Empowering Decision Makers in Texas with Information They Want

“We work to rebuild communities, to put Texans back in their homes and help businesses recover after the trauma of disaster.”

– George P. Bush, Commissioner

Mission Statement:
GLO-CDR Planning team designs and oversees planning studies to collect, analyze, and communicate disaster-related data to assist decision makers to better protect Texans from future disasters.

• GLO-CDR Planning team empowers decision makers with the information they want.
• Our planning studies focus on:
  - Gathering or generating the data wanted to make informed decisions
  - Building tools and platforms to interact with the information
  - Making recommendations for actionable and sustainable future steps
Texas Culture – Local Control

The GLO is building the capacity and tools to consolidate data and fill the information gaps that will allow Texans to work together at all levels (Federal/State/Regional/Local/Individual).

"Men often oppose a thing merely because they have had no agency in planning it, or because it may have been planned by those whom they dislike."
– Alexander Hamilton

Usefulness ➔ Teamwork ➔ Trust ➔ Unity & Prosperity

"Trust is the only currency with any value." – Unknown

What Information do Texans Want?

Post-Harvey Survey Results:

1. Funding Opportunities
   • Generating ideas for projects is not a problem, finding funds for projects is a major problem.

2. Accurate and Reliable Risk Information
   • Especially updated flood maps

3. Effective Mitigation Strategies
   • Especially multi-jurisdictional and regional level partnerships and projects

Planning Cycle

Funding Analysis & Recommendations ➔ Stakeholder Engagement & Data Collection ➔ Alternative Analysis ➔ Risk Modeling ➔ Funding Analysis & Recommendations
Regional Flood Study - Goals

- Accurately model and evaluate flood risks within the study area
- Assist communities in developing cost-effective flood mitigation strategies
- Determine potential funding sources for mitigation projects

GLO-CDR Planning Team

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Program Outreach

Overarching Strategies

- Leverage Existing Community Relationships  
  - Intergovernmental Relations team
- Diverse Outreach Styles  
  - Flexible engagement strategies
- Keeping the Community and Mission First  
  - Data sharing agreements
  - Collaboration with ongoing projects
  - Cross-study working groups
East Region Outreach Overview

BY THE NUMBERS...

<table>
<thead>
<tr>
<th>Engagement Workshops</th>
<th>Introductory Services with County Officials</th>
<th>Workshops with County Officials</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>13</td>
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</table>

East Region Best Practice

- Design a user-friendly map-based questionnaire
- Pinpoint critical data points
- Capture detailed information
- Convey information through map-based outputs

East Region Data Collection

BY THE NUMBERS...

<table>
<thead>
<tr>
<th>Data Points Collected</th>
<th>What Was Identified</th>
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<tbody>
<tr>
<td>372</td>
<td>Flood/Storm Areas</td>
</tr>
<tr>
<td></td>
<td>Flood/Storm Hazards</td>
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<tr>
<td></td>
<td>Drainage Problems</td>
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<td></td>
<td>Access or Potential Projects</td>
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<td></td>
<td>Critical Facilities</td>
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West Region Outreach Overview

Overview: 25 counties, 5 river basins that experience significant flooding across the region

Outreach Events: Initial kickoff workshop, initial survey, data collection meetings, community flood needs workshops, & one-on-one meetings. 100% of counties participated in at least one event

Next Steps: Complete community flood needs workshops and assist communities in identifying and applying for potential grant opportunities to mitigate flood risks

Contact Information: glofloodstudies.west@recovery.texas.gov

West Region Best Practice

Building Partnerships through Virtual & In-Person Workshops
• Enhanced flood data by integrating the community-based perspective
• Completed over 75% of workshops across 21 West-led counties. The relationships we built with community representatives at the county and city levels have enabled more productive follow-up and understanding of flood mitigation needs.
• Captured 397 data points and rich qualitative insights on community concerns such as:
  • Flood prone areas
  • Dollars
  • Projects

LRGV Region Update

Data Collection:

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<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Counties</td>
<td>4</td>
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<tr>
<td>Municipalities</td>
<td></td>
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</tr>
<tr>
<td>8 Flood Studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Natural Environmnet Datasets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Built Environmnet Datasets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Natural Hazard Datasets</td>
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</table>
**LRGV Region Update**

**Collaboration with Ongoing Projects:**
- TWDB State Flood Planning – Region 15
- 20 TWDB Flood Infrastructure Funding Projects
- 28 GLO CDBG Mitigation Projects

**Next Steps:**
- Kickoff Regional Workshop
- Data collection meetings, community flood needs workshops

**Contact Information:**
- GLOfloodstudies.lrgv@recovery.texas.gov

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**Outreach Recap**

Intentionally coordinating on data collection with other initiatives is important to limit the burden of data requests on our stakeholders.

