

Facilitation

Best Practices in Dam and Levee Safety Risk Analysis

Part A – Risk Analysis Basics

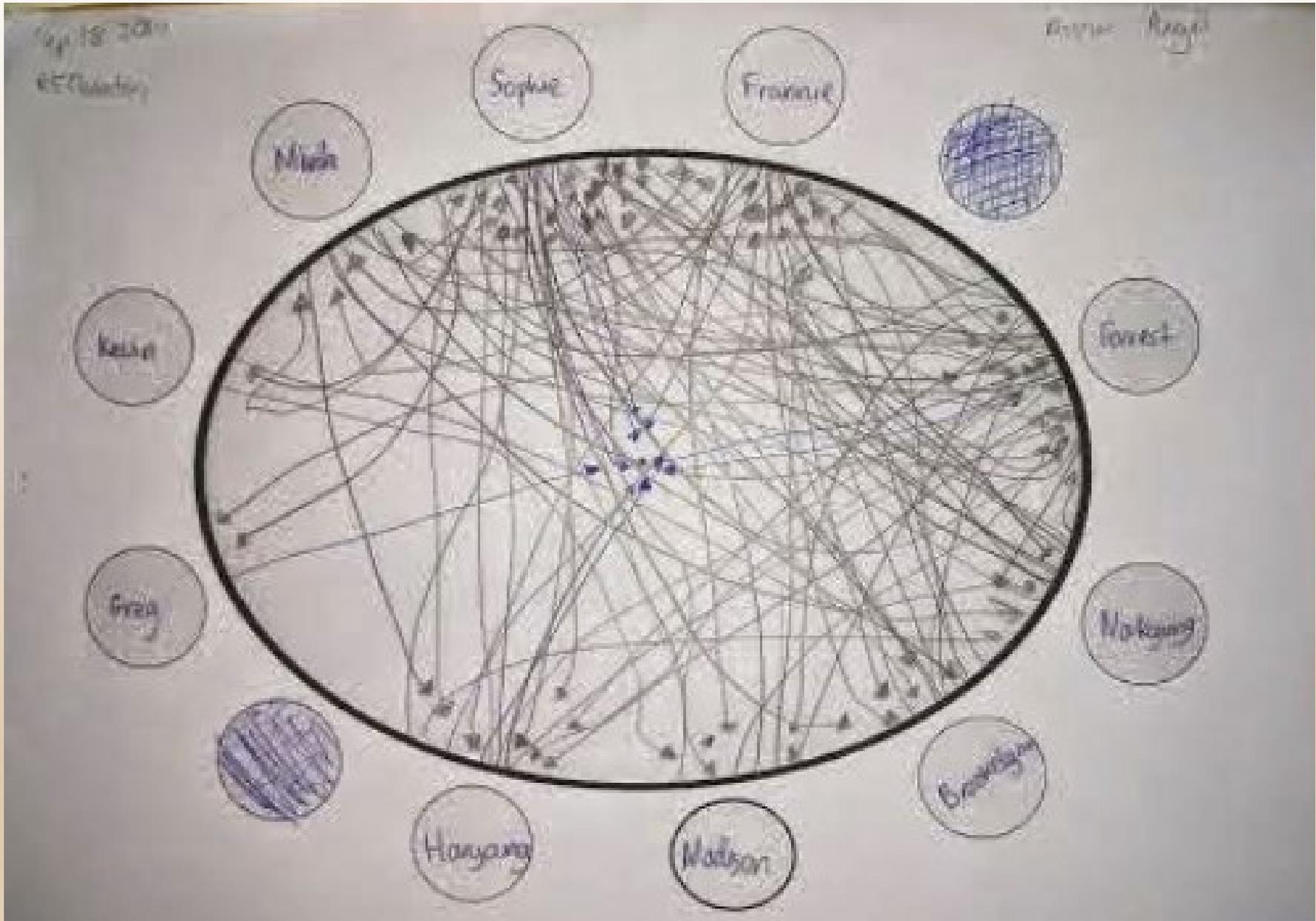
Chapter A-11

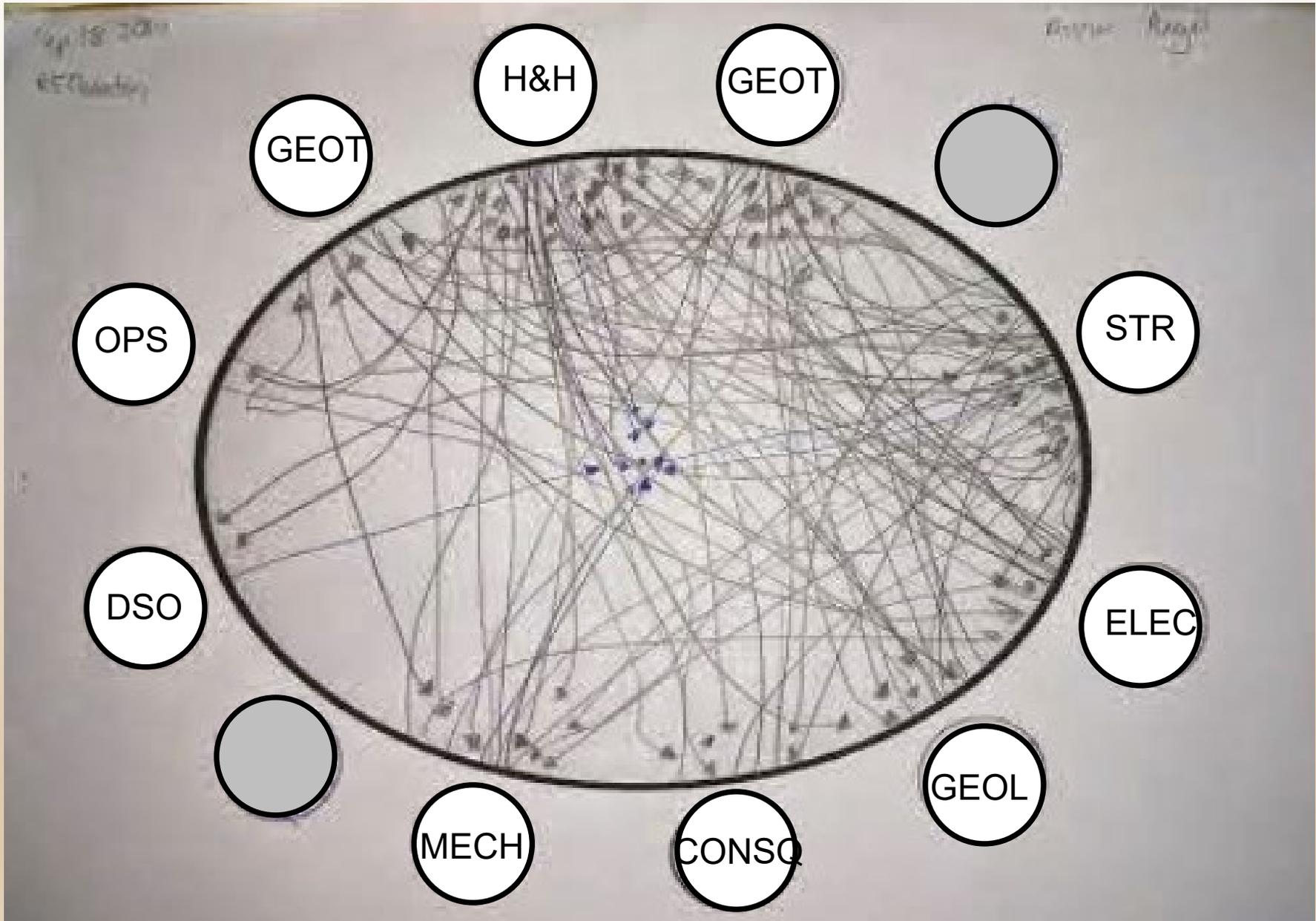
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Objectives and Key Concepts: Facilitation (A-11)

Objectives

- Role of facilitators
- Necessary skill set
- Training/experience requirements
- Responsibilities

Key Concepts

- Facilitation concepts/ideas
- Various types of facilitation
- Understanding of agency guidelines
- Ability to lead diverse teams



Facilitation

- Process by which an individual(s) lead a group in solving problems and reaching consensus in order to meet the necessary objectives for the evaluation being undertaken
- Objective facilitation is a key element of dam and levee safety risk analysis
- Important for all phases of investigation from screening level evaluations to detailed risk analysis and scenario evaluation procedures



Role of Facilitators

- Serve as leader of group that has been assembled for a specific task.
 - a comprehensive and multi-discipline team
 - varying levels of risk estimates
- Ensure that needed information/analyses are available, checked and peer reviewed prior to the risk analysis meeting.
- Lead team in development of PFMs. Directs team in risk estimate procedures.
- Allow and encourage discussion and documentation of alternative viewpoints.
- Review and certify report.



