AASHTO **DOT Resilience Workshop**

November 7, 2017

Deliverable from Fast Forward Collaboration

Understanding **Purpose and Objectives**

PURPOSE: The conference intends to provide the opportunity for attendees to share ideas and to build more resilient and effective Departments of Transportation nationwide.

OBJECTIVES: In an engaging and creative environment, we will:

- Discuss existing practices and challenges to implementing resiliency
- Learn about successful practices around the country
- Be a part of a larger resiliency effort taking part over the next 12 months in preparation for the 2018 conference
- Develop specific guidance and recommendations for being proactive in DOT resiliency efforts.
- Increase understanding of how efforts can be implemented at DOTs around the nation and develop a more complete understanding of the direct and indirect impacts and costs associated with disaster events by:
  - Understanding responsibilities of DOT's before, during, and after negative events
    - Understanding the life cycle of an adverse event, from advance warning to resumption of normal service and everything in between.
  - Understanding responsibilities of ALL affected departments
  - Identifying multiple response pathways for any disruption quickly and reducing time and resources to attain a state of normality / to progress to further higher stages of operational performance

Welcome from **Paula Hammond** & Opening Remarks from **Josh DeFlorio**

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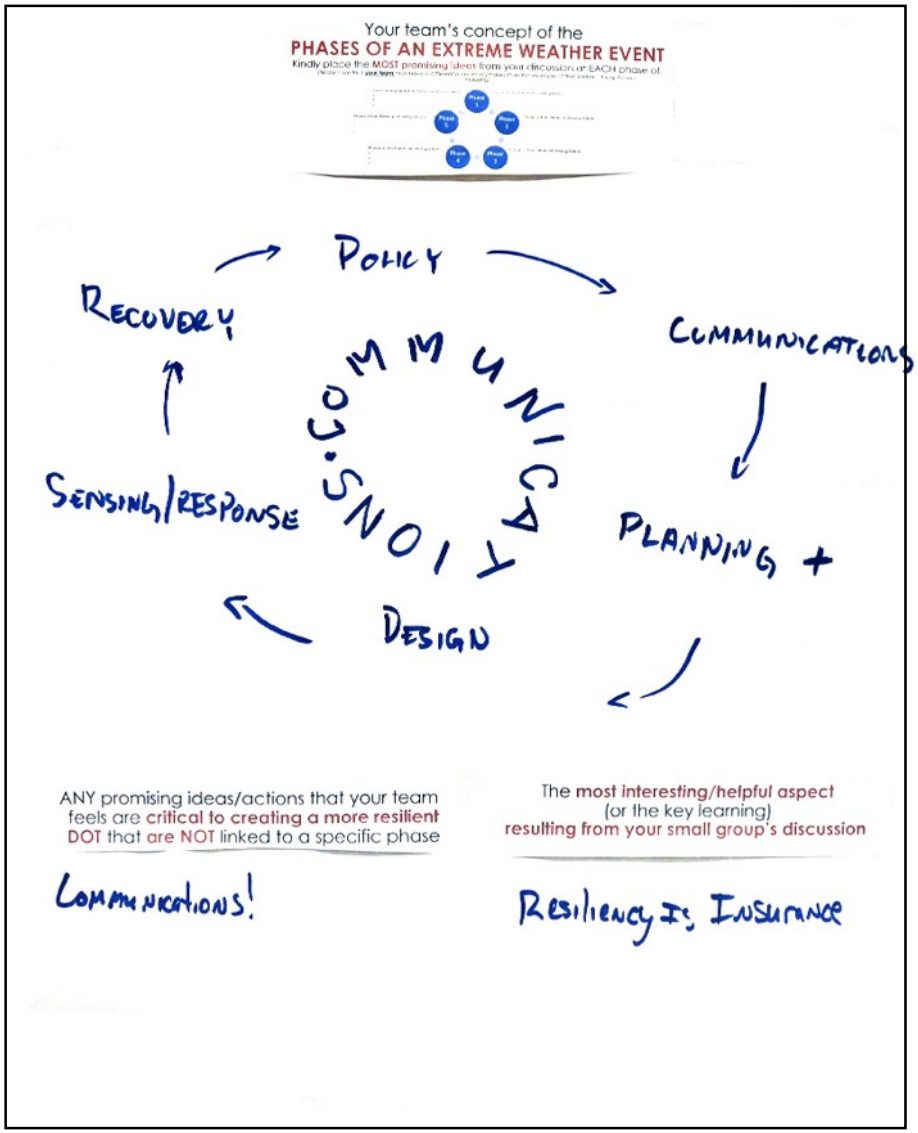
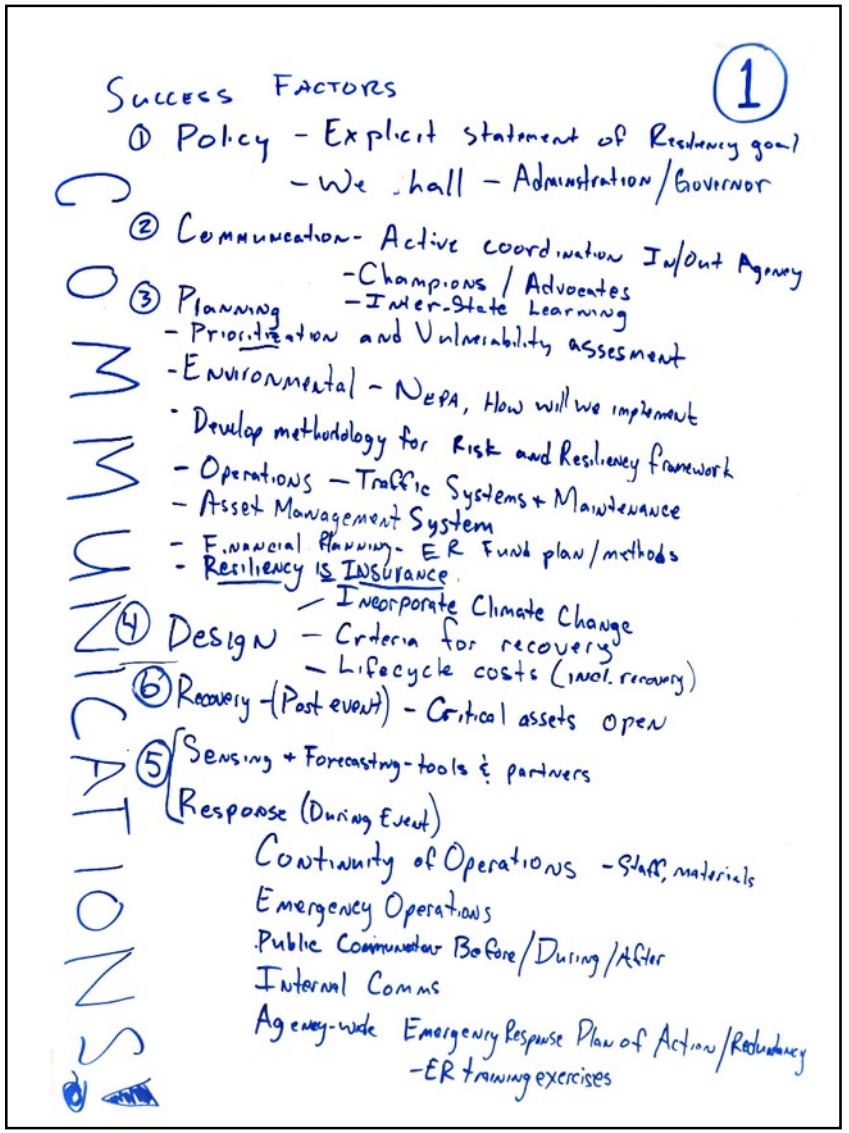
Breakout: **Outlining the Actions Toward a Resilient DOT**

Summarizing Questions to report back to larger group:

- Using your team's concept of the **phases of an extreme weather event,** which ideas are THE MOST promising for EACH phase?
- What are the MOST promising actions your team feels are **critical to creating a more resilient DOT** that are not linked to a specific phase?

