Computer Supported Co-operative Work (CSCW)

Prof. Antonella De Angeli

Ground rules

- To keep disturbance to your fellow students to a minimum
  - Arrive on time. If you are more than 15 minutes late, please wait until there is a break and copy the notes from a friend.
  - <u>Make sure your mobile phone is switched off during the lecture!!!</u>
  - Keep talking, whispering and other background noise to a minimum.
  - If there is something you don't understand, please interrupt me to ask if I could clarify.
  - If you want to make a general remark, then it may be better to wait until there is a natural break.

Purpose

- Explain what is meant by communication and collaboration (C&C)

    - Describe main social processes underlying C&C

- Outline the range of CSCW systems and their characteristics developed to support C&C

    - Main emphasis on web2.0 and communities

- Consider how knowledge of C&C in the context of groups and organisations can improve the design of CSCW systems
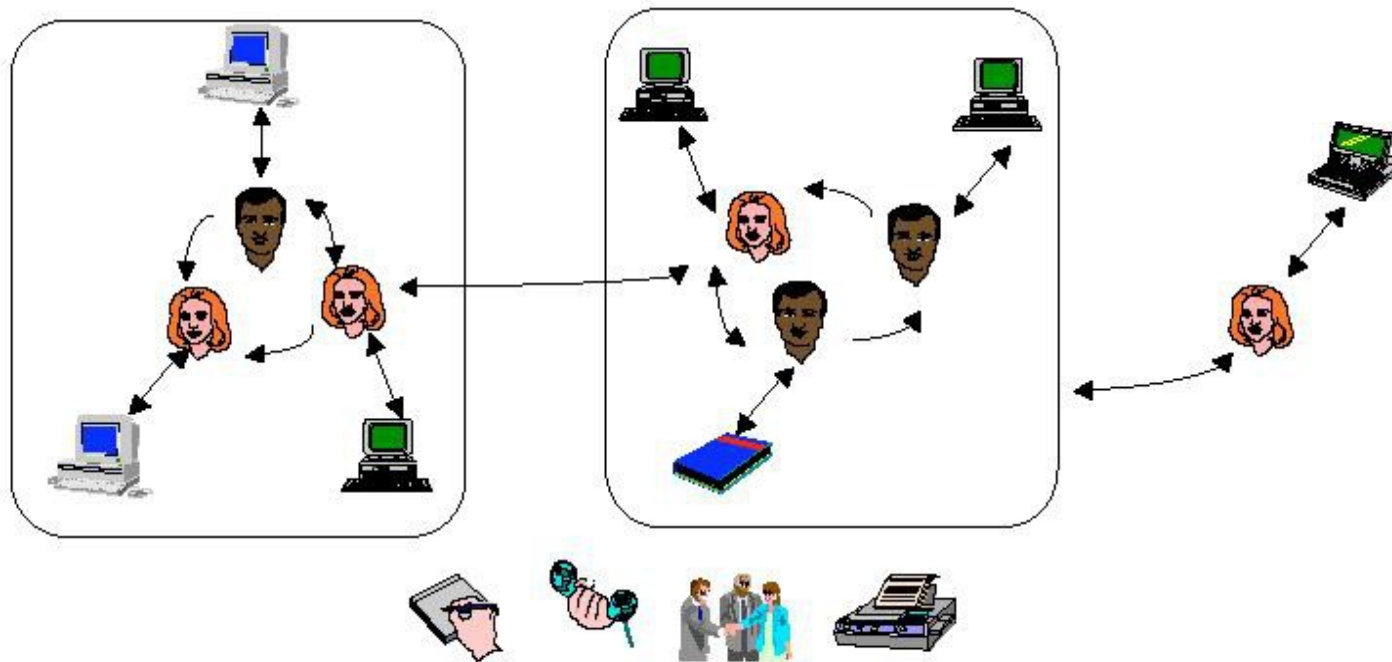
What is CSCW?

