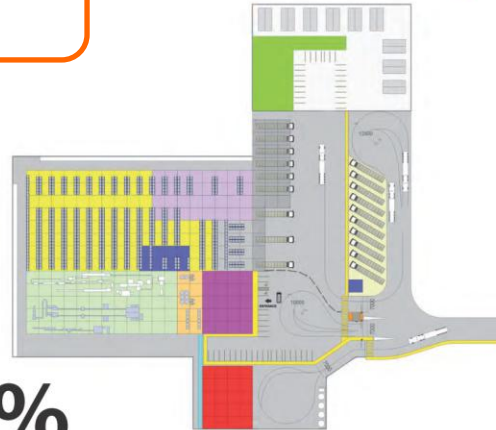
Projects driven by Cost of Goods



Using process focused modular design
to lean the construction.



-30%

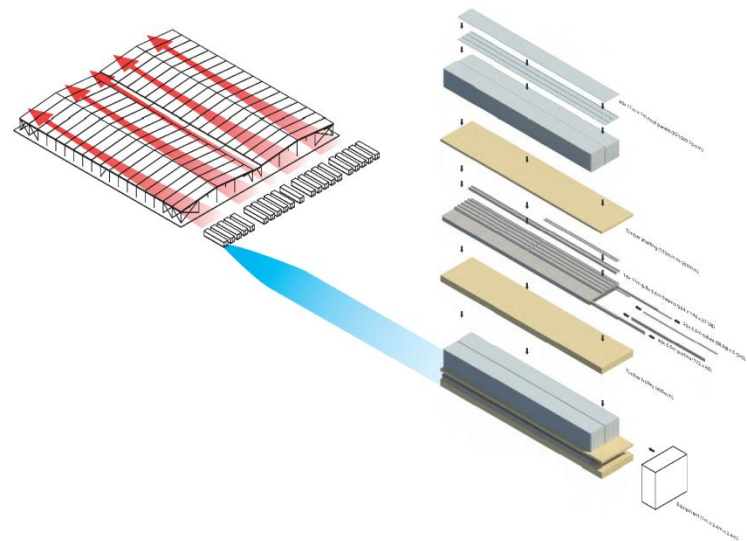
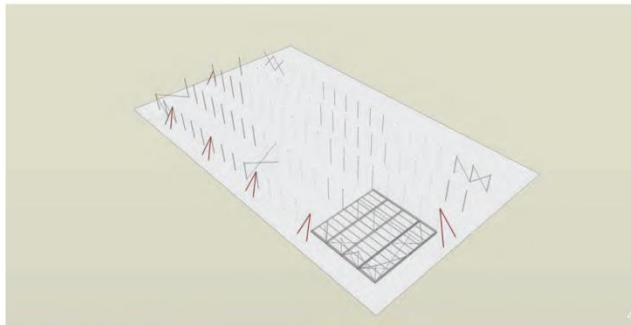
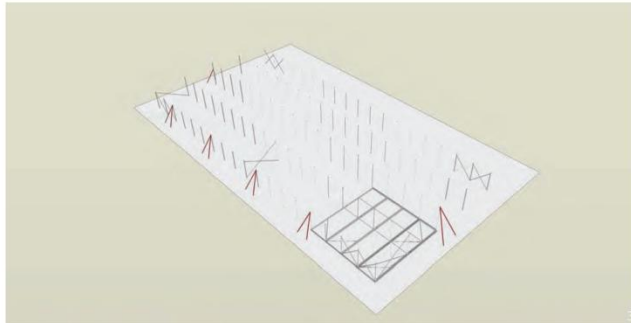


And the whole site master-plans...



-50%

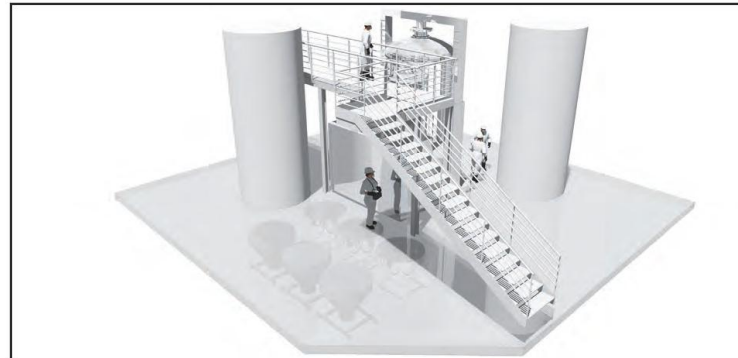
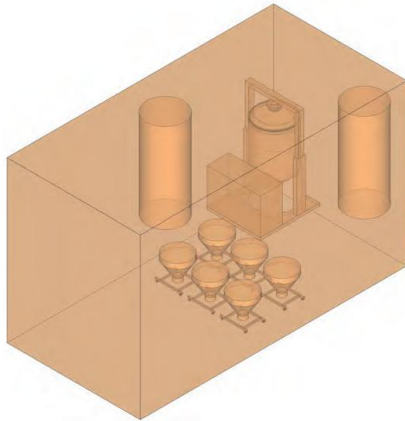
Identifying the right construction methodology to meet the business drivers.



CHIP & MODELLING



Each supply chain is made of links: -
critical steps or stages - CHIPs



Basic Chip Utilities			
	Category	Unit	Value
Electrical	Power LV Supply	KVA	88
	Lighting	Lux	500
HVAC	Air Change Rate	AC/hr	10
	Diversified cooling Loads	kw	24.6
Process	Plant Steam	Kg/hr	0
	Compressed air 6bar	m3/hr	yes
	Total Process Water	kg/s	0
	CIP Total Process Water	kg/s	0.45
Domestic Systems	Total RAW Water	kg/s	0.45

