Pedagogical Approaches to Geodesign: Teaching Geodesign to Non-designers

Nader Afzalan, Ph.D.

Geodesign Summit 2016

ESRI Headquarters, Redlands, CA

Visiting Assistant Professor of Geodesign and Urban Planning at the University of Redlands

Chair of the American Planning Association- Technology Division

Course: Geodesign Studio

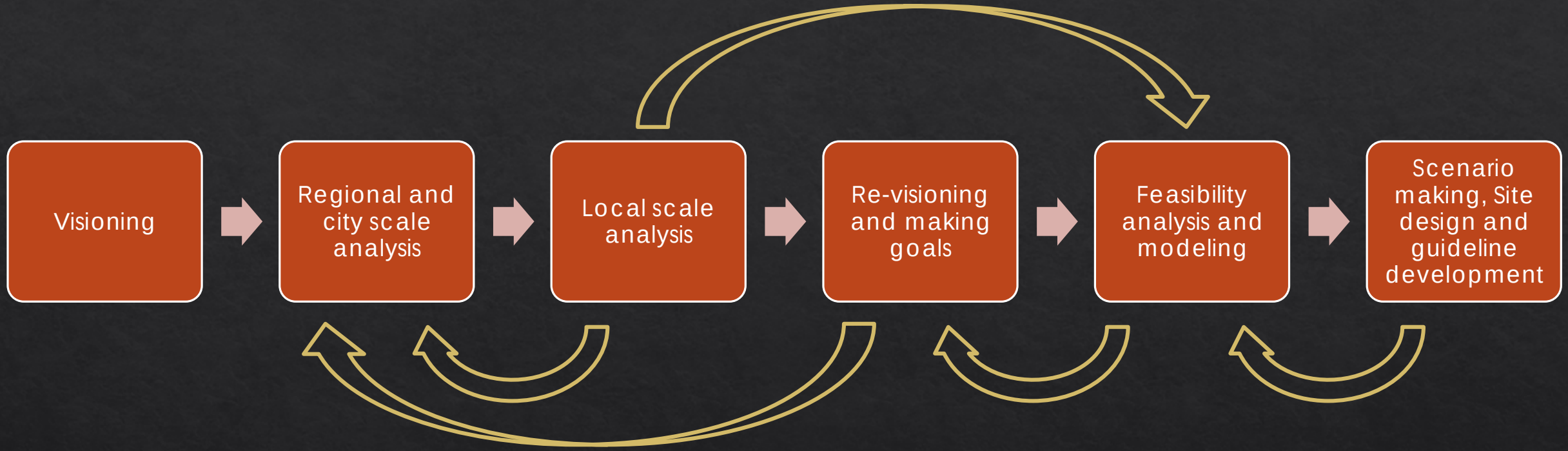
Level: Undergraduate

Program: Environmental Studies

Project: Designing a transit oriented village

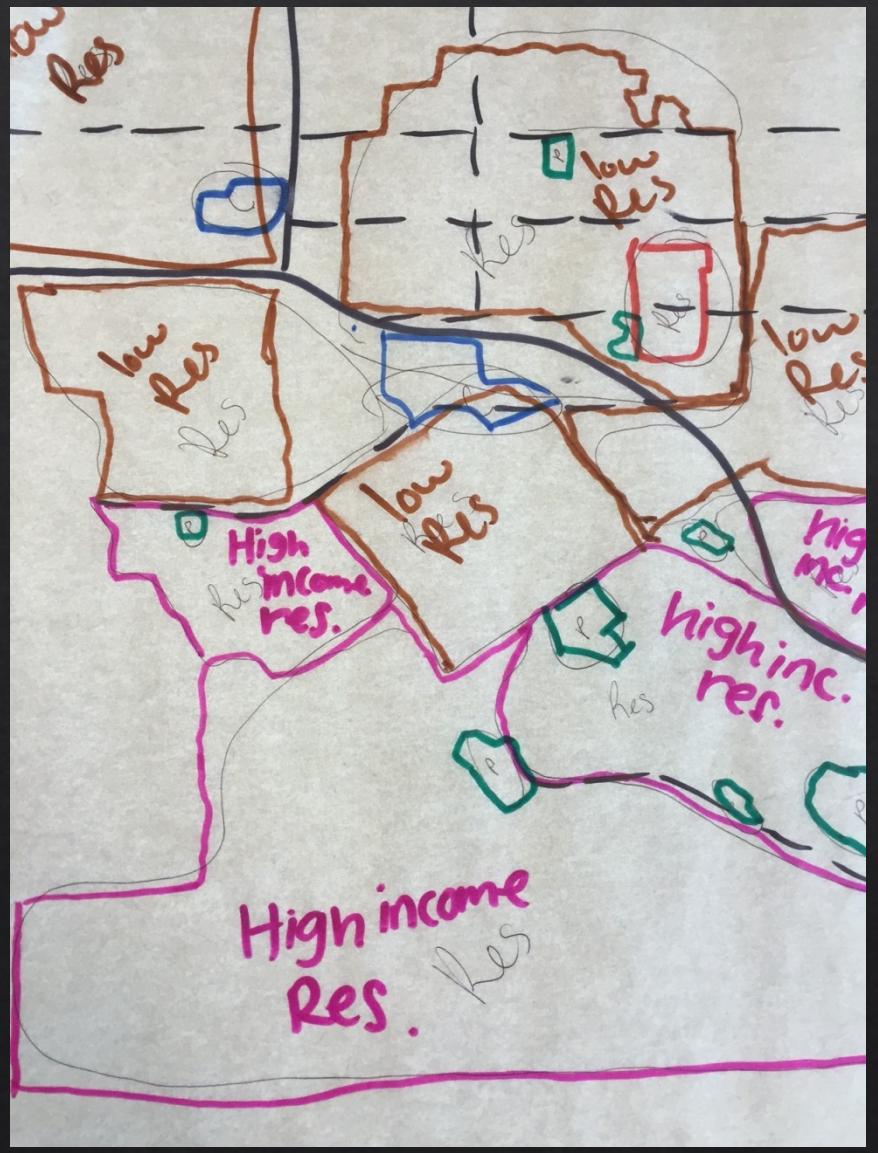
Client: University of Redlands

Geodesign process



Analyzing natural, social, financial, informational systems

First Week



Last Week

The Future is Here: U of R South Campus Transit Village

EVST-250 DESIGN STUDIO FALL 2015

Erica Beaulieu, Tyler Griffin, Nick Nassir, Marshall Webb

VISION

Years from now, we envision a thriving, transit-oriented village centered around the Metro Link station which is soon to be constructed in the South Campus Area (SCA) of the University of Redlands. We see this as a focal point for the region where academia, business, and community will intersect, giving rise to a unique living and working experience. Moreover, it will serve as common ground for an assortment of cultures and regional groups where civic exchange and interplay can occur. Finally, our transit village will advance the university's commitment to sustainability through the implementation of green architecture and lifestyle concepts.

GOALS

- **Harmony with Nature**
  - Preservation of natural and open space
  - Use of green architecture and infrastructure
  - Pedestrian and cyclist-friendly
  - Minimize obstruction of scenic landscape views
- **Responsible Regionalism**
  - Complement neighboring urban centers
  - Attract a range of businesses and regional employers
  - Appeal to a wide variety of needs and tastes
  - Create public spaces for civic engagement

DESIGN GUIDELINES

- Tax incentive for achieving LEED Silver Certification
- Required permeable-to-built-surface ratio for developers
- Parking spaces zoned only for the edges of the village
- Moratorium on any new, public roads within the village
- Building height limit of two stories (with certain exceptions)
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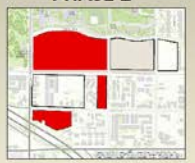
- Retail zoning along the unused rail corridor
- Modular office lease spaces for adaptability to leasee needs
- Subsidized lease rates for small, regional enterprises
- Building code which honors visual themes of Main Campus

Connecting Southern California to Redlands

PHASE 1

- Completion of train station
- Relocation of Greek houses
- Construction in northeastern lots
  - Graduate housing
  - Townhouse complex
  - Retail corridor
- Demolition in northwestern and central-western lots

