



Conclusions from the Interactive Sessions

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What do Extreme Weather Scenarios tell us?

Paola Mercogliano, Kari Maki and Guido Rianna

- Objectives of the session:
- Providing insights into the concept of weather extremes
- Illustrating the use of methodology developed in INTACT
- Providing insights on extreme weather events and their EWIs in INTACT cases
- Assess the needs to include climate change and extreme weather in the risk framework for CI management

- General notes:
- About 40 people have participated to this session
- Thanks to this morning's speeches people attending to the session were already sensitized with respect to the session topic
- The people attending completed a questionnaire testing the expected variations in weather forcing and also the expected variations in EWE impact on CI according the single expertise
 - Results will be analysed afterwards
- INTACT Wiki was used by participants to access the weather scenarios on map
- Participants sought for information to check their initial assumptions on extreme weather changes in their own country
- Some suggestions were made for more analysis to improve the accuracy of results in Wiki

How vulnerable is your infrastructure?

Marco Uzielli

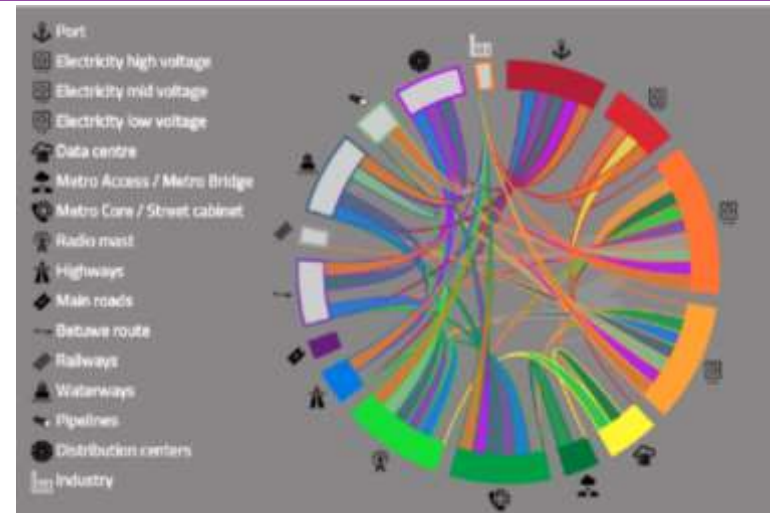
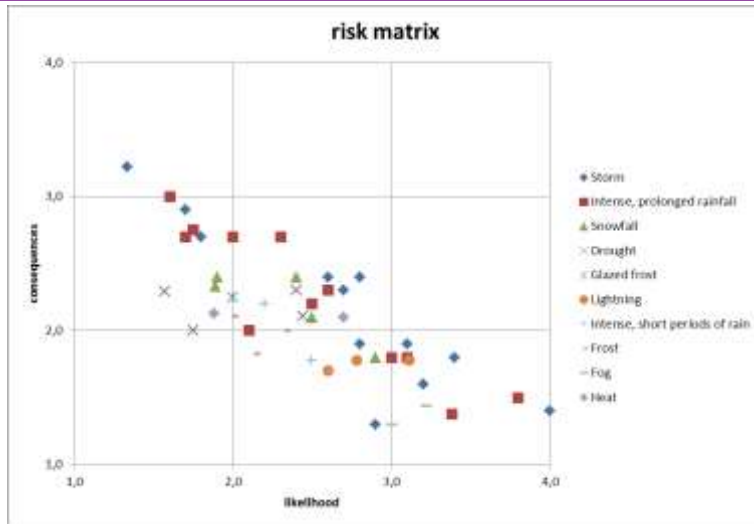
First Session

- Lots of questions about the probabilistic approach
- How uncertainty can be modelled reliably?
- How can intensity be modelled probabilistically?
- What is the present-day diffusion of probabilistic networks in risk estimation for CI's to EWE?