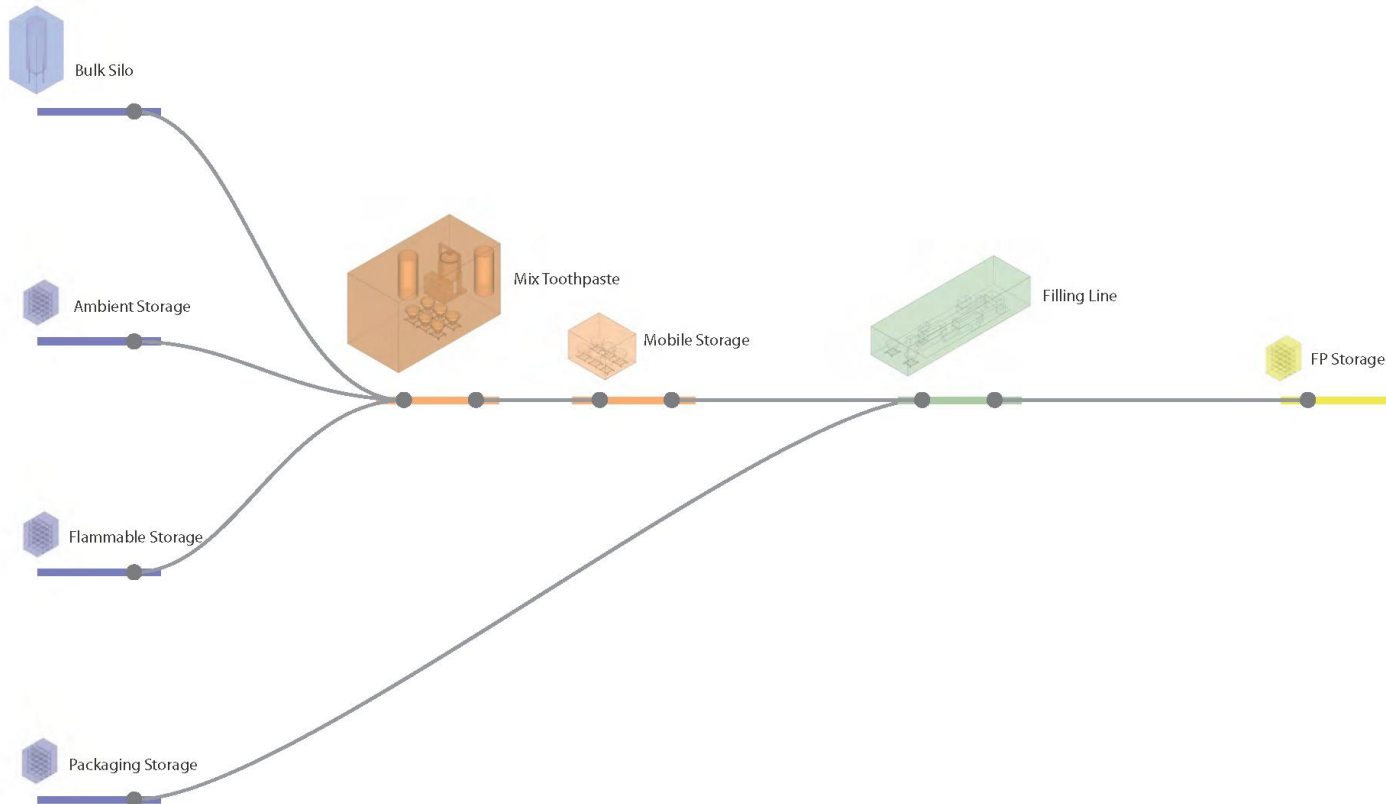
Modelling facilities and supply chains to find the Right Project

