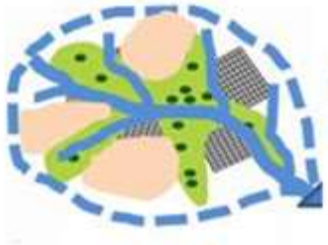
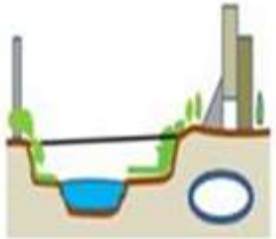
COLLABORATIVE NEGOTIATION AS A GEODESIGN METHOD




The generic problem----

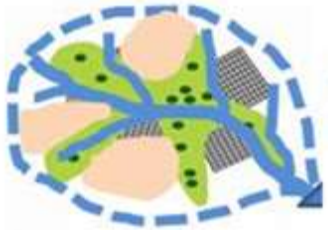
How do we organize and conduct the very beginning and strategic stages of designing for longer-term change in a large, multi-system, multi-client and *contentious* context …..and one which should not become a zero-sum game?

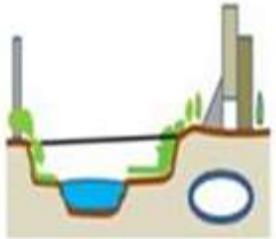
This is very frequently the normal situation for important projects and studies.

This is what geodesign should be doing !

Carl Steinitz

COLLABORATIVE NEGOTIATION AS A GEODESIGN METHOD





Kevin Lynch (January 7, 1918 – April 25, 1984)

A Theory of Good Urban Form
Cambridge, Mass.
MIT Press, 1981

1. It should start from purposeful behavior and the images and feelings which accompany it.

2. It should deal directly with settlement form and its qualities, and not be an eclectic application of concepts from other fields.

3. It should connect values of very general and long-range importance to that form, and to immediate, practical actions about it.

4. It should be able to deal with plural and conflicting interests and to speak for absent and future clients.

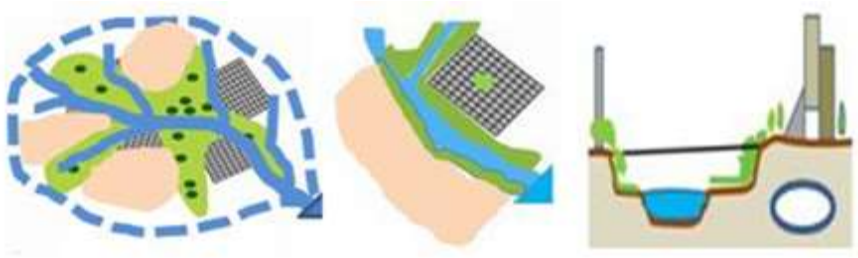
5. It should be appropriate to diverse cultures and to variations in the decision situation (variations in the centralization of power, the stability and homogeneity of values, the level of resources, and the rate of change).

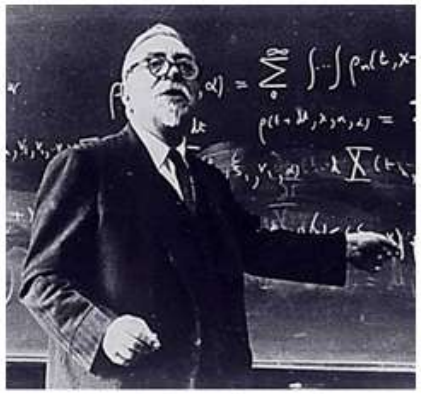
6. It should be sufficiently simple, flexible, and divisible that it can be used in rapid, partial decisions, with imperfect information, by lay persons who are the direct users of the places in question.

7. It should be able to evaluate the quality of state and process together, as it varies over a moderate span of time.

8. While at root a way of evaluating settlement form, the concepts should suggest new possibilities of form. In general, it should be a possible theory: not an iron law of development, but one that emphasizes the active purposes of participants and their capacity for learning.

COLLABORATIVE NEGOTIATION AS A GEODESIGN METHOD

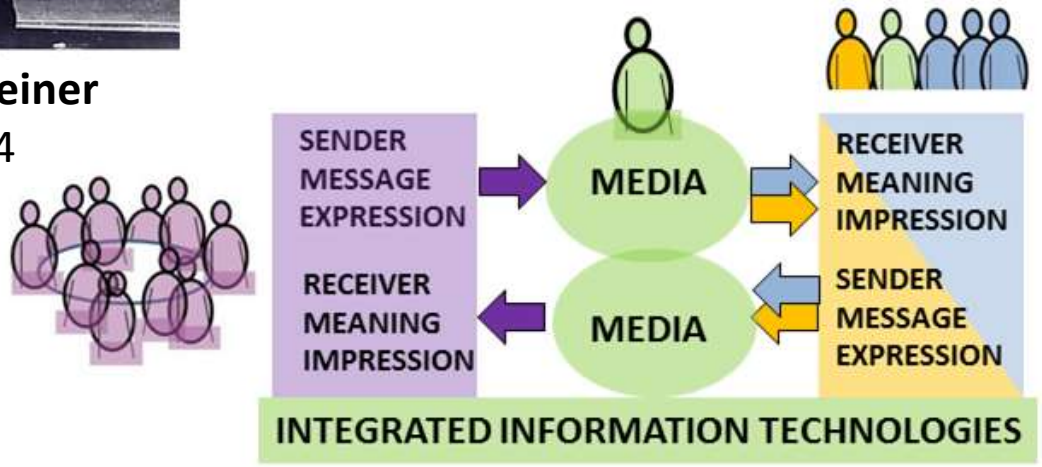




Norbert Weiner
1894 - 1964

A BASIS FOR COMMUNICATION

SHARED KNOWLEDGE OF THE SUBJECT
SHARED ASSUMPTIONS
SHARED LANGUAGE



based on Norbert Wiener, *Cybernetics*, 1948

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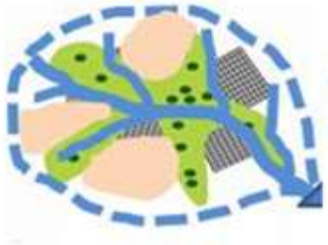
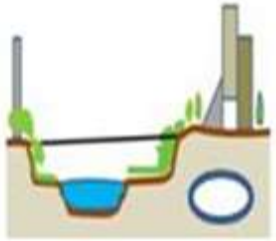
COLLABORATIVE NEGOTIATION AS A GEODESIGN METHOD




"Geodesign applies systems thinking to the creation of proposals for change and their impact simulations, informed their geographic contexts, and usually supported by digital technology."

Tess Canfield after Carl Steinitz after Stephen Ervin after Michael Flaxman

"Geodesign changes geography by design"

Carl Steinitz

adapted from C.Steinitz, 2012, *A Framework for Geodesign* , preface

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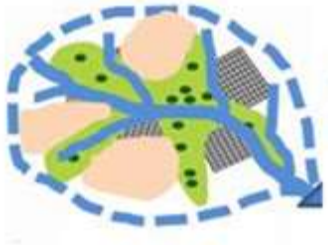

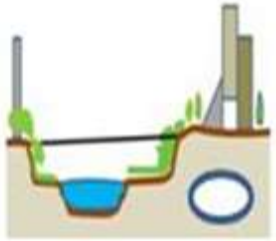


"Geodesign" is an invented word, and a very useful term to describe a collaborative activity that is not the exclusive territory of any design profession, geographic science or information technology.
Each participant must know and be able to contribute something that the others cannot or do not. …….
yet during the process, *no one need lose his or her professional, scientific or personal identity.*

adapted from C.Steinitz, 2012, *A Framework for Geodesign* , preface

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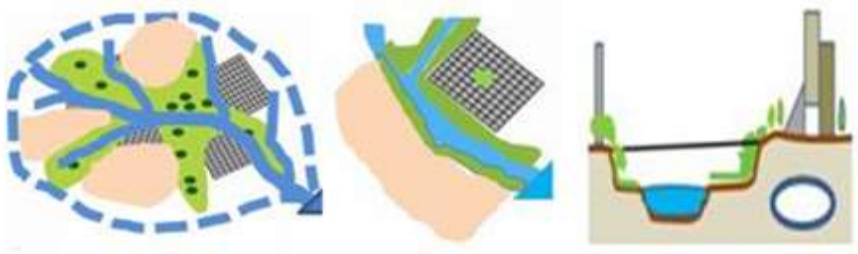


GEOGRAPHIC SCIENCES

SUPPLY-BASED

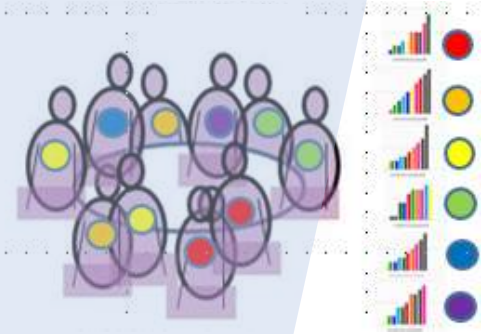
"DEFENSIVE" STRATEGIES

GEODESIGN IS COLLABORATION AND NEGOTIATION

DESIGN PROFESSIONS

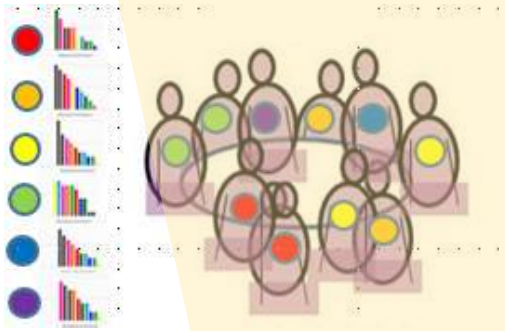
DEMAND-BASED

"OFFENSIVE" STRATEGIES



INFORMATION TECHNOLOGISTS

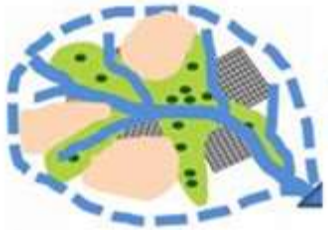
THE PEOPLE OF THE PLACE

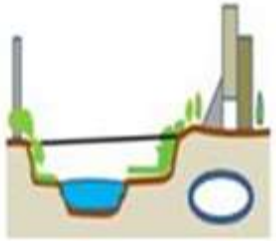


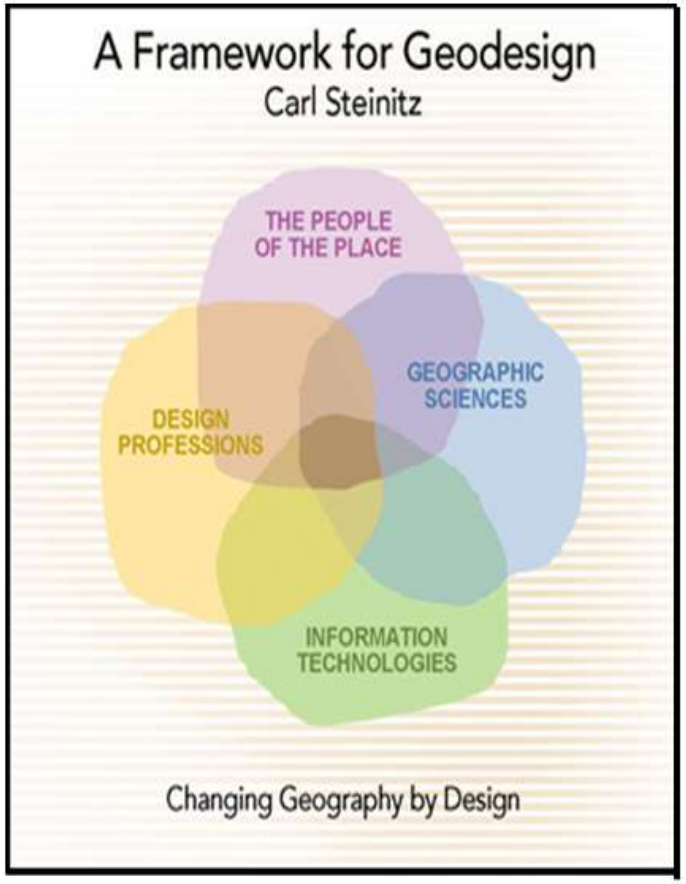
GIS ⟷ **GEODESIGN** ⟷ **BIM**

GIS	GEODESIGN	BIM
ALLOCATION	ORGANIZATION	VISUALIZATION
LONGER TERM MANAGEMENT	STRATEGIC DESIGN	SHORTER TERM MANAGEMENT

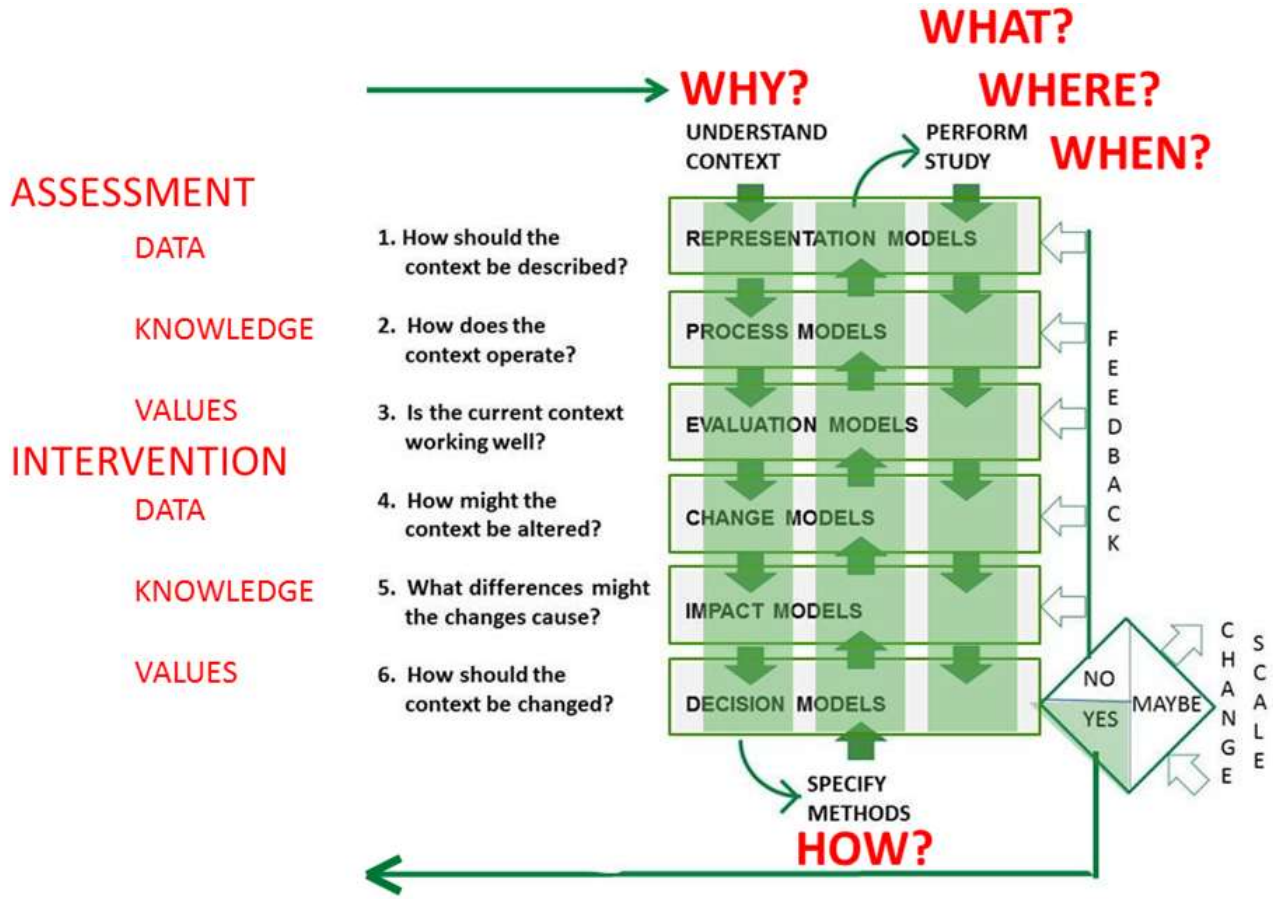
COLLABORATIVE NEGOTIATION AS A GEODESIGN METHOD







