

## MODERNISING NORWAY'S REGIONAL AIRPORTS WITH COST-EFFICIENT, INTEGRATED TOWER SYSTEMS

Avinor AS is a state-owned company responsible for planning, developing and operating the Norwegian airport network and providing air navigation services. Among the 46 airports Avinor operates numerous regional and local facilities. Traffic may be low, but these airfields are the lifeblood of the local economy. Tower infrastructure at these smaller airports was mostly built in the late 1990s, so featured relatively old equipment.

With time, workspaces had filled up with different display and control systems (and excessive cabling), leading to usability problems. Since systems were not standardised across airfields, maintenance costs were high and Avinor had to retrain staff every time they moved to a new tower. Another issue was the low level of automation. Tower upgrades and automated systems were the obvious solution.

In April 2010, Avinor entrusted Frequentis with the integration of tower subsystems into one system for initial five regional and local airfields, with five more following after.



**“All tower subsystems were integrated into one User Interface (UI) standardised across airfields. This improved efficiency and lowered costs for maintenance and training”**

### CUSTOMER PROFILE

Avinor AS  
[www.avinor.com](http://www.avinor.com)

### BUSINESS SITUATION

Many airports run by Norwegian ANSP Avinor are small, local facilities valued for their role in the regional economy. However, ageing tower equipment, disparate system setups and little automation had led to inefficiencies and higher maintenance and training costs. Avinor needed a standardised integrated control and monitoring system (ICAMS) to address these problems.

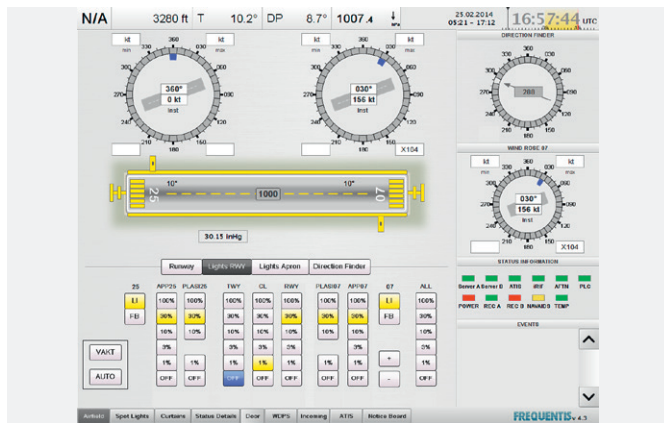
### SOLUTIONS

The solution uses smartTOOLS modules to automate airfield data retrieval, processing and distribution, and integrate control subsystems within a single User Interface (UI). Frequentis worked with Avinor controllers to develop and install a modern ICAMS solution at twelve airfields.

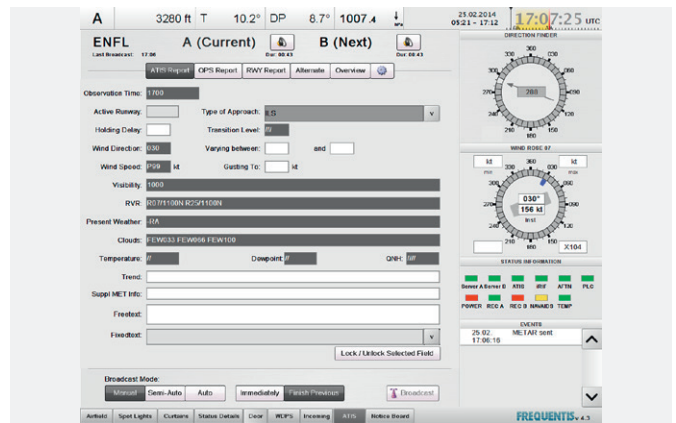
### IMPACT

- **Improved efficiency and safety:** through increased automation and usability. Up-to-date information is available even when the airport is unmanned, which is important for emergency flight safety.
- **Reduced costs:** a standard solution simplifies maintenance, reduces training requirements and makes it easier to move staff between sites.
- **Localisation and ease of use:** although standardised, the system also supports individual configuration to each site's needs. A single UI simplifies controller tasks and eases workloads.
- **Investment security:** a scalable and modular approach allows Avinor to easily add features, upgrades and working positions.

# THREE KEYWORDS FOR MODERN TOWERS: AUTOMATION, INTEGRATION, HARMONISATION



smartLICOS (airfield lights)



smartATIS (ATIS report)

## COOPERATIVE DESIGN FOR A CONTROLLER-FRIENDLY SOLUTION

The key task was to define the all-important standard UI template. Frequentis experts joined Avinor controllers at a three-day workshop in Oslo to jointly scope out system needs and UI design. Controllers also provided feedback throughout the subsequent development process. The close cooperation continued through the deployment phase. Avinor provided the required technical infrastructure, allowing Frequentis to install systems quickly and efficiently.

**“A joint group of experts from Avinor and Frequentis teamed up to perfectly fit the tools for Avinors needs.”**

### smartTOOLS FEATURES

Main features of the smartTOOLS solution installed at Stokmarknes, Vardø, Røst, Honningsvåg, Rørvik, Vadsø and Sogndal sites. One display providing:

- MET Info display and calculations (smartMET)
- Navaid control and monitoring (smartNAV)
- Airfield lights and equipment management (smartLICOS)
- Control of tower cabin lights and sun shades (smartTEC)
- Display and control of direction finders

Extended smartTOOLS solution at Asker (mobile tower), Røros, Brønnøysund, Molde and Florø sites.

#### All main features plus:

- Automated generation and distribution of met reports (smartWDPS)
- Fully-automated ATIS broadcasting (smartATIS)
- Mobile tower

## FLEXIBLE ROLL-OUT FOR SAFETY AND EFFICIENCY

Within the harmonised system, Frequentis built in enough flexibility to allow configuration to local conditions, for example to support accurate graphical runway displays or account for unique airfield lighting arrangements. Avinor can modify each site setup themselves using a configuration tool. Avinor and Frequentis can also upgrade and maintain systems remotely to decrease lifecycle costs. To accelerate the rollout, designated staff at each airfield filled out a standard questionnaire about the local integration environment, particularly the available sensor systems. This allowed Frequentis to ensure each installed system was compatible with all local requirements. After an initial design and integration phase, early sites were deployed in parallel, with subsequent airfield implementations rolled out one-by-one on a swift, bimonthly basis. Avinor are pleased with the efficiency and cost improvements, which are now fully automated, ensuring reliable data 24/7 independent of staff working hours. Such is the success of the initial implementations, Avinor has added Sogndal and Vadsø airfields to the project, bringing the total to twelve sites. ‘Working with Avinor is a classic example of how a close partnership produces a solution that benefits safety, efficiency and budgets while also making controller life easier’, says Maria Schwarzenauer, project manager at Frequentis.

### FREQUENTIS HEADQUARTERS

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