Video Conferencing and Application Sharing in Public Administration – Between Organisational and Personal Awareness

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Awareness is…

- ...a quality that is provided by a technical system to a social system, e.g.
  - the awareness of tools and objects that are available to a user in a video conference,
  - the working conditions of the users in a video conference,
  - the social relationship of the users.

Awareness describes…

- ...the extent of cognitive consciousness employees should have of the work processes they are involved in

...and...

- ...how this consciousness can be supported.
Awareness (2)

Sender-receiver-oriented framework to assign aspects of awareness consisting of six items (according to Luczak & Wolf):

- the person who provides awareness information,
- the specification and collection of awareness information,
- the selection and distribution of awareness information,
- the presentation of awareness information,
- the person who receives and perceives awareness information,
- the context of communication processes describing the social relationships the interacting persons have with each other.
Additional contexts of awareness found in the TEAMS project:

- **Organisational Awareness**…
  …means the context of the involved organisations and the awareness information that is provided to the organisation,
  ☐ what the organisation learns about the other organisation.

- **Functional Awareness**…
  …means the context of the involved functions (roles, offices) and the awareness information that is provided to the functions,
  ☐ what the functions (roles, offices) learn about the functions in the other organisation.

- **Personal Awareness**…
  …means awareness about personal activities and their effects on other persons,
  ☐ what the employee learns about other individuals and the effect of his activities on them.
The Mission of TEAMS (1)

Report about a project (finished in April 2000) of

- the District Government in Düsseldorf, State of North Rhine-Westphalia,
- its Department of Cadastral Surveying,

in cooperation

- with Municipal Cadastral Surveying Offices in
  - Mülheim,
  - Oberhausen and
  - Neuss District,

accompanied by the

- Institute for Work and Technology (IAT).

TEAMS is an acronym standing for

- “Telekooperation unter Einsatz von Application Sharing und Multimedialen Systemen in der Verwaltung”

- in English: Telecooperation Using Application Sharing and Multimedia Systems in Public Administration
The Organisations of TEAMS

Institute for Work and Technology
Gelsenkirchen

Cadastral Surveying Office
Neuss District

Municipal Cadastral Surveying Office
Oberhausen

Department 33
of Cadastral Surveying
District Government Düsseldorf

Mühlheim an der Ruhr
Stadt am Fluss

Municipal Cadastral Surveying Office
Mühlheim

HAAMAHA 2000
The Mission of TEAMS (2)

It was the aim of TEAMS

- to introduce *video conferencing* and *application sharing* (VC/AS) as tools for co-operation,
- to report about benefits and improvements,
- to point out hindrances and obstacles and
- to develop concepts for efficient and effective use of VC/AS in additional branches of public administration.

The focus of TEAMS is

- on the changes in the organisation of work,
- on the renewal of organisational processes,
- on the creation of new services for citizens,
- and not only on the introduction of new technology.
The Mission of TEAMS (3)

Aim for District Government and Councils

☐ to support the process of creating local digital maps and a general digital map of Germany

Superior Questions

☐ What are the benefits of “new” technologies like VC/AS in general for public administration?

☐ Which opportunities arise for the citizens from the combination of digital maps and new technologies?

Scientific Aims of TEAMS

☐ to collect information about the use of video conferencing and application sharing systems (VC/AS systems) under conditions of real life

☐ to watch the impacts on the organisational structures and processes of the participating administrations.
Researchers and Roles

The researchers played two different roles in TEAMS

☑ Role as researchers:
  ➢ accompanying the process,
  ➢ observing the employees doing their work with the VC/AS systems,
  ➢ making interviews with the employees and their superiors.

☑ Role as “technology consultants”:
  ➢ helping the users in the municipal offices with the systems’ configurations,
  ➢ providing and distributing updates and patches,
  ➢ solving typical PC problems.
Ascertaining and Observing (1)

☑ Questionnaires
  ☐ a short “everyday form” – to be filled in
    ➢ by the participants of the conferences of each session
  ☐ a detailed questionnaire – to ascertain information about
    ➢ the participants,
    ➢ the participants’ qualifications,
    ➢ the participants’ tasks,
    ➢ use of the VC/AS systems,
    ➢ opinions about VC/AS systems.

☐ The detailed questionnaire was used twice:
  ➢ in the initial phase of system use
  ➢ again at the end of the project.
Ascertainling and Observing (2)

- The “normal” way of observing the employees during visitations at the offices, watching sessions at different locations
- Interviews at all locations with employees and their superiors

- Video conferencing equipment used to stay in contact with employees
- An additional VC/AS system at the IAT to observe the ways employees behave during sessions while
  - technical support is provided
  - software (patches, updates etc.) is distributed
VC/AS is nothing brand new, ...

- ...but VC/AS is new to most of Germany’s offices and shop floors.
  - In 1995, less than three percent of the German employees had access to VC/AS systems.