ESRI Press 2012



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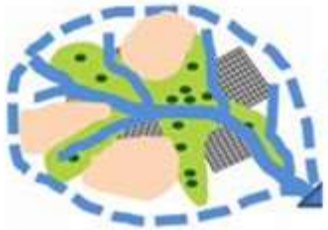

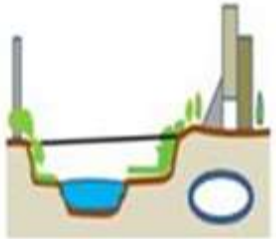

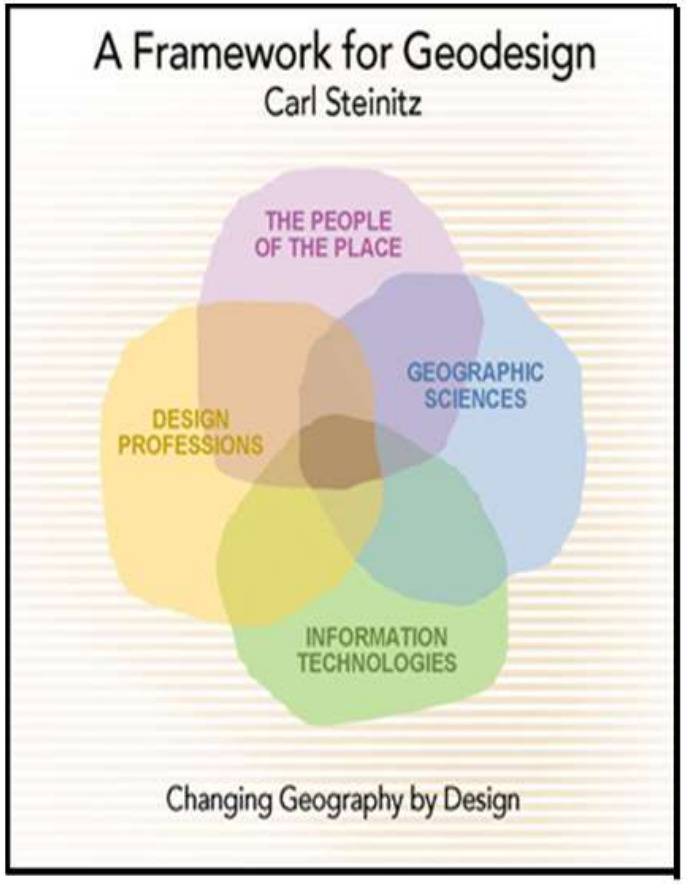

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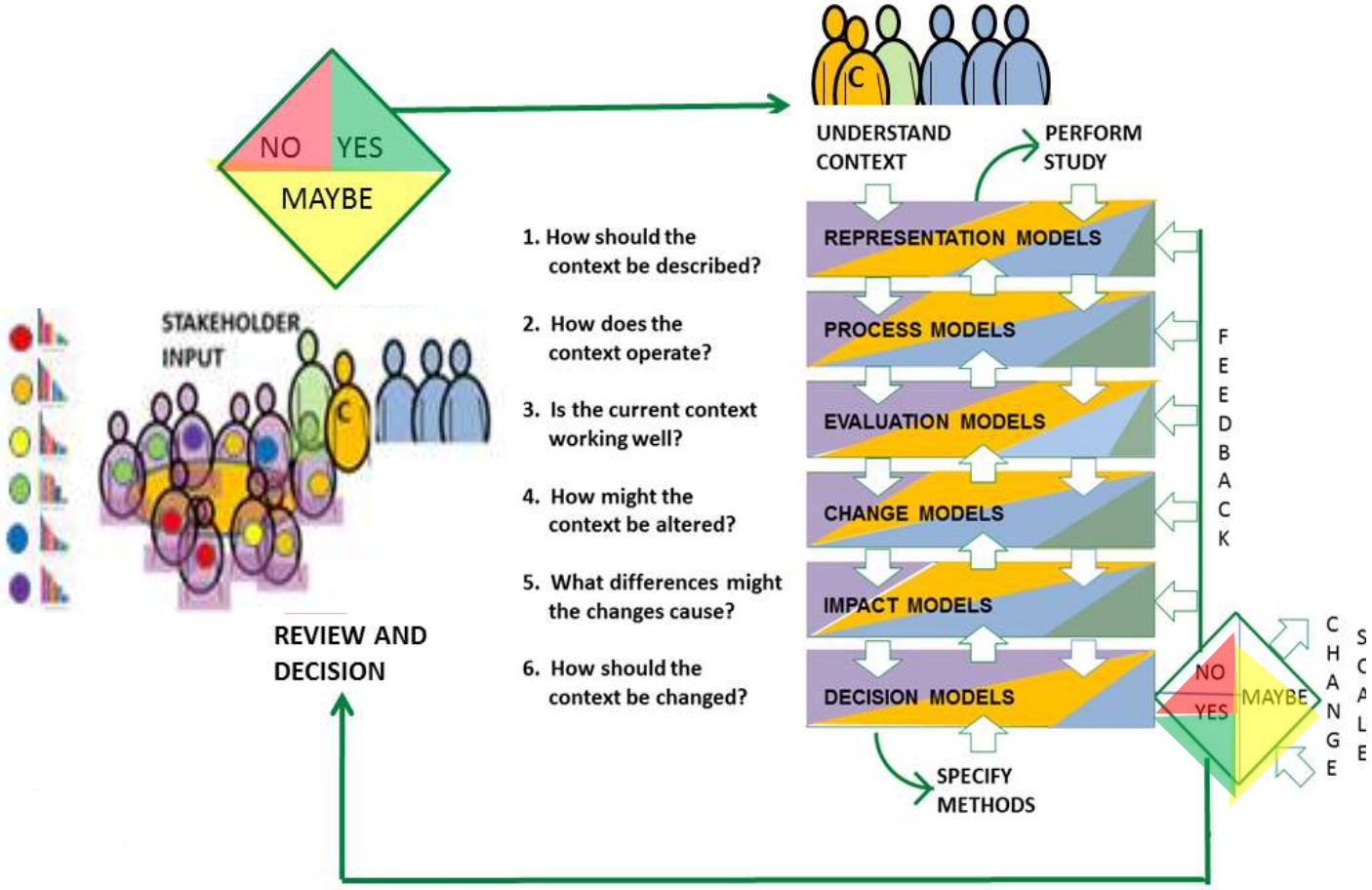

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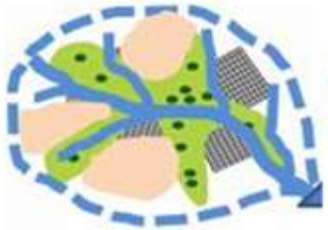

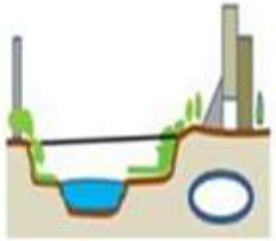

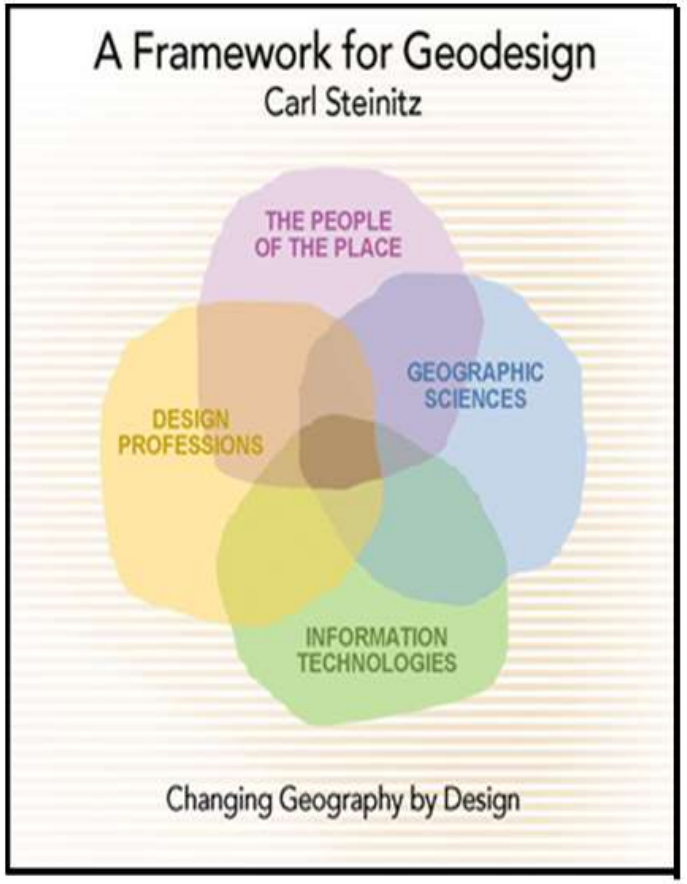

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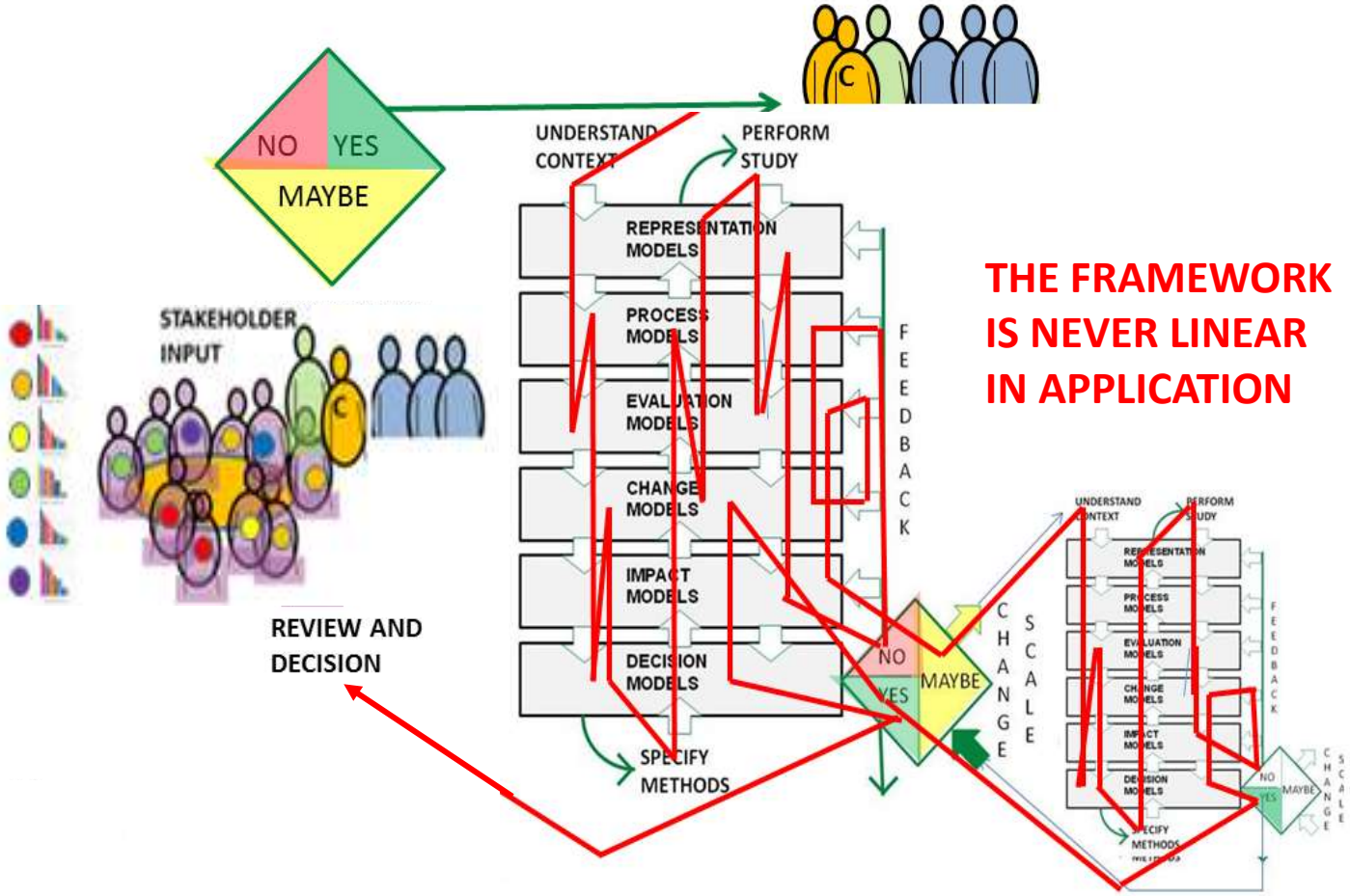
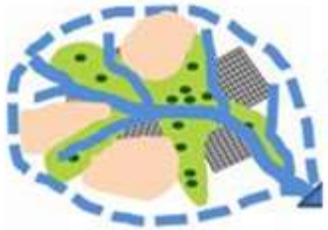
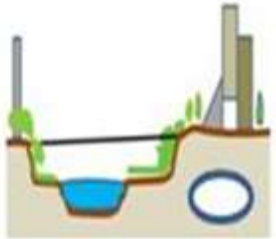
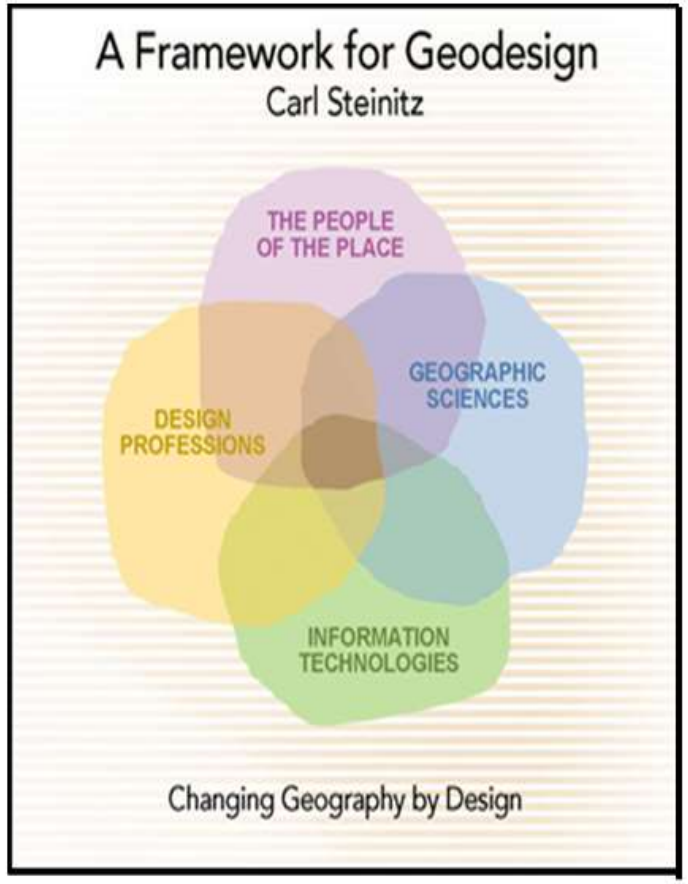