Paradigm shift
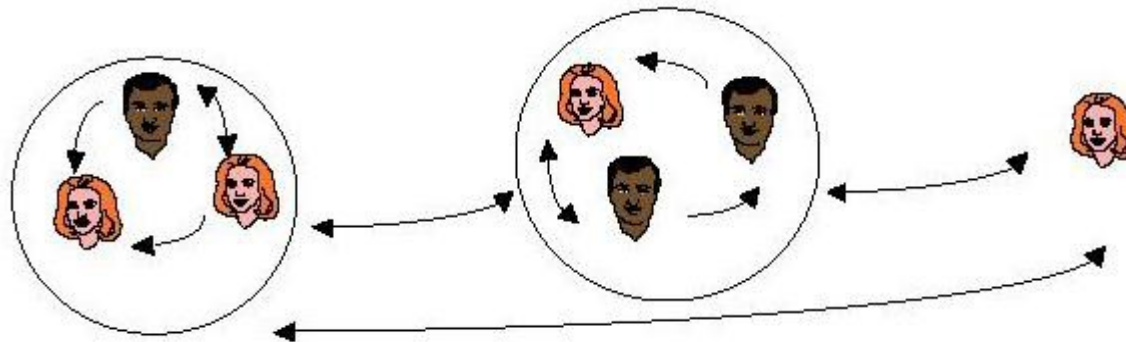
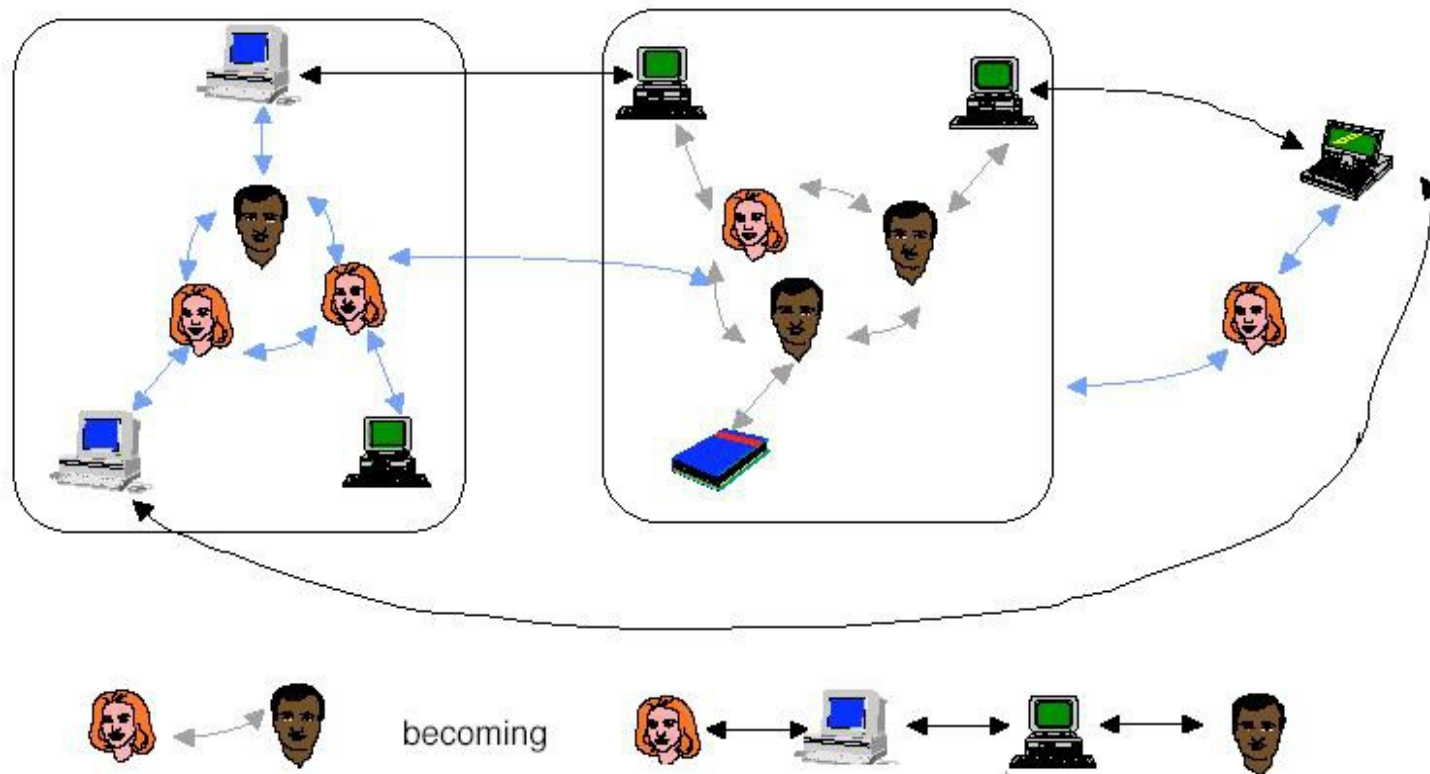Collaboration between individuals and groups
without computer support

Paradigm shift

human-computer interaction is introduced
but human-human collaboration still required

