Cooking Up Catastrophe:
A Recipe for Realistic Hazard Assessment & Exercises in Oregon

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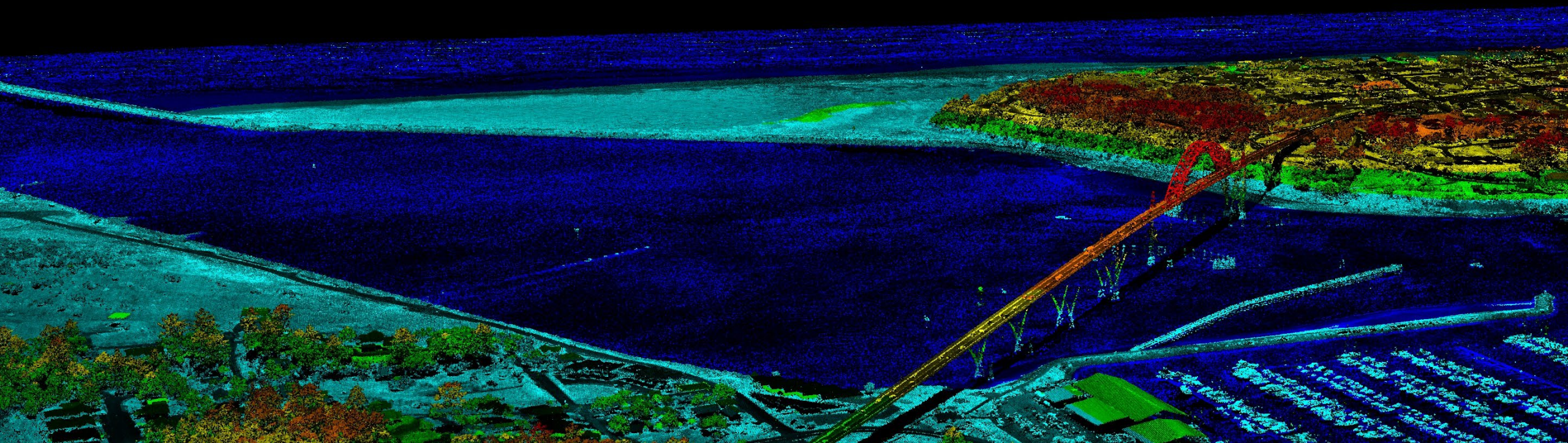
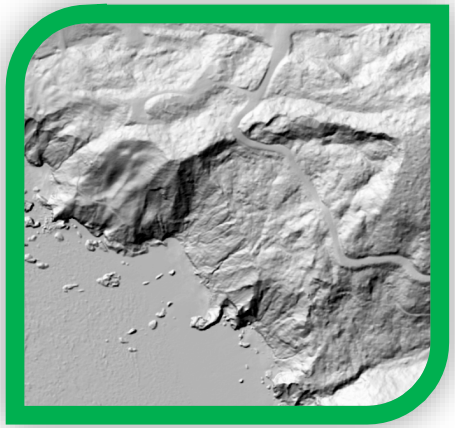
[2]Oregon Department of Emergency Management



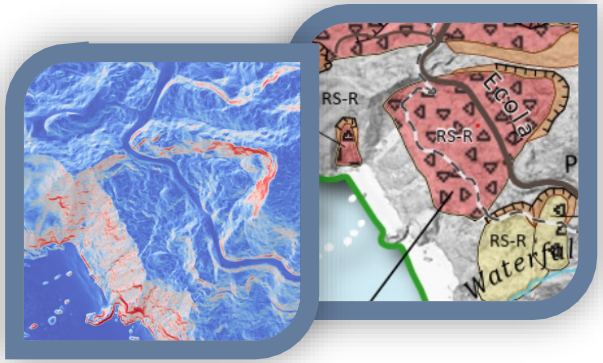
A recipe for hazard research & risk reduction at DOGAMI