Second Session

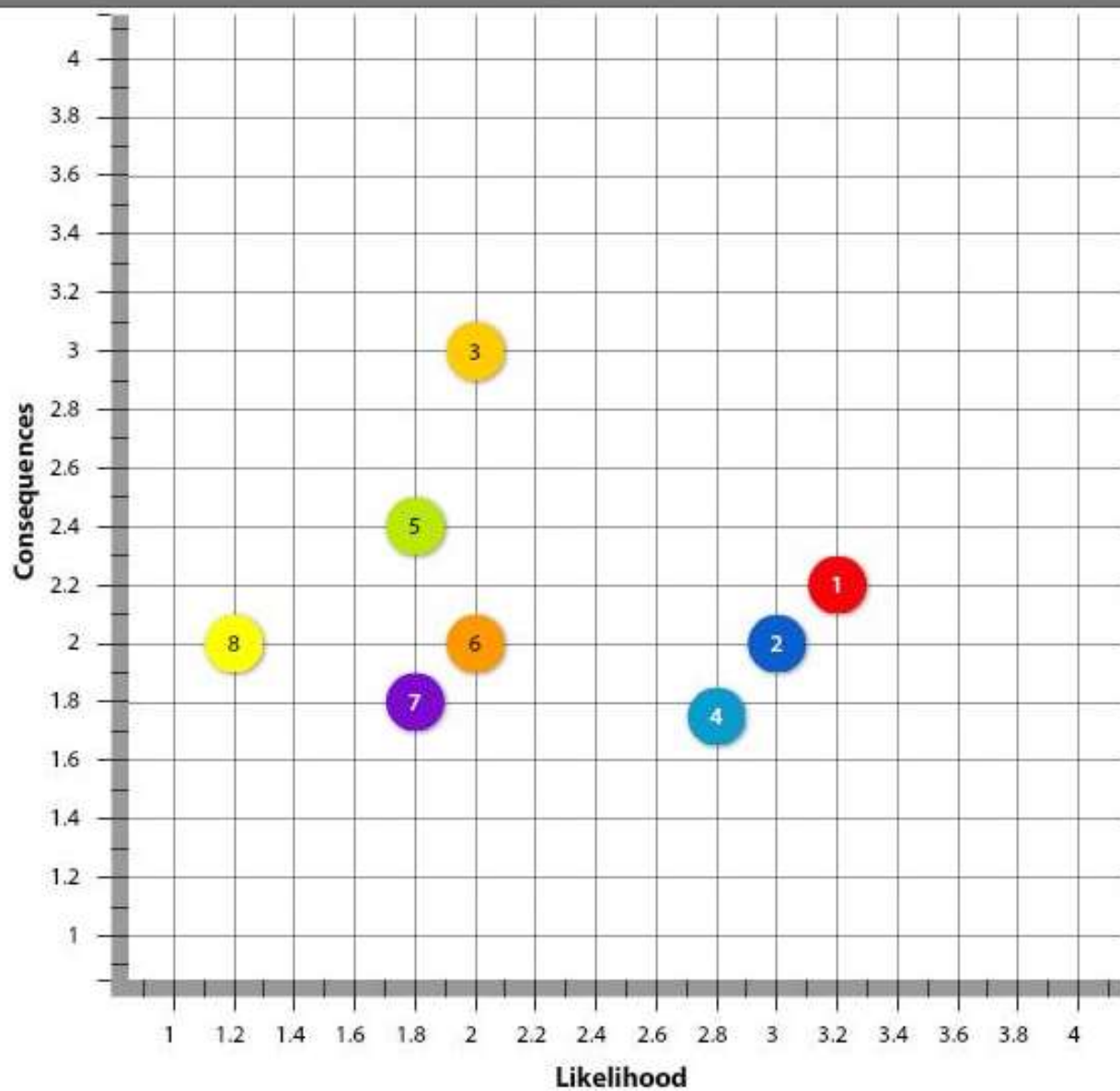
- No questions

Risk assessment – Cascading effects

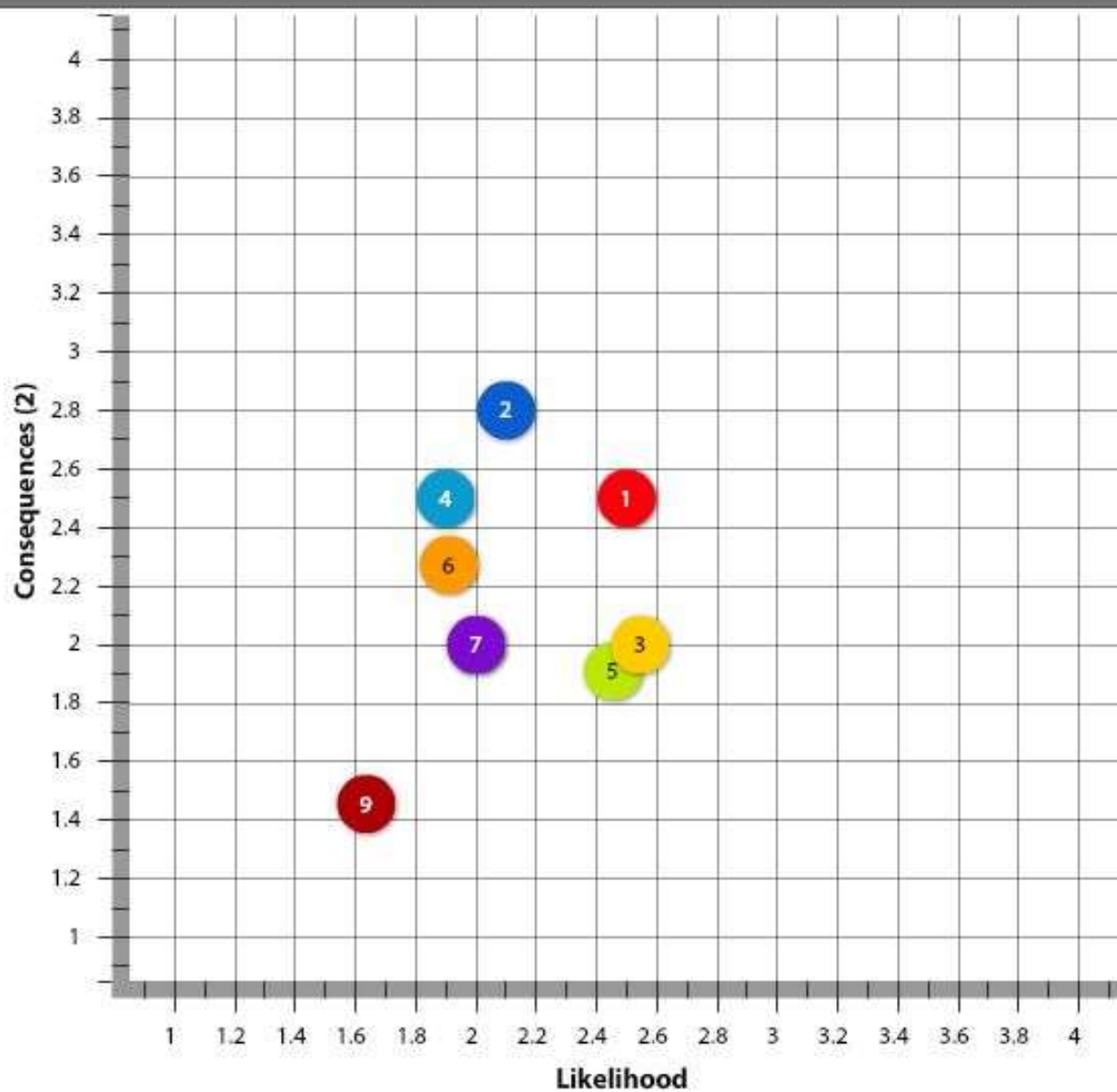


Objectives of a collaborative risk assessment

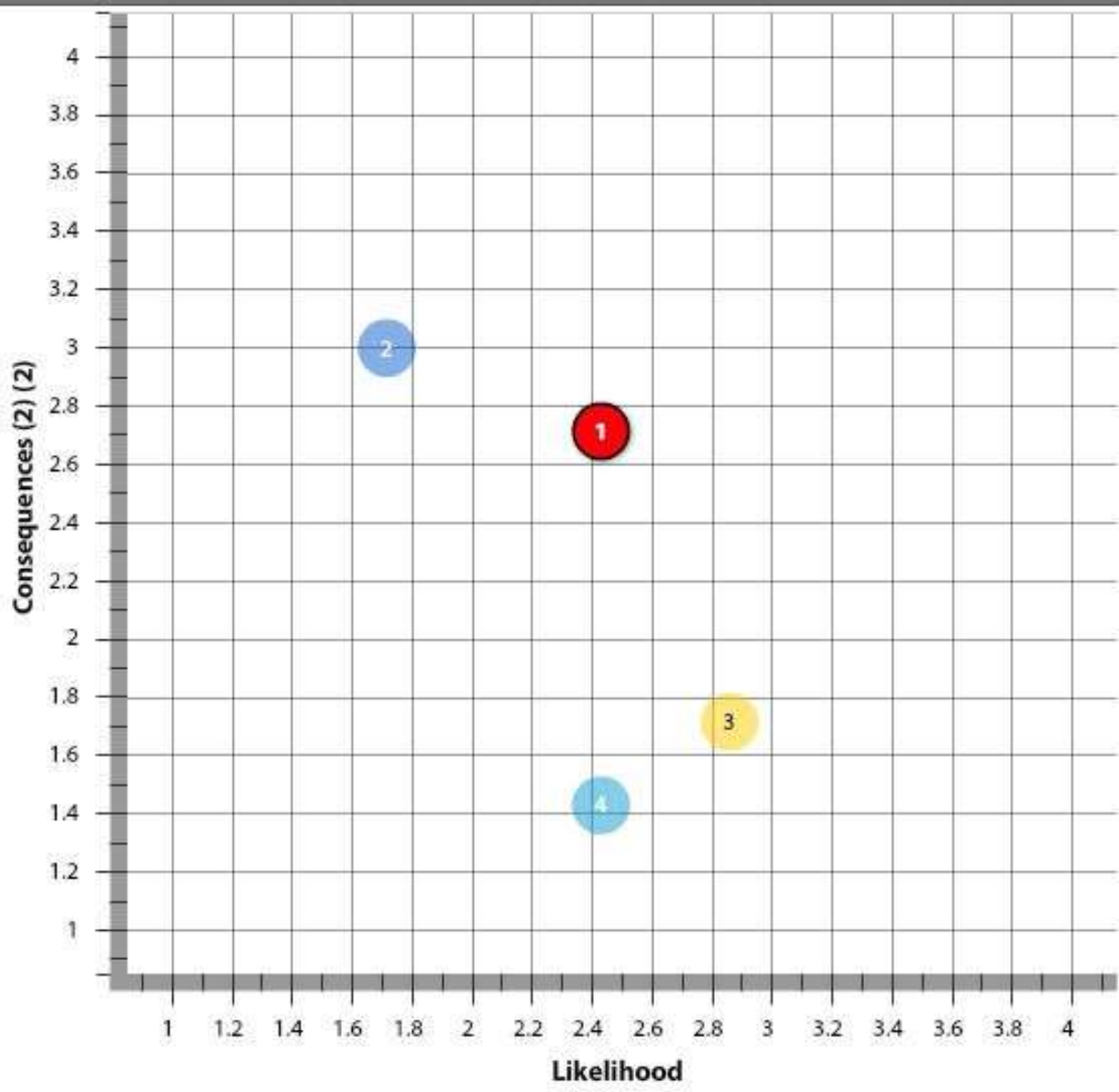
- To raise awareness and common understanding
 - Extreme weather effects
 - Climate change
 - Dependency on critical infrastructures
 - Sharing of lessons learned
