

Taking the lead in digitisation of a hospital – lessons learnt from Bradford, UK

Vitalis

Gothenburg, Sweden 22 May 2019

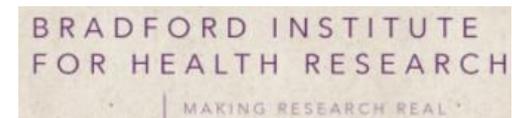
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Bradford is ...

- 5th largest metropolitan (pop. 531,000)
- Fast growing city (11% population growth over 10 yrs., predicted 28% by 2033)
- Europe's youngest city (22.6% <16 yrs. Old)
- Ethnically diverse City (30% of population is BAME origin)
- Deprived City (A third live in UK 10% most deprived areas)
- 5,800 staff and 500 volunteers
- Annual turnover €460m
- 135k Emergency attendances, 121k in-patients, 497k out-patients, 6k babies annually
- Medical, nursing & allied health students
- Tertiary cancer: Upper GI, Head & Neck, Urological
- Bradford Institute for Health Research (Born in Bradford applied health research)
- Wolfson Academy, Improvement Academy, Yorkshire & Humber Digital Safety Research Group



Our digital journey started off poorly

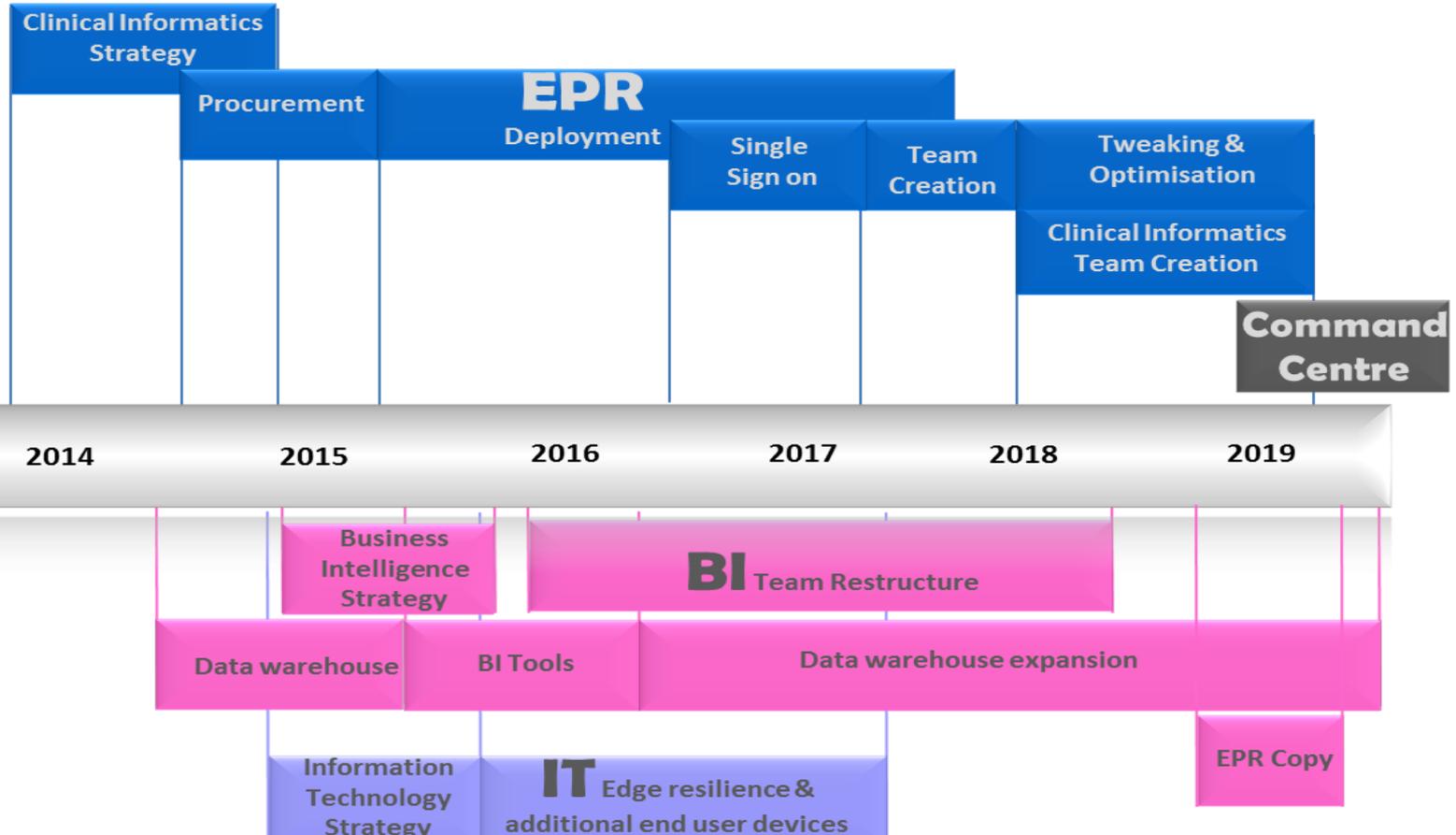
- Ongoing issues with activity/pathway data
- 3 failed attempts to introduce an EPR – local, national, co-development
- Digital was not integrated culturally or operationally
- Underdeveloped, highly customised tools
- Low data/information maturity
- Believed there would never be successful with digital
- However
 - State of the art data centre infrastructure
 - Eager clinicians
- No need to convince people digitisation was the right thing to do
- But
 - Needed to convince people we could actually do it
 - Needed to establish why the Trust should set the bar high

