

Regional Integration Projects Long Term Transmission Studies

Mark Norton
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Agenda



Factors in planning the network

Regional planning potential impact

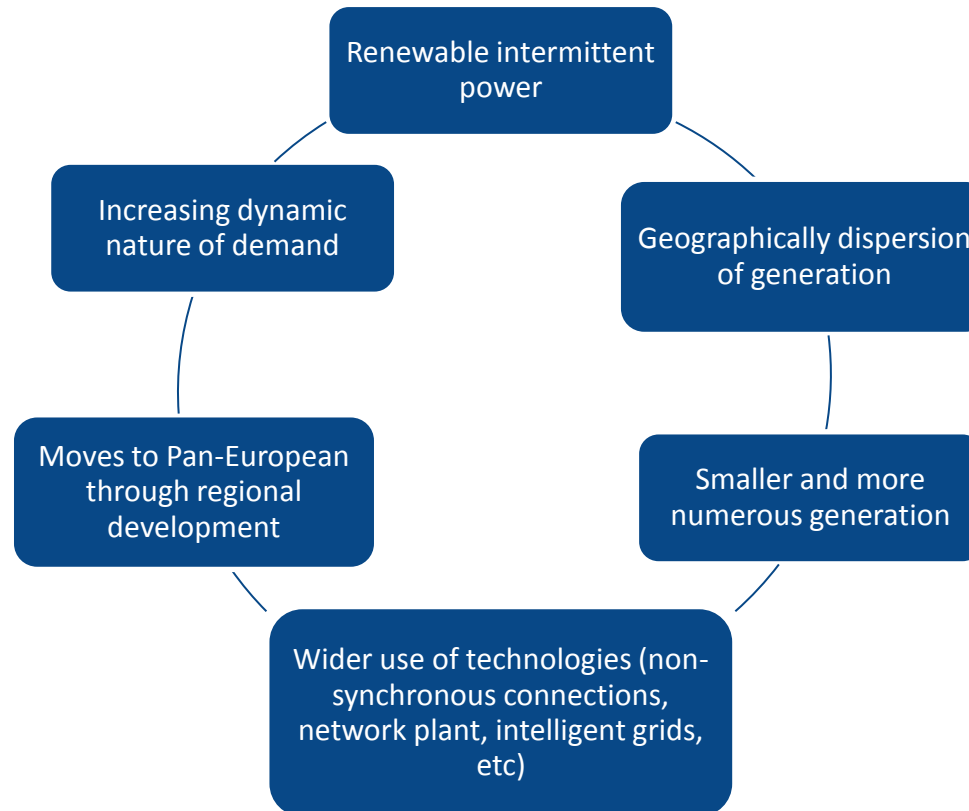
Impact on long term planning studies



Factors in planning of the network

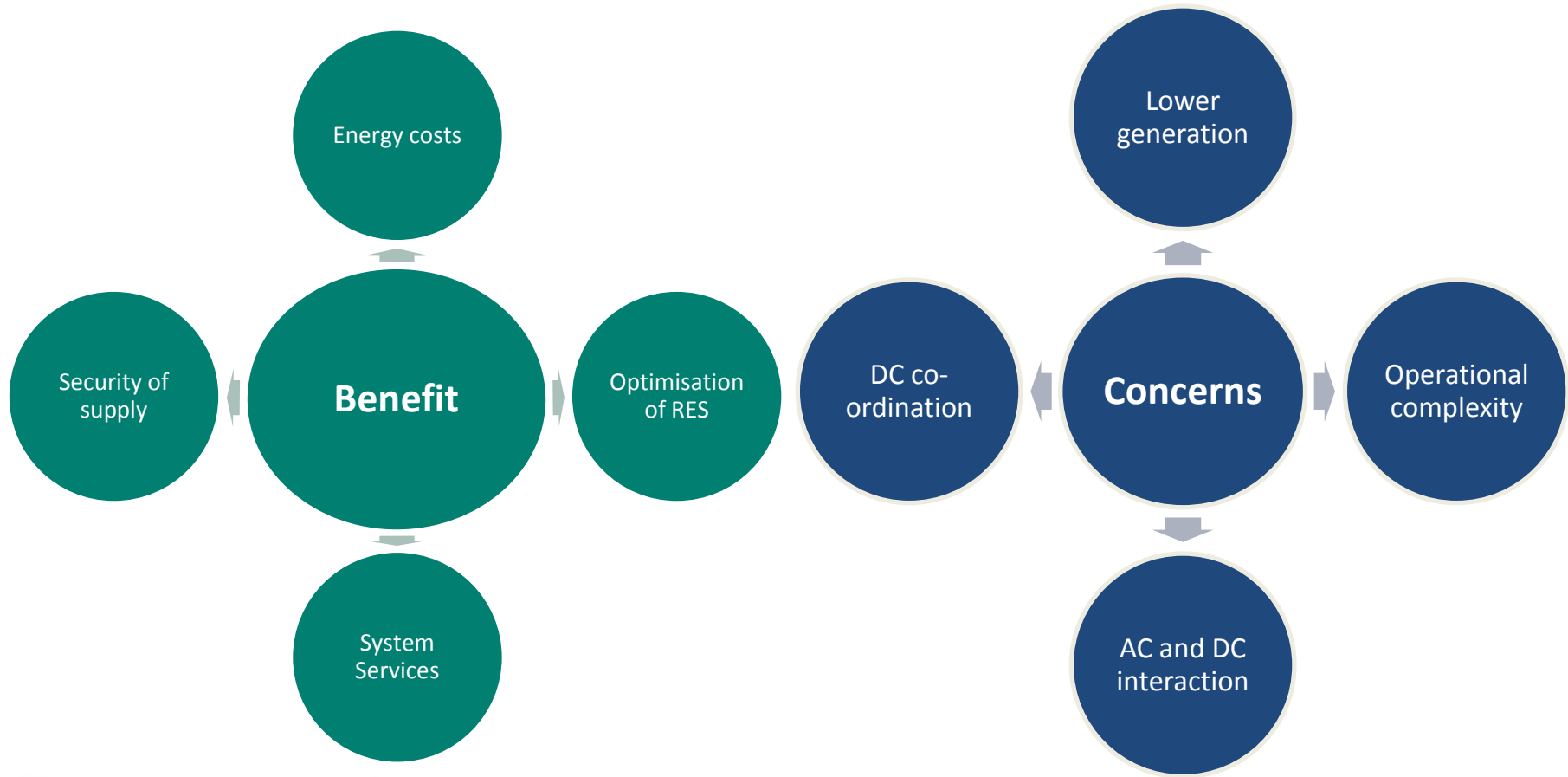


Change is at the core of Transmission network planning and operation