RM Storage

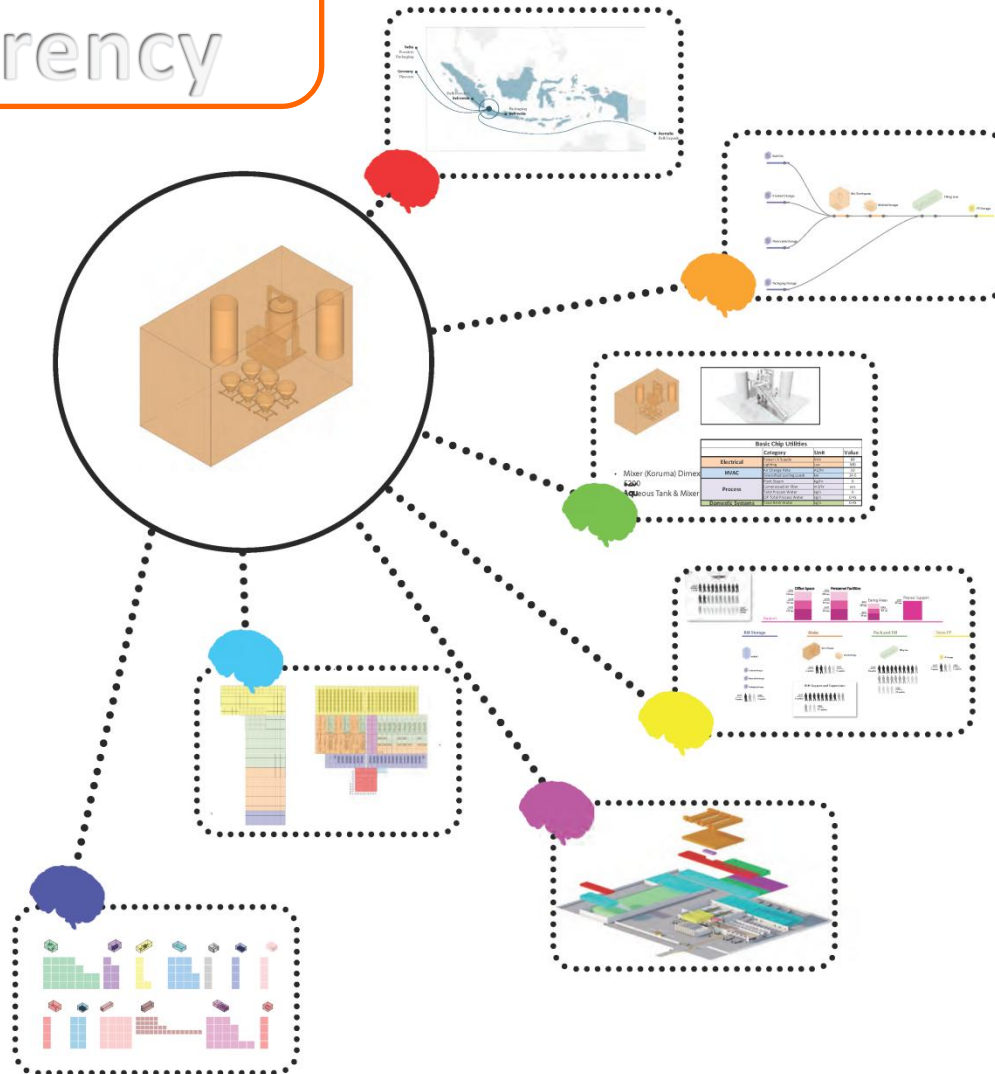
Make

Pack and Fill

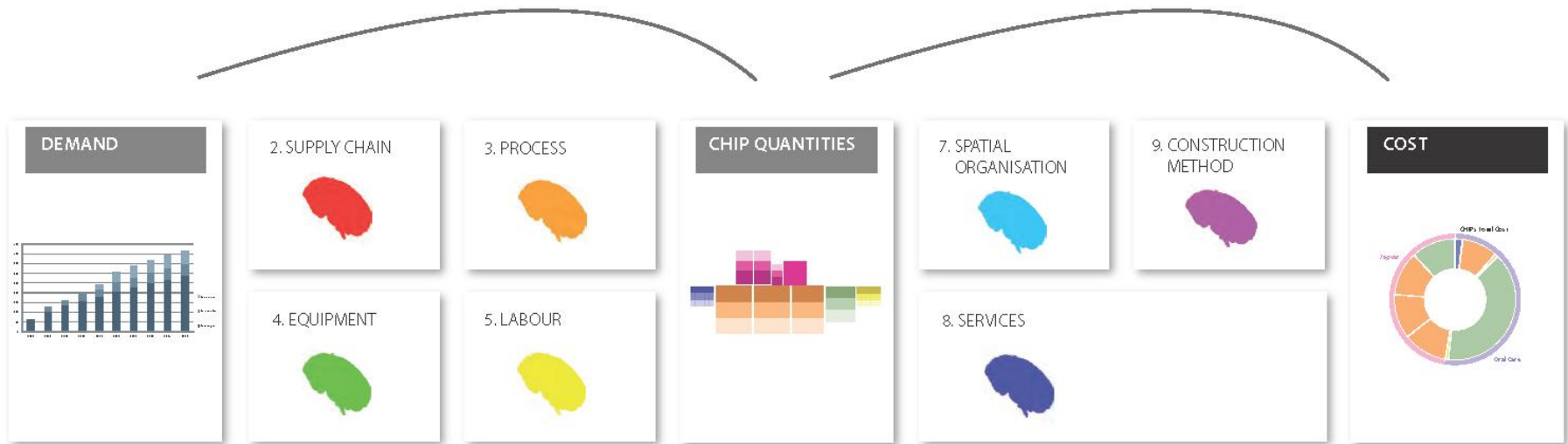
Store FP



Perspectives = Transparency

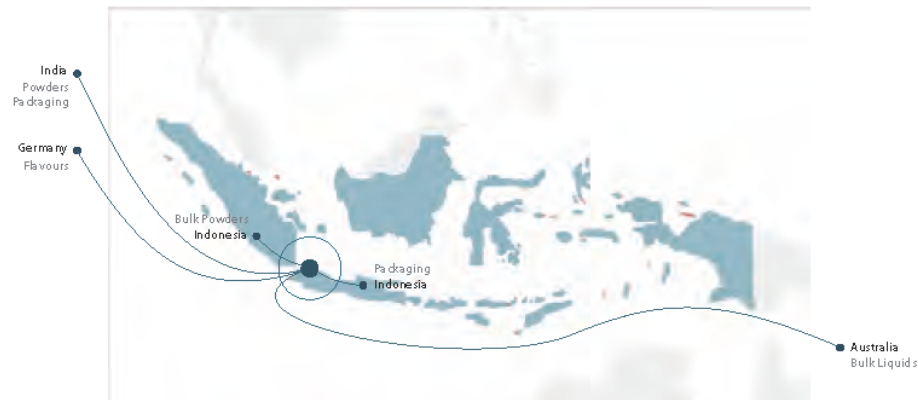
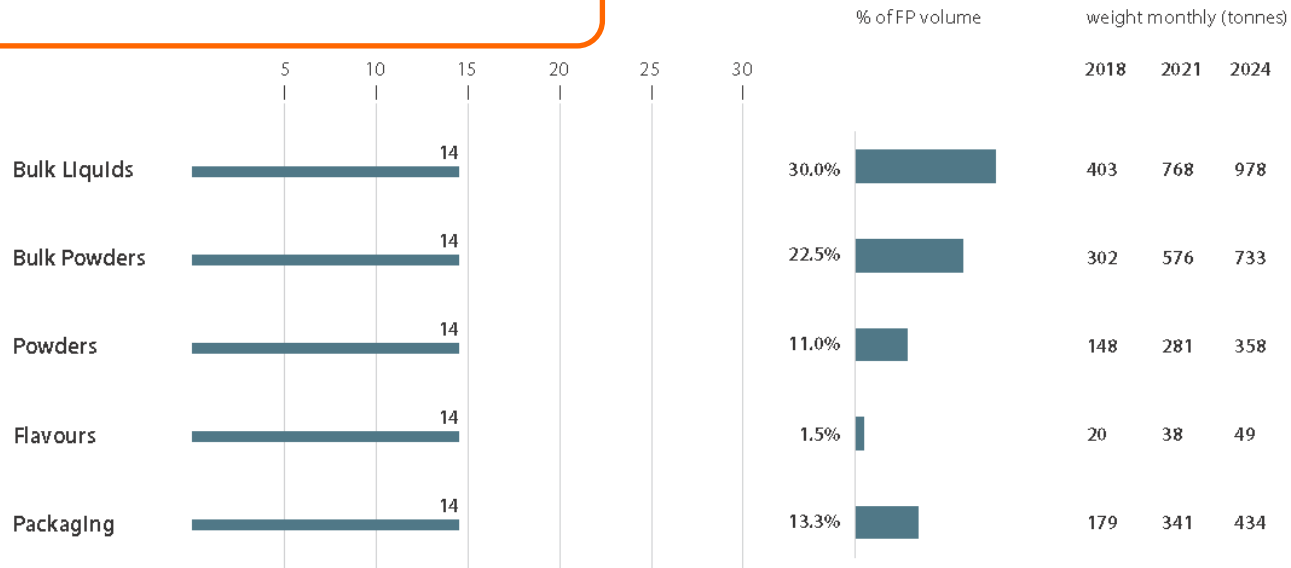


THE FRONT END FACTORY PROCESS

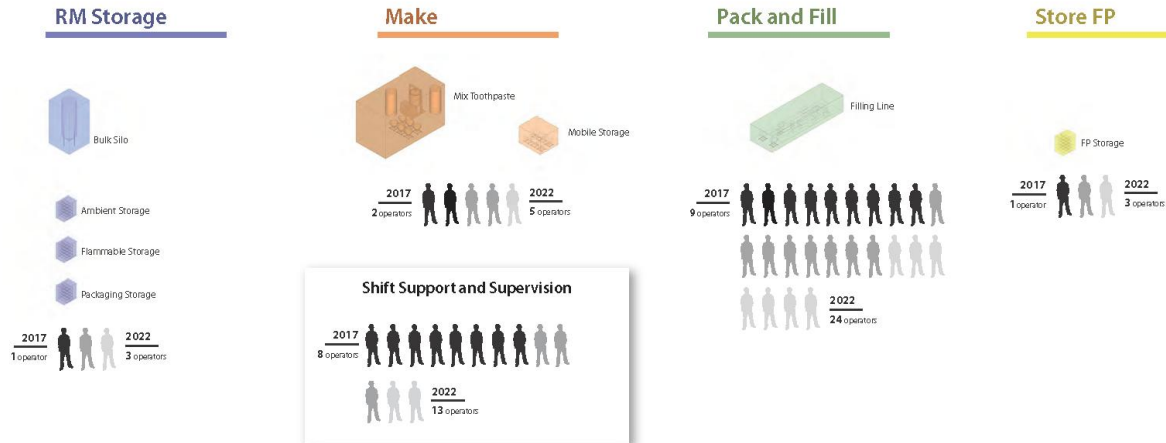
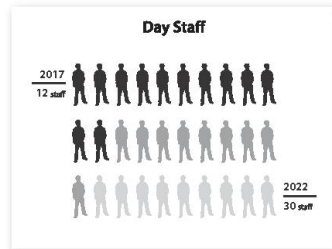