Team One





Team's output reported back to group

Team's working wall

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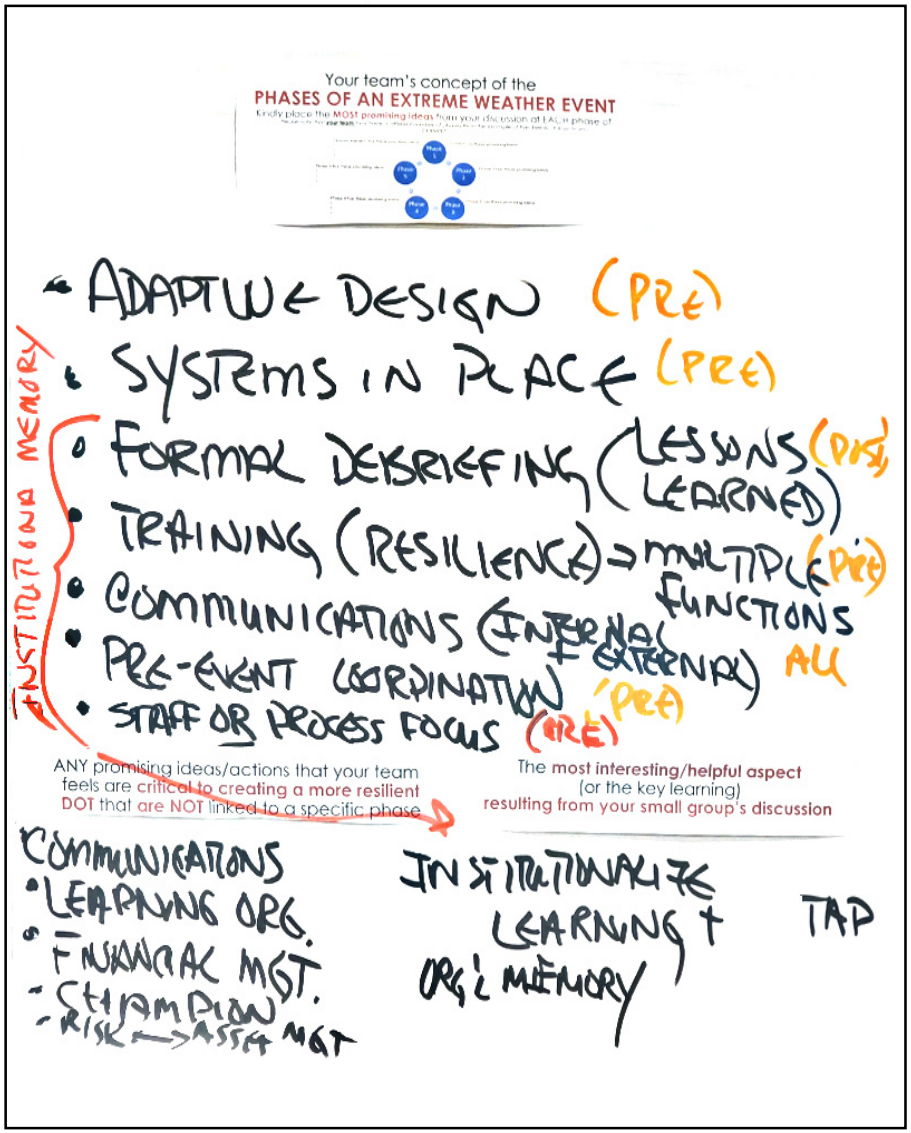
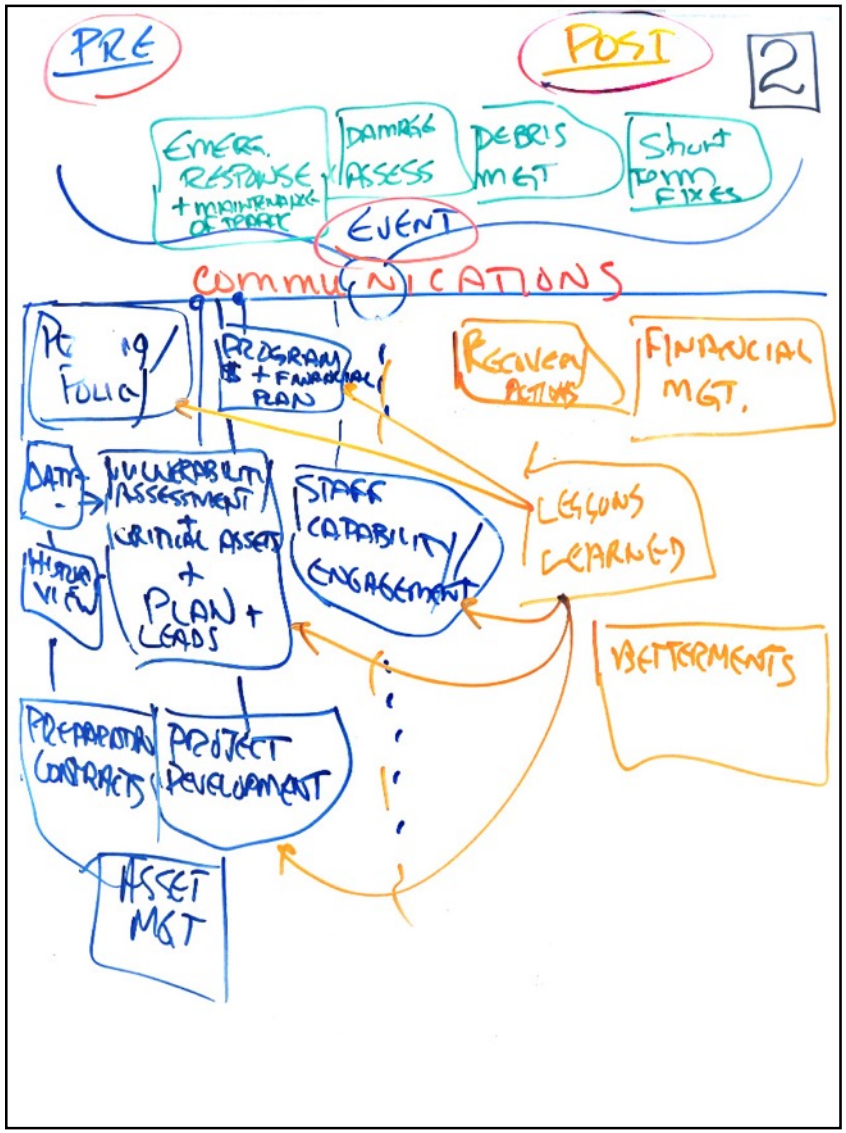
Team Two