THE FRAMEWORK IS NEVER LINEAR IN APPLICATION

COLLABORATIVE NEGOTIATION AS A GEODESIGN METHOD







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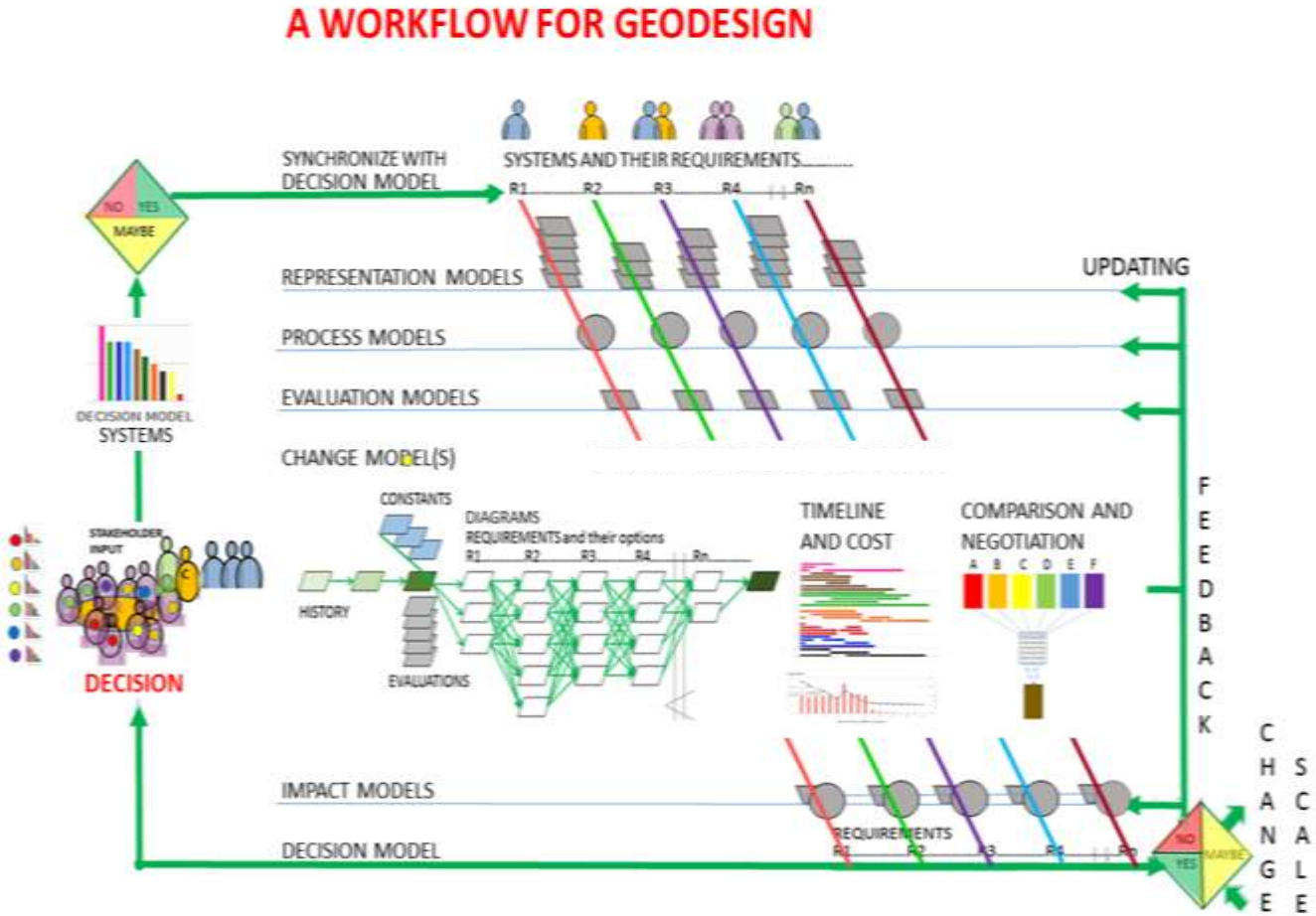
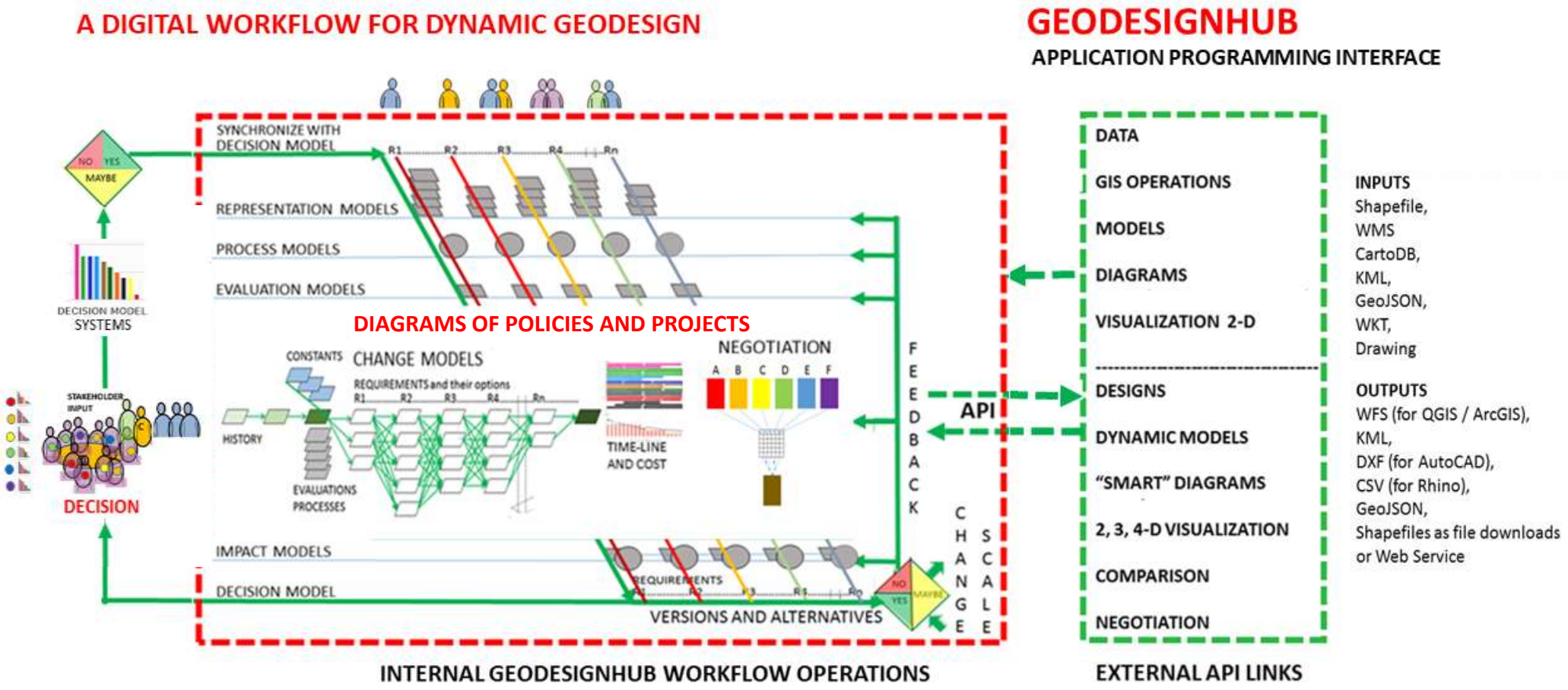


GEODESIGNHUB

Hrishi Ballal, Geodesignhub.com

Geodesignhub is a cloud-based, free and open access, open platform software built by Hrishi Ballal in cooperation with Carl Steinitz and Stephen Ervin. It is designed to link with other tools and models via APIs rather than to contain complex substantive algorithms itself. Geodesignhub is designed to support collaboration and negotiation towards agreement.

It aims to be as simple as possible: easy to learn, set up, use and (most importantly) easy to understand.



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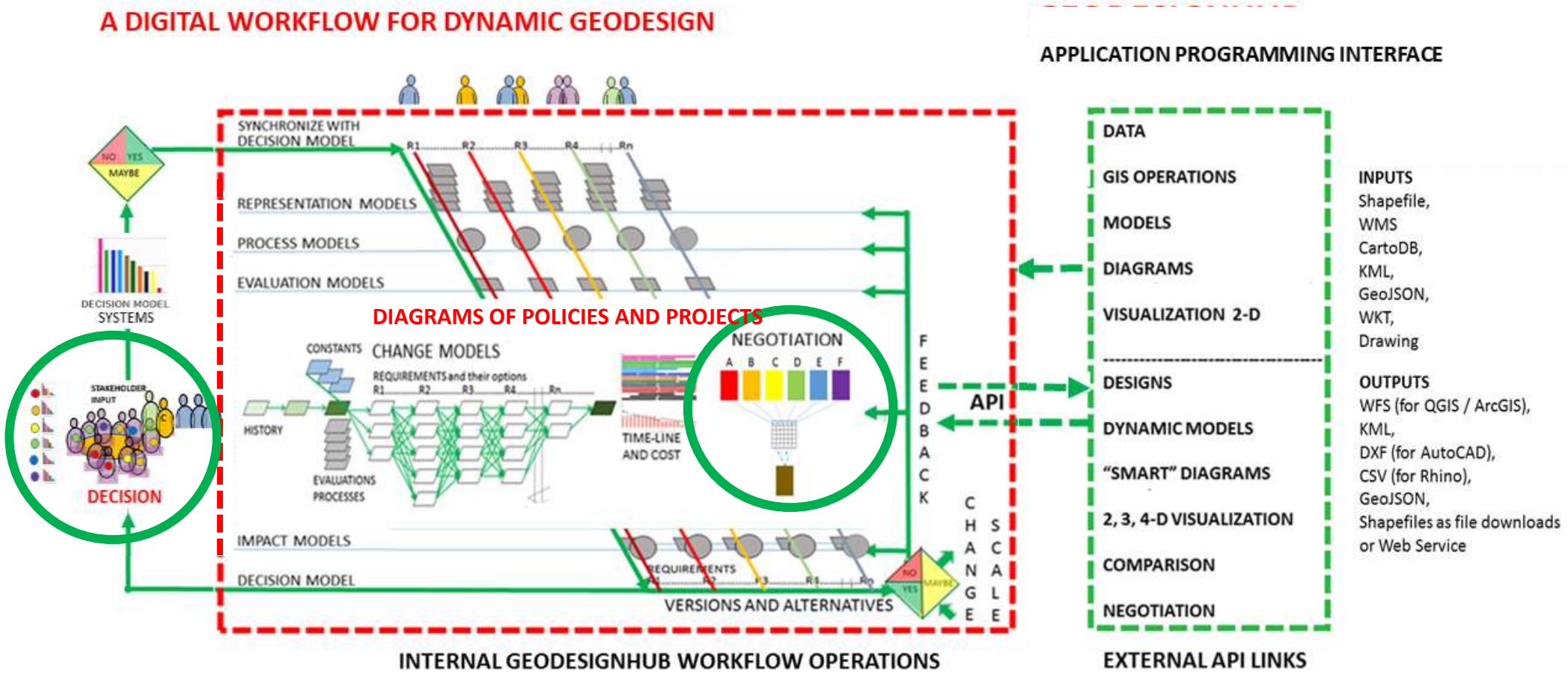
A DIGITAL WORKFLOW FOR DYNAMIC GEODESIGN