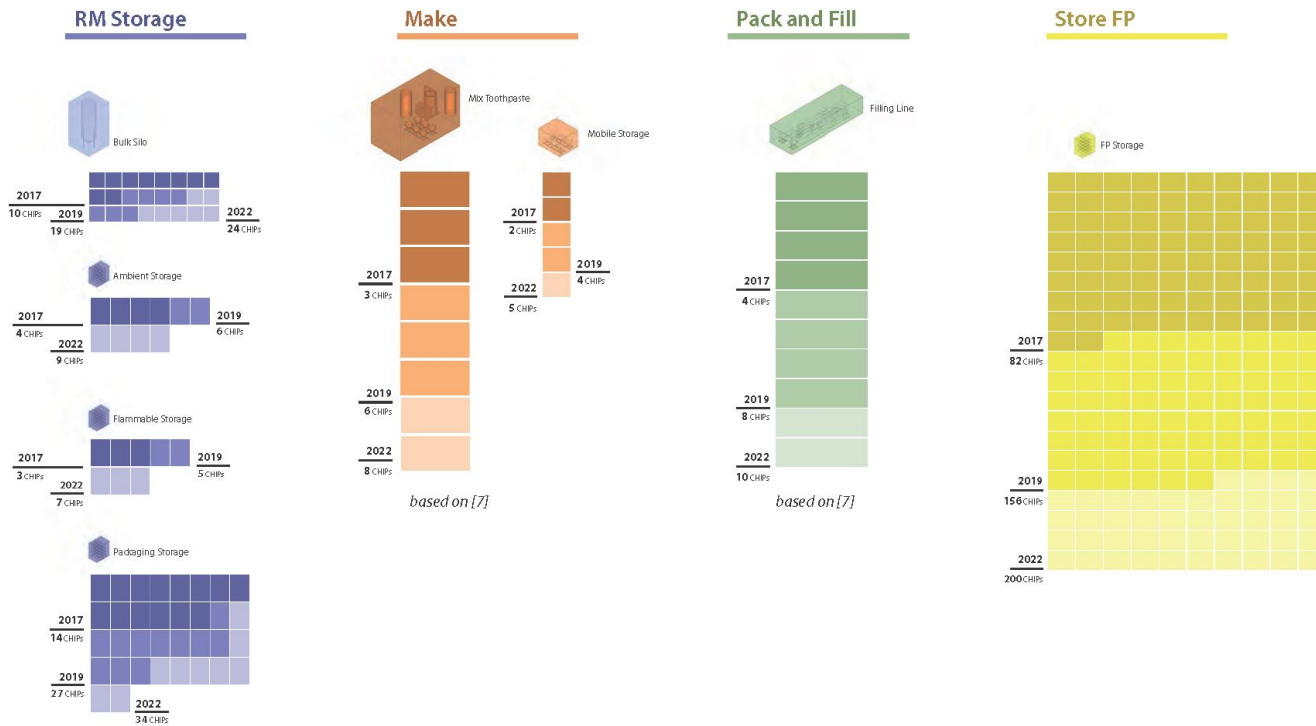
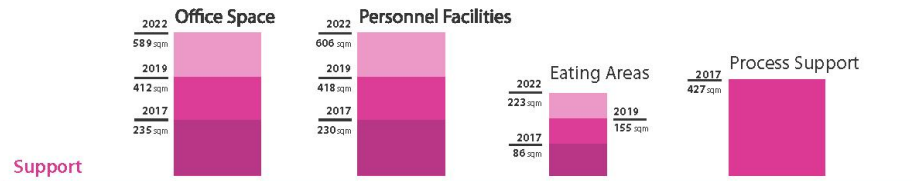
A supply-chain approach to projects.



The Model looks at people .



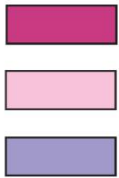
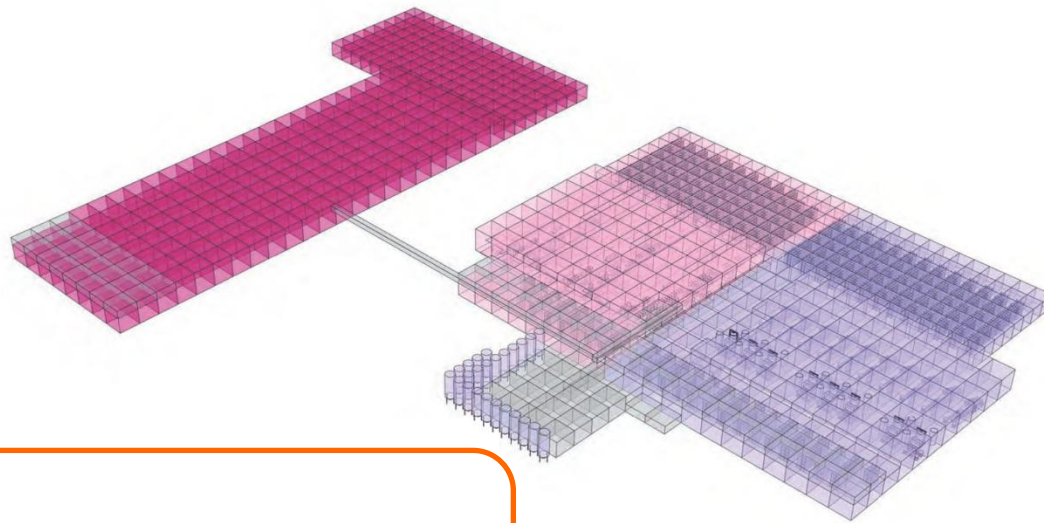
The model allows different phasing to be explored for different products, different demand profiles to be explored.



