DRIVING DIGITAL TRANSFORMATION IN HOSPITALS: *LESSONS LEARNED AND WAYS FORWARD*

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OVERVIEW

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- Methodological considerations and evaluation challenges
- Drivers for digital transformation and history of digitalisation in the NHS
- Case studies: National Programme for Information Technology, Global Digital Exemplar Programme
- Lessons learned

CONTEXT

The problem

13% of UK GDP spent on healthcare

- UK performance and care outcomes declining

The solution?

Health information technology innovation

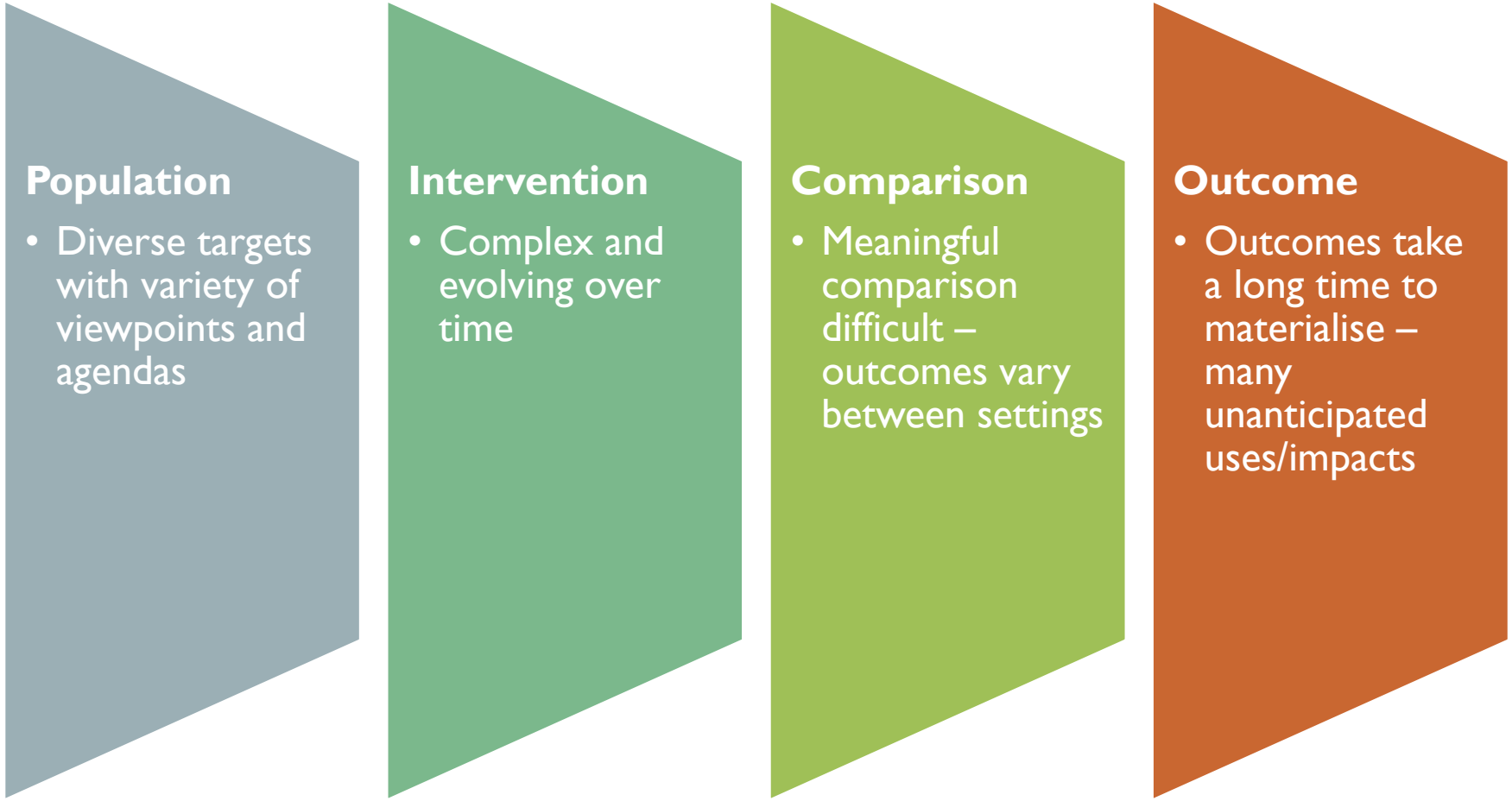
- Increasing investment by UK government – but trend continues
- No shortage of innovations but many projects get scrapped or fail to scale