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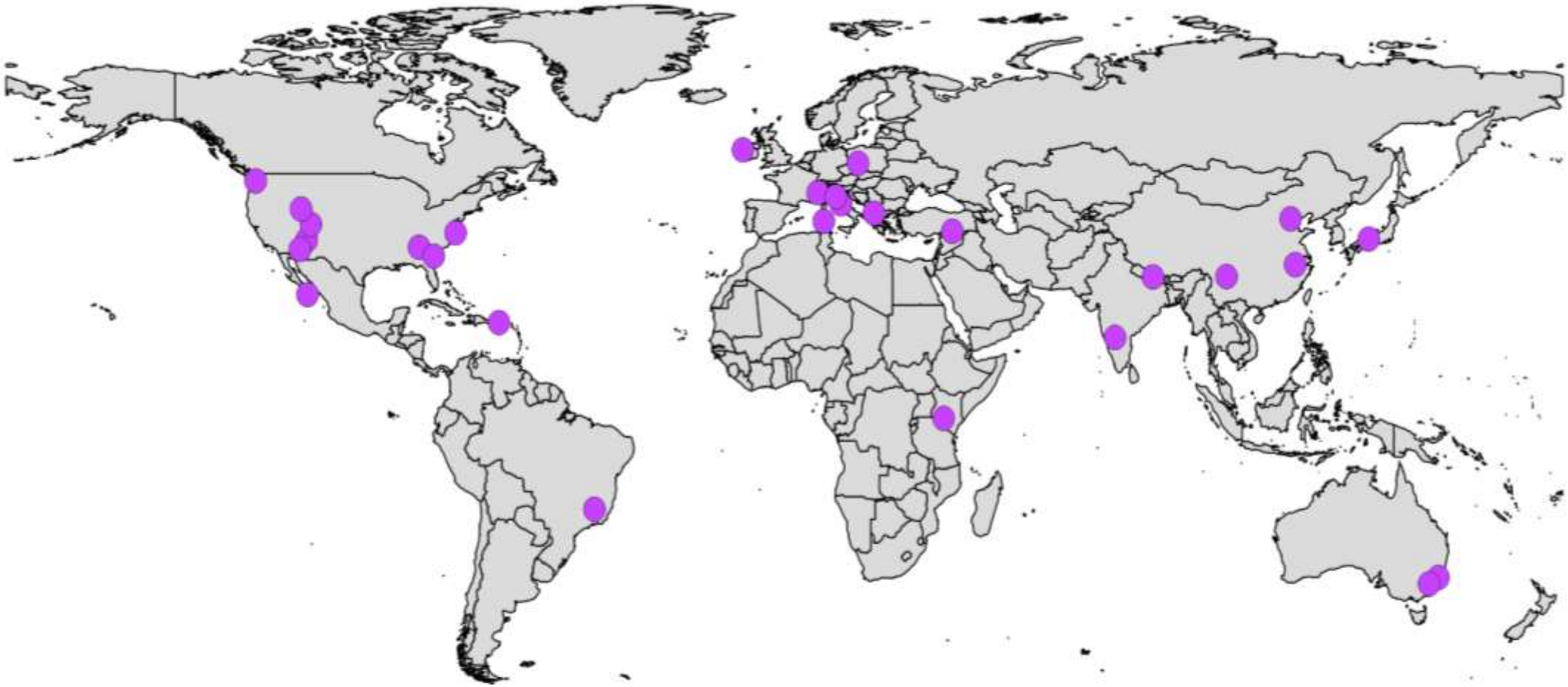
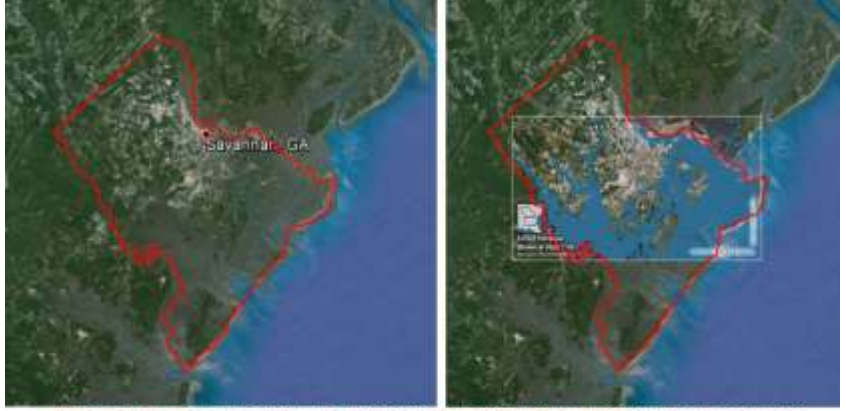
PROJECTS AND STUDIES ON THE GEODESIGNHUB PLATFORM



ARE THE KING COUNTY, WASHINGTON, USA , GROWTH MANAGEMENT REGULATIONS SUSTAINABLE TO 2050?

Tim Nyerges, et. al., University of Washington, USA and others, 2015



HOW CAN CHATHAM COUNTY, GEORGIA, USA, DOUBLE IN POPULATION BY 2050 AND RESPOND TO CLIMATE CHANGE?

Rosanna Rivero, Alison Smith, Brian Orland et.al., University of Georgia and others, USA, 2015

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Barty Warren, Carlos Licon, Utah State University,
IN THREE, 5-HOUR WORKSHOPS AMONG 9TH GRADERS IN A UTAH HIGH SCHOOL, 2015

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

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

Quadrilátero Ferrífero (The Iron Quadrilateral) is a 7000 sq km region located in the State of Minas Gerais, Brazil. It is the largest domestic producer of iron ore. Settlement began with the gold mining boom in the 17th Century. At the end of 19th Century with the founding of Belo Horizonte, there was a new stage of development into what now is one of Brazil's most important regions.

Ana Clara Mouro et. al., University of Minas Gerais, Brazil, July 2016

TRANSFORMING THE "CITTA DEL SALUTE TORINO"

Stefano Pensa et al, Turin Polytechnical University

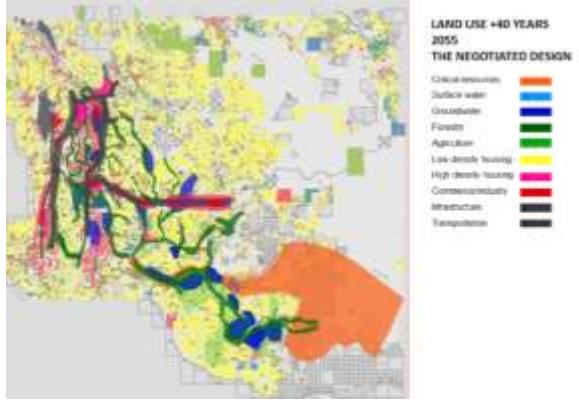
AN ALTERNATIVE FUTURE FOR YOSANO, KYOTO PREFECTURE

Yosano Town covers 107 square Km., embracing several town centers and villages with a combined population of approximately 23,000 people. We will study the long term implications for Yosano Town which is a typical example of Japanese countryside settlements, with falling birthrates, an aging society, and a shrinking population.

Keiji Yano, Tomoki Nakaya, et. al., Ritsumeikan University, Kyoto, Japan, November 20016

AN ALTERNATIVE FUTURE FOR EASTERN SUBURBS, SYDNEY, AUSTRALIA,
including UNSW and the hospital district, the port, and the airport which is proposed for relocation

Chris Pettit et. al., University of New South Wales, Sydney, Australia November 2016



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3-DIMENSIONAL VISUALIZATION

OVERVIEW
DIAGRAMS
DESIGN IN 3-D ?

SEE THE VIDEO NEXT

Courtesy of
Jose Geraldo Alfenas Milagres,
Luiz Roberto Schuchter Junior,
Diretoria de Planejamento
e Desenvolvimento de Ferrous
Vale S.A.

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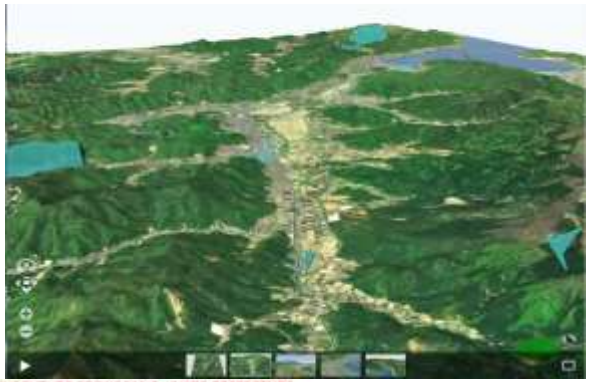

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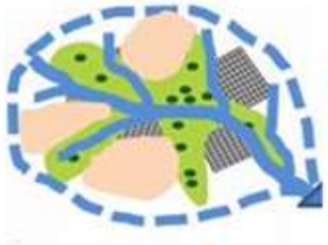
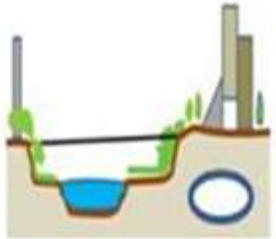
GEODESIGN IS SERIOUS




There are IMPORTANT **PROBLEMS** and—frequently—

there is **LITTLE TIME** FOR DECISION AND ACTION.

PEOPLE/GROUPS HAVE DIFFERENT **INTERESTS** AND **PRIORITIES**.

EACH seeks/NEEDS **LEGITIMACY** in/via design.

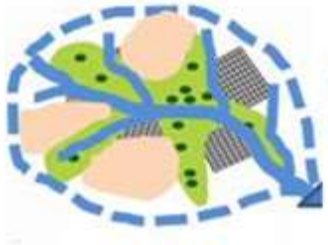
GEODESIGN does *NOT* normally produce A *FINAL* PRODUCT.

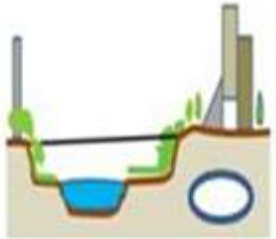
IT IS LIKELY TO MOST USEFUL AT THE BEGINNING

of thinking about and deciding on

THE **STRATEGY** of what to do….

GEODESIGN IS COMPLEX




THERE ARE **UNCERTAINTIES**:

Multiple GEOGRAPHIC SCOPES: political boundaries, watersheds, etc.

Complex CONTENT: SYSTEMS which vary by size, location, threat, etc.

CHANGE REQUIREMENTS are many.

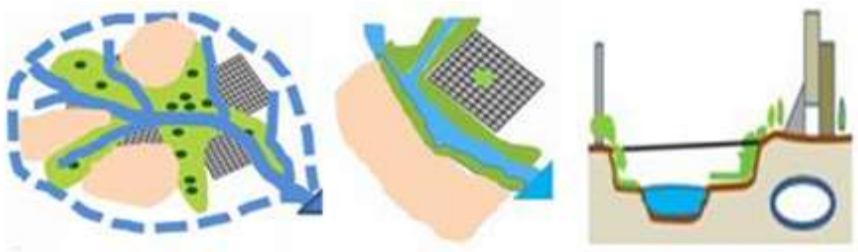
GEODESIGN METHODS do not scale and do not exactly-repeat.

THEY SHOULD FIT THE CONTEXT.

Therefore GEODESIGN and its technical support must be

FLEXIBLE, ITERATIVE, TRANSPARENT AND RAPID.

GEODESIGN IS DYNAMIC



CHANGE in a design is a ***RELATIONAL SYNTHESIS*** in SPACE and TIME of SETS of system-based **POLICIES AND PROJECTS**

….AND **THE SEQUENCE MATTERS.**

DESIGN(S) SHOULD BE ASSESSED AND ITERATIVELY IMPROVED, KNOWING THAT **ANY CHANGE CHANGES ALL THE SYSTEMS.**

Therefore, a primary aim of GEODESIGN is to RAPIDLY MOVE from infinite possible designs towards an socially, environmentally and economically **FEASIBLE DECISION.**

THE GEODESIGN ENDGAME MUST SUPPORT **INFORMED NEGOTIATION.**

Carl Steinitz, Notes on Geodesign Dynamics, October 2015

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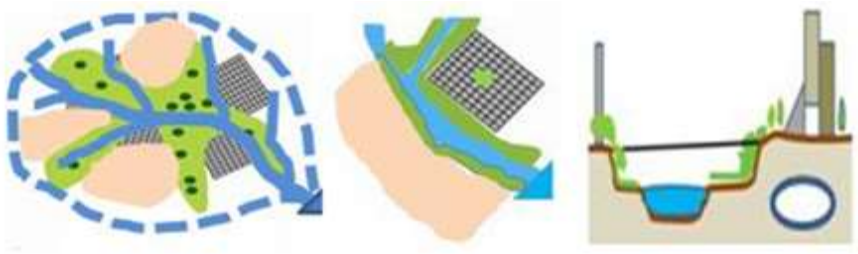
GEODESIGN IS COLLABORATIVE



GEODESIGN is likely to be **COLLABORATIVE.**

Therefore--

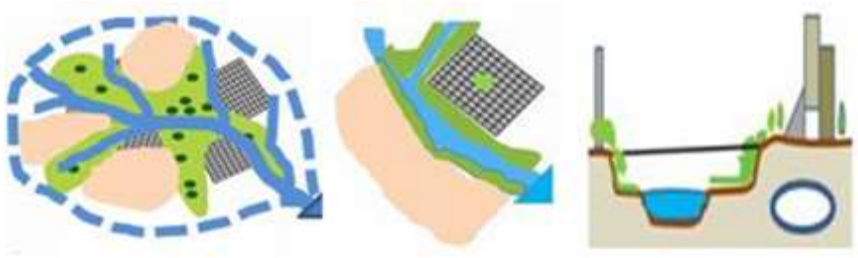
ALL ASPECTS OF GEODESIGN SUPPORT MUST BE EASILY LEARNED, EASILY USED AND EASILY COMMUNICATED --and most importantly--

THE “LANGUAGE” of GEODESIGN MUST BE **EASILY UNDERSTOOD** BY ALL.

GEODESIGN IS A COLLABORATIVE,

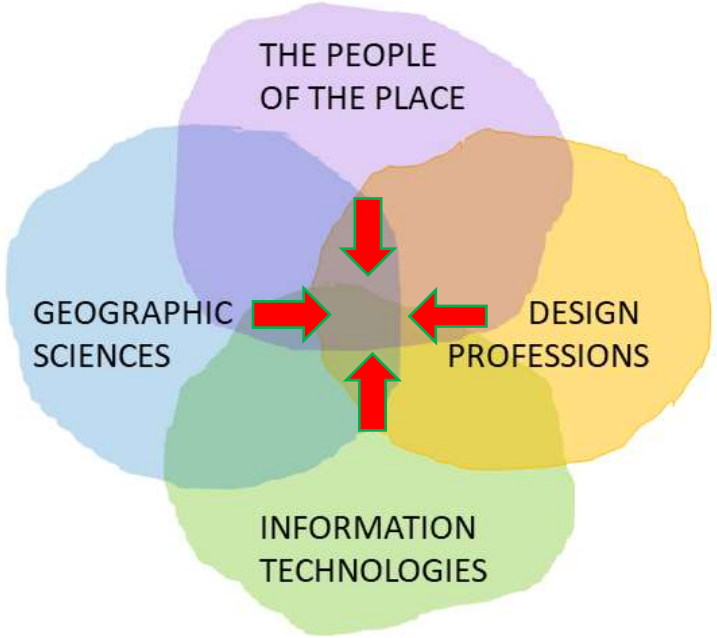
SOCIAL- POLITICAL PROCESS OF DESIGN.

