



# WORRYING ABOUT EMBEDDING AND DREAMING OF INTEGRATION: CONCEPTUALIZING THE IMPLEMENTATION OF HEALTH TECHNOLOGIES

Carl May

Health Technologies and Human Relations Research Program  
Institute of Health and Society, Newcastle University

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# This presentation....

- Explores technology implementation from the perspective of a 10 year program of research on telemedicine and related systems
- Relates empirical research to a parallel program of theoretical development
- Discusses results from a recently completed study of telecare implementation and integration

# Fundamental problem for health care service providers and researchers...

- Why is it so difficult to implement new technologies in practice?<sup>1</sup>
- Why are service innovations<sup>2</sup> more than a problem of adoption, diffusion, and change management?

1 House of Commons Health Committee, Inquiry into New Technologies in the NHS (2005)

2 Greenhalgh T, et al, (2005) Milbank Q



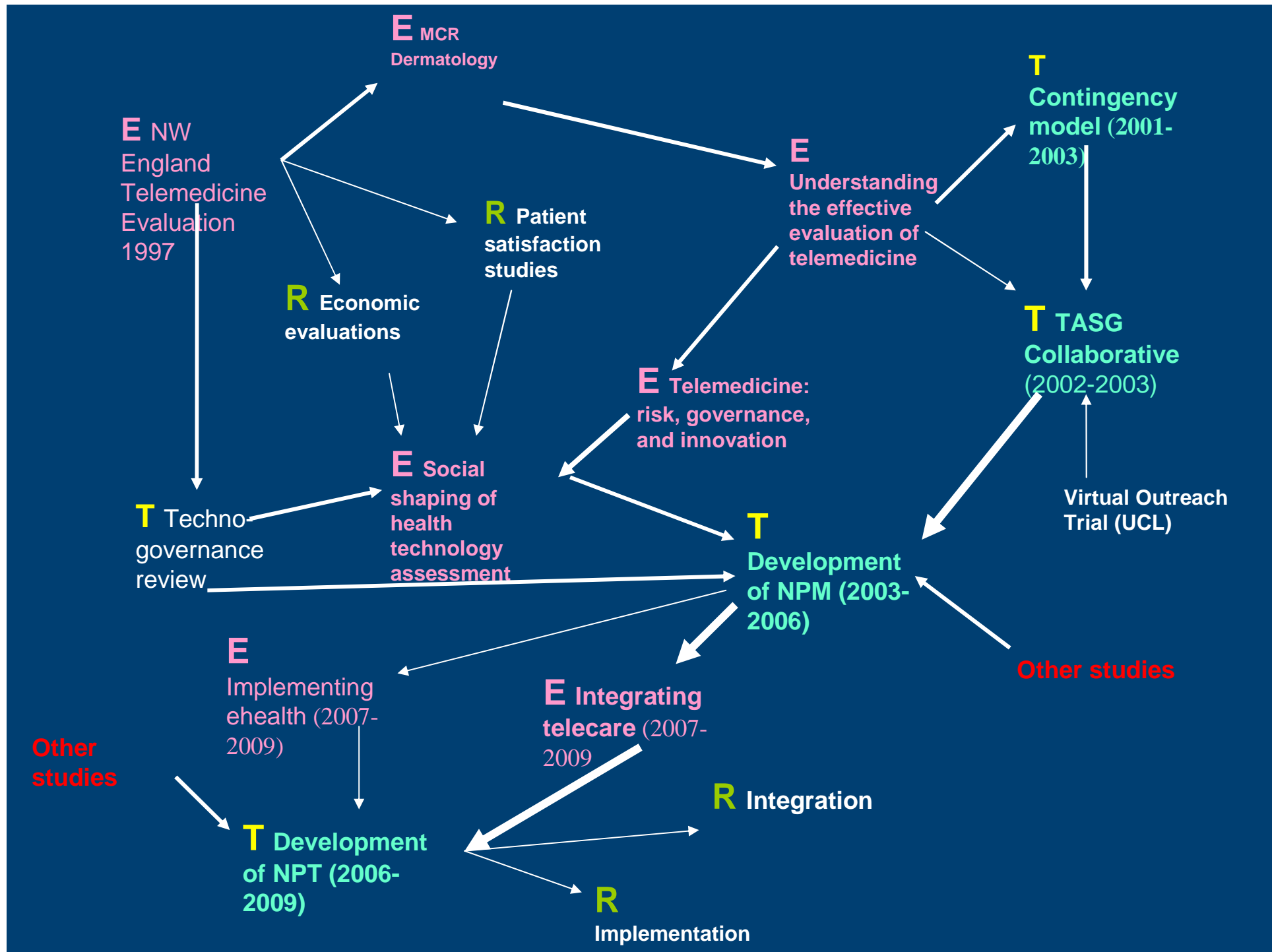
# ▪ Telemedicine

# Definitions

- **Telemedicine** – application of ICTs to clinical work (real-time video conferencing + parallel clinical data, or asynchronous email/telephony transmission of images + data)
- **Telecare** – application of telephony + CRM/Algorithms to health & social care (real-time interactions by voice or data with a call centre, or remote surveillance of specific activities)
- Policy shift towards more generic **ehealth** applications

