Chapter 8 Groupware in Urban Planning

Table 8.1 Several definitions of groupware and related issues. According to Nunamaker, Briggs and Mittleman (1995)

Groupware is ...
Computer Supported Co-operative Work (CSCW)
Group Decision Support System (GDSS)
Group Support Systems (GSS)
Co-ordination software
Group memory
Information filtering
Electronic conferencing
Groupware
Group scheduling
Team calendar
Group development tools
Team database
E-Mail
Project management
Group conferencing
Video teleconferencing
Electronic brainstorming
Shared drawing
Electronic meeting systems
Workflow automation
Electronic voting
Shared edition

8.1 What is groupware?

- according to Coleman & Khanna(1995),

  'groupware indicates technologies that support person-to-person collaboration;
  groupware can be anything from email to electronic meeting systems to workflow'

- groupware rapidly changes the dynamics of group interactions

  by improving communications
  by structuring & focusing on problem-solving efforts
  by establishing & maintaining an alignment between personal & group goals

Table 8.2 The Groupware environment
According to Coleman and Khanna (1995)

	ENTERPRISEWARE		
	Cross-vendor support Integrated networks Executive information systems		Standards Local/remote servers
	GROUPWARE		
Database or infobase. Object repository or knowledge base. Document and image repository.	Group Decision Support Systems Desktop video and audio conferencing Group application development environment Group editing Workflow		
	Group-enabled applications	E-mail messaging	Calendering Scheduling
	Personal productivity applications	Network operating systems	
	Operating systems		
	Hardware infrastructure: cables, multiplexers modems, ATM, frame relay, ISDN		

- 4 categories of grouping aimed at greater productivity
  a. group calendaring & scheduling
  b. electronic meeting support systems
  c. group project management software
  d. workflow software to route & track documents & action items

- groupware can be defined as an intermediate layer
  top layer: enterprise ware bottom: hardware

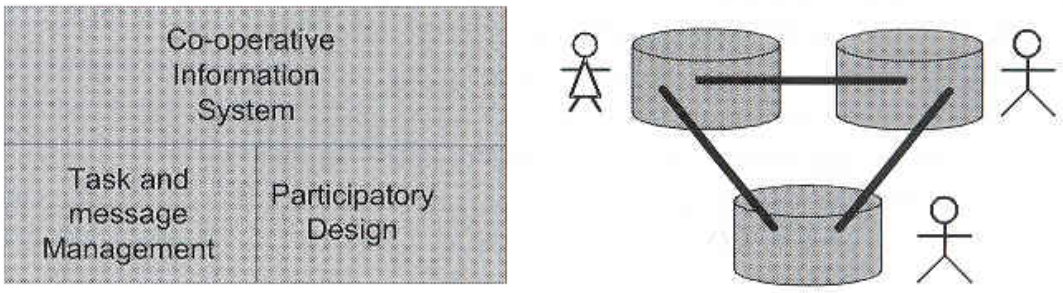

Figure 8.1 Structure of a co-operative information system.
Reprinted from *Computers, Environment and Urban Systems* 22 4, R. Laurini 'Groupware for Urban Planning: An Introduction' 317–33 © 1998, with permission from Elsevier Science.

Cooperative info systems

- consists of a distributed DB w/ one central DB & several local DBs

  central DB: store common info for global project management

  local DBs: store info necessary for end users

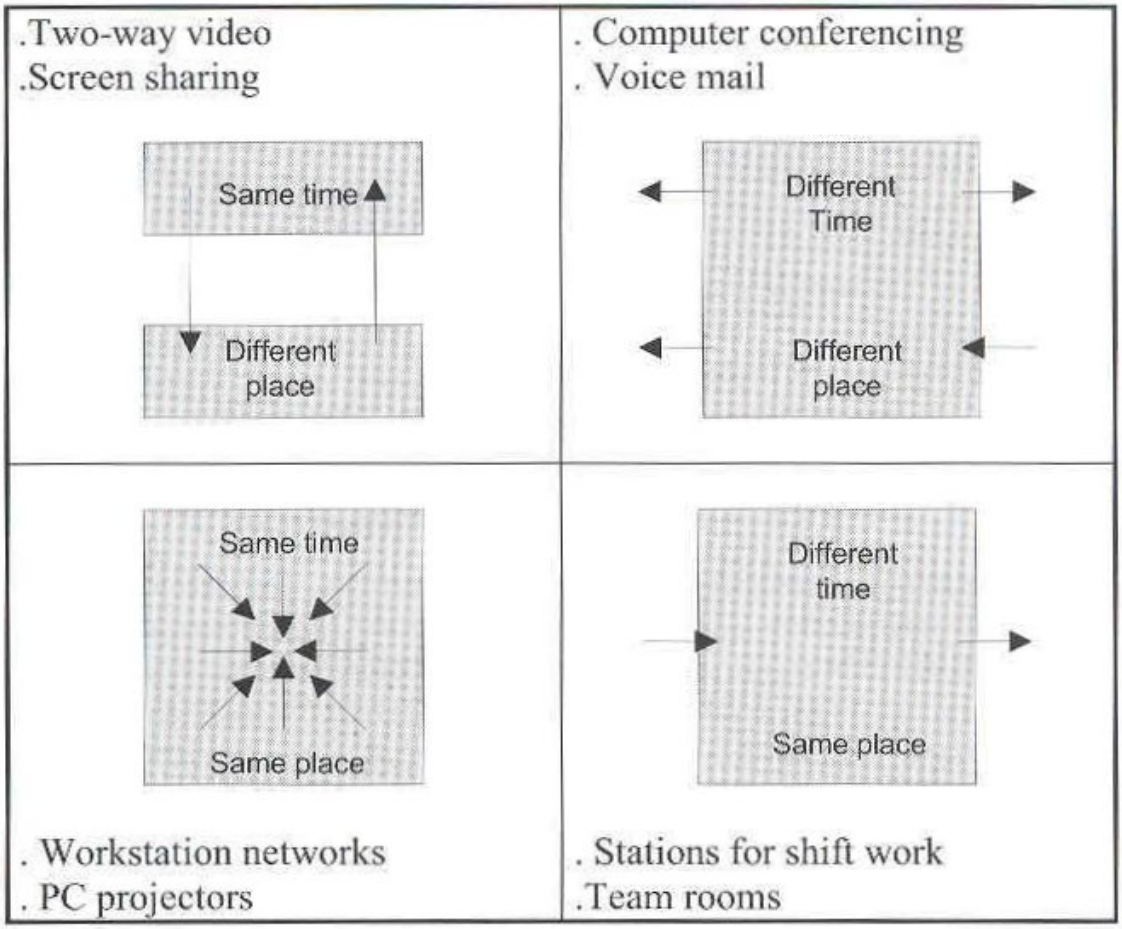

Figure 8.2 The 4-square map for groupware options.
From Johansen *et al.* (1991). Reprinted from *Computers, Environment and Urban Systems* 22 4, R. Laurini 'Groupware for Urban Planning: An Introduction' 317–33 © 1998, with permission from Elsevier Science.

- 4 possibilities of groupware according to time & place

Table 8.3 Social interaction supporting systems
From Erik-Andriessen (1996)

OPTIONS	(a) For different place/different time	(b) For different place/same time	(c) For same place/same time
1. *Ad-hoc* information exchange (very short)	• Fax • Email general, or with information filtering and conversation structuring	• Telephone • Cellular phone • Videophone	
2. Group meeting/ presentation/ teaching (few hours)		• Video-conferencing systems • Audio-conferencing systems	• Group decision room (GDR) equipment • Presentation equipment
3. Teamwork (long time) (including 1, 2 and 4)	'Keepers' • Computer-conferencing • Co-editing system • Group-CAD systems • Other sharing systems 'Synchronisers' • Group-calendar • Shared project planning • Shared workflow system	• Video-conferencing systems • Audio-conferencing systems • Screensharing	• GDR equipment
4. Socialising		• Media spaces	

Figure 8.3 Example of a room for group decision-making at Queens University Kingston, Ontario.
Source: http://www.groupsystems.com used with kind permission of Ventana Corporation.

