



NHS England and NHS Improvement



Target Architecture

Got this ...



- Too many disjointed systems and solutions with limited integration and producing siloed data
- Difficult to manage & maintain, not conducive to Smart strategy

Want this ...



- Fewer and 'best in class' solutions
- Integrated using open & interoperable standards enabling 'future-proofed' Digital roadmap and producing NHS 'owned' data

And not this ...



- Proprietary, single supplier, 'walled garden' solutions
- Tied into long-term, 'house of cards' contracts that are complicated to terminate



Re-usable and interoperable data available for different profiles & outcomes

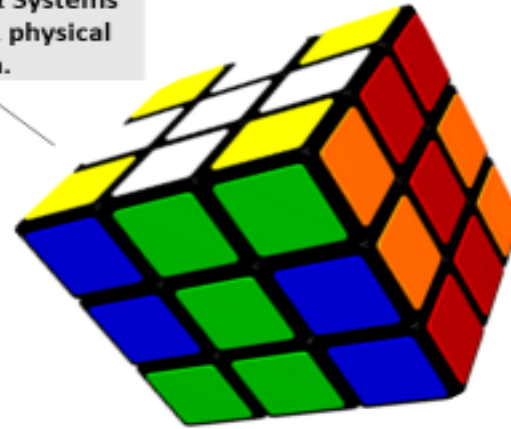
1. Connect

- a. Energy Consumption
- b. Room Occupancy
- c. Asset / Location Temp.
 - People Flow / Movement
 - Air Quality
- Existing systems to SEAM
- Clinical (anonymised)
- Weather, Traffic, ...

2. Profiles

- | | |
|----------------------------------|--------------------------------------|
| a. Operations & Sustainability | d. Architect MEP (New Builds/Refurb) |
| b. Clinicians (NHS Trust Boards) | e. Finance (Benefits, ROI) |
| c. Healthcare Providers. | f. Estates & Facilities Management |

Assets, Locations & Systems forming Big Data & physical digital twin.



3. Outcomes

- a. **Sustainability**
- b. **Well-Being**
- c. **Backlog Reduction**
 - Productivity
 - Asset Optimisation
 - Cost Reduction
 - Process Performance
 - Reduce Premiums
 - Improve Compliance
 - Traceability ...