What is needed are not more innovations but ways to address innovation failure – potential to do this through evaluation

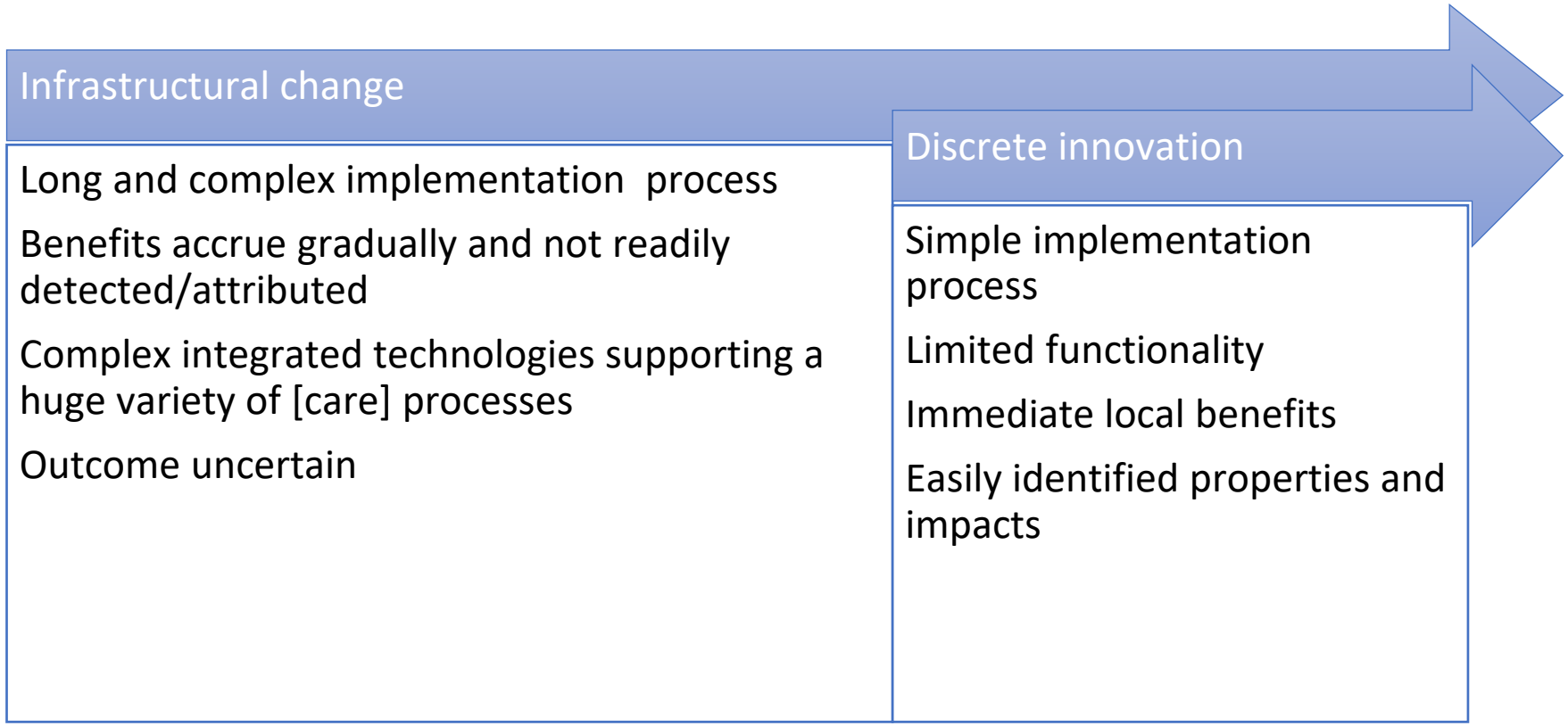
WHY IS EVALUATION IMPORTANT?

- To identify benefits of health IT e.g. financial or improvements in safety
- To identify risks and unintended consequences e.g. inadvertent introduction of new threats
- To learn – revising implementation strategies and helping future implementations

WHY IS HEALTH IT EVALUATION SO DIFFICULT?