PHASE 2

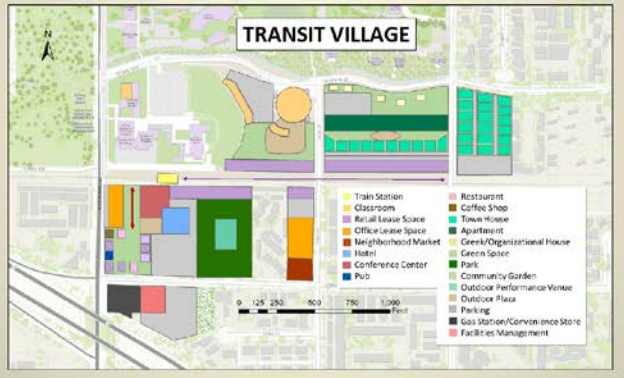


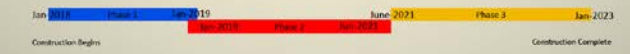
- Construction in northwestern lot
  - Expanded academic facilities
  - Extension of retail corridor
- Use of central lot as temporary parking area
- Construction in southwestern lot
  - Parking structure
  - Facilities management

PHASE 3

- Construction in central-western lot
  - Hotel and conference center
  - Office park
  - Shopping and dining plaza
  - Community park
  - Extension of retail corridor
- Completion of central lot

TRANSIT VILLAGE

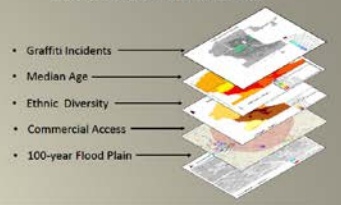




OFFICE PARKWAY

RETAIL CORRIDOR

SUITABILITY ANALYSIS



INFLUENCES ON DESIGN

- Train Station
- Traffic/Circulation
- Parking
- Flood Plain
- Fault Lines
- Fire Hazard
- Crime
- Aesthetics

SITE USERS

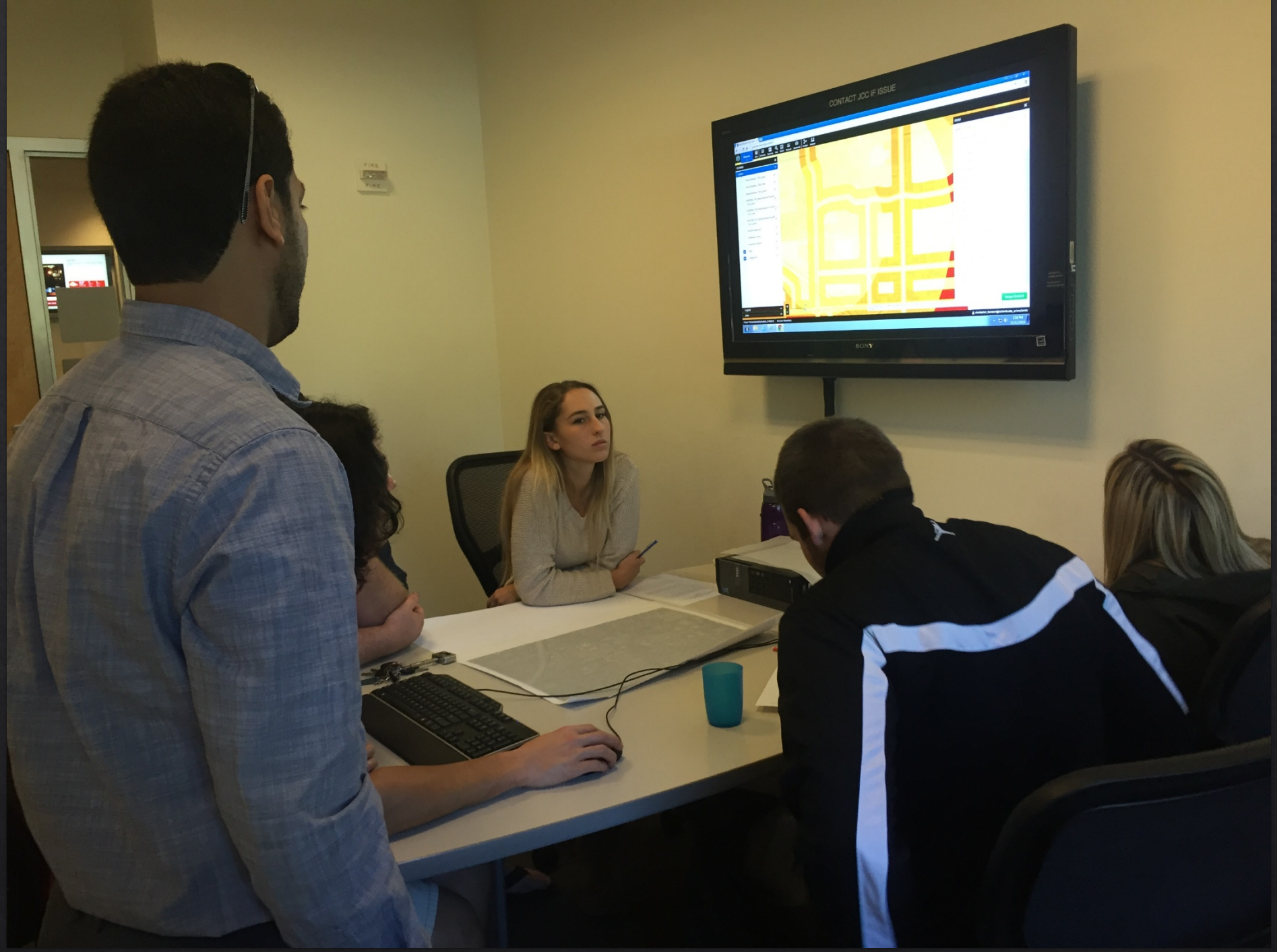
PRIMARY USERS	STUDENTS, FACULTY/STAFF, COMMUTERS
SECONDARY USERS	LOCALS, PROSPECTIVE STUDENTS
TERTIARY USERS	ALUMNI, FAMILIES, TOURISTS

Community Engagement

ECONOMIC FEASIBLITY

Structure	Total Square Feet	Estimated Development Cost
Townhomes	301,550 Square Feet	$69,588,693
Apartment Building	255,228 Square Feet	$58,898,965
New Greek Houses	15,855 Square Feet	$3,658,858
Classroom Space	73,699 Square Feet	$29,940,115
Office Buildings	74,082 Square Feet	$33,081,317
Facilities Building	29,152 Square Feet	$7,669,599

