Department of Computer Science
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Semiotic Design of Information Systems
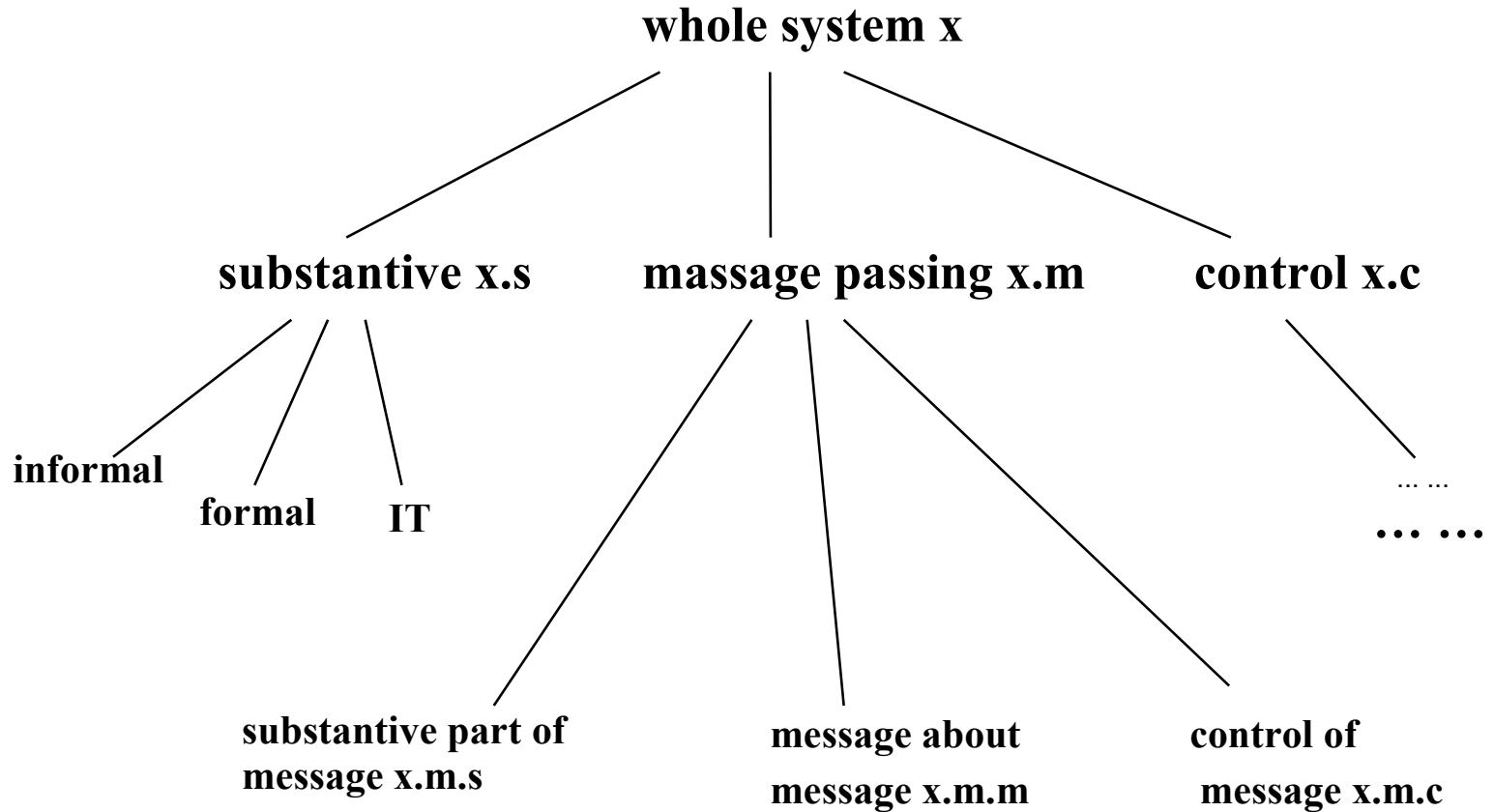
- where to go from here

