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Getting on the Map: Using GIS to Assess Risk and Create Resilience Throughout Campus

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Getting on the Map!

Using GIS to Assess Risk and Create Resilience Throughout Campus

Disaster Resistant University Workshop

University of New Orleans

February 16th 2011

André Le Duc

Director

UO Emergency Management

University of Oregon

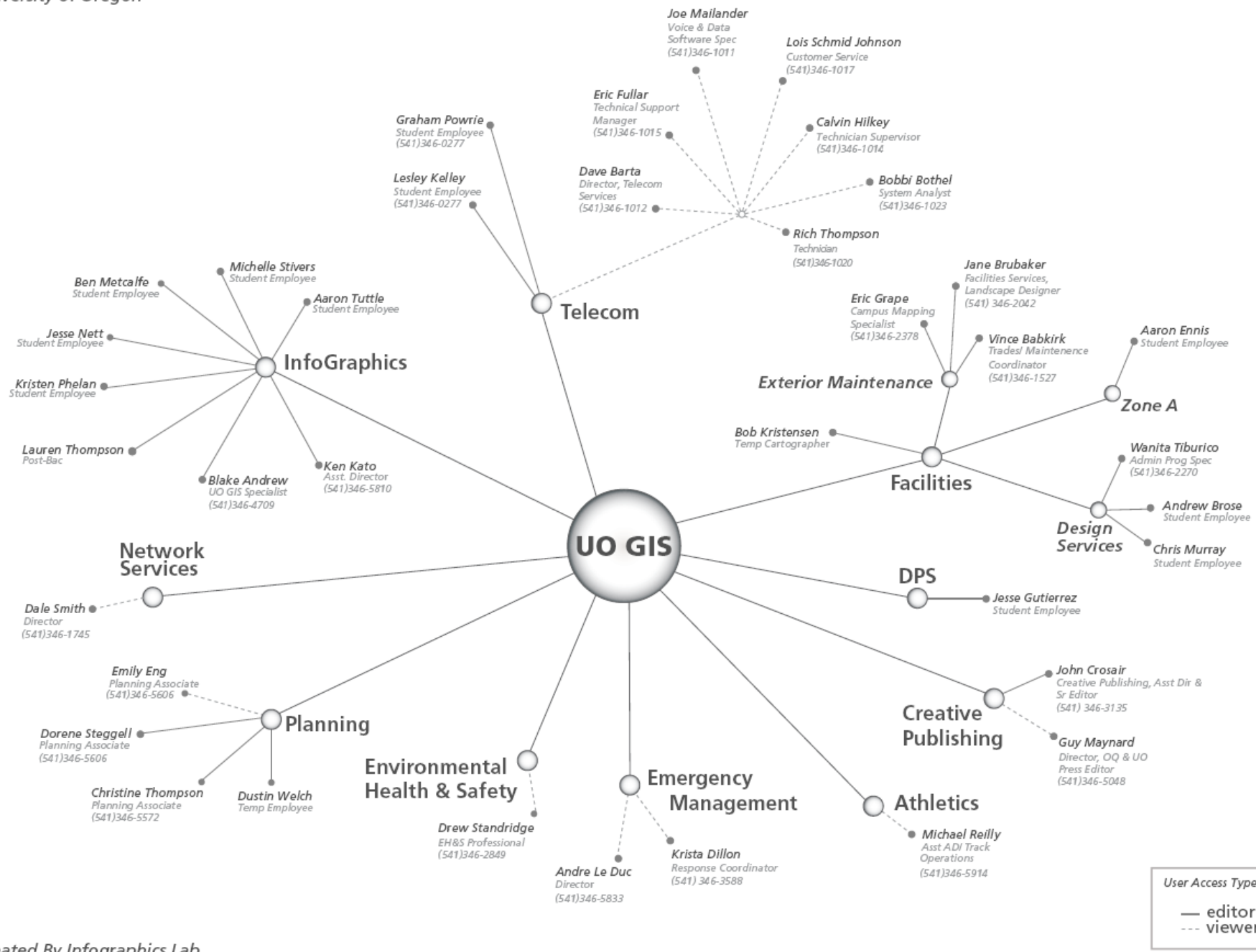
Vice-Chair

IAEM-University College Caucus

List Manager

Disaster Resilient University (DRU) Listserv





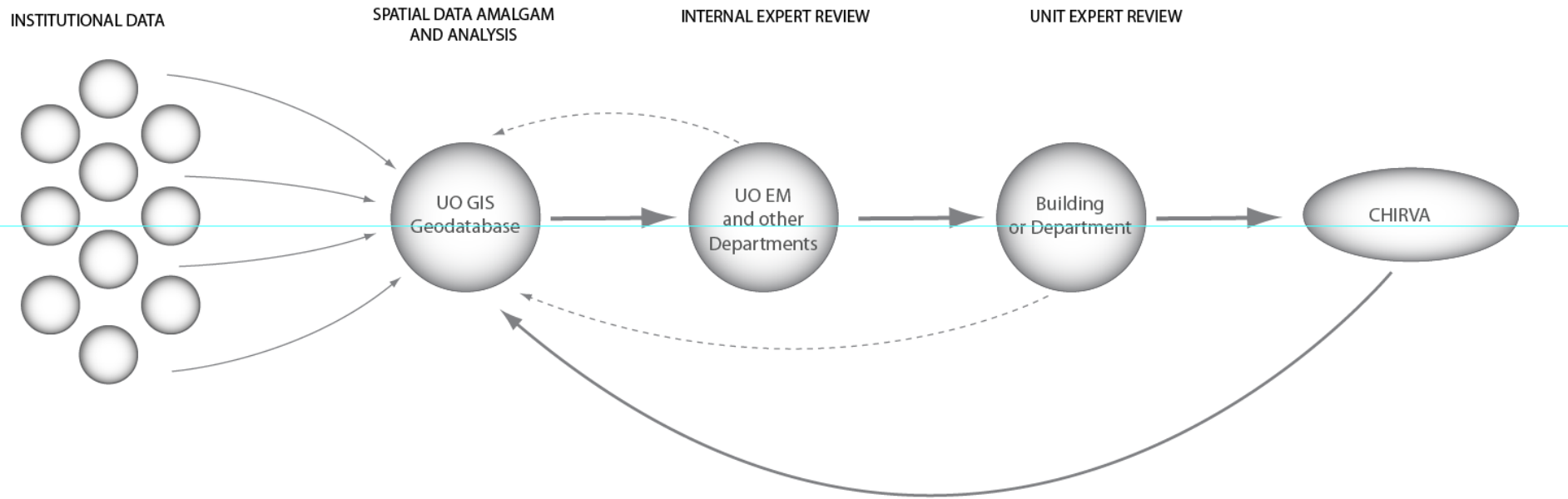


CHIRVA

**Campus Hazard
Identification and
Risk/Vulnerability
Assessment**



PROCESS MODEL