Mapping

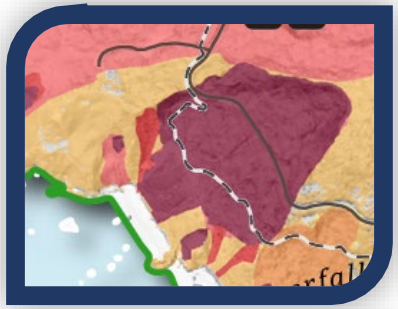
Collect lidar



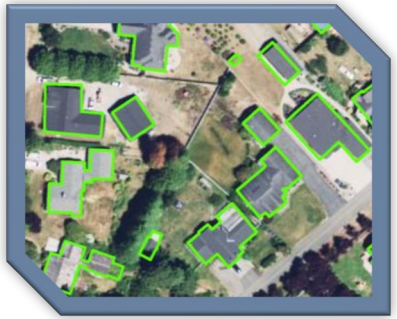
Apply hazard models



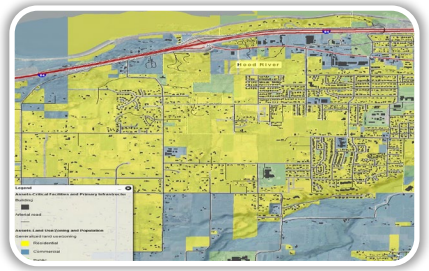
Hazard maps



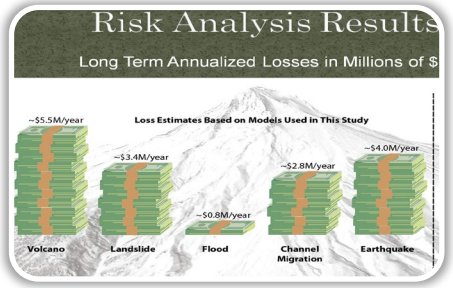
Building inventory



Risk mitigation



Planning and Regulation



Risk Analysis

Community Risk Reduction

Williams (2023)

Modified after Burns (2015)

DOGAMI hazard and risk studies

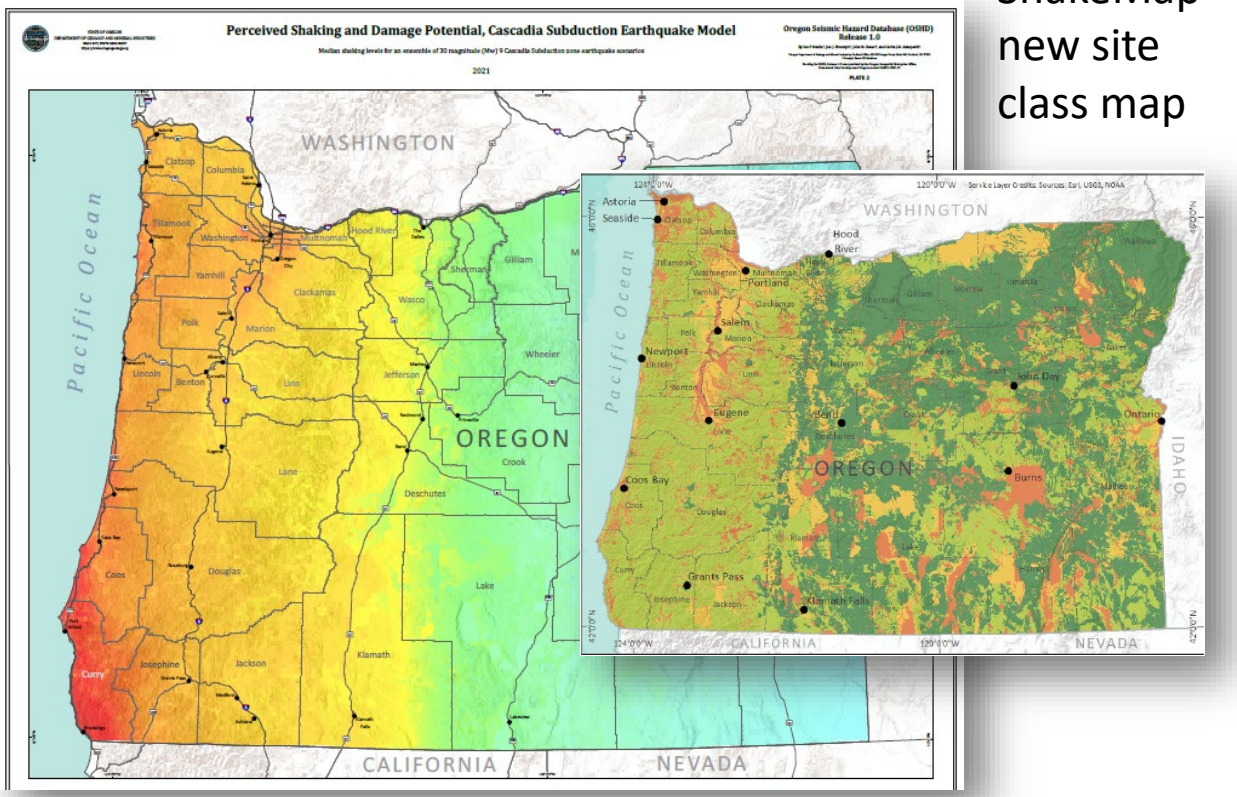
Cascadia M9 + local crustal fault scenarios