- To get input about impact of failure of critical infrastructures for the end users and CI operators
- Build on end users' own experiences to get results that are fit for purpose
- Scoping



- 1 heavy rainfall > delays in traffic > arrival to l...
- 2 bus is full
- 3 failure in the power supply to the railway
- 4 missing the connecting train
- 5 Snowstorm, Bft 11 and heavy snow varyin...
- 6 Storm
- 7 hailstorm
- 8 personal injury



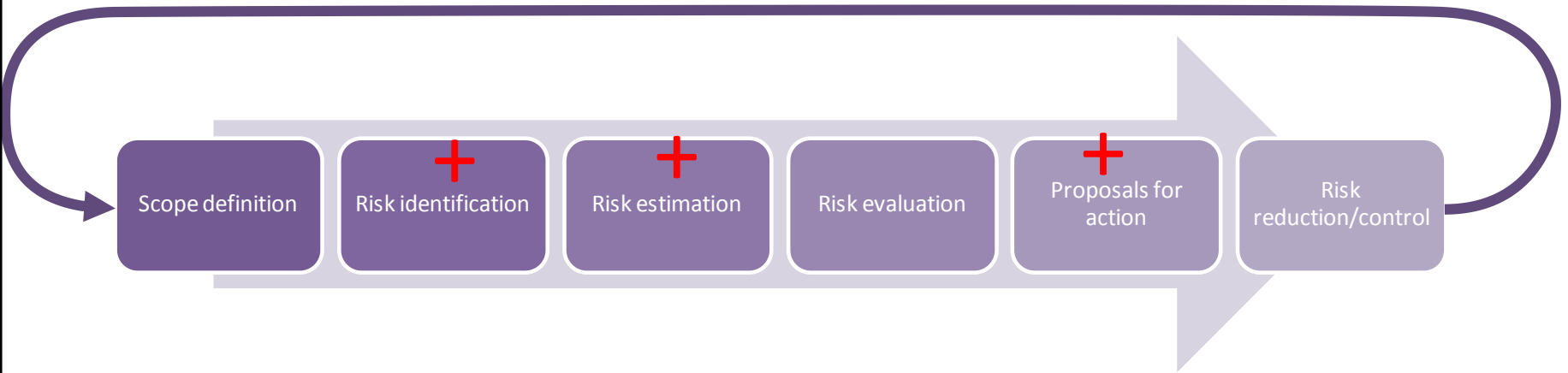
- 1 extreme storm, take car in stead of bicycle,...
- 2 Extreme rainfall event combined with bloc...
- 3 Heavy snow, bike roads are not safe to use
- 4 Ice rain - driving becomes difficult, traffic j...
- 5 extreme rainfall - lead to road blockages
- 6 Winter Snow Storm - flight from Montreal i...
- 7 large amount of snow -> increased travelli...
- 8 snowstorm leads to disruptions of NS rail...
- 9 extrme frost