- Communities expressed the need for updated floodplain maps in many rural areas.
- The use of interactive mapping tools allowed stakeholders to engage with our study virtually, in-person, and at their convenience.
- Communities need additional funding to implement and identify flood risk mitigation projects.

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**The Texas Disaster Information System**

The cornerstone project for the Institute is the Texas Disaster Information System. This project is currently in the planning phase, but will be an interactive, analytical, and visual web-based spatial data system designed to support more resilient decision making at the state level.

The planning phase will result in a comprehensive plan for the design, development, and creation of TDIS; a dedicated project management team; and a stakeholder engagement strategy.
“It can’t just be another data tool. It has to be useful.”

It’s about developing resources for decision makers based on their needs rather than the individual missions of data-producing and holding entities.

“Science-based work that will go into TDIS is the main differentiator.”

Partnership of multiple state agencies … will create an environment of shared partnership and collective realization.

**North Star: KEYS TO TDIS SUCCESS**

**REAL-WORLD APPLICATION**
- Answering practical questions
- Feedback loop to responders and decision makers
- Bottom-up, not Top-Down
- Easy-to-understand visualizations

“Getting resources for decision makers based on their needs rather than the individual missions of data-producing and holding entities.”

**PARTNERSHIPS**
- Reduces information silos
- Creates buy-in among agencies
- Generalized access without duplicating

“Partnership of multiple state agencies … will create an environment of shared partnership and collective realization.”

**INNOVATION**
- Grounded in cutting-edge research
- Consolidates & Integrates Data in New Ways
- Answers complex questions through analytics

“Science-based work that will go into TDIS is the main differentiator.”

TDIS is emerging into a broader forest of data resources and services.

**TDIS Knowledge Ecosystem**
- Smart Data
- Knowledge
- Information
- Data
- Resources

**TDIS Functional Ecosystem**
- Forest Floor
- Understory Layer
- Canopy Layer
- Emergent Layer
- Roots and Resources
Focus on Core TDIS Knowledge Ecosystem and Capabilities

- Smart Data
  - Wisdom, Intelligent Systems
  - Taking decisions using knowledge and reasoning
  - AI Supported, emergent research and prototyping

- Knowledge
  - Analytics & Reusable Workflows
  - Information used with experience and understanding

- Information
  - Information Services
  - Data enriched with context and history

- Data
  - Data Objects
  - Data Discovery, ETL, Provenance Records, Metadata

- Resources
  - Infrastructure, Compute, & Federated Sources
  - Compute Resources & Organizational Processes

Celebrating Conclusion of Planning Year

- Collaborative partnership solidified between Texas A&M and UT
  - Core TDIS work at the Texas Advanced Computing Center consolidated
  - Formalized additional support from the Center for Space Research
  - Development of Core TDIS team with members from UT, A&M, and private consultants to support initial planning and project management

- Initial Stakeholder engagement complete
  - Five formal steering committee meetings complete
  - 17 meetings with state agencies and local government entities to identify and scope potential use cases

- Cross-functional TDIS team established
  - Involves multiple departments and local government entities

- Completed First TDIS Plan and iterative "evergreen" process for updating
  - While the first year of the TDIS planning phase is complete, planning and documentation activities will continue through the TDIS lifecycle through an "evergreen" process. Planning is not static and will continue to evolve and adapt as TDIS services are deployed, tested, and formalized.

TDIS DRAFT Living Plan
Version 1.0 has Published

https://tdis.io/
Transition to Tactical

Goal:
Provide strategic decision support services and analytics that inform

Planning:
• Completed initial plan
• Starting iteration and continuous improvement
Implementation - Base Camp:
• Developing detailed Standard Operating Procedures
• Setting up initial and core services
• Expanding team

Milestones

<table>
<thead>
<tr>
<th>TDIS Contract</th>
<th>Master Contract</th>
<th>Work Order 1</th>
<th>Work Order 2</th>
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<tbody>
<tr>
<td><strong>Planning</strong></td>
<td><strong>2020-2021</strong></td>
<td><strong>2022-2024</strong></td>
<td><strong>2022-2033</strong></td>
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<tr>
<td><strong>Completed</strong></td>
<td><strong>$1.5 M (CDBG-DR)</strong></td>
<td><strong>$8.5 M (CDBG-DR)</strong></td>
<td><strong>Up to $30 M (CDBG-MIT)</strong></td>
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<tr>
<td><strong>Contract</strong></td>
<td><strong>Plan Published October 2021</strong></td>
<td><strong>Will Cover Implementation through 2024</strong></td>
<td><strong>Will Cover Implementation through 2032</strong></td>
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<td><strong>Work Order 1</strong></td>
<td><strong>Executed December 2021</strong></td>
<td><strong>Deliverables and Reports Due Quarterly</strong></td>
<td><strong>Deliverables TBD, under development</strong></td>
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<td><strong>Work Order 2</strong></td>
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Work Order 1 High-Level Structure