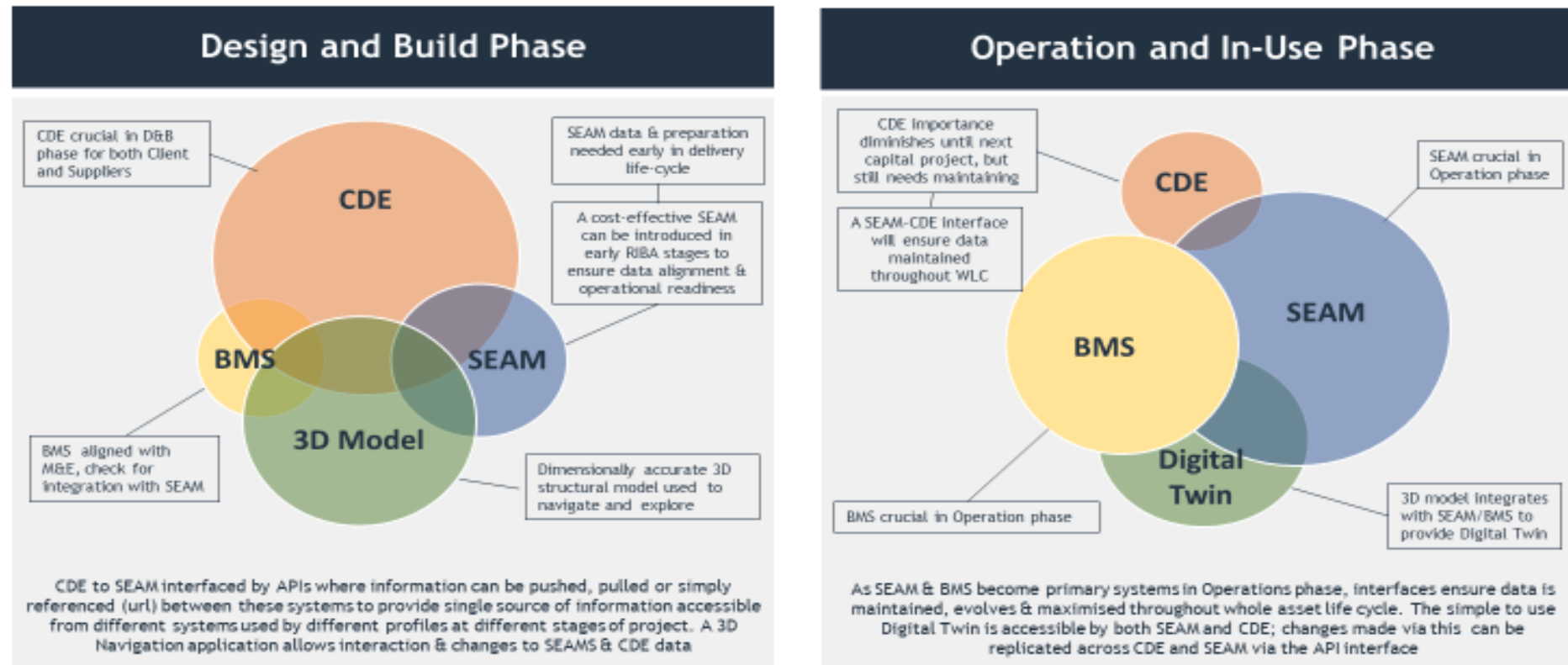
4. Scale

- Add more sources of data + apply more complex algorithms once initial 'start small' ROI confirmed

80% of Carbon footprint in Operations Phase vs c.20% for D&B – start 'smart' in Operations



Value of BIM, CDE & SEAM alignment



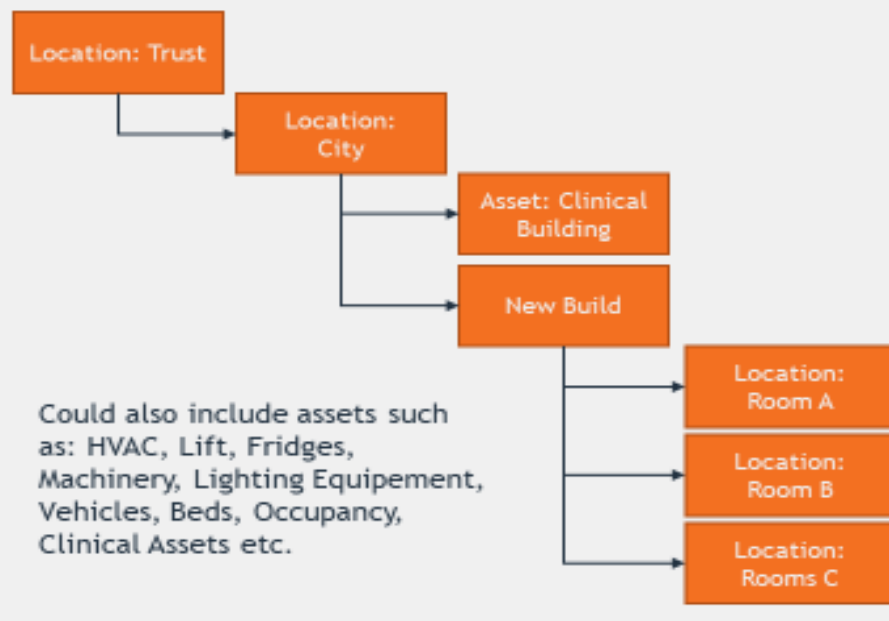
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Example: BIM to SEAM display data; trigger work-orders; manage / track projects.