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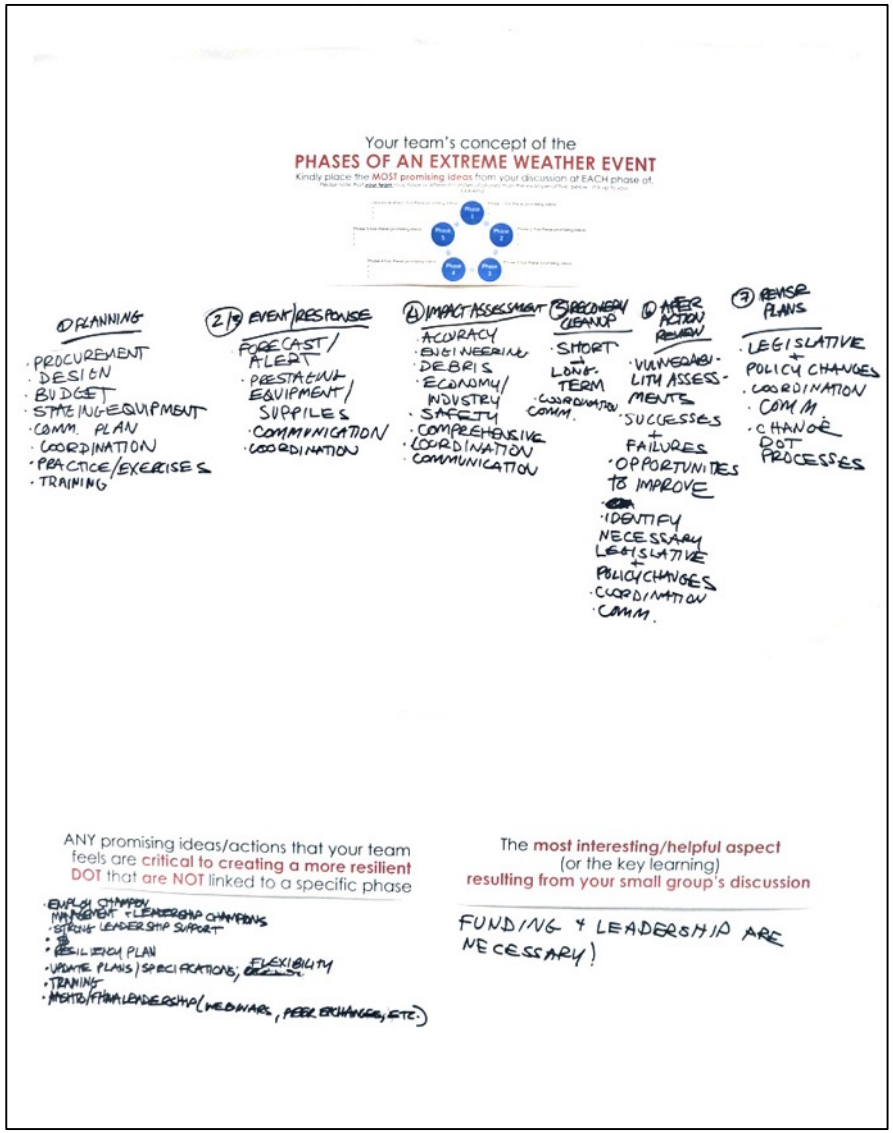
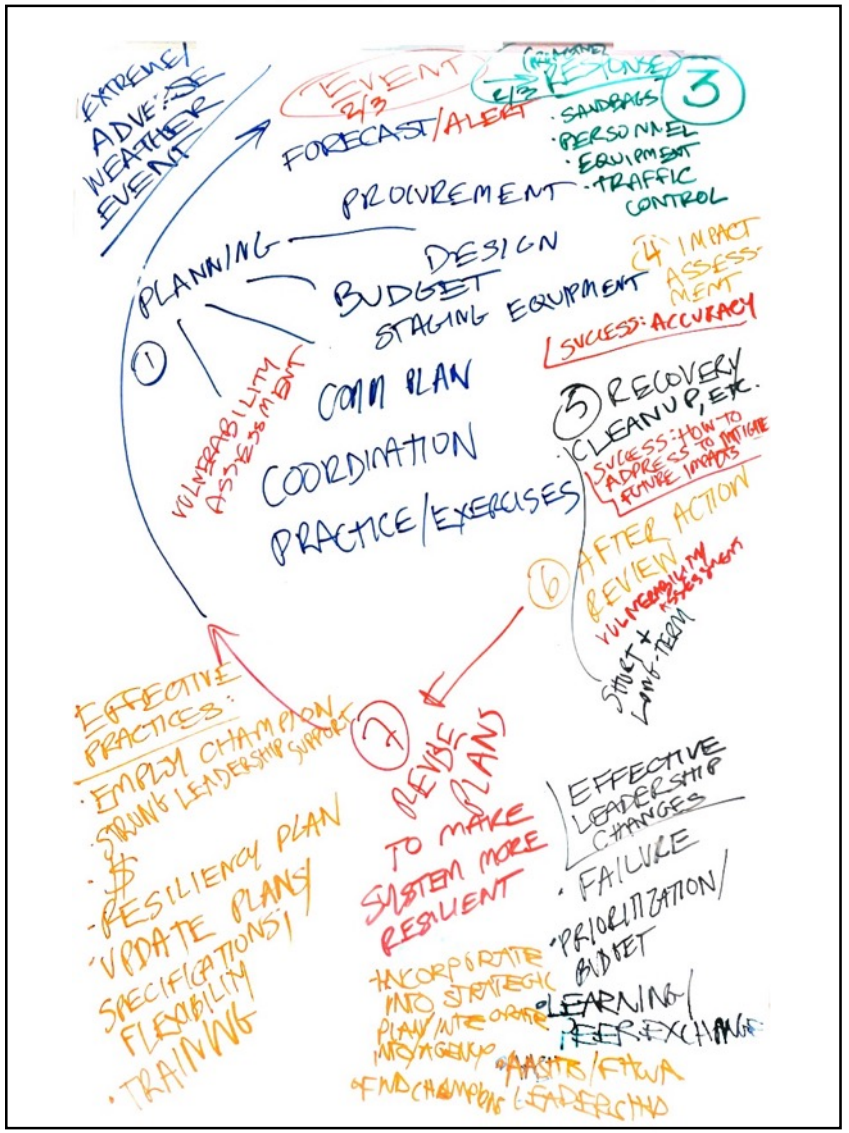
Team Three





Team's output reported back to group

Team's working wall

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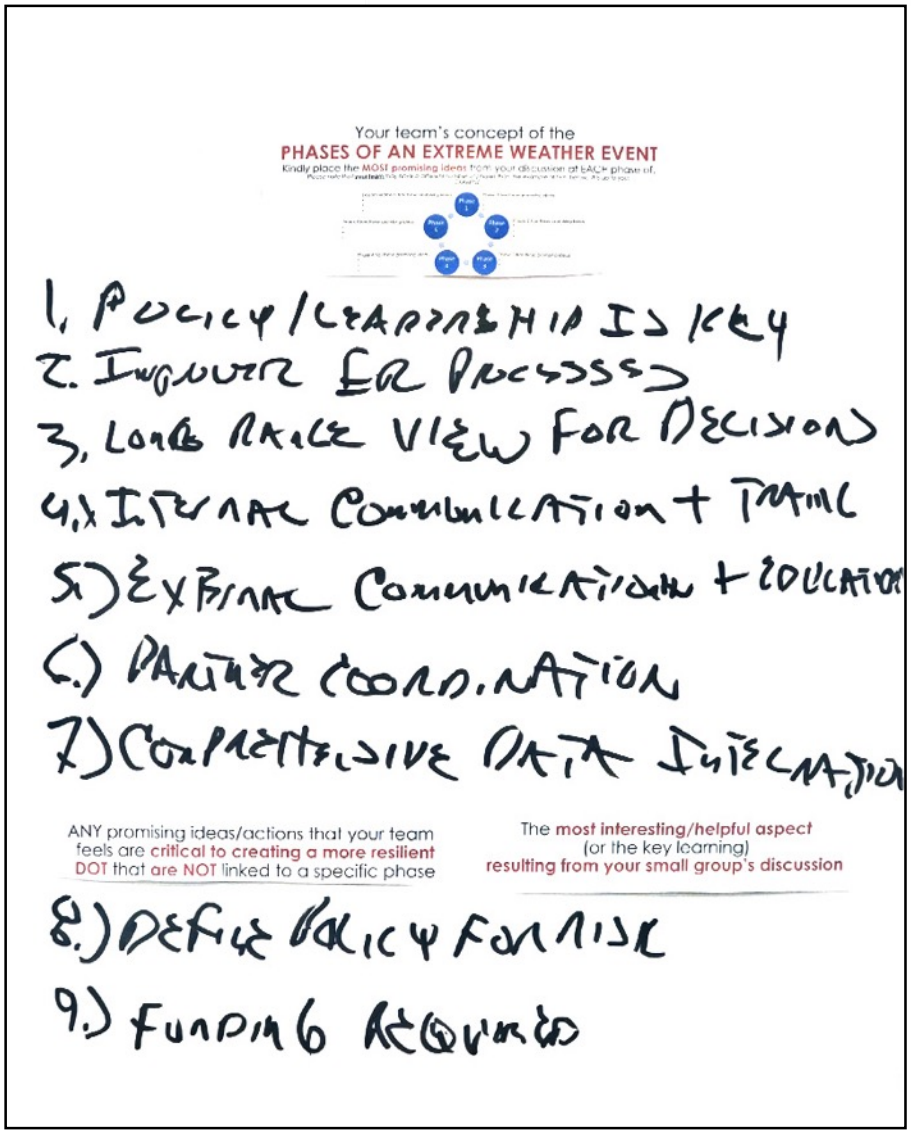
Team **Four**



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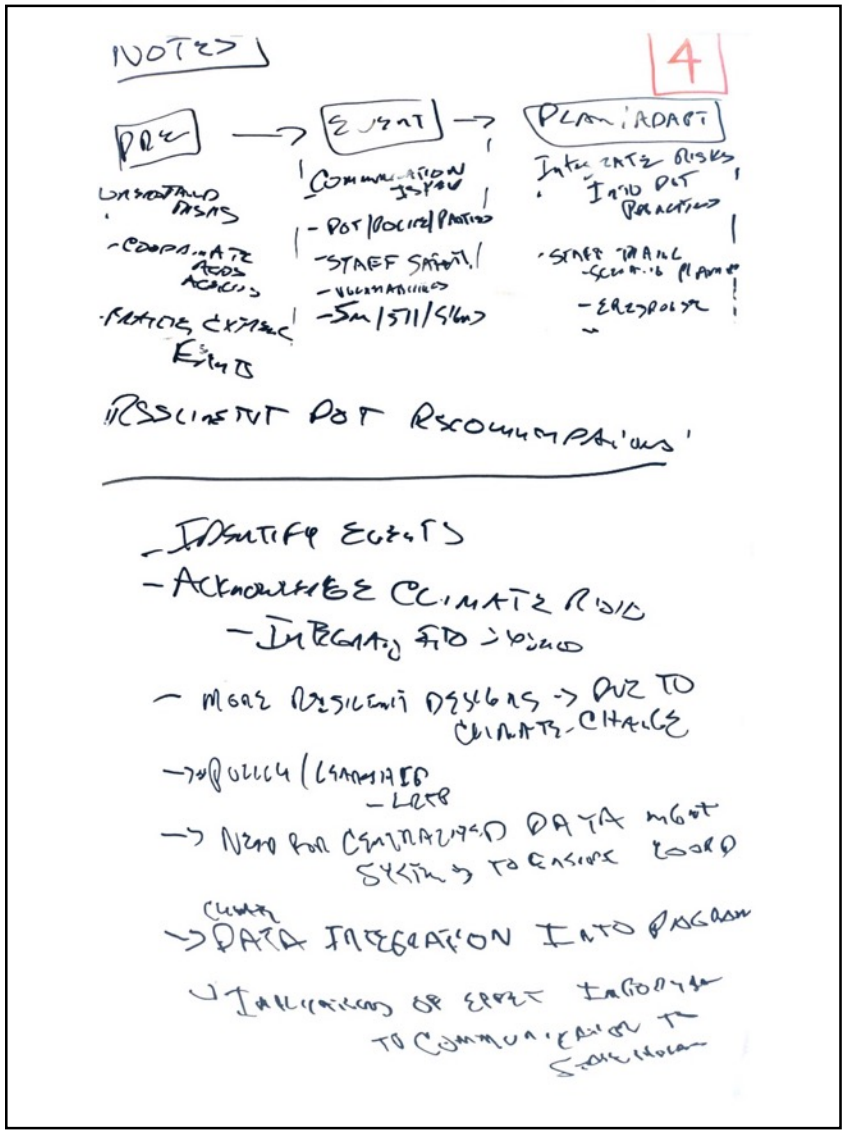

