NCSG
National Center for Smart Growth Research & Education

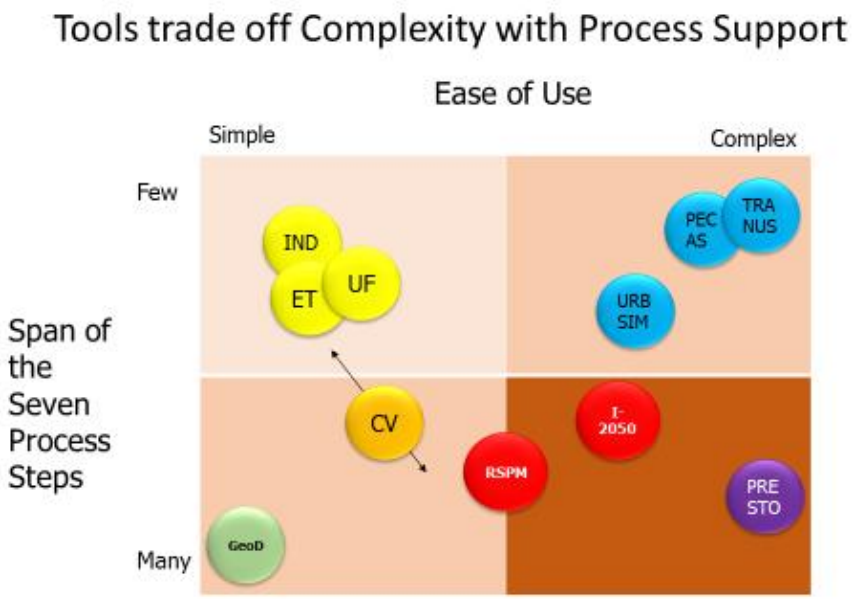
Geodesignhub

TRB Conference

Tuesday, August 16, 2016

Uri Avin FAICP, UMD

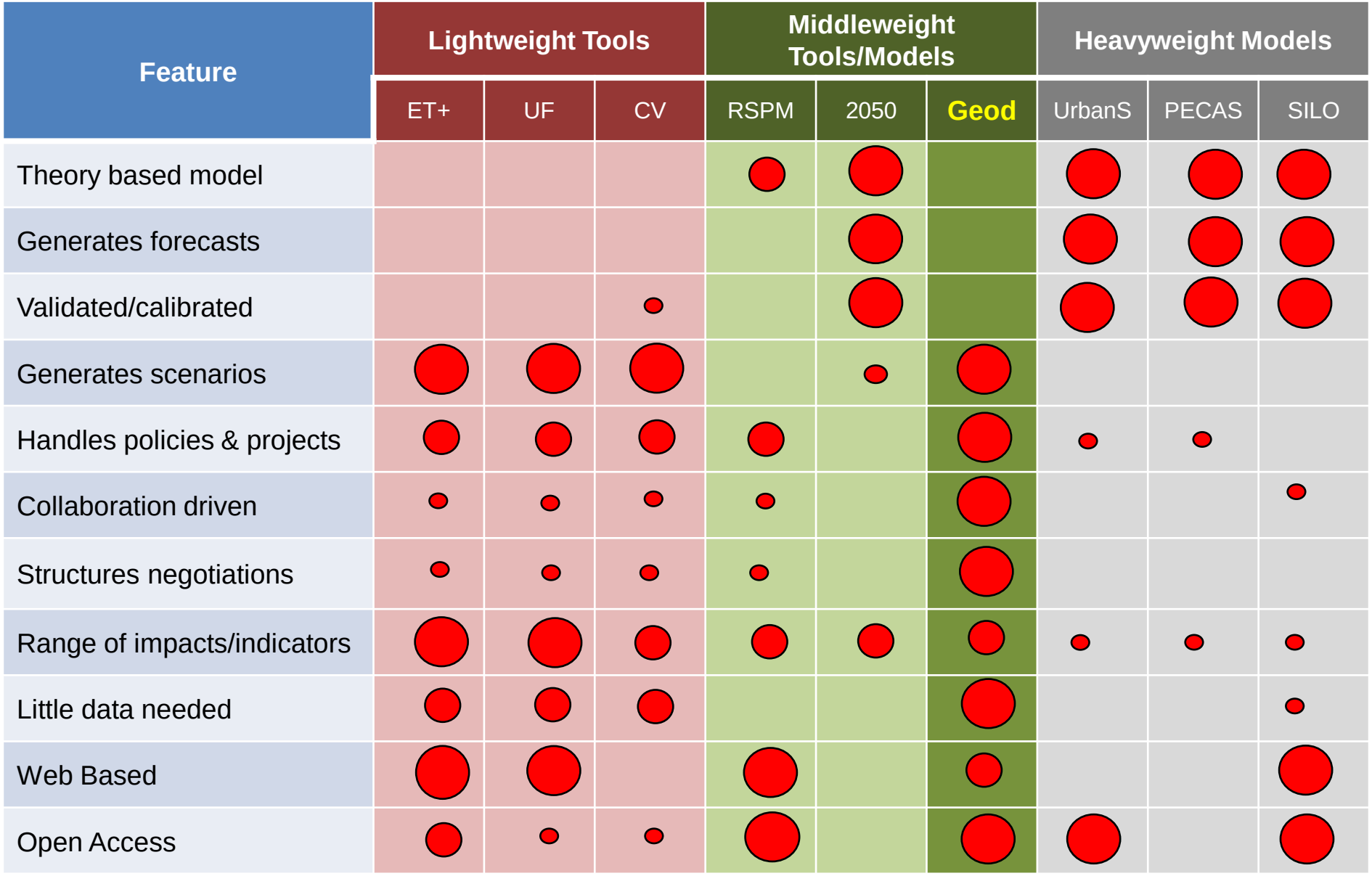
uavin@und.edu



Sequence of Presentation

- Geodesignhub (GDH) in the bigger picture; key features
- Case study
- Tool structure

GDH has many unusual strengths

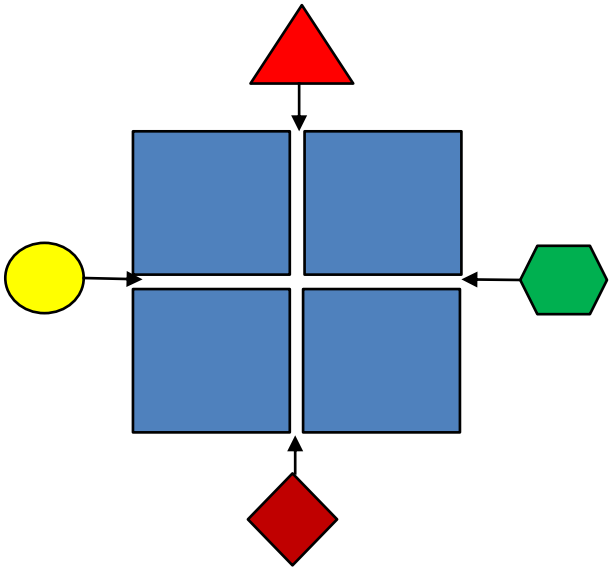


Source: Adapted from Avin et al, NCHRP Project 8-36, Task 117, 2016

Strong fit Moderate fit Weak Fit Blank = no fit

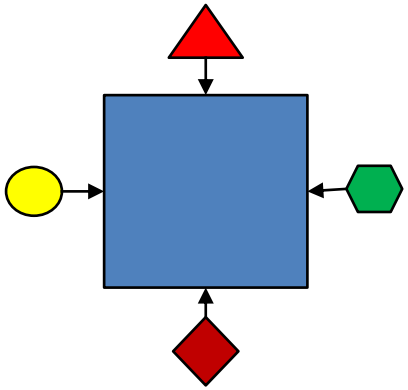
Relationships to External Data and Models

