Research and development for smart grid innovation

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• An overview of the R&D programs in smart grid: University of Moratuwa
• Potential research projects for Sri Lanka and developing countries: Weakness and opportunities
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The importance of R&D for Sri Lankan Power Industry

- Identify the key areas to determine the future shape of smart grids
- Target oriented research to achieve the objectives
- Technology development
- Industrial development with socio-economic considerations
Statistics and Impact: Research on Smart Grids

42 Research publications in the area of Smart Grids

Academic impact: High

Economic and societal impacts: ?????????

Source: www.scopus.com
Key Projects: University of Moratuwa

• Develop a microgrid control platform for sustainable energy management in distribution Network
• Multi-agent system based micro grids for distribution network (Control of Cells using Agent based control)
• Reconfigurable architecture for Solar Photovoltaic microgrid systems
• Adaptive Protection of Microgrids Using Graph theory and Optimization algorithms
Multi-agent system based micro grids for distribution network (Control of Cells using Agent based control)

- Multi Agent System (MAS): complex task to be broken down into several smaller tasks assigned to a team of agents.
- Several MGs should be interconnected together to form the MG clusters (Cell) to satisfy the power requirements.
- Ideal topology: cluster of cells which is formed from several MGs.
Reconfigurable architecture for Solar Photovoltaic microgrid systems (Smart Inverter)
Fault Detection, Isolation and Restoration using a Multiagent-based Distribution Automation System
Potential R&D projects for Sri Lanka

• **Research Projects**
  – Study possible clusters within the distribution network to convert them as Microgrid
  – Smart Building management systems with DR

• **In house development projects**
  – Distribution T/F monitoring system
  – Smart meter with DR facilities
Conclusion: Way forward

- Main criteria for selecting R&D Projects: Economic and Social Development
  - Target oriented Research and Developments
  - Funding for the commercial development for the R&D outcomes
    - Smart metering project
    - DR implementation
    - Fault detection, isolation and restoration systems
- Creating a research hub for Smart Grid research with key parties.
Thank you…!