Group decision support system (GDSS)

- important characteristics

  a. it is designed w/ the goal of supporting group decision making

  b. easy to learn & use

  c. encourage activities such as idea generation & conflict resolution

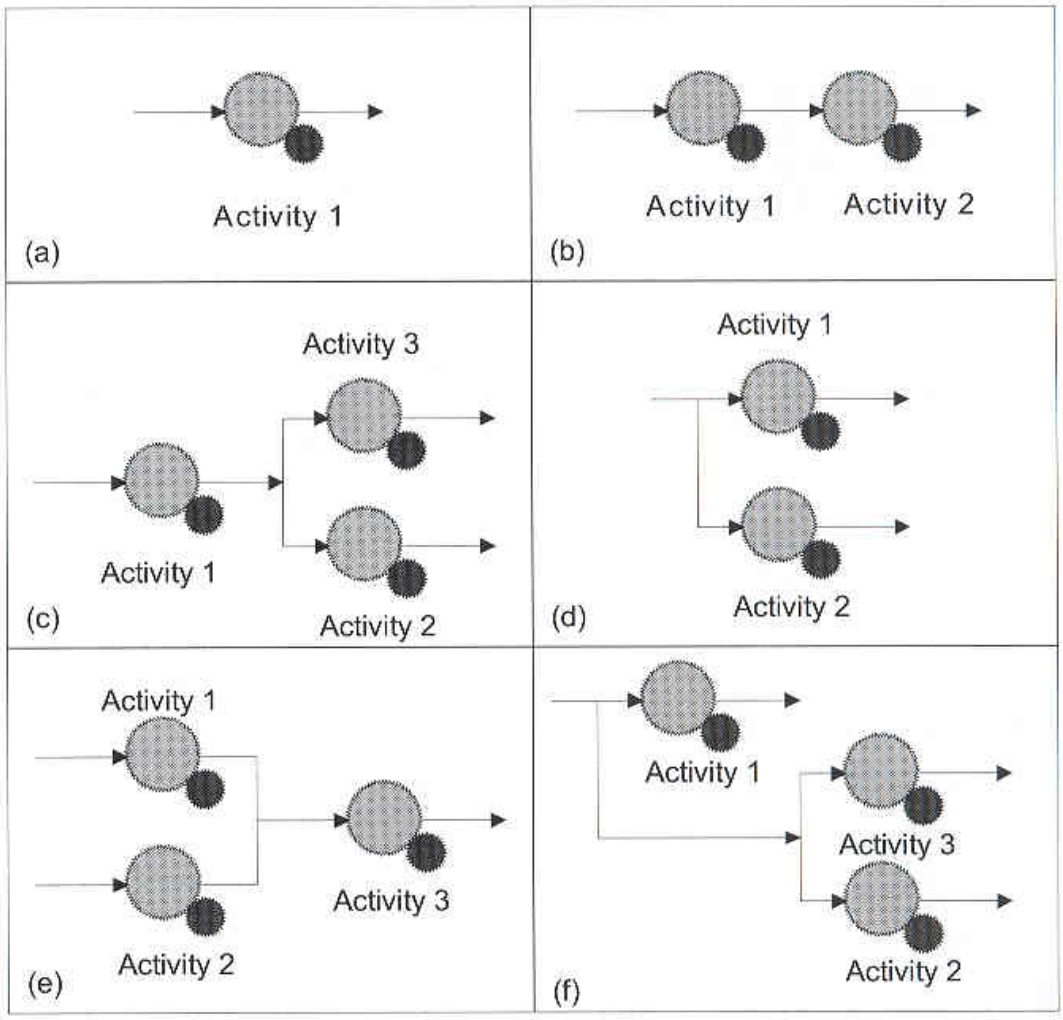

Figure 8.4 Workflow modelling. (a) an activity. (b) Sequence of activities. (c) Branching process (fork). (d) Two activities in parallel. (e) and (f) More complex ordering of activities.
From Kappel *et al.* (1998) with modifications.

Workflow modeling

- workflow model components
  : activity ordering, user selection, worklist management

- control flow between activities

  : control structures such as sequencing, branching, joining
  dependency such as successor, predecessor
  logical connectors such as AND, OR
  temporal constraints e.g. an activity must be done by certain time

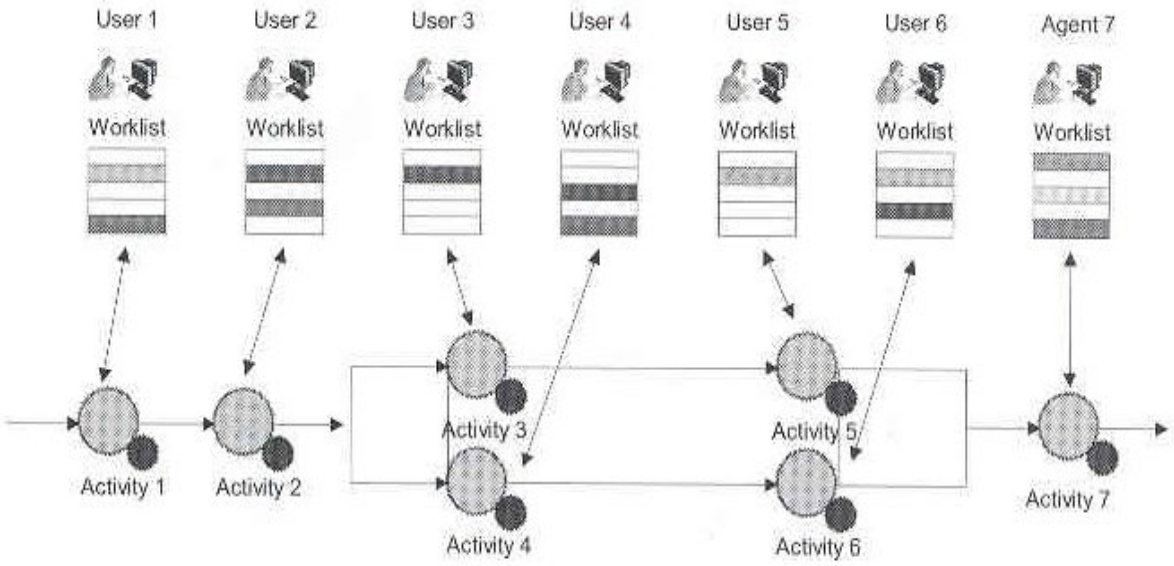

Figure 8.5 Example of a complex clerical process including several agents. After Kappel *et al.* (1998).