UrbanSim



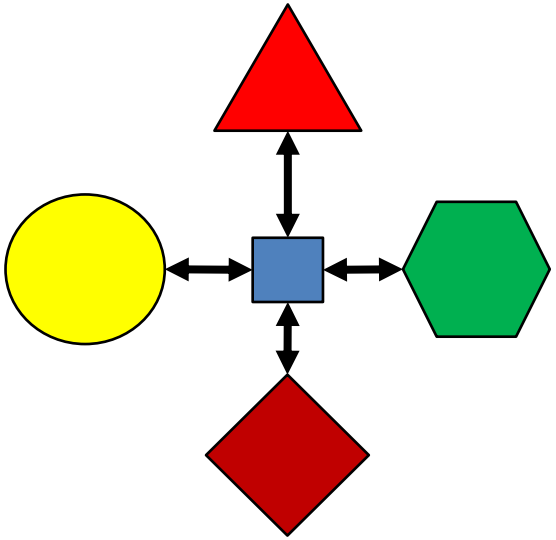
Multiple internal models fed with outside data

CommunityViz



Tool contains multiple internal applications built with outside data

Geodesignhub

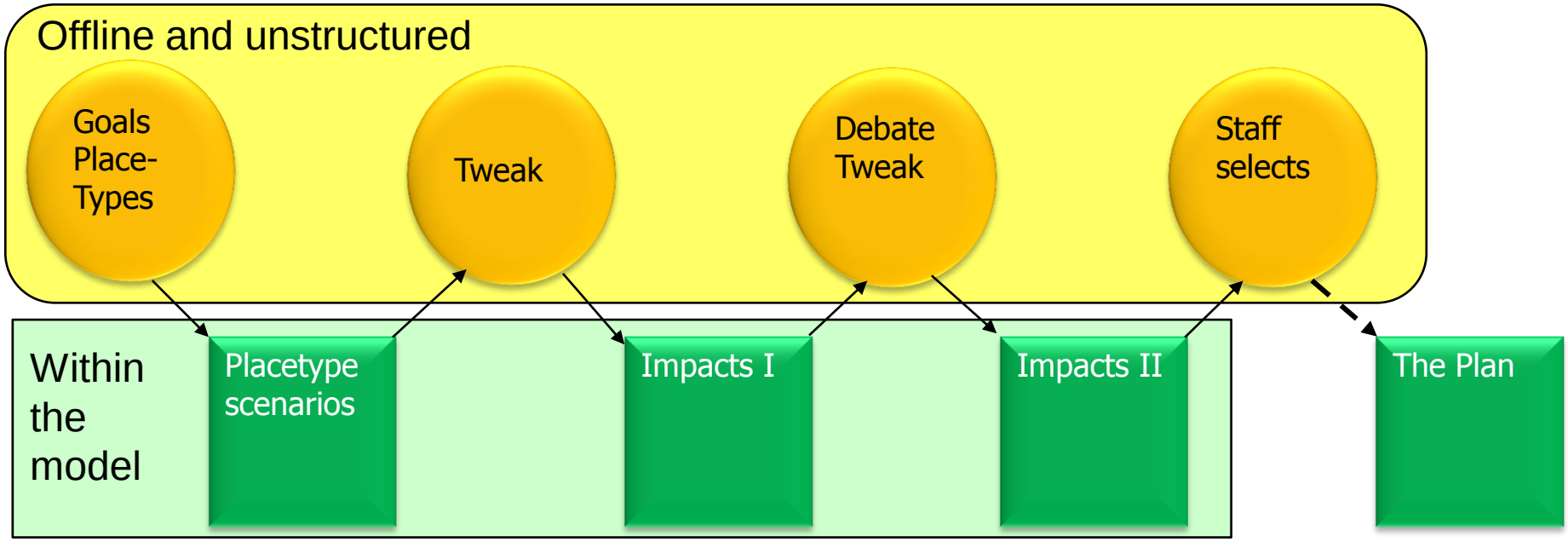


Tool contains simple operations but **interacts** with outside models

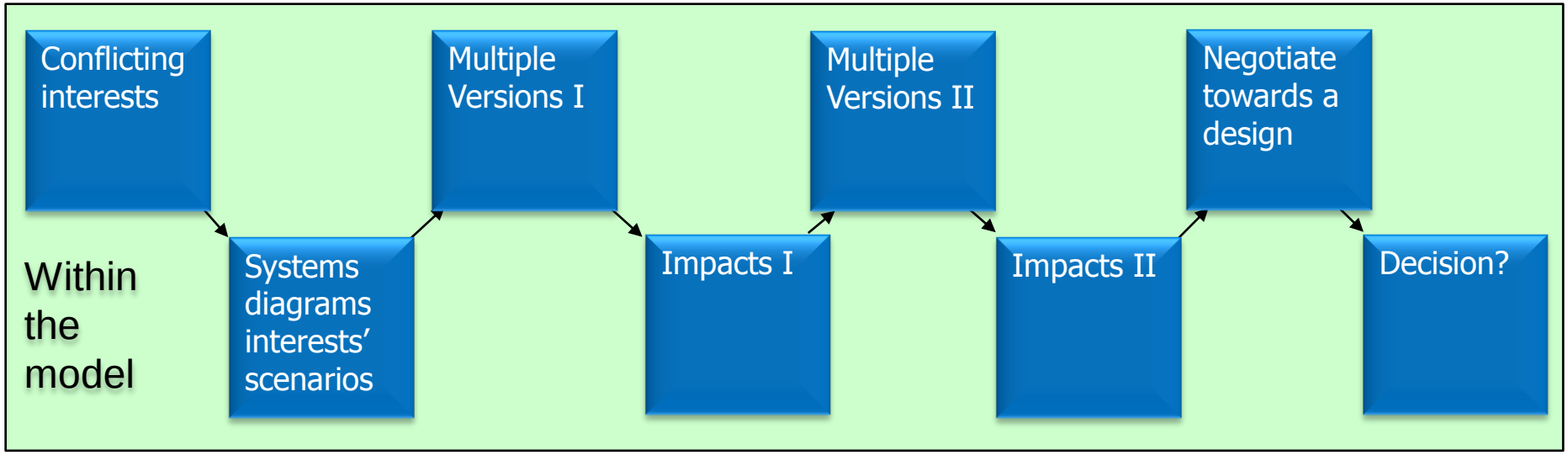
A cloud-based, open-source, open-platform software written in Python and Node/JavaScript explicitly designed to link to other tools or models, rather than containing complex substantive algorithms itself

