

## **Tutorial on "Power networks for communication engineers (P4C)".**

The goal of the P4C tutorial is to explain how the power network works, and especially highlight the smart grid challenges which are faced today.

### **Background and content**

Environmental concerns and various benefits of small on site generation have resulted in significant penetration of dispersed generation in many distribution systems. Such a system demands for a much more intelligent grid structure (Smart-grid) and results in various operational problems like balancing, stability and reliability problems in the network together with power quality. In addition, various aspects of islanded operation of distribution systems with dispersed generation are also issues to consider.

Following topics are covered in the tutorial:

- The energy demand and supply of power
- The nature of the dispersed generation (Wind, Photovoltaic, others)
- Basic operation and protection of the grid (classical, dispersed)
- Power quality issues
- Grid reconnection requirements
- Synchronization and island detection
- Control and operation of dispersed generation grid connected and islanded scenario
- Communication demands now and in the future
- Future trends, micro-grid & smart grid

### **Who should attend**

Especially communication engineers who works on the power issues that arise in a smart grid context, and hence lead to challenges/needs for communication networks.