Preserving Open & Natural Spaces


CONTACT JCC IF ISSUE
SONY

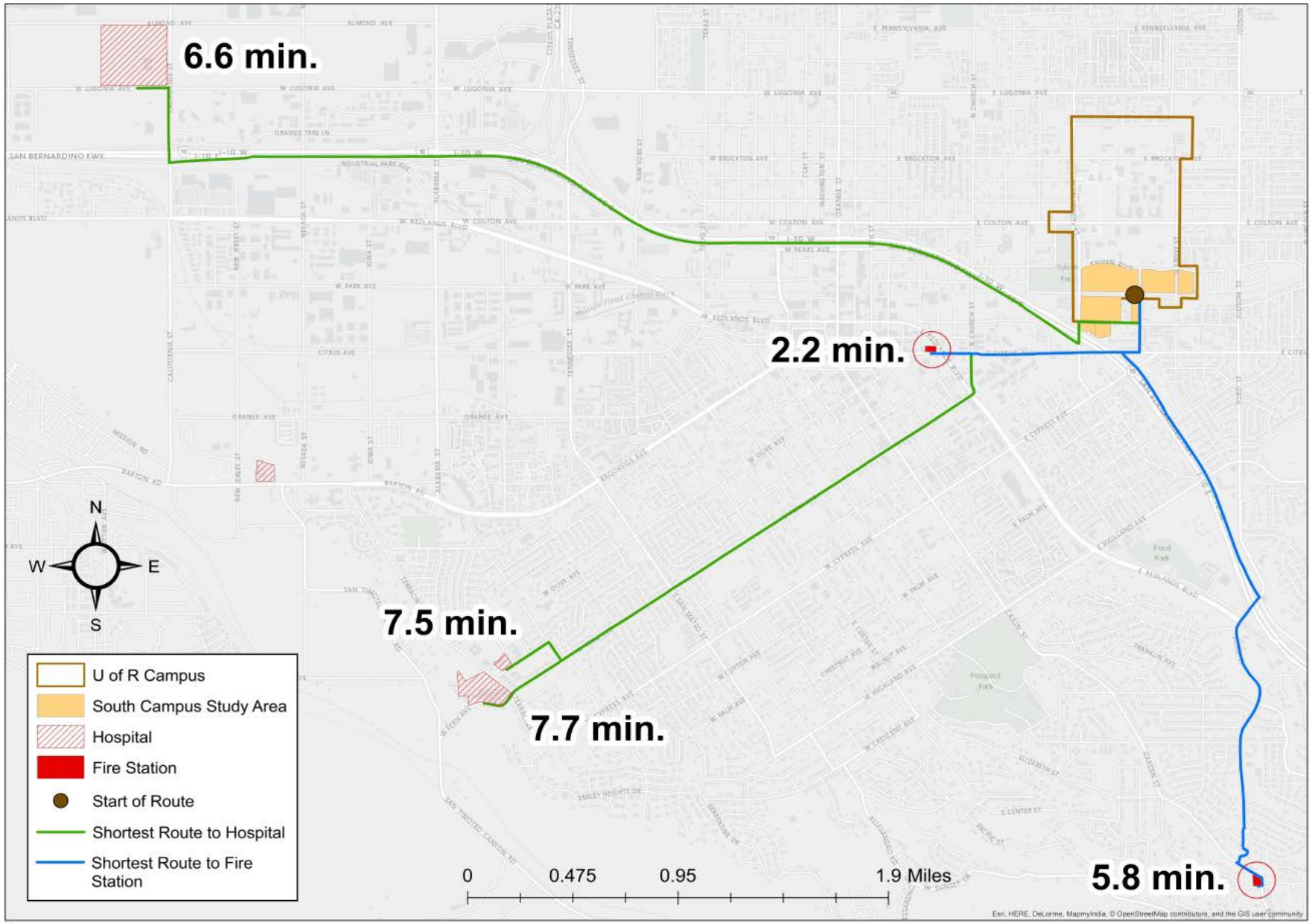
Formal or verified data set

(Census data, City of Redlands Shapefile)

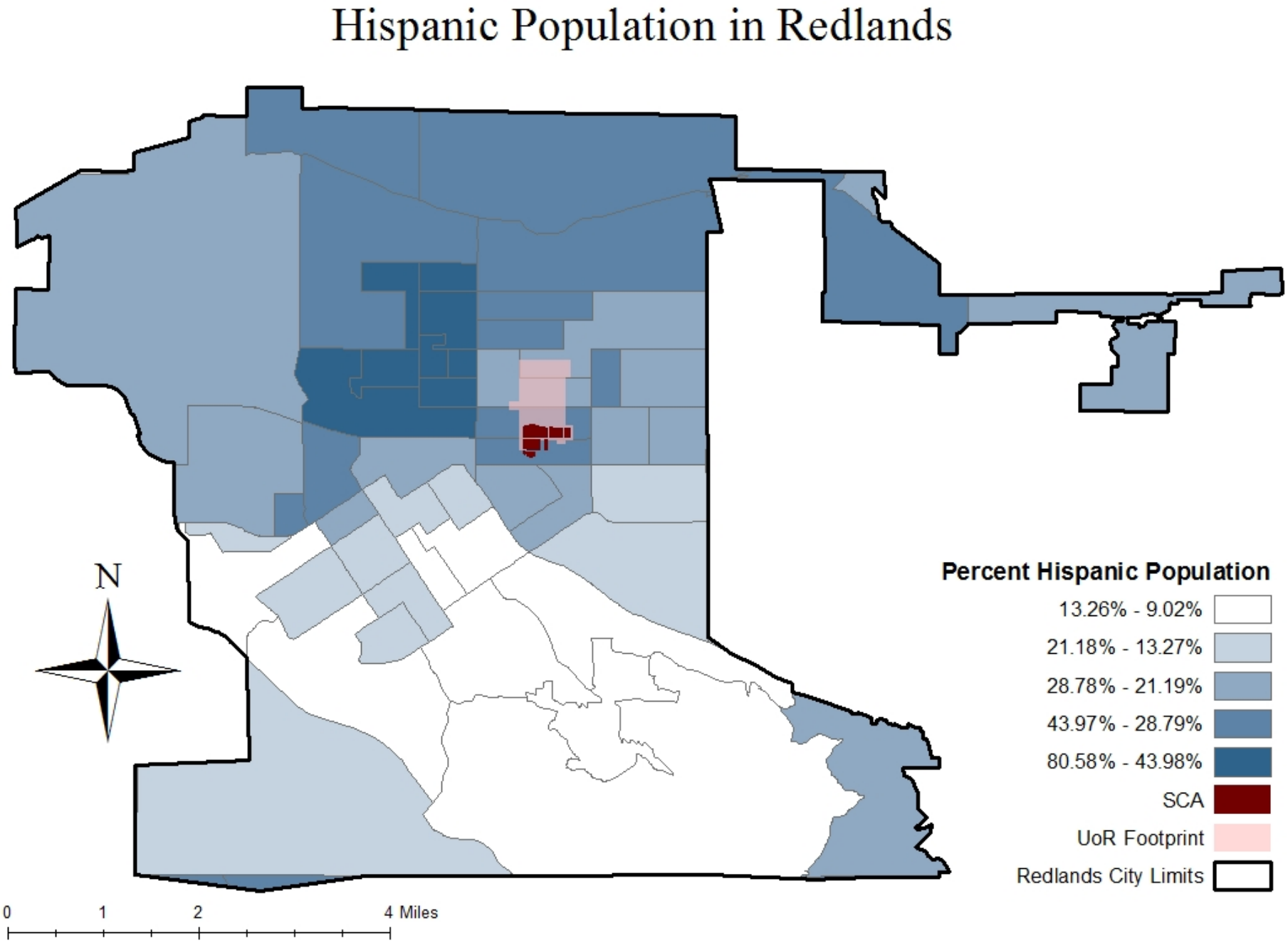
Citizen generated and social media data

(311 or Facebook data)