Geodesignhub Structured to Support Collaborative Processes

Most Sketch tools



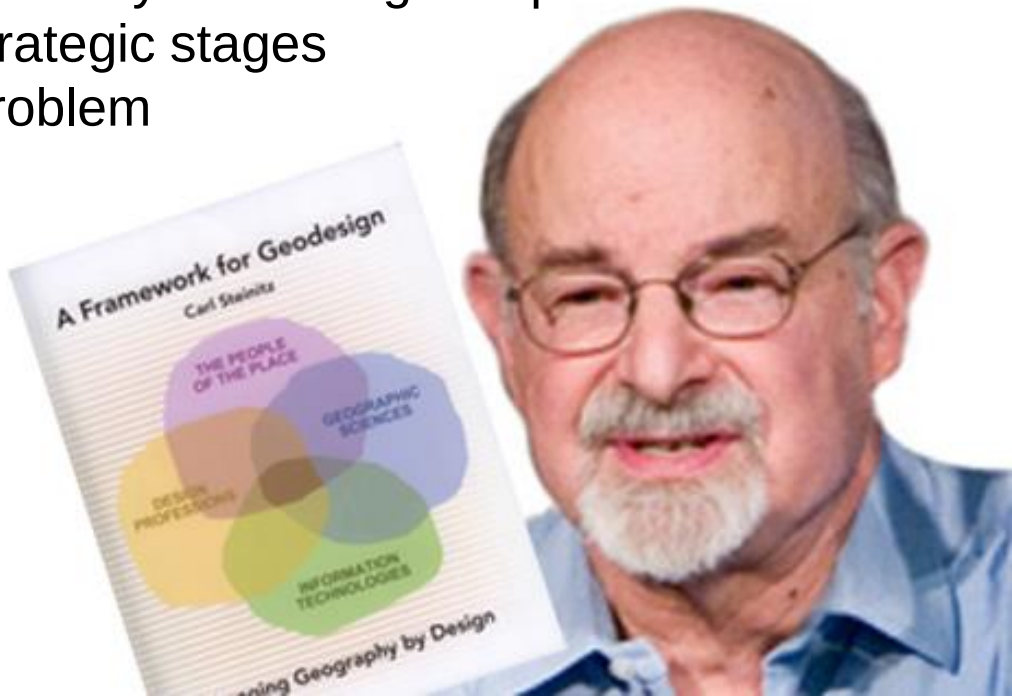
Geodesignhub



GDH: Mature Approach, Much-Tested

- Carl Steinitz (ex-Harvard Landscape Dept; now at CASA in London) been applying and refining this approach for 50 years
- Applied in 150 case studies in 30 countries in analog, GIS, and now, in digital modes; for 20 acres up to 16,000 sq. mi.
- Converted to a PSS as Geodesignhub in last 2 years
- Geodesignhub applied in over 20 places in 8 countries over last 2 years
- Built around stakeholder negotiation; does not separate design from analysis; ***inverts*** goals > data > analysis > design sequence
- Best used at very beginning, strategic stages of resolving a large, complex problem

Dr. Hrishkesh Ballal, Software designer



AN ALTERNATIVE FUTURE FOR THE COASTAL ZONE OF GEORGIA, USA

AN EXPERIMENT IN MULTI-SCALE AND MULTI-JURISDICTIONAL GEODESIGN DYNAMICS

April 20-21, 2016

INDEPENDENT ⇨ RELATED ⇨ INTEGRATED

GEODESIGN HUB

THE UNIVERSITY OF GEORGIA COLLEGE OF ENVIRONMENT + DESIGN
C E+D
landscape architecture + historic preservation env. planning + design environmental ethics

Coastal Regional Commission OF GEORGIA

Lupita McLenning, Hunter Key, Georgia Coastal Regional Commission
Rosanna Rivero, Alison Smith, Brian Orland, Jon Calabria, University of Georgia
Ryan Perkl, University of Arizona
Carl Steinitz, Hrishi Ballal, Tess Canfield, Geodesignhub.com

Day One Schedule

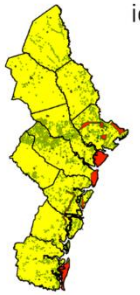
08:30 – 09:00 Set up and connect to Geodesignhub
09:00 – 09:45 Personal Introductions, Description of Study Area and Organization of Workshop
10:00 – 10:30 Geodesignhub tutorial
10:30 – 12:15 System teams make at least 10 diagrams of policies and projects
12:15 – 12:30 Form Change-design teams
12:30 – 13:30 Lunch
13:30 – 13 50 Geodesignhub tutorial
13:50 – 15:00 Create Decision model and Change design Version independently, assess Impacts
15:00 – 16:30 Create Change design Version 2, with negotiation as wanted, assess Impacts
16:30 – 17:30 Allocation of development by externally linked model

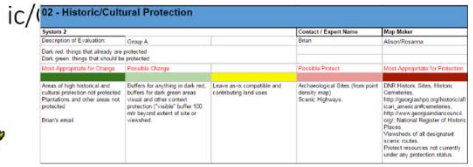
Day Two Schedule

09:00 -- 10:00 Presentations of Change designs Version 2
10:00 – 12:30 Negotiate Change designs Version 3, in paired teams with similar Decision models: ECO, DEV, SOC and assess Impacts
12:30 -- 13:30 Lunch
13:30 -- 16:00 Publically negotiate among ECO, DEV, SOC to make a final Change design Version 4
16:00 -- 17:00 Visualize in 3-D
17:00 – 17:30 Discussion