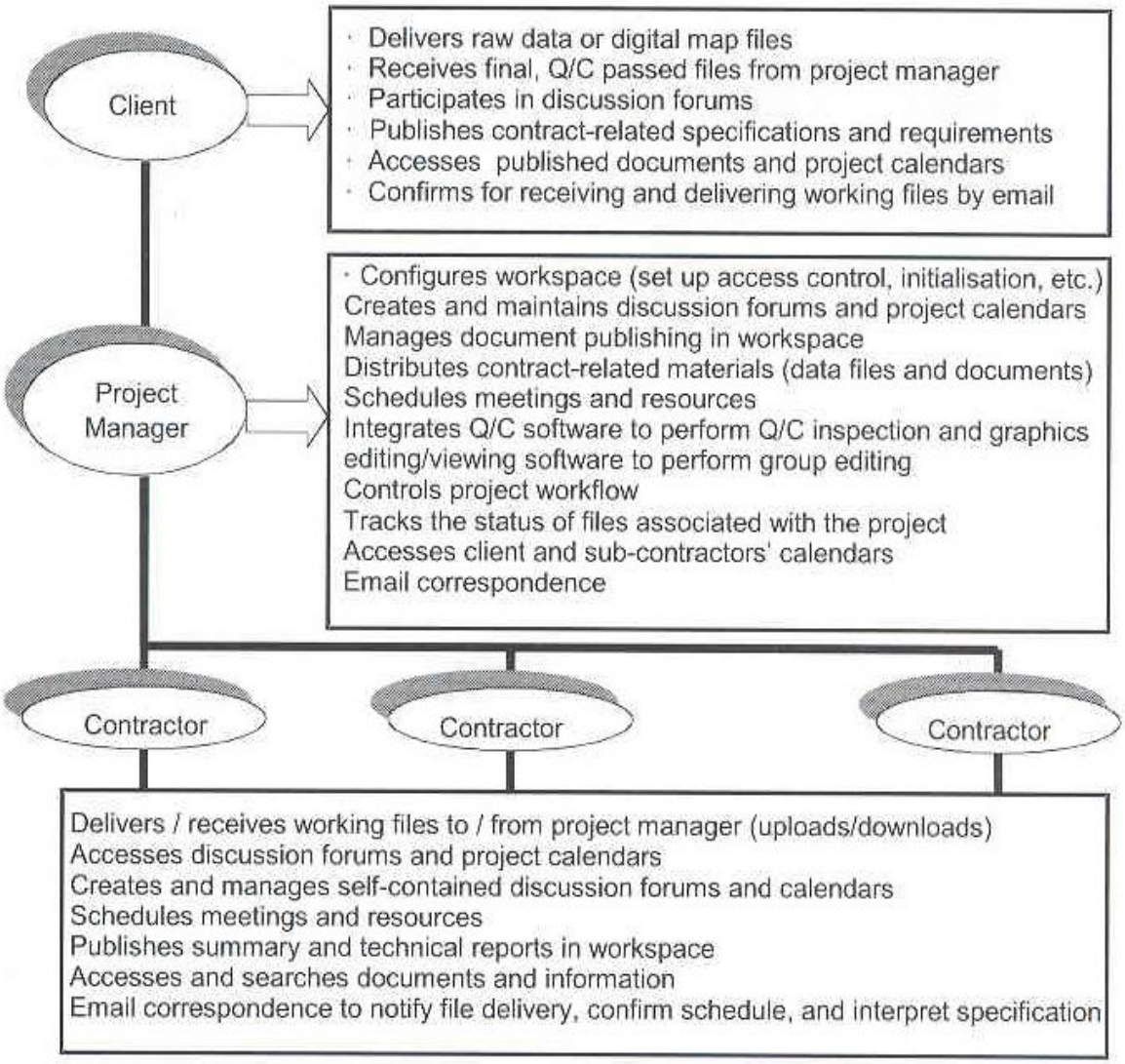

Figure 8.6 Functional data management and project management requirements of geomatics project participants.
According to Coleman and Li (1999), published with permission.

- Examples in geoprecessing

  mission: for the management of geomatics production

  issue: main functionalities & interactions between actors

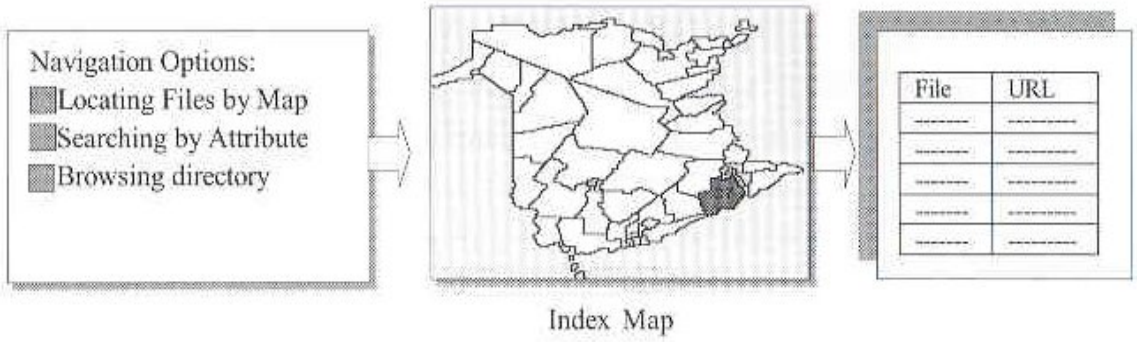

Figure 8.7 An example of viewing file status.
According to Coleman and Li (1999), published with permission.

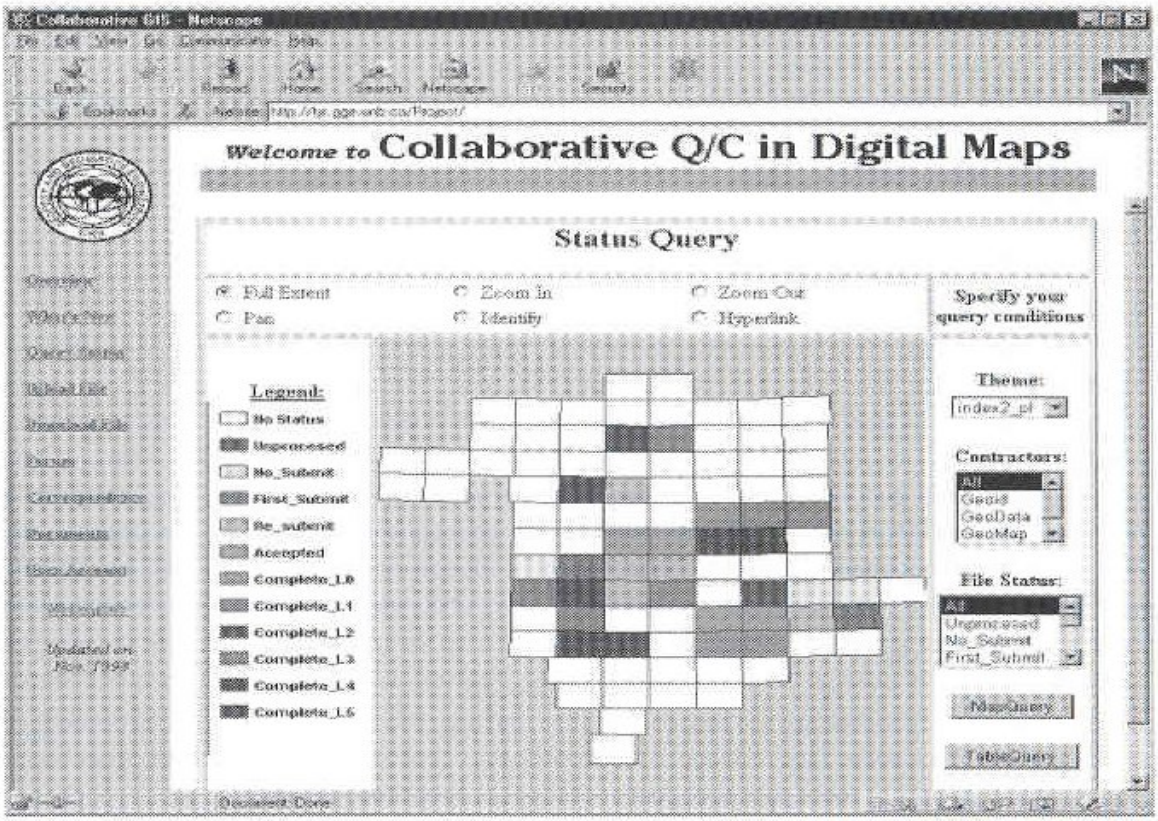

Figure 8.8 Example of database-driven production status reporting capability (Coleman and Li 1999), published with permission.