DIGITAL DATA SERIES

2021 OREGON SEISMIC HAZARD DATABASE: PURPOSE AND METHODS

By Ian P. Madin[1], Jon J. Francyzk[1], John M. Bauer[2], and Carlie J.M. Azzopardi[1]

Wirth et al. (2021) M9 ShakeMap + new site class map

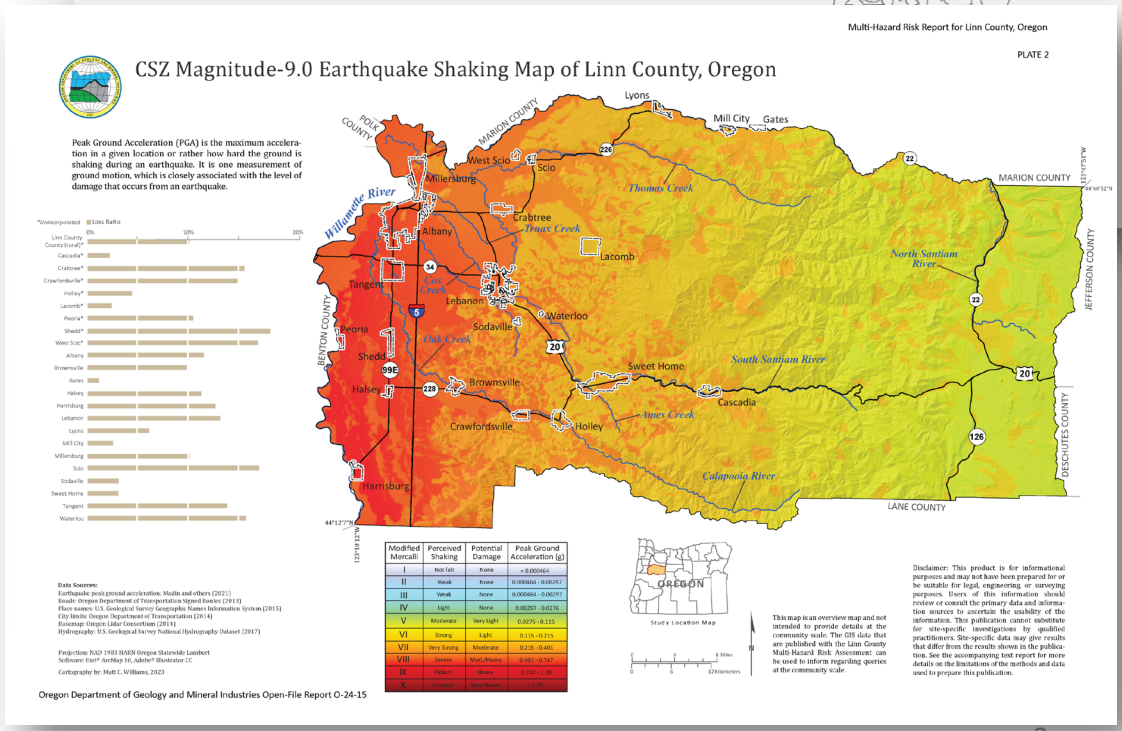


State of Oregon
Oregon Department of Geology and Mineral Industries
Ruarri J. Day-Stirrat, State Geologist

OPEN-FILE REPORT O-24-15

MULTI-HAZARD RISK REPORT FOR LINN COUNTY, OREGON

INCLUDING THE CITIES OF ALBANY, BROWNSVILLE, GATES, HALSEY, HARRISBURG, IDANHA, LEBANON, LYONS, MILL CITY, MILLERSBURG, SCIO, SODAVILLE, SWEET HOME, TANGENT, AND WATERLOO



Williams & McClaughry (2024)

DOGAMI hazard and risk studies

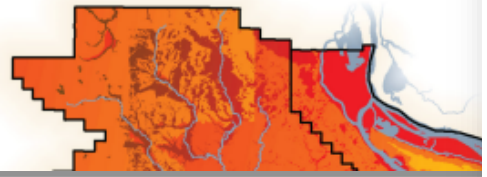
State of Oregon
Oregon Department of Geology and Mineral Industries
Brad Avy, State Geologist

OPEN-FILE REPORT O-18-02

EARTHQUAKE REGIONAL IMPACT ANALYSIS FOR

CLACKAMAS, MULTNOMAH, AND W

by John M. Bauer[1], William J.