EVALUATION CHALLENGE?



THEORY: SOCIOTECHNICAL SYSTEMS

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- Social systems have technological consequences (e.g. abandonment, workarounds)
- Technological systems have social consequences (e.g. changes to work practices and organisational functioning)
- Interlinked and should not be viewed in isolation

THEORY: HEALTH INFORMATION INFRASTRUCTURES

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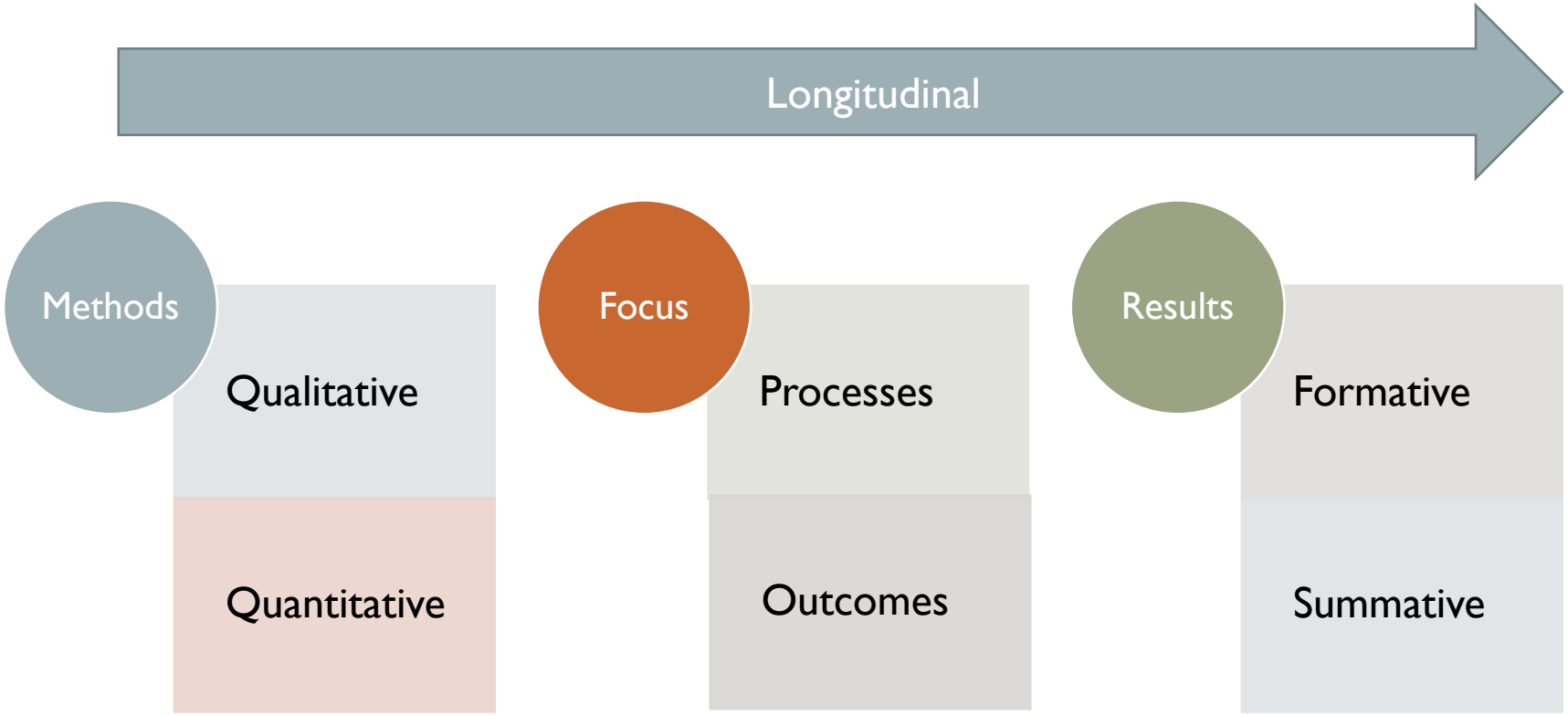
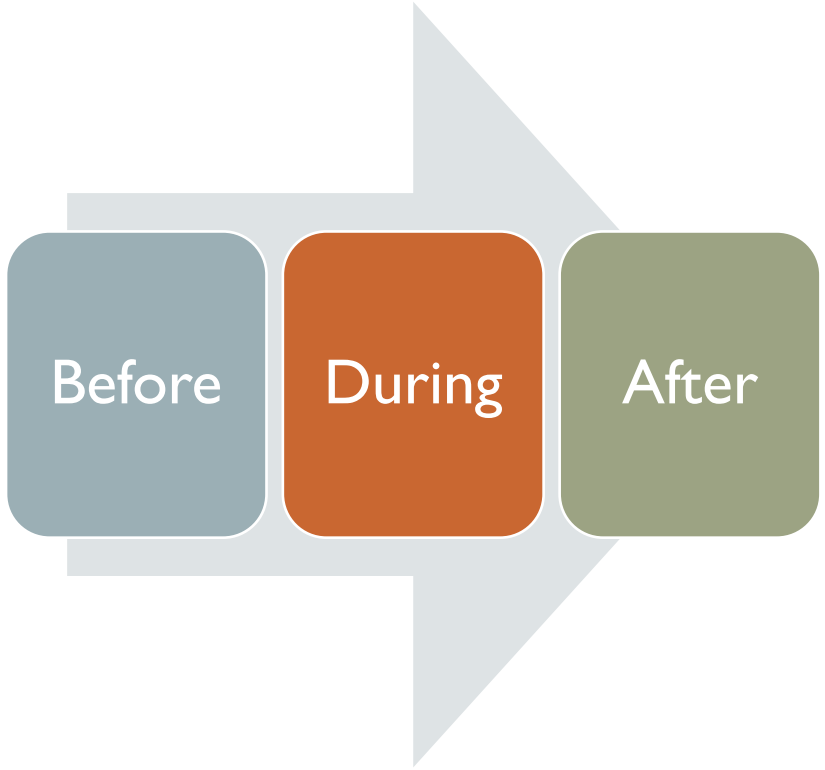
- Simple, stand-alone "discrete" Health Information Systems (HIS) become knitted together into increasingly complex "systems of systems"
- HIIs emerge and evolve over extended periods of time, never finished
- Benefits evolve only slowly as organisational stakeholders learn to exploit the new functionality. Eventually, the package becomes taken for granted – "invisible except on breakdown"