- Examples in geoprecessing

  : status of the processing & some graphical reports

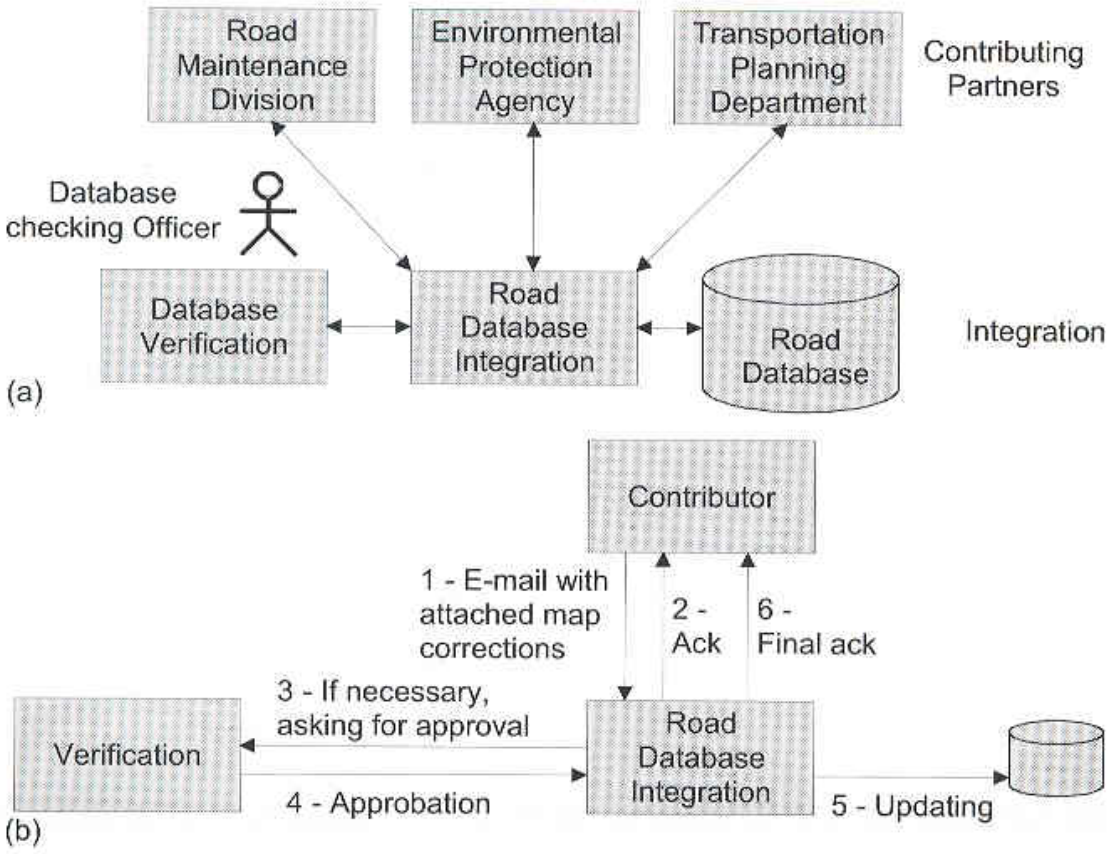

Figure 8.9 Workflow for updating street data. (a) Processes and actors. (b) Basic actions.

- Another example in geoprecessing

  mission: street data maintenance

  issue: processes, actors, actions

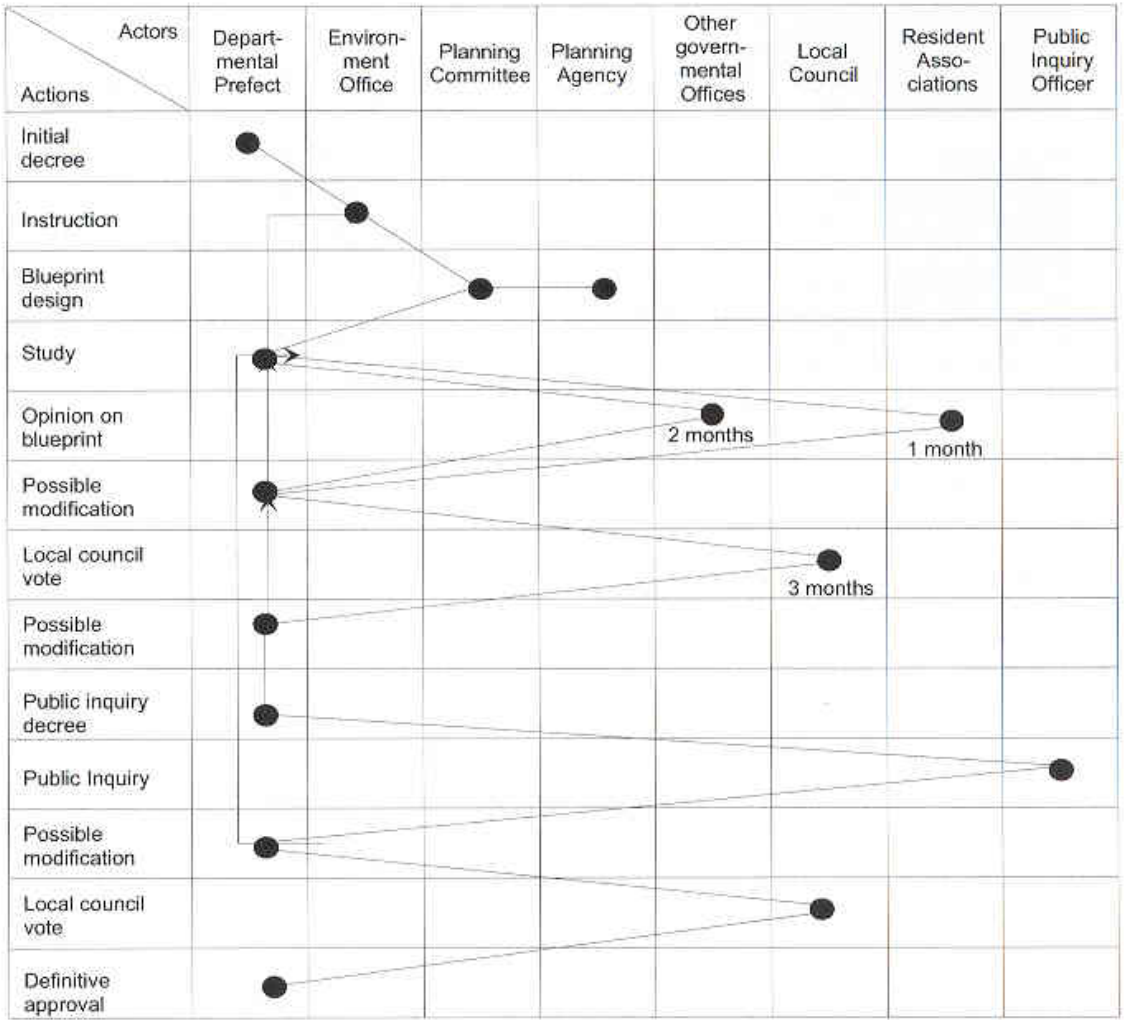

Figure 8.10 The French juridical process of the French Land Use Plan design. According to Laurini (1982a).

8.2 Groupware & urban planning

Description of the French planning process

- very complex process for land use plan design
- show routes that map & written documents must follow to be approved
- procedure can last from several months to a few years

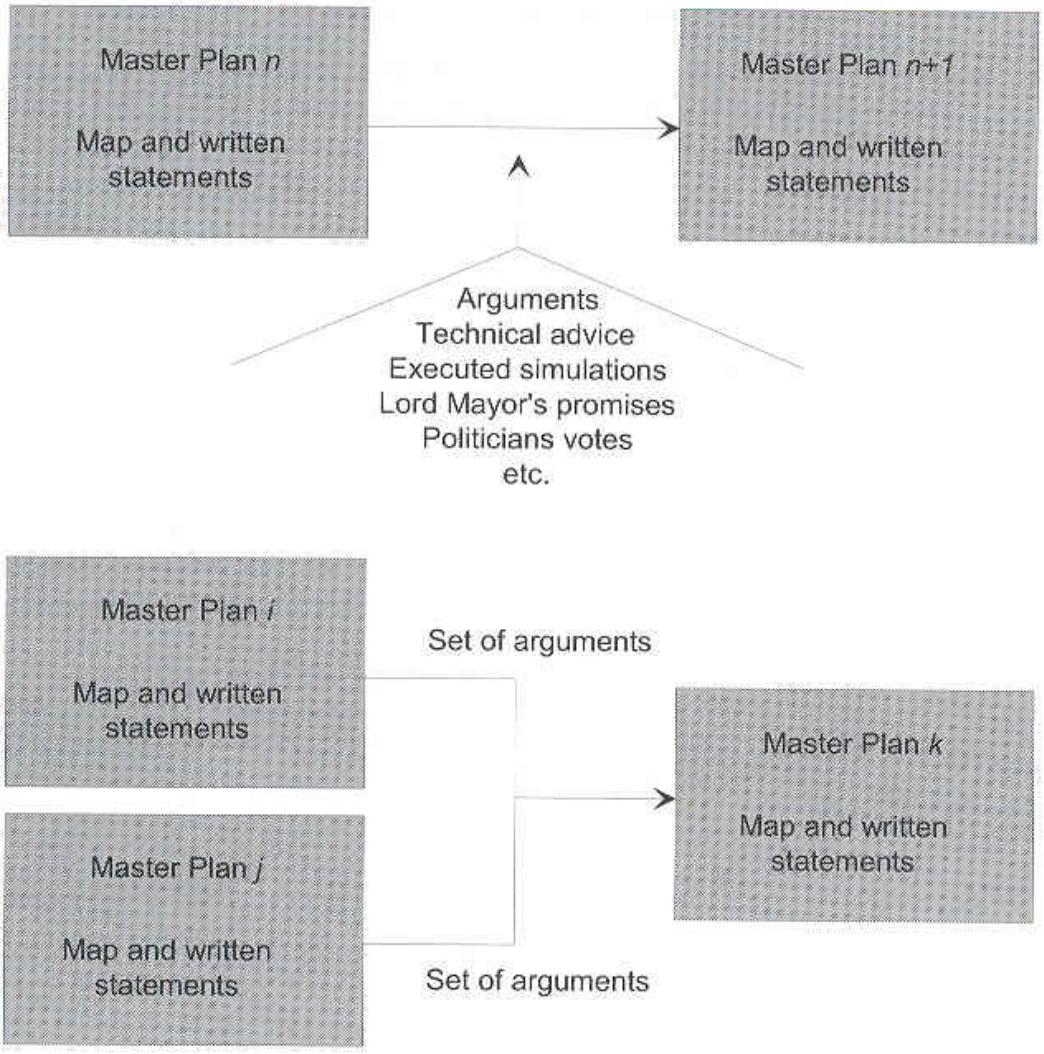

Figure 8.11 Information necessary to support new versions of plan.
Reprinted from *Computers, Environment and Urban Systems* 22 4, R. Laurini 'Groupware for Urban Planning: An Introduction' 317–33 © 1998, with permission from Elsevier Science.