State of Oregon
Oregon Department of Geology and Mineral Industries
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OPEN-FILE REPORT O-25-01

EARTHQUAKE AND TSUNAMI IMPACT ANALYSIS FOR THE OREGON COAST

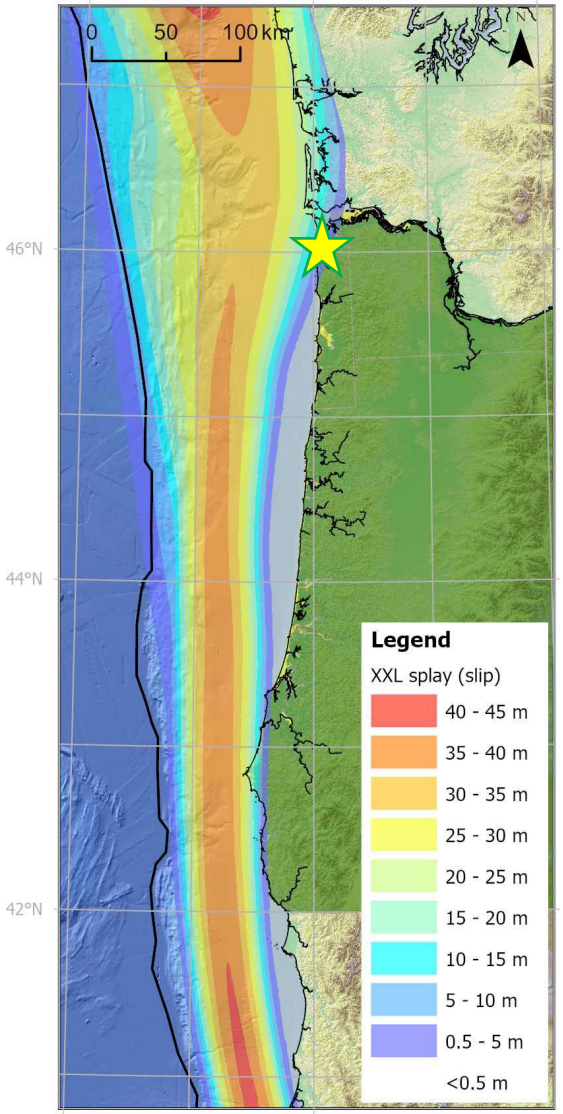
By Jonathan C. Allan[1] and Fletcher E. O'Brien[2]

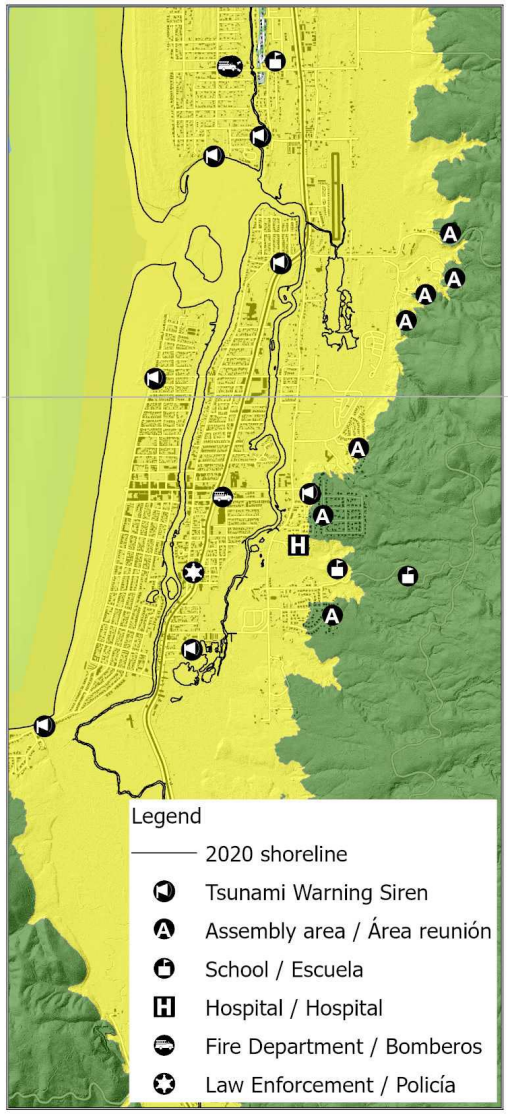
Search for "**hazard**", "**risk**", and "**impact**" to find reports and datasets