We started with principles & a clinically-led strategy

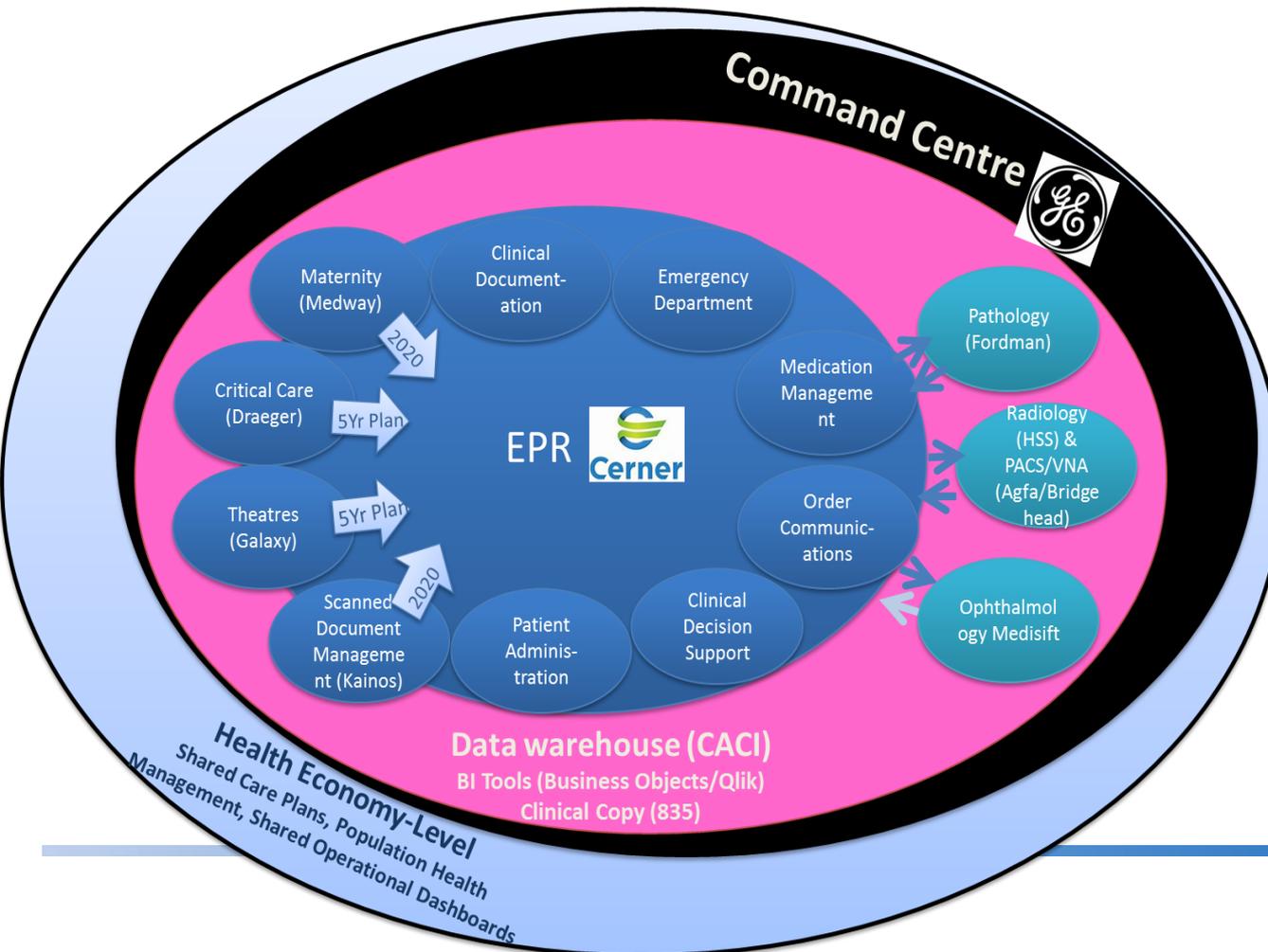
- 1st Introduced Board-approved Principles, e.g., no in-house development
- Need to start EPR as it takes a long time
- Needed to ensure everyone agreed – disciplines, areas, including corporate areas
 - Industry-ranked
 - 1 big EPR for main clinical use, except where the EPR can't do it
 - Big bang to force change
 - To make it manageable leave existing software as is in specialty areas
 - Do with another secondary care organisation to save money
 - Eventually consolidate with some exceptions
- Complementary strategy for business intelligence maturity