- plan evolves from version to version
- need to store all info to know the reasons for such a new version

Table 8.4 What groupware can afford to the main actors of urban planning

Actors in urban planning	Groupware in action	
	Frequency	Type of usage
Higher planning officer	From time to time, (minimum once a month)	General checking Final approval
City councillors in charge of urban planning	Several times a week	Requirements Meetings Simulation Votes
Other city councillors	Several times a month	Checking, votes Conferencing Meetings
City dwellers' associations	At the beginning and during all the processes, especially during inquiry	Collection of requests
Public consultation	At the end, daily, one month long	Photo-realistic visualisations Simulation Opinions
Urban planning staff and Municipal engineers and architects	Daily, during the whole process	Simulations, cartography meetings, authoring, messaging, conferencing

Actors & roles in urban planning

- 3 types of actors in urban planning: politicians, technicians, citizens
  a. politicians: real decision makers
  b. technicians: all staff of local authorities, advisers of politicians
  c. citizens: can be grouped, participate in the public consultation

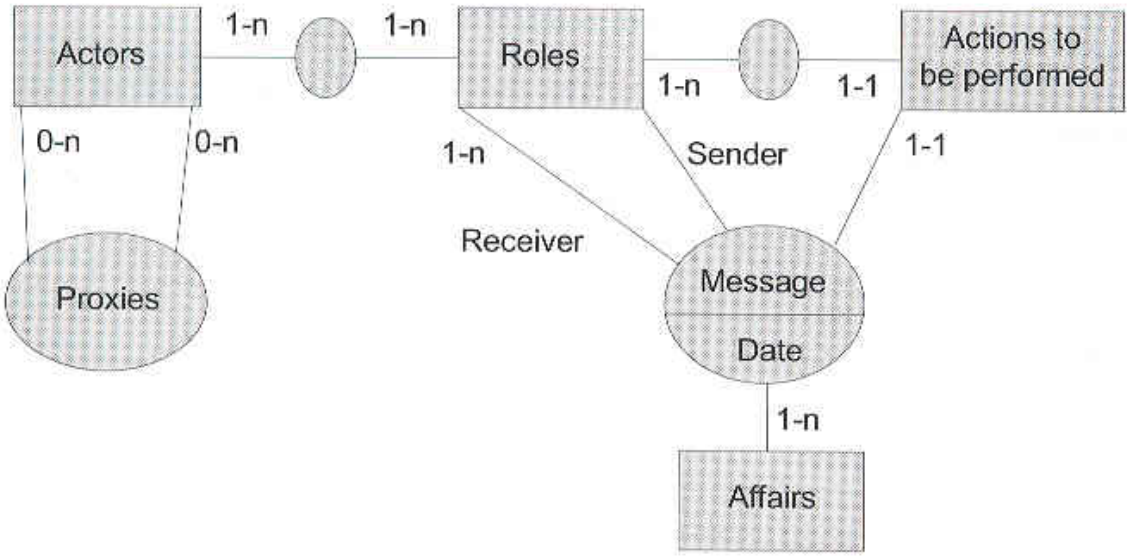

Figure 8.12 Relations between actors and tasks to be performed. Reprinted from *Computers, Environment and Urban Systems* 22 4, R. Laurini 'Groupware for Urban Planning: An Introduction' 317–33 © 1998, with permission from Elsevier Science.

- relations between actors & tasks

  message: an association between affairs, actions, roles

  roles: different functions that an actor must perform

  proxies: possible delegation an actor can give to another actor

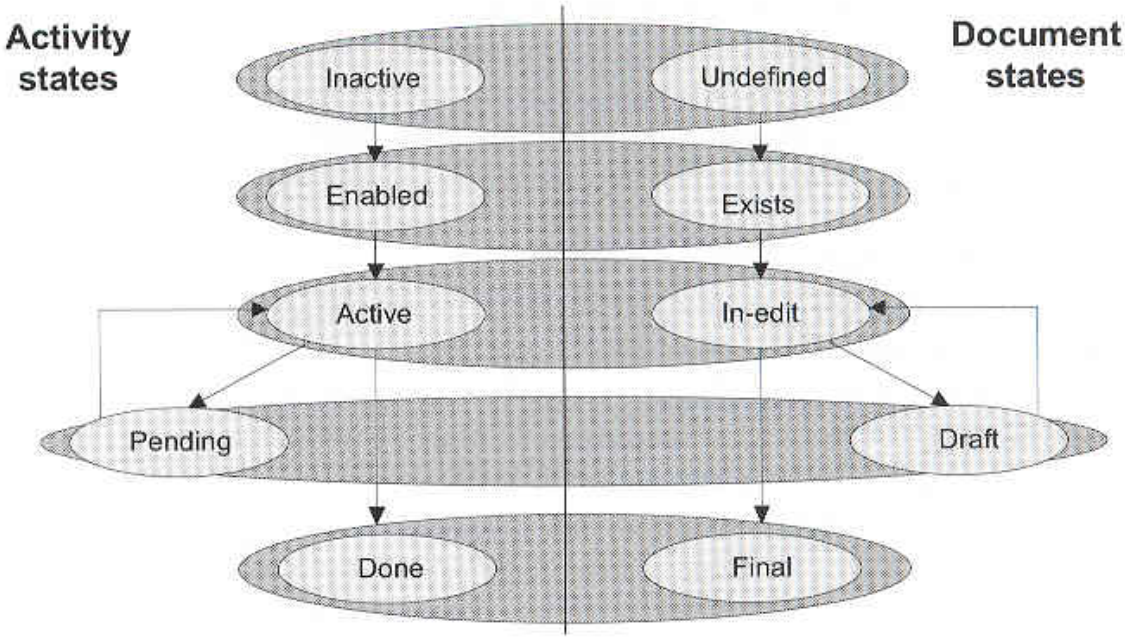

Figure 8.13 Coupling activity states with document states. According to Glance *et al.* (1996).

Conditions of success

- will of participation, training, well-designed CSCW system infra

  * CSCW : computer supported cooperative works

- equation of success for groupware is

  Groupware success = Technology + Culture + Economics + Politics

Groupware in action

- when a groupware is installed, the essential role is the definition of the plan

  : activity state & document states are needed

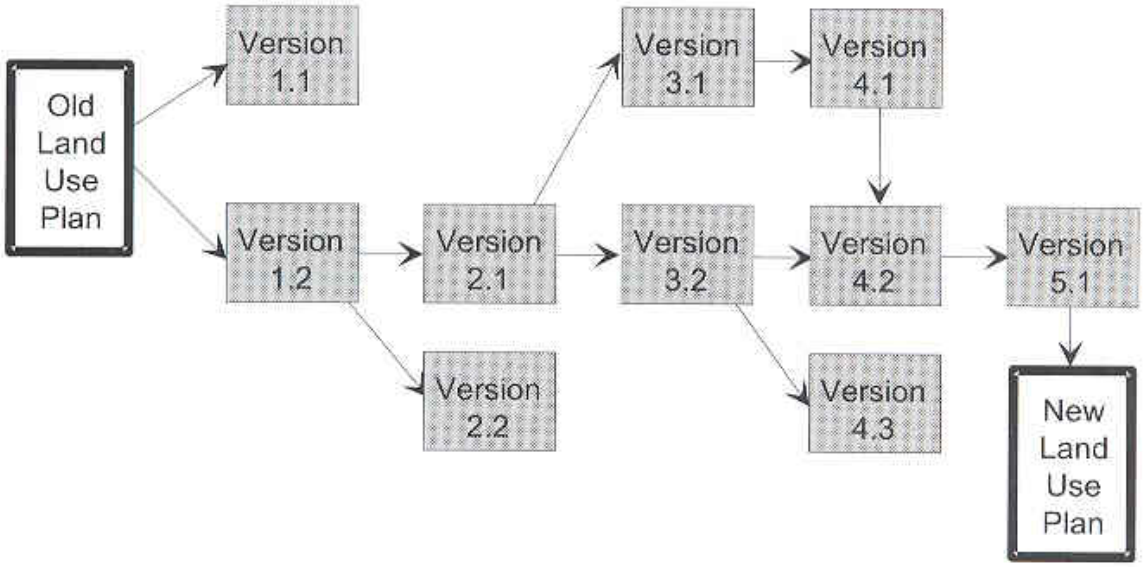

Figure 8.14 During the planning process, the Land Use Plan evolves through several versions before it reaches the final state, that is the approved new Land Use Plan.