METHODOLOGICAL IMPLICATIONS



LONGITUDINAL DIMENSION

- Assess changes over time
- Before implementation
  - Map existing practices/contexts
  - Help plan how practices need to change
  - Input into system design
- During implementation
  - Changes to practices
  - How conflicts are resolved and things are worked out
  - Anticipated and unanticipated consequences
- After implementation
  - When the system had time to embed, new routines become established



EXPLORING PROCESSES AND OUTCOMES

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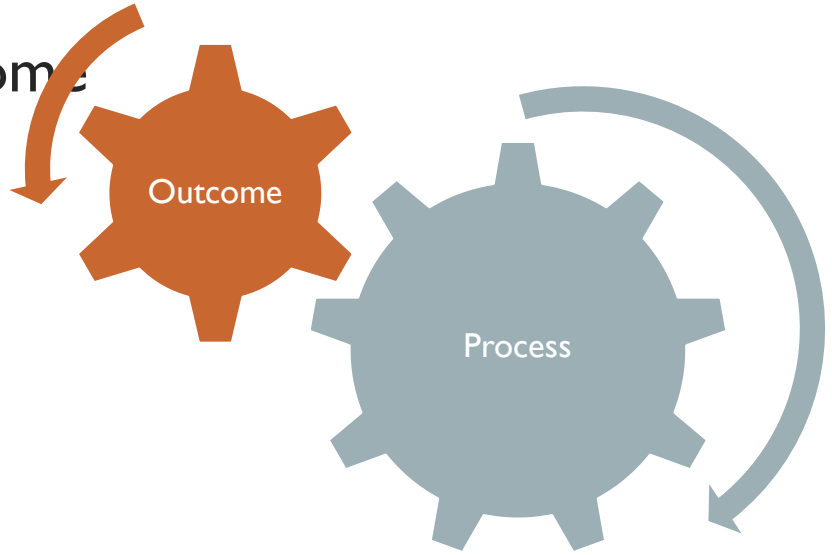
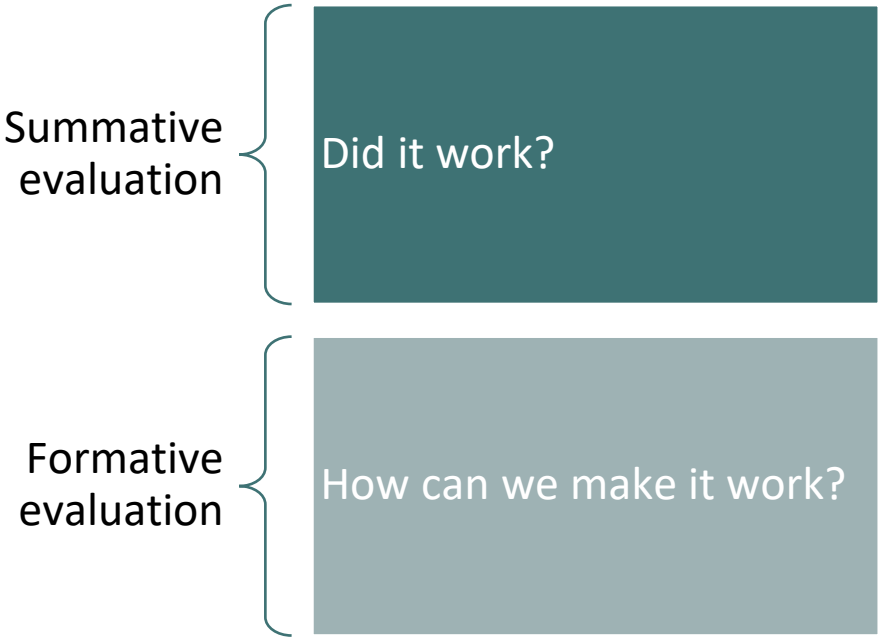
- Outcome: something that follows as a result or consequence of the digital intervention
  - Measured quantitatively
- Processes: a series of factors that lead to a particular outcome
  - Qualitative assessment
  - Attention to contexts (micro and macro)
  - Insights as to how something worked, for whom and under what circumstances
  - Assess how an intervention may be transferred between contexts
- Both are important, value of mixed methods studies with embedded qualitative evaluation components