Team's working wall

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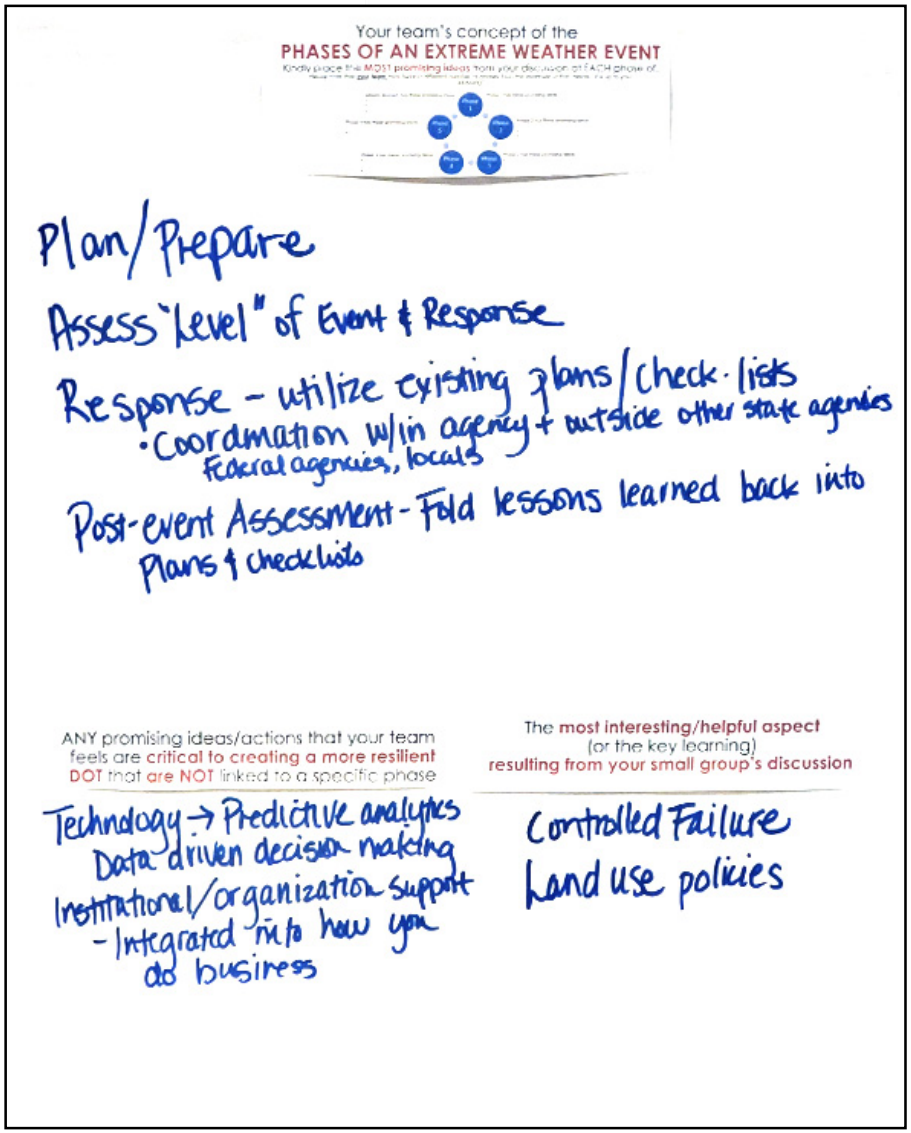
Team Five



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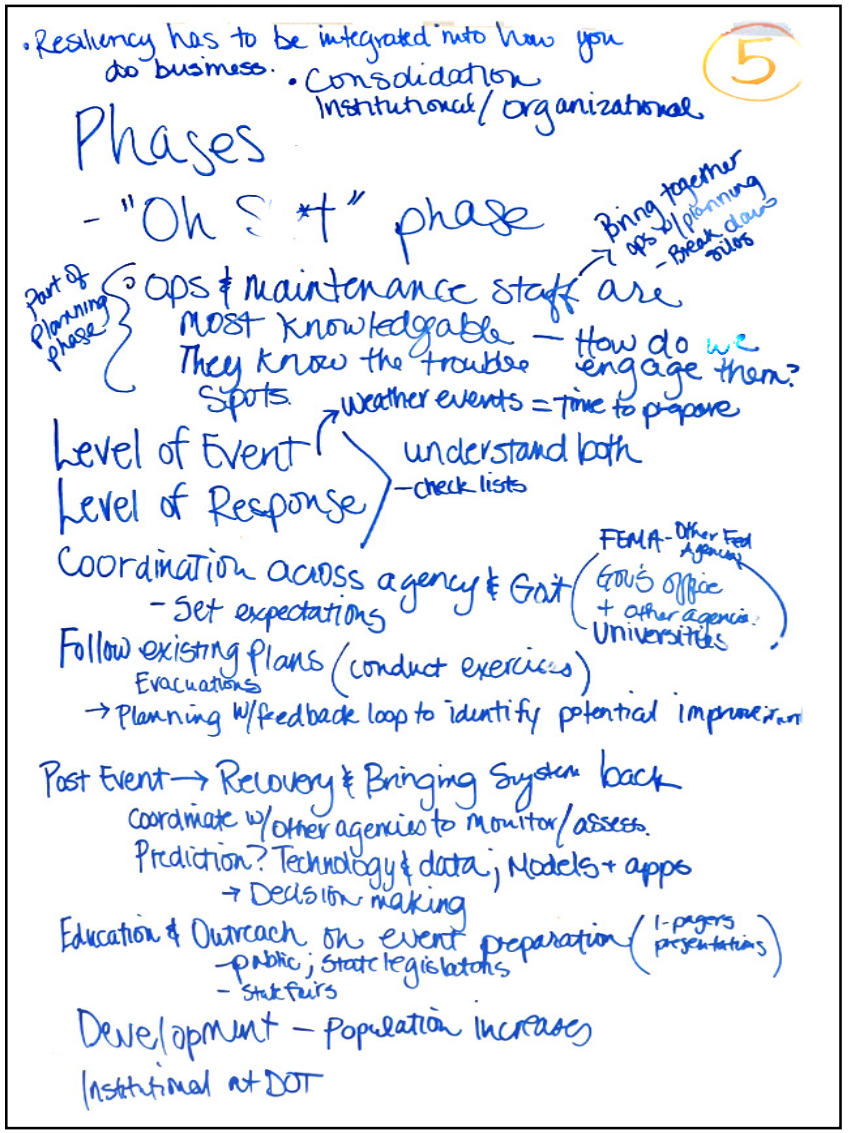

