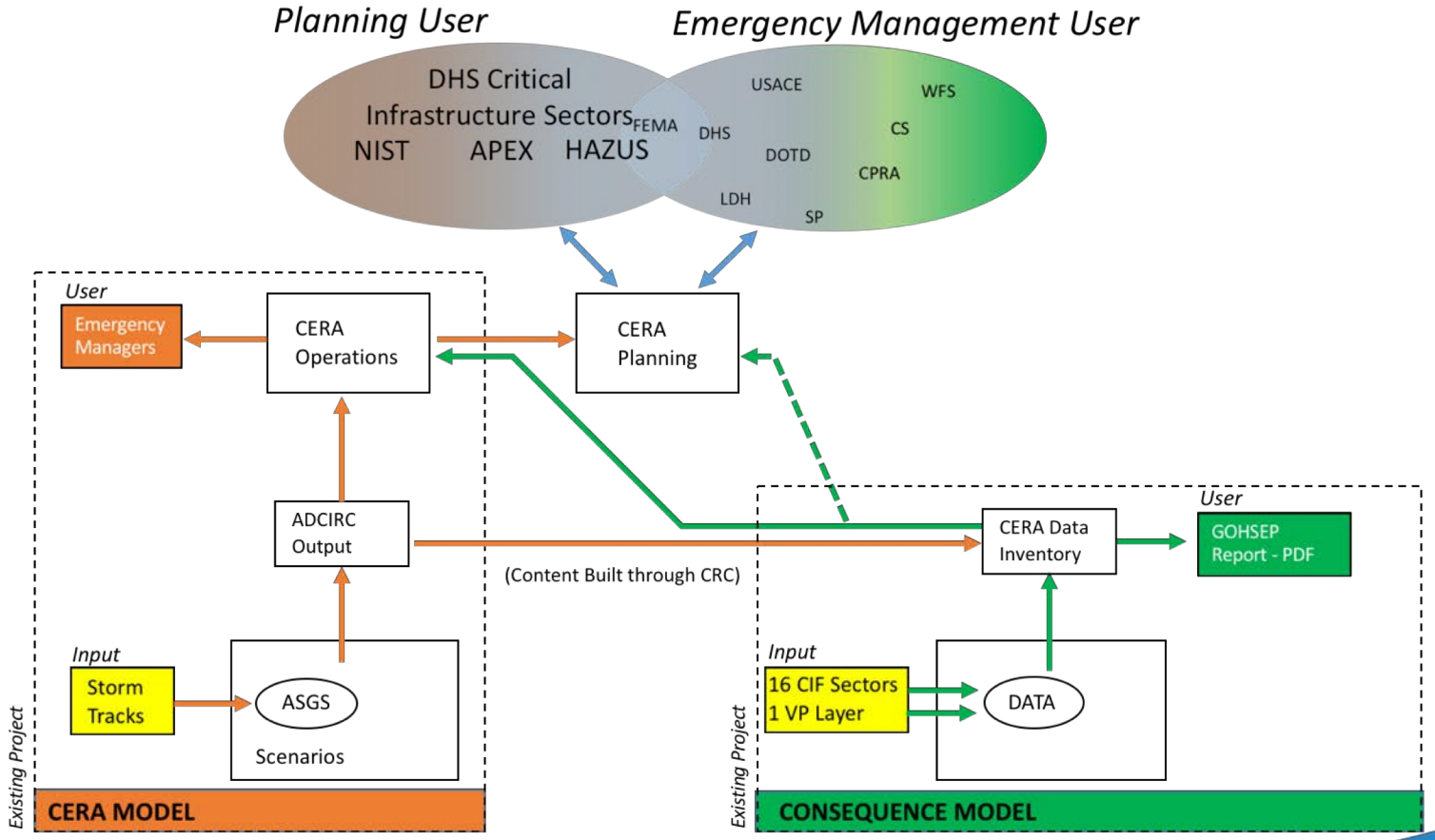
Integrating CERA-Planning Software to support DHS Modeling and Planning Efforts for more Resilient Communities

- Robert R. Twilley, Sea Grant Director and Professor, Oceanography and Coastal Science, LSU
- Traci Birch, School of Architecture, Coastal Sustainability Studio, LSU
- Carola Kaiser, Center for Computation and Technology (CCT), LSU
- Brant Mitchell, Stephenson Disaster Management Institute (SDMI), LSU

Integrating CERA-Planning Software to support DHS Modeling and Planning Efforts for more Resilient Communities



Research Work and Accomplishments

- We propose to investigate how some of the skills developed within CERA-Planning can be integrated into some of the flood exposure and damage modeling techniques that have been developed to evaluate impact of natural hazards to improve planning.
- The approach is to test whether some of the skills that have been developed within CERA/ASGS and incorporated into CERA-Planning to describe flood exposure and impacts can contribute to the existing flood consequence modeling within FEMA and NIST.
- We will incorporate established modeling outputs into existing consequence models (HAZUS FLOOD) and community resilience guidelines (NIST Community Resilience Program) showing how flood risk (both from storms and SLR) will impact people, industry, and infrastructure.

