

WORKSHOP #2: SECURITY AND RESILIENCE IN DISTRIBUTED ENERGY SYSTEMS

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ENERGY TRANSITION DIALOGUE IN LUXEMBOURG 2022

Afternoon sessions

14.00 - **Topic #1: “Integration of local actors and resources in distributed energy systems”**

Workshop #1	Workshop #2
<p>“Local communities and active citizens pushing forward energy innovation”</p> <ul style="list-style-type: none">• André Madureira, LIST• Claude Hornick, ILR• Ramses Villa, InnoEnergy• Paul Kauten, Energipark	<p>“Security and resilience in distributed energy systems”</p> <ul style="list-style-type: none">• Florin Capitanescu, LIST• Sylvain Kubler, SnT• Alex Michels, CREOS• Martin Finkelmann, Amprion

15.15 - Coffee Break

15.45 - **Topic #2: “AI and digitalisation solutions for accelerating the energy transition”**

Workshop #3	Workshop #4
<p>“Digital management of smart energy grids and cities”</p> <ul style="list-style-type: none">• Pedro Rodriguez, LIST• George Bouladakis, European Dynamics• Christoph Emde, Nexxlab• Antonello Monti, RWTH	<p>“Energy digital twins: Driving innovation in the energy sector”</p> <ul style="list-style-type: none">• Jun Cao, LIST• Eric Dubois, LIST• Koen Triangle, IMEC• TBC, Gaia-X

16.45 - **Closing session** – Prof. Dr Lucien Hoffmann, Director of ERIN, LIST

WORKSHOP #2



“Security and resilience in distributed energy systems”



Sylvain KUBLER



Resilience of smart grid IT infrastructures under adversarial attacks



Alex MICHELS



Energy transition @ Creos



Kai FLINKERBUSCH



Amprion Systemvision 2050: A collaborative project to assess the question of how to reach climate neutrality

WORKSHOP MOTIVATION AND GOAL

- mantra: “power grids have to become more resilient”
- different definitions and interpretations on what resilience means
- the relationship between resilience and security (or operation reliability) is confusing
- **workshop goal: present different views and unveil this confusion**

THREATS TO POWER SYSTEM RELIABLE OPERATION

Typical faults (shortcircuits)



