

DUSEL-Cascades S3 effort focused on site fundamentals

Assessment of the site's geotechnical suitability – growing confidence

- *engineering potential*
- *cleanliness: how to establish and maintain optimal conditions*
- *access: how to utilize the main-line railroad to make experiment construction cheaper, quicker, more efficient – seamless connections between FermiLab (or overseas labs) to the underground*
- *health and safety: ducted ventilation, dedicated exhaust shaft, parallel escape tunnel, all-electric operations, tracked transport, low-elevation portal, all science activities sequestered from BNSF*

Assessment of the site's environmental suitability

- *mineralogy and radioactivity*
- *water quality*
- *regional context: seismic hazards, thermal gradient*
- *no existing or envisioned future environmental legacies*

Assessment of the site's legal and permitting suitability

- *very stable owner, motivated to help because of project's benefits*
- *a permitting map constructed with care: an effort to be complete*

Also a focus on procedural fundamentals

Costs, schedules, approaches to engineering and ES&H:

- *sought the **guidance of national laboratory and industry professionals***
- *provided the committee with a **realistic cost estimate & schedule***
- ***conservative drill-and-blast construction and geotechnical assumptions***
- *cold-eyed, bottoms-up costs by **industry estimators***
- *while still on the learning curve, we think the estimates remain solid*

- *thought hard about the **project-lifetime cost equation***
- *87% of lifetime costs consumed in facility operations, experiments*
- *DUSEL-Cascades advantages are significant: clean and dedicated, horizontal and railed, container-capable, **engineered** to be efficient*

- *tried to **avoid over-reaching in scope***
- *Stage I/II designed to complement SNO Lab: **healthy international collaboration***
- *our geoscience/geomicrobiology exploits site and site investigation for construction: maximize **benefit/cost***
- *can envision a **future Stage III** being launched with experience under our belt, and with the support of our international partners*

DUSEL-Cascades: Design Phase Management

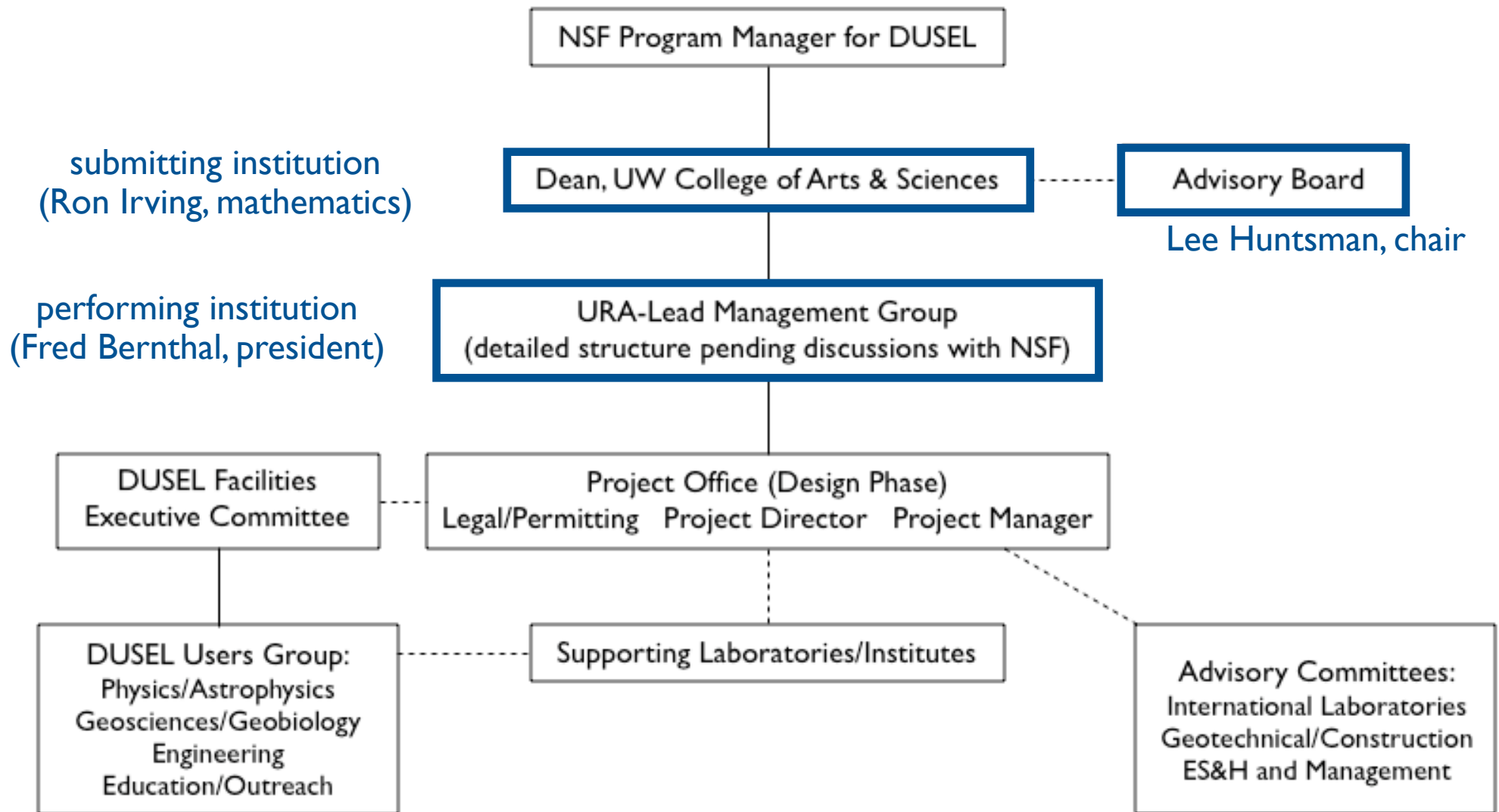
We advocate a design-phase structure that allows DUSEL-Cascades to be:

