PalCom prototypes in use at Tall Ships' Race 2007 in Aarhus

In July 2007 the EU research project PalCom (www.ist-palcom.org) participated in the planning and execution of Tall Ships' Race in collaboration with Aarhus Police, Aarhus Fire Brigade and the Trauma Centre. A number of PalCom prototypes supporting the overview in connection with "Major Incidents" were put to their largest test so far in this huge real-time setting.

PalCom's Major Incidents Overview prototype was used as a communication, collaboration, and coordination tool for the planning and execution of the first Tall Ships' Race in Aarhus.
The event was expected to draw up to one million visitors to Aarhus Harbour. Aarhus Fire Brigade and East Jutland Police organized the safety-related part of the event. They asked PalCom to provide some of their prototypes – which are developed in collaboration with the above-mentioned organizations – for the purpose of supporting the overview, coordination and communication.

Prototypes provide overview
PalCom took part in the planning of the Tall Ships' Race in order to improve the prototypes for the challenges of this event. During the race, the prototypes were centrally placed on e.g. the command station in "Toldboden" at the harbour, from where the overall coordination took place. They were distributed among key personnel on the harbour. The prototypes gave an overview of the traffic conditions, distribution of visitors, the ships' locations and background information, the location of key personnel, location and content of tents and stalls, etc. In short, they provided the overview needed for some exiting days at Aarhus Harbour.

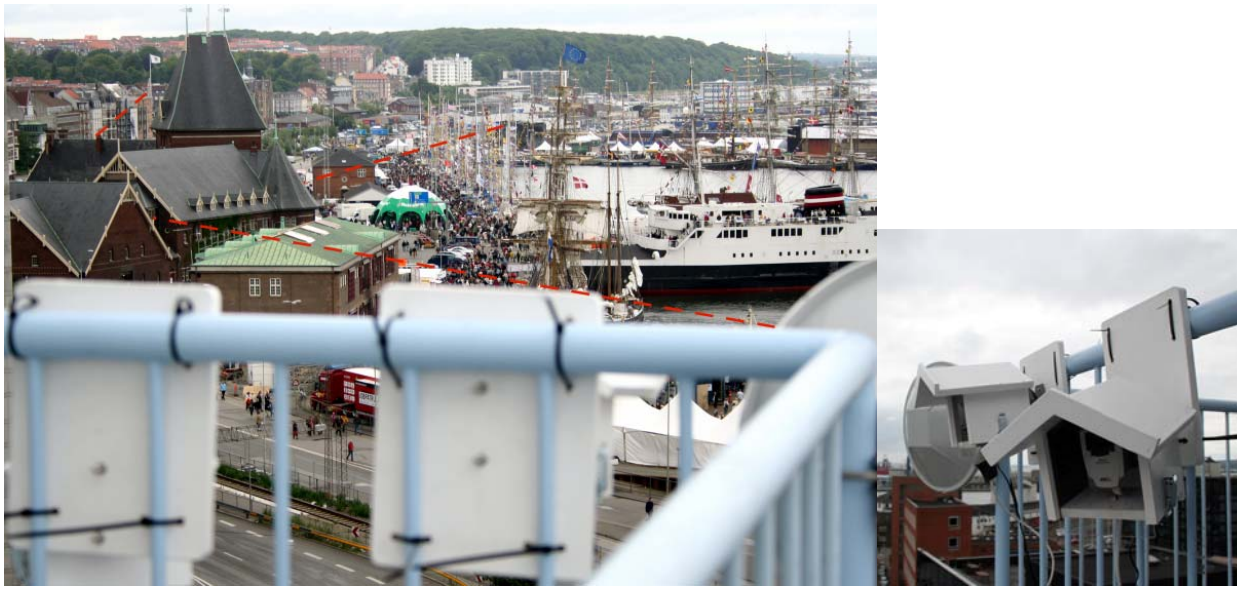
The technological activities included:

- In the command station (a ca 80 m2 room on the first floor of a central building), PalCom installed a large interactive screen (smartboard), where a Topos 3D client was running. That client was used by staff at the command station.
- PalCom created a 3D workspace of the harbour, including stationary buildings, ad-hoc tents and stalls, ships, emergency boats, and much more[1].
- Experiments with Topos clients running on tablet PCs (and the various Topos clients networked and collaborating). The clients were running the same 3D workspace as the command station, enabling collaboration and the sharing of materials between the command station and the people on site.
- PalCom mounted 6 stationary video cameras at selected, potentially critical areas. Such areas included traffic lights that might easily turn into a traffic bottleneck, a remotely controlled (pan, tilt, zoom) network high resolution dome camera mounted on the large concert stage towards the audience (ca 25.000), cameras around a tent used for parties for about 8.000 people, and cameras covering the main road within the area. The live video feeds from cameras were selected and controlled by the users from the command station and shown in the Topos workspace in the proper place and orientation.

[1] thanks to Cowi, Aarhus fire brigade, Aarhus municipality, Aarhus harbour, VisitAarhus and 'festivalkontoret' for providing data

- Provision to key personnel of GPS enabled Nokia N95 phones[2], allowing us to track them when they were moving around on site and enabling them to take pictures of critical issues to be transferred to the shared workspaces in the proper positions.
- Tracking of all boats in the harbour showing name and location using AIS (Automatic Identification System)

- The small emergency boats without AIS were tracked via GPS (N95 phones) and had the ability to share their overview of the situation with staff on land.
- Between critical areas and the command station we established wireless links via directional WiFi.
- Utilization of public UMTS networks (3G) for the GPS tracking and transmission of pictures taken.



The red dotted lines indicate directional WiFi connections. The white plates in the foreground are the back of two cameras and a disk used for directional WiFi.

To participate in this great event was an important experiment and a great opportunity for PalCom and users to test the prototype.

Jakob Andersen, Fire Chief to TV2: *"It supports our overview – that means, instead of only communicating over radio, we also have this visual tool. In this way we can discuss on the basis of the same picture …*"

[2] thanks to Nokia for donating phones

Amrik Singh Chadha, Østjyllands' Police, adds; "…*as you can see with this live camera input- if a traffic situation is emerging I'm able to observe it myself. This means I can act on it now rather than wait until people start calling me….*

Erika Christensen, Head of Aarhus Trauma centre, explains why this Overview tool is important to the hospitals involved (TV2 Østjylland kl. 19.30): "*If you imagine a major incident around here, we are able to see where the patients are, how serious the accident is, how the cars became damaged, and in this way what to expect at the hospital. What is needed? We receive a copy of all this at the hospital and in this way we can see exactly what they can see down here – it is a fantastic tool*"

A great experiment

During the last three years PalCom has collaborated with emergency response personnel and organizations in the large EU research project, PalCom.
The purpose of the collaboration between emergency response and research is to find a technology that is able to support rescue operations across organizational boundaries.
"*For many years we have requested some kind of technology to support our work, enabling us much faster to move from the chaos phase to much more effective and productive work. In this aspect this system is absolutely exceptional*", as Amrik expresses it to TV2 Østjylland.

The objectives of the collaboration in the real world are to develop and test prototypes of future technologies. As the critical work of the emergency response personnel is in and about accidents, experiments with the technology in real situations are often impossible. Tall Ships' Race was therefore a unique opportunity to have an experiment lasting several days, where "Major Incidents" was changed to "Major Events".

PalCom site and contact information

For further information or download of pictures please look at PalCom's site: www.ist-palcom.org.
You are also welcome to contact Preben Holst Mogensen (preben@daimi.au.dk).