Example of heirarchy based on requirement



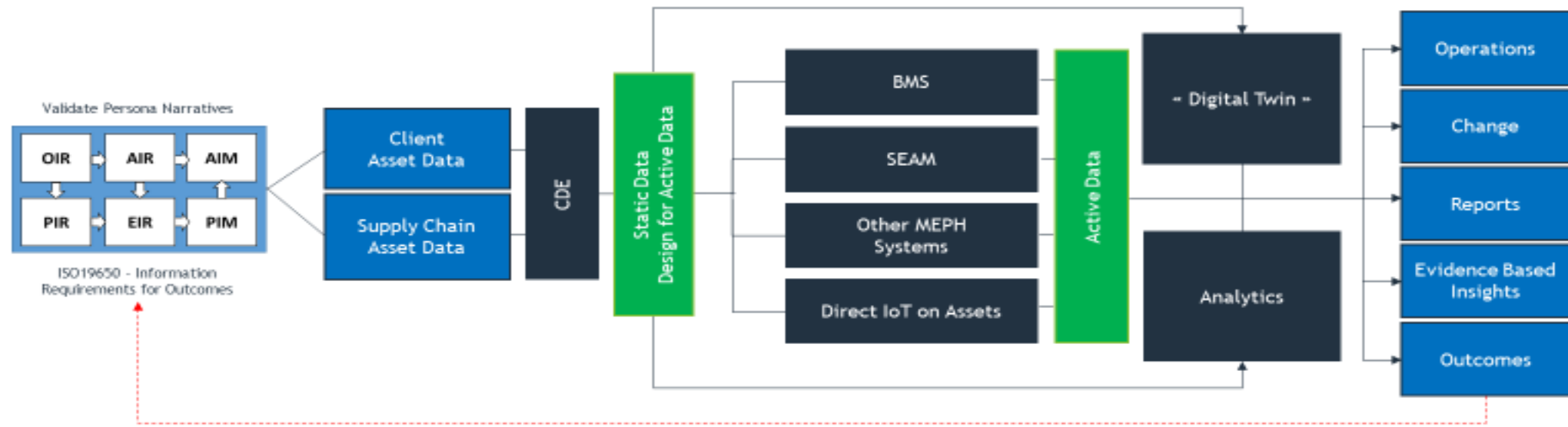
Transactional + Operational Data

- Existing 'transactional' data capture may include:
 - Name, role, contact details, sector; n° employees, patients, customers; size, value, costs, associated contracts & SLAs; risks, checks, amendments, etc.
- Operational - digital data for locations & assets:
 - Plans; job plan; datasheets; contracts; materials (traceability); calibration & warranty dates / cycles
 - Potential IoT data: temp, humidity, air quality, occupancy, footfall, energy (electricity, water, gas) consumption; on/off run-time & asset usage, ...
 - ✓ Trigger work-orders (scheduled, unplanned or IoT driven) to alert NHS EFM and.....more.
 - ✓ Use data in next D&B / Refurb phase

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High-level data flow throughout whole asset lifecycle



Ensure necessary static & active data to achieve desired business outcomes is created, structured and shared between systems early in D&B phase, and to ensure 'golden thread' of information kept across whole asset lifecycle

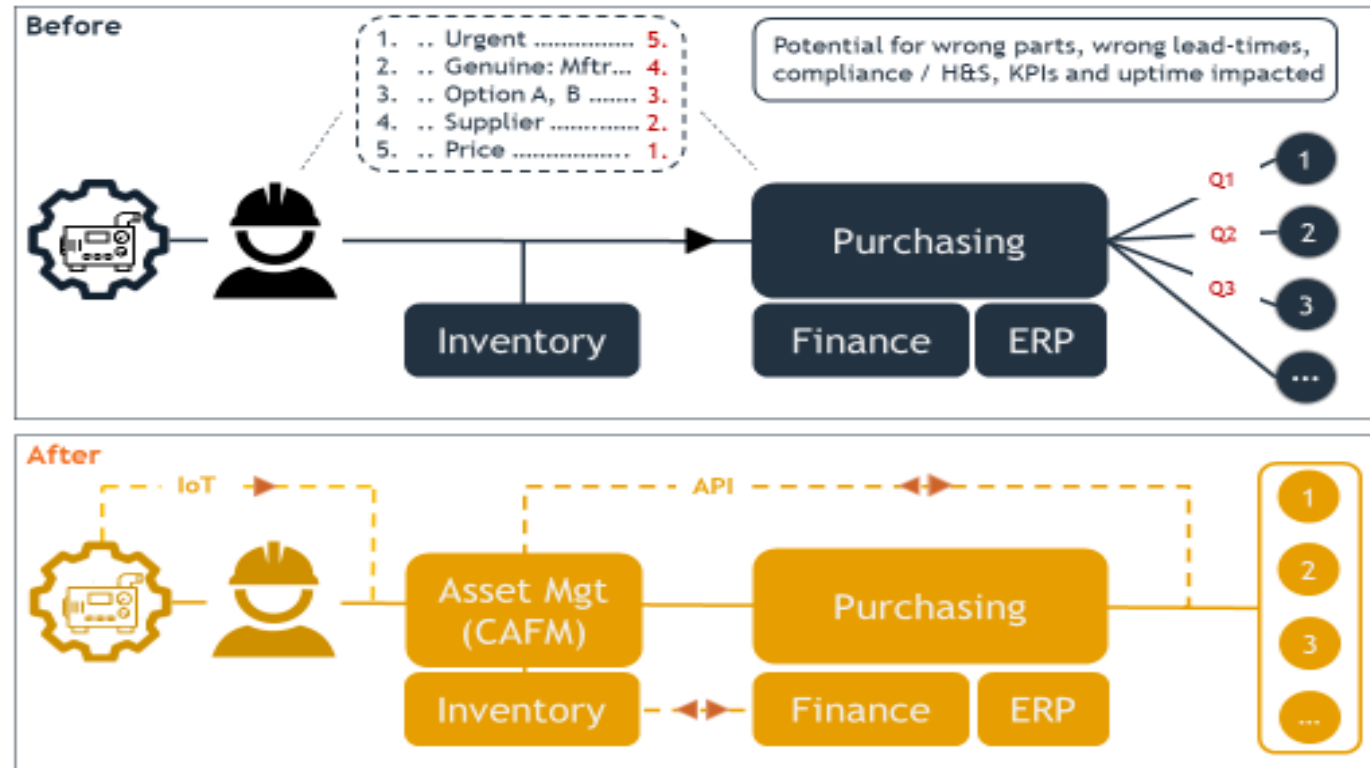
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Supply Chain - Supplier E-procurement & Asset Management