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Content

- A Semiotic View of an Organisation
- The MEASUR Methods
- Applying the MEASUR methods in Co-Design of Business and IT Systems
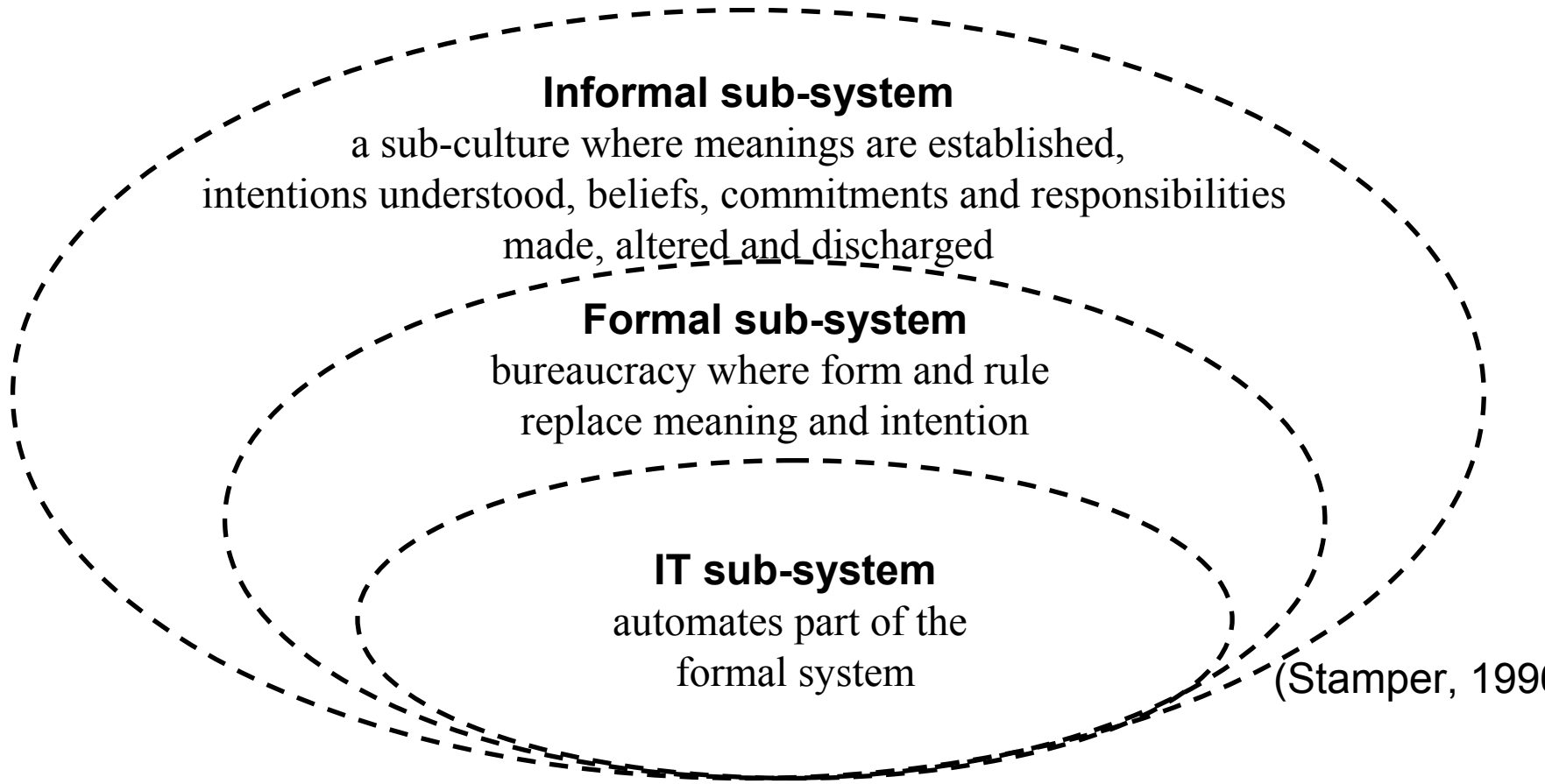- Where to Go from Here?

Organisational Morphology

whole system x
- substantive x.s
  - informal
  - formal
  - IT
- massage passing x.m
  - substantive part of message x.m.s
  - message about message x.m.m
  - control of message x.m.c
- control x.c
  - ... ...
  - ... ...

(Stamper *et al.*, 1988)

Organisations as Information Systems
- interconnections between 3 subsystems

Informal sub-system
a sub-culture where meanings are established,
intentions understood, beliefs, commitments and responsibilities
made, altered and discharged

Formal sub-system
bureaucracy where form and rule
replace meaning and intention

IT sub-system
automates part of the
formal system

(Stamper, 1996)