Team's working wall

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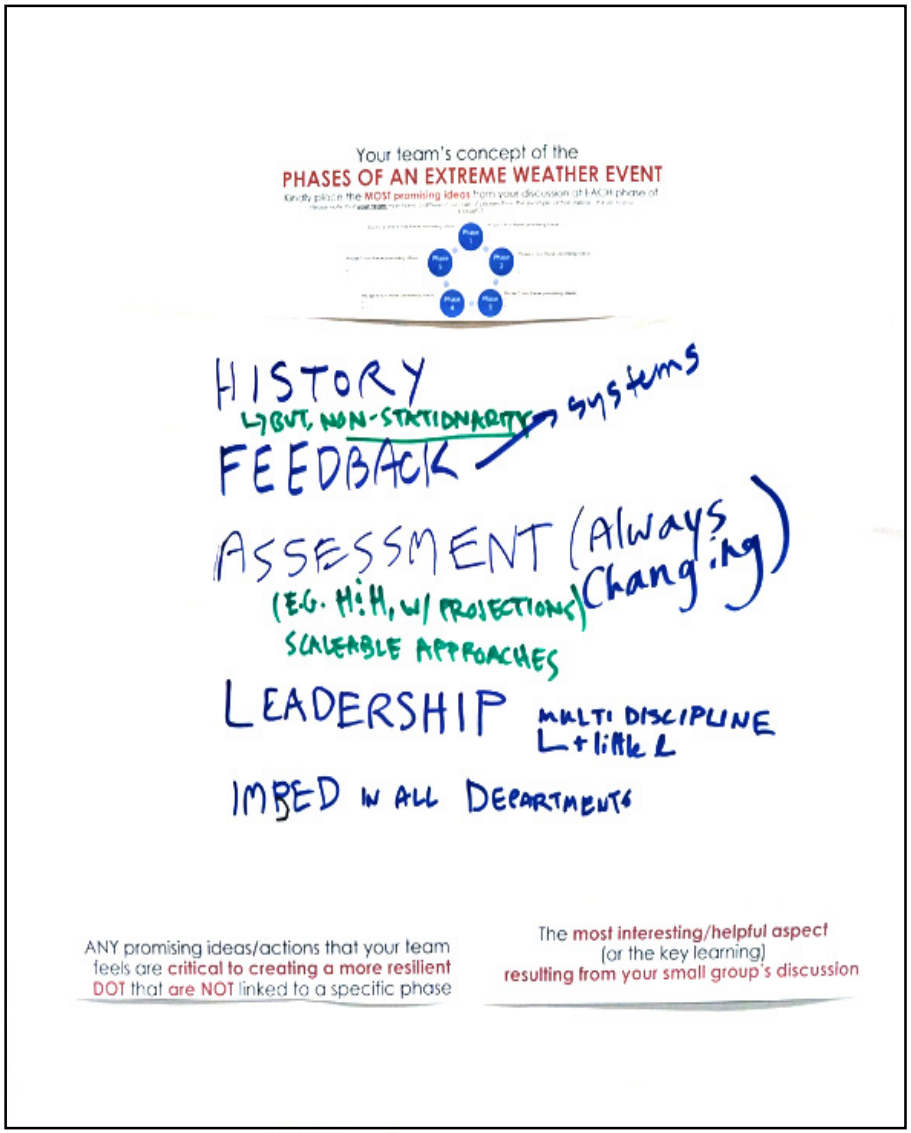
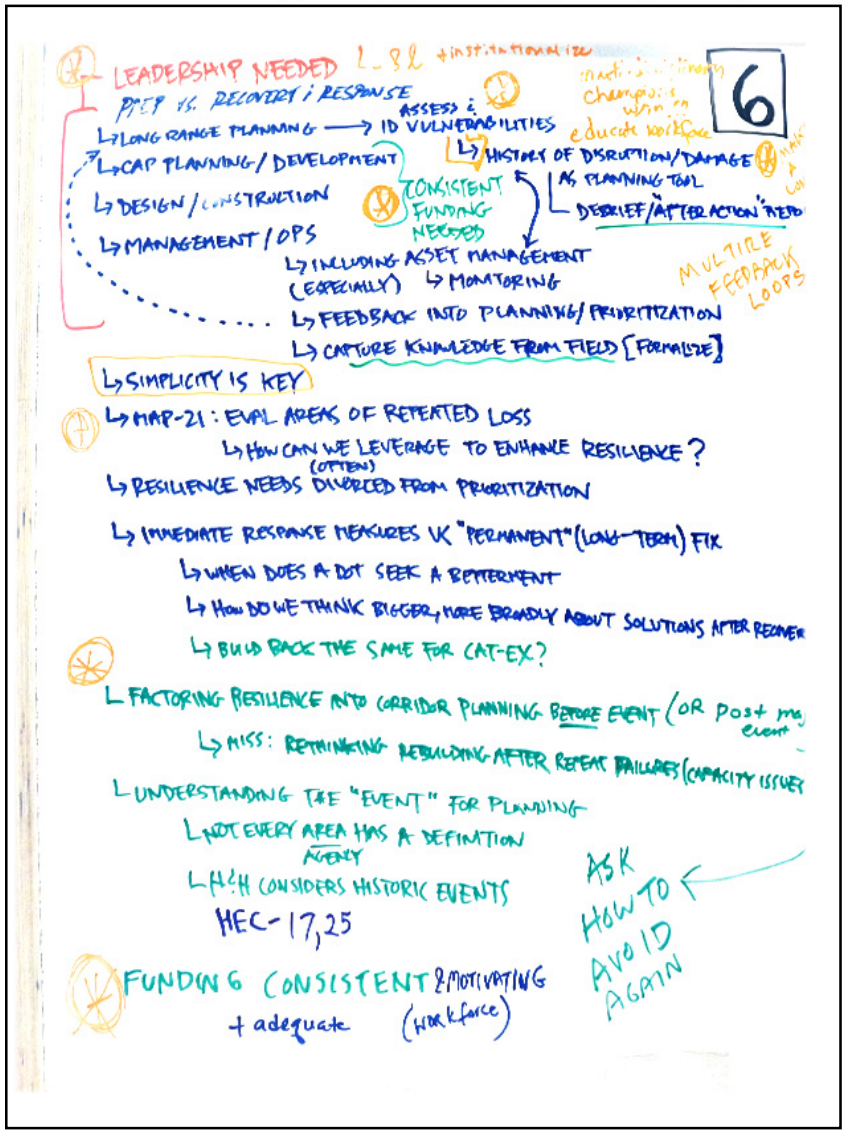
Team Six





Team's output reported back to group

Team's working wall

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Team **Seven**

Your team's concept of the
PHASES OF AN EXTREME WEATHER EVENT
Kindly place the MOST promising ideas from your discussion at EACH phase of:

1. Planning + Prep
   - long-term planning + risk mitigation
   - short + medium-term prep
2. Storm Prep
3. Weather Ops + Comms
4. Immediate clean-up
5. After-action analysis

ANY promising ideas/actions that your team feels are critical to creating a more resilient DOT that are NOT linked to a specific phase

Integrating climate mitigation into all regular processes - make "business as usual."
Coordination "know who to call"

The most interesting/helpful aspect (or the key learning) resulting from your small group's discussion

Pre-response Establishing streamlined processes for storm response

Team's output reported back to group

Leadership Support

- Promote + celebrate work underway
- Integrate resiliency into regular capital planning process
- Understand and treat climate as a risk