<table>
<thead>
<tr>
<th>What's Included</th>
<th>Major Tasks</th>
<th>Key Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Data Collection, Data Sharing, and Data Standardization</td>
<td>Comprehensive Quarterly Reporting</td>
</tr>
<tr>
<td></td>
<td>2. Security and System Infrastructure Operation</td>
<td>Standard Operating Procedures</td>
</tr>
<tr>
<td></td>
<td>3. Decision Support Web Applications, Use Cases, Services, Analytics, and Visualizations</td>
<td>Staffing Plan</td>
</tr>
<tr>
<td></td>
<td>4. Project Management</td>
<td>Risk, Users, and Testing of Operational Services</td>
</tr>
</tbody>
</table>

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<tbody>
<tr>
<td></td>
<td></td>
<td>User Interface Design, Testing, and Evaluation</td>
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<td></td>
<td></td>
<td>Steering Committee Facilitation, Management (User Case Development)</td>
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<tr>
<td></td>
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<td>Testing</td>
</tr>
</tbody>
</table>
Problems Lead Development of TDIS Services

Protocols & Practices

TDIS CORE Services

System Operations

Development & Prototyping

Preservation & Provenance

Accessible Processing & UI/UX

Model Management & Execution

Data Management Services

Preservation & Provenance

TDIS Ecosystem

Use Cases

- Domain problems drive the use case selection
- Initial implementation includes straightforward examples
- Early use cases tightly connected with feature requirements
- Initial use case have arisen organically
  future use cases will be selected using a rubric

TDIS Ecosystem

Implementation 0-18 months

Use Cases

GLO Regional Flood Studies

- Project has officially kicked-off
  1. Collect and ingest datasets and digital objects from 4 regions.
  2. Coordinate with GLO Vendors to design features and capabilities.
  3. First data services test cases.

State Hazard Mitigation Plan

- Project officially kicked-off
  1. Collect and store high-quality hazards data and metadata attributes.
  2. Develop a statewide relational hazards database.
  3. Perform statewide hazard exposure, vulnerability, and risk assessments.

Flood Planning Coordination with TWDB

- Project in co-development (Reem Zoun)
  1. Assist with flood model metadata descriptions.
  2. Develop a model and data indexing service for TWDB user.

Data Inventory & Matching Service with TRIF

- Project in co-development (Sam Rendon)
  1. Gather and ingest datasets and digital objects from 4 regions.
  2. Coordinate with GLO Vendors to design features and capabilities.
  3. First data services test cases.
**Expected Results**

- Between 7-9 implemented example Use Cases
- Multiple partnerships and collaborative efforts with state agencies and universities
- Establish 3 core services in the TDIS ecosystem
- Develop initial TDIS SOPs, protocols and practices
- Leverage synergistic win-win opportunities

Planned from fall 2021 through initial phase of Work Order 1

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**Thank you!**

**Discussion**

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**The CHARM Approach**

- CHARM: Community Health And Resource Management
CHARM provides customizable, hyper-local, interactive analyses...

Future Land Use Plans
Higher Development Standards
Riverine & Surge Flood Loss Estimates
Critical Facilities Exercise
Demographic Vulnerabilities
Mitigation Opportunities

... to support interactive, data-driven collaboration and planning

The CHARM approach

Using data, support the human dimensions of collaborative decision-making

- Intended for all technical and non-technical participants and stakeholders
- Bring various viewpoints to work together
- Allow participants to come to terms with the data in their own words
- Build a conversation around data
- Engage with live mapping feedback
- Push technology to the background and let people work directly with each other and the data
Each app will be community specific
Explore state and local data easily
Customize tools to match local needs
Compare scenarios and plans
Facilitate, capture, and share ideas as a team
Online CHARM is a living platform to support collaborative community planning:

- Create teams to develop, view, and share ideas online.
- Workshop mode will allow you to bring in external stakeholders.
- Intended for use by technical and non-technical users.
- Link with other state data resources, TIDAL, upload and integrate local data.

Online CHARM helps identify strategies and opportunities:

- Build, visualize, and compare your plans and scenarios.
- Tag locations.
- Drill down to assess local risks.
- Add comments, link to documents, and upload pictures.
No plan can address the infinite problems caused by disasters. Our goal is to empower decision makers with the information they need to understand the situation and quickly adapt.

“No plan survives first contact with the enemy. What matters is how quickly the leader is able to adapt.”
– Tim Harford

We are not trying to solve any one problem; We are creating the relationships and platforms to address any problem together.

Planning together will promote unity, trust, and empowers decision-makers to better protect Texans from disasters.

Questions?