## Standards Associated with Power Systems Dynamics

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### Importance for the future grid
- The need for fundamental rethinking of both standards which should be met at the system level as well as of standards which need to be met by different system components as they connect to the grid.  
- A more formal and quantifiable approach to integrating sensing, control and communications is required in order to utilize potential of these technologies in managing uncertainties caused by unconventional resources.

### Principal issues

#### Objectives of Dynamic Standards
- **Problem Posing**
  How to design specifications and protocols for enabling more flexible management of diverse energy resources without endangering system stability?
  
  - **The Role of Protection, Control and Communications in Ensuring System Stability**
  - **Component versus System Stability Criteria**
  - **Reliance on Real-Time Information and Communications**
  - **Robustness of System Stability with respect to Communications and Control Failures**

### Suggested paths

#### Research:
- Instead of deciding a priori on the worst-case scenario and then tuning controllers to ensure no stability problems during such events, dynamic standards need to be established so that a given system for given disturbance specifications (continuous and topological changes) has predictable dynamic response.

#### Industry-academia collaborations:
- Revisit today’s dynamics standards and requirements. Prepare a short summary.  
- Identify possible problems with these.  
- Discuss how ensuring stability fundamentally changes with the availability of sensing, fast computing, communications and synchro-phasors.  
- Jointly propose an approach to enhancing cyber design in order to ensure acceptable dynamic response in the evolving energy systems.