PERSPECTIVES



Model what a facility may look like



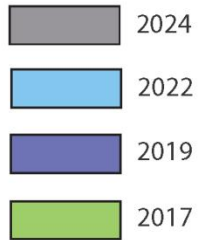
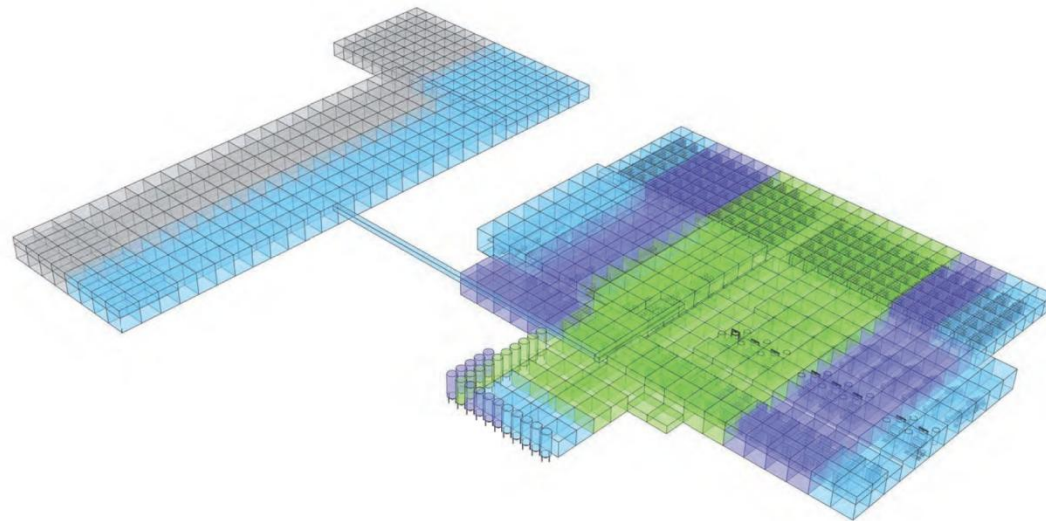
For different Categories in the business



