

A DESIGN FRAMEWORK FOR PERVASIVE SYSTEMS

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BATH

OVERVIEW

- Aspects of a pervasive system
 - Space - Information - Citizen
- Degree of “publicness”
 - Public - Social - Private
- How is it helpful?
 - Understanding, Design, Evaluation

MOTIVATION

- Current “pervasive” systems are not consistently
 - Designed
 - Represented
 - Compared

FRAMEWORK

- A set of useful ideas & concepts
- Origins: User - Task - Domain
- Useful in reasoning about pervasive systems
- Two dimensions:
 - Aspects of pervasive systems
 - Degree of publicness

ASPECT: SPACE

- Architectural space + Interaction Space
- Architectural space affects how we move, behave, feel
- Interaction space affects how we use technology and access information



ASPECT: INFORMATION

- Information spheres are “pools of information”
- Information is organised / categorised in information spheres
- Similar to InfoSpaces, Locales Framework

ASPECT: CITIZEN

- What user / human aspects are relevant?
 - Presence
 - City dweller
 - Rights & responsibilities

PUBLIC-SOCIAL-PRIVATE

- Lots of theories on privacy
- NOT what we want to offer
- Draw on two interesting theories:
 - Control theory
 - Restricted access theory

CONTROL THEORY

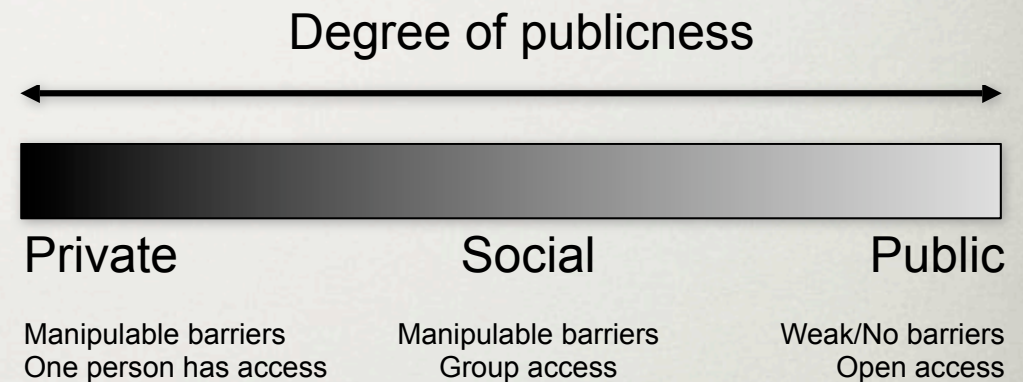
- Control theory: privacy if and only if one has control over information about oneself
- Recognises that individuals with privacy can grant, as well as deny, others access to private information