Reprinted from *Computers, Environment and Urban Systems* 22 4, R. Laurini 'Groupware for Urban Planning: An Introduction' 317–33 © 1998, with permission from Elsevier Science.

- plan evolves from version to version

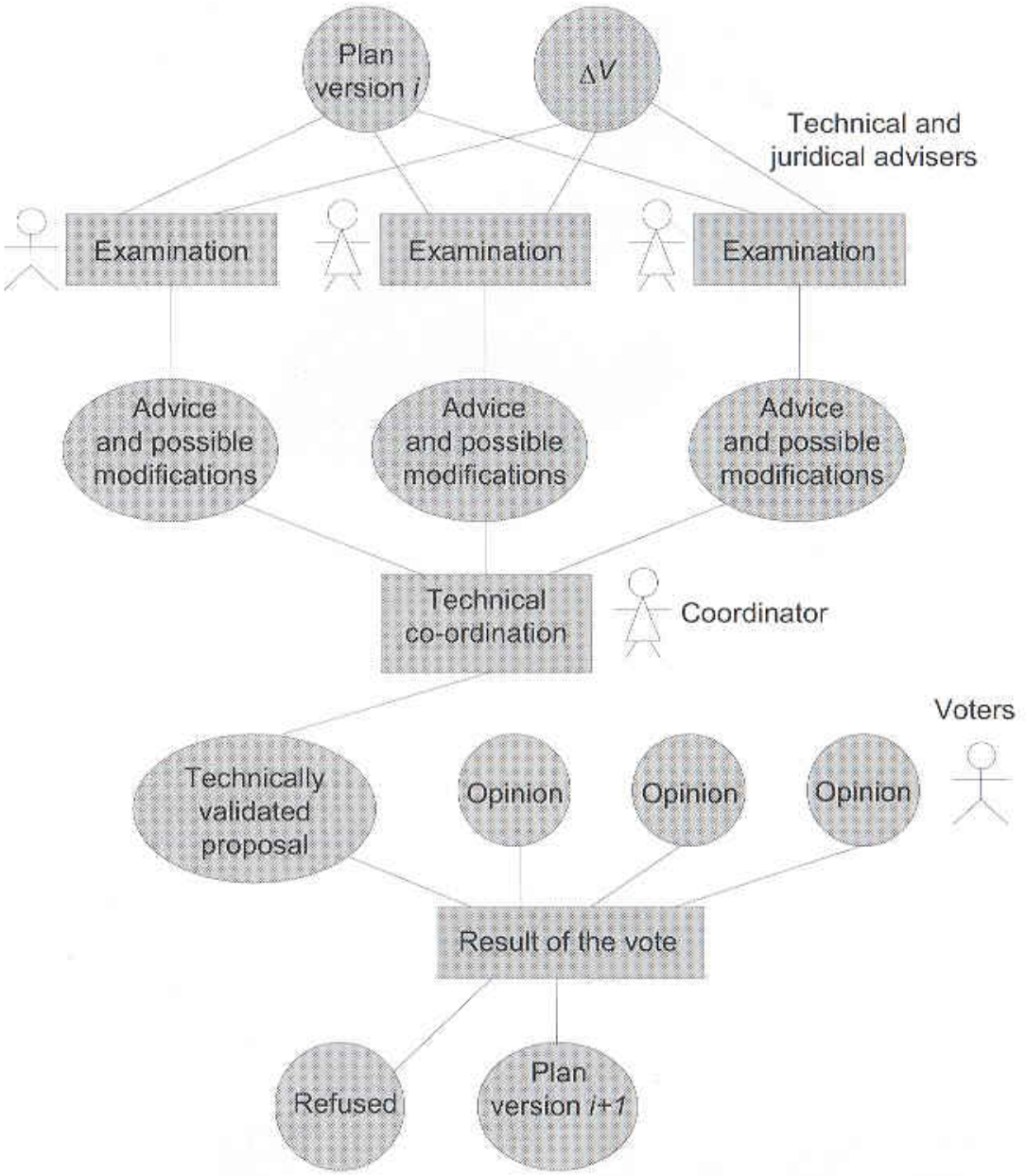

Figure 8.15 Each modification of the version (ΔV) needs to be examined by technical advisers in order to verify the technical and juridical aspects.
Reprinted from *Computers, Environment and Urban Systems* 22 4, R. Laurini 'Groupware for Urban Planning: An Introduction' 317–33 © 1998, with permission from Elsevier Science.

- when a modification of a version is suggested (ΔV), the concerned advisors will examine it

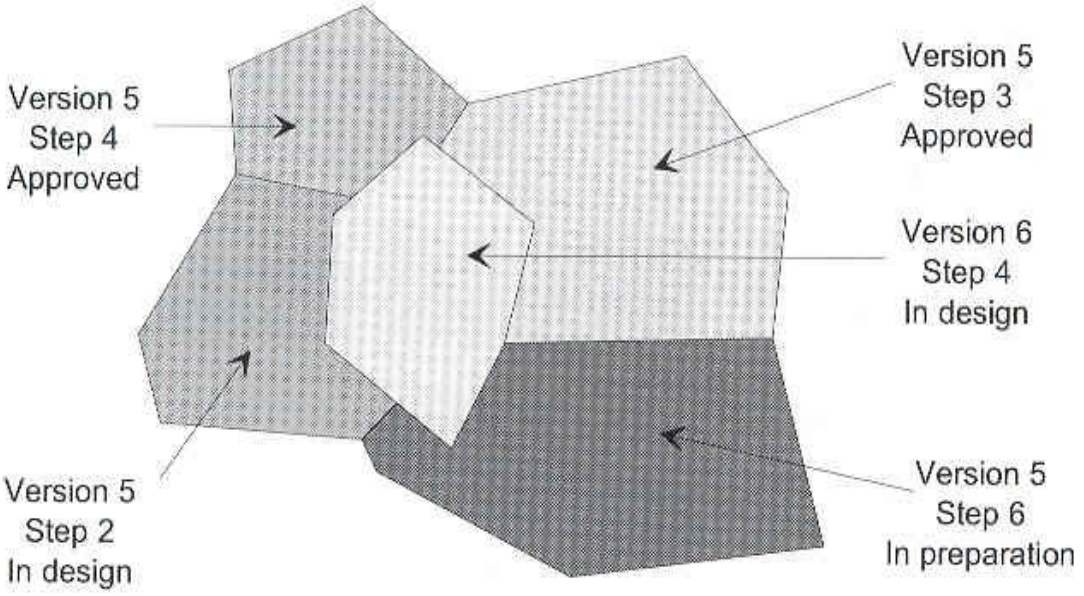

Figure 8.16 Each zone of the city can be at different states of approval. At the end of the process, for all zones, the planning proposals will be duly accepted. Reprinted from *Computers, Environment and Urban Systems* 22 4, R. Laurini 'Groupware for Urban Planning: An Introduction' 317–33 © 1998, with permission from Elsevier Science.