Paradigm shift

becoming

Definitions of CSCW

- There does not exist a commonly agreed definition
  - Abstract definition
    - "CSCW is a generic term which combines the understanding of the way people work in groups with the enabling technologies of computer networking, and associated hardware, software and services."
  - Practical definition
    - "CSCW looks at how groups work and seeks to discover how technology (especially computers) can help them work more effectively as a group"
- More recently, CSCW knowledge has been applied to non-work related computer-supported collaboration/communication activities
  - On-line communities
  - Second Life
  - Social Networking Platfmors
  - We understand these technology as enablers of collective action
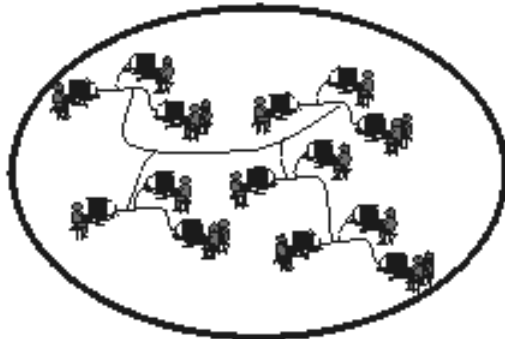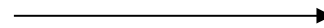

Human-Computer Interaction (HCI)
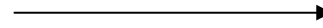
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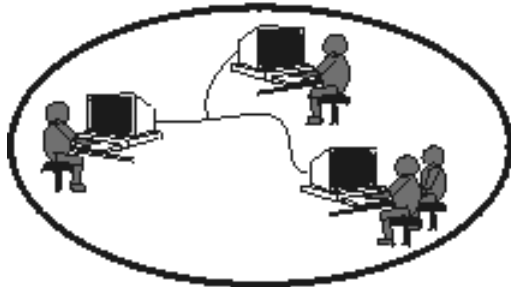
Computer Supported Collaborative Work (CSCW)