MULTI-SCALE

ROOM - LEVEL



FLOOR - LEVEL



BUILDING - LEVEL



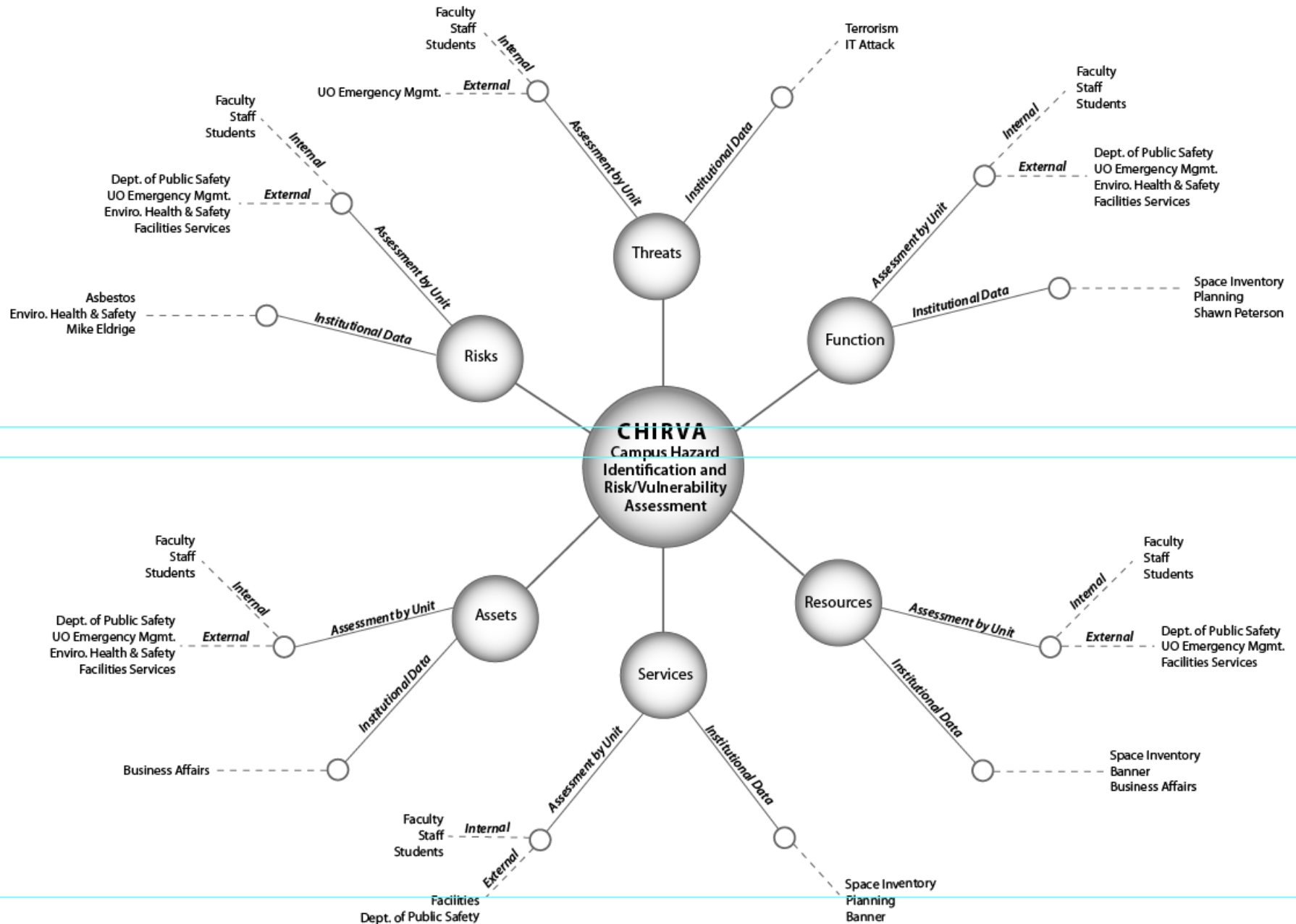
DEPARTMENT - LEVEL

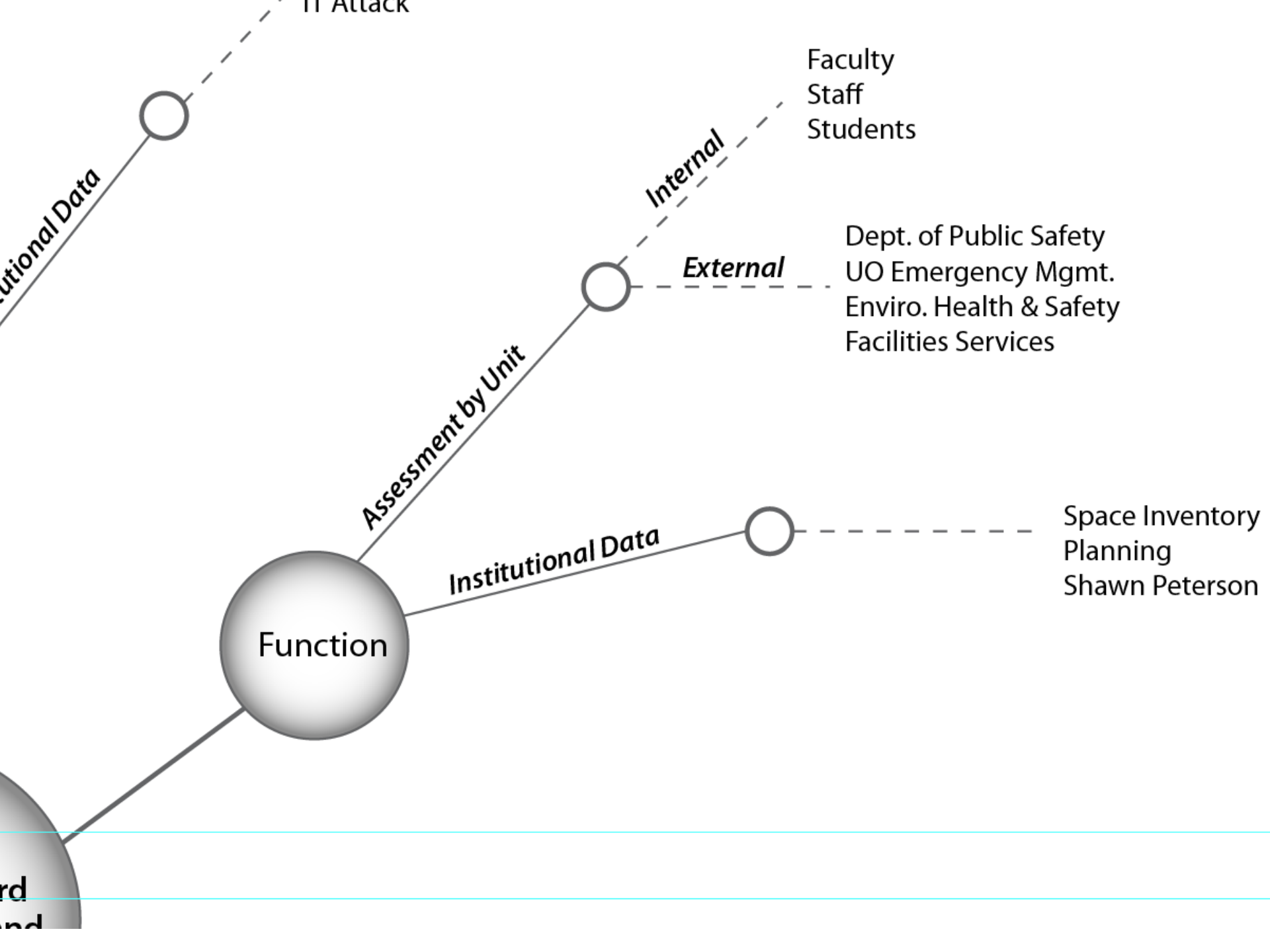


CAMPUS - WIDE



BASIC ARCHITECTURE

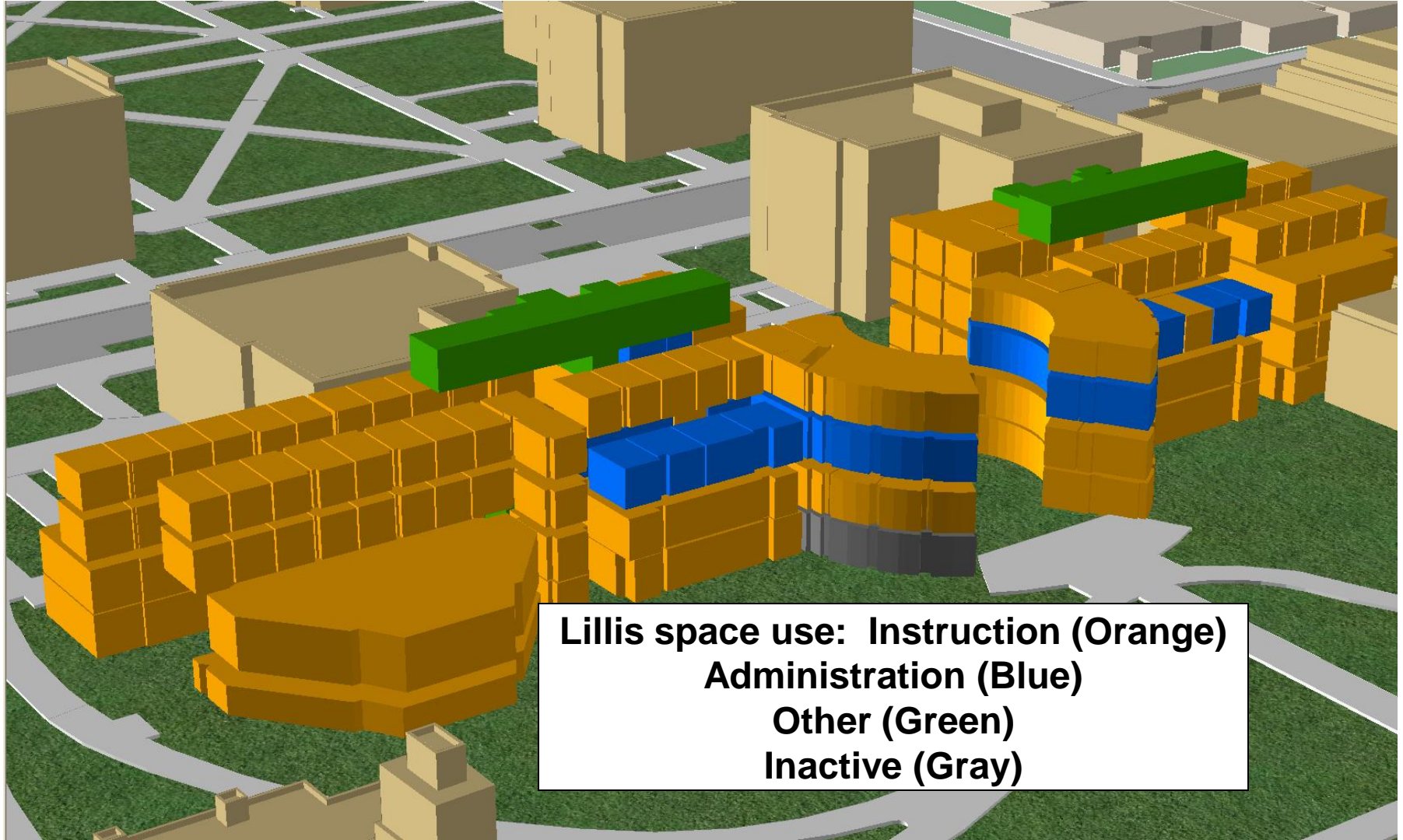




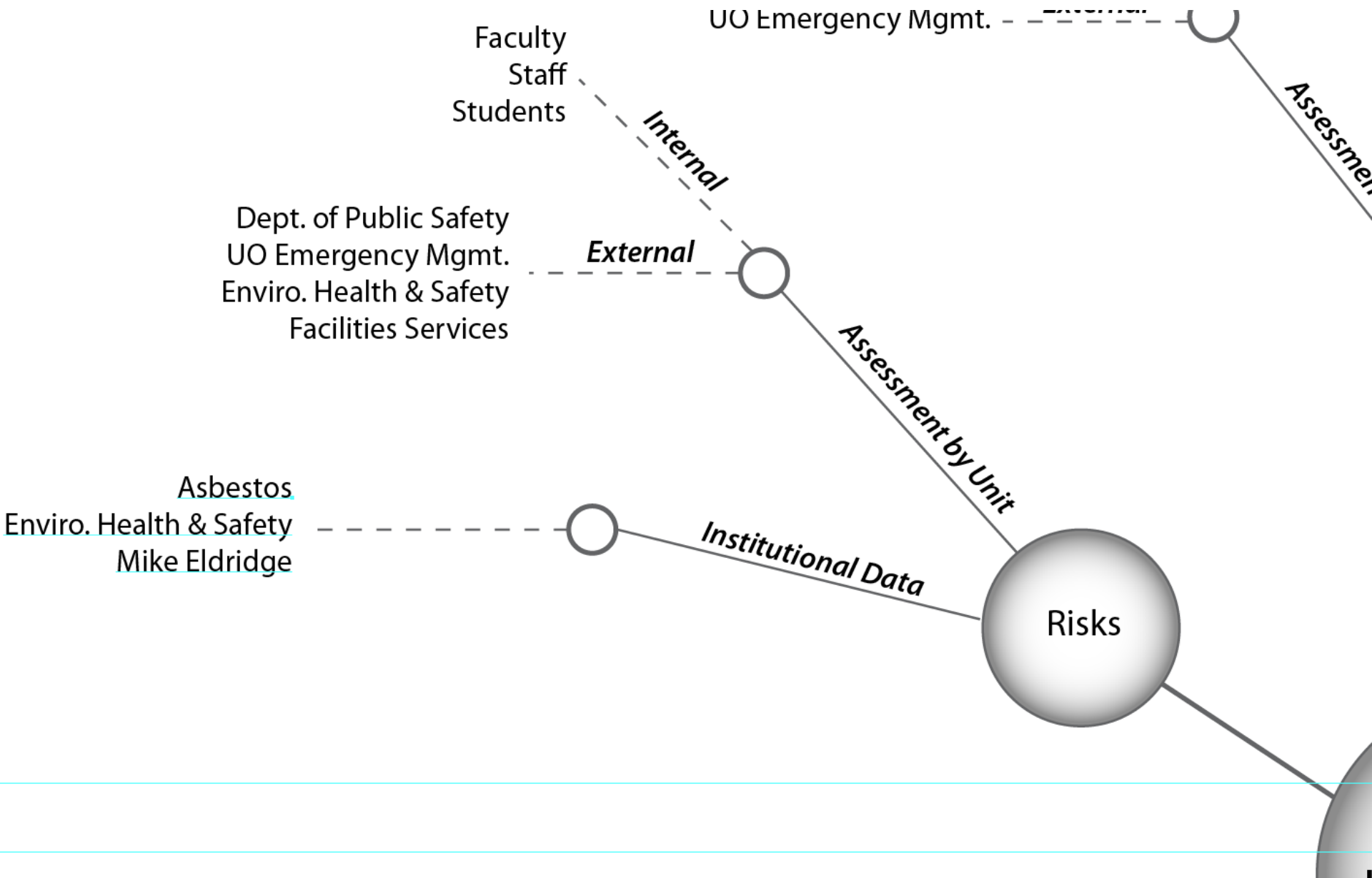
FACILITIES

Shift from Building-Level to Room-Level

Integration of “Space” Database



**Lillis space use: Instruction (Orange)
Administration (Blue)
Other (Green)
Inactive (Gray)**



RISKS

Hazardous Materials

Asbestos Mapping – Database – Friendly Hall



In September 2005, the Department of Geology and Mineral Industries released a report describing the results of its preliminary earthquake Rapid Visual Assessment of UO buildings. The Oregon University System suggests obtaining engineering studies that evaluate seismic deficiencies for those buildings in the "high" or "medium" category shown on the map below.

hazard type

6

EARTHQUAKE

Key Issues

Life Safety

Non-structural elements such as unsecured bookshelves and parapet walls present a threat to life safety in every building.