Skills for Successful Facilitation

- Objectivity
- Open minded
- Leadership
 - ✓ diverse teams with varying opinions
 - ✓ discuss wide range of issues but stay focused
- Diplomatic
 - ✓ re-direct team and individuals towards necessary objectives
 - ✓ buffer dominant members, encourage quieter members
- Technical Expertise
 - ✓ understand varying engineering principles & disciplines
 - ✓ keep big picture perspective and contextualize the evaluation



Knowledge and Skills Required

- Know agency guidelines and procedures
- Screen long list of PFMs down to those considered risk-drivers for the evaluation
- Develop PFMs from initiation through failure in a step-by-step progression (event trees)
- Understand loading scenarios (seismic, hydrologic, etc.)
- Understand consequence estimation and procedures (life loss, economics)
- Understand risk analysis calculation tools such as @Risk, Precision Tree, and DAMRAE
- Understand uncertainty and confidence for the purposes of the analyses
- Understand how to weight results for a given load range or how to determine if additional load ranges are needed

Facilitator Training/Experience

- No single training course, university degree program, or series of classes that can be completed to fully develop a qualified facilitator
- Learn-by-doing (dam/levee safety and risk analysis)
- 20+ years of dam/levee engineering experience coupled with about 10+ years of attending, estimating, facilitating, and writing risk assessments reports.
- Minimum requirements:
 - Licensed engineer and/or geologist
 - Diverse experience in dam and levee safety engineering
 - Active participation as technical expert on two RA
 - Write main aspects of report for two RA (can be concurrent)
 - Facilitate two risk assessments while monitored and assisted by an experienced facilitator

Training

developing the skills... experience,
employees need to perform
improve their performance
skills, and abilities, specific

Nothing
teaches us better than our own
experiences!



Opportunities for Development

- Federal agencies (USBR, USACE, FERC, TVA) Best Practices Manual and Training Course
- Understand dam and levee safety tolerable risk guidelines
- Develop a better understanding of various dam and levee failure modes across multiple disciplines
- Active participation as technical expert on risk analysis team including PFMA, risk estimating, and report writing
- Co-facilitate with multiple experienced facilitators to learn different methods and procedures



Facilitator Responsibilities

- Coordinate efforts between dam owner/operator and risk team
- Facilitate the PFMA and team risk analysis
- Ensure agency's methodologies are followed to develop risk estimates
- Review for methods consistent with best practices in field
- Ensure the RA team is diverse and experienced enough for the project and type of evaluation
- Review report for clear documentation of all underlying assumptions and 'building the case' for the risk estimate
- Participate in higher level review and necessary modifications
- Present (or participates) in presentation of results to management



Types of Facilitation in Dam/Levee Safety

- Potential Failure Modes Analysis (PFMA) and PFM Classification
 - ✓ Applicable to all agencies
- Screening Level Risk Estimates
 - ✓ Periodic Assessment (USACE)
 - ✓ Semi-Quantitative Risk Assessment (USACE)
- Detailed Risk Estimating (QRA)
 - ✓ Comprehensive Facility Review (Reclamation)
 - ✓ Issue Evaluation Studies & Dam Safety Modification Studies (USACE and Reclamation)



Summary

- Facilitation plays a key role in U.S. Federal Dam Safety Programs
- Requires a combination of technical expertise and people skills
- See the risk assessment from start-to-finish with the PFMA, PFM screening, consequence estimate, risk calculations, report, review, and presentation
- Serve as the 'team captain' coordinate between the dam owner/operator, reviewers, management, and the risk team



Questions, Comments, or Discussion

Thank you for your attention.

