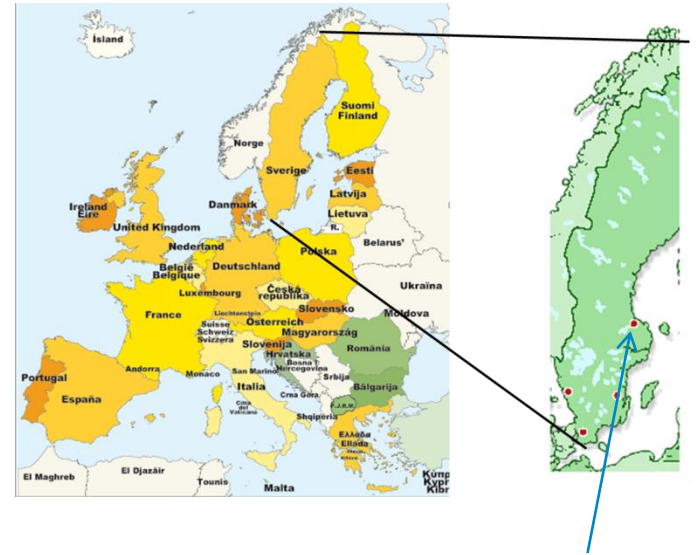


WIRELESS IN NPP

Current situation and Future expectations for
wireless in NPP

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FORSMARKS KRAFTGRUPP AB



Forsmark NPP

FORSMARKS KRAFTGRUPP AB

- 3 nuclear power units, all boiling water reactors
 - BWR, ASEA ATOM design
 - 4 safety trains (A-D)
 - F1: 1980, 1000 MW, F2: 1981, 1130 MW, F3: 1985 1170 MW
 - Still a lot of analogue I&C from startup
- Produces approximately 24 TWh of electrical energy per year
 - 15-20 % market share in Sweden (second largest nuclear site in Sweden)
- Approx. 1200 employees plus approximately 500 full time consultants

CURRENT USE TODAY

- Limited use of wireless today
- Communication – DECT, Tetra
- Wireless (radio) control for cranes/traverse (e.g. refueling floors, turbine hall, etc.)
- Card readers for access system (RFID), e.g. access to refueling floors
- Some use in Physical Protection System
- Internet access by WiFi in administration areas



CHALLENGES WITH WIRELESS

- Cyber security issues
- EMC concerns, mostly regarding existing equipment that was installed prior to most EMC standards
- Not optimal building layout for wireless
 - Thick concrete walls, large amount of rooms, not that much equipment in each room
- Modern equipment sensitive to radiation
- Use of wireless would require an infrastructure, a good business case would be a prerequisite for such a investment



POSSIBLE FUTURE APPLICATIONS

- No plans for (additional) wireless applications today
- Perhaps use existing wired infrastructure to create a (temporary) wireless access point in a room to move around with e.g. wireless cameras, measurements Equipment Status Data could perhaps be collected by wireless
- Temporary measurements, e.g. during outage etc
- Measurements with needs/use for flexibility (location/duration/etc)
- Some Radiation Measurement Systems:
 - Measurements in refueling floors during outage/fuel handling
 - Tele dosimetry for certain work tasks

QUESTIONS

- Thanks for your attention!
- Any question?