However scale and speed of change in recent years is unprecedented

Regional Integration Potential Impact



Ten Year Network Development Plan 2012



By end of 2016



By end of 2017 and beyond



Regional integration development

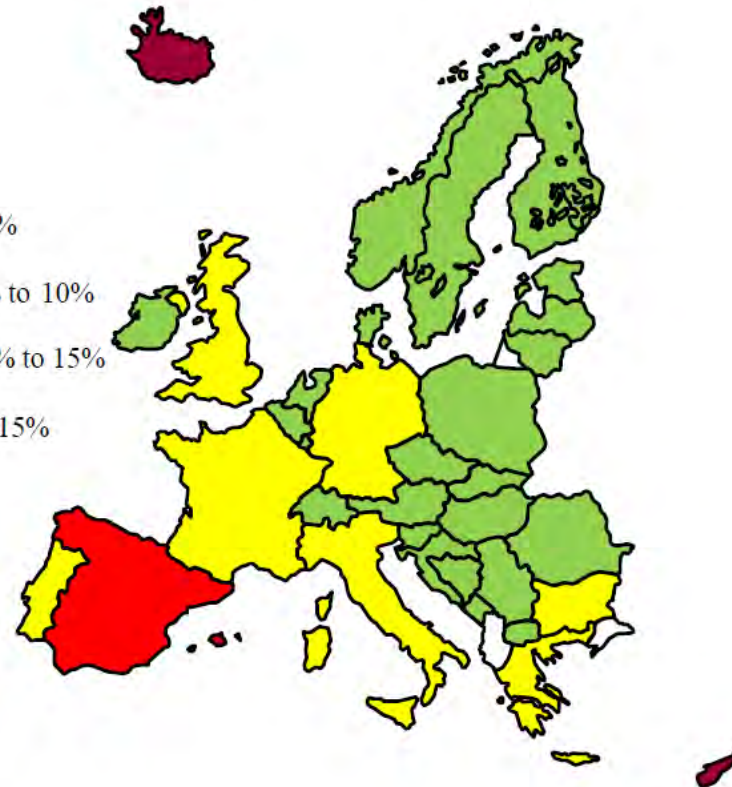


2011



2020

- <5%
- 5% to 10%
- 10% to 15%
- >15%



Interconnection capacity compared to installed power capacity for each country.