But overhauled everything at once

- In parallel to EPR
- Initiated some obvious business intelligence work without a supporting strategy
- Best shot at getting staff to change, getting it done & maximises investment
- Introduce 'standard', i.e., simplified architecture



And created a mostly simplified architecture



- Go vanilla
- Cerner for as much as possible with standard content
- ‘Standard’, inclusive data warehouse
- Limited customisation/home-grown
- Then could build GE Command Centre off standardisation
- Position for health economy

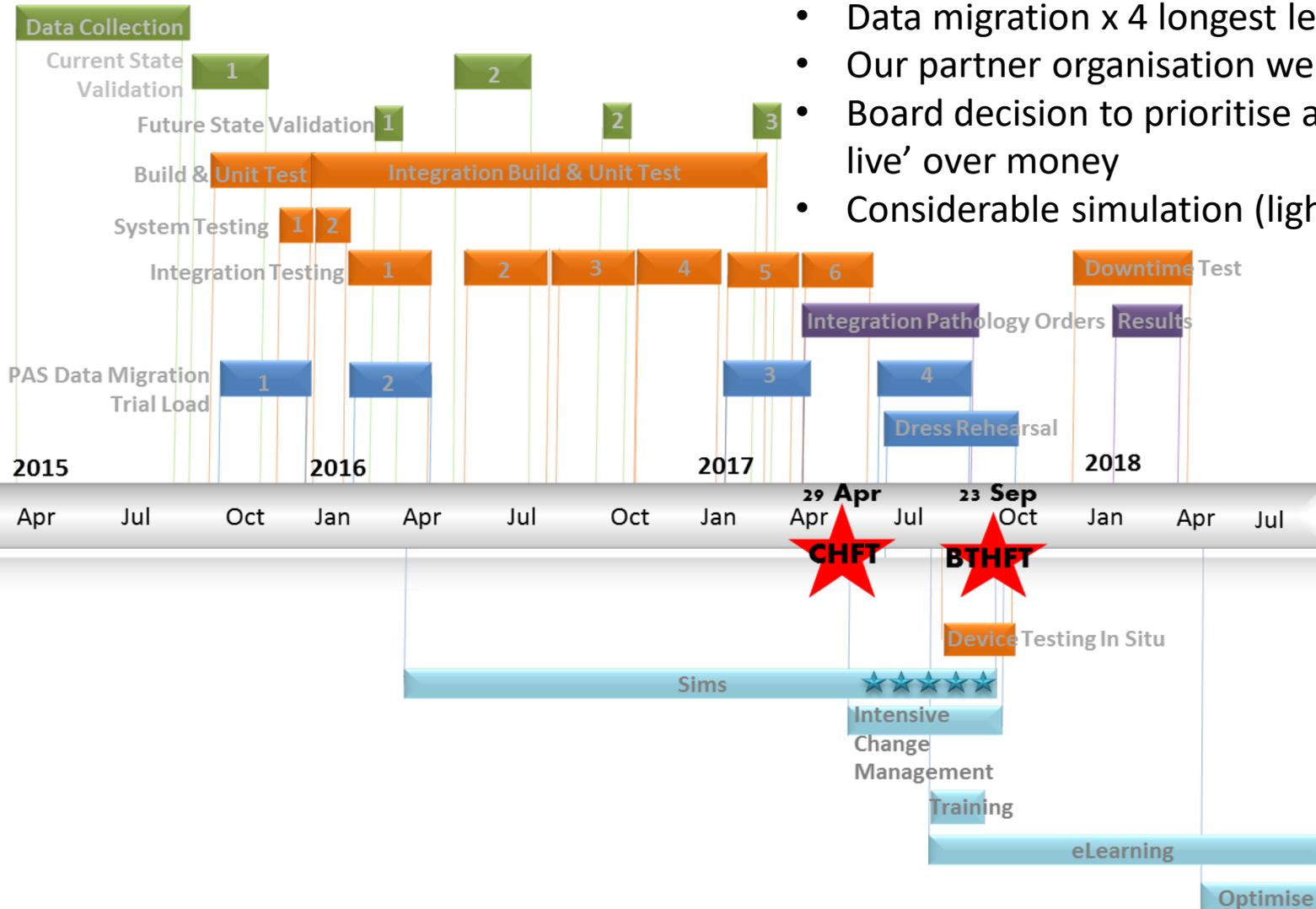
Review of two key projects:

Case 1: Electronic Patient Record

Case 2: Command Centre

Case 1: Electronic Patient Record

- 2 year implementation
- Multiple repeated steps for engagement
- Data migration x 4 longest leg (dark blue)
- Our partner organisation went 1st
- Board decision to prioritise a 'good go-live' over money
- Considerable simulation (light blue)