- each zone of the city can be at different states of approval

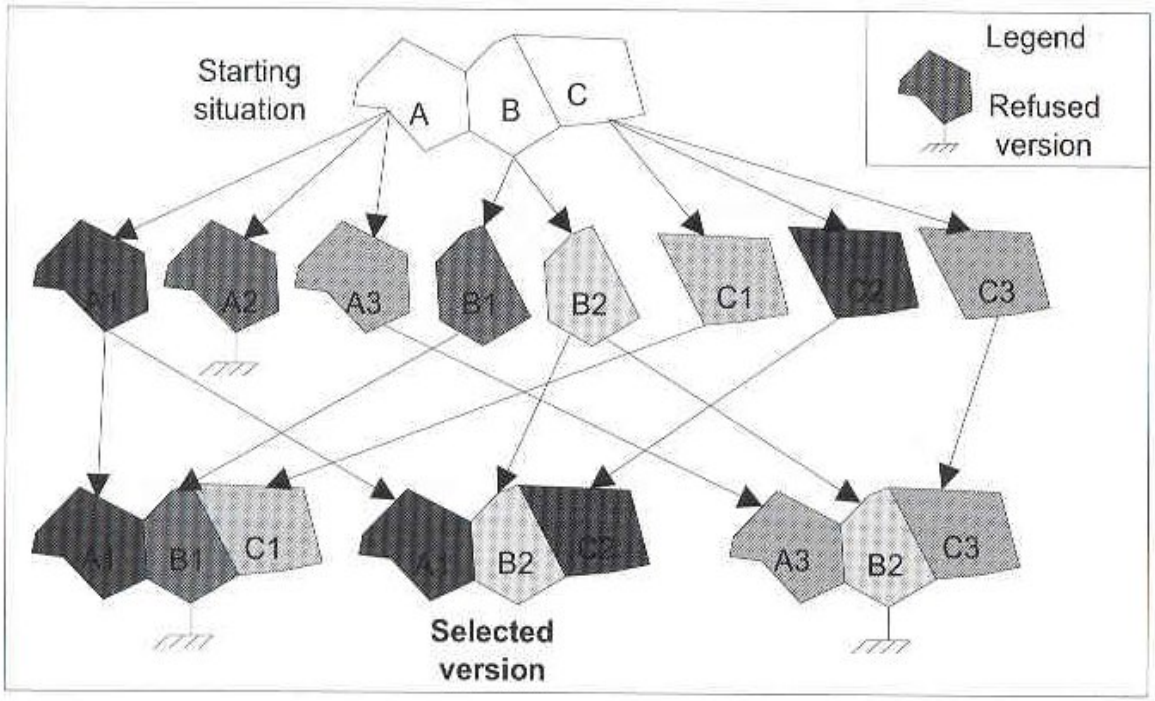

Figure 8.17 Graph of decomposition, and recomposition of versions. Reprinted from *Computers, Environment and Urban Systems* 22 4, R. Laurini 'Groupware for Urban Planning: An Introduction' 317–33 © 1998, with permission from Elsevier Science.

- sometimes a zone must be split into several smaller zones

  : different plans can be designed for these small zones

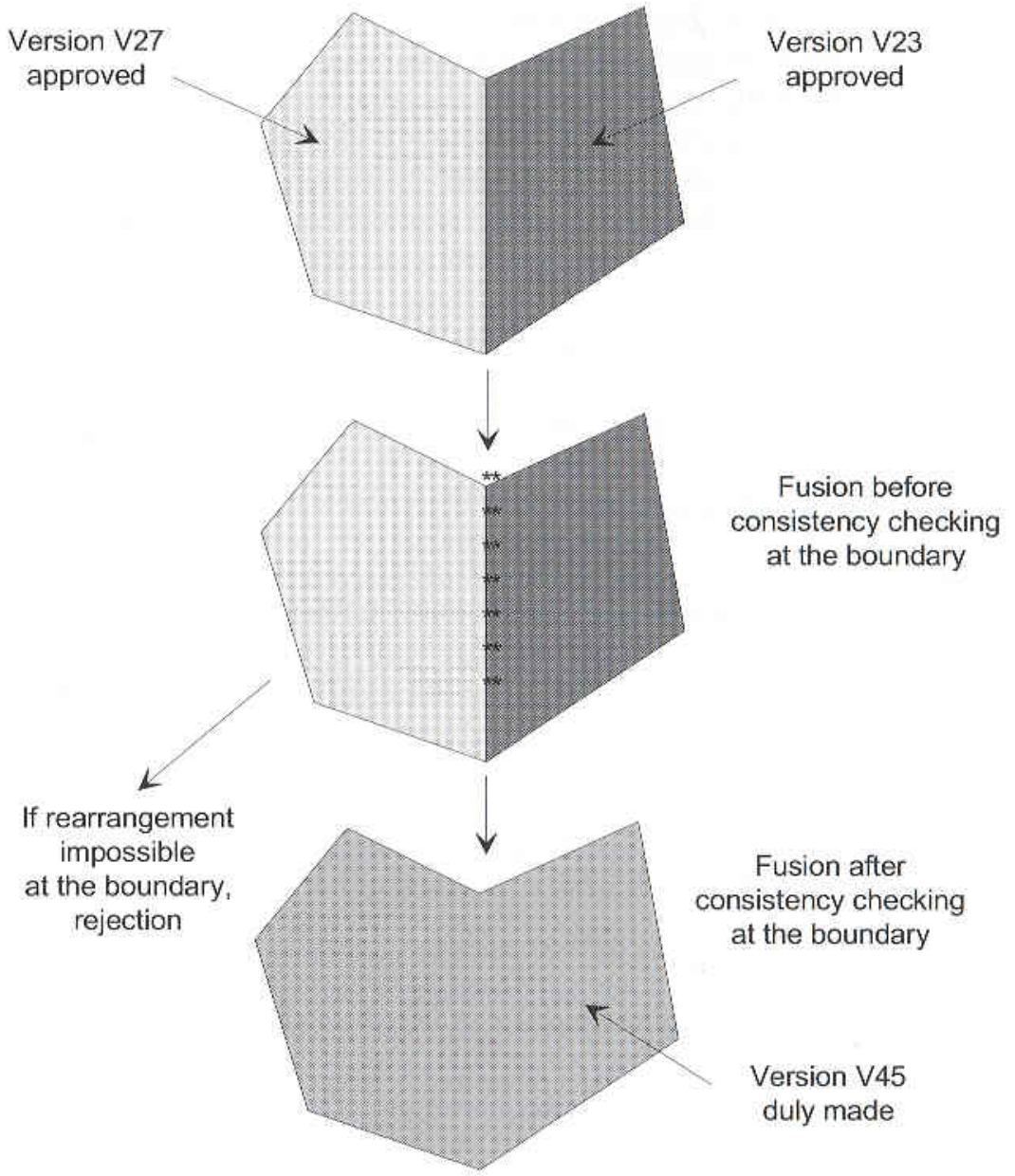

Figure 8.18 Amalgamation of two neighbouring zone versions into a single zone version, once consistency checking at the boundary is performed. Reprinted from *Computers, Environment and Urban Systems* 22 4, R. Laurini 'Groupware for Urban Planning: An Introduction' 317–33 © 1998, with permission from Elsevier Science.

- to get a final version, all versions will be amalgamated after several consistency tests