Regional Integration impact on Long Term Planning



Examine
Scenarios

Enable

Utilise
capabilities



Regional Integration impact on Long Term Planning



Examine
Scenarios

Enable

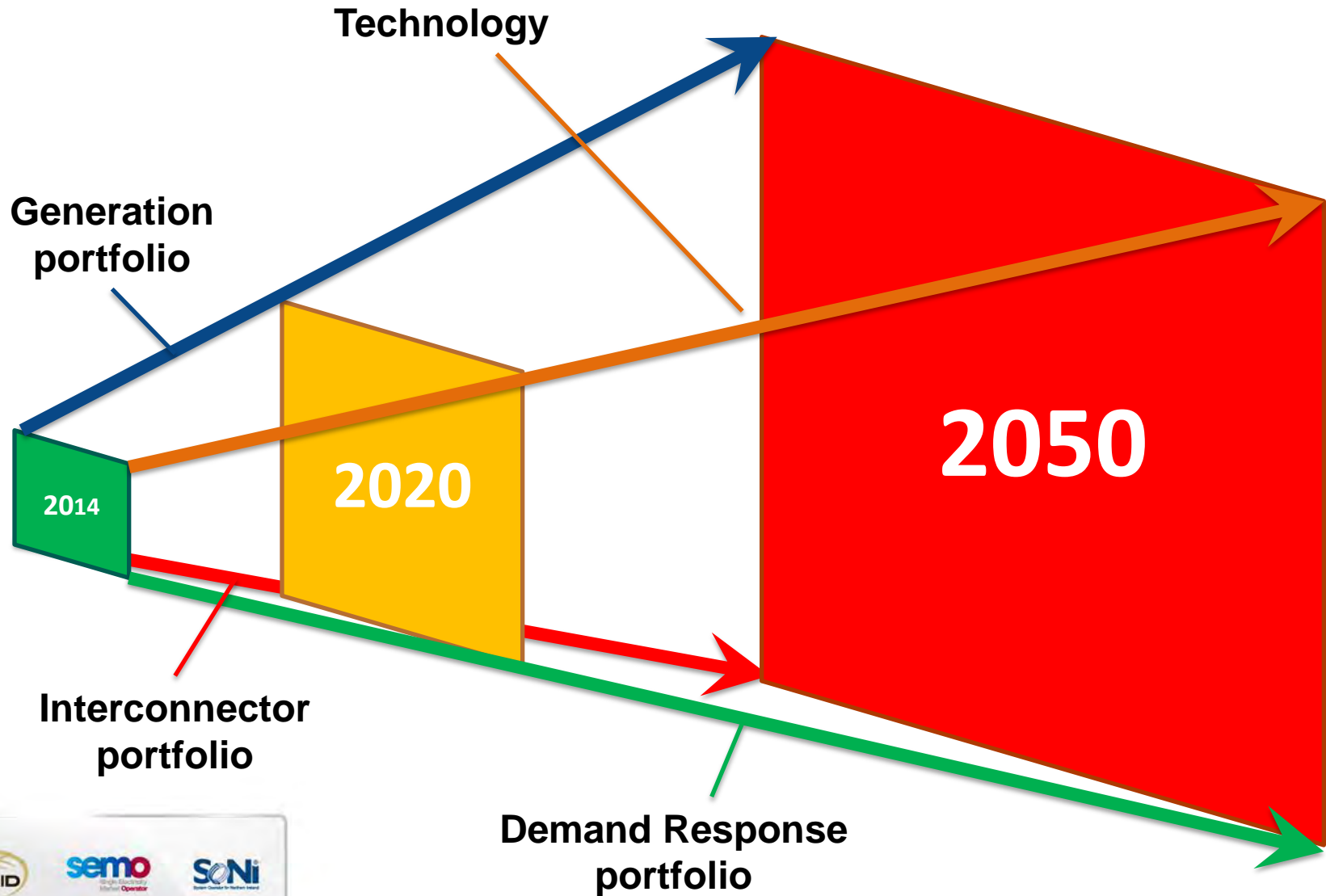
Utilise
capabilities



Examine Scenarios

- **Strategic Planning Study tools**
- Strategic Network Planning Studies
 - Facilitation of Renewables
 - Offshore Grid Study
 - RES Exports
 - Further Interconnector studies
 - Joint regional studies
- ENTSO-E TYNDP and 2050 project
- GRID25, TDP, TAS