# Since 1997

- **Qualitative studies of telemedicine and telecare systems in implementation, evaluation, operation, and integration**
- **Seven main studies, all in UK, all in NHS/Local Authority settings**
- **In excess of 2000 data collection episodes (interviews, observations, meetings, documentary analyses workshops)**



# Normal Failure

- **‘Normal failure’ is a consistent observation of our studies**
- **Systems were poorly integrated and suffer problems of practical workability**
- **Multiple case studies demonstrate complex cycles of successful demonstration and failed operation**
- **Small scale successes, champions, enthusiasts, and realists**

# Wider body of research

- Key lesson of large body of research on adoption, diffusion, stabilization, actor-networks, sts – it's **complex**
- Research literature focuses on case studies, leaves generic policy lessons to reviews
- Way open for comparative, whole systems, theory-testing studies

# Normalization

- Problem of 'Normal failure' vs 'Normalization' (routine incorporation of telemedicine in clinical settings)<sup>1</sup>
- Explanation in terms of vertical integration of clinical experiments (randomised controlled trials)<sup>1</sup> and experimental clinics (demonstration projects)<sup>2</sup>

(1) May, C et al., Understanding the normalization of telemedicine services through qualitative evaluation. *J Am Med Informat Assoc*, 2003. 10(6):596-604.

(2) May, C. et al., Health Technology Assessment in its local contexts: studies of telehealthcare. *Soc Sci Med*, 2003. 57:697-710.