- 1 Heavy rain-delay of flight-impossible to at...
- 2 Hail storm that crashes windows
- 3 Heavy wind - flights delays - late arrival to ...
- 4 Cold spell (hazard)- changed train schedul...

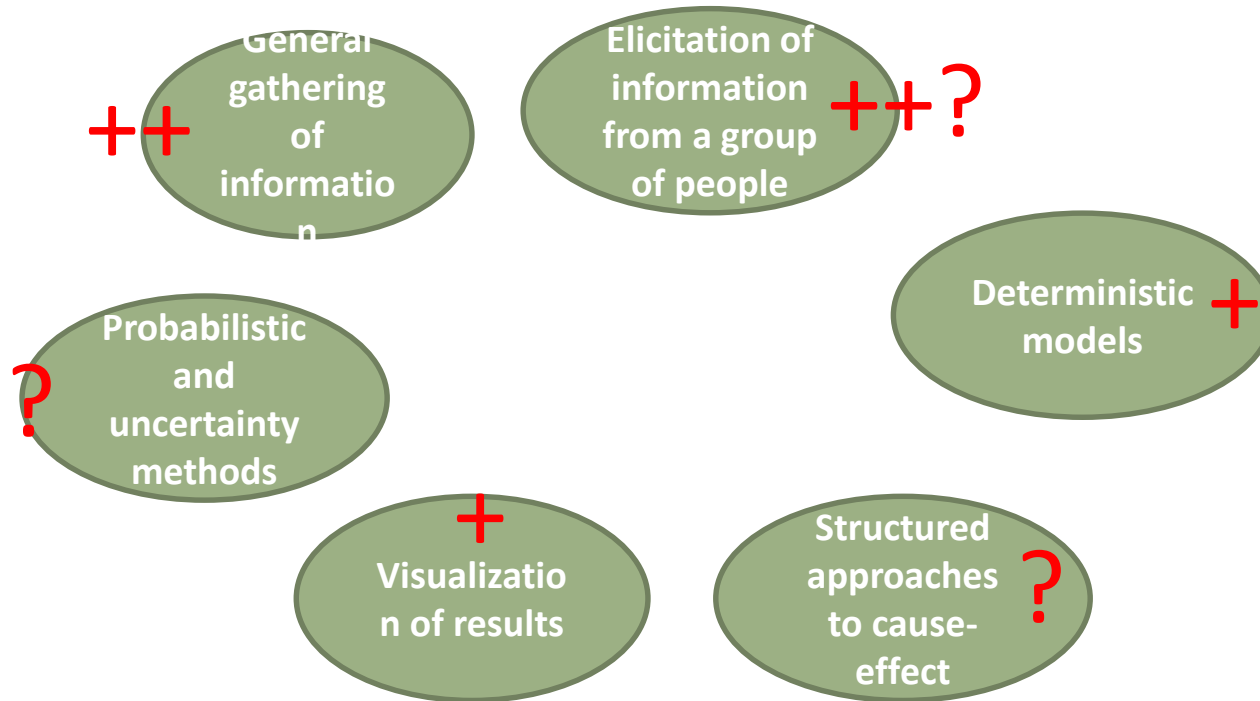
Conclusions - Use of wiki

Andy Tagg & Albert Nieuwenhuis



- Steps familiar
- Often used

Conclusions - Use of wiki (2)



Beyond INTACT - Billy Hynes and Jan Kiel

Question 1

- How would you use the INTACT wiki, the data and methods in your work?
- How useful are the results for your work?

