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Report EXE 06.09.03, VP-061 03-04 Sep 2014, Sundsvall Project 06.09.03: Remote and Virtual Tower

Introduction project general description:

Investigate, develop and validate operational methods that enable one ATCO to control multiple primarily low density remote towers simultaneously or in sequence from a Remote Tower Centre, RTC, position. Identify requirements adjustments/additions to associated rules and regulations.

Validation main Objectives:

The overall exercise aim is to assess the capability of the Remote Tower Module, RTM, in a live operational setting. This will primarily focus on the usability and capability of the visual reproduction and various technical configurations. Validation within this exercise will also focus on establishing and defining technical requirements for the prototype and attempt to gain an initial insight into working methods for degraded mode operations.

Meeting Report:

The validation was performed as a Passive Shadow Mode simulation in Sundsvall, Sweden, using in-data produced for the Swedish RTC implementation of the airports Sundsvall, ESNN, and Örnsköldsvik, ESNO. The RTM was not the Swedish one, but the SESAR version produced by SAAB. This was the first "live" multiple simulation.

The camera house at the airport has 14 cameras. In the 1-to-1, single, the 360-view is presented on 14 screens. In the 1-to-2, multiple, 8 cameras of the 14 are used giving you a 205 degree view. This covers the arrival sector, the airport and the departure sector. You do not see anything behind you. The presentation of the 2 airports is on 12 screens, one airport 8 screens and the other 4 screens (2 cameras on each screen). You shift to 4/8 when you want the other airport highlighted. To replace the binoculars you can manoeuvre a Pan-Tilt-Zoom, PTZ, camera. This is the Basic set-up.

To increase Situational Awareness and Capacity you can add some features like radar, MET-info, additional fixed cameras, head-up presentation, automatic tracking etc.

In this simulation both Basic and Advanced exercises were done. Mainly to find out what will happen in degraded modes. How will Safety, Human Performance and Capacity be affected?

The Out The Window view, OTW, presented by the cameras is now very good. You do feel like being in a "real" tower. In the advanced version with overlays you have much information on the screens and very short head-down time. The e-strip is easy to use and enter data with a touch pen, opening windows for pre-selected values. The simulation ATCOs wanted some of the overlays to be used in their local tower windows.

The discussion on Degraded Modes was very long and deep. Many proposals for workarounds to mitigate loss of an advanced feature were put forward, all not that good for use.

One conclusion was that when Advanced mode was degraded so much that we were in Basic mode, traffic should be one moving aircraft per airport. A prerequisite for multiple airport operations was that radar shall be available – no radar single, 1-to-1 operations.



President Lars Lindgren

General Secretary Eduardo Chargas

Vice President Alexander Kirchner
Birgitta Pass



Pending on what Advanced feature that were lost, an assessment of Human Performance, Capacity and Safety was done, very serious and realistic discussions and solutions.
After each run questionnaires had to be filled in and then a debriefing discussion.

Conclusion:

The Remote Tower Project has now entered the Multiple phase. The SAAB platform is now very good and reflects a real tower interior and outlook. The visual presentation is very good and not tiring for the eyes. The CWP has an e-bay with easy handled e-strips and also the use of airport lights is done in the e-bay.

The validation was very professionally organized and performed with many questionnaires and debriefings. Much emphasis was put on degraded modes generating a lively debate on Human Performance, Capacity and Safety.

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