Expansion of future scenarios



Outcome of expanded scenarios



- Manual examination impractical
- New screening tools - automated selection
- Resources as specialised studies become common place



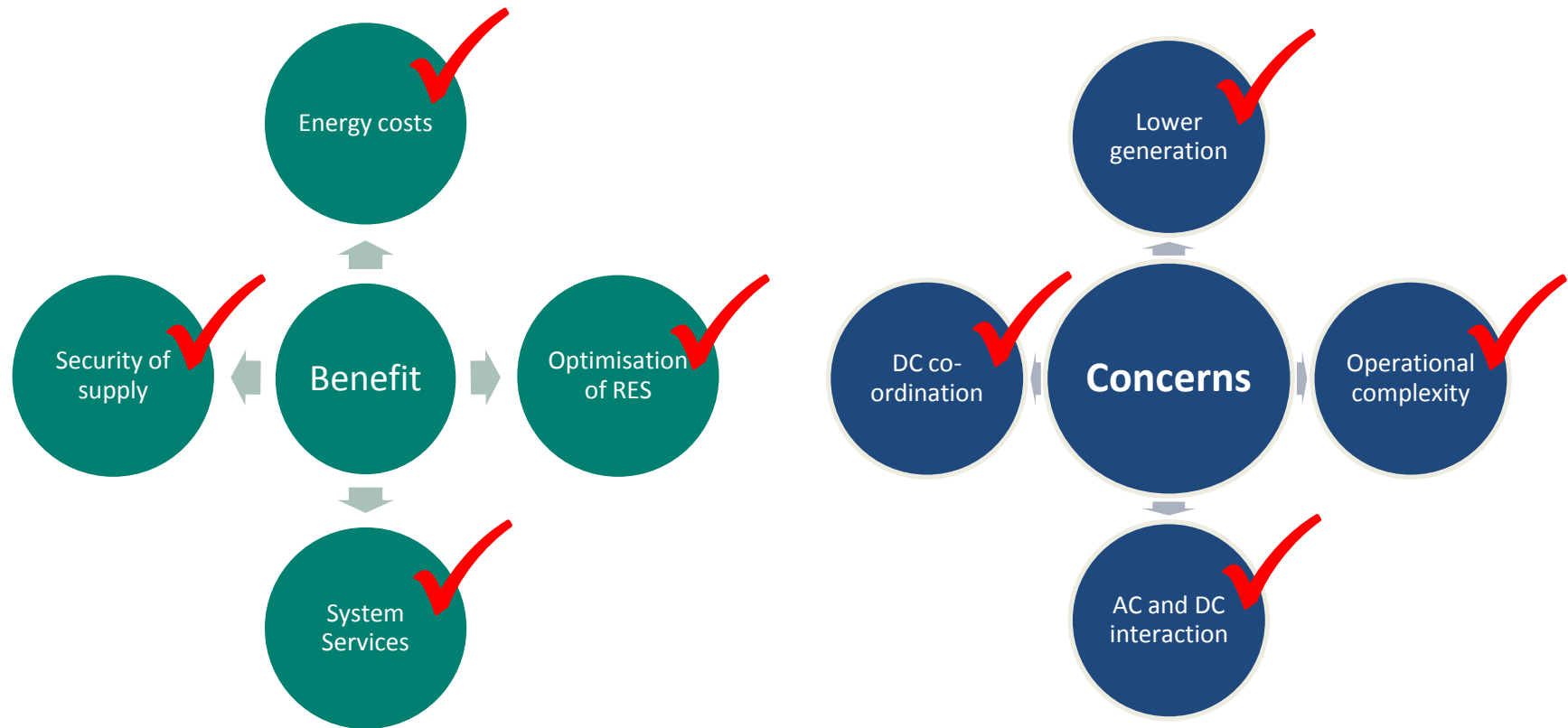
Introduction of Strategic Planning tool



- ESPAUT Core tool in 2009
- Used in NSCOGI project for ENTSO-E in 2012
- Examines all possible network configurations
- Provides optimised solution
- Ongoing Development
- Use in Grid30 update