Answers

- Wiki methods very useful
- Can cross-link wiki to UNISDR Scorecard, the Sendai Framework for Disaster Risk Reduction
- Consider links to Rockefeller 100 Resilient Cities, insurance organisations
- Clear linkages with Wiki and the National Roads Authority for the Netherlands projects
- Need another page on Wiki showing/explaining linkages to existing and developing frameworks
- Consider "Vital Infrastructure" definition
- Consider "rapid risk assessment" process within Wiki for fast risk assessment
- Make the data available within the Wiki more explicit
- Consider renaming the "Wiki" to potentially "Resilience Climate Inquiry Framework/System" or "Innovation for Climate Resilience", or "Climate Adaptation Framework" or "A Stress Test Tool for Climate Adaptation"
- Could be test on existing and future projects
- Could be beneficial for use by the EIB, particularly the Circle Tool
- Wiki very beneficial for presenting an overview of many issues, actors involved, complexities involved
- Consider a custom pilot application of the Wiki

Question 2

- What benefits do the INTACT outcomes offer for your region?
- At what scale can the results be used best? Local, national, international, world-wide?

Answers

- Think of the application of INTACT as a top-down bottom-up process – and apply this rational to the spatial application
- Key issue is the availability, application, use of data

Question 3

- The platform is built for generic purposes. The advantage is that it can be used for any CI sector. The drawback is that it is not tailor made.
- How do you see this? Do the advantages outweigh the disadvantages? What would be needed extra?

Answers

- Depends on usage – if Wiki is seen as a reference guide then it is appropriate to have it at a generic level
- Depends on the search engine capability of the Wiki
- Generic is more appropriate than tailor made, particularly when trying to understand the cascading effects

Question 4

- The INTACT wiki is currently hosted by the consortium. What is your opinion on this?
 - Does the EC need to host it?
 - Does industry need to host it?
 - Some other party?

Answers

- Should be hosted independently – potentially EC, Community of Users, EU weather institutes,
- Needs to be controlled, patrolled by, for example, UNISDR

Question 5

- The INTACT wiki is a platform that needs to be further filled in the future. We will aim to do so, but are there any ideas from your side concerning future expansion of the wiki?
 - Regular update?
 - Validation of update?
 - More information to be added?
 - Organisation?

Answers

- Regularly updated by communities dealing with EWE and Cis
- Validation controlled through a peer-review protocol

Question 6

- We identified different customer segments:
 - Education/Academia
 - Policy Makers
 - Risk Management
 - Critical Infrastructure Operators
 - Regional Authorities
 - Municipalities
 - Consultancy
 - Emergency Service Providers
 - Training Providers
- Which segments are most important / least important?
- Do we miss any?

Answers

- Key segment is Consultancy, as they have to put it to the end-users, and also as other segments may not explore in detail all the many issues, factors, etc., under consideration
- Also, Emergency Service Providers very important segment
- Users of the CI not an important segment

Question 7

- We see the following value proposition:
 - Problem Solving
 - Awareness Raising
 - Information Availability
 - Risk Reduction/Management
 - Knowledge Platform
 - Tools
 - Educational Material
 - Cost Reduction
 - Linkages with other EU Research Projects
- Which propositions are most important / least important?
- What else?

Answers

- Knowledge Platform and Tools most value propositions
- Also, linkages to global research important
- In additional. “Long-Term Comprehensive Interventions” proposition

Question 8

- What gaps do you see in the knowledge?
- What suggestions do you have for further research?

Answers

- Ongoing and dynamic cascading effects and aspects, and the continuous changing environment and society

CI - Learning & Teaching

Thursday March 23rd

Prof Jorn Birkman & Dr Michael McCord

- Clear need for different disciplines to understand vulnerability, risk, impact and resilience factors of Critical Infrastructure (CI) to Extreme Weather Events (EWE)
- The 'Need' for future employees → CI failure should be an integrated part of teaching at universities
- CIs are socio-technical systems → resilience is not only a matter of technical assessments but also of the involvement of different actors and their cooperation
- Multi-actor co-operation: Importance of linking different disciplines – in particular engineering, social science, ...
- Clearly a 'space' for multi-disciplinary education and CPD practice using the **INTACT VLE ecosystem**