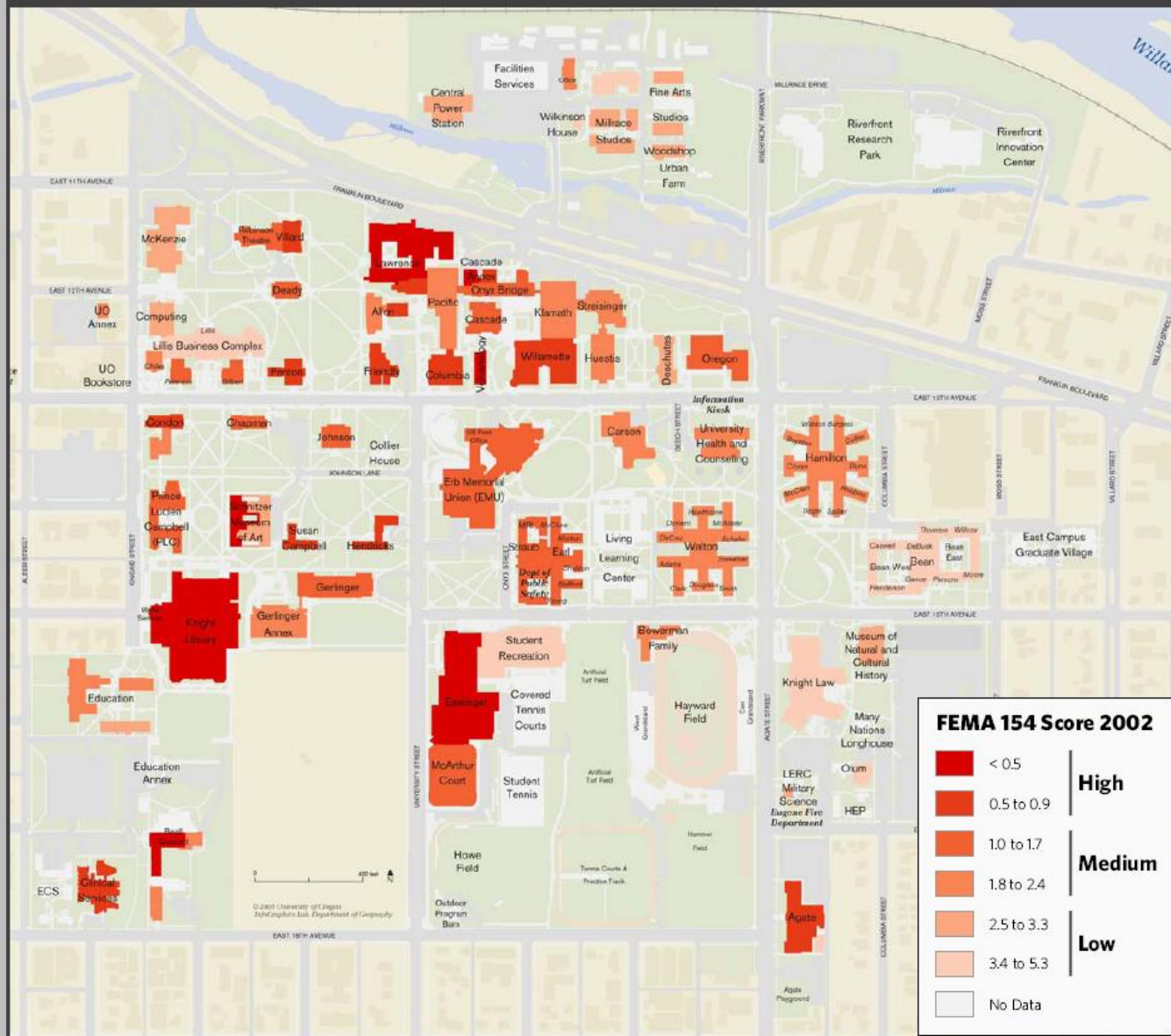
Building Vulnerability

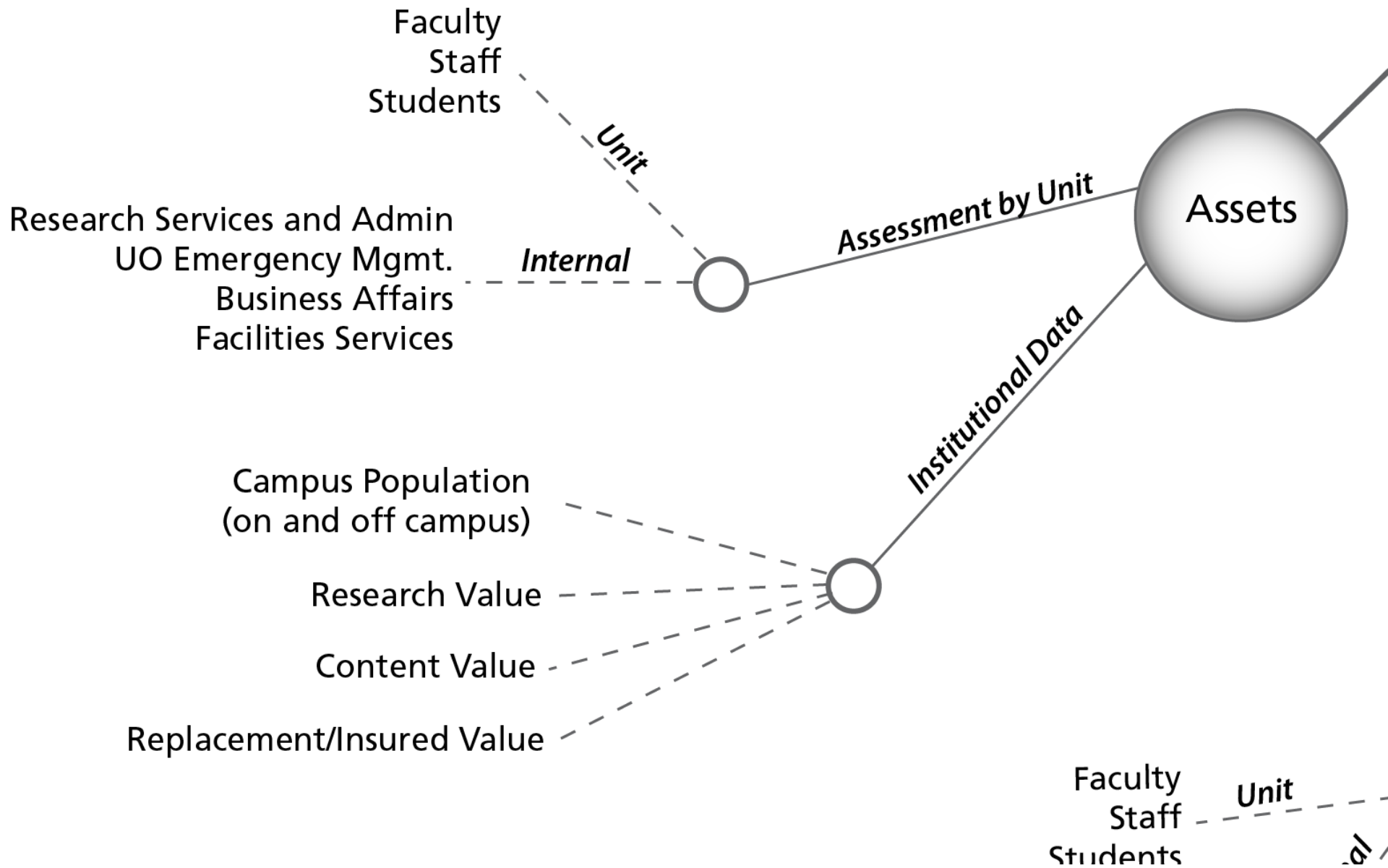
Without an engineering study evaluating the seismic deficiencies, it is difficult to know the seismic vulnerability of a building. The FEMA 154 study identified 47 buildings that could benefit from a seismic study. Other factors, such as historic significance and building occupancy must be considered when determining which buildings should be studied further and potentially retrofitted.