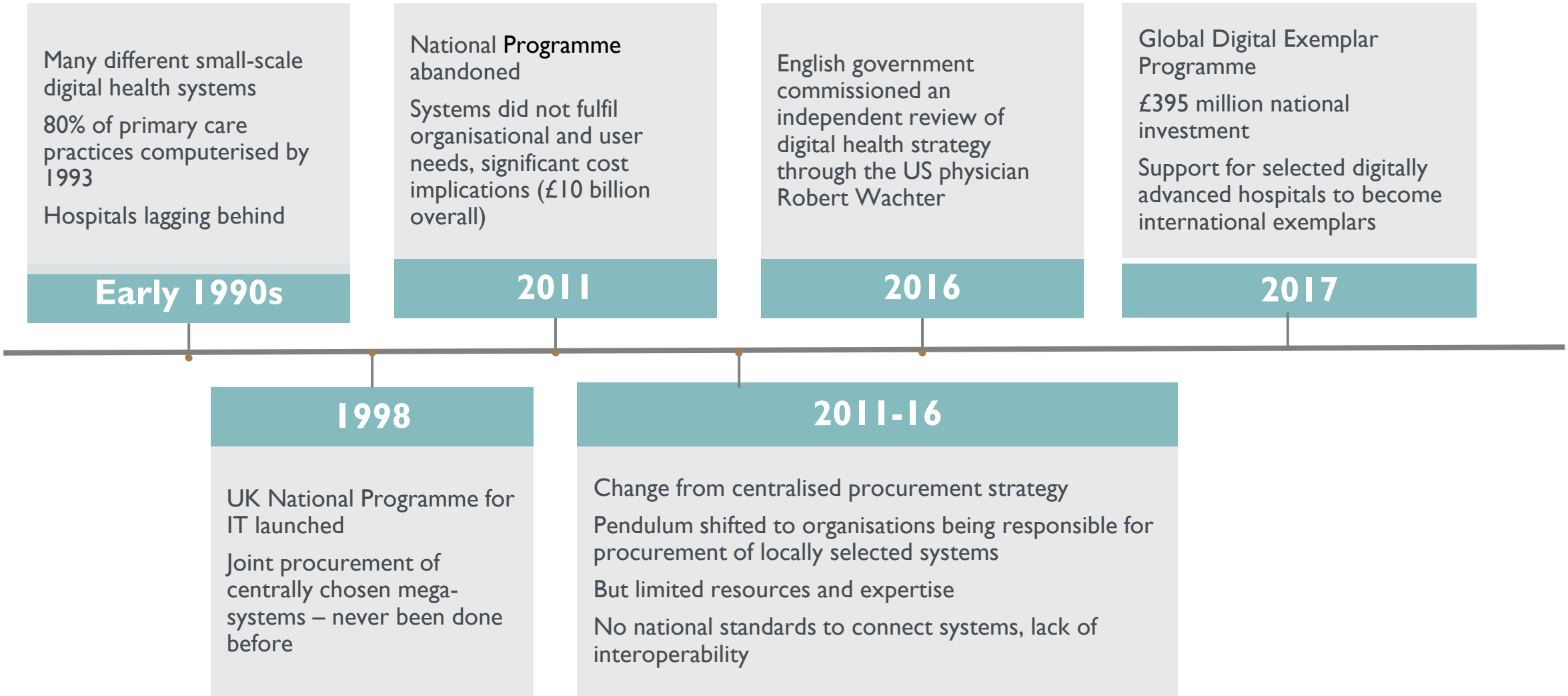


USING BOTH FORMATIVE AND SUMMATIVE METHODS

- Currently too much focus on summative components – wasted efforts?
- Social science informed formative evaluation can influence system design and implementation/policy strategy
- From reactive "I told you so" to proactive "how can we make it better together"