- Public administrations are regarded as to be “conservative” concerning the use of innovative communication technology.
  - But how to be innovative with an annual budget of less than 25,000 €...?
  - Communication technology usually means telephones and fax machines:
    ➢ one fax machine per department – or less...
    ➢ telephones in all offices, but long distance calls have to be ordered from the switchboard operator...
The State of Cadastral Surveying in Public Administrations

- Cadastral surveying offices have access to Unix workstations and PCs, but they are...
  - ...up to 15 years old.
  - ...dedicated to special tasks resp. services (databases, plot and print servers etc.).

- Most of the official maps are analogue maps
  - painted by hand e.g. on lithography plates or special paper reinforced with tin foil
  - any change in reality (e.g. new roads or buildings) means to correct the referring plate with razor blades and ink.

- Years ago, Germany started a long-term programme to register land parcels in digital maps (automated legal parcel maps), which will not be finished before 2002.
How Geo Data are made...

- Geo data are brought together by Municipal Cadastral Surveying Offices:
  - Surveying of land parcels feeds data bases with billions of vectors: sides of buildings, plots, streets, railway lines, sewers...
  - A special visualisation software is used to generate maps of varying scales out of the data bases.
- When a land parcel is finished, the Municipal Cadastral Surveying Office has to contact the District Government.
- The Department of Cadastral Surveying at the District Government proves the data sets to be formally and legally correct.
- The usual way means...
  - to send tapes with the data sets by mail to the District Government,
  - to have a couple of telephone calls about detected mistakes and open questions,
  - to travel to Düsseldorf – bringing all printed maps and updated tapes to the District Government and discussing each item,
  - after fixing what has been complained the tapes are sent again to the District Government...
At the Municipal Cadastral Surveying Office – Feeding the Databases
Printed Version of a Digital Map: A Cadastral Map Composed of Cadastral Plans (Scale 1:5,000)
Changes made by TEAMS

- VC/AS is used to shorten the longish processes of geo data proving

- Selected Municipal Cadastral Surveying Offices and the Department of Cadastral Surveying at the District Government were equipped with a PC including
  - a video camera,
  - an audio system,
  - Intel’s ProShare,
  - Hummingbird’s Exceed.

- The geo data visualisation software is shared between Municipal Office and District Government
  - both sides see the same geo data at the same time
  - both sides can act on the same geo data at the same time
  - questions about the surveying and registering of objects in the data bases can be discussed.
Application Sharing and Video Conferencing – Discussing Problems of Land Registration
Findings and Results (1)

- VC/AS do work with cadastral surveying – beyond the expectations of the project.
- VC/AS is used to improve productivity, especially when solving problems and making decisions.
- Most of the problem solving processes in cadastral surveying require a visual impression of geo data.
- Average time of problem solving and decision making: half an hour
  - …for what has taken days before and what has delayed other processes for weeks is now finished right at the working place...

- Quality of service has increased
  - The Department of Cadastral Surveying at the District Government is able to give better and more adequate support to the Municipal Cadastral Surveying Offices.
  - Problems are understood easier, solutions are found faster, and information is provided when and where it is needed.

- Quality is “produced”, not “proven” – better data are produced, less errors are made, less proving has to be done.
The employees have widened the spectrum of tasks which are done by using VC/AS systems: they...

- exchange applications for checking geo data,
- discuss project organisation questions,
- decide on the need of field checks,
- provide information about new legal standards and their adoption,
- use VC/AS for all tasks which require shared use of software and visualisation of geo data.

Communication has improved and become more intense:

- VC/AS systems are used when the reasons for communication require computer applications.
- Relationship to “local” colleagues did not deteriorate.
- Telephones are still used and employees visit each other, e.g. to discuss long-term strategies or to provide context information.
- The employees emphasise that the relationship to their “remote” colleagues would not become that familiar and personal without VC/AS systems.
Findings and Results (3)

The use of VC/AS systems fosters the development of...

- **Organisational Awareness**...
  - The department of cadastral surveying at the district government gets a qualified, time and task narrow impression of the current state of the municipal cadastral surveying offices.

- **Functional Awareness**...
  - A functioning of the department learns about the state of the referring functioning in the municipal offices.

- **Personal Awareness**...
  - Individuals are provided with awareness information about what has been understood or not, about what can be done by somebody or cannot be done.
At the District Government…

- At the District Government employees now have a more challenging job (direct support, problem solving, preparation and presentation of general solutions).

- VC/AS systems had some organisational impacts for the department of cadastral surveying at the district administration

  - Most of the decisions now are made during the VC/AS sessions, not during the meetings of the department
    - less time is spent in meetings,
    - queue of pending decisions is remarkably shorter,
    - head of the department has much more time for his original tasks
    - members of the department are working on the department’s internal processes.

  - VC/AS has initiated a “little” process of organisational renewal within the Department of Cadastral Surveying at the District Government.
Increase your awareness about TEAMS
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