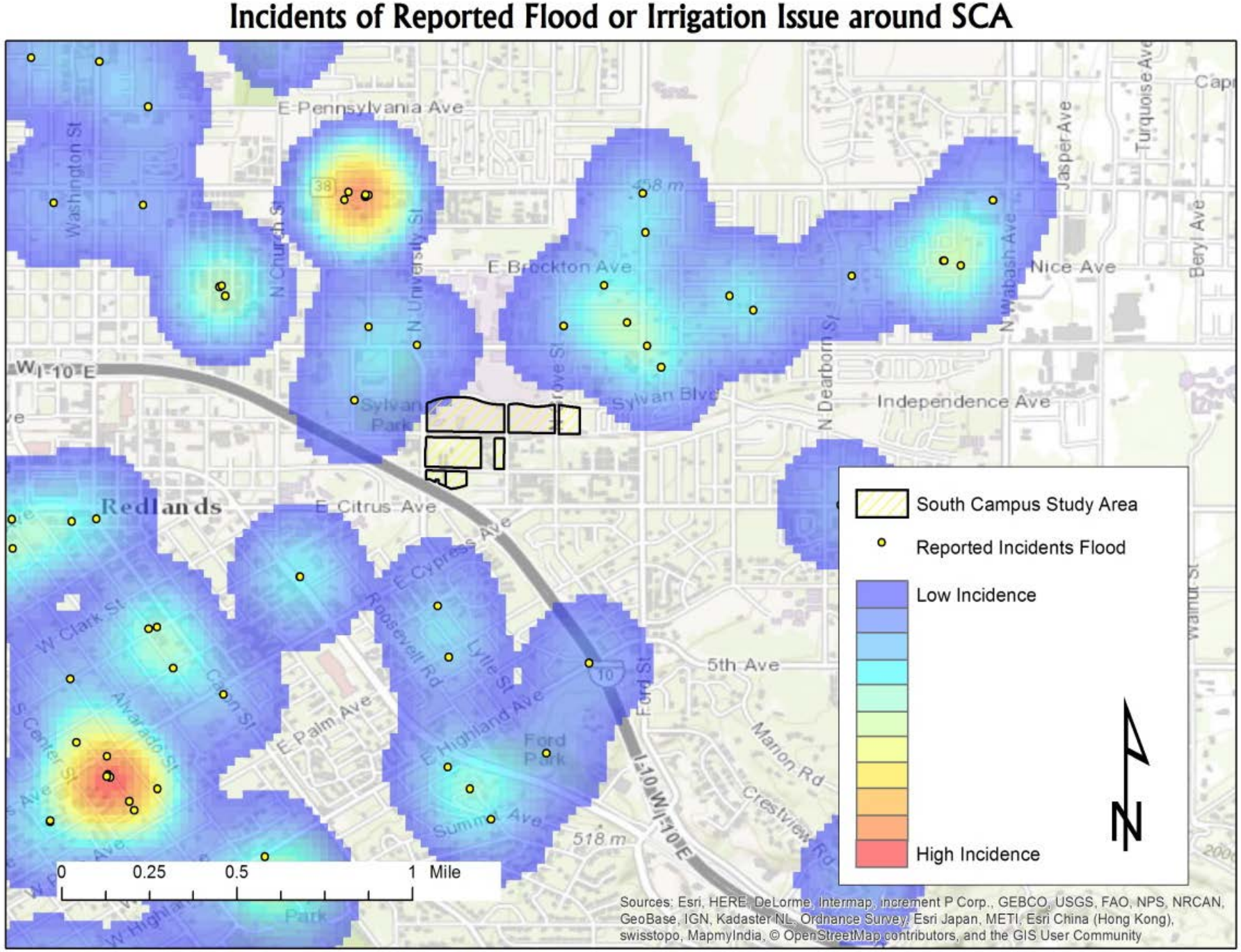
Accessibility



Ethnicity

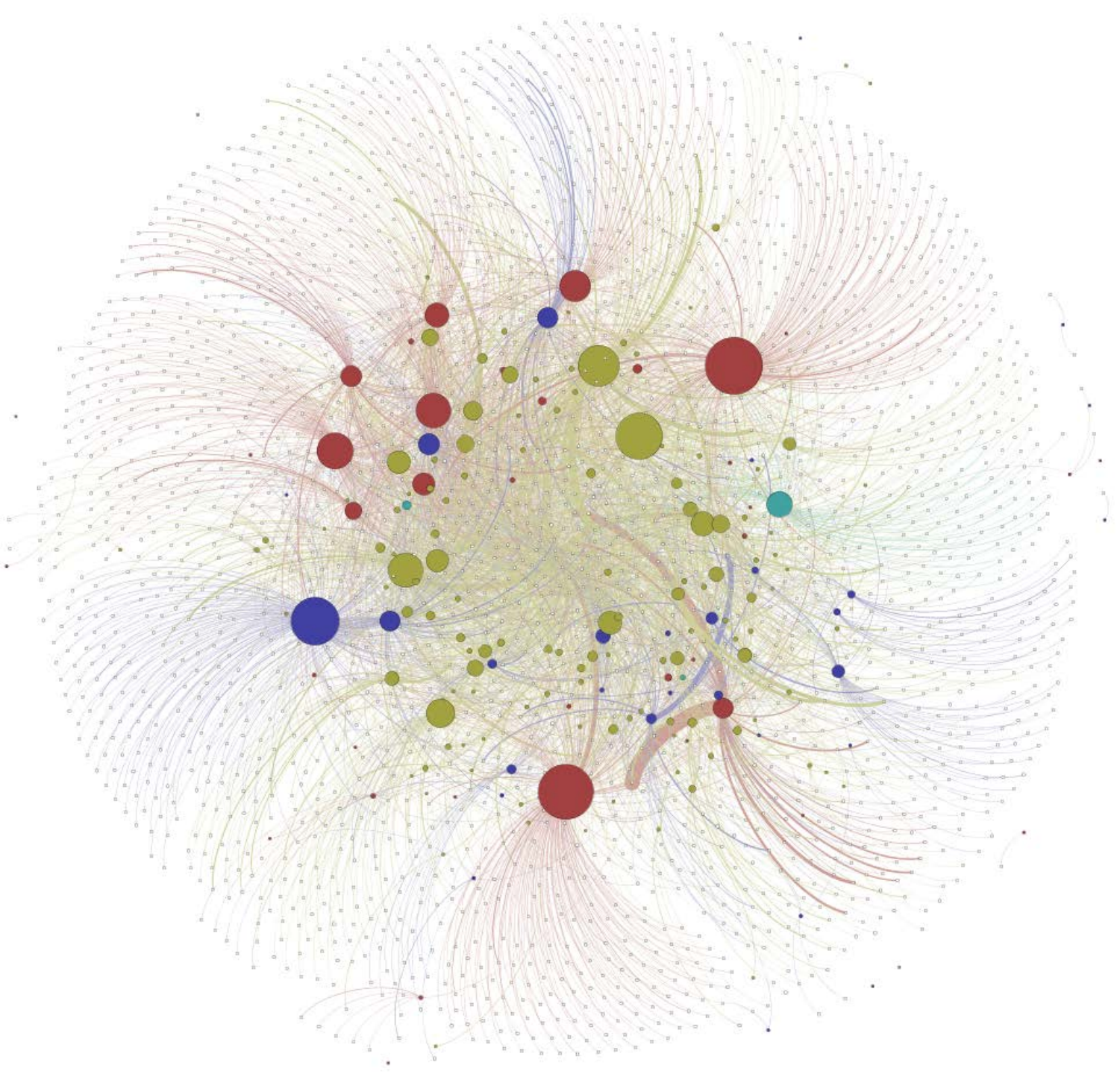

Hispanic Population in Redlands
N
0
1
2
4 Miles
Percent Hispanic Population
13.26% - 9.02%
21.18% - 13.27%
28.78% - 21.19%
43.97% - 28.79%
80.58% - 43.98%
SCA
UoR Footprint
Redlands City Limits