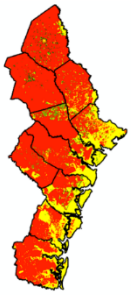
END

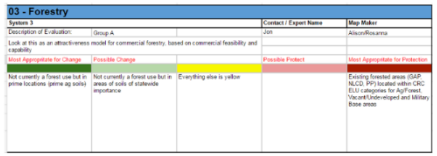
The Ten Systems Teams Products



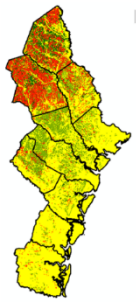


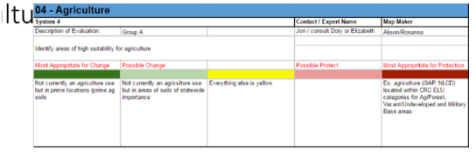
HISTORY AND CULTURE



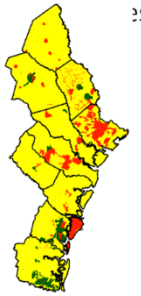


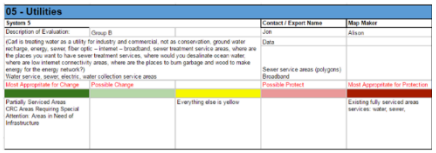
FORESTRY



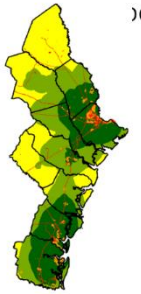


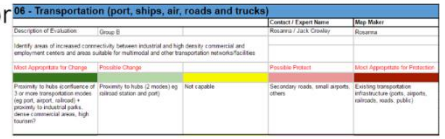
AGRICULTURE



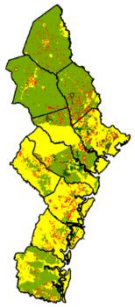


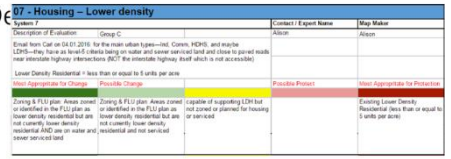
UTILITIES



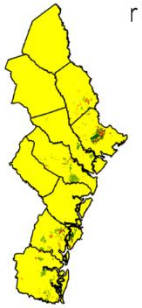


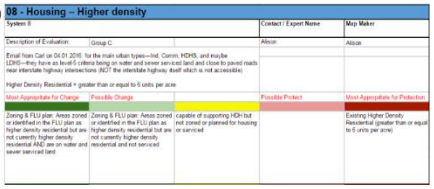
TRANSPORTATION



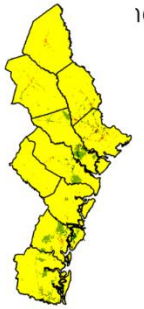


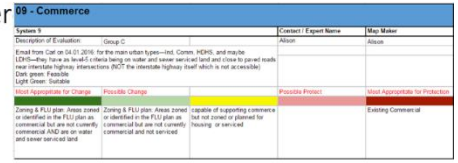
HOUSING, LOWER DENSITY



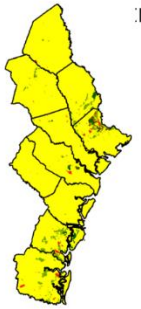


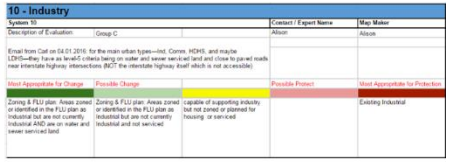
HOUSING, HIGHER DENSITY





COMMERCE

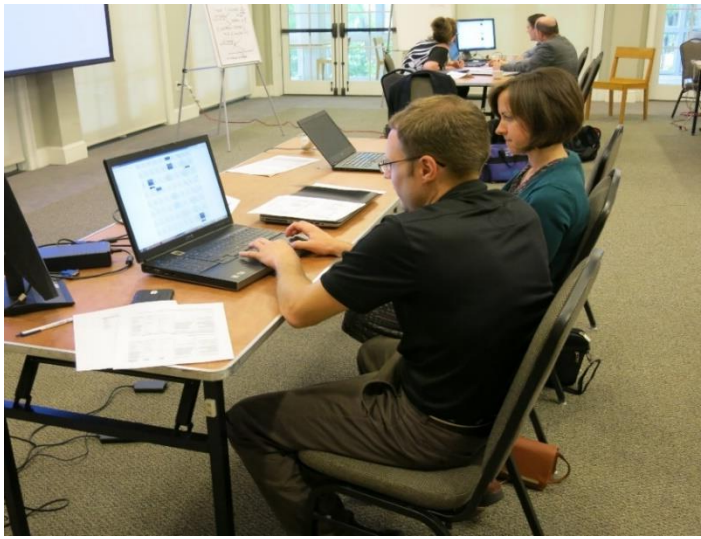




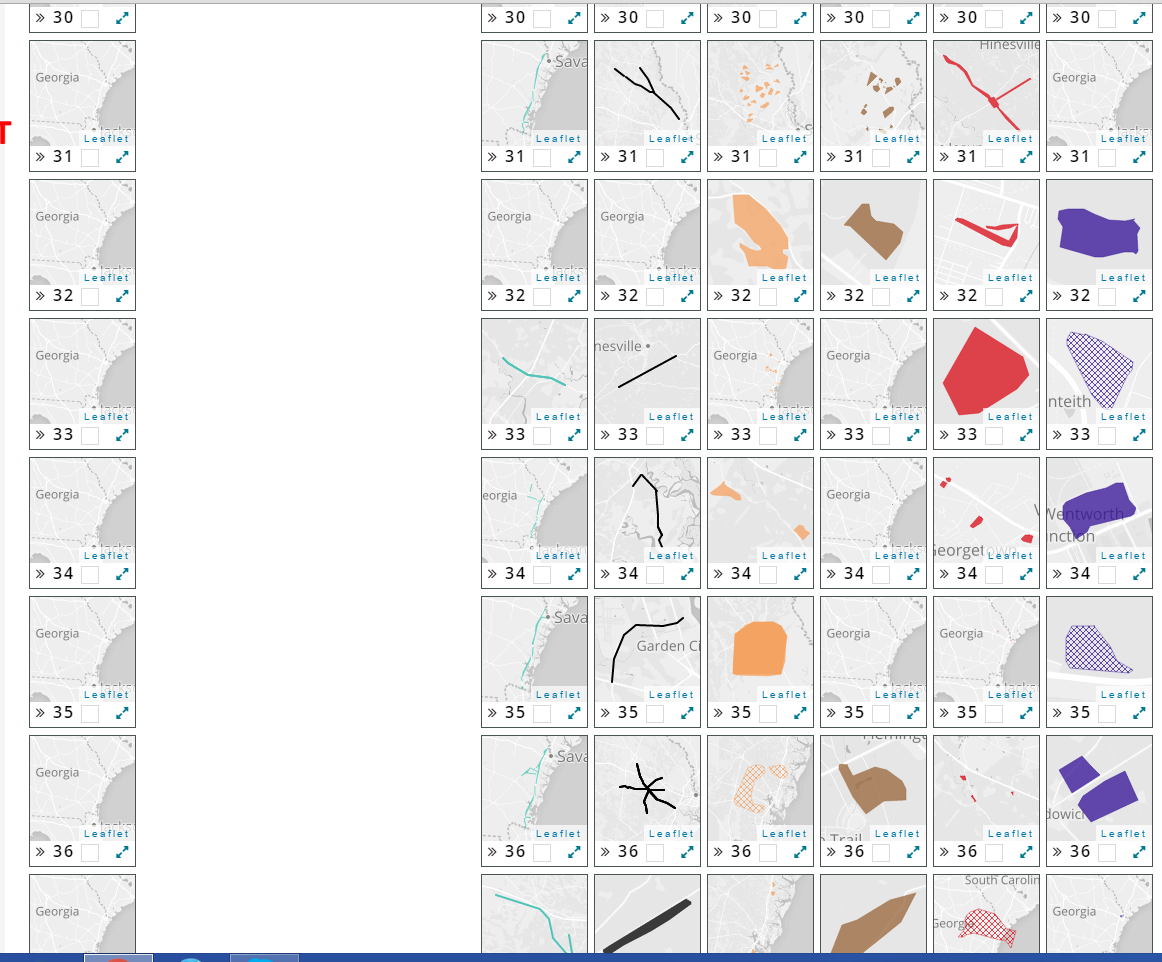
INDUSTRY

MAKING DIAGRAMS OF POLICIES AND PROJECTS TO IMPROVE EACH OF THE TEN SYSTEMS

https://www.geodesignhub.com/p/join/vn/

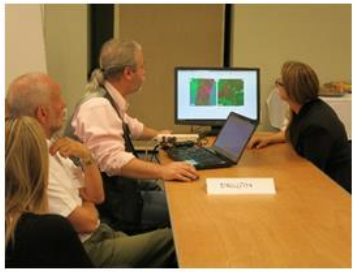


MAKING POLICY AND PROJECT DIAGRAMS



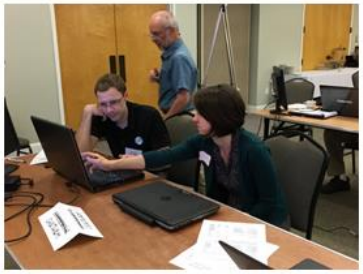
TEN COUNTY TEAMS MAKING VERSIONS 1 AND 2 OF THE CHANGE DESIGNS