NEGOTIATION IS PERVASIVE



A FRAMEWORK FOR GEODESIGN

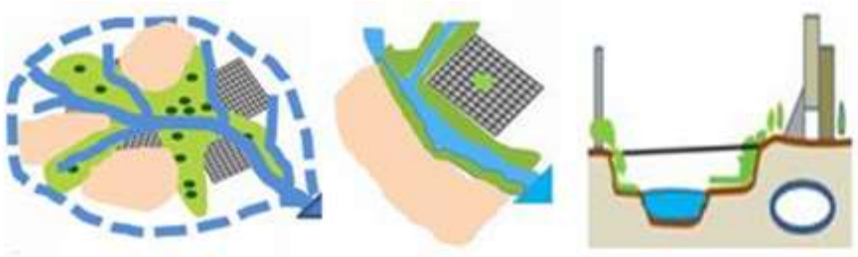
Carl Steinitz



GIS ←----------→ **GEODESIGN** ←----------→ **BIM**

GIS	GEODESIGN	BIM
ALLOCATION	ORGANIZATION	VISUALIZATION
LONGER TERM MANAGEMENT	STRATEGIC DESIGN	SHORTER TERM MANAGEMENT

NEGOTIATION IS PERVASIVE



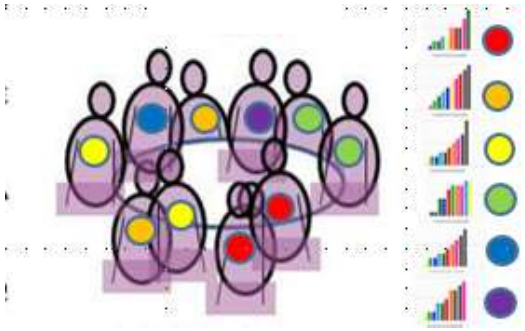
GEOGRAPHIC SCIENCES

SUPPLY-BASED
"DEFENSIVE" STRATEGIES

GEODESIGN IS COLLABORATION AND NEGOTIATION

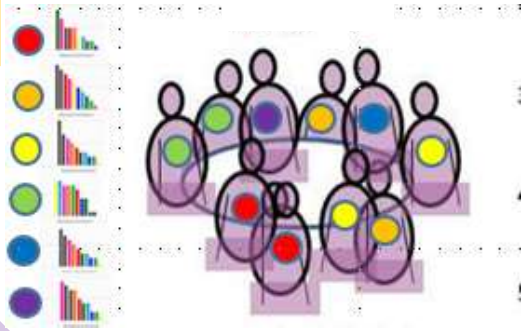
DESIGN PROFESSIONS

DEMAND-BASED
"OFFENSIVE" STRATEGIES



INFORMATION TECHNOLOGISTS

THE PEOPLE OF THE PLACE



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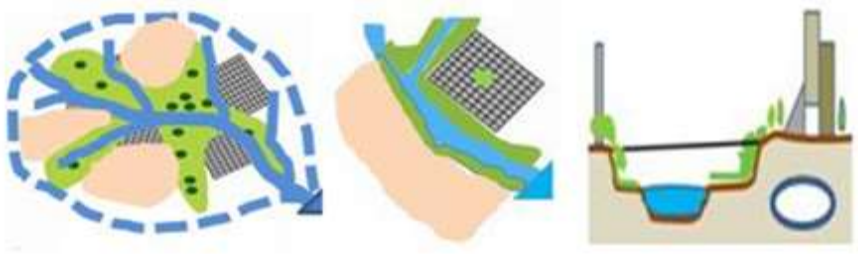
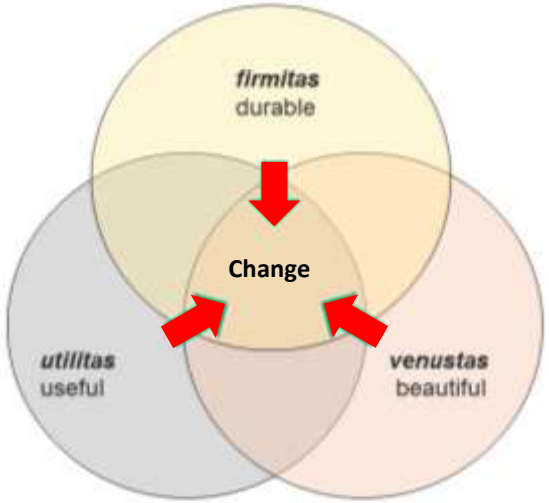


Report of the World Commission on Environment and Development:
Our Common Future, United Nations, 1987
"The Brundtland Report"



Vitruvius, Pollio (transl. Morris Hicky Morgan, 1960),
The Ten Books on Architecture.
Courier Dover Publications. ISBN 0-486-20645-9.

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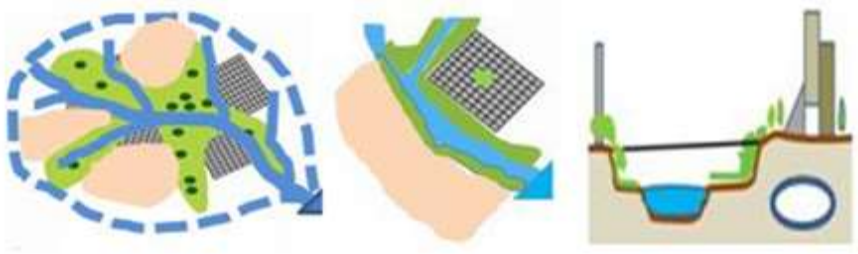

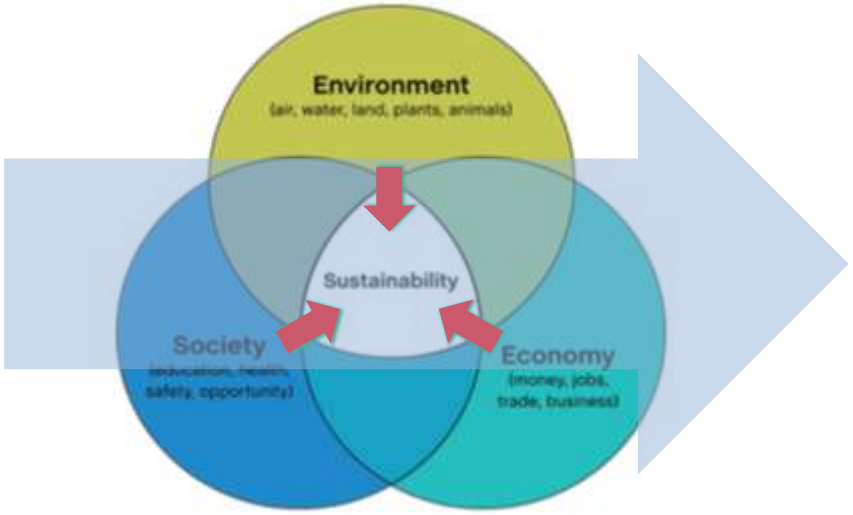

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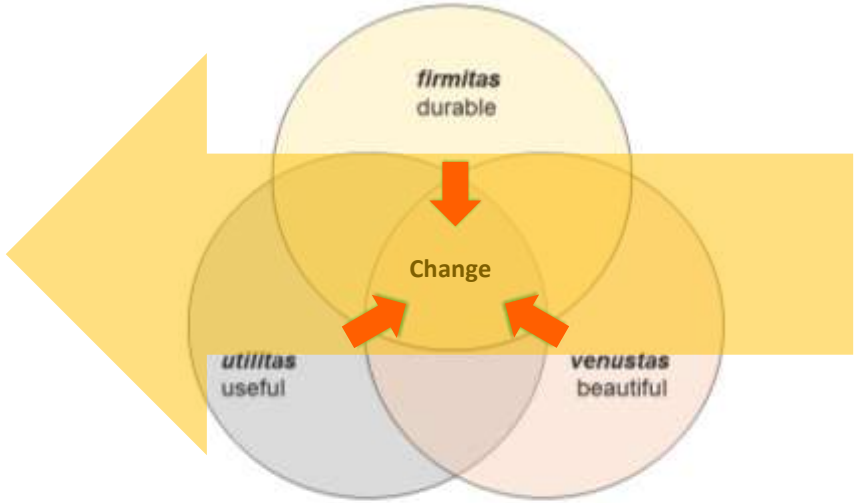

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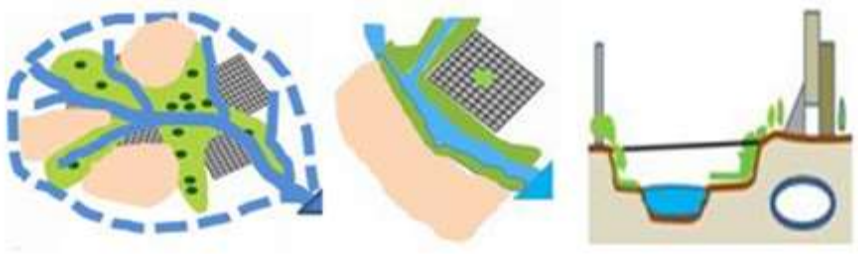

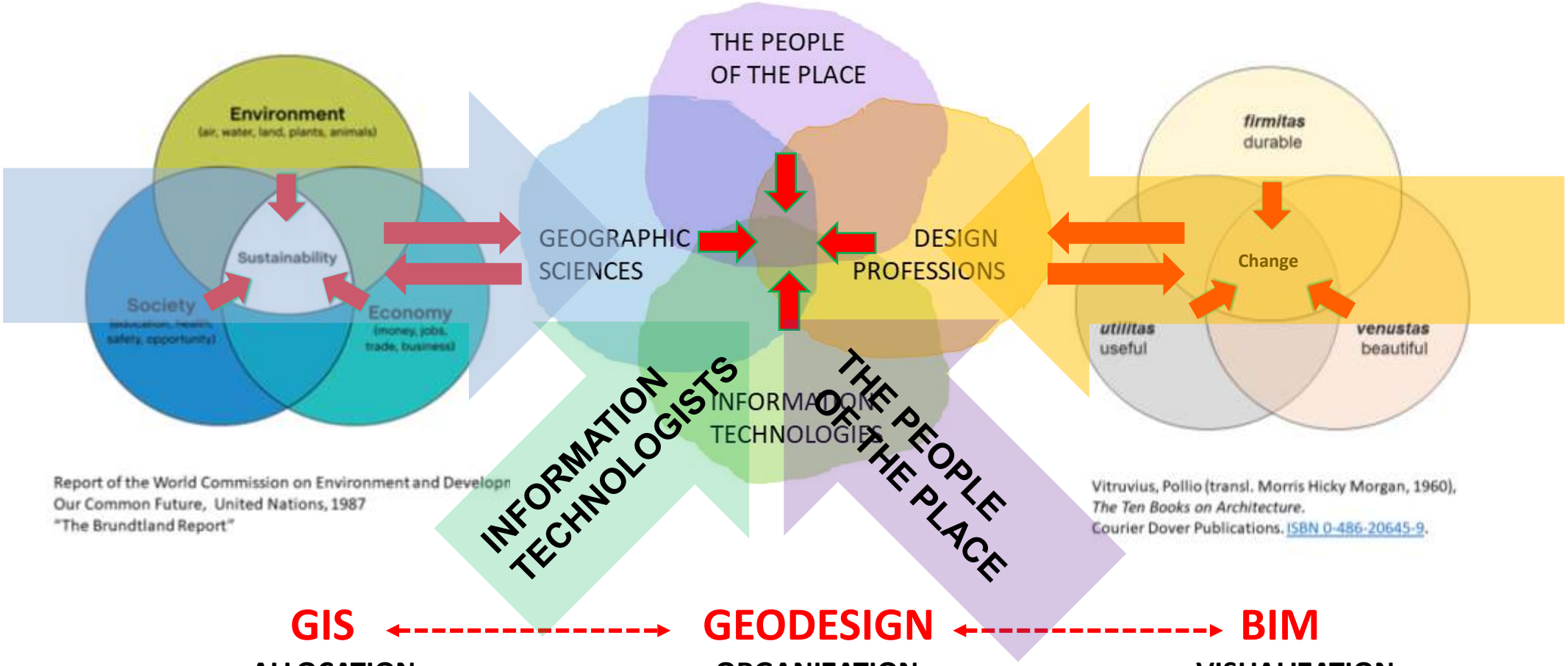

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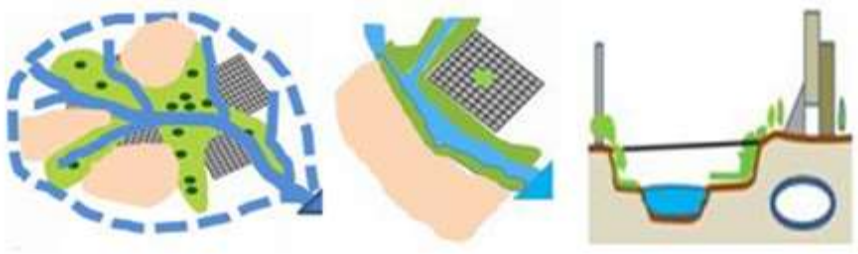

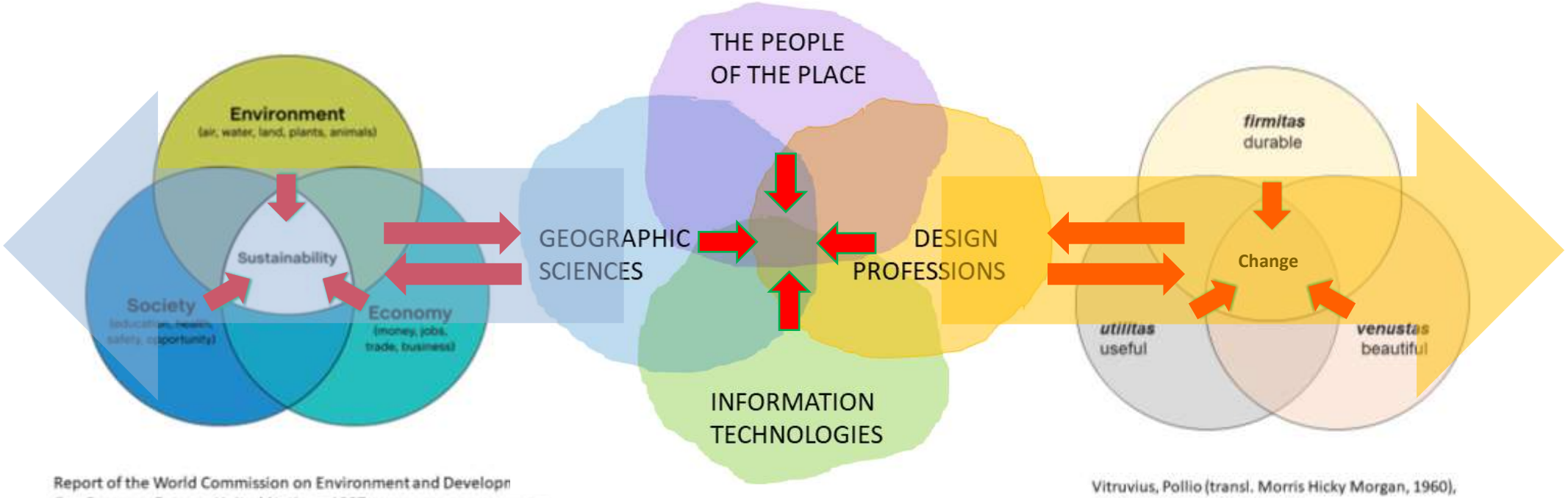

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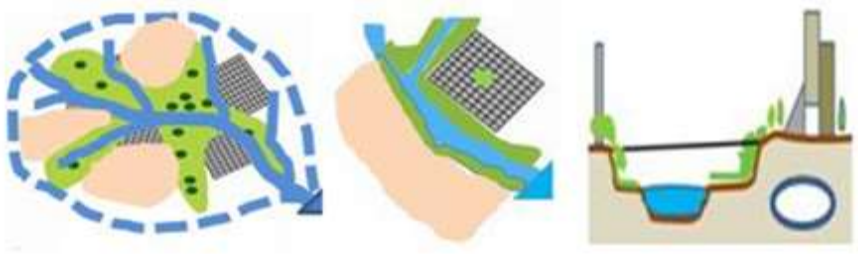