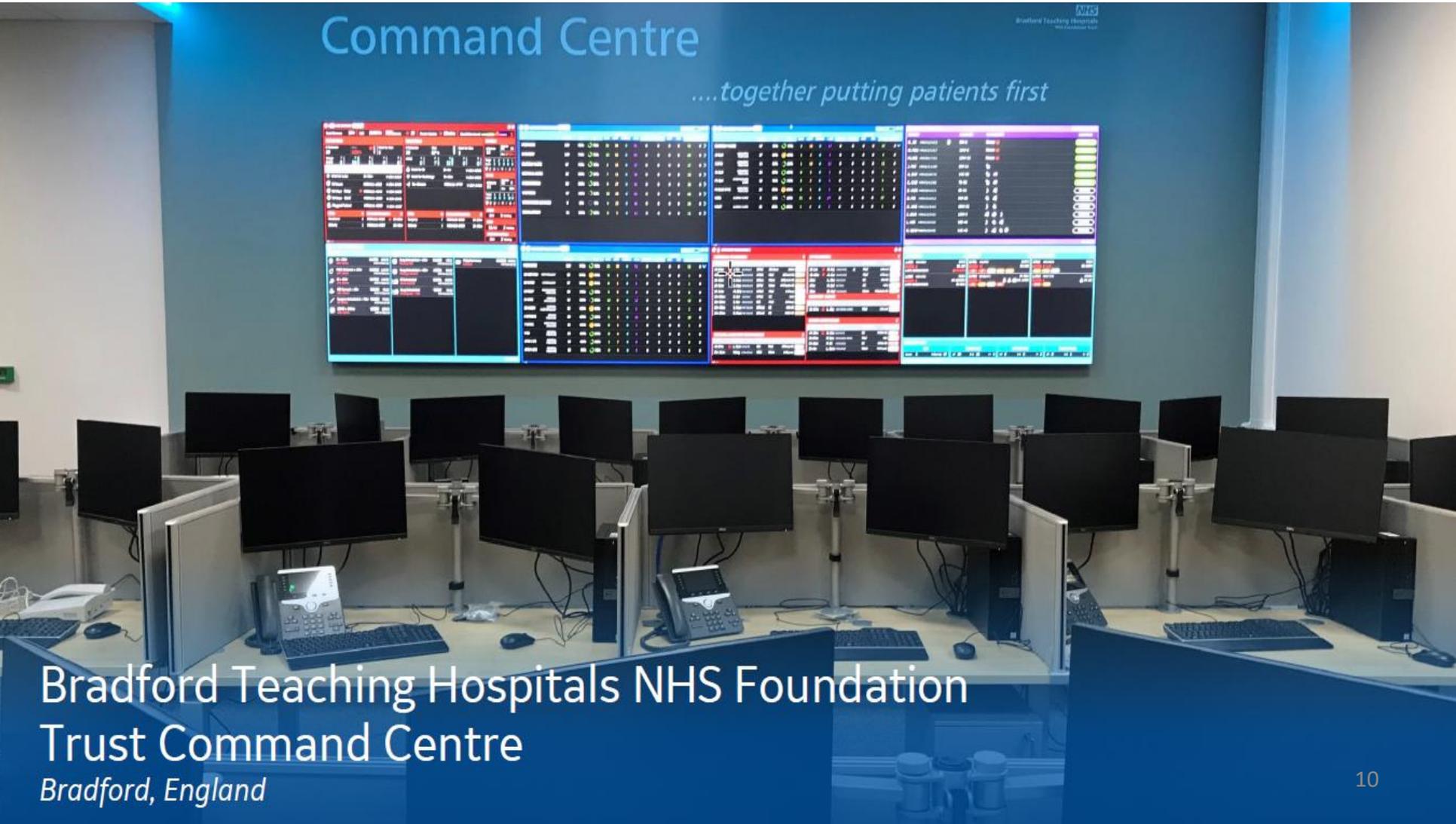


Case 1: EPR

- **Patient safety project**
- Whole-hospital project with active leaders
- Co-design via team (~100) – 1/3 seconded staff & 1/3 front line experts
- Standardisation using 80:20 rule
- Engagement multi-method, multi-stage engagement 1/5 of all staff
- Learnt from others - 'Critical Success Factors' via Assurance Board
- Strong adherence to gateways
- Keys to success
 - 3 months simulation & 1 month building confidence in the built EPR
 - Local ownership via readiness Passports & EPR Friends on all shifts
- Big bang worked - no more paper!
- But
 - Shared EPR hard work culturally
 - Difficult adoption by administrative staff
 - Should have cleaned data and templates before starting €5-8m
 - Time to settle in long – 6 months to feel OK, 12 optimise, 18 start harder process changes; Command Centre facilitating change



Case 2: Command Centre



Command Centre

...together putting patients first

Bradford Teaching Hospitals NHS Foundation
Trust Command Centre
Bradford, England

Case 2: CC

- 8 tiles
- Access ... capacity/demand ... is everyone safe?
- Actions not information
- Uses AI in the background to inform actions

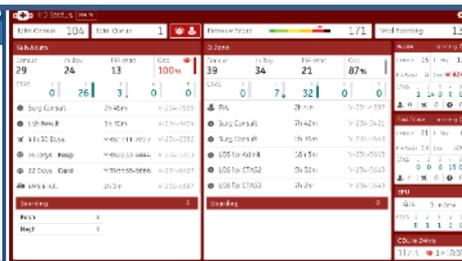
1: Capacity Snapshot

What is the current bed status, and where will I have problems later?