Infrastructure

Many of the buildings that support important infrastructure, such as Prince Lucien Campbell, Oregon Hall, Facilities Services, and Straub Hall Annex have been identified as needing engineering studies to evaluate seismic deficiencies.

See **Action Items 1.4, 1.6, 1.7, 3.3 and 5.5**

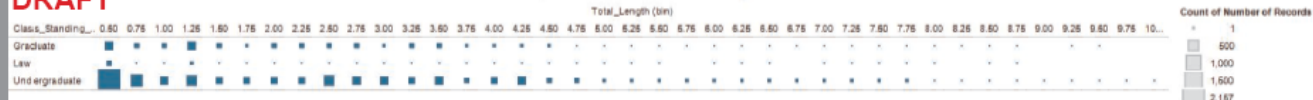




DRAFT

DRAFT

Number of Students in quarter mile increments from UO campus.



DRAFT

EUGENE

UO CAMPUS

SPRINGFIELD

University of Oregon Student Population Distribution of Home Addresses in Eugene-Springfield

DRAFT

Population data from UO Registrar - March 2009. LTD route and stop data from LTD - May 2009. Map intended for preliminary design and data review only. Distance data calculated by InfoGraphics Lab using networked routing. Locational information is potentially sensitive - Please do not distribute.

- Student Address Location
- 2009 LTD Active Stops
- 2009 LTD Routes

InfoGraphics Lab, Dept of Geography, May 2009



Miles

DRAFT



ta x
Object Data Tool

EUGENE

UO
CAMPUS

University of

☐ loop animation

☐ play animation

☐ stop animation

☐ step forward

☐ step back

☐ go to end

☐ go to beginning

☐ go to specific step

☐ constrain start/end, play

☐ change speed, play

.....
☐ play non-sequential
series of steps

☐ step forward in series

☐ step back in series

.....
☐ change targeted animation



Assets -Economy

What is a Building or Room Worth?

Replacement Value – Insured Value



Assets -Economy

What is a Building or Room Worth?

Contents – Valuable Equipment



Assets -Economy

What is a Building or Room Worth?

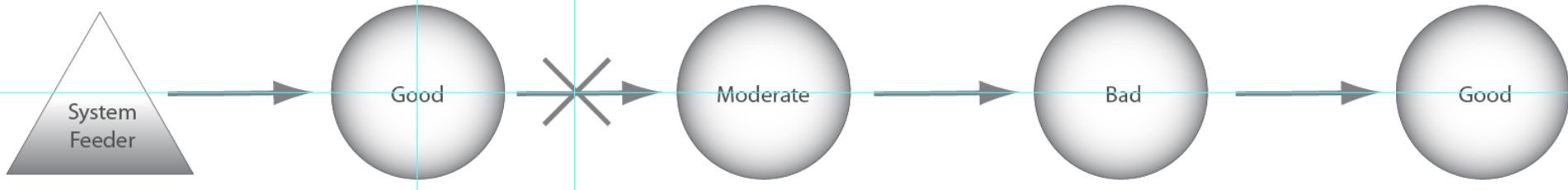
Economic Activity



SYSTEM CONNECTIVITY

FUNCTIONING UNIT SYSTEM BREAK

DOWNSTREAM UNITS ARE AFFECTED BY A BREAK IN THE SYSTEM, REGARDLESS OF RATING



Assets

Critical Infrastructure

Critical Systems for Response

Shut Offs

Emergency shutoff locations
In Johnson Hall basement.



Critical Infrastructure

Critical Systems for Operations

Tunnel System