Extreme weather: storm and icing



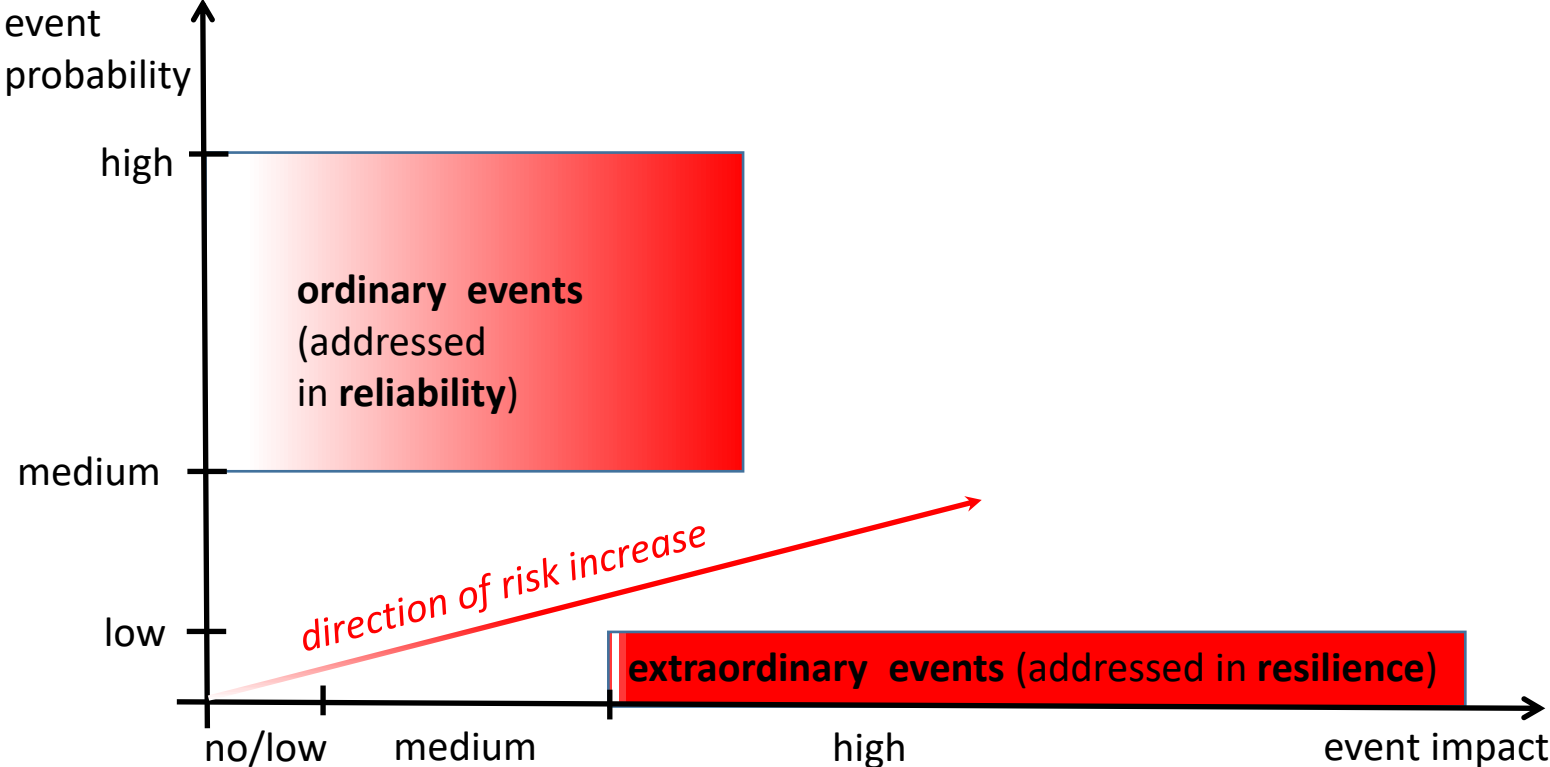
Extreme weather: floods



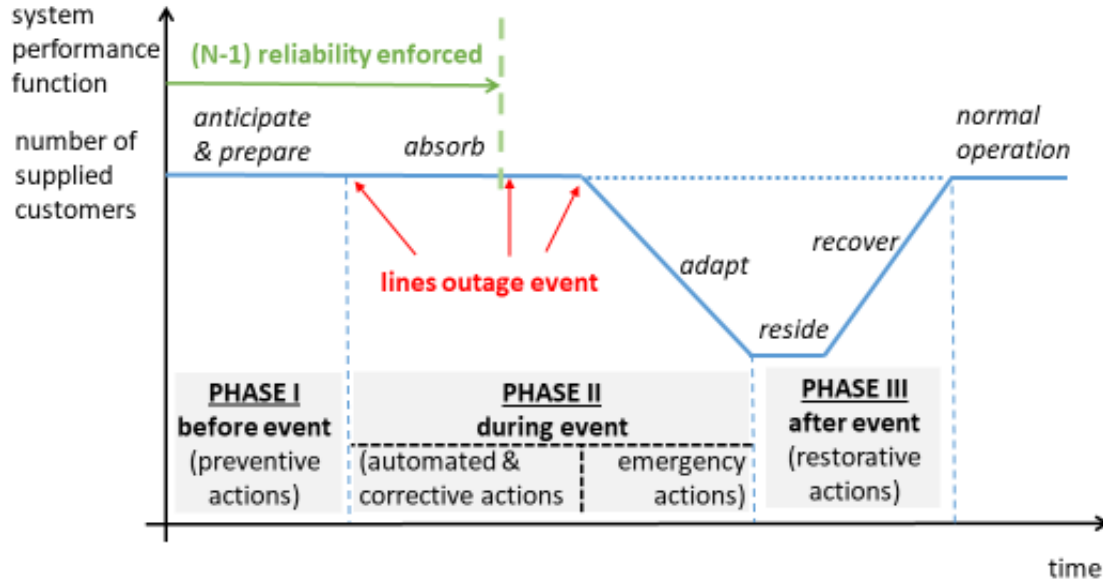
Terrorism: cyber-attacks



SECURITY/RELIABILITY VERSUS RESILIENCE (WRT EVENTS CLASSIFICATION)



SECURITY/RELIABILITY VERSUS RESILIENCE



- Phases I and II are common in security and resilience
- All phases are common to both reliability and resilience

OBSERVATIONS AND RESILIENCE DEFINITION

- translating resilience dictionary definition to power grids ...
- resilience is **misunderstood** as the ability to quickly adjust to disturbances and recover normal operation after them (i.e. some sort of elasticity)
- by design the power grid is already “resilient” wrt N-1 events (the actions could be faster!)
- resilience is the system ability to **withstand and recover after extreme, damaging disturbances** (e.g. natural disasters)
- the concept of resilience in power systems applies only to N-k ($k \geq 2$) events i.e. low probability (with possible high impact)
- resilience complements security

WORKSHOP #2

Q&A

Questions?



thank you

contact information

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