# ■ Theory-building

# Process of theory development<sup>1</sup>

**I. Clinical Practice (1999-2003)**  
**(highly contextualized empirical generalizations)**

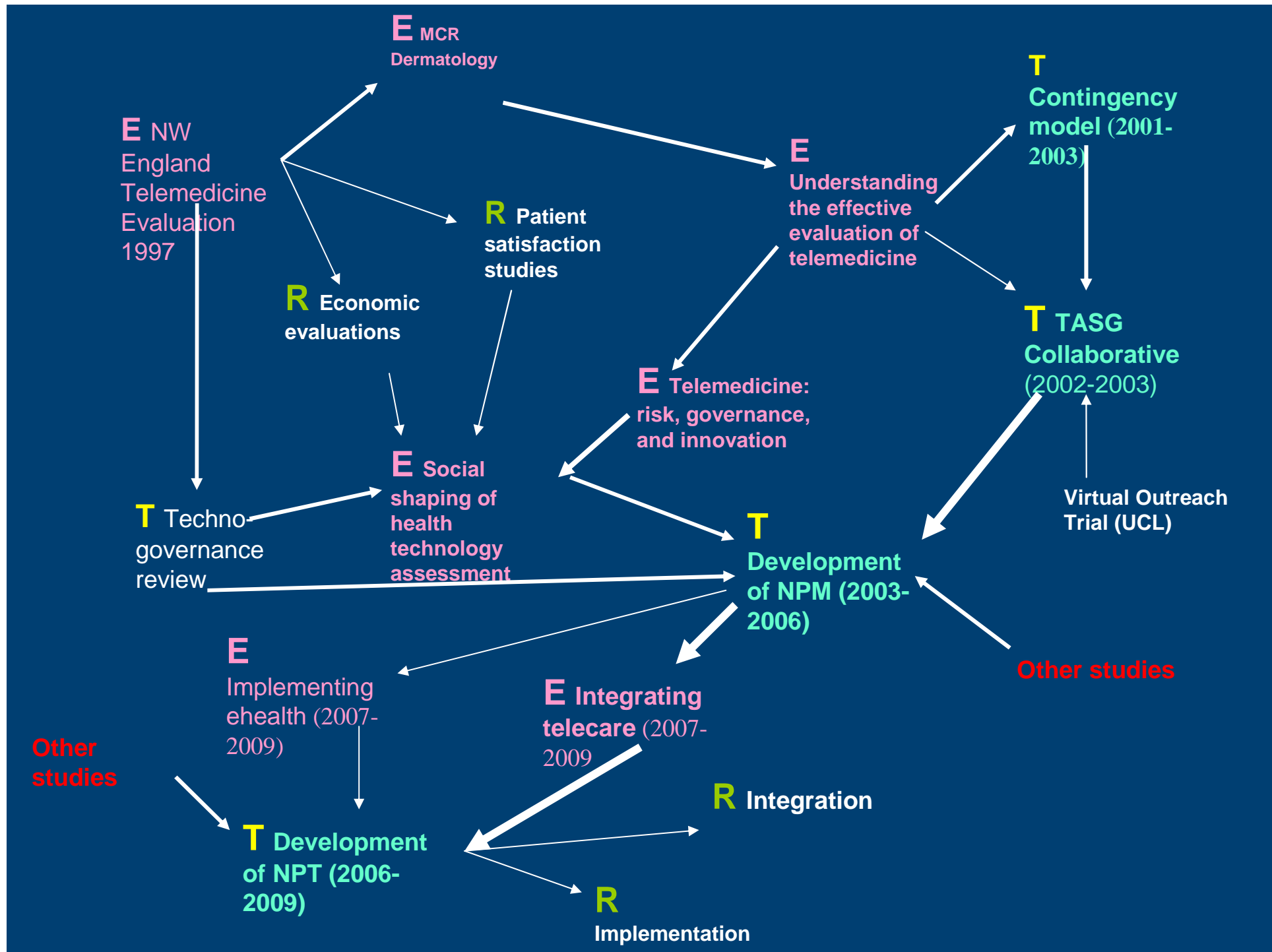


**II. Complex Interventions (2003-2006)**  
**(decontextualized analytic propositions)**



**III. Material Practices (2006-2009)**  
**(acontextual generic properties)**

<sup>1</sup> May C, Mair FS, Finch T, et al . Development of a theory of implementation and integration: Normalization Process Theory. Implementation Science 2009; 4



- **Normalization Process Theory:**<sup>1</sup> Explanatory model of processes by which new techniques, technologies, organizational interventions become *routinely embedded in practice*
- Limited in scope, derived from **real-world** studies
- Explanatory model that seeks to balance group and individual contributions to normalization

1 May C, Finch T. Implementation, embedding, and integration: an outline of Normalization Process Theory. *Sociology* 2009; 43: 535-554

- **Material practices become routinely embedded in social contexts as the result of people working, individually and collectively, to implement them.**
- **The work of implementation is operationalized through four generative mechanisms (coherence; cognitive participation; collective action; reflexive monitoring).**
- **The production and reproduction of a material practice requires continuous investment by agents in ensembles of action that carry forward in time and space.**