- developed as a *national project*
- with all groups working as *equal partners*
- managed *by and for scientists and engineers*
- with URA providing, through its national laboratory and industry contacts, an *umbrella of support* for a community that is relatively unfamiliar with major-project construction and operations

Role of Washington State: helping with permitting, environmental, and land use issues, partnering on various development issues that can accelerate the project, relieving NSF of local responsibilities to the extent desirable

We recognize that management decisions are NSF's prerogative – these are *suggestions* to the NSF and community

Organization Chart: DUSEL Design-Phase



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NSF Program Manager for DUSEL

	<i>Committee role</i>	<i>Possible candidates</i>	
subm (Ron In	<i>University liaison</i>	<i>Lee Huntsman, UW (chair)</i>	Advisory Board Lee Huntsman, chair
perform (Fred Ber	<i>Environmental protection</i>	<i>William Ruckelshaus or Dan Evans (governor, senator, regent)</i>	
	<i>BNSF relations</i>	<i>Gerald Grinstein, CEO, Delta Airlines (former BNSF CEO, regent)</i>	
<div style="border: 1px solid black; padding: 2px; width: fit-content;"> D Exec </div>	<i>Construction industry</i>	<i>Paul Gilbert, Parsons Brinckerhoff, or Richard Robbins, Robbins Co.</i>	
	<i>Health and Safety</i>	<i>Karen VanDusen, UW ES&H Director, or rep from industry leader like DuPont</i>	
<div style="border: 1px solid black; padding: 2px; width: fit-content;"> DUS Phy Geos Edu </div>	<i>Recreational liaison</i>	<i>Sally Jewell, CEO, REI or rep from Mountaineers or Sierra Club</i>	<div style="border: 1px solid black; padding: 5px;"> Advisory Committees: International Laboratories Geotechnical/Construction ES&H and Management </div>
	<i>Science & Engineering</i>	<i>4-5 members recommended by science & engineer communities and NSF</i>	

DUSEL-Cascades: Local Partners

*Have worked to establish a **healthy foundation** for DUSEL at the **state/local level***

- *our goal: do sufficient preliminary work to **demonstrate good options exist***
- ***minimize promises** to local entities*
- ***maximize the potential** for NSF/science community to shape choices*

- *surface campus*
- *local governments mobilized: options ranging from **close-by/rural to urban***
- *multiple suggestions on financial/educational partnerships*

- *educational outreach: **we have home-run potential, with national implications***
- *partner organizations identified with experience, reach*
- *considerable potential to engage foundations for further leverage*
- *state's concern over math/science education is intense*
- *selection of our site would allow us to “pull the trigger”*

- *officials informed and engaged regarding needed **infrastructure improvements***
- *road resurfacing/maintenance, substation upgrades, sanitary connections, high-bandwidth fiber, project “fast-start” opportunities*
- *funding opportunities identified*

DUSEL-Cascades Supporting Infrastructure Timeline

2007

2008

2009

2010

2011

2012

2013

2014

2015

Lab

Design

Construction

Construction speedup

TBM

Road access

Substation

Crosscuts

Water & sanitary

Fiber

Infrastructure

Surface campus

Concept

Design

Construction

Site

Financing

Educational Outreach

Stevens Pass experiential opportunities

Pacific Science Center and national partnerships

DUSEL-Cascades: Perspective

We have kept in focus that we are creating a *national* laboratory

- NSF must identify the *site with the most potential*
 - our collaboration will support that choice *enthusiastically*
- our design-phase plan envisions bringing the best of industry together with the best of the science/engineering community
 - the proposal was submitted *by* a collaboration, *for* a *national community*
 - want that community to feel it owns DUSEL-Cascades design process

We have carried the *same message* to local government, collaboration members

- we have sought to limit expectations of local government and those universities and laboratories now involved in our effort
- once the site is selected, it will be critical to rally all the stake-holders – local and national – to do their parts
 - universities, national laboratories, industry
 - DOE, foundations, and others with the potential to support the NSF
 - local, state, and federal agencies with connections to the site

DUSEL-Cascades can be a great success for the community and the NSF