

ASCE Infrastructure Resilience Division and Synergies with the NIST Community Resilience Panel

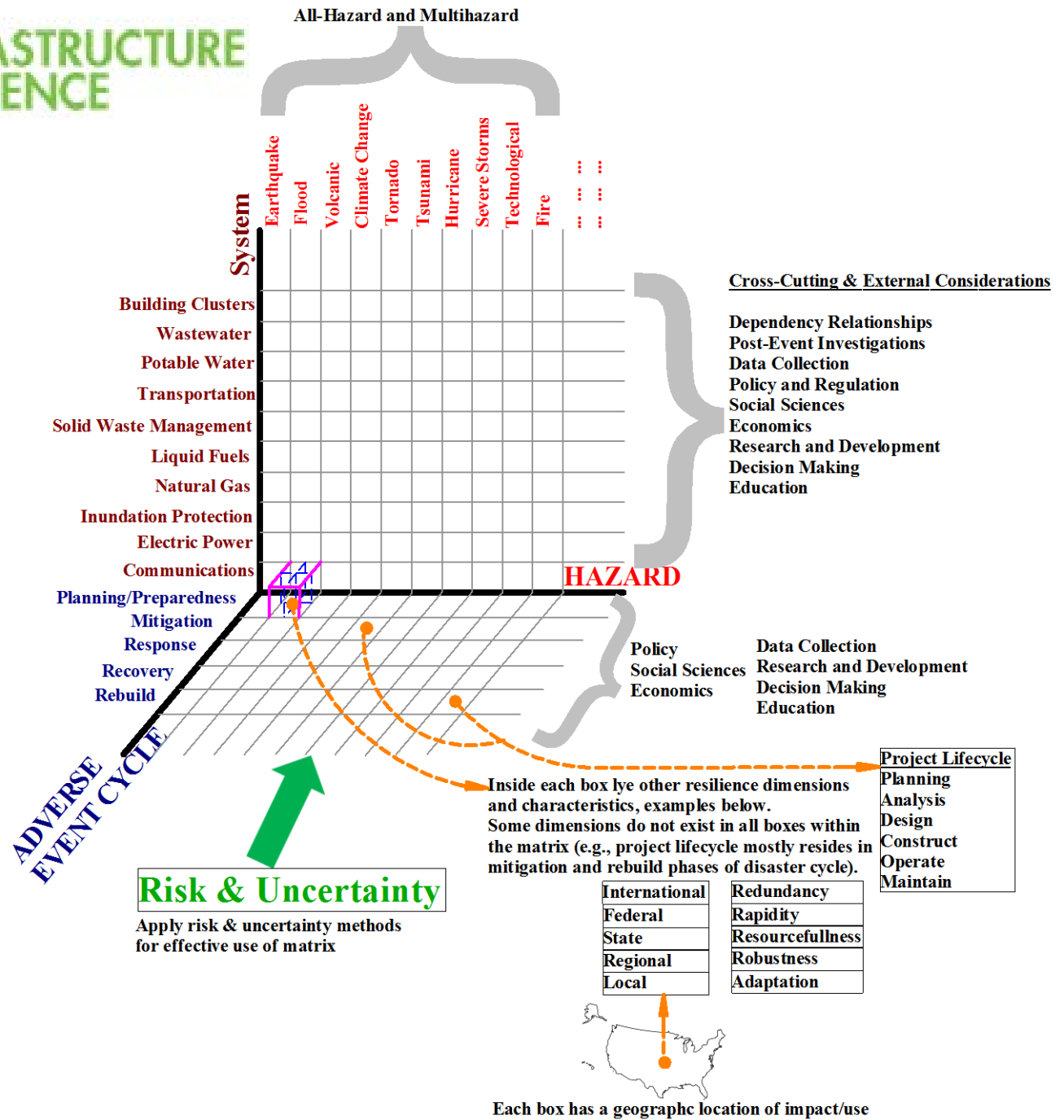
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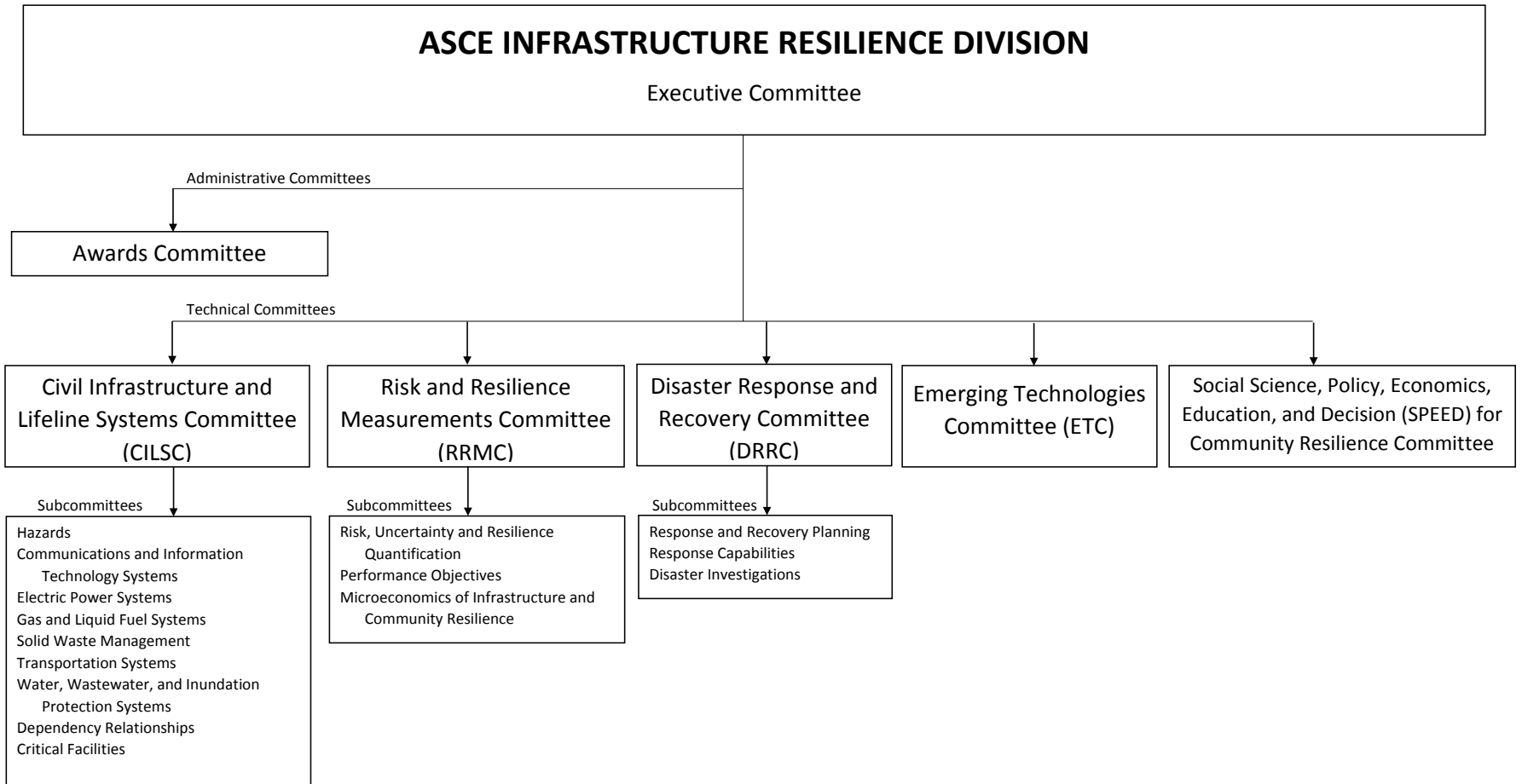