Small group

Virtual Community

Large societies

The Context
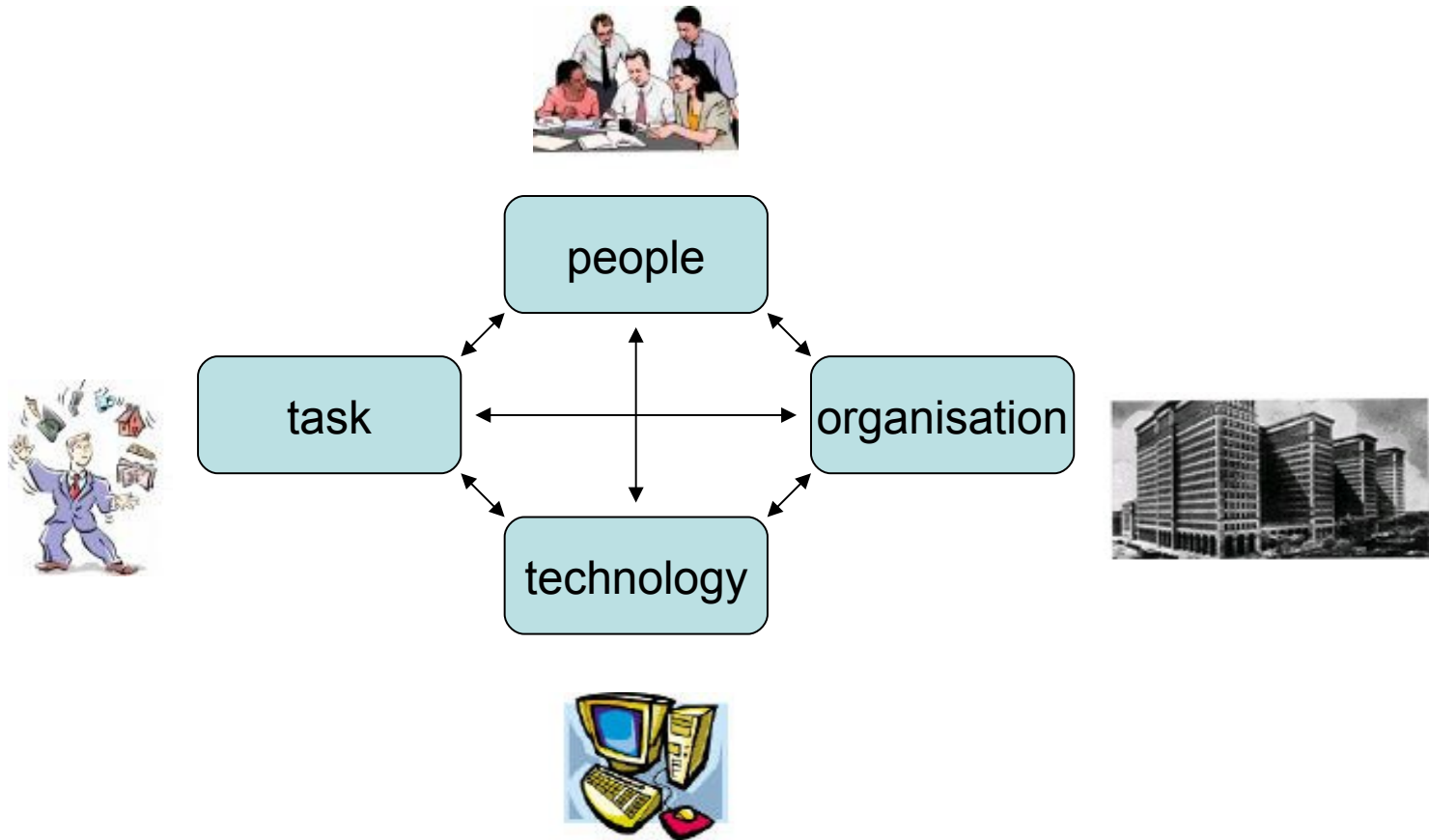
Organisations and Tasks

- Software design and development
  - Macro level cooperation between departments
  - Micro level cooperation between members of a group
  - Communities of practice
  - Open-source
- E-Science
  - Information sharing
  - Data analysis
  - Experiments planning
- Teaching environment
  - Transfer of information and skills (e-learning)
    - Between teacher and students
    - Between students
- Shared design of media and products
  - CAD/CAM
- Cooperation in healthcare (e.g. between doctors and nurses)
- Any other teamwork

People

- People with a range of skills
- People of all ages and cultures
- Rich people and poor people
- People in offices and people on the move
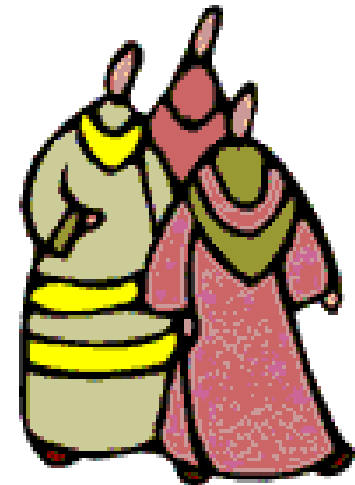
Technology

- The technology used for CSCW is called GROUPWARE

- Examples
  - Team-room – video

  - http://grouplab.cpsc.ucalgary.ca/Videos

Communication

- For
  - Faster communication between individuals and groups
  - Easier to keep in touch with remote team members
  - Easier to avoid or repair misunderstandings
- Against
  - People without the 'right' systems get excluded
  - Faster pace of life may cause more stress
  - "Work doesn't get done by talking about it"
  - More communication – Less thinking

Group-work

😬 **For**

– Best practice can be embedded in the tools

– Easier to recruit appropriate team members

– Reducing dependence on a single member's expertise

– Organise work better

🌐 **Against**

– Reliance on technology (loss of control)

– Reduction in creativity due to more protocols

Organisation

For
- Physical location of team members becomes less of a constraint
- Easier to switch between tasks and roles

Against
- Many changes may be difficult for staff
- Less understanding of processes/roles

General Lecture Topics

- Part 1: CSCW Foundations
  - Week 1: Group work
  - Week 2: Groupware
  - Week 3: Issues in Groupware Design
  - Week 4: Issues in Groupware Evaluation
- Part 2: Sociability, mobility, on-line community, second Life, Social Networking etc.
  - GAMIFICATION
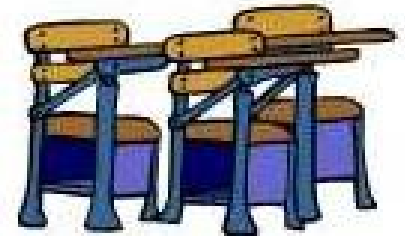
Assessment

- Coursework   50%
    - Individual activity
    - Group activity
- Exam   50%

Reading List

- Preece J. (2000) Online communities: Designing Usability, Supporting Sociability. John Wiley & Sons.

- Other material given by the lecturer

CSCW Basics

- **Intro to Group Work** ⟵
- Intro to Groupware
- Design of Groupware
- Evaluation of Groupware

Learning outcomes

- The Aims are to …
  - introduce the importance of working in groups
  - explain the problems associated with group work
  - discuss the various stages in the team life-cycle