# It's all about the work.....

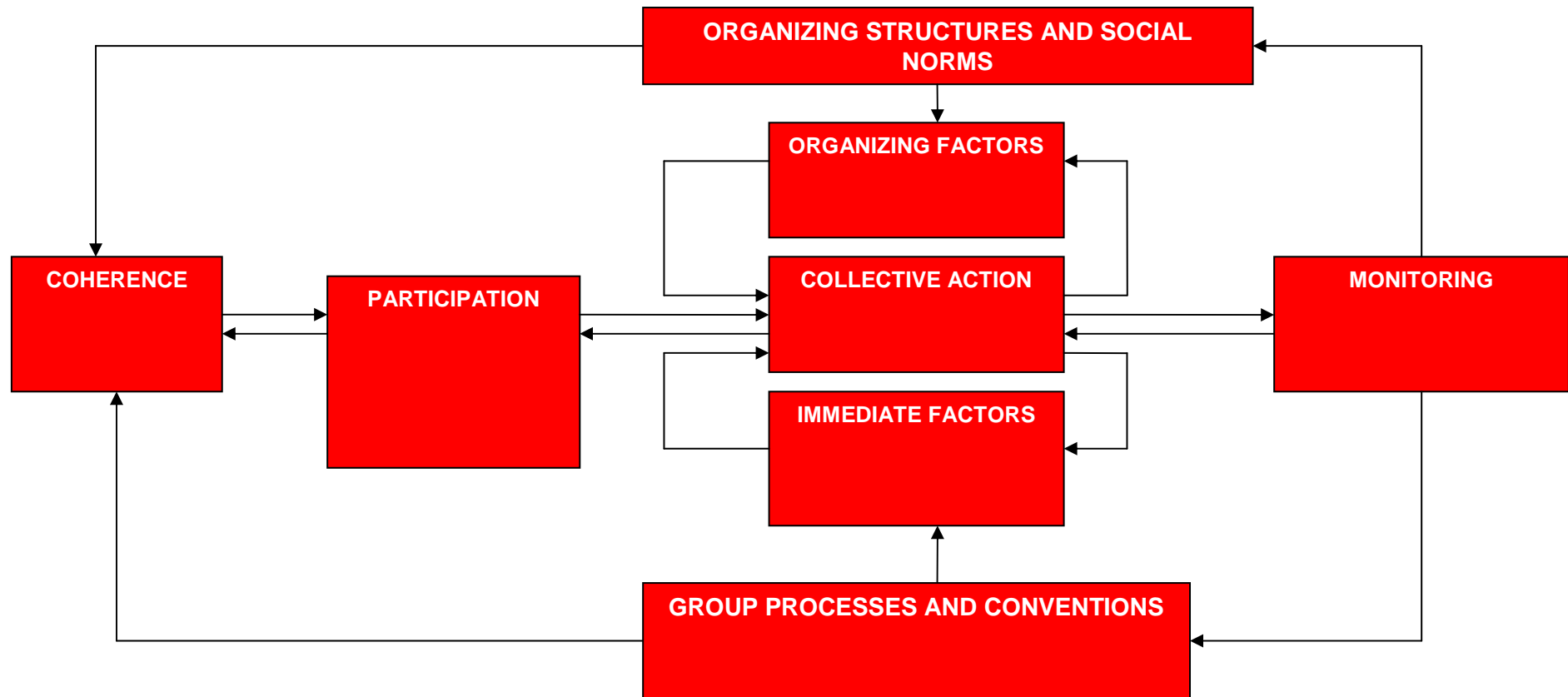
**Coherence:** Work that defines and organizes the **components** of a complex intervention