Team's working wall

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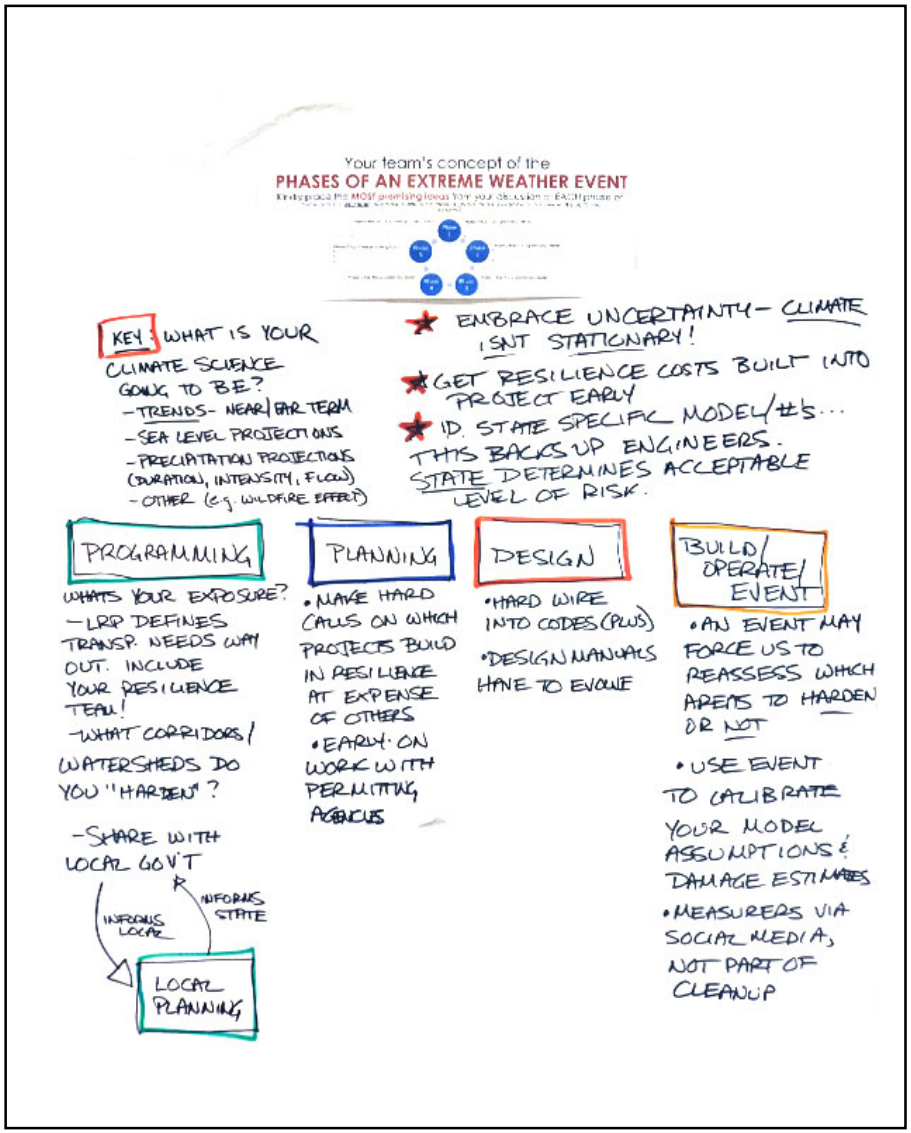
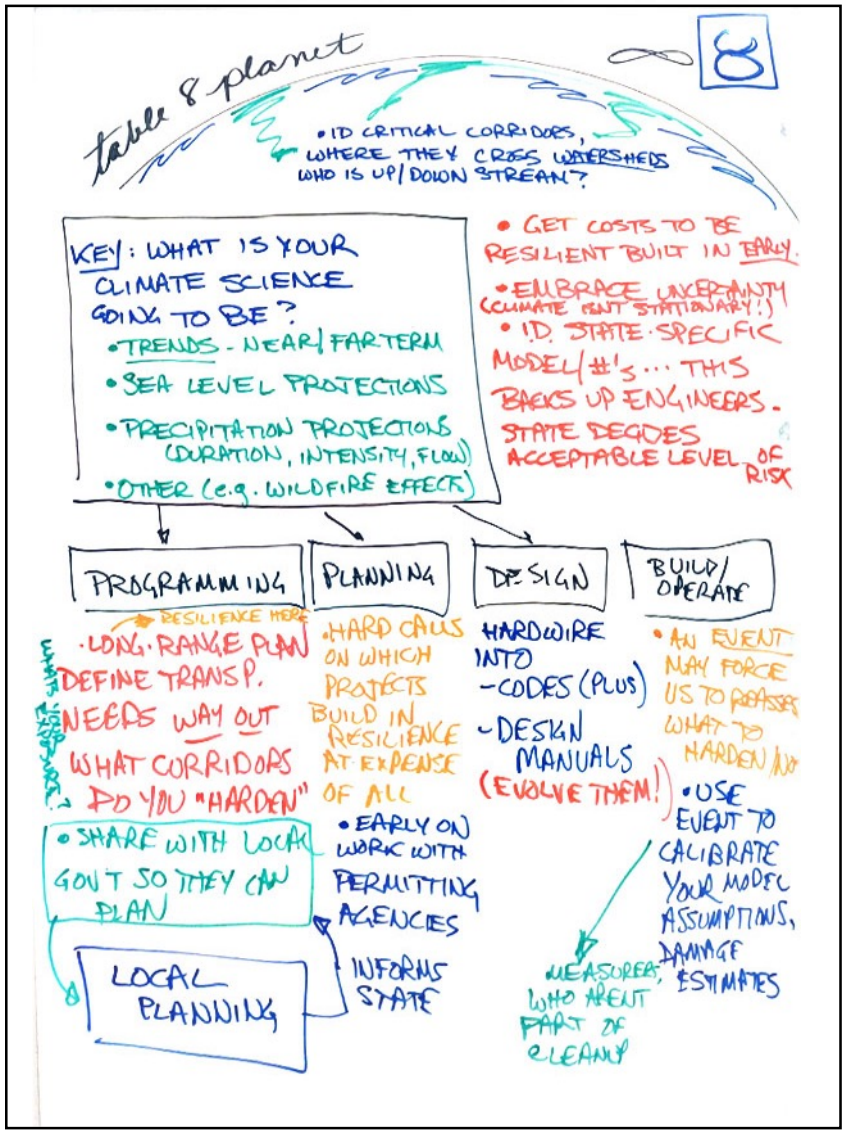
Team **Eight**





Team's output reported back to group

Team's working wall

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Luncheon & Information Sessions

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Luncheon **Information Sessions**

Meg Pirkle: Georgia (efforts to respond to future vulnerabilities)
Therese McAllister: Ongoing Resiliency Efforts and Lessons Learned: California (legislation, agency policies)
Chris Schmidt: NIST Community Resiliency Framework

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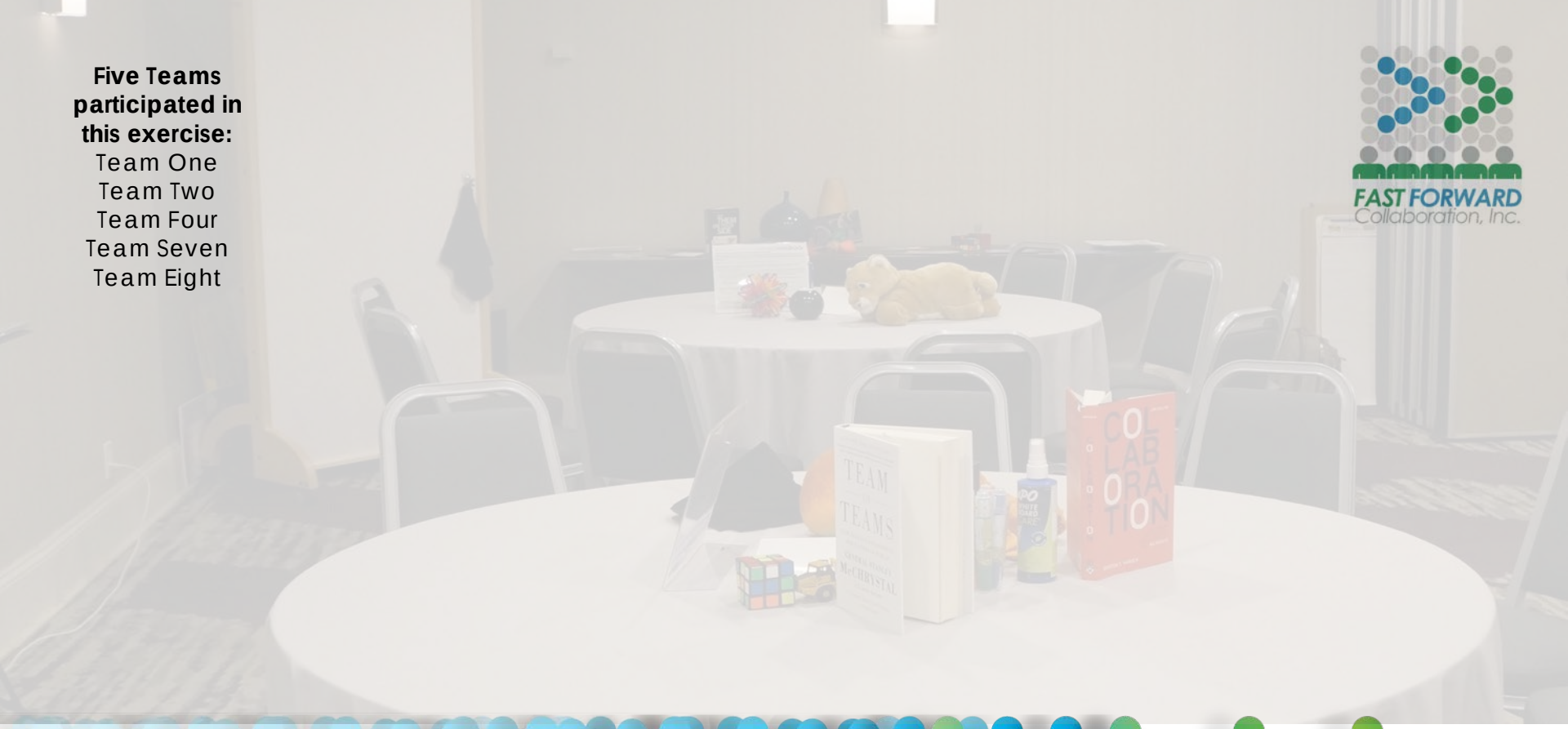
Five Teams participated in this exercise:
Team One
Team Two
Team Four
Team Seven
Team Eight



Breakout: **Critical Factors for DOT Resilience**

Summarizing Questions to report back to larger group:

- **Understand and align** on what is **critically important to each of the following four State DOT groups** from a resiliency perspective: 1) Budgetary and Policy (leadership); 2) Planning/Environment Group; 3) Engineering Design ; 4) Operations/Emergency Response/Maintenance
- **The #1 critical thing** that feels is **the most important thing** among all discussed that agencies could do to become more resilient. Why is this the most important?

*** **OPTIONAL BONUS OUTPUT:** A graphic image which captures **the key elements of DOT resiliency to extreme weather events.**

Output: **Budgetary and Policy (Leadership)**

Budgetary and Policy (Leadership)

Institutionalize
Resilience into agency:
- workflow
- position desc.
- standards
- etc...