- Early engagements with developers and strategic decision makers
- Requires long-term relationship and trust between developers, policy and academia



BUT FIRST A LITTLE BIT OF HISTORY….



TWO NATIONAL EVALUATIONS

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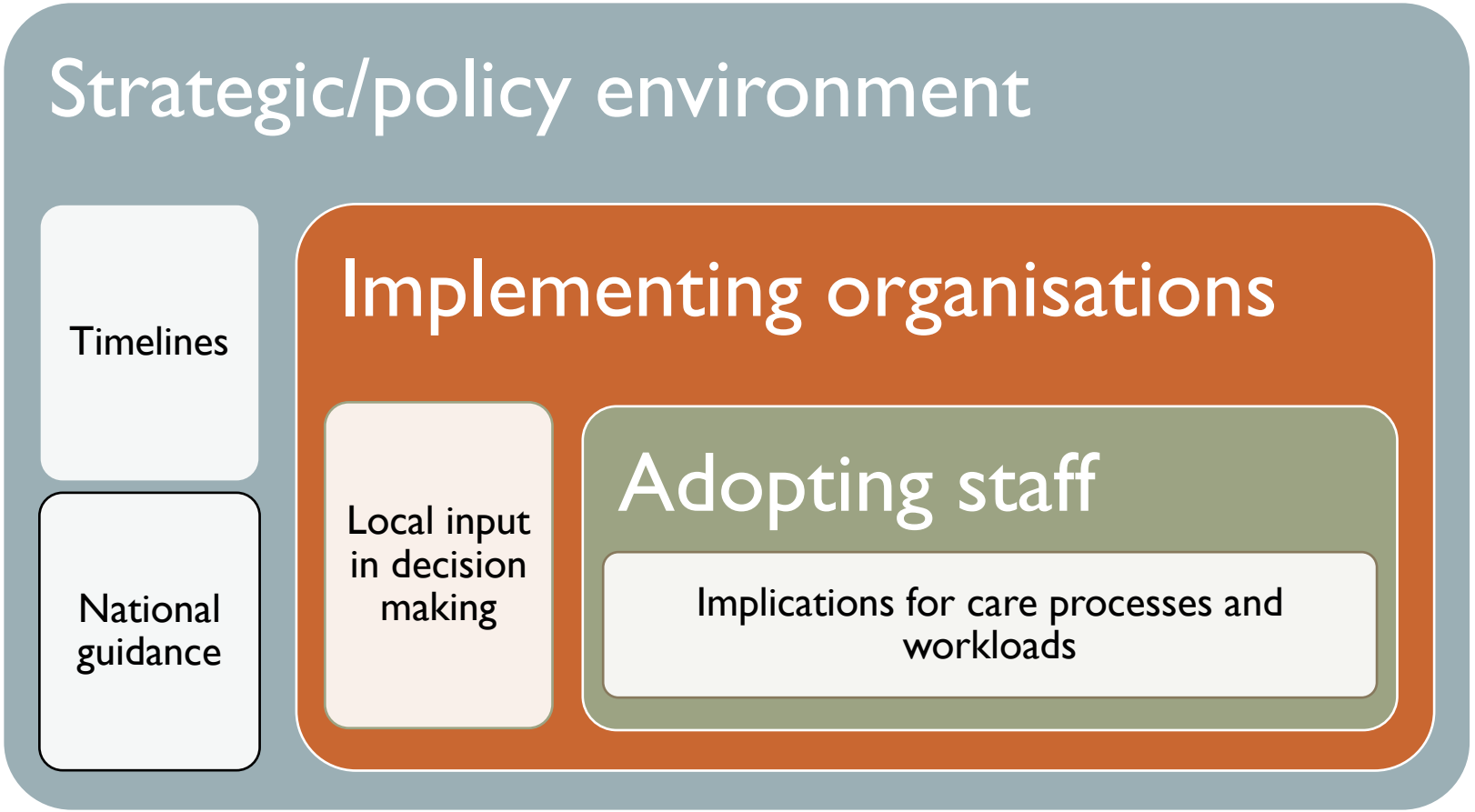
NPfIT