**Cognitive Participation:** Work that defines and organizes the **people** implicated in a complex intervention

**Collective Action:** Work that defines and organizes the **enacting** of a complex intervention

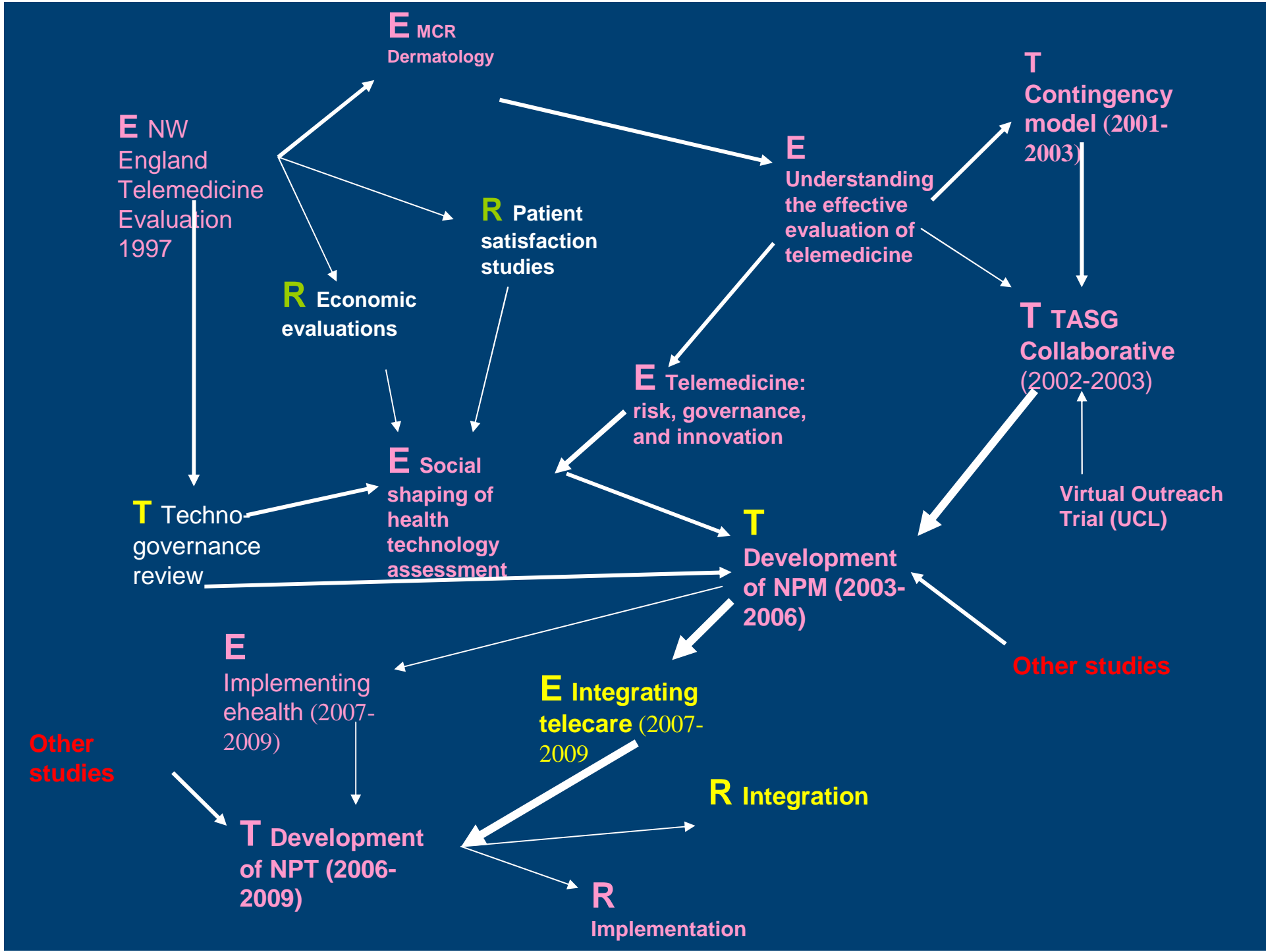
**Reflexive Monitoring:** Work that defines and organizes assessment of the **outcomes** of a complex intervention

# Normalization Process Theory maps highly complex, dynamic, and emergent processes





- **Integrating  
telecare for  
chronic disease  
management**



# Large scale qualitative investigation

- **What factors promote and inhibit the integration of telecare systems for managing chronic disease in the community?**
- **Integration into systems of practice, at home, in social care, in primary care**
- **What principles should inform service design, implementation, integration?**