====> Co-design of Business and IT systems

MEASUR Methods

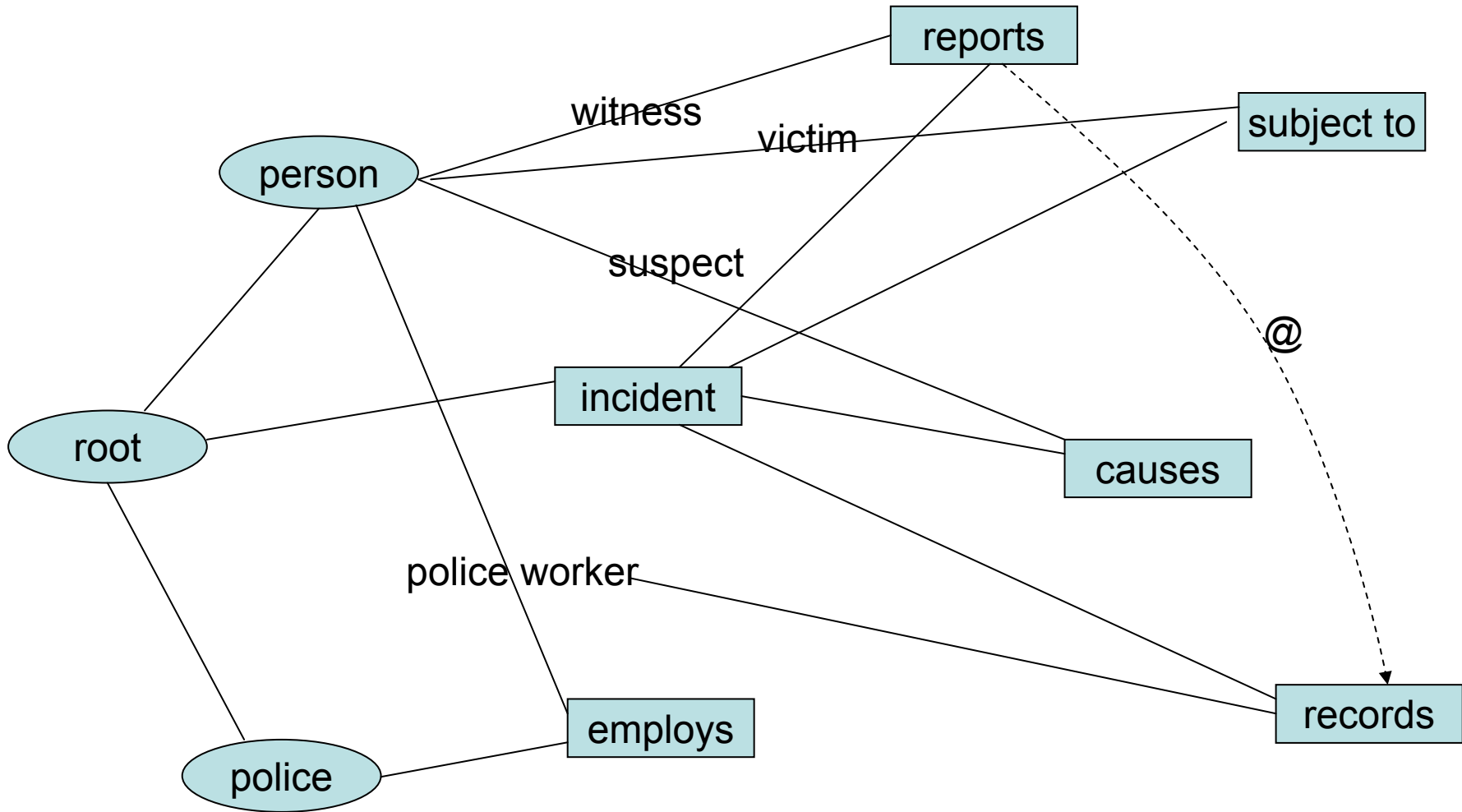| Major phases	Major activities	MEASUR methods
Infrastructure analysis	**Business strategy analysis information planning**	**PAM PAM/SAM**
Requirement analysis	**Information analysis functional analysis**	**SAM NAM**
Construction	**Design implementation**	**Normbase Normbase**
Audit	**Audit**	**PAM, SAM, NAM**

Problem Articulation Methods (PAM)

- To scope and structure the problem domain
  - *Unit System Definition*, identifying stakeholders and courses of actions
  - *Valuation Framing*, revealing impact of the courses of actions on the stakeholders
  - *Collateral Analysis*, structuring a problem situation into a kernel course of action and collateral activities

Semantic Analysis Method (SAM)

- To elicit and represent users' requirements in a precise form – a semantic model for requirements specification

- To specify responsible actors and their roles in a business system

- To clarify meaning of a word by relating the word and appropriate actions

An Example of Semantic Analysis

What makes an incident a crime?