2009 - 2011
12 longitudinal qualitative case studies
431 interviews
590 hours of observations
234 sets of field notes
809 documents

GDE Programme

- 2017-2020
- 34 longitudinal qualitative case studies
- 563 interviews
- 389 documents
- 217 observations

INTERLINKED NATURE OF STAKEHOLDER GROUPS



LESSONS LEARNED

- Lesson 1: Digital transformation takes time
- Lesson 2: Balancing national strategy with local input in decision making
- Lesson 3: Digital transformation requires capacity and capability building
- Lesson 4: Digital transformation often increases workloads for adopters
- Lesson 5: Digital transformation can be accelerated through concerted adoption and learning ecosystem

LESSON 1: DIGITAL TRANSFORMATION TAKES TIME

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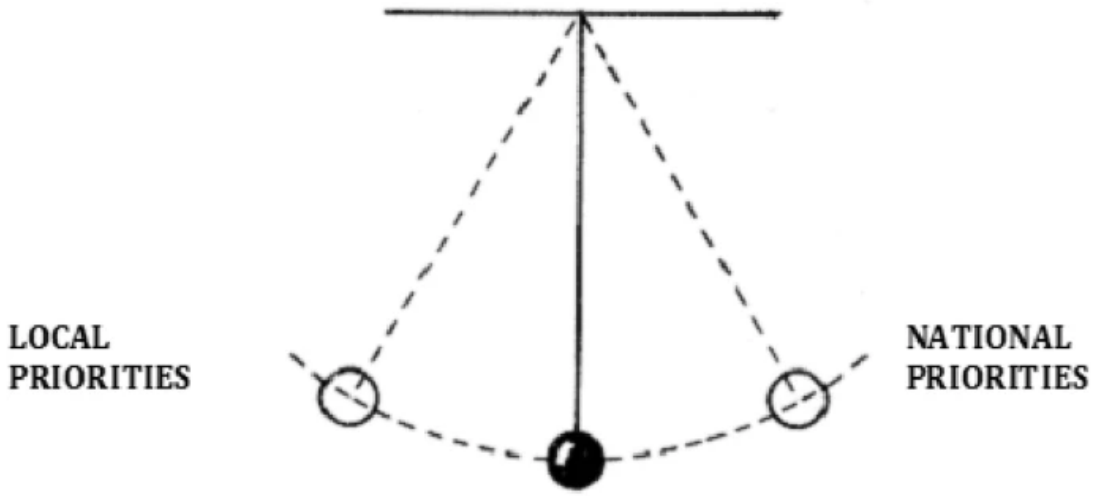
- It's a long-term journey with no endpoint
  - *"Successful EHR [electronic health record] and ePrescribing investments are not quick wins; they are sustainable wins. It takes at least four and, more typically, up to nine years before initiatives produce their first positive annual SER [socio-economic return], and six to eleven years to realise a cumulative net benefit."* EHR IMPACT STUDY
- Contrast: changes in leadership and strategy
- Move away from projects to programmes
  - Funding structures
  - Developing a long-term strategy and defining the role of digital within this