Long

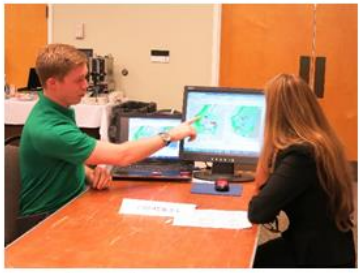


Bryan

McIntosh



Chatham



Camden

Liberty

Bulloch

Glynn

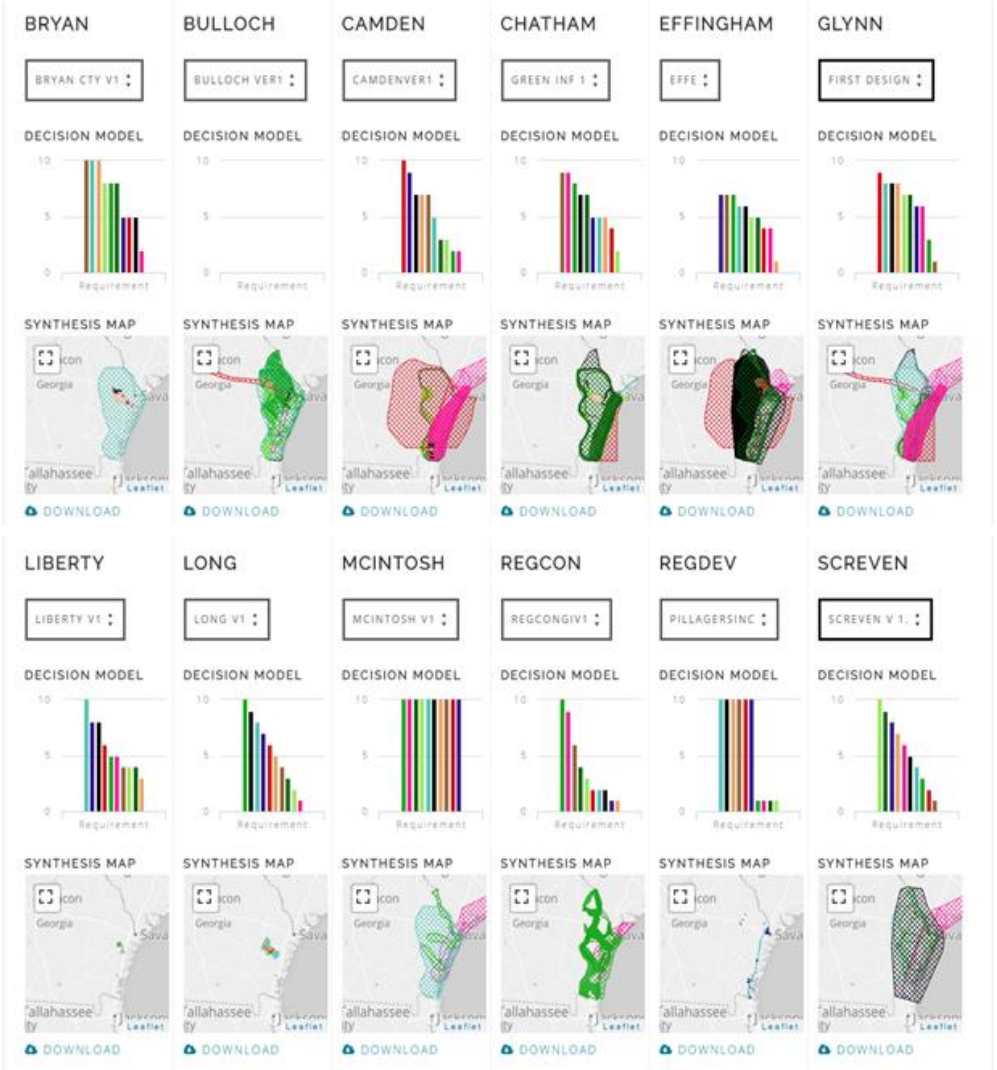
Screven

Effingham

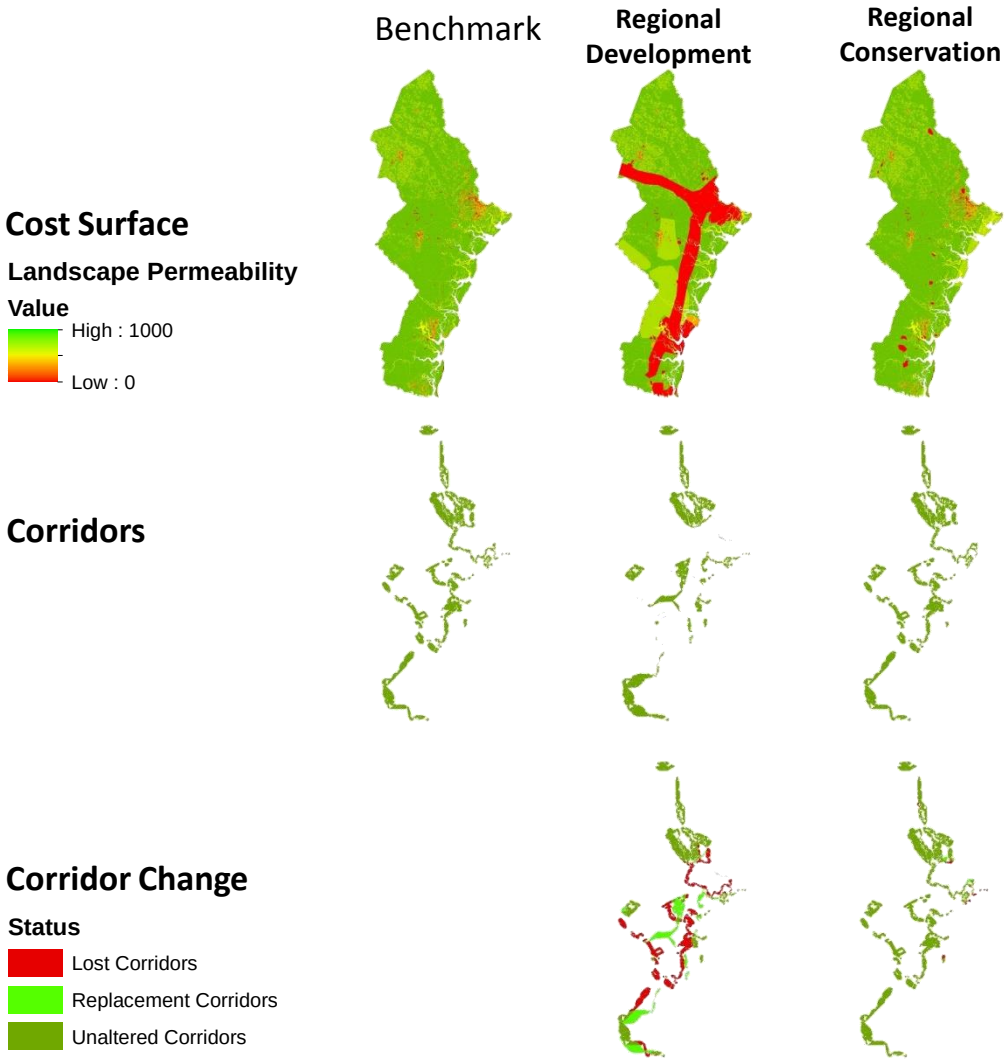
VERSIONS 1 AND 2 OF THE CHANGE DESIGNS

Note how different the Decision models and the Change designs are.