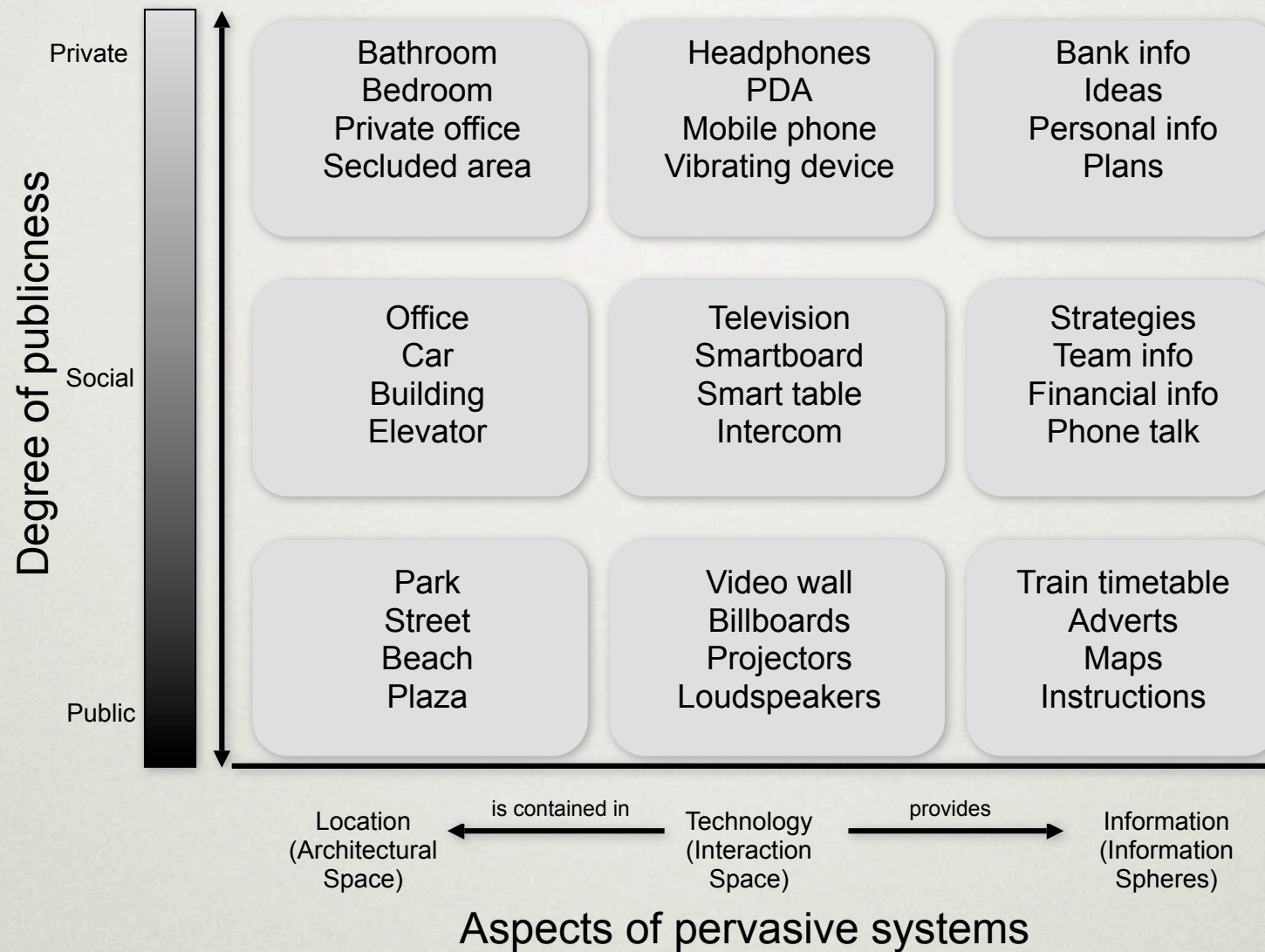
RESTRICTED ACCESS THEORY

- Describes privacy in terms of limiting access to information about oneself in certain contexts
- Recognises the need for zones that protect privacy

PUBLIC-SOCIAL-PRIVATE

- Concept of barrier is key
- User & technology barriers: Control theory
- Physical space barriers: Restricted access theory





DESIGNING WITH THE FRAMEWORK

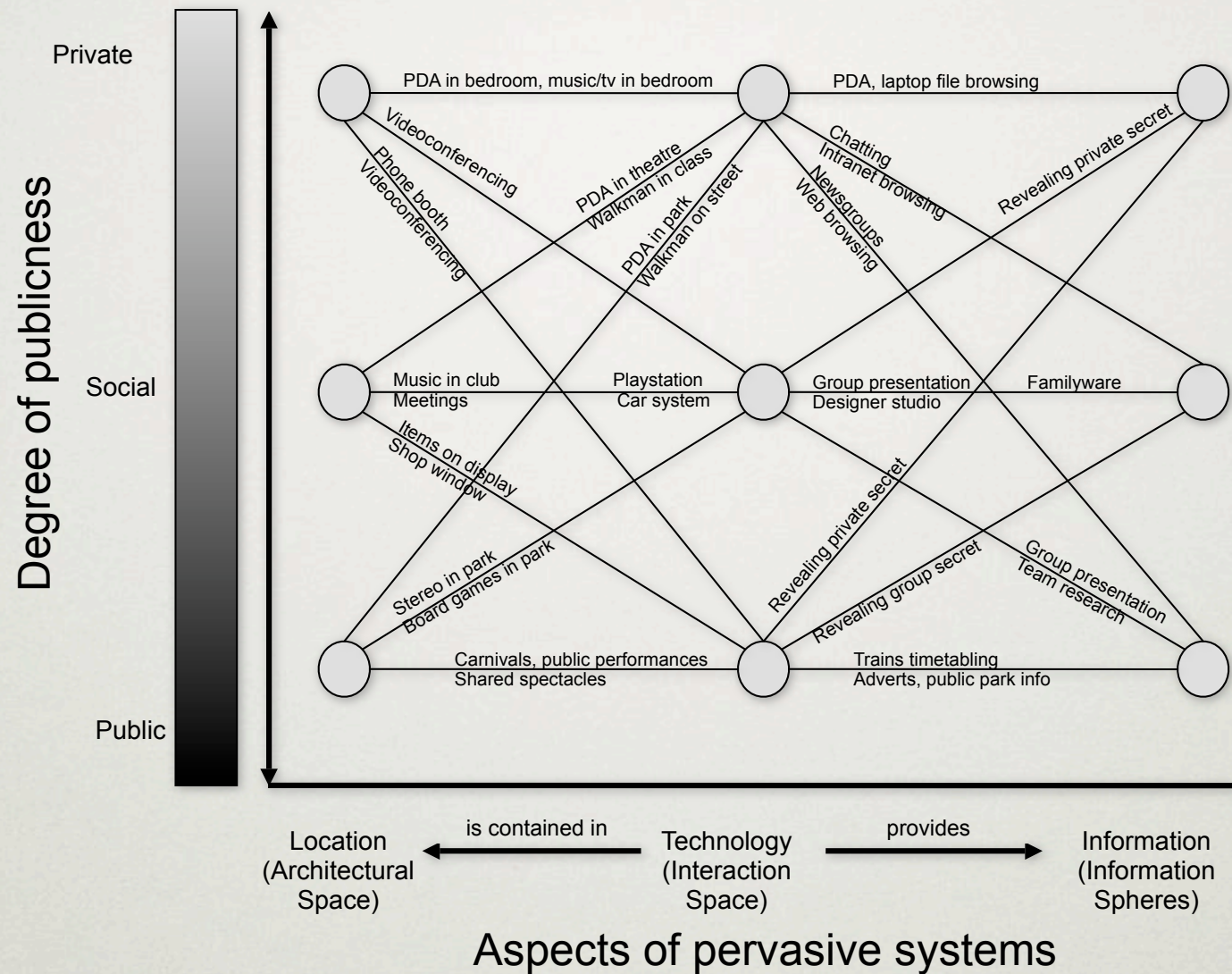
- ♦ In design, we have a range of artefacts that can create interaction spaces; e.g. wall displays, PDAs etc
- ♦ To know what interaction space to create, we take account of the information sphere and the space in which the citizen is currently located