Norm Analysis Method (NAM)

A norm

- defines responsibility for a human actor
- specifies conditions in which someone *may* (*must, or must not*) carry out an action

NAM specifies the social, cultural and organisational norms

whenever an incident report is received
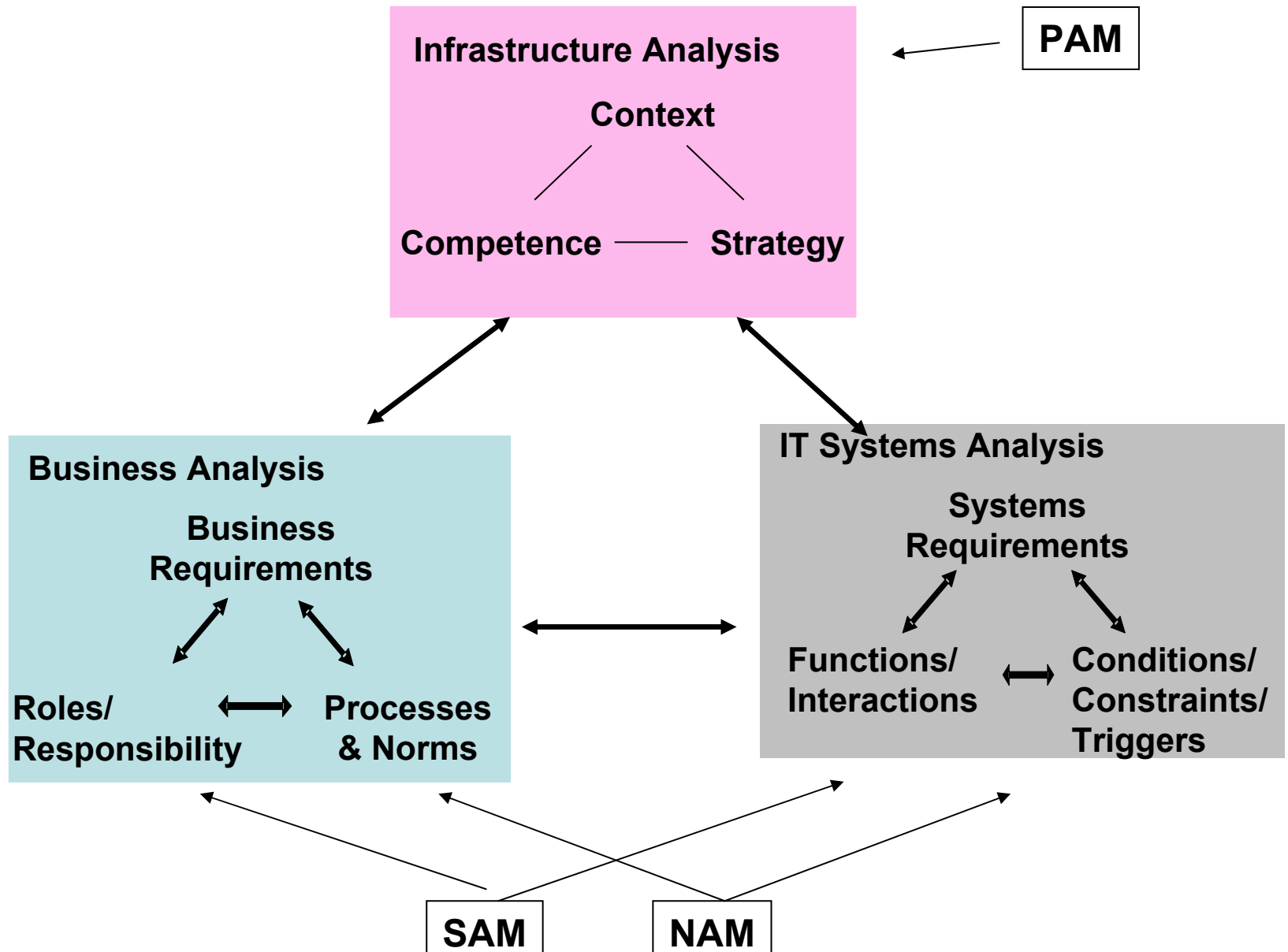   **then the police worker**
    is obliged
    To record the report.

Deontic operators:
Obliged – should, must
Prohibited – must not
Permitted - may

Applying MEASUR Methods in Co-Design of Business and IT Systems

Infrastructure Analysis

Context

Competence —— **Strategy**

PAM

Business Analysis

Business Requirements

Roles/ Responsibility ⟷ **Processes & Norms**

IT Systems Analysis

Systems Requirements

Functions/ Interactions ⟷ **Conditions/ Constraints/ Triggers**

SAM   **NAM**

Where to Go from Here?

- MEASUR architecture – guideline for analysis and design

- Architecture of the business systems
  - validate the model of organisational morphology and further refinement
  - Rework on established cases and also new cases

- Work with colleagues in Stafford
  - Develop supporting tools
  - Apply MEASUR in industrial cases for validation, refinement and dissemination