The Context
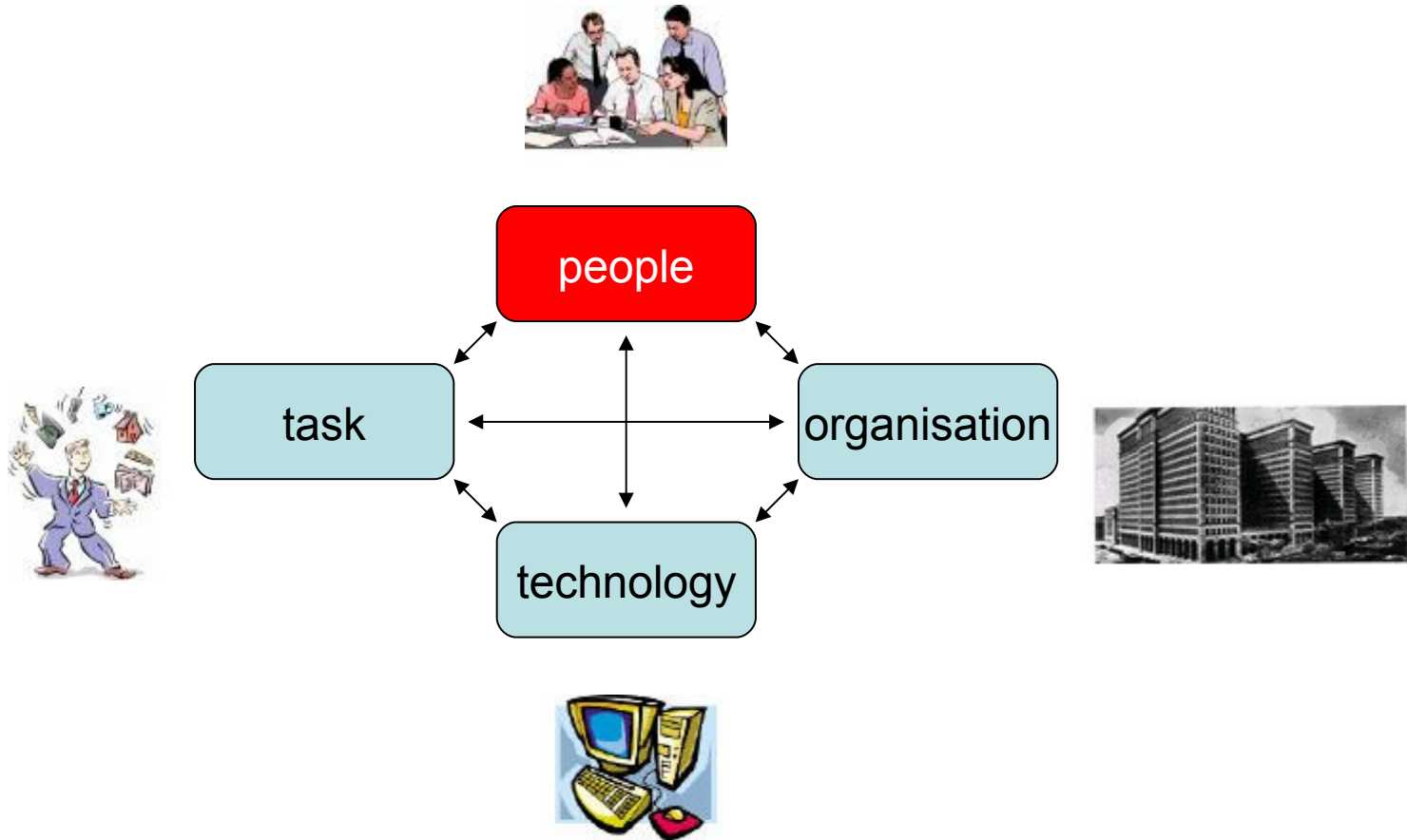
What is your experience of Group Work?

- Think about your experiences of working as part of a group
  - Write down particular benefits and drawbacks of group work that you have experience of

What is a group

- Group → two or more individuals that influence each other in some way
- Group is a dynamic entity - different from the sum of its members
- Important features are:
  - Interdependence: group members need each other to reach common goal
  - Common identity: individual perceive themselves as belonging together
  - Structure: mixture of roles, hierarchies and bonds between group members

Social-identity theory
Tajfel & Turner, 1986

Personal Identity

Representation of the self in terms of the unique individual, different from relevant others

Social Identity

Representation of the self according to social categories to which people identify - women vs. men; students vs. lecturers; Manchester United supporters vs.