Regional Integration Potential Impact



Regional Integration impact on Long Term Planning



Examine
Scenarios

Enable

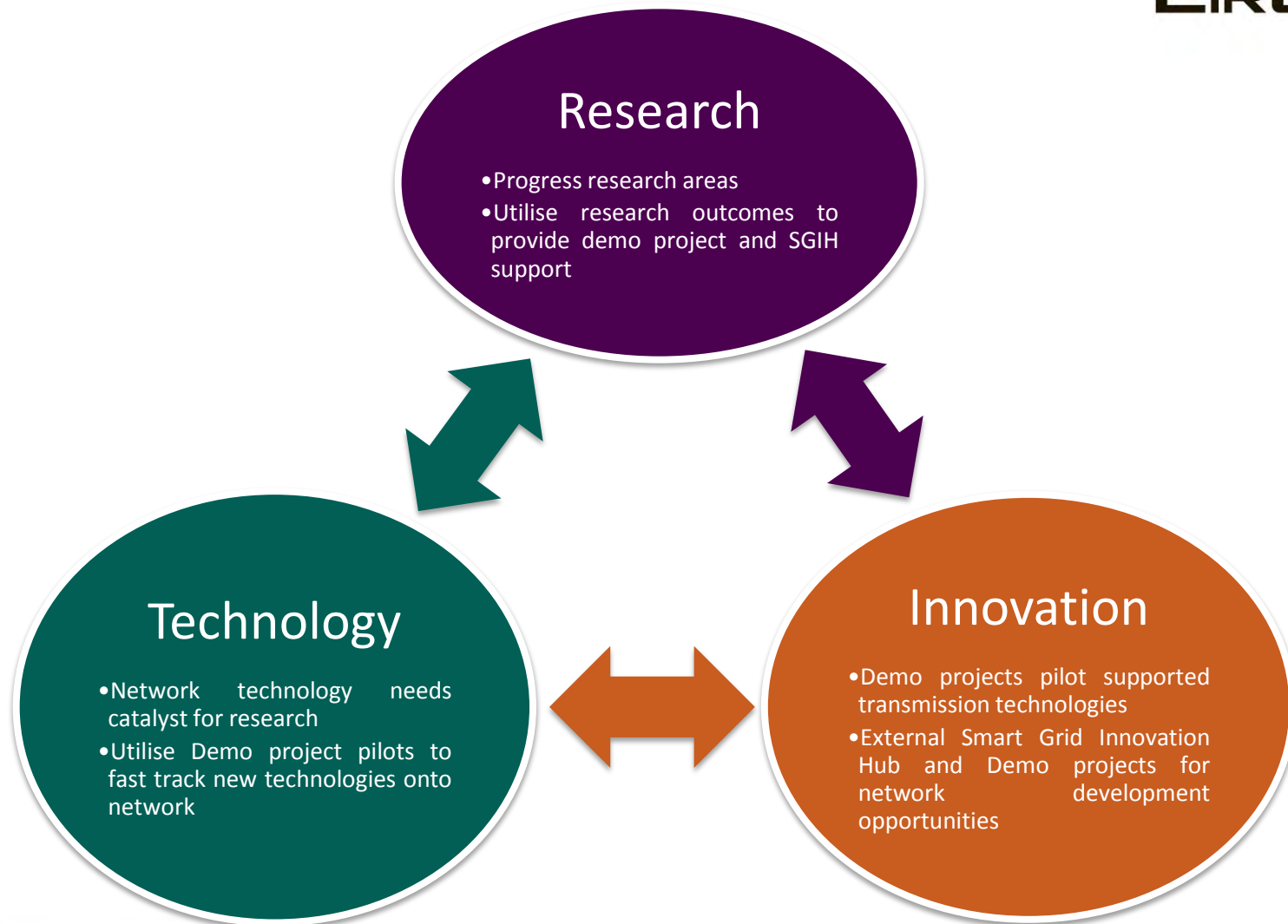
Utilise
capabilities



Enablers

- **Transmission Technology and Innovation**
- Smart Grid
- Demand Side Management
- Network Codes
- Reinforcement [PCI's]
- Standards