SPATIAL ORGANISATION

PHASING

Spatial Organisation - 2024

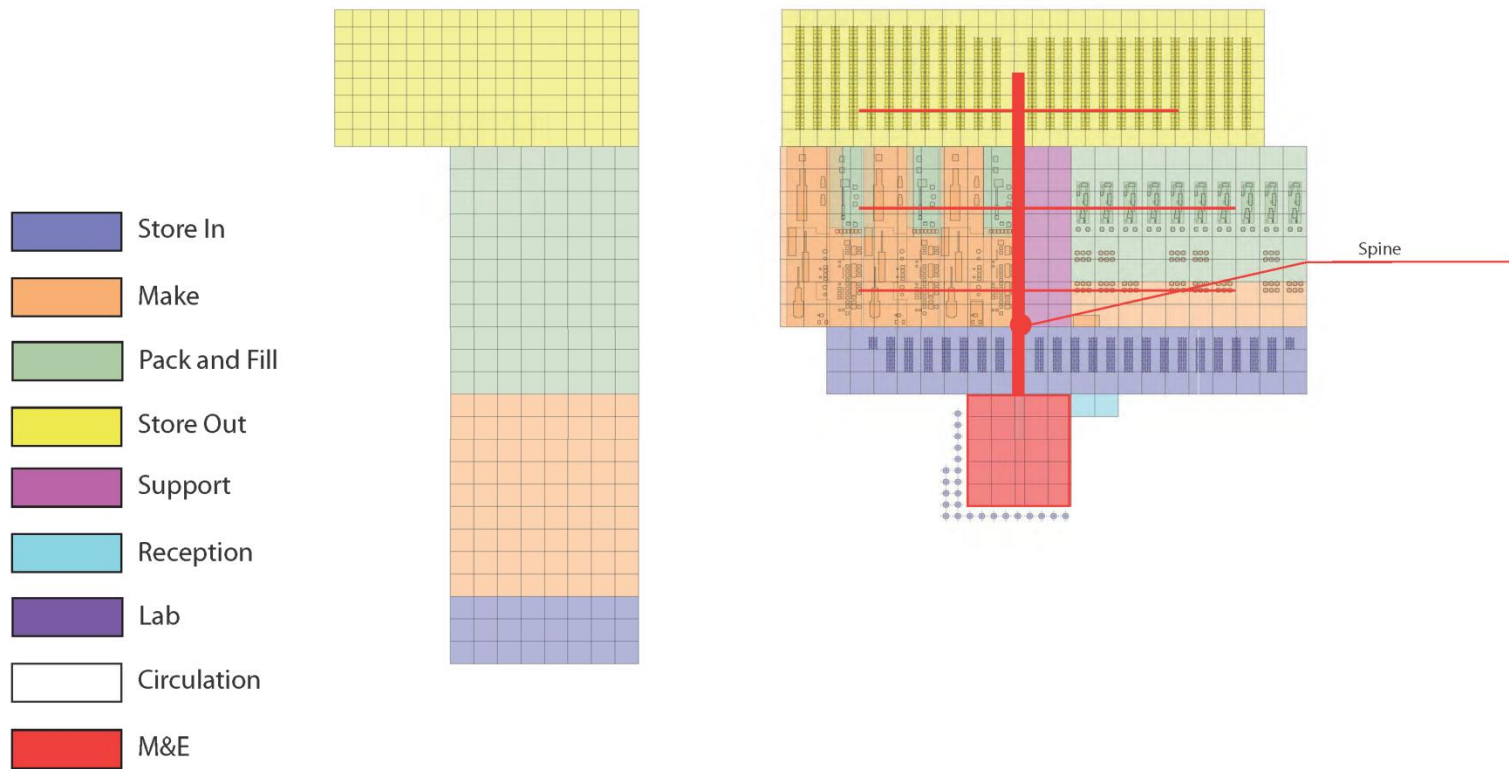




SPATIAL ORGANISATION

PHASING

Spine Organising Principle





SERVICES

ELECTRICAL

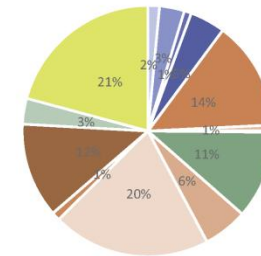


Power LV

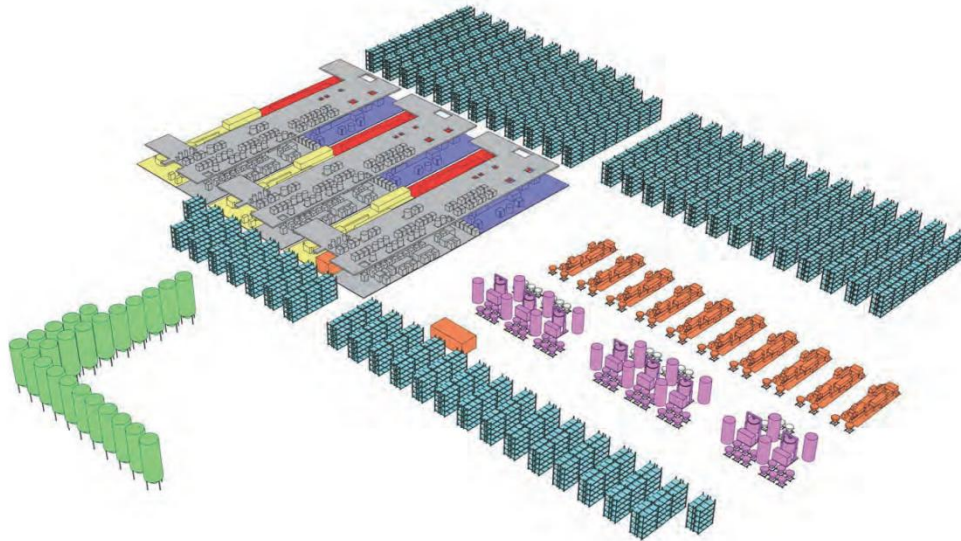
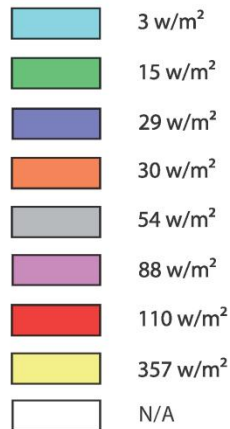
Design Assumptions:

- A suitable grid connection can be provided. Assumed 10kV
- GSK will procure power at HV and own/operate HV/LV network allowing expansion to match growth in facility
- Primary HV infrastructure will be sized for maximum facility load one day one.
- Further details of Solid Dose required

Jaguar & Oral Load Split



- Silos
- Ambient Storage
- Flammable Storage
- Packaging Storage
- Make Mixer Toothpaste
- CIP Toothpaste
- Mobile Storage Toothpaste
- Pack and Fill Toothpaste
- Pre Mix Jaguar
- Extrude Jaguar
- CIP Jaguar
- Dry Jaguar
- Pack and Fill Jaguar
- Goods Out