Creating groups

- Create a sense of belongingness to the group → shared social identity

- More important than creation of interpersonal bonds between individual group members

- Different in mediated interaction

- 1st meeting anonymous: Less emphasis on individual characteristics: race, gender

- Appropriate intergroup comparison with other groups

- Instruction given to the group as a whole

- Group personalisation / rather than individual personalisation

- Let group members choose their roles

Group Formation Space

External

Circumstantial
groups

Concocted
groups

Emergent ←——————————————→ Planned

Self-organised
groups

Founded
groups
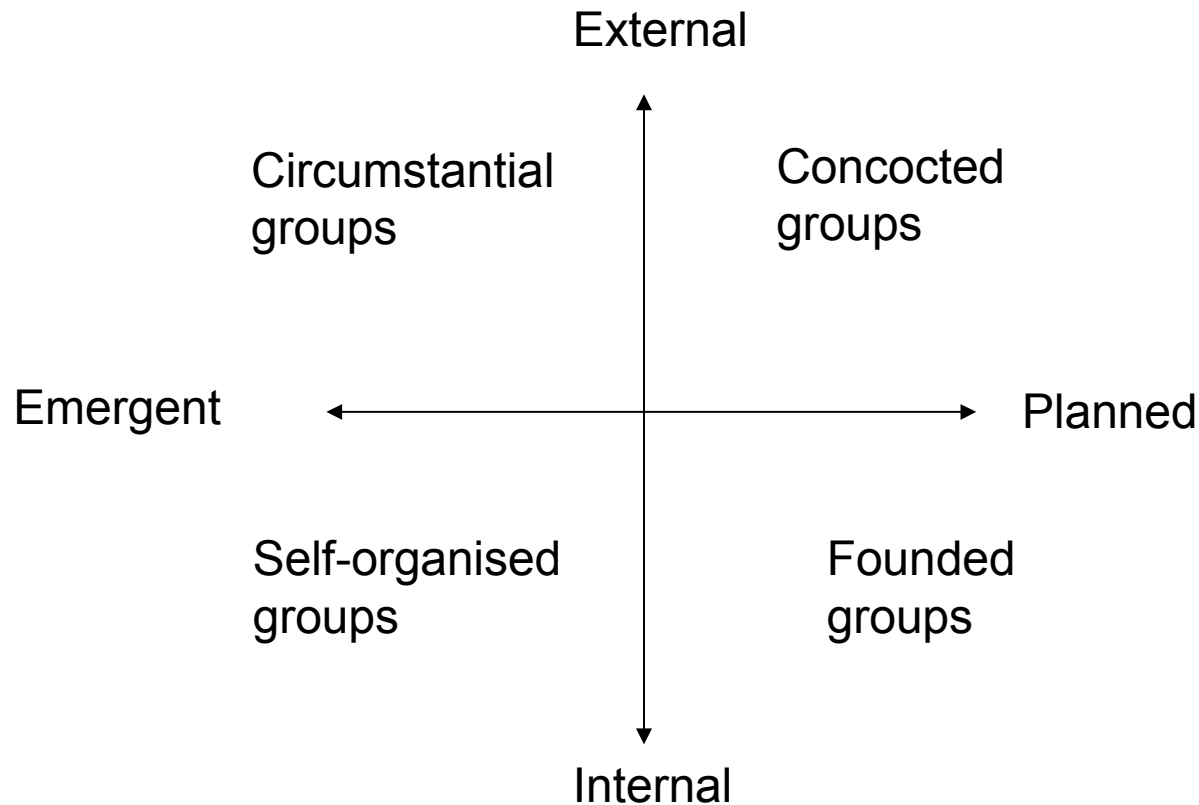
Internal

Group-formation space

- Framework to differentiate between groups based on the reason of the group
  - **Planned** group are **deliberately** formed by the members themselves (founded group) or by an external authority (concocted group), usually for **some specific purpose or purposes**
  - **Emergent group**s form **spontaneously** as individuals find themselves repeatedly interacting with the same subset of individuals over time and settings. These groups may be **circumstantial** or **self-organised**.
- The framework helps predict the social norms regulating the group, their time-frame, etc. and can be used to predict how a groupware technology can affect performance

Why work in groups?

- Combine a number of areas of expertise, competencies, view-points
  - Mistakes are more likely to be detected

- Split a large task up into smaller parts
  - Global 24-hour software development
- Individual members perform different roles, have different viewpoints
  - 'Shaper': derives objectives, sets priorities
  - 'Leader': Organises who does what
  - 'Strategist': Generates ideas and seeks ways of solving problems
  - 'Motivator': Injects enthusiasm and motivation
- Presence of others is emotionally arousing
- Group may motivates to think harder and more creatively than we do by ourselves
- Satisfy socio-emotional needs

Why <u>not</u> to work in group?

- Lack of common goals – people may not like each other – people do things in different ways
- Social Loafing
  - tendency of individual group members to reduce their work effort as groups increase in size
- Diffusion of responsibility
  - The belief that the presence of others makes one less responsible for the events that occur in that situation
- De-individuation
  - Loss of a sense of individuality and a consequent weakening of social norms and constraints
- Group-polarisation
  - The group tend to enhance shared pre-existing views (more extreme attitudes, opinion)

What makes a successful team?