All Publications:

Tsunami Clearinghouse page:

Cascadia megathrust earthquake coastal impacts





	Oregon coast	Exposure
Residents Visitors* Buildings	224,755 ~210,000 – 400,000	24,500 - 62,100 ~30,000 - 100,000 19,417 – 45,195
Fatalities	**CSZ Estimates**	**Japan 2011**
M** L XXL	4,300 to ~16,200 6,100 to ~23,200 13,800 to ~48,600	~18,500
Displaced	**Residents**	**Displaced**
M L XXL	20,000 30,000 45,400	~450,000 45,000 nine years later
Building losses		**Building losses**
M L XXL	$14 billion $16 billion $19 billion	~$14.5 to $35B total losses ~$250 billion

(Allan and O'Brien, 2025)

Oregon Geologic Hazards Clearinghouse Plan

In development!

Goals:

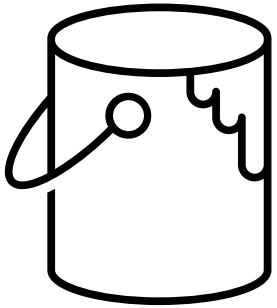
- Coordinated geoscience response for perishable data
- Effective communication among relevant agencies:
  - Science (e.g., USGS, CGS, CRESCENT, universities), Emergency Managers (e.g., OEM), Infrastructure (e.g., ODOT)

Notes:

- Based on Washington plan
- Lower barriers to inter-state collaboration
- Based on Survey123 platform- contributors do not need licensed software

Oregon Encyclopedia

Integrating the Science into Exercises



Scenario

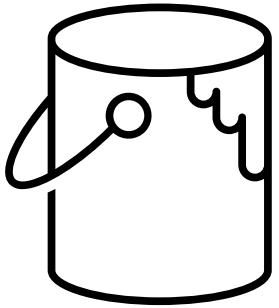
Scenario Summary & Extended Scenario Documents

Infrastructure Impacts

Environmental Impacts

Economic Impacts & Loss Estimations

Population Impacts



Maps / Modeling
(Debris, Sediment, Impacts)