# Study – between 2006-2009

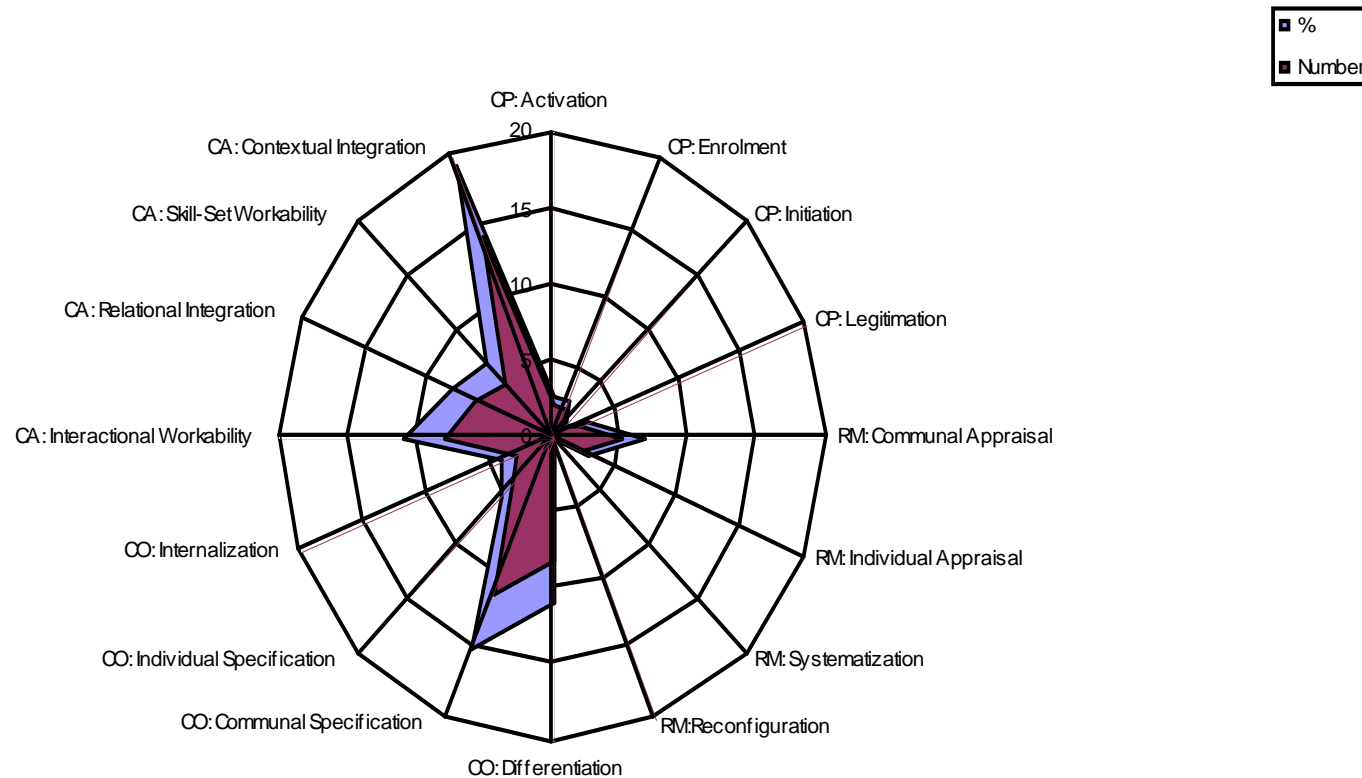
- **228 Participants – England and Scotland**
  - Primary care professionals and managers (n=46)
  - Patients and carers (n=31)
  - Social care managers and professionals (n=73)
  - System manufacturers and suppliers (n=78)
- **Key informant interviews (n=57); task groups (n=14) and workshops (n=2)**
- **Qualitative data analysed using framework method, informed by normalization process theory**

# Principles

- **Principles for service design, implementation, integration**
- **86 principles generated, 75 after elimination of duplicates**
- **Principles coded as qualitative data, in framework of NPT**
- **Grouped according to NPT construct, edited down to core attributions.**