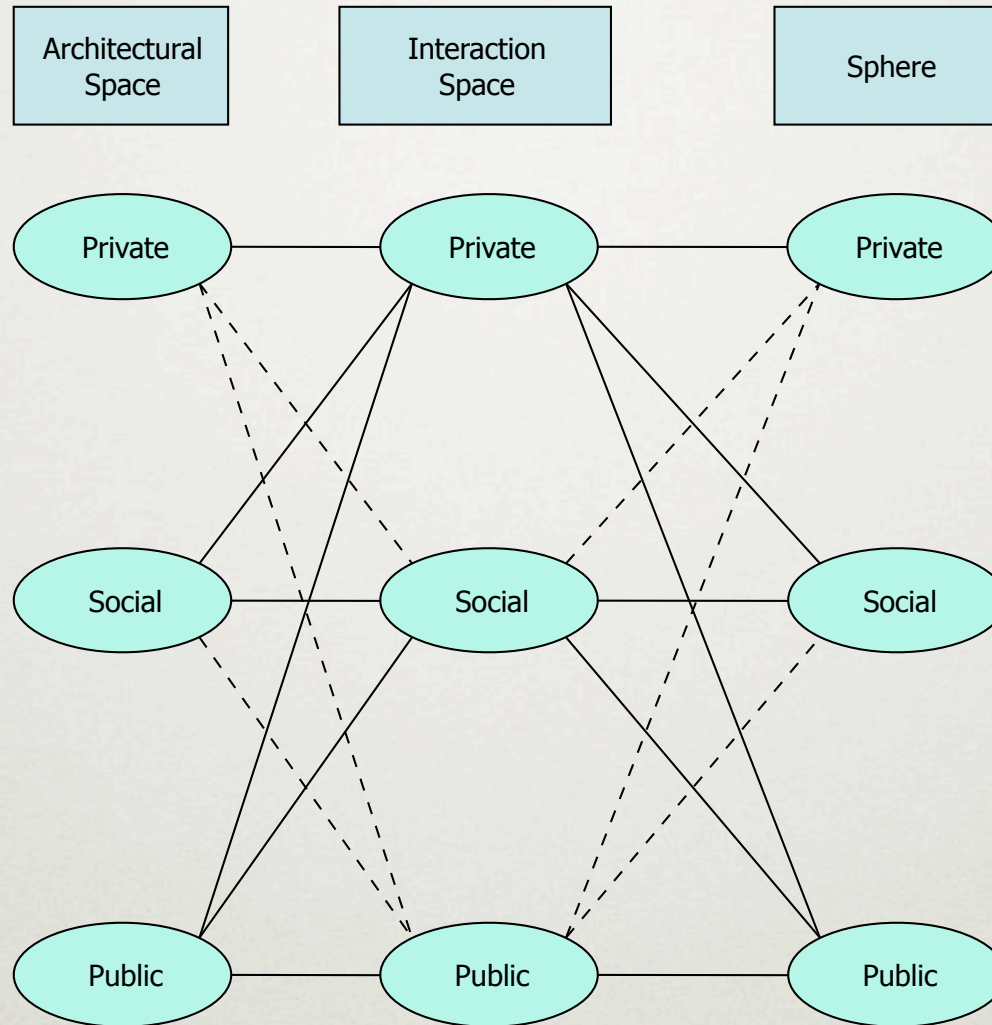
Architectural
Space

Interaction
Space

Sphere







CONCLUSION

- Aspects to think about
 - Architectural Space
 - Interaction Space
 - Information
- These can be categorised as
 - Public - Social - Private