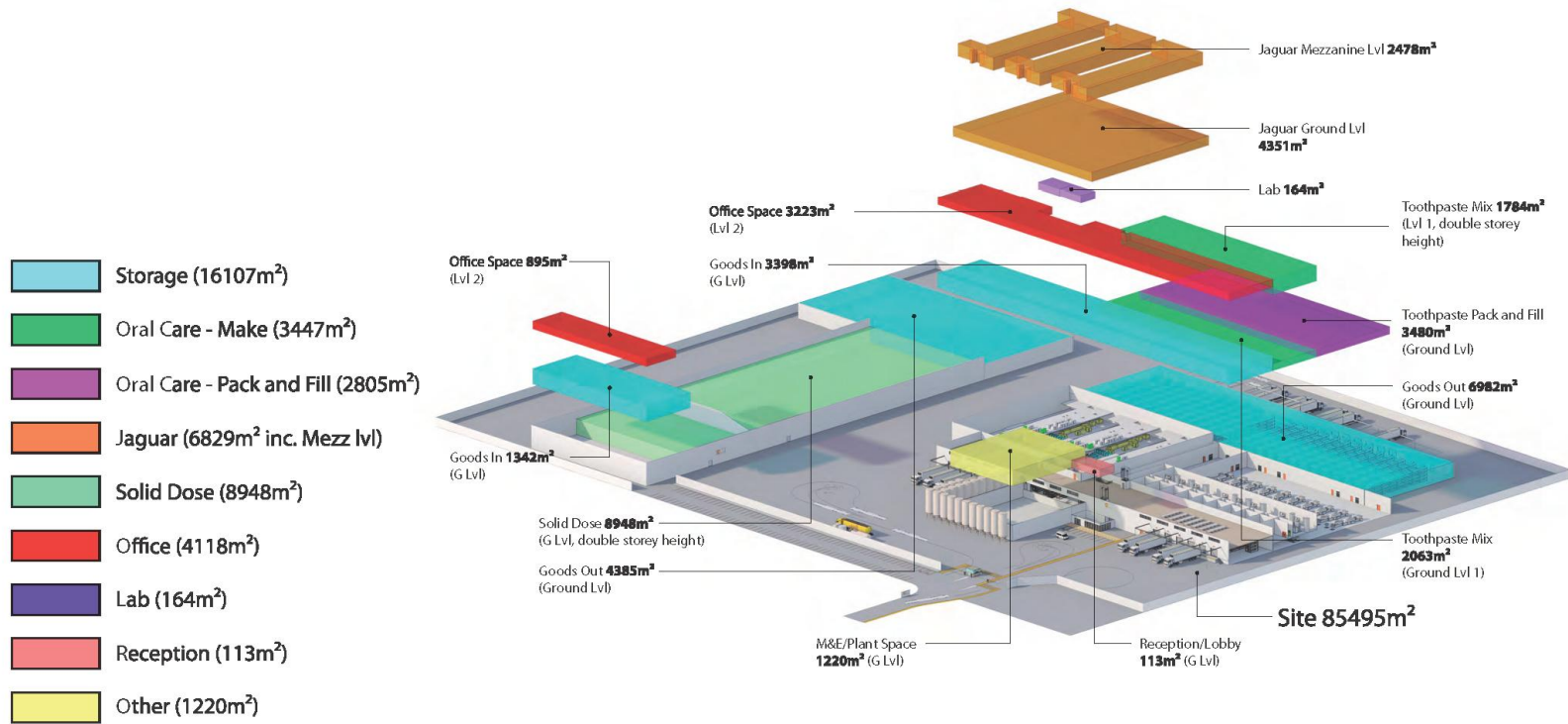
Peak Load

Jaguar & Oral Care	kVA
2024	5862
2019	4391
2017	2497
Solid Dose	
2024	4750



CONSTRUCTION METHOD

OVERVIEW BUILDING SYSTEMS





CONSTRUCTION METHOD

EXTERNAL VIEW

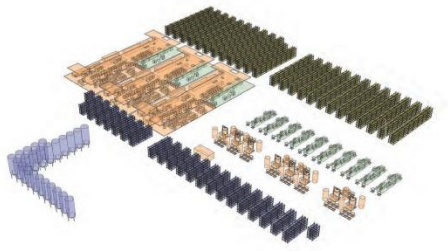




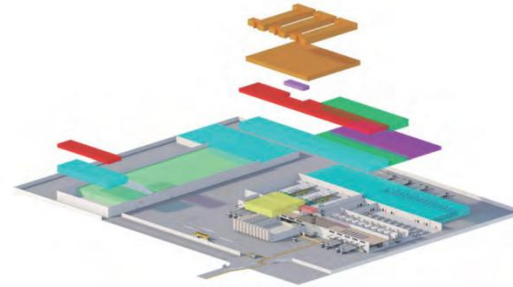
COST

COST CATEGORIES

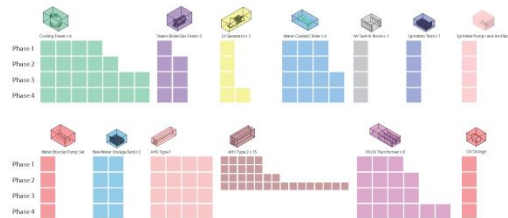
CHIPS



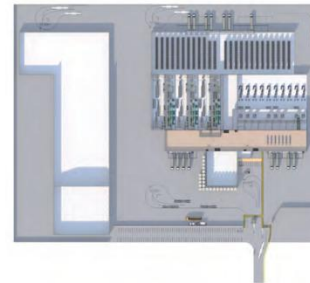
BUILDING



SERVICES



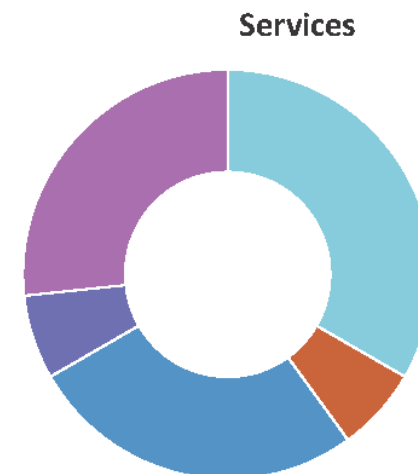
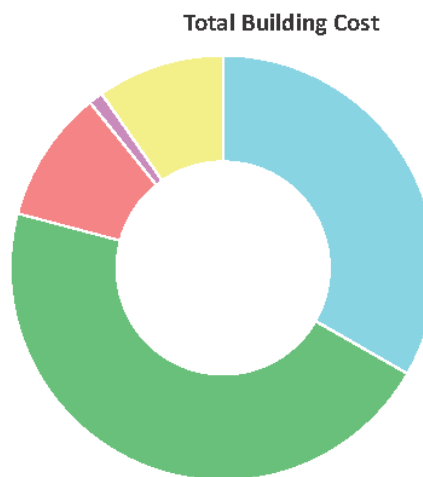
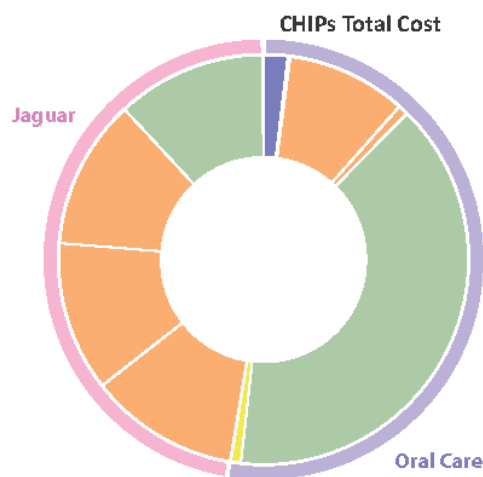
EXTERNAL WORKS





COST

CHIPS, BUILDING AND SERVICES



- Oral Care Bulk Silo
- Oral Care Ambient Storage
- Oral Care Flammable Storage
- Oral Care Packaging Storage
- Oral Care Mix
- Oral Care Mobile Storage
- Oral Care Pack and Fill
- Oral Care FP Storage
- Jaguar Ambient Storage
- Jaguar Premix
- Jaguar Extrude
- Jaguar Dry
- Jaguar Pack and Fill
- Jaguar FP Storage

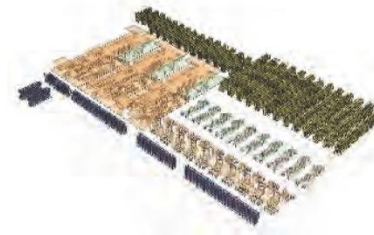
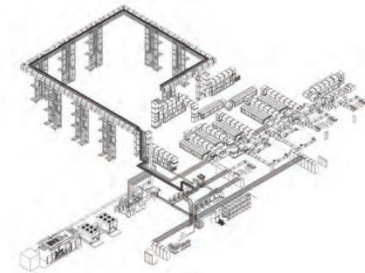
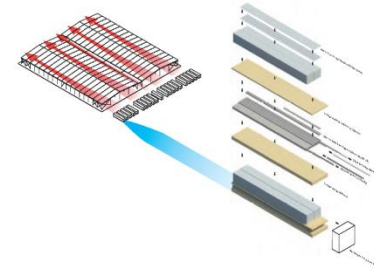
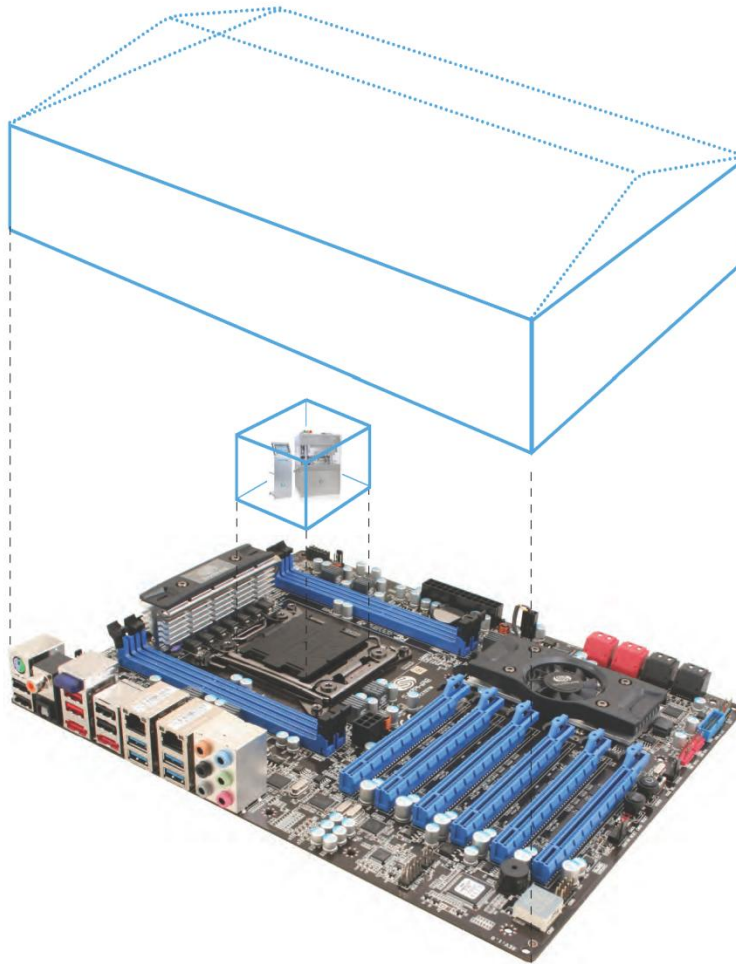
- Storage
- Manufacture
- Office
- Lab
- Other