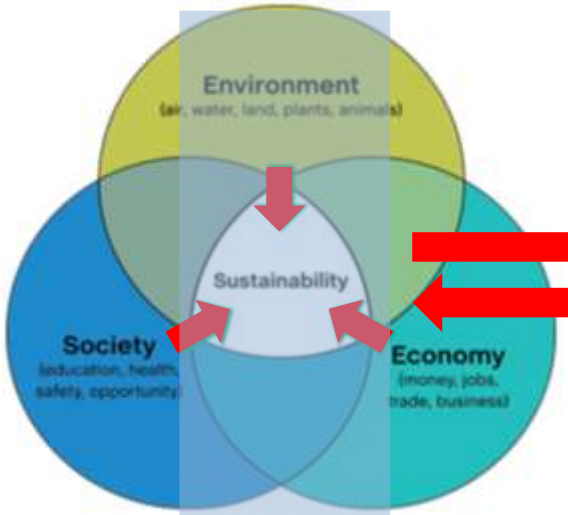

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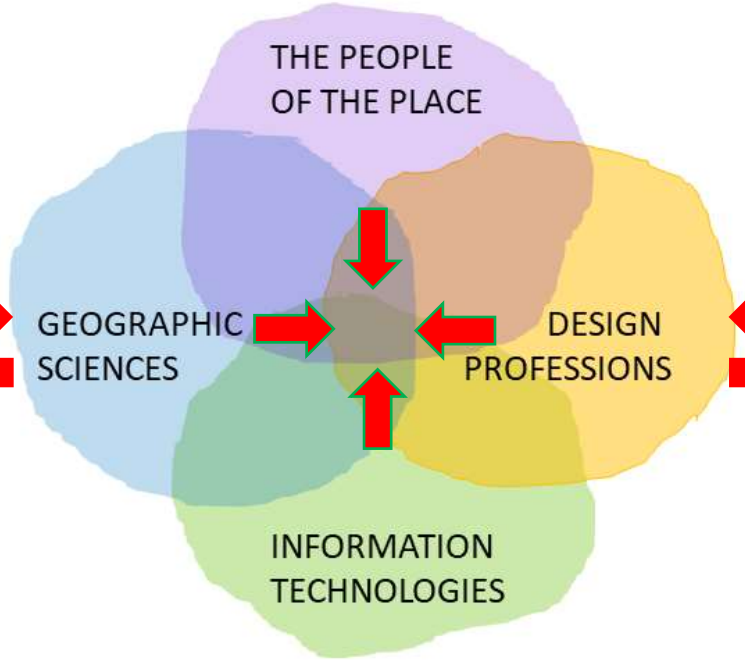

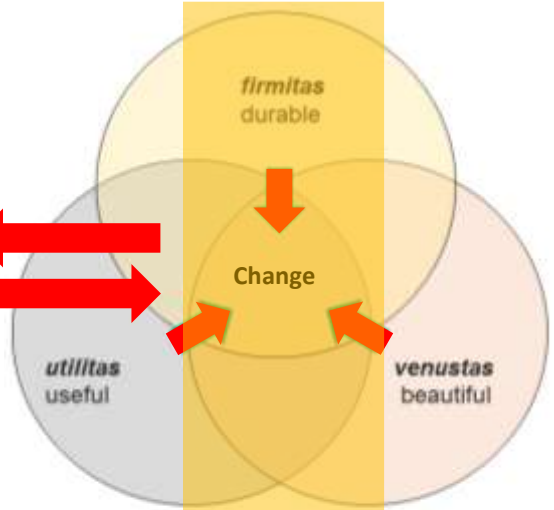

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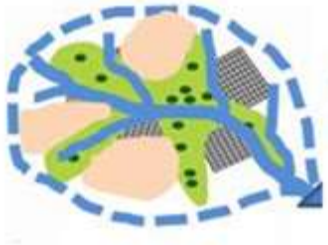
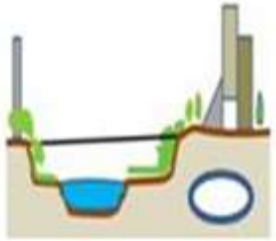
WHY APPLY GEODESIGN IN A COLLABORATIVE WORKSHOP FORMAT ?




- WHEN WORKING THROUGH A FRAMEWORK IN ORDER TO UNDERSTAND IT
- WHEN APPLYING GEODESIGN AND THERE IS LITTLE TIME AND SMALL DATA
- WHEN STARTING FAST TO IDENTIFY CENTRAL ISSUES AND OPTIONS
- WHEN IT TAKES A DESIGN TO KNOW WHAT THE QUESTIONS REALLY ARE
- WHEN IT TAKES A DESIGN TO KNOW WHAT IS REALLY WANTED

GIS	GEODESIGN	BIM
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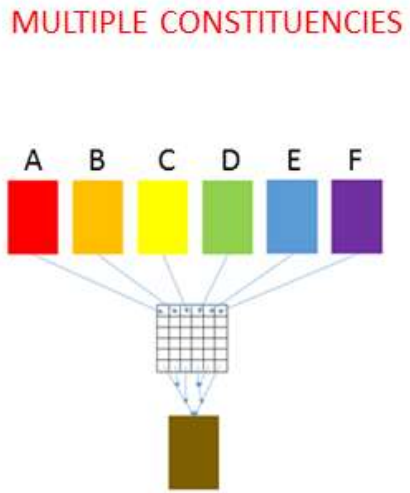
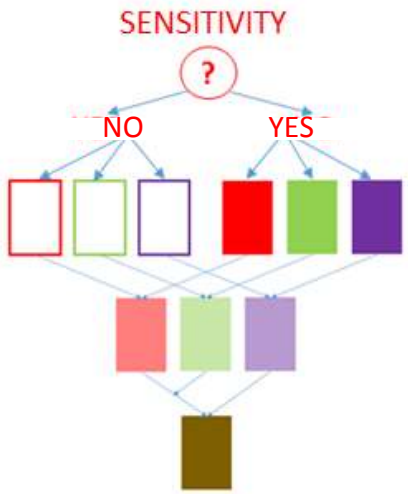
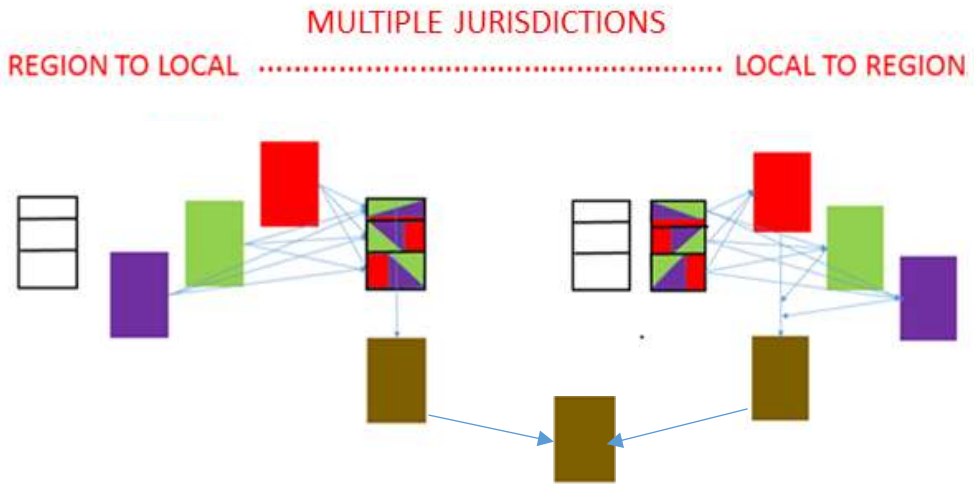
WAYS TO ORGANIZE GEODESIGN TOWARDS A NEGOTIATED AGREEMENT





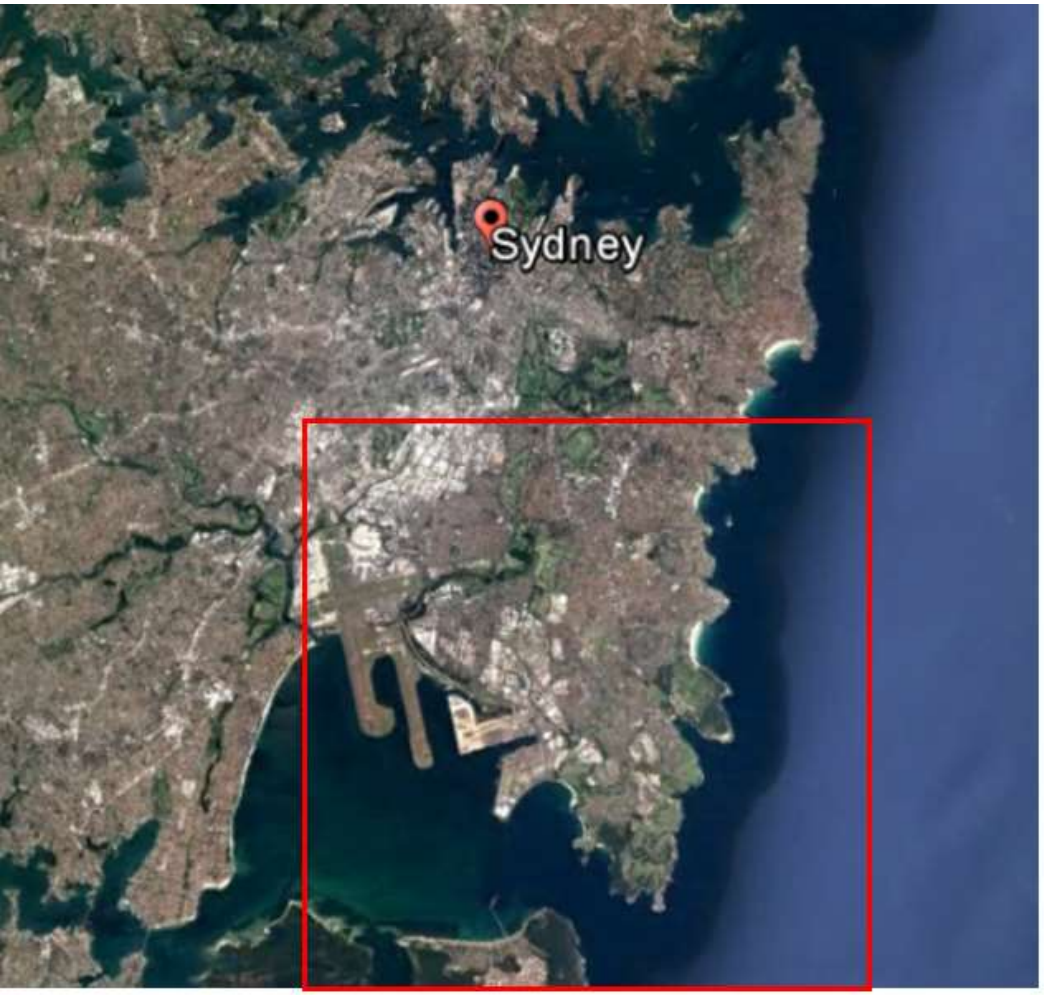


The Eastern Suburbs,
Sydney, Australia
Chris Pettit et al

Iron Mining in Minas Gerais,
Brazil
Ana Clara Moura et al

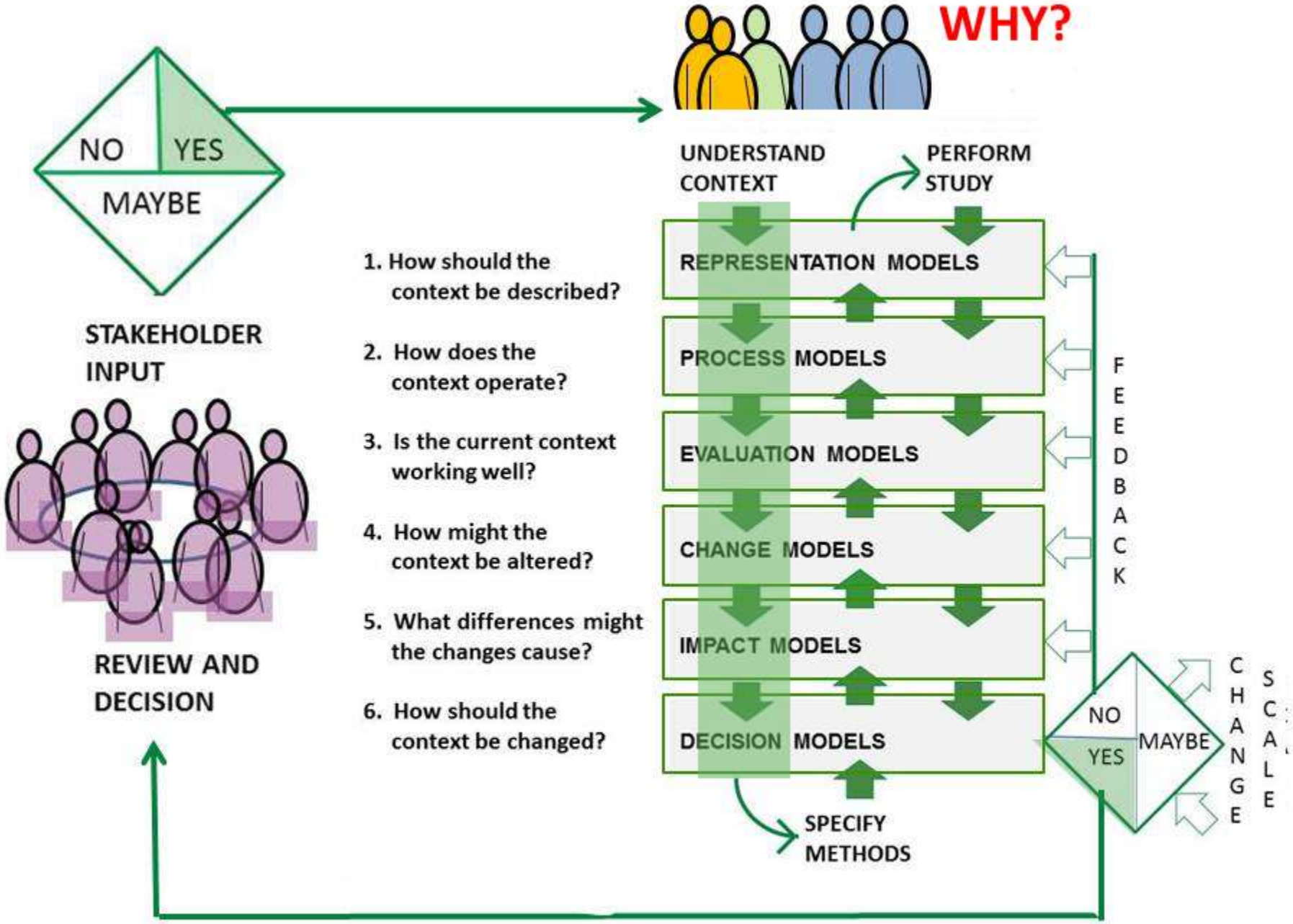
The Georgia Coastal Zone,
U S A
Rosanna Rivero, Brian Orland et al