Citizen generated data

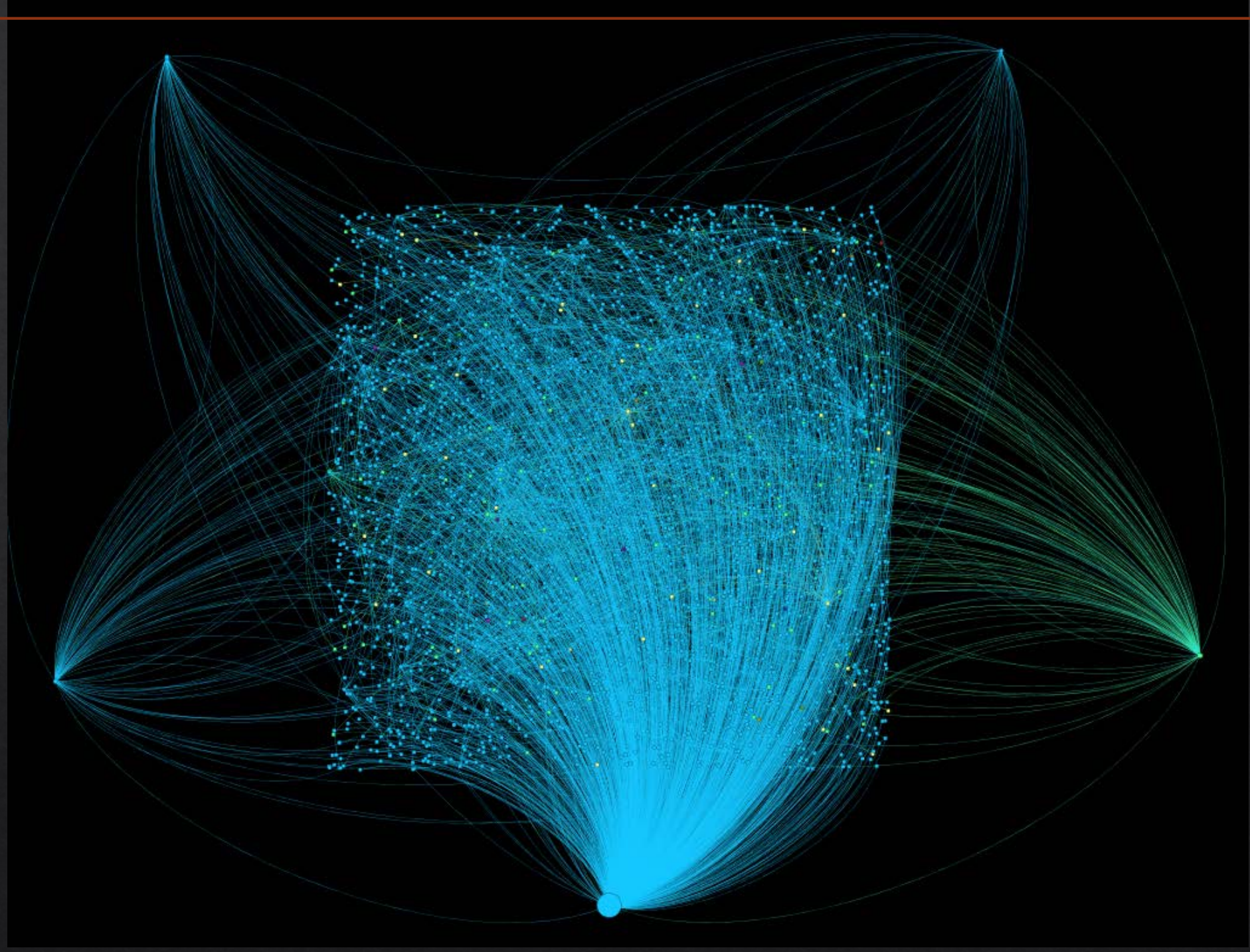


Facebook data: Community engagement

Identify potential active stakeholders in Redlands



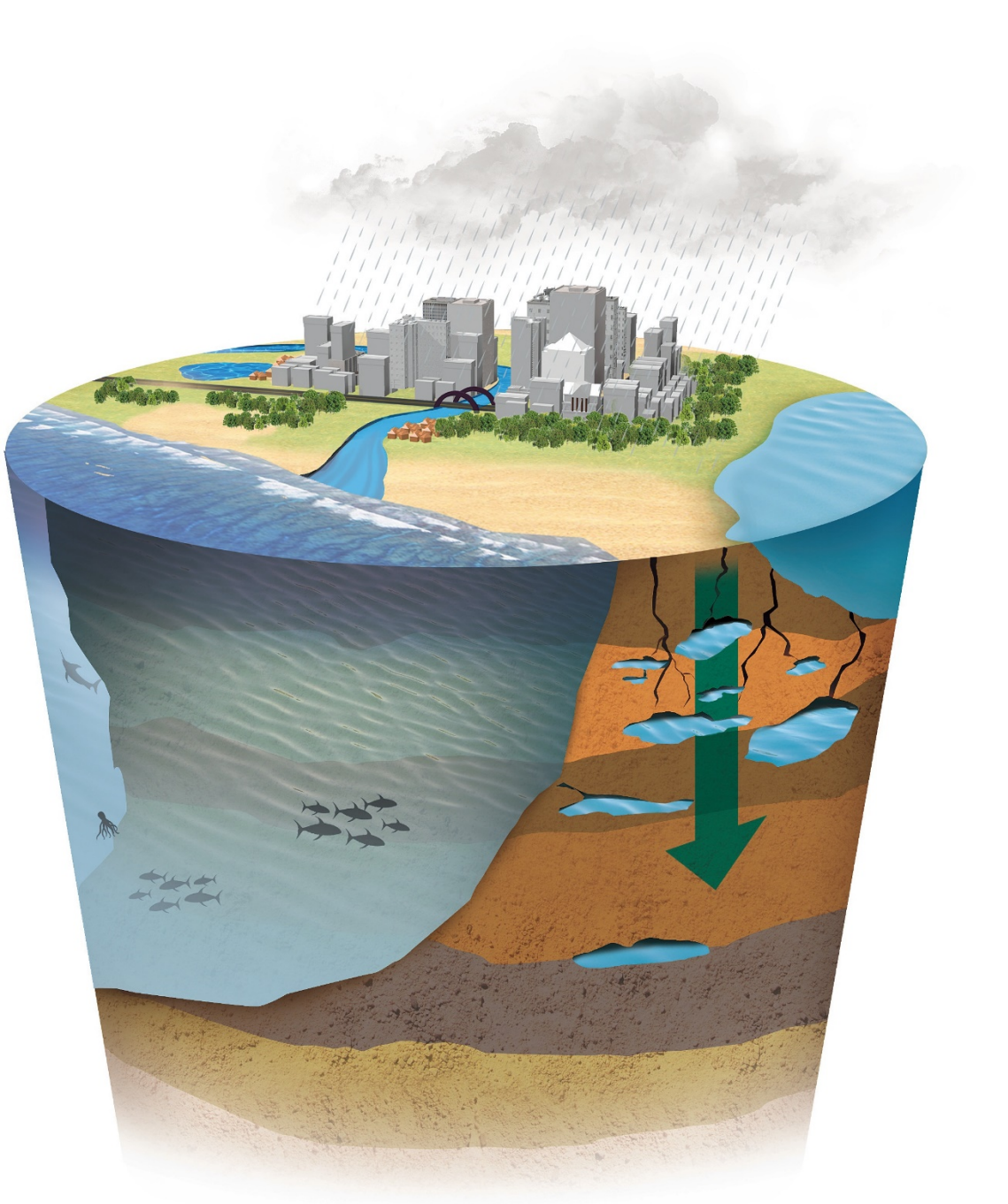
Facebook data: Citizens interest



Analyzed community groups, engaged faculty from various departments and city staff

Teaching challenges	Teaching Opportunities
2 & 2 ≠ 4	Focus on design feasibility
Can have multiple correct answers	Super technology Savvy
Design process is iterative and messy	Detailed environmental science knowledge

Environmental Studies
Religious studies
Business
Chemistry
Political science
Education
English
Anthropology
History
Biology
MS GIS Program & Center for Spatial Studies



Retrieved from: http://www.newindianexpress.com/cities/chennai

System interaction

Feasibility

Economic Feasibility

Residential Apartment's Financial Analysis

# of Units	Unit Type	Total Cost	Rent Per Sq ft	Rev 1 Mo.
40	Studios (800 Sq ft)	$8,000,000	$1.50	$48,000
40	1 Bed (1000 Sq ft)	$10,000,000	$1.50	$60,000
15	2bed 1Br (1200 Sq ft)	$4,500,000	$1.50	$27,000
13	2Bed 2Br (1400 Sq ft)	$4,550,000	$1.50	$27,300
Total: 108 Units	Total: 108,200 Sq ft	Total (Estimated): **$27,050,000**		Total (Estimated): **$162,300**