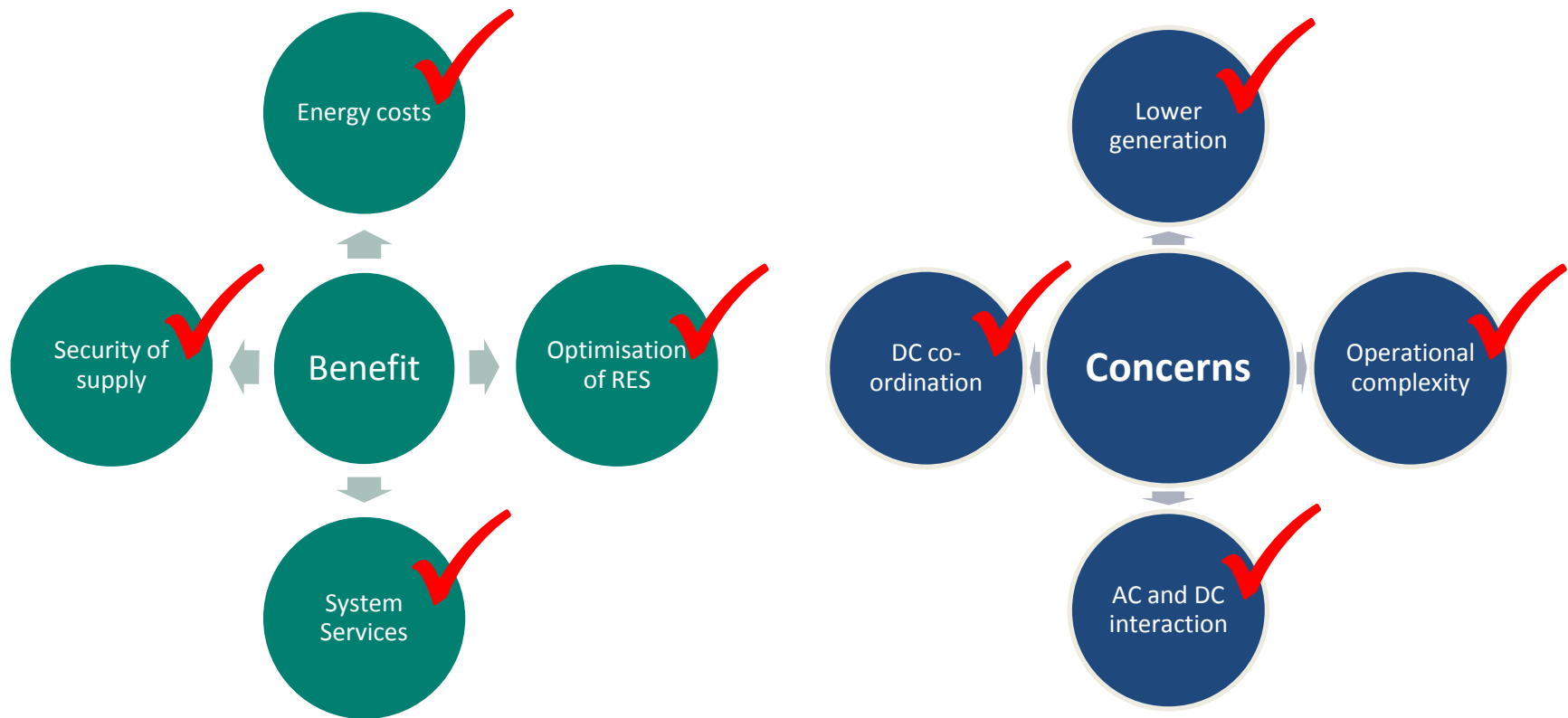
Technology Development Cycle



Technology and Innovation

	Maximising assets			Responding to lower system strength			Responding to new users plant and equipment						
	Ampacity	Fault Level Management	Power Flow Control	Resilience	EMT - TOVs	Harmonic Distortion Management	Voltage Stability Management	EMT - TOVs	Harmonic Distortion Management	Voltage Stability Management	Replacement Balancing services	Replacement Inertia	Alternative short term active/reactive power provision
Research													
Distribution Series Reactor			✓			✓	✓		✓	✓			
Res Export Dynamic Study	✓		✓	✓			✓			✓	✓	✓	✓
Innovation													
Domestic DSR trial	✓		✓				✓			✓	✓	✓	✓
Technologies													
FACTS devices	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓

Regional Integration Potential Impact



Regional Integration impact on Long Term Planning



Examine
Scenarios

Enable

Utilise
capabilities



Utilise Capabilities

- Academic and Internal Research
- Network Codes
- Grid/Distribution Code
- Reinforcements
- Strategic Network Development Plans
- Standards

**Thank you for your attention are
there any questions?**