END OF DAY 1 OF THE WORKSHOP



COMPARING IMPACTS ON CORRIDOR CONTINUITY IN THE GREEN INFRASTRUCTURE

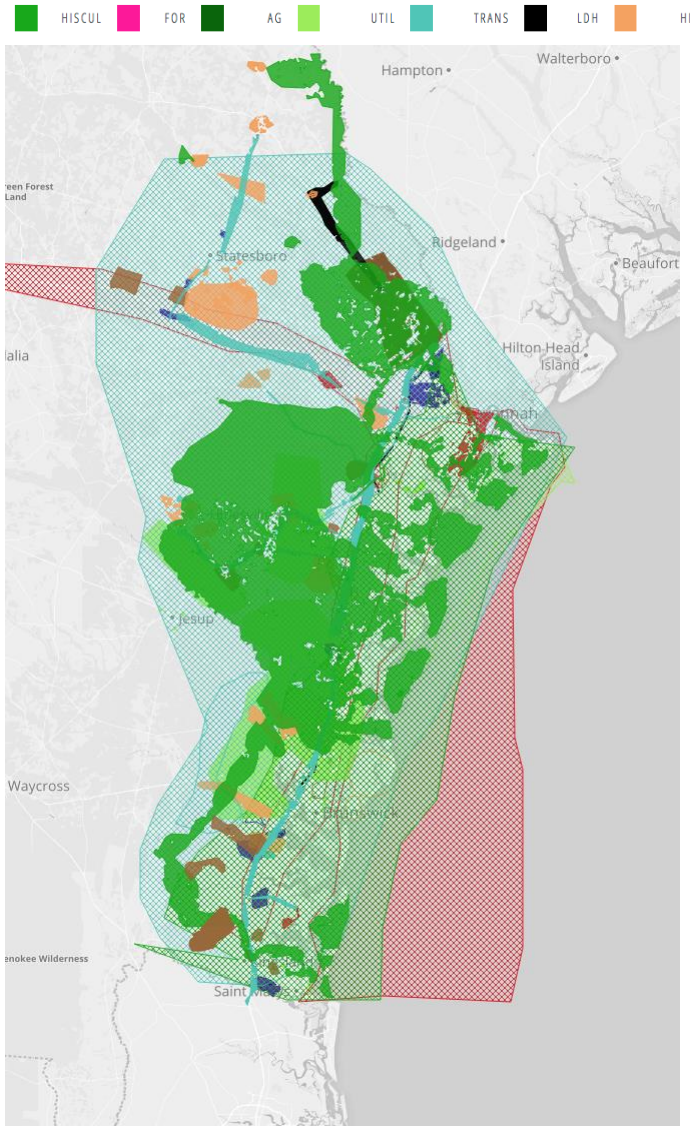


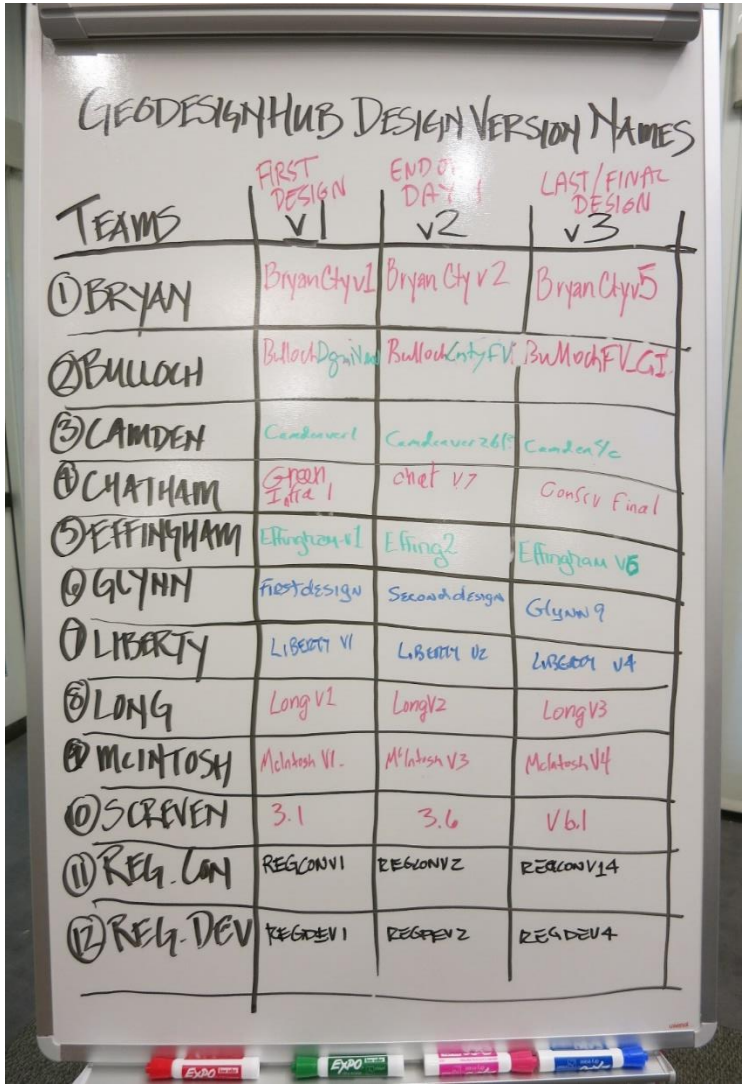
Ryan Perkl,
University of Arizona

NEGOTIATION
BETWEEN
REGCON AND REGDEV

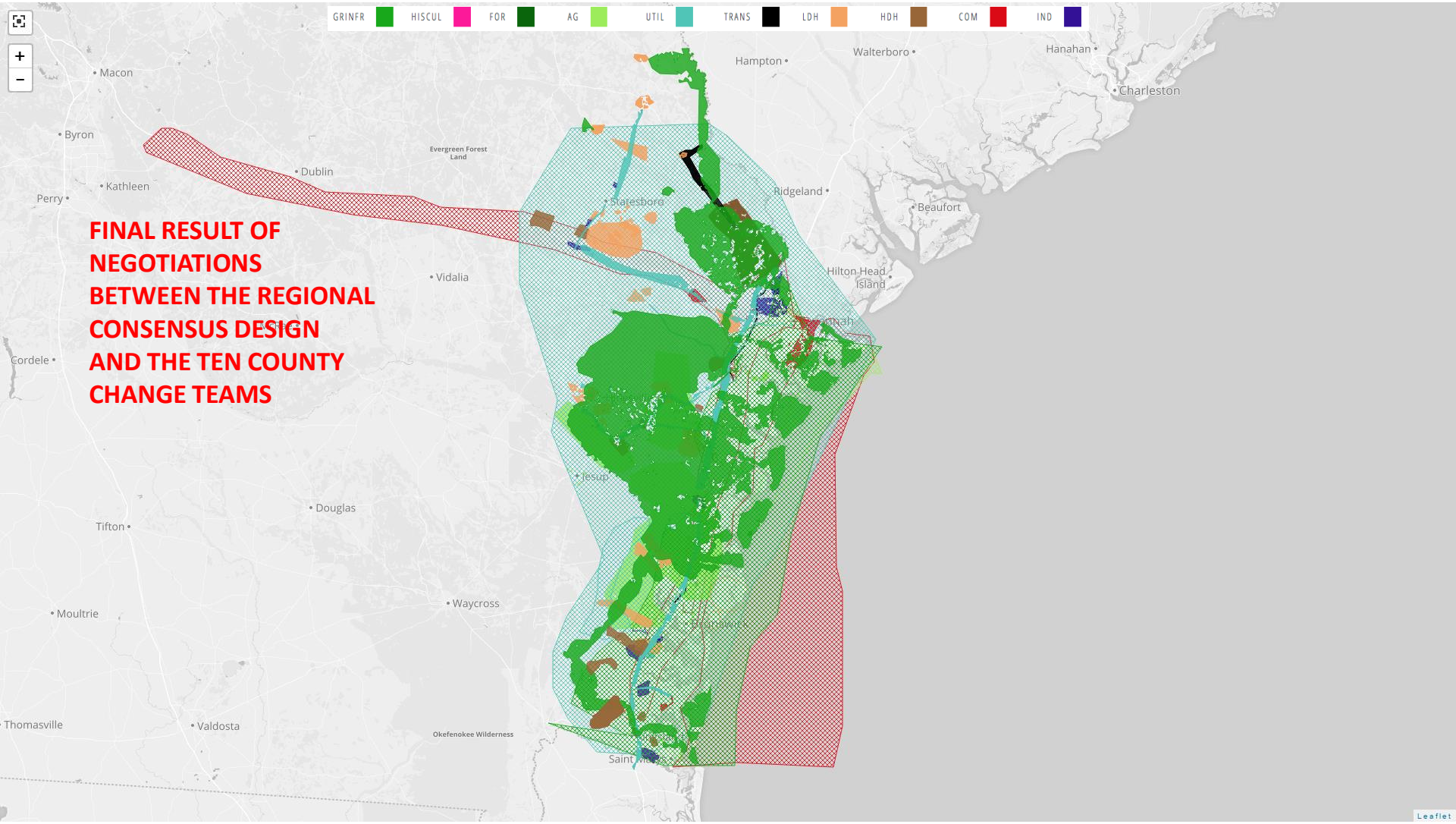
RESULT OF NEGOTIATION BETWEEN REGCON AND REGDEV