- Team members …
  - are engaged in a common task
  - work towards a common goal
  - interact with a shared environment
  - share and exchange information
  - strive towards a common understanding and awareness
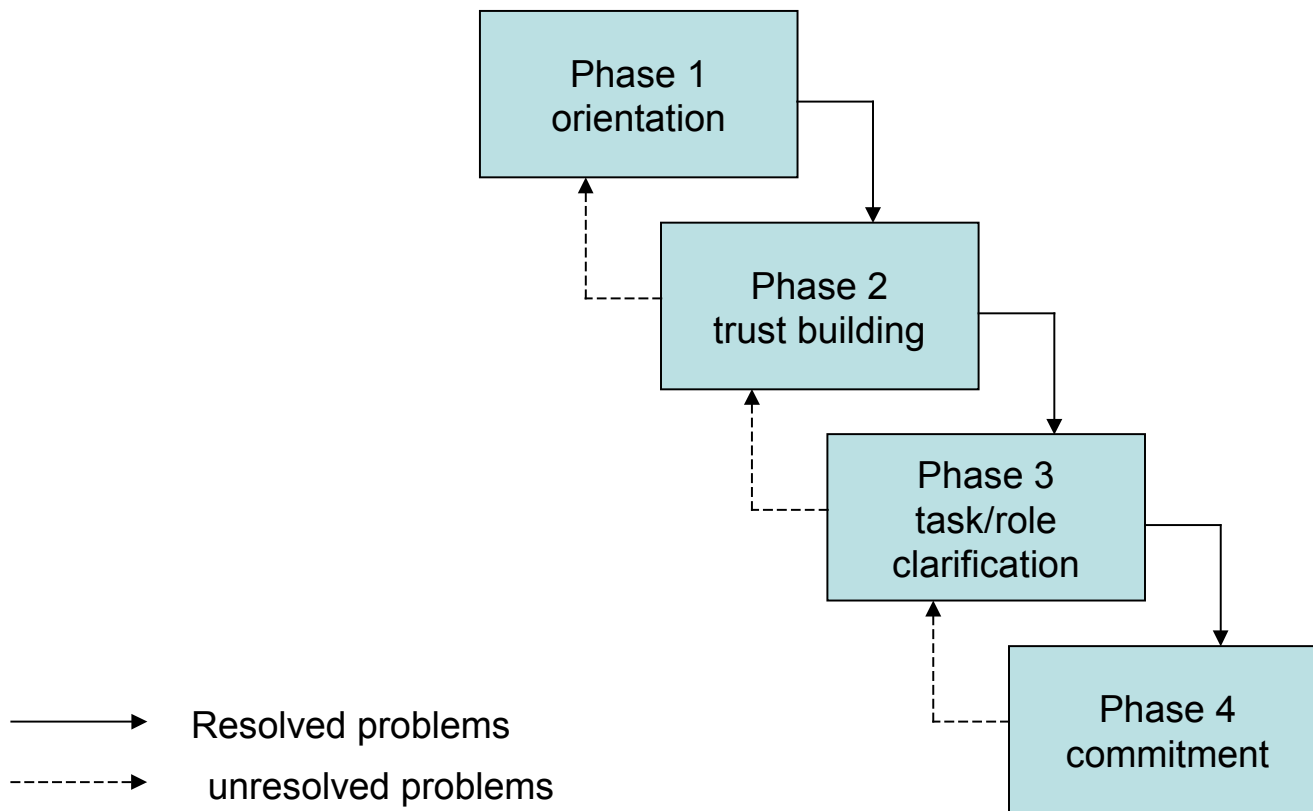 - take responsibility of their individual actions

Conflict

- Conflict arises due to:
  - Differences in beliefs, values, interests
  - Scarcity of resources such as money, time, power
  - Rivalries between people and groups
  - Pressure to avoid failure

Co-located versus Distributed

- Distributed teams can be from different cultures, very large
- Problems:
  - Dispersion
  - Coordination breakdown
  - Loss of communication richness
  - Loss of Teamness