Master's Student Housing Financial Analysis

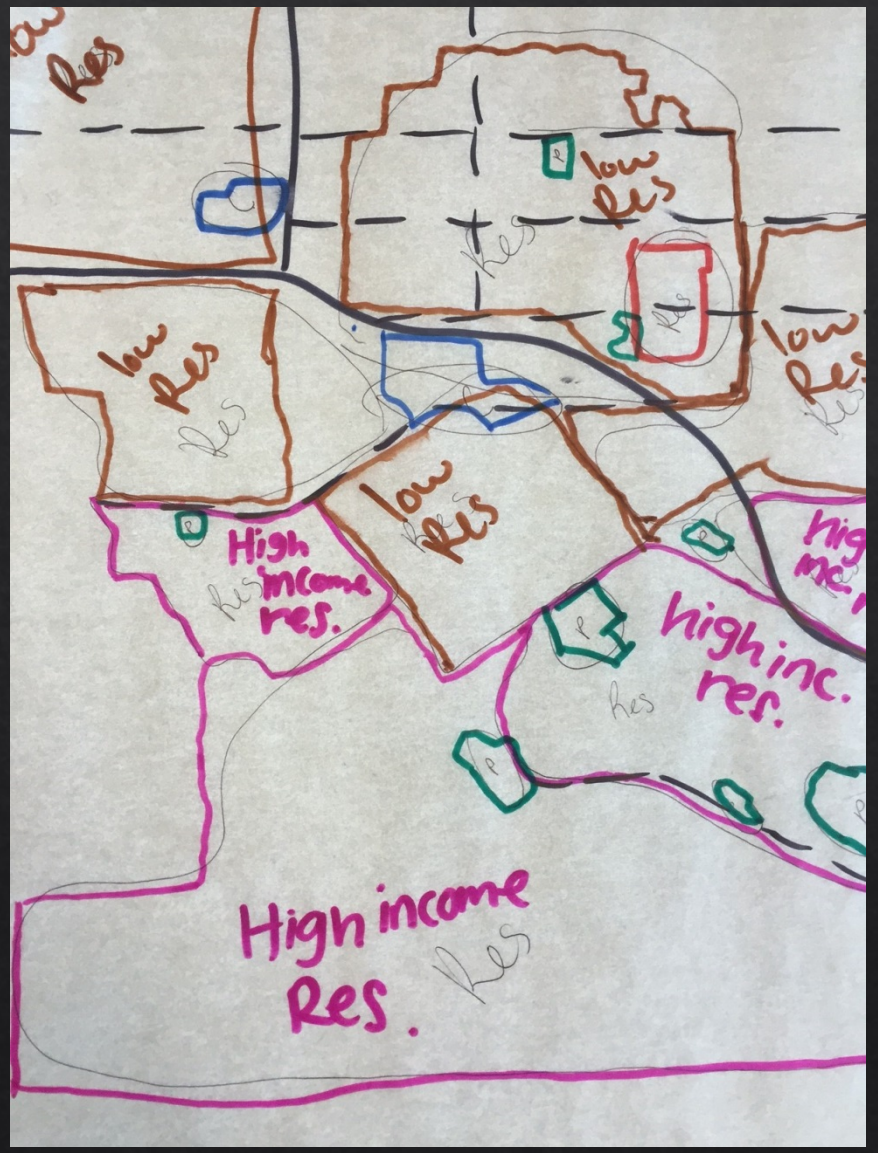
# of Units	Unit Type	Total Cost	Rent Per Sq ft	Rev 1 Mo.
20	2Bed 2Br (1400 Sq ft)	$7,000,000	$2.50	$70,000
Total: 20 Units	Total: 28,000 Sq ft	Total (Estimated): **$7,000,000**		Total (Estimated): **$70,000**

Building Use	Total Sq Ft	Cost Per Square Ft	Cost
Academic Building	17,251	$421	$7,262,671
Arcade	57,211	$430	$24,600,730
Arts Center	39,610	$421	$16,675,810
Car Rental	9,045	$400	$3,618,000
Conference Center	88,610	$447	$39,608,670
Convenience Store	7,801	$400	$3,120,400
Health Center	249,000	$578	$143,922,000
Hotel	379,788	$463	$175,841,844
IT Services	2,021	$379	$765,959
Maintenance	21,606	$263	$5,682,378
Mixed Retail	168,975	$429	$72,490,275
Office	194,000	$455	$88,270,000
Pub	118,594	$429	$50,876,826
		Estimated Total Cost:	**$632,735,563**

Did the students learn drafting?

NO

First Week



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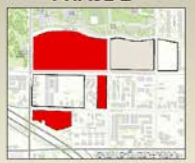

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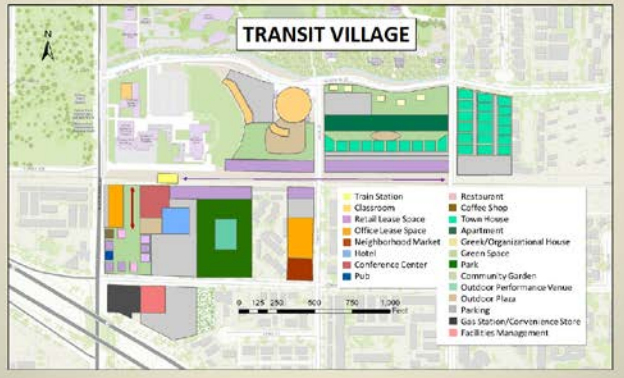

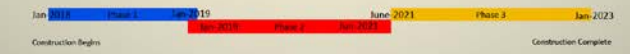

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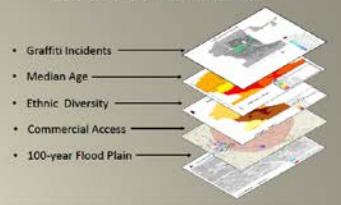

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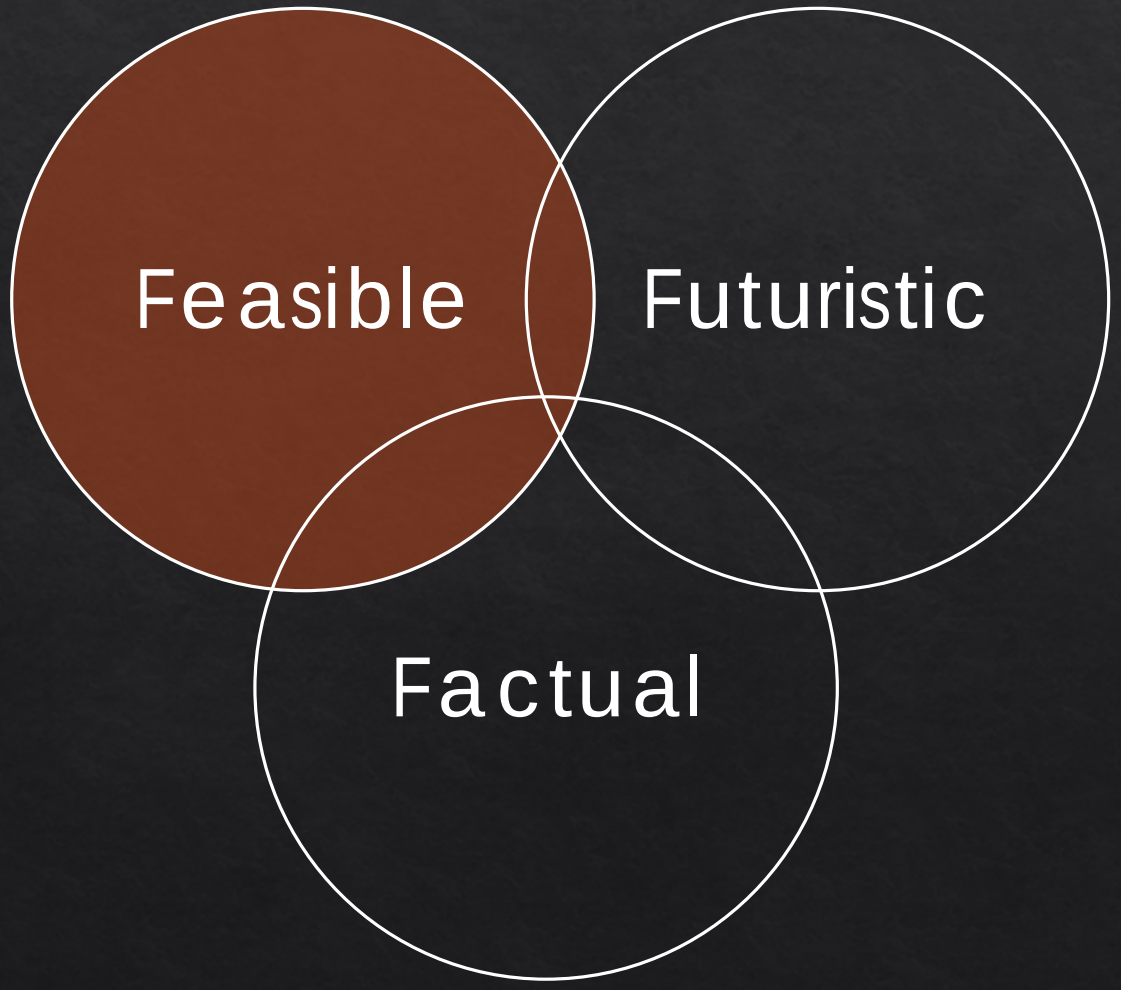
Preserving Open & Natural Spaces

How can we evaluate a geodesign **product**?