AND THE NEED TO NEGOTIATE WITH THE TEN COUNTY CHANGE TEAMS





NEGOTIATION WITH COUNTY TEAMS


GRINFR
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UTIL
TRANS
LDH
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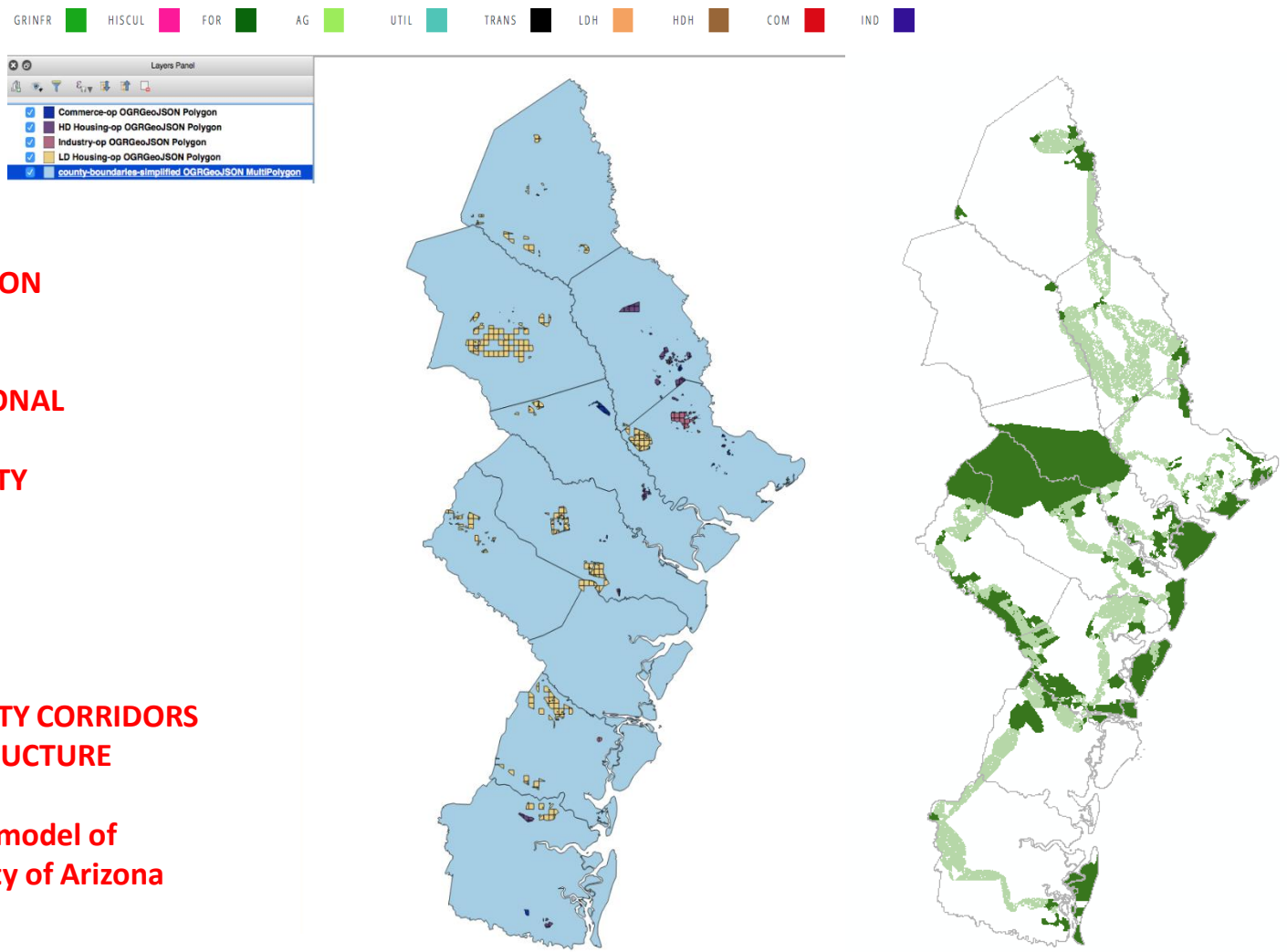
COM
IND
FINAL RESULT OF NEGOTIATIONS BETWEEN THE REGIONAL CONSENSUS DESIGN AND THE TEN COUNTY CHANGE TEAMS
Macon
Byron
Perry
Kathleen
Dublin
Evergreen Forest Land
Statesboro
Vidalia
Cordele
Jesup
Douglas
Tifton
Moultrie
Waycross
Thomasville
Valdosta
Okefenokee Wilderness
Hampton
Walterboro
Hanahan
Charleston
Ridgeland
Beaufort
Hilton Head Island
Brunswick
Saint Mary's
Leaflet

REGIONAL
URBAN LAND USES
ALLOCATION BASED ON
THE FINAL RESULT
OF NEGOTIATIONS
BETWEEN THE REGIONAL
CONSENSUS DESIGN
AND THE TEN COUNTY
CHANGE TEAMS
by the exogenous
Geodesignhub
allocation model

BASELINE CONTINUITY CORRIDORS
OF GREEN INFRASTRUCTURE
by the exogenous
landscape structure model of
Ryan Perkl, University of Arizona