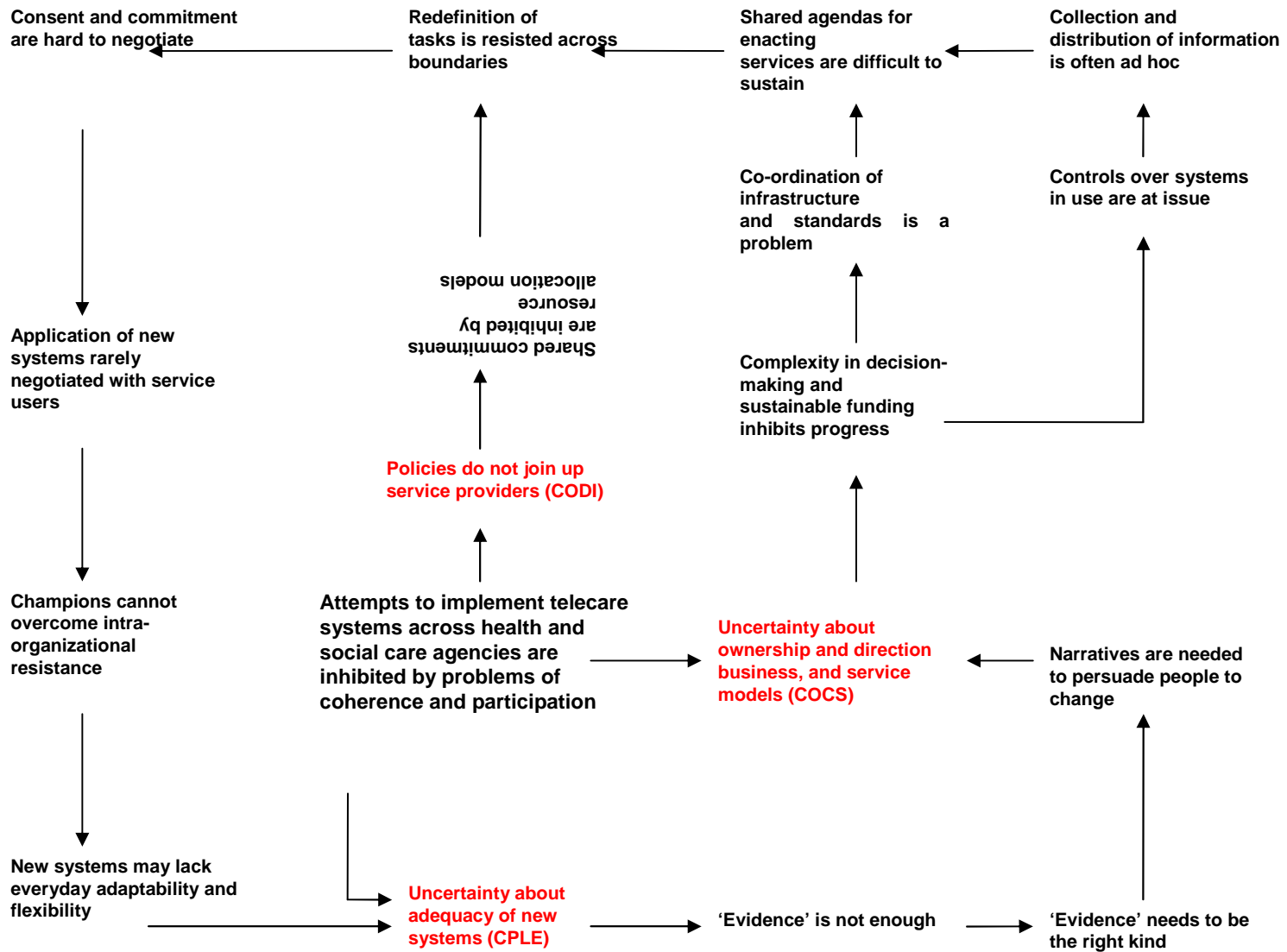
# Distribution of principles by NPT construct

Distribution of principles against NPT constructs



# Problems relating to

- **Communal Specification and differentiation – how people attribute meaning to telecare and its possibilities**
- **Contextual integration – how telecare is practically resourced and executed**
- **Interactional workability – how people actually experience and use these systems**



# Conclusions of this study

- **reduce uncertainty about the *ownership of implementation processes* and develop a shared vision.**
- **establish communities of practice bound by shared ideas about *common cause* and that break down inter-sectoral antagonisms**
- **focus on support for *patient-defined* practices of self-management and self-care.**
- **service redesign demands that professional knowledge, practice, and *roles are reconfigured*.**
- ***robust and comparative appraisals* of value are needed in which patients and carers also play a part.**

A stylized blue dragon graphic is positioned on the left side of the slide, facing right. The dragon's body is composed of several overlapping, curved shapes in varying shades of blue, creating a sense of movement and depth. Its head is partially visible, with a large, curved eye and a mouth that appears to be breathing fire or smoke. The dragon's tail is also visible, curving upwards and to the right. The entire graphic is set against a solid dark blue background.

Thank you!

[c.r.may@ncl.ac.uk](mailto:c.r.may@ncl.ac.uk)