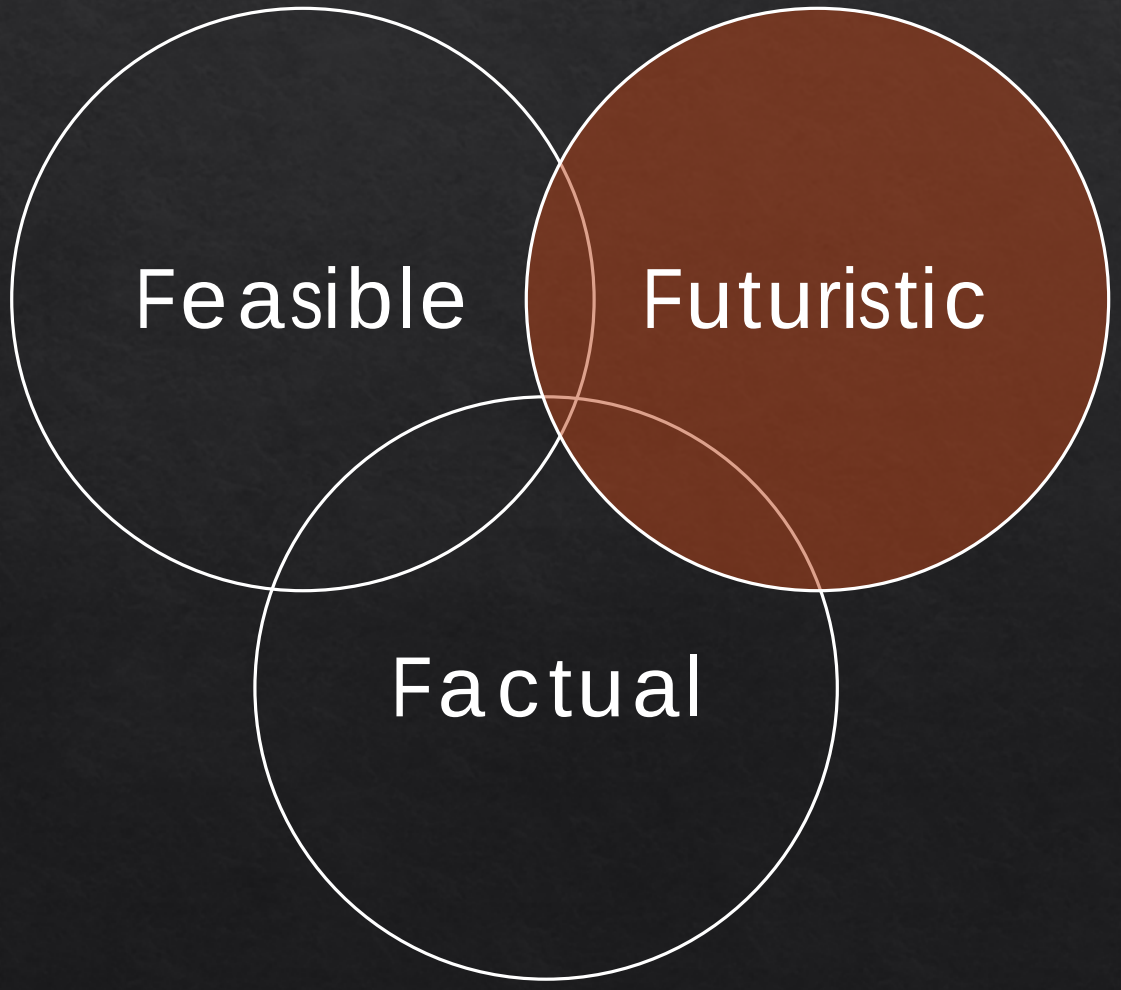
Product: design, plan, policy, guide

3 Fs of Geodesign products



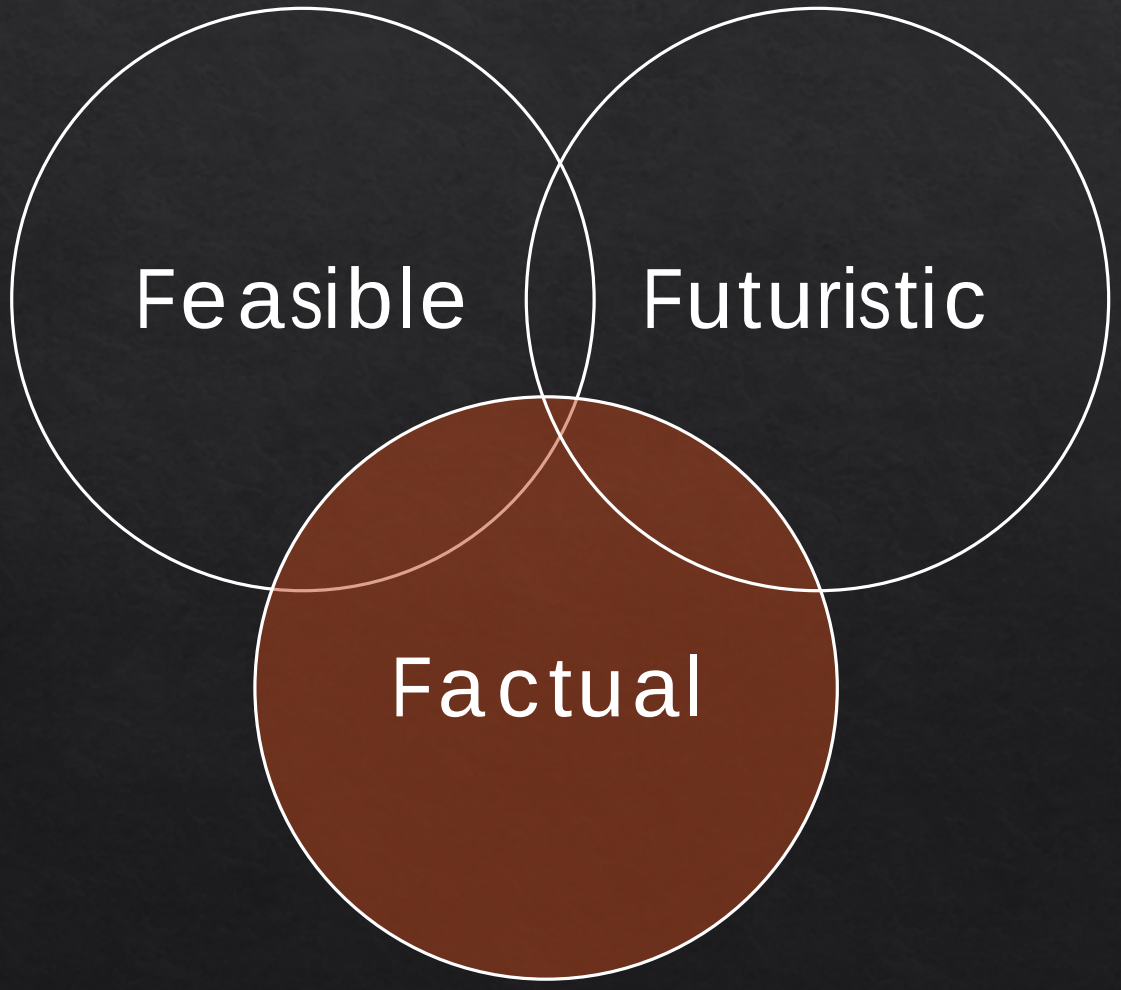
- **Can we implement this?**
- **Do we have time and resources to implement it?**

3 Fs of Geodesign products



- **What are its future impacts on different systems?**
- **Are these impacts sustainable?**

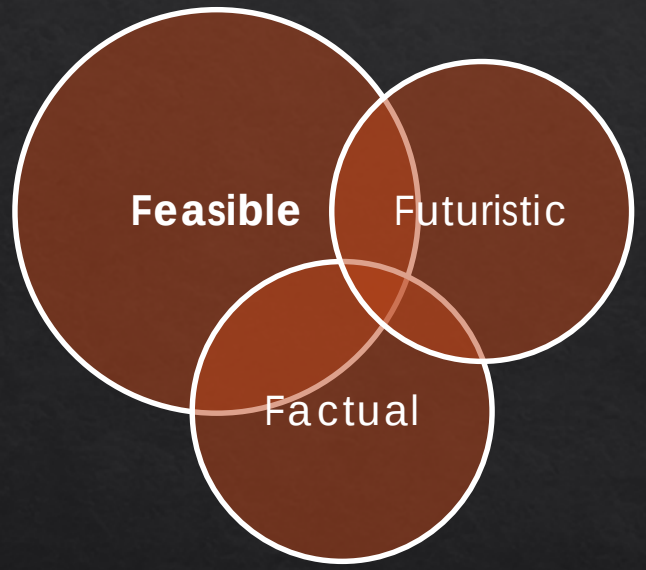
3 Fs of Geodesign products



- **Is it developed based on the realities of current systems?**
- **Is it developed based on the desires and requirements of different stakeholders?**