Computer Modeling

Maps

****LT26 South Sisters Volcano Modeling**

Integrating the Science into Exercises

IRON OR 24

Earthquake

LAHAR'D TIMES

Volcano

FEMA

USGS science for a changing world

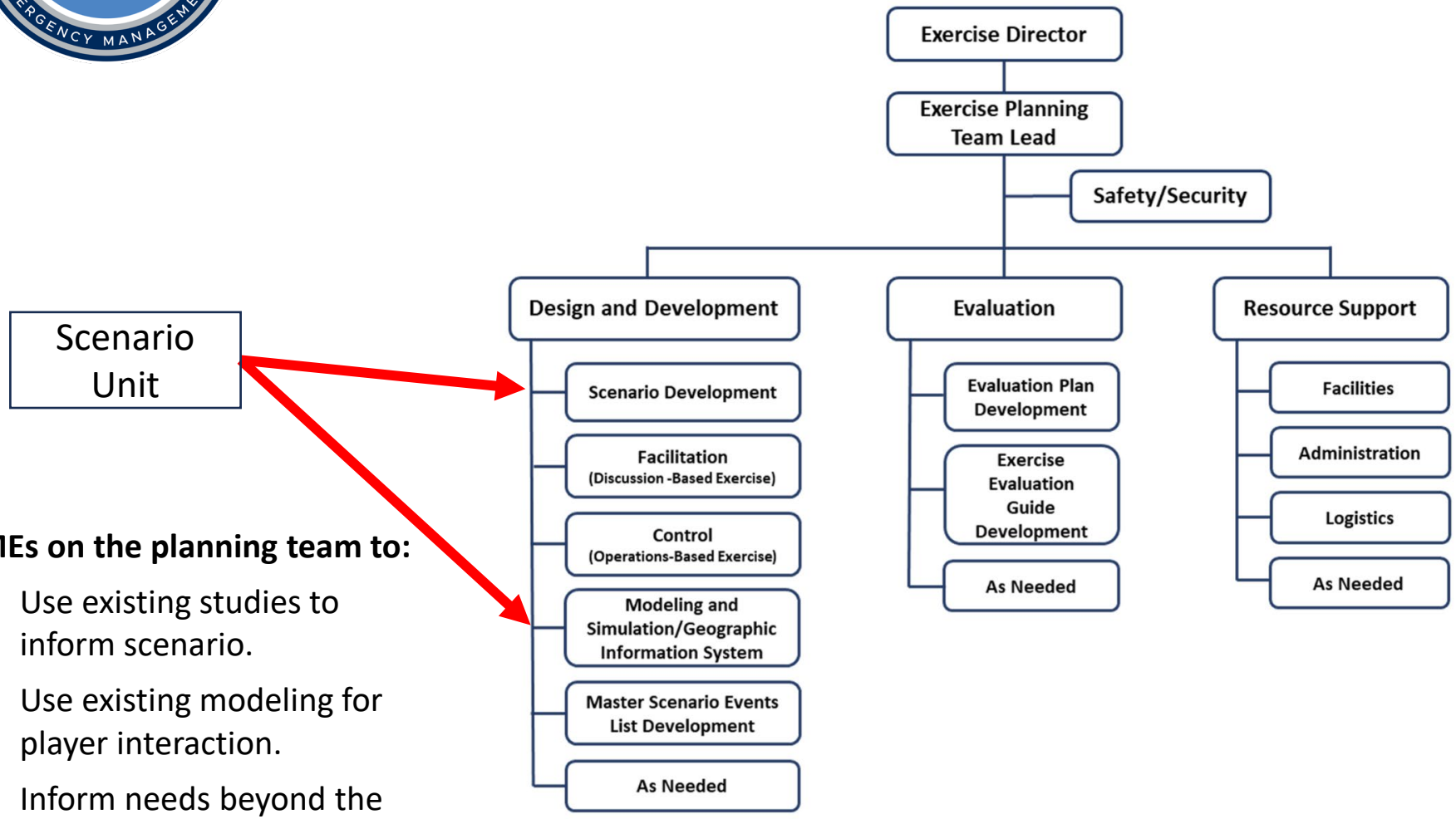
Lewis & Clark

FEMA

USGS science for a changing world

OREGON DEPARTMENT OF ENERGY

Integrating the Science into Exercises



Scenario Unit

SMEs on the planning team to:

A. Use existing studies to inform scenario.

B. Use existing modeling for player interaction.

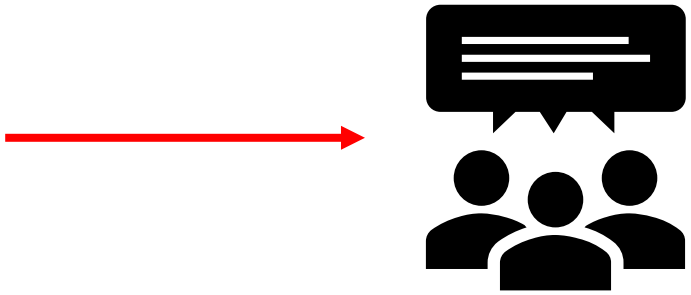
C. Inform needs beyond the scenario.

****Most of the time, the Scenario Unit = the Exercise Designer**

Future Integration

Emergency Managers Don't Know All the Studies & Modeling Available

Science Community Doesn't Know the Upcoming Exericses

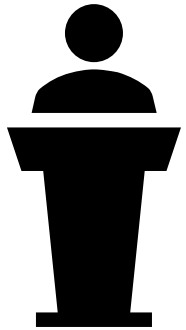


Identifying Consistent Opportunities to Share

Integrated Preparedness Planning (IPP)

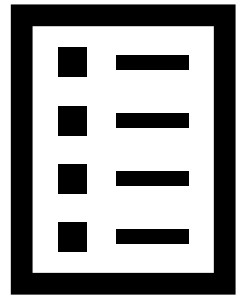
Future Integration

Don’t need to wait for exercises, we can develop scenarios to support:



Educating Leadership and Elected Officials

Community Organization Data / Information



Planning Expectations, Assumptions, and Content