2017 GEODESIGN SUMMIT, REDLANDS, CA, USA https://youtu.be/QERJbL9J1Xw



AN ALTERNATIVE FUTURE FOR EASTERN SUBURBS, SYDNEY, AUSTRALIA,

Chris Pettit et. al., University of New South Wales, Sydney, Australia November 2016


WHY?
NO
YES
MAYBE
STAKEHOLDER INPUT
REVIEW AND DECISION
1. How should the context be described?
2. How does the context operate?
3. Is the current context working well?
4. How might the context be altered?
5. What differences might the changes cause?
6. How should the context be changed?
UNDERSTAND CONTEXT
PERFORM STUDY
REPRESENTATION MODELS
PROCESS MODELS
EVALUATION MODELS
CHANGE MODELS
IMPACT MODELS
DECISION MODELS
SPECIFY METHODS
FEEDBACK
NO
YES
MAYBE
CHANGE SCALE

ASSUMPTIONS AND THE PROBLEM STATEMENT

THE SYDNEY REGIONAL POLICIES PERSPECTIVE

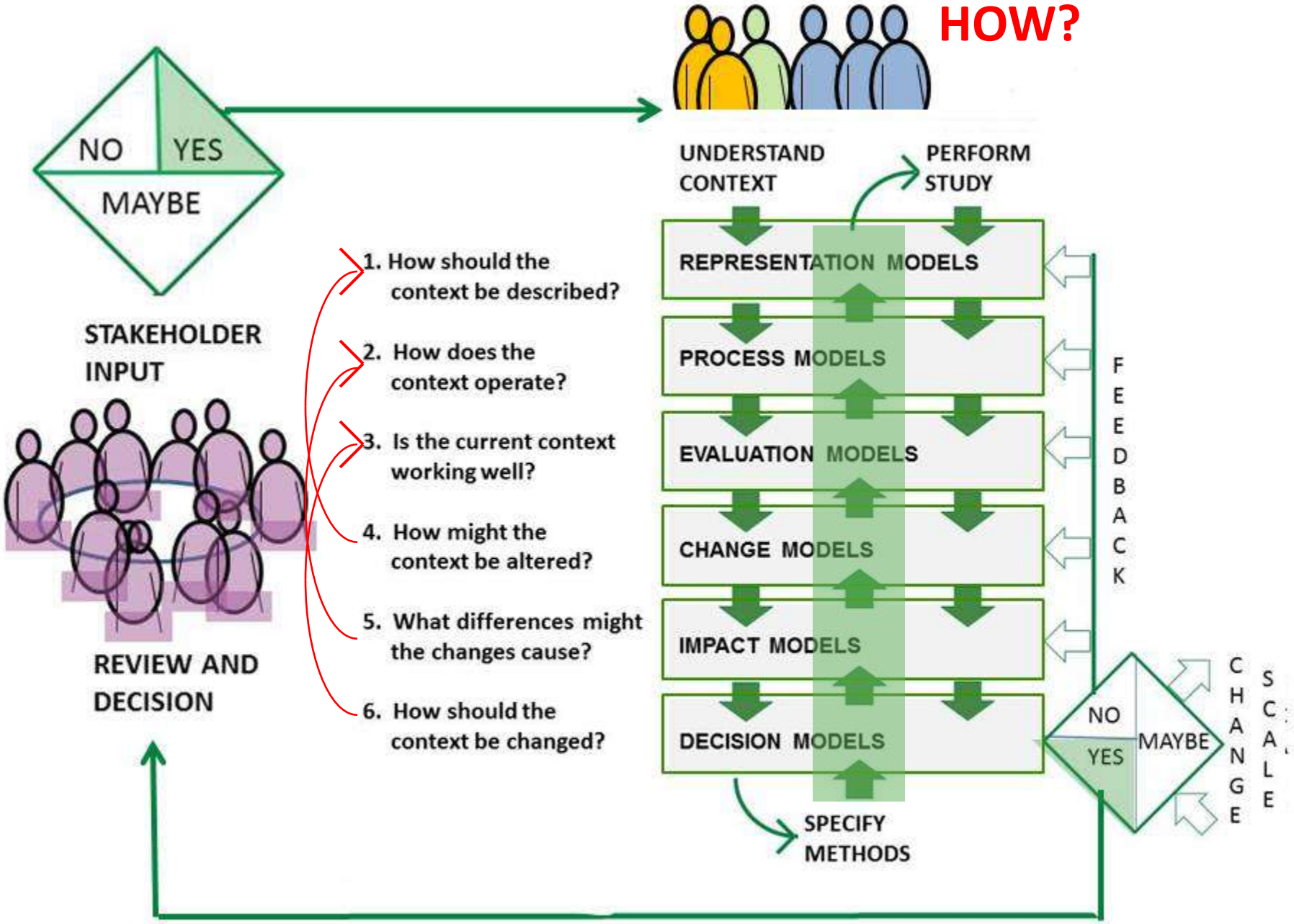
Approximate land area of study site: 5553 ha (ABS 2014)

Assumptions

- Sydney's population is set to grow from 4.7 million (as of 2012) to 7.9 million by 2050 based on the largest population projection scenario for NSW (ABS 2013)

- **Projected changes within the study area:**
- 180,000 additional dwellings needed between 2016 and 2050 in the Eastern Suburbs to serve an added 360,000 population.
- Increase in younger population and cultural diversity is expected due to overseas migration
- 25% of the population would be people of 65 years and over, while children of 0-14 years of age could make up 16-18%.
- While the Eastern part of the study area may be relatively unaffected by rise in sea level due to its topography, low-lying areas in the Western part of the study area may experience more nuisance flooding.
- Kingsford Smith Airport will become domestic, with international commercial flights and most air freights moved to Western Sydney Airport
- Growth of High Value Industry drives demand for a new university/expansion of UNSW.
- The hospital will also expand.
- There is a need to remake the region's "Green Infrastructure" and "Blue infrastructure".

References
ABS data
Greater Sydney Plan and District Plans
30 minute city – Federal Government
Eastern Suburbs Economic Profile - SGS Economics and Planning


HOW?
NO
YES
MAYBE
STAKEHOLDER INPUT
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CHANGE MODELS
IMPACT MODELS
DECISION MODELS
SPECIFY METHODS
FEEDBACK
NO
YES
MAYBE
CHANGE SCALE

WORKSHOP PARTICIPANTS

4	Organisation	Names	Roles/Titles
5	Sydney Water	Luther Uthayakumaran	Senio Leader in Strategy, Analytics and Innovation
6	Sydney Water	Marcia Dawson	Principal Analyst/Project manager
7	Sydney Water	Fernando Gamboa	Planner, Liveable City Solutions
8	Sydney Water	Emma James	Senior Water Sensitive Urban Designer
9	Arup	Oliver Lock	Urban Planner and Data Scientist
10	Arup	Sian Elliot	GIS Specialist
11	Arup	Chris Schmid	Senior Planner
12	EY	Sarah Duignan	Partner/NSW Government Leader, Oceania Leader-Policy, Economics and Regulation
13	Randwick City Council	Gary Ella	Coordinator Community Development
14	Randwick City Council	David Ongkili	Acting Manager Strategic Planning
15	Botany Bay City Council	Anne Qin	Urban Designer, Strategic Planning
16	Infrastructure NSW	Sean O'Shannassy	Exectuve Director
17	Land and Housing Corporation	Andre Szczepanski	Senior Planner
18	Land and Housing Corporation	Michael Carnuccio	Principal Planner
19	Greater Sydney Commission	Alex Gold	Special Advisor
20	Greater Sydney Commission	Clare Donovan	Project Lead - Sustainability
21	Urban Growth NSW	Alexandra Vella	Program Director
22	Transport NSW	Kyle Sharpe	Senior Transport Planner
23	Transport NSW	David Turner	GIS Analyst
24	Department of Planing and Environment f	Andrew Hargreaves	Senior Officer for Strategic Open Space and Social Infrastructure Planning
25	Department of Planing and Environment f	Jennifer Richardson	Team Leader-Transport an Strategic Infrastructure Planning
26	Department of Education NSW	Susanne Johnson	Senior Assets Planner
27	UNSW	Hal Pawson	Associate Director, CFRC
28	UNSW	Sara Padget Kjaersgaard	Lecturer - Landscape Architecture
29	UNSW	Katrina Simon	Senior Lecturer - Landscape Architecture
30	UNSW	Mike Harris	Senior Lecturer
31	UNSW	James Weirick	Program Director, Urban Development and Design
32	University of Canberra	Hitomi Nakanishi	Assistant Professor in Urban & Regional Planning
33	Core team	Chris Pettit	Associate Director, City Future Research Centre
34	Core team	Scott Hawken	Lecturer, Urban Development and Design
35	Core team	Scott Lieske	Research Fellow
36	Core team	Simone Zarpelon Leao	Research Fellow
37	Core team	Aida Afrooz	Technical Specialist
38	Core team	Karolina Peret	Intern, visiting post-graduate student

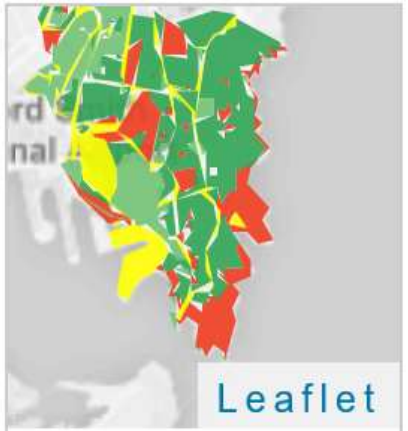
30 PARTICIPANTS

Hrishi Ballal,
Tess Canfield,
Carl Steinitz

PRE-WORKSHOP PREPARATION

EVALUATION MODELS

	Feasable	Suitable	Capable	Inappropriate	Existing
System 1	5	4	3	2	1



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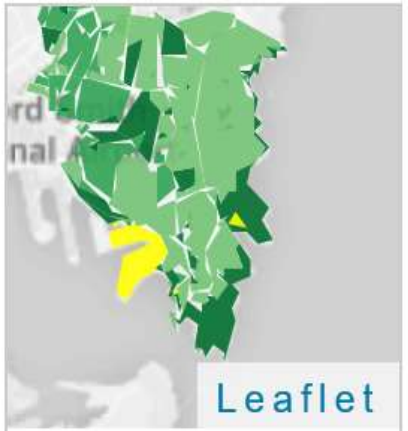
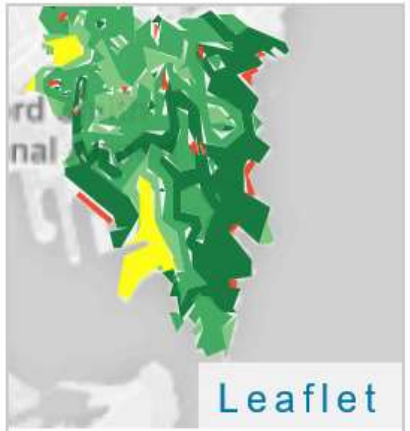
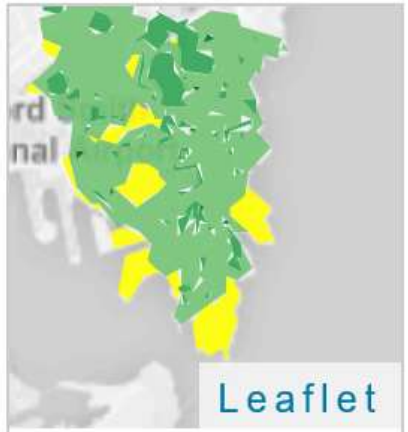