A FRAMEWORK FOR GEODESIGN

ASSESSMENT

DATA

KNOWLEDGE

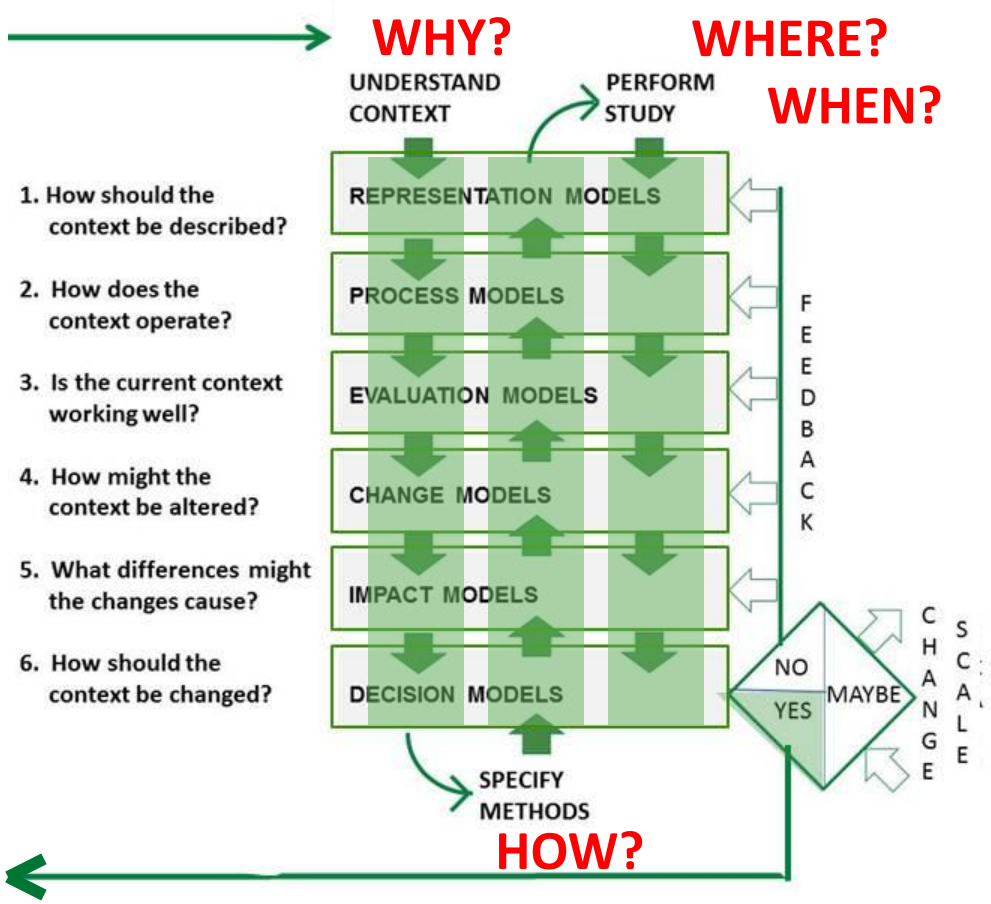
VALUES

INTERVENTION

DATA

KNOWLEDGE

VALUES

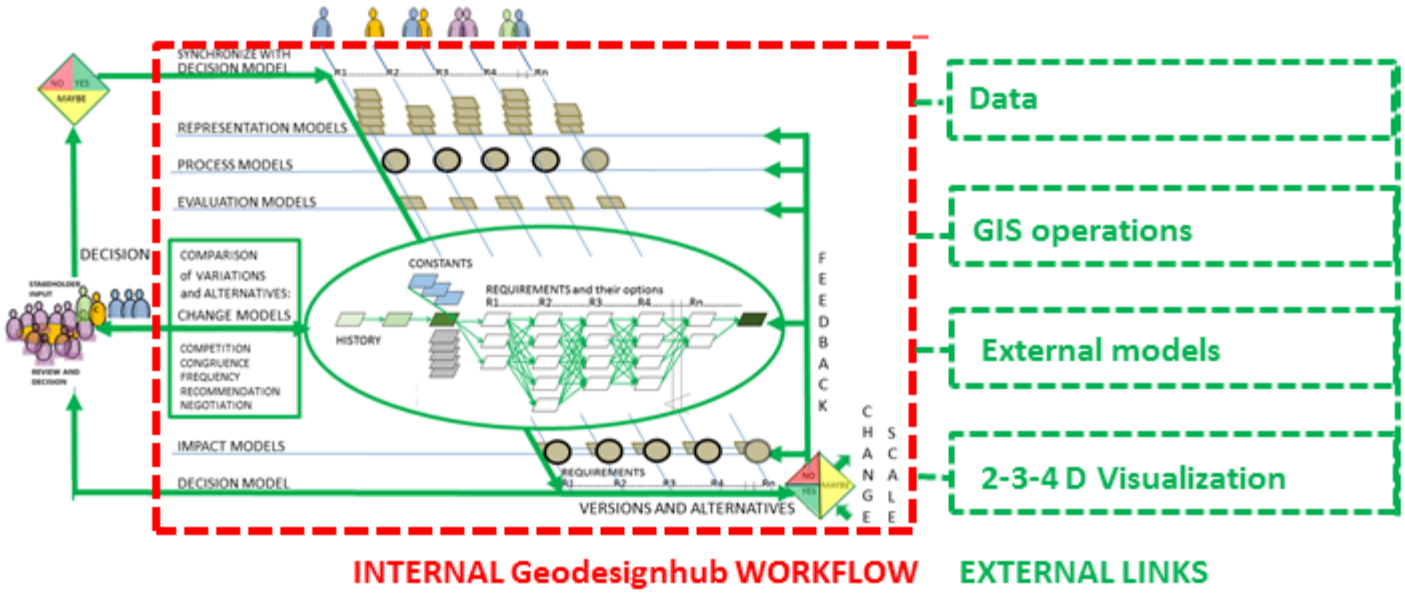


Steinitz, C., A Framework for Geodesign, Redlands California, Esri Press, 2012

http://www.youtube.com/watch?v=rwZjeUCSqc0

THE DYNAMICS OF GEODESIGN SUPPORT TECHNOLOGY

ALL ASPECTS OF GEODESIGN WORKFLOW ARE DYNAMIC
ALL UPDATE AND CHANGE AS THE DESIGN IS BEING MADE



Geodesignhub

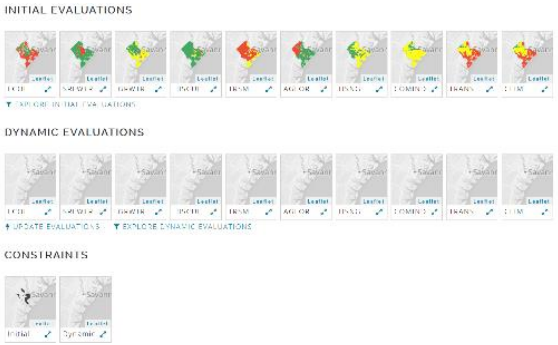
THEREFORE, FOCUS ON SUPPORTING THE WORKFLOW AT BEGINNING AND DIAGRAMMATIC STAGES OF GEODESIGN
WHEN ALL ASPECTS OF THE GEODESIGN WORKFLOW ARE MOST DYNAMIC
AND ALL ASPECTS CAN RAPIDLY UPDATE AND/OR CHANGE AS THE DESIGN IS BEING MADE
AND….KEEP IT AS SIMPLE AS POSSIBLE: EASY TO LEARN, SET UP, USE, AND (MOST IMPORTANT) UNDERSTAND

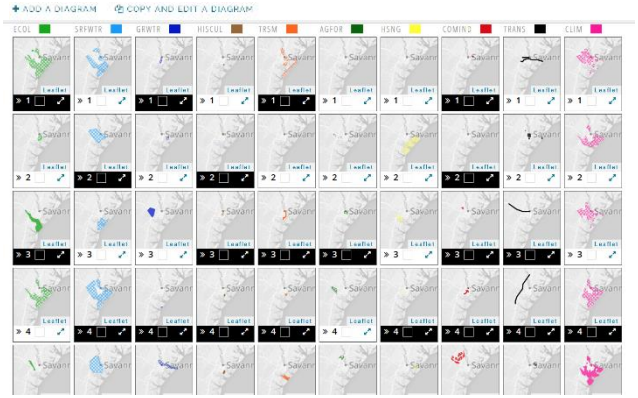
"Diagram: a graphic that explains rather than represents;
especially a drawing that shows arrangement and relations"

THE DYNAMICS OF DIAGRAMS

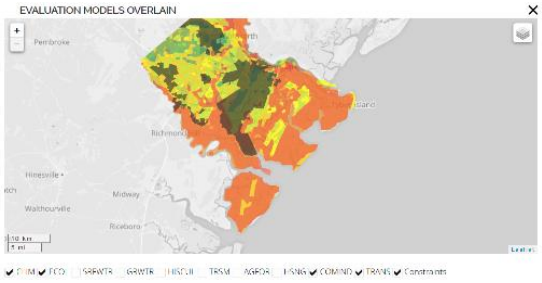
DRAWN POLICY DIAGRAMS
GIS-IMPORTED POLICY DIAGRAMS

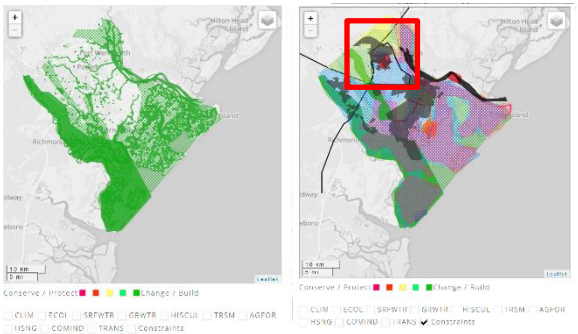
DRAWN PROJECT DIAGRAMS
GIS-IMPORTED PROJECT DIAGRAMS

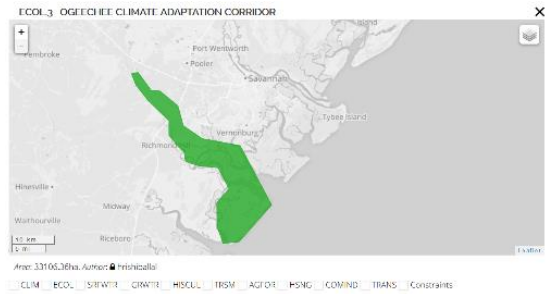


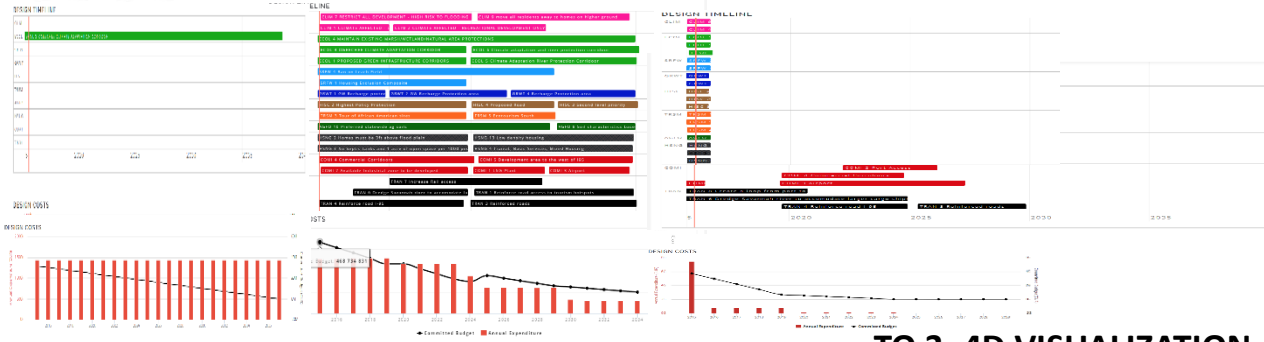


REPORT









TO 3- 4D VISUALIZATION

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National Center for Smart Growth Research & Education

Geodesignhub

Website: www.geodesighub.com

Support Portal and Consulting Services: www.geodesignsupport.com

Support team email: support@geodesignhub.com