- Cooling
- Heating
- Air Handling
- Water
- Electrical

STANDARDISATION & DELIVERY

ABOUT FEF

BENEFITS AND POTENTIAL

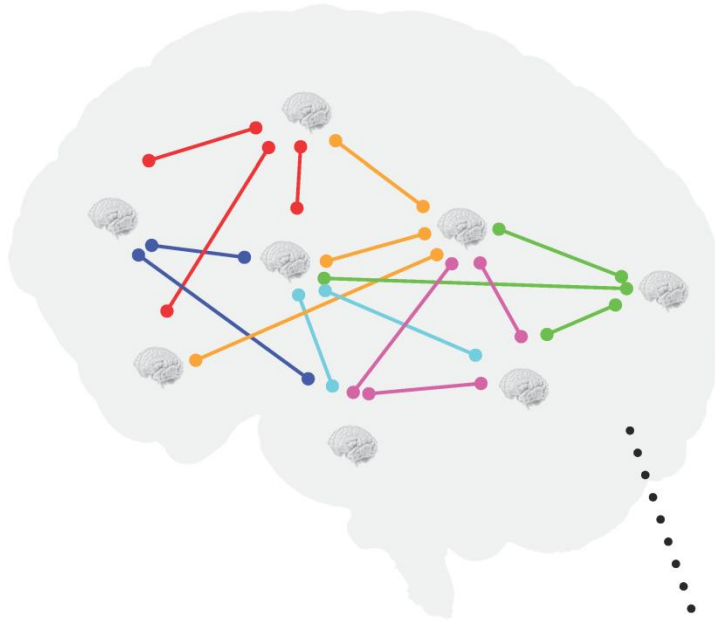


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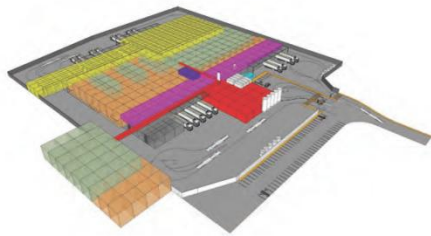
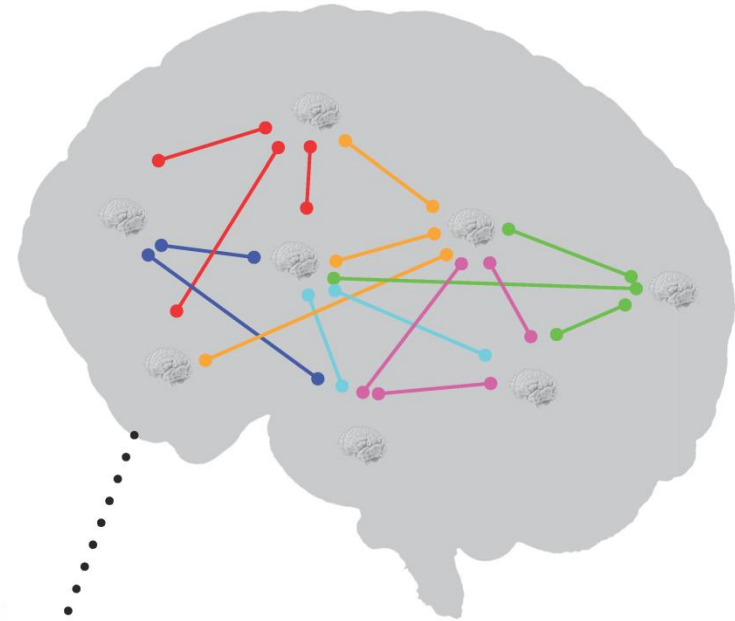
BENEFITS AND POTENTIAL



UNDERSTANDING



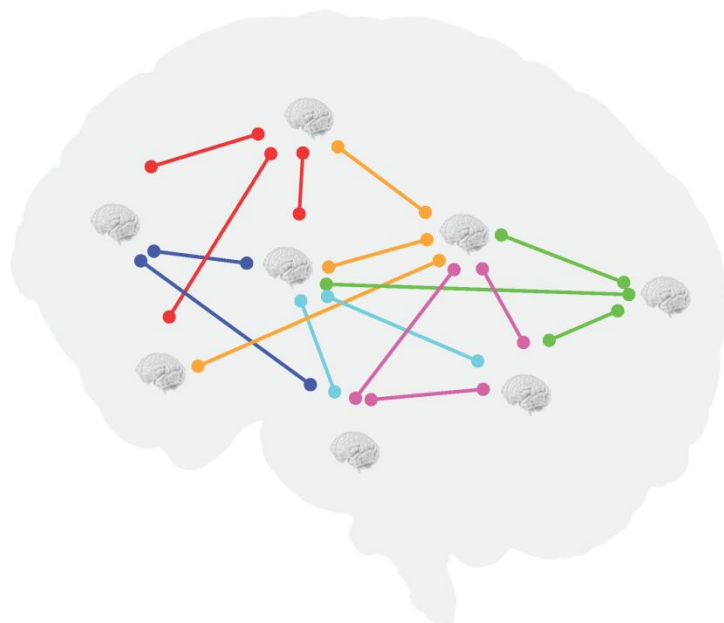
SOLVING



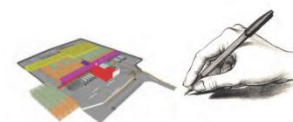
'VISIONING'

ABOUT FEF

SUMMARY



***Capturing, Communicating
and Leveraging
Knowledge.***



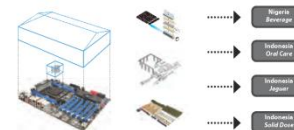
***Faster
Option Appraisal***



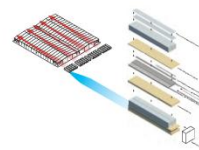
***Joint Decision Making
and Accountability***



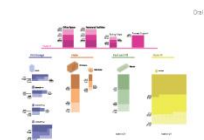
***Leaner Contingencies
Through Better
Understanding of Risks***



Optimised Procurement



***Flexible and
Agile Solutions***



***Better Decision Making,
Better Use of Capital***