Dynamics of Creation

Phase 1
orientation

Phase 2
trust building

Phase 3
task/role
clarification

Phase 4
commitment

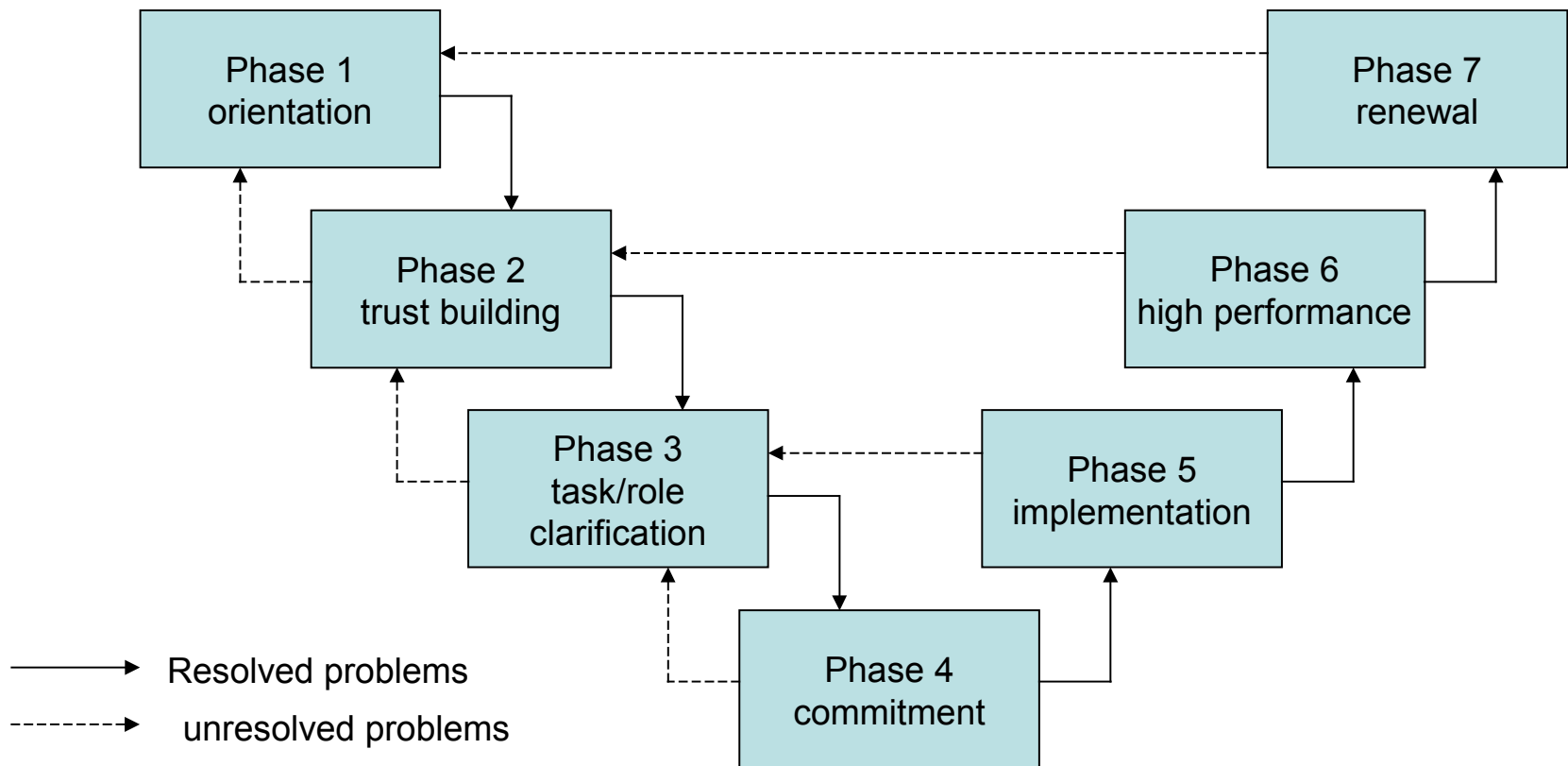Resolved problems

unresolved problems

Creation of a Team

- Orientation:
  - Discuss the overall goal of the team
    - What is the purpose of the team?
- Trust building:
  - Integration of the individuals into the team
    - What is expected of me?
    - Who are my direct contacts?
- Task/role clarification:
  - Agree upon the tasks and roles in the team
    - Make sure everyone has the same expectations of the tasks and roles.
- Commitment:
  - Sort out responsibilities and dependencies
    - Decide on task structure and assignment of resources

Team Life-cycle

Phase 1
orientation

Phase 7
renewal

Phase 2
trust building

Phase 6
high performance

Phase 3
task/role
clarification

Phase 5
implementation

Phase 4
commitment

→ Resolved problems

-----→ unresolved problems

Consolidation of a Team

- ## Implementation
  - Assign individual tasks to team members
    - Temporal and causal dependencies must be taken into consideration
- ## High performance
  - Team members get on with the execution of their tasks
- ## Renewal
  - Team members get less motivated and a new cycle in the life of the team is initiated
    - The goals of a team may shift
    - The structure and roles of a team may change

Summing up

- CSCW definitions
- 4 dimensions: task, people, organisation and technology
- Groups are different from individuals
- Group dynamic can somehow be predicted
- Best group-work practices (creation and consolidation of teams)