Research Work and Accomplishments

- The LSU CERA/ASGS team have been working with NIST to define how CERA-Planning can create test case scenarios of previous storms in selected locations to test the capacity of these new tools and guidelines in achieving the goals of the NIST
- Webinars with NIST have been held to define how CERA-Planning may be used in the presentation format used by NIST in community engagement to utilize the Community Resilience Planning Guide.
- The development of CERA-Planning took has focused around the use of Hurricane Isaac and flood prone region of Northshore of Lake Pontchartrain to build an integrated system for community resilience.

End User Engagement

- Research Engineer, Community Resilience Group, NIST; Section Chief, Infrastructure Development and Recovery at National Protection and Programs Directorate
- Lead contact to establish integration of CERA-Planning into NIST Community Resilience Guidelines
- Discussions to establish NIST process in community engagement (March to June 2018);

- Discussions and webinars with NIST and Texas A&M to utilize the Nashua, New Hampshire, example of community engagement using community resilience guidelines to establish similar project in Louisiana;

End User Engagement

- The plan is to invite NIST to work with LSU Coastal Sustainability Studio design team to compare how the NIST Community Resilience Guidelines compare to the Community Resilience Index (CRI) community engagement that have been occurring along the Gulf Coast as part of Sea Grant effort.
- Use this design team to determine what metrics from CERA-Planning are needed within the community resilience engagement process with planners using Hurricane Isaac and Northshore Lake Pontchartrain as test bed.
- Engage Capital Region Planning Commission (CRPC; Kim Marousek, Director of Planning) to select community to utilize the NIST Community Resilience Guidelines and the CERA-Planning tool as envisioned from the design class as part of the LSU Coastal Sustainability Studio.

Transition

- Develop a working group to develop ways that CERA-Planning can augment technical capabilities of FEMA Hazus-FLOOD.
- Hold technical workshop with Hazus-FLOOD modelers and developers to identify how CERA-Planning tool can provide additional high-resolution input data on flood conditions during an event .
- Incorporate output identified in the CERA-Planning/Hazus FLOOD workshop results into a simulation test of the Hazus FLOOD model.
- Compare Hazus-FLOOD model capabilities with and without the higher resolution input data on flood exposure

Anticipated Project Impact

- CERA-Planning will be focus of presenting technical information that can be used to augment community planning process with NIST and FEMA.
- The use of technical outputs of flooding and consequences generated by CERA-Planning will support the products of NIST and Hazus in providing high resolution impacts of flooding scenarios.

Anticipated Project Impact
Gulf of Mexico NOAA Regional Team

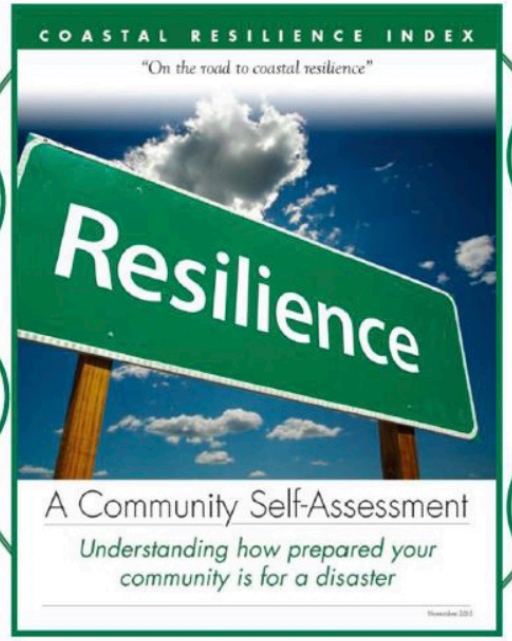
- NOAA GoMRT has been working with Gulf Sea Grant Programs to incorporate NOAA tools into the Community Resilience Index that has been program supported by the Gulf of Mexico Alliance.
- CERA-Planning is envisioned as additional tool to augment this effort
- The value of integration with the CRI is that this platform has national connections using the National Sea Grant Network of 33 programs. Since the CRI is already in place as a planning tool in the LPB communities impacted from Hurricane Isaac, there are existing professional contacts between community leaders and LSU and Louisiana Sea Grant that can foster a productive and effective planning process at the community level.

Anticipated Project Impact

Updates

Overall CRI Update
Lead: Mississippi-Alabama Sea Grant

Online, On Demand Facilitator Training
Lead: Auburn University Marine Extension and Research Center



Enhancements

Health and Human Services
Leads: RAND and Mississippi-Alabama Sea Grant

Ecosystem Services and Socio-economic Indicators
Lead: Harte Research Institute

Traditional Ecological Knowledge and Participatory Mapping Tools
Lead: Louisiana Sea Grant and NOAA Gulf of Mexico Regional Collaboration Team

Updates and Enhancements funded by: NOAA Regional Coastal Resilience Grant, Sea Grant—NOAA Regional Integration Grant, and GOMA Gulf Star Program Grant