

Decentralizing the Control Room: Mobile Work and Institutional Order

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Overview of presentation

- Motivation
- Organization and resources
- How the technology
- How we did our study
- What we found in the field
- Conclusions
- Design implications

What's so exciting with this study?

- Shift in the design of air traffic coordination
- Mobile collaborative work
- Opportunity to evaluate two CSCW systems in use - a new system introduced alongside the old system

Shift in the design of air traffic control

- Air traffic constantly increasing - Traffic control becomes a problem
- New concept for air traffic coordination introduced to increase collaboration and situational awareness among pilots and ground personnel
- New system to meet these ideas was designed for snow clearance personnel

Mobile collaborative work at Arlanda Airport

- **Control tower** dealing with ground vehicles
- Coordination through radio speech communication
- Manual stating the way work and communication should be organized
- Display showing map with location of other vehicles – SnowCard system

Field study

- Studying mobile work and coordination from the perspective of the mobile workers
- Riding in the vehicles during snow clearance operations
- Two people in the field at the same time – different perspectives
- Recordings of radio talk during these operations

Visual support for situational awareness

- Little use of SnowCard
- "I can tell where the others are from looking out the windshield"
- The display did not add anything to the view from windshield and rear mirrors
- Two competing visuals – SnowCard display and view from the windshields

Decision-making on the ground

- Sweepers made decisions based on visual local information
- Actions to be checked with the tower via radio – delayed work
- Example of sweeper crossing runway without permission
- Breach against regulations treated as unproblematic in communication between sweeper and tower

Making decisions on the ground

SWEEPER: Tower the sweeping group at Yan::kee
(0.5) can we go Zulu south via Zulu Kilo? #
(17.0)

391: Tower three nine one #

TOWER: Eh: three (.) nine (.) one tower #

((Conversation between tower and 391))

SWEEPER: Tower sweeping group (.) we went Zulu south
via the entrance Zulu Kilo (.) just so you know #

TOWER: The sweeping group is driving Zulu south #

SWEEPER: + eeping group #

Conclusions

- The tower and the snow sweepers occupy different viewpoints in the organization
- Coordination is achieved through negotiations between different localities
- In this coordination work, talk is important

Design implications

- SnowCard didn't add anything to the interaction - talk still the tool for coordination
- *Talk*: Combine talk with visual system, rather than considering them as competitors
- *Visual*: What type of visual information do they need? Not what they can see out from the windshield.

Questions and comments?

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