Budgetary and Policy (Leadership)

EXECUTIVE LEADERSHIP
BUY-IN
&
ADVOCACY

Budgetary and Policy (Leadership)

Budgetary and Policy (Leadership)

1) Have a policy
   a) develop
   b) integrate
   c) communicate it
2) Whole Life-cycle cost
   "cost of recovery curve"
3) Avoid underestimating

Budgetary and Policy (Leadership)

#1 POLICY MANDATE

Also:
- CRITICAL SUCCESS FACTORS + PERF. MEASURES
- Life cycle costing + resilience

Output: Planning/Environment Team

Planning/Environment Team

#1 GHG reduction is goal #1

Incorporate your stat. Vulnerability Assessment into NEPA

Planning/Environment Team

HAVING A SOLID FRAMEWORK:

Planning/Environment Team

- Vulnerability Assessment
- Training
- Impact on Envior.
- Coordination w/ Envior. Partnering Agencies
- Asset Mgt.
- Incorporate into Planning/Program/Project Development Processes

Planning/Environment Team

Pre-planning:
Check to ensure the Vulnerability assessment is completed.

Integrate prioritization into projects, early on.

Resiliency is built-in; buy-in with data and all pertinent departments. (Same page/one goal).

Planning/Environment Team

VULNERABILITY ASSESSMENTS -

- DATA
- CRITICALITY
-

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Output: Engineering Design

Engineering Design

△ the Manual!

△ = Change (v)

Engineering Design

ENGINEERS NEED PROCEDURES:

- SCIENCE-BASED
- REPEATABLE
- DEFEND-ABLE IN COURT
- DESIGN PROCESS & INTEGRATED SCOPING (INCORPORATES STATE-ID'D ACCEPTABLE RISK)
- LIFECYCLE COSTING FOR OPTIONS

Engineering Design

- DESIGN MANUAL UPDATES (HARD TO DO)
- AASHTO/FHWA/TRB/STATE DOT GUIDANCE/RESEARCH
- TRAINING
- INCORPORATING INTO PLN/PROGRAMMING/PROJ DEV PROCESSES

Engineering Design

- Resiliency should be apart of ALL Phases.
- Incorporated into preliminary designs.
- Bring correct analysis to project; best methods.

Engineering Design

GUIDELINES FOR DESIGN

- flexible design
- Design alternative

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Output: Operations/Emergency Response/Maintenance

Operations/Emergency Response/Maintenance

Proactive

Response

Operations/Emergency Response/Maintenance

COMMUNICATIONS!

- THESE FOLKS KNOW THINGS. CONNECT THEM TO PLANNERS.
- LISTEN TO THEM... OR LOSE THEM
- LEVERAGE WHAT YOU LEARN FROM THEM ABOUT PAST EVENTS TO PREPARE FOR FUTURE ONES!

Operations/Emergency Response/Maintenance

- EXERCISES
- TRAINING
- SOPs AND CONTACTS COORDINATION (INTERNAL/EXTERNAL)
- UPDATES TO EMERGENCY RESPONSE PLAN (COORDINATION INTERNAL/EXTERNAL)

Operations/Emergency Response/Maintenance

- Program to incorporate broader resiliency requirements
- Prioritize maintenance based on Risk
- Communication (ALL)

Operations/Emergency Response/Maintenance

RESPONSE PLAN INFORMED FROM PAST EVENTS + DE-BRIEFINGS

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Title Title

Best Thing From Team Discussion

Use Resilience as the entry point (lever) ~~to~~ for a transformational approach for our transportation system.

Best Thing From Team Discussion

SHARING INFO AMONGST EACH OTHER

Best Thing From Team Discussion

- Leadership / Champion From Each Discipline
- Incorporate into Planning/Program/Project Development Process
- Updates to Emergency Response Plan (Coordination Internal / External)

Best Thing From Team Discussion

Integration of resiliency as Part of the culture and daily operations

Best Thing From Team Discussion

Importance of policy mandate

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Team One

Budgetary and Policy (Leadership)

Institutionalize Resilience into agency:

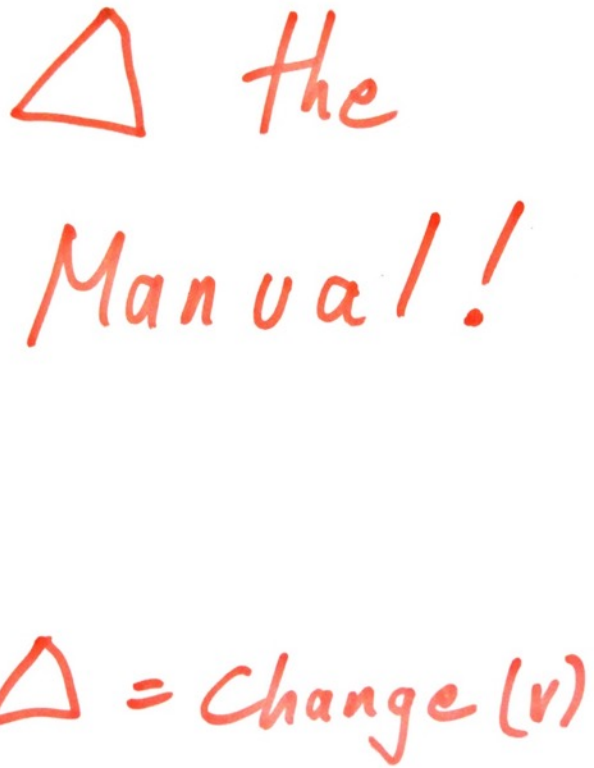
- workflow
- position desc.
- standards
- etc....

Planning/Environment Team

#1 GHG reduction is goal #1

Incorporate your state Vulnerability Assessment into NEPA

Engineering Design



Operations/Emergency Response/Maintenance

Team One

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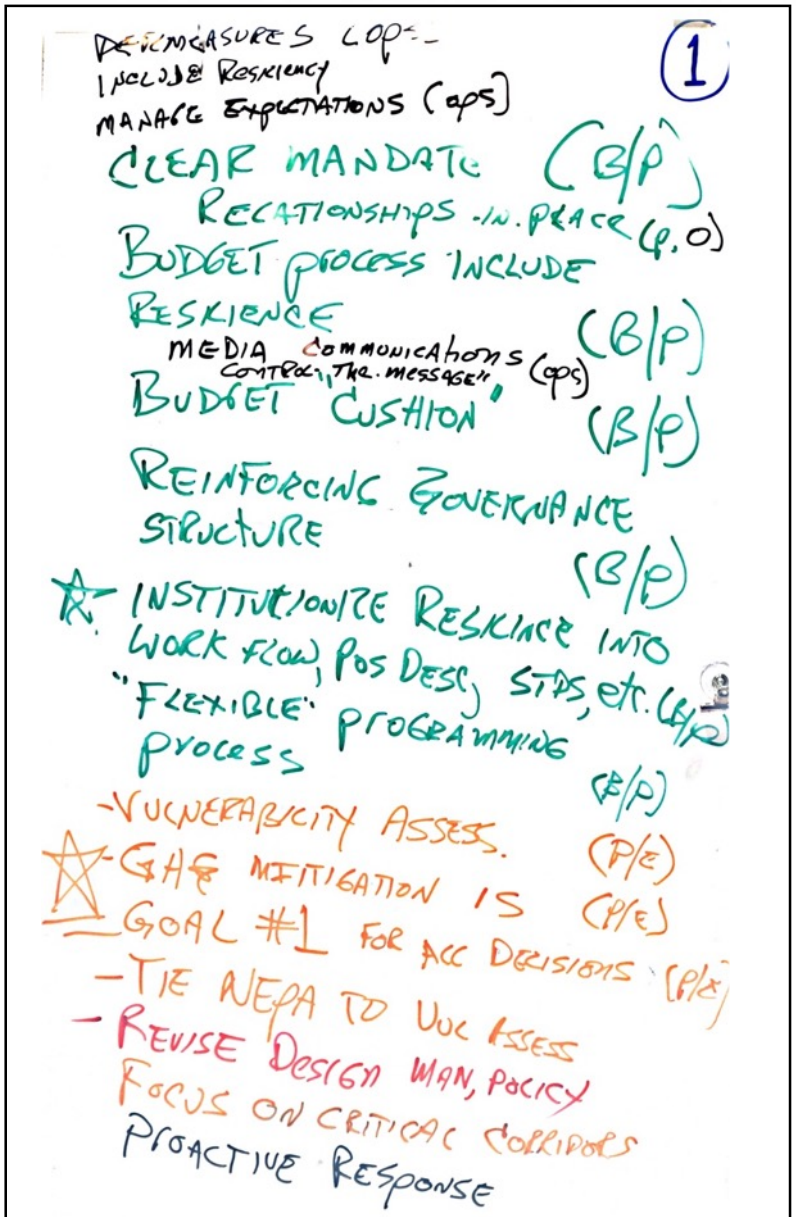