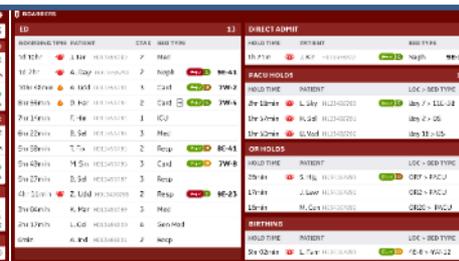
2: ED Status

How much pressure is A&E facing, and which patients have needs?



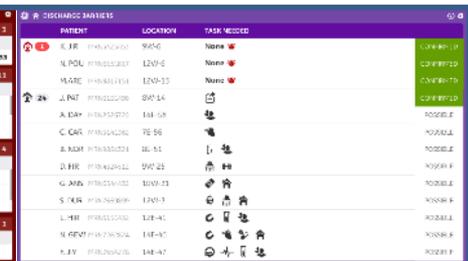
3: Patient Transfers

Which patients are ready to move, and what's stopping them?



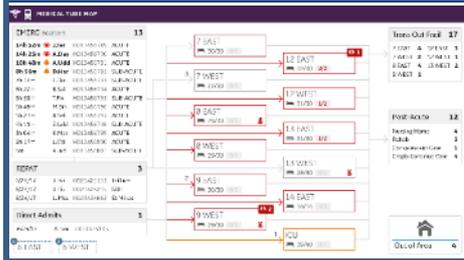
4: Discharge Tasks

Which patients are ready to go, and what are they waiting for?



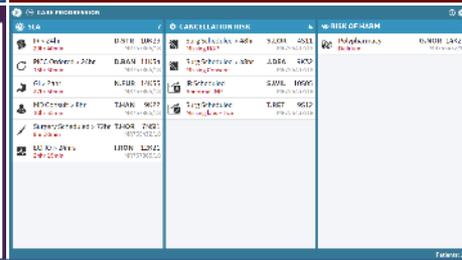
5: Medical Tube Map

Where are my outliers and are they getting the care they need?



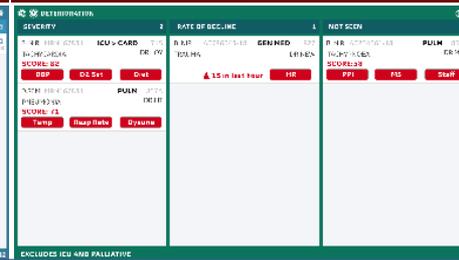
6: Care Progression

Which patient services are delayed? Where is the risk?



7: Deterioration

Where are my sickest patients and are they getting what they need?