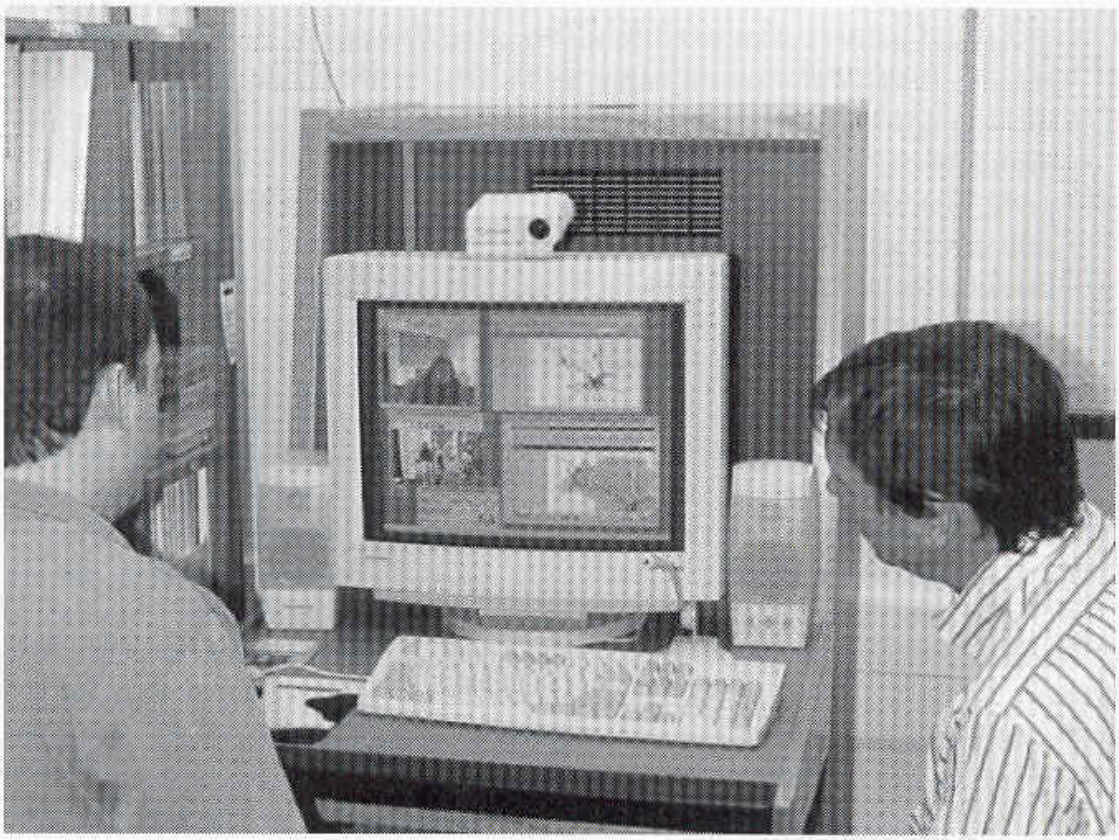

Figure 8.19 The video-conferencing system in South Carolina (Cowen *et al.* 1998). Published with permission.

- example of collaborative GIS based on video-conferencing

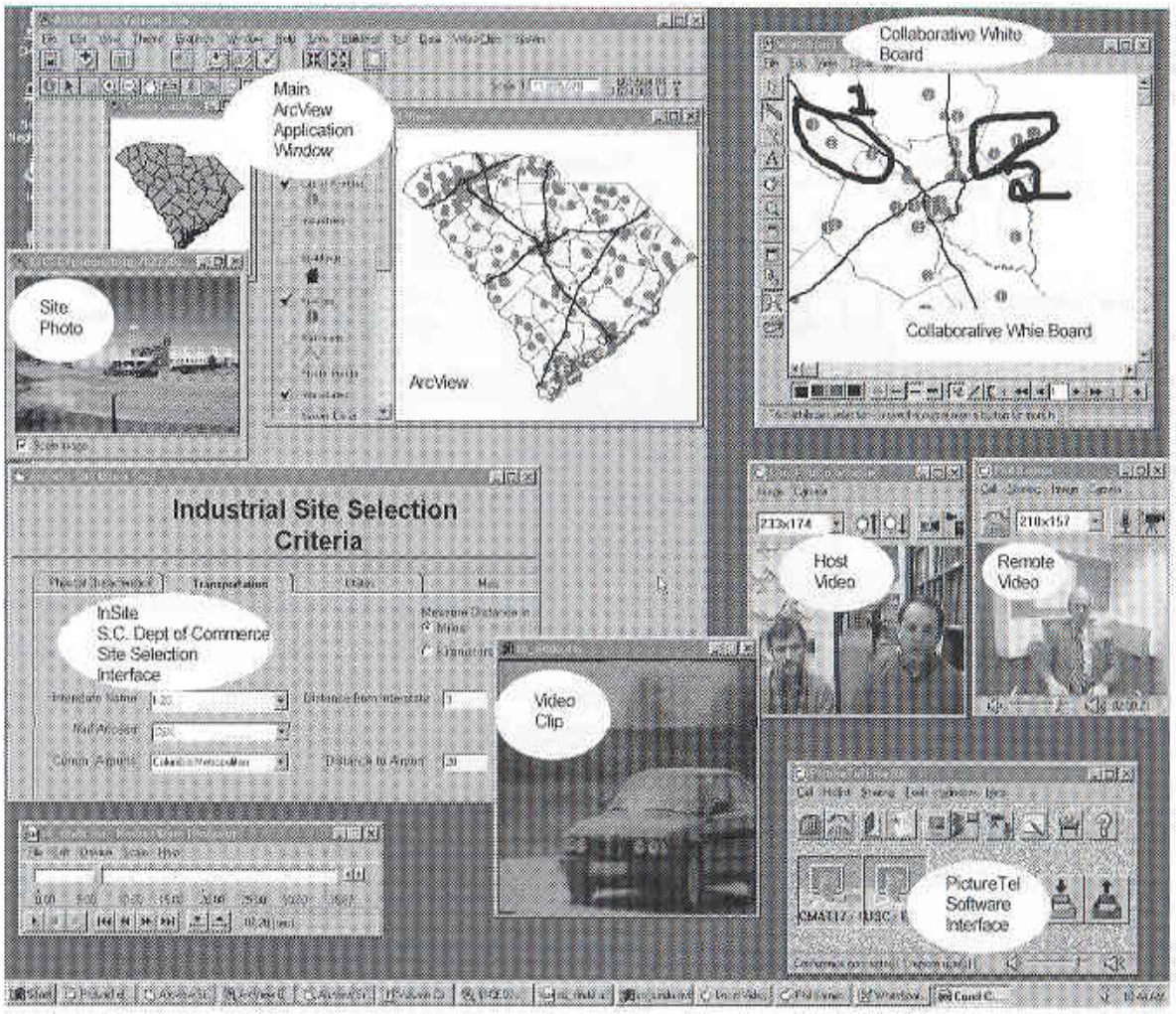

Figure 8.20 Example of the interface for industrial site selection based on video-conferencing based groupware system (Cowen *et al.* 1998). Published with permission.

- example of collaborative GIS based on video-conferencing

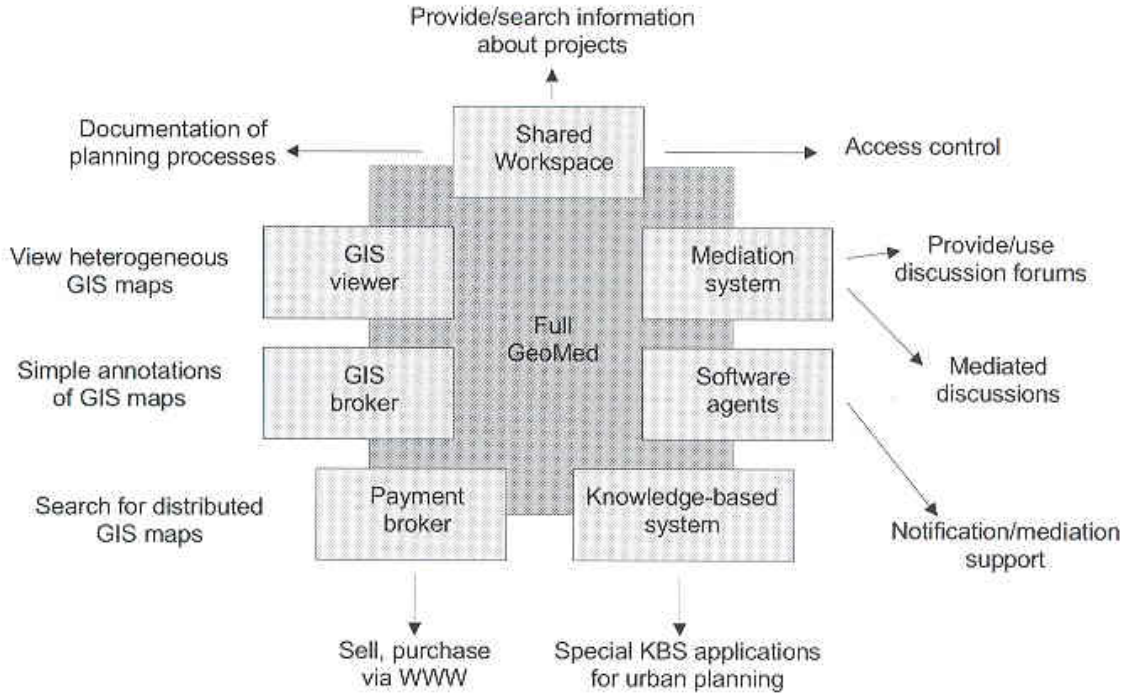

Figure 8.21 Structure of GeoMed. From Schmidt-Beltz *et al.* (1998).

- GeoMed

  internet based support for spatial planning & decision making

  integrate support for cooperation, negotiation, mapping

  a wide range of tasks of various user groups can be supported