- **IRD Vision**
Improve the resilience of civil infrastructure and lifeline systems.
- **IRD Mission**
Serve the civil engineering profession in advancing civil infrastructure and lifeline systems for local, regional, and national resilience against all hazards. All hazards and resilience are defined in ASCE Policy Statement 518.
- **IRD Charge**
Develop products and services to include but not be limited to **standards, guidelines, manuals of practice**, journals, webinars, seminars, and conferences to advance resilient practices related to civil infrastructure and lifeline systems recognizing their dependency relationships and using risk and uncertainty principles. Promote and perform **investigations, research, policy development**, and **application of resilience activities** by collaborating with ASCE Divisions, Institutes, and Committees.

RESILIENCE MODEL



IRD COMMITTEE STRUCTURE



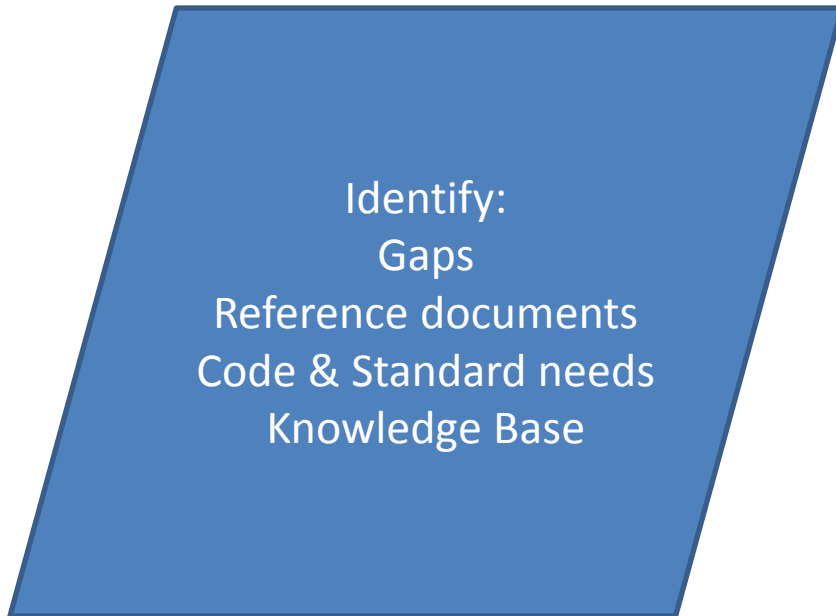
Community Resilience Panel

- The Panel identifies policies and important reference materials that may be used to facilitate community resilience, as well as gaps and impediments to achieving it.
- The Panel considers the adequacy of standards, guidelines, best practices, and other tools in order to recommend, develop, and work with others to enhance the resilience of communities.
- The Panel develops products, including, but not limited to identifying gaps and needs to codes and standards bodies, case studies, and a Resilience Knowledge Base (RKB).

Synergistic Activities

- CRP and IRD have parallel and synergistic activities which can be better aligned

Community Resilience Panel



Infrastructure Resilience Division



Synergistic Activities

- Aligning and synergizing the IRD and CRP activities works best as a two-way collaboration.
- IRD → CRP:
 - Resilience documents (standards, guidelines, best practices, manuals of practice, etc.)
 - Case Studies (post-event investigations, longitudinal studies, etc.)
- CRP → IRD
 - Knowledge gaps, needed documents
 - Needs for standards bodies (ASCE is a standards body)

Example Current IRD Activities

IRD Project Title: *Resilience-Based Performance Standards for Buildings and Lifeline Systems*

IRD Committee: Risk and Resilience Metrics Committee

Brief description: The primary objective of this project is to provide the technical foundations for developing the next generation of performance standards and guidelines for the systems and components that comprise the built environment. The vision for these new standards is that they will feature a “resilience-based” approach in which the performance objectives for buildings and lifelines are aligned with a specific functionality goals that are defined at the community level, consistent with the NIST Resilience Planning Guide. This is a change from the life-safety emphasis in current codes.

Deliverables: white paper

Related NIST Step: Step 3, Determine goals and objectives.

Schedule of activities and completion: Draft by January 2017.

Example Current IRD Activities

IRD Project Title: *Characteristics of Resilient Lifeline Systems*

IRD Committee: Civil Infrastructure and Lifeline Systems Committee

Brief description: This project identify basic characteristics which are needed for lifeline systems to be resilient. The characteristics will be classified as generally applicable to all lifeline systems and hazards, which can then be utilized by lifeline specific organizations for hazard specific issues. The characteristics can also be used as a checklist to allow lifeline organizations to better understand their current level of resilience and what they may undertake to improve. They are also useful to help identify gaps and set future direction and projects.

Deliverables: Technical Report

Related NIST Step: Step 2, Understand the Situation,
Step 3, Determine Goals and Objectives;
Step 4, Plan Development

Schedule of activities and completion: Draft October 2016, publish 2017.

Example Current IRD Activities

IRD Project Title: *Longitudinal study of the 2011 Tohoku Earthquake and Tsunami -Telecommunication System*

IRD Committee: Disaster Response and Recovery Committee

Brief description: Use the 2011 Great East Japan Earthquake and Tsunami to perform a longitudinal study with an initial focus on the telecommunication system, followed by other lifeline systems including transportation, water and wastewater, and electric power.

Deliverables: Technical Report

Related NIST Step: Step 3, Determine Goals and Objectives,
Step 4, Plan Development

Schedule of activities and completion: Draft report 2017, publish 2018.

Moving Forward

- Integrate IRD activities with CRP
- Embed ASCE-IRD members in the CRP
- Invite all CRP members to join IRD. Members can cooperate by (examples):
 - CRP identifying gaps and eliminate the gaps through IRD activities (e.g., developing guidelines, standards, etc.)
 - Identifying knowledge in ASCE-IRD and fill Resilience Knowledge Base in CRP
- Develop collaborative scheme for ASCE-IRD and CRP to feed each other information useful for undertaking respective missions