Team's Work Wall

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Team Two

Budgetary and Policy (Leadership)

EXECUTIVE LEADERSHIP

BUY-IN

& ADVOCACY

Planning/Environment Team

HAVING A SOLID FRAMEWORK:

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Team Two

Engineering Design

ENGINEERS NEED PROCEDURES:

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Team Two

Best Thing From Team Discussion

SHARING INFO AMONGST EACH OTHER

Team's Work Wall

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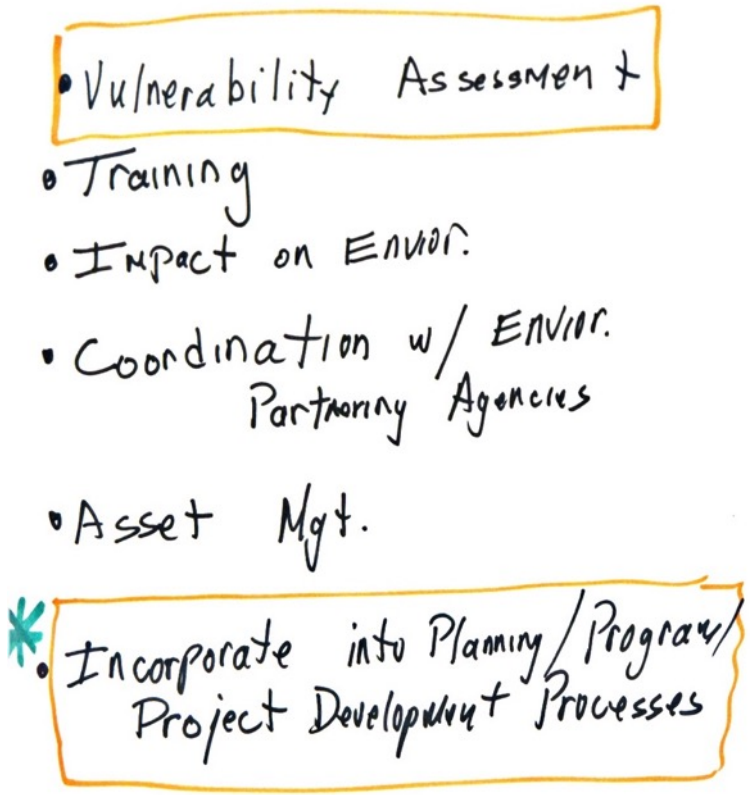
Team Four

Budgetary and Policy (Leadership)

Planning/Environment Team



Engineering Design

- DESIGN MANUAL UPDATES (HARD TO DO)
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- TRAINING
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Operations/Emergency Response/Maintenance

- EXERCISES
- TRAINING
- SOPs AND CONTACTS COORDINATION (INTERNAL/EXTERNAL)
- UPDATES TO EMERGENCY RESPONSE PLAN (COORDINATION INTERNAL/EXTERNAL)

Team Four

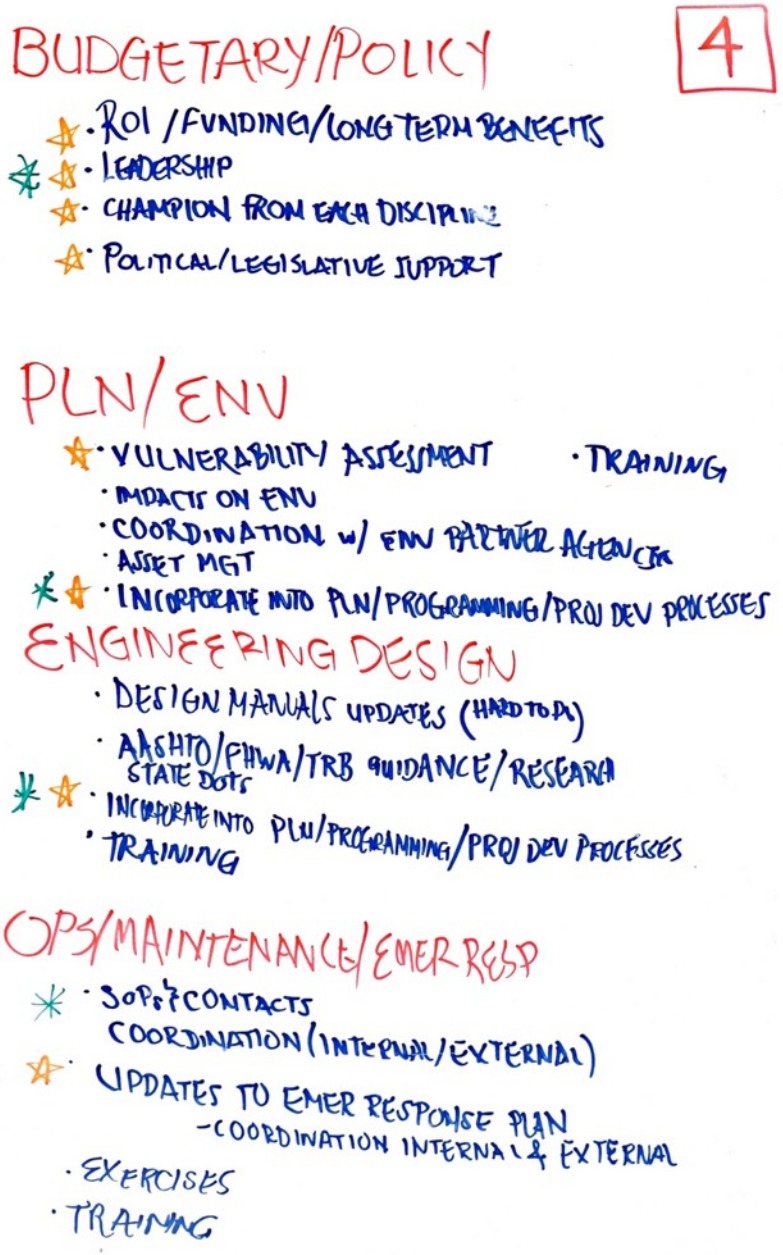
Best Thing From Team Discussion

- Leadership / Champion From Each Discipline
- Incorporate into Planning/Program/Project Development Process
- Updates to Emergency Response Plan (Coordination Internal / External)

BONUS GRAPHIC

Working together
Building
a
Resilient
DOT !

Team **Four: Wall**



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Budgetary and Policy (Leadership)

1) Have a policy
   a) develop
   b) integrate
   c) communicate it

2) Whole Life-cycle Cost
   "cost of recovery curve"

3) Avoid underestimating

Planning/Environment Team

Pre-planning:
Check to ensure the Vulnerability assessment is completed.

Integrate prioritization into projects, early on.

Resiliency is built-in; buy-in with data and all pertinent departments. (same page/one goal).

Engineering Design

- Resiliency should be apart of ALL Phases.
- Incorporated into preliminary designs.
- Bring correct analysis to project; best methods.

Operations/Emergency Response/Maintenance

- Program to incorporate broader resiliency requirements
- Prioritize maintenance based on Risk
- Communication (ALL)

Team Seven

Best Thing From Team Discussion

Integration of resiliency as Part of the culture and daily operations

BONUS GRAPHIC

Note: Team did not use work wall

Team Eight

Budgetary and Policy (Leadership)

#1 POLICY MANDATE

Also:

- CRITICAL SUCCESS FACTORS + PERF. MEASURES
- Life cycle costing + resilience

Planning/Environment Team

VULNERABILITY ASSESSMENTS -

- DATA
- CRITICALITY
-

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Team Eight

Engineering Design

GUIDELINES FOR DESIGN

- flexible design
- Design alternative

Operations/Emergency Response/Maintenance

RESPONSE PLAN INFORMED FROM PAST EVENTS + DE-BRIEFINGS

Team Eight

Best Thing From Team Discussion

BONUS GRAPHIC

Team Eight: Wall

① Budgetary / Policy (Leadership)

2. add critical success factors / PM's
3. incorporate resilience in Life-Cycle Cost
1. policy mandate / impetus for resiliency
   - factor resiliency in capital programming / project budgeting / selection
   - update policies/guidelines for various functions
   - establish criteria for prioritization, allocation and selection

② Planning / Environment

- inventory of infrastructure and climate data

1 - vulnerability assessment (feedback to capital programming)

- natural systems as mitigation strategies
- role of system/assets in serving community
- collaboration w/regulatory agencies
- co-benefits (transp & environment)

③ Engineering Design

- Guidelines for Flexible Design
- Design Alternatives

④ Operations / ER / Maintenance

- Incorporate in Engineering Design / Planning / Policy
- Post-event de-Briefing

1. Response Plan informed by past events
   - Tabletop Exercises
   - Communications
   - Institutional Relations
   - Feedback to Asset Management → Planning

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Thank You from Fast Forward Collaboration

Any questions? Contact us!

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