"Implementation proved time consuming and challenging, with as yet limited discernible benefits for clinicians and no clear advantages for patients"

LESSON 2: BALANCING NATIONAL STRATEGY WITH LOCAL INPUT IN DECISION MAKING

- Top-down and politically driven nature of Programmes
  - Can help to ensure high level leadership and support
  - But failure of cookie cutter model of standardised procurement
  - Limited local involvement in decision making (risk of disengagement, abandonement)
  - Importance of clinical engagement
- Locally-led initiatives
  - Threat to large-scale interoperability
  - Organisational drivers may not align with national strategy
    - Uneven distribution of risks and benefits



"So what we're doing at the moment is just trying not to let [system] die, we're trying to show that it still works, I'm trying to talk to commissioners to get them on-board. They're looking at two [other] systems and somebody much higher than me will make a decision"
Implementer NPfIT

LESSON 3: BUILDING AND RETAINING DIGITALISATION CAPACITY AND CAPABILITY

- Skills development (NHS Digital Academy)
- Clinical informatics as a credible profession (from back-office to board)
- Importance of intermediaries e.g. Chief Clinical Information Officers
- Strategic vision/leadership in organisations and nationally

> ""So, I think it's changed the nature and structure of digital leadership in the organisation, so there's greater depth and breadth in clinical engagement, and those posts persist, so we've been able to transition the CCIO, CNIO funding into Business As Usual, so that is maintained."
> Implementer GDE

LESSON 4: DIGITAL TRANSFORMATION OFTEN INCREASES WORKLOADS FOR ADOPTERS

- Redistribution of work
  - Clinicians doing more data entry, less time for patient care
  - Risks of developing workarounds
  - Can make or break a system – risk of abandonment
- Clinical systems are unlikely to save clinician time
  - Grudin's Law (uneven distribution of risks and benefits)
- Implications for communication when introducing systems, need for expectation management

"All our doctors and nurses are having to work harder now, because we are having to see the same number of patients with less time, because you are spending more time on a computer now and we have got no more doctor or nursing resources to do that" Healthcare Professional NPfIT

LESSON 5: DIGITAL TRANSFORMATION CAN BE ACCELERATED THROUGH CONCERTED ADOPTION AND THROUGH A LEARNING ECOSYSTEM

- Shared digital transformation knowledge can be shared between organisations, this can lead to efficiencies in adoption
- Establishment of communities of practice
- Informal personal relationships most effective, documents less so
- Knowledge sharing facilitated by:
  - Common core system (such as for EHRs and ePrescribing)
  - Prior relationships
  - Geographical proximity and regional alignment

"We have worked extremely closely with [site]. We have more or less cut and pasted all their workflows, all their pharmacy workflows, all their drug administration workflows...without that involvement, the project would have taken longer...I think the result is safer and more robust than it would have been if we had done it without their help." Implementer GDE

LEARNING LESSONS FROM HISTORY

Risk of loss of organisational memory exacerbated by structural challenges

Two key ways forward:

1. Utilising available expertise
   - Lessons from organisational problem solving e.g. Von Hippel notion of "sticky knowledge" and movement of people across contexts
2. Designing learning programmes and pro-active involvement of evaluators

KEY CHALLENGES GOING FORWARD IN THE NHS

1. Levelling up across remaining provider organisations
2. Integrating health and social care information infrastructures
3. Supporting further innovation: promoting new innovations, scaling up

No easy solution – but a complex learning journey

IMPLICATIONS FOR NATIONAL STRATEGY

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- Realistic expectations in terms of timelines
- Communication to stakeholders that digital transformation will be a long and difficult journey
- Build on previous experience and existing strategy (rather than developing new ones)
- Consolidate learning from previous initiatives and build learning programmes (evaluation)
- Develop and draw on communities of practice to facilitate learning and knowledge sharing
- Recognise trade-offs e.g. between local progress and large-scale interoperability

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HAPPY TO DISCUSS FURTHER

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