Suggestions

Geodesign product



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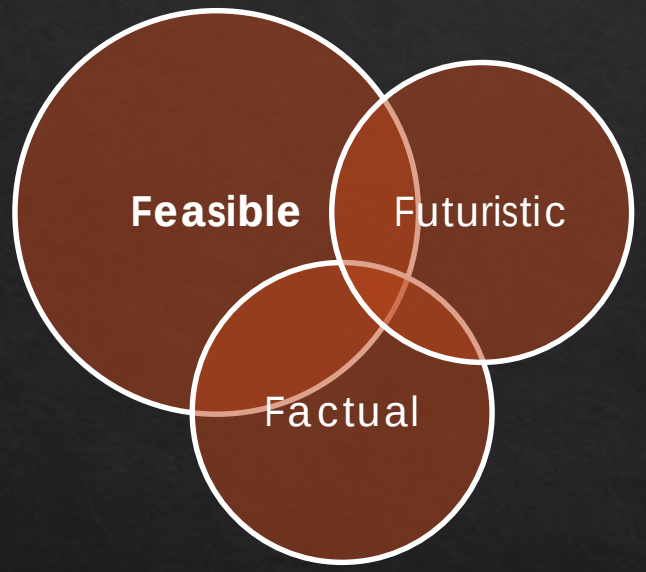
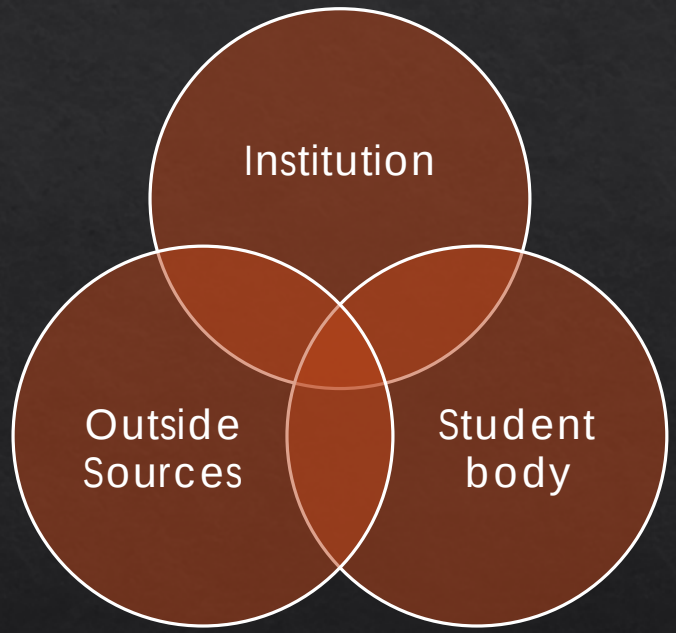


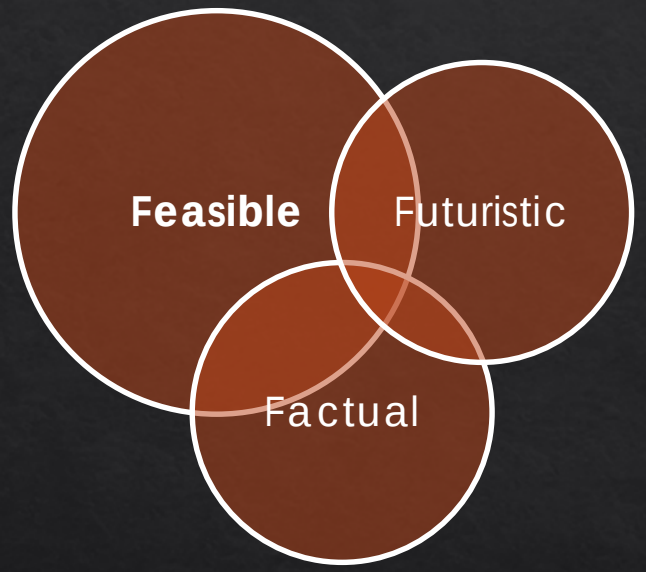
Pedagogical Opportunities



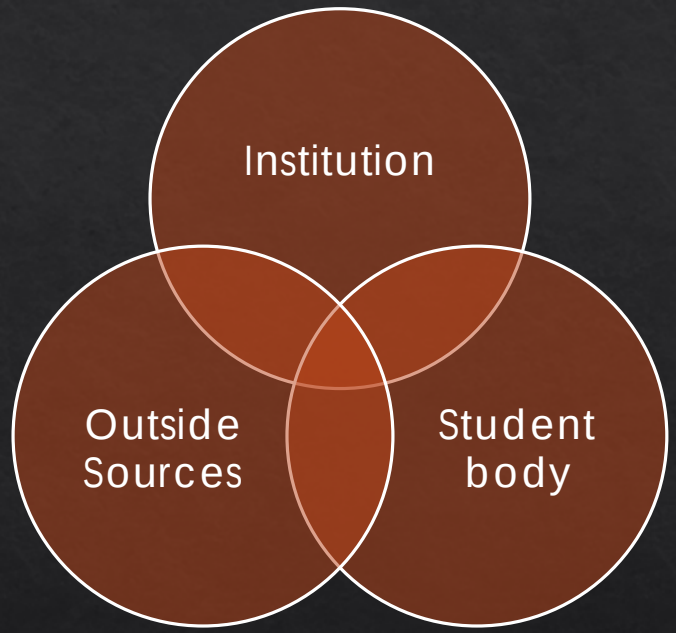
You may need to start with traditional tools

Retrieved from: http://www.helsinkidesignweek.com/weekly/

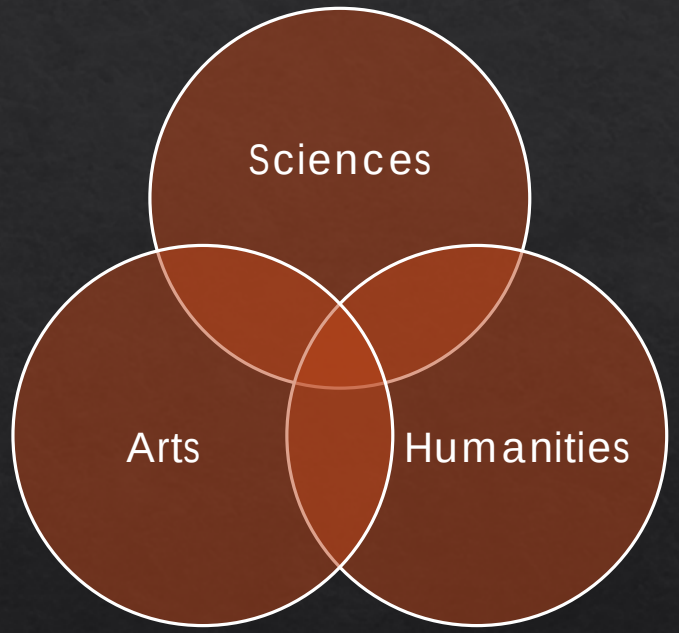
Geodesign product



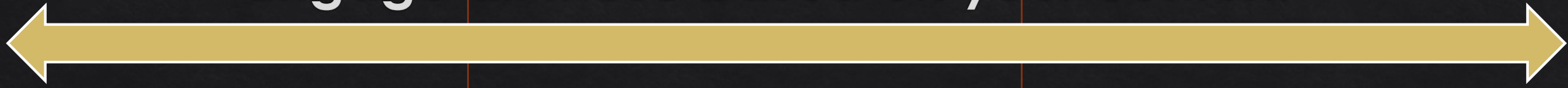
Pedagogical Opportunities



Engage different disciplines



Engage all these based on your context



My 2 Cents

- Consider the **product** while designing the process.
- **Engage** various **methods**, **disciplines**, and **communities**.
- Look at the **context** of your institution.

Future work

- What are the **criteria for evaluating** the success of geodesign pedagogical approaches?

- What other disciplines should be engaged in geodesign?

Business? Conflict resolution? Sociology?

Thank you

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