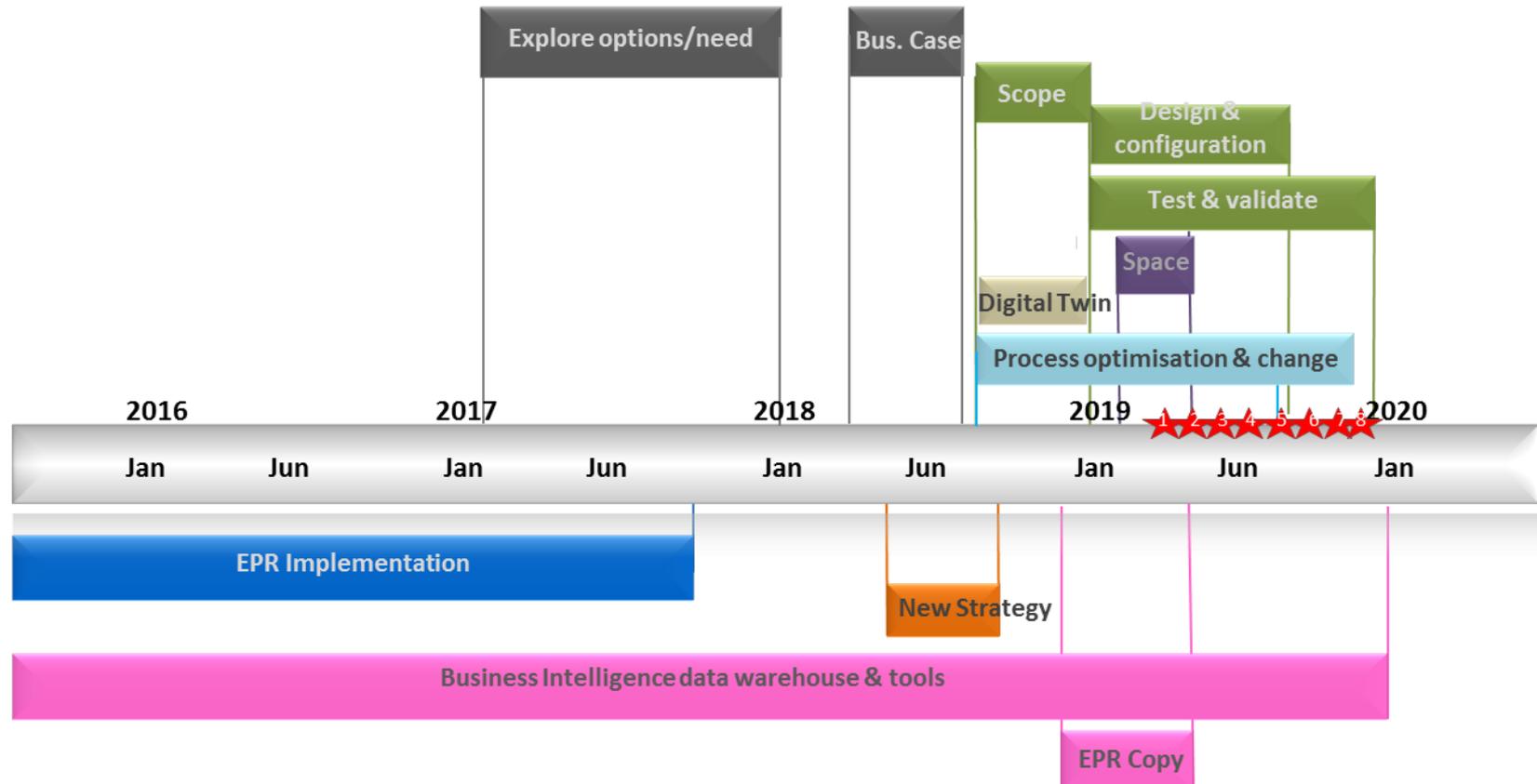


8: To Be Confirmed



Case 2: CC

- 1.5 year implementation
- Digital Twin for AI built & in use early (light grey)
- Iterative release (red stars)
- Process & people change in parallel (light blue)
- Data & data tools foundation (pink)



Case 2: CC

- **Modernisation of site management**
 - Trial run showed improvement in **Emergency Care times 12% + Ambulance handover 20% + bed occupancy 10% + staff morale = €700K per year**
 - In one place with one tool – people (10), actions, processes
- Next step from EPR - uses wealth of digitally-native data administrative & clinical
 - Forces EPR processes & data are correct
 - Now with good data - predictive analytics driving defined actions
 - New strategy – built off investment especially data & Artificial Intelligence
- Early use of AI Digital Twin informed early changes, e.g., Emergency Department configuration, beds right-sizing, pathways redesign
- Co-designed with staff – tiles, owners, actions, clinical review
- Challenges
 - Staff disliked ‘Command’ word
 - Needed to prove can’t be done with an EPR
 - Justify spend to staff

Our next steps are all about the data

- Build even more on top
- More real time & reflective quality of care dashboards using AI
- Population Health Management in near real time
- Continued development of data warehouse to enable more and more information provision
- Maturity of analytics by front line staff
- Division of Clinical AI in conjunction with research
- Automation of some repetitive digital tasks with Robotic Process Automation
- Extend everything to the local health & care economy

Key takeaways

1. Secure hearts, not minds to prevent a revolt
2. Sometimes a big change, all at once, is the best way and sometimes not ... it depends
3. Maximise value by building on top of investments
4. Start with the end in mind: clean data → wealth of information for intelligence

Next challenge for all of us:

How can the local health & care economy leverage a hospital's digital maturity for health economy-level transformation?

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