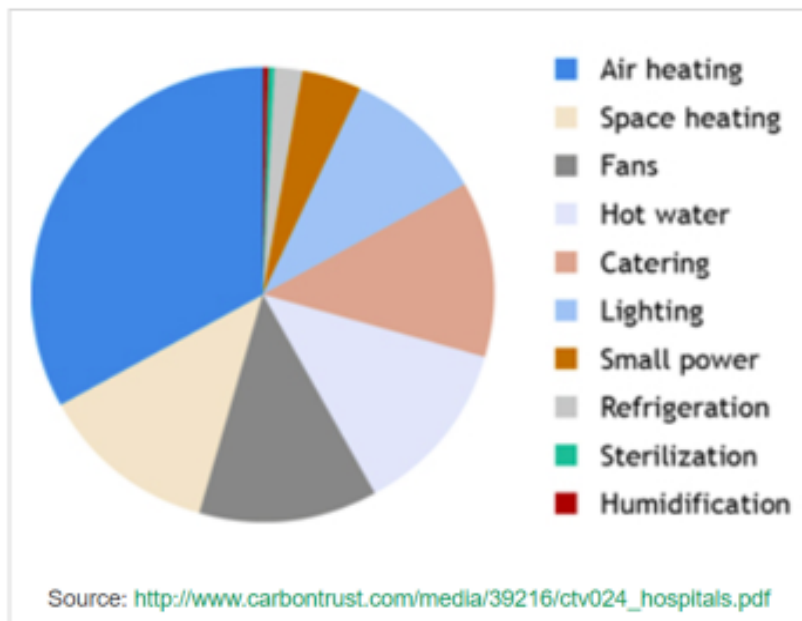
Benefits: Supply Chain

- Ensure right product, right price, right lead-time based on right criteria (criticality, genuine, energy consumption ...) - to ensure uptime, compliance, H&S, SLAs, target KPIs
- Just-in-Time Inventory - Planned & IoT enabled Predictive maintenance to ensure parts delivered on-time, in stores and reserved for jobs
- Improve Uptime: c.50% downtime due to parts not available
- Optimise Procure-to-Pay for materials, spares and consumables
- Improve Supplier Performance, Management and Consolidation



Sustainability & Digital: Measure & Manage

Energy consumption in a typical hospital by end use. Need Smart Assets + Smart Operations + Smart Facility Management + a Smart Approach



If you can't measure it, you can't manage it

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Agree on approach: LEED, BREEAM Excellent 2018 (D&B), BREEAM In-Use (Operations), then collect Data, Measure and improve Outcomes



Use insights for future D&B and refurb

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Thank you.

Questions?

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