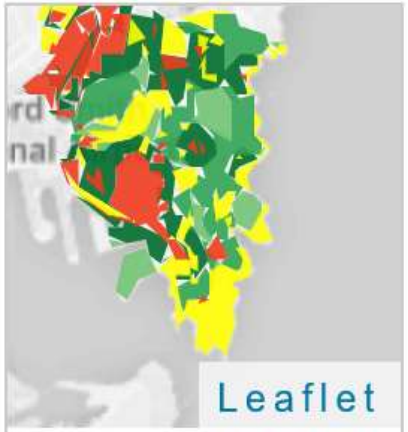
BINFRA



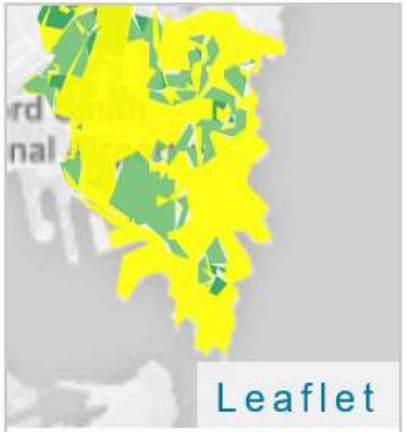
TOUR



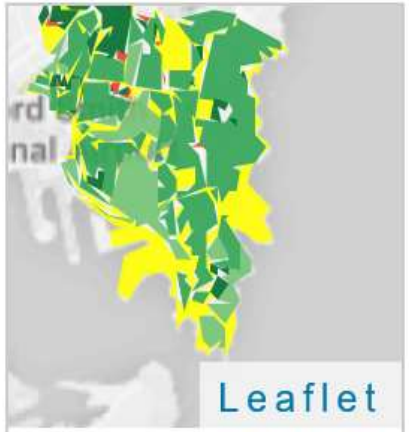
EDU



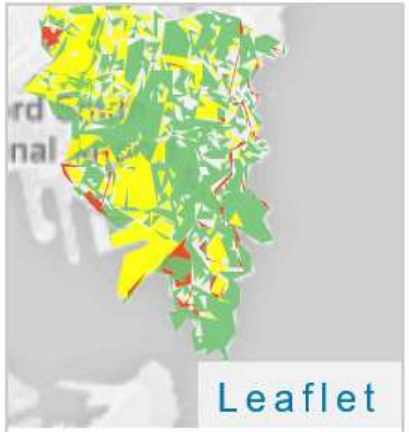
COMIND



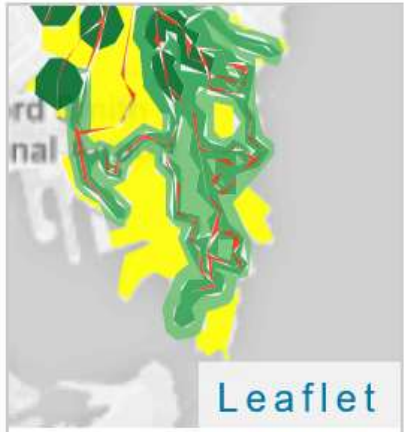
HDH



MDH



ATRANS



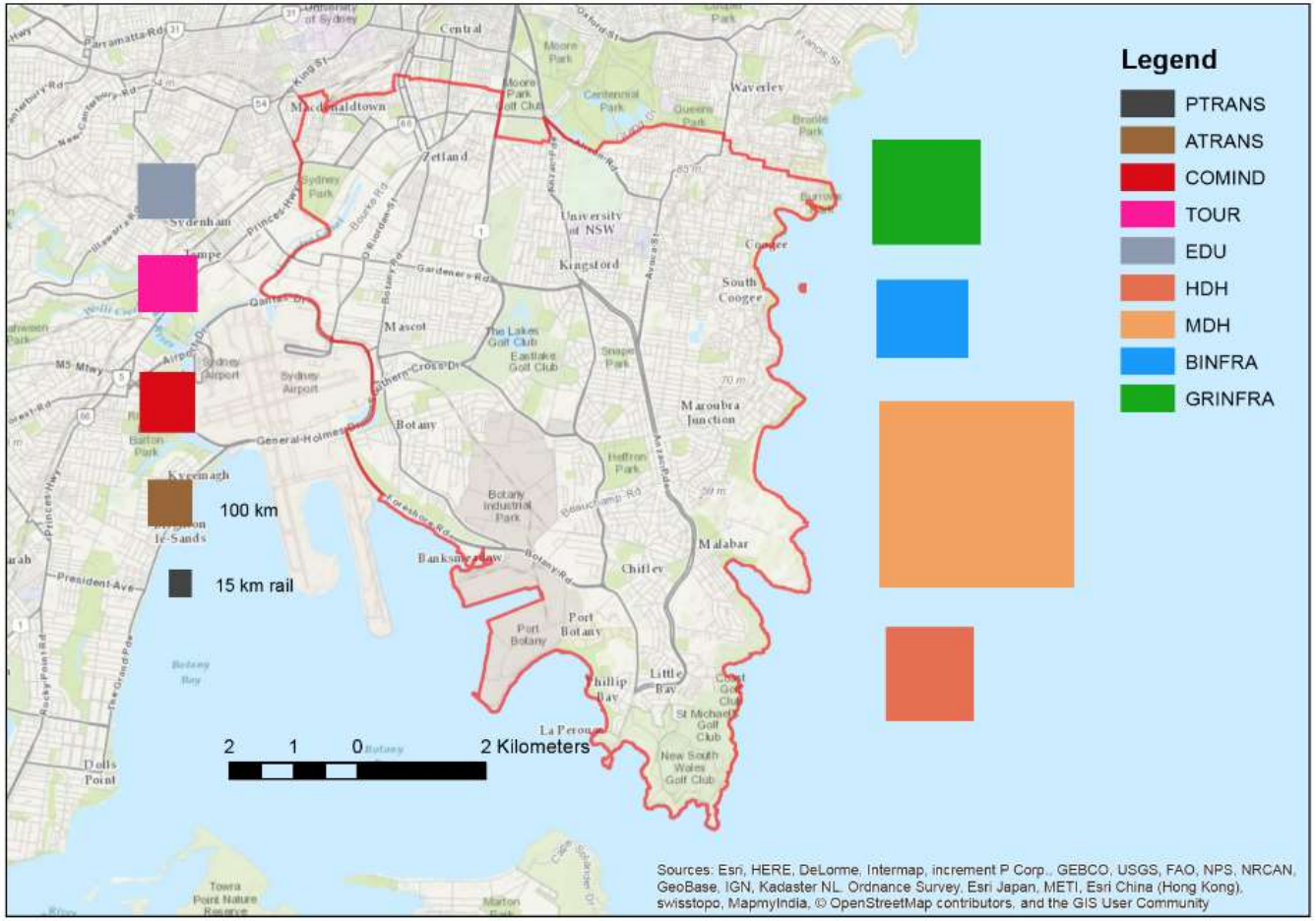
PTRANS

PRE-WORKSHOP PREPARATION

SYSTEM REQUIREMENTS BY YEAR 2050

	Year 2016[a]	Year 2050[b]
Population	407250	770000
Number of households	184850	360000

System	Description	Additional provision needed (ha)
MDH – Medium Density Housing	New medium density housing of 4-7 storeys accommodating 200 persons/ha	900 ha
HDH – High Density Housing	New high density housing of 8-25 storeys accommodating 800 persons/ha	300 ha
PTRANS – Public transport	Train and light rail development	15 ha (15km length x 10m width)
ATRANS – Active Transport	Cycling infrastructure	50 ha (100km length x 5m width)
GINFRA – Green Infrastructure	Installing elements of urban greenery; e.g. rain gardens, green roofs	700 ha
COMIND – Commerce and Industry	Commercial/industrial development	200 ha
BINFRA – Blue Infrastructure	Swales, green space for promoting water sensitive urban design	400 ha
EDU – Education	Development/expansion of Primary/secondary/tertiary education facilities	200 ha
TOUR – Tourism	Developing new points of interest for recreation and entertainment, and/or expanding tourist areas	200 ha



PRE-WORKSHOP PREPARATION

SYSTEM IMPACTS MODEL FORMAT

	System : GINFRA									
	Feasable		Suitable		Capable		Inappropriate		Existing	
System 1	5		4		3		2		1	
CHANGED SYSTEM	IMPACT and UPDATED EVALUATION									
GINFRA	1	5	1	5	1	4	1	3	0	1
TOUR	1	5	1	5	1	4	1	3	0	1
BINFRA	1	5	1	5	1	4	1	3	0	1
EDU	-1	4	-1	3	-1	2	0	2	1	2
TRANS	-1	4	-1	3	-1	2	0	2	1	2
COM	-1	4	-1	3	-1	2	0	2	1	2
HDH	-1	4	-1	3	-1	2	0	2	1	2
MDH	-1	4	-1	3	-1	2	0	2	1	2
ACTV	0	5	0	4	0	3	1	3	0	1
0		5		4		3		2		1

RULE---if more than one polygon is in one location, use the most positive value. E.g high density housing with sewer = 2

	IMPACT MODEL
2	most positive, best
1	positive, good
0	neutral
-1	negative, bad
-2	most negative, worst

PRE-WORKSHOP PREPARATION

CROSS-SYSTEMS IMPACT MODEL

			SYSTEM EXISTING CONDITION										
		System #	1	2	3	4	5	6	7	8	9	10	Project's cause of system impact
			GINFRA	TOUR	BINFRA	EDU	TRANS	COM	HDH	MDH	ACTV	0	
System #	SYSTEM CHANGE												
1	GINFRA		N/A	1	2	-1	-1	-2	-2	-2	-2		
2	TOUR		-1	N/A	-1	-1	-1	1	0	-1	-1		
3	BINFRA		1	2	N/A	0	-1	1	1	1	0		
4	EDU		-1	-1	-1	N/A	1	1	1	1	1		
5	TRANS		-2	-1	-1	1	N/A	2	2	1	2		
6	COM		-2	1	-1	-1	2	N/A	2	2	1		
7	HDH		-2	-2	-1	1	2	2	N/A	2	2		
8	MDH		-2	-2	-1	1	2	2	2	N/A	0		
9	ACTV		1	0	0	1	1	1	1	1	N/A		
10	0											N/A	

RULE---if more than one polygon is in one location, use the most positive value. E.g high density housing with sewer = 2

	IMPACT MODEL
2	most positive, best
1	positive, good
0	neutral
-1	negative, bad
-2	most negative, worst

PRE-WORKSHOP PREPARATION

COSTS MODEL (based on Seattle, WA, USA)

http://yoursay.infrastructurevictoria.com.au/30-year-strategy/application/files/1714/7546/2887/SGS_Economics_and_Planning_-_Comparative_costs_of_infrastructure_across_different_development_settings.PDF

	SYSTEM	UNIT COSTS		SYSTEM	UNIT COSTS
	Seattle	$US		Sydney	$ US from $ AUS
	w/refs	Greenfield		CP, CS	Urban Redevelopment
1	CRITICAL AREAS	3000/ac	1	GREEN INFRA	1,000,000/mile, 10,000/ac
2	SURFACE WATER	3000/ac	2	BLUE INFRA	1,000,000/mile, 50,000/ac, 10,000,000/fac
3	GROUNDWATER	30,000/ac	3	TOURISM	1,000,000/ac
4	FORESTRY	10,000/ac	4	EDUCATION	25,000,000/fac
5	AGRICULTURE	10/000/ac	5	COM, IND	16,000,000/fac, 4,000,000/ac
6	LOW DENS HOUSING	600,000/ac	6	HIGH DENS HSG	22,,000,000/ac
7	HIGH DENS HSG	6,000,000/ac	7	MED DENS HSG	12,000,000/ac
8	COM, IND, INST	9,000,000/ac	8	AUTO TRANS	1,500,000/lane mile
9	UTILITY INFRASTR	130,000/ac	9	PED TRANS	300,000, lane mile
10	TRANSPORT	2,000,000/lane mile			

add 50% of value of prior use if taken

PRE-WORKSHOP PREPARATION

WORKSHOP SCHEDULE

30 November 2016: Pre-workshop Geodesign team Tour of Study Area

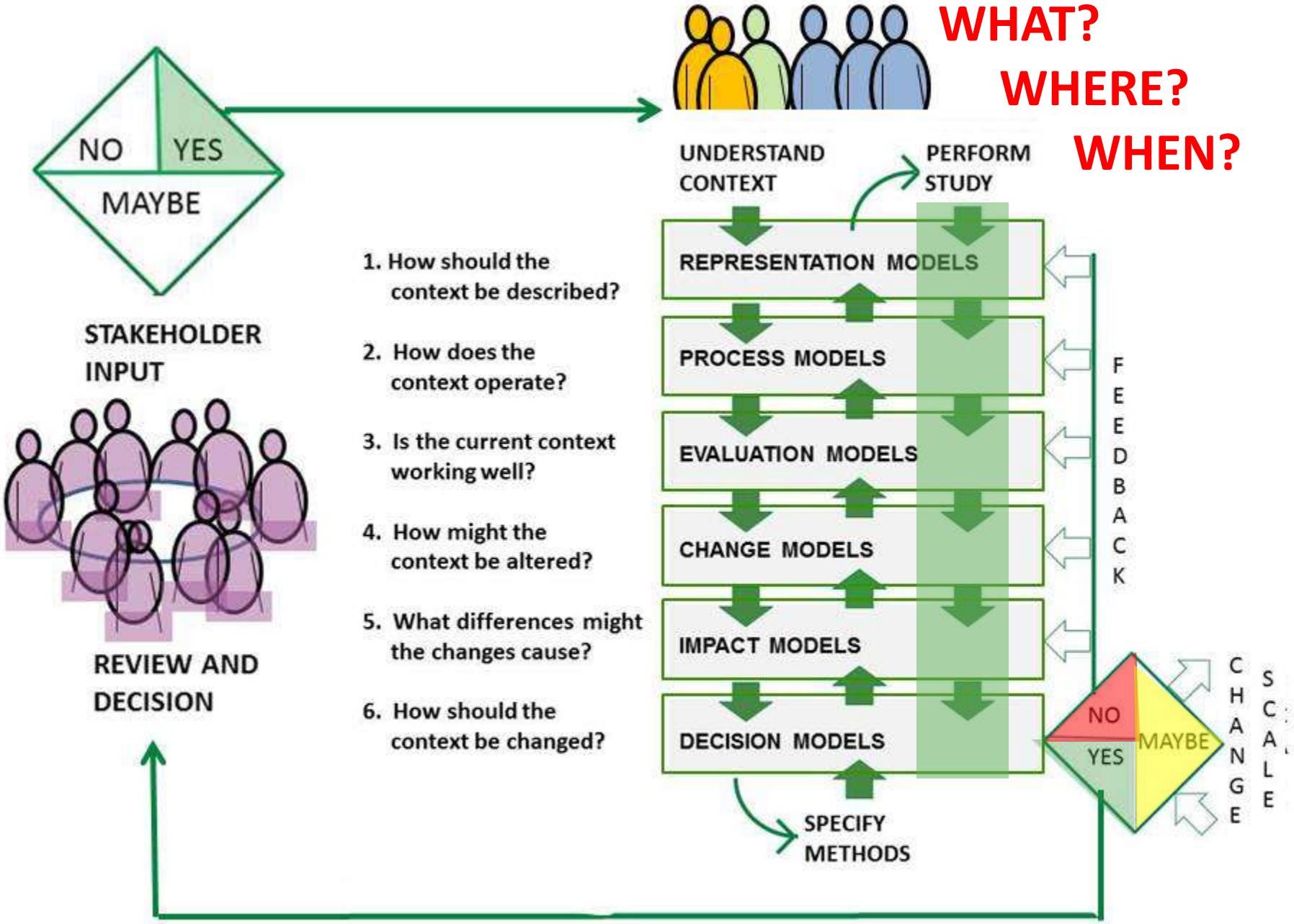
17:30 – 19:30 Public Lecture by Carl Steinitz

1 December 2016: Workshop Day One

08:30 – 09:00 Set up and connect to Geodesignhub
09:00 – 09:45 Personal Introductions and Description of Study Area and Organization of Workshop
09:45 – 09:50 Pre-workshop Survey
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 1, assess Impacts, independently
15:00 – 16:30 Create Change design Version 2, assess Impacts, Independently
16:30 – 17:30 Timeline, cost and 3-D

2 December 2016: Workshop Day Two

09:00 -- 10:00 Presentations of Change designs Version 2
10:00 – 12:30 Create Change design Version 3, with negotiation as needed, assess Impacts and cost, and make Timeline
12:00 -- 13:00 Lunch
13:00 – 13:30 Presentations
13:30 – 14:00 Comparision and Negotiation tools
14:00 – 14:30 Sociogram and Negotiation strategy
14:30 – 15:30 First Negotiation round , create Versions 4, assess Impacts and costs, staging and 3-D
15:30 – 17:00 Final Negotiation round, create Verion 5 in public, assess Impacts and costs, staging and 3-D
17:00 – 17:30 Discussion and END
17:30 – 18:00 Post-workshop survey and debrief participants


WHAT?
WHERE?
WHEN?
NO
YES
MAYBE
STAKEHOLDER INPUT
REVIEW AND DECISION
UNDERSTAND CONTEXT
PERFORM STUDY
1. How should the context be described?
2. How does the context operate?
3. Is the current context working well?
4. How might the context be altered?
5. What differences might the changes cause?
6. How should the context be changed?
REPRESENTATION MODELS
PROCESS MODELS
EVALUATION MODELS
CHANGE MODELS
IMPACT MODELS
DECISION MODELS
SPECIFY METHODS
FEEDBACK
NO
YES
MAYBE
CHANGE SCALE

Day 1 9am

INTRODUCTION OF PARTICIPANTS,
THE WOEKSHOP STRUCTURE,
AND "THE PROBLEM"

Day 1 10am
TUTORIAL:
EVALUATION MODELS AND DIAGRAMS OF POLICIES AND PROJECTS

Geodesign Hub

https://www.geodesignhub.com/p/10de5ee7c3a1ba23/design/

GEODESIGN HUB

CONSTRAINTS

Initial

Dynamic

UPDATE CONSTRAINTS

INITIAL EVALUATIONS

GINFRA

BINFRA

TOUR

EDU

COMIND

HDH

MDH

ATRANS

PTRANS

EXPLORE INITIAL EVALUATIONS

DYNAMIC EVALUATIONS

Ask me anything

1:32 PM
12/7/2016

Geodesign Hub

https://www.geodesignhub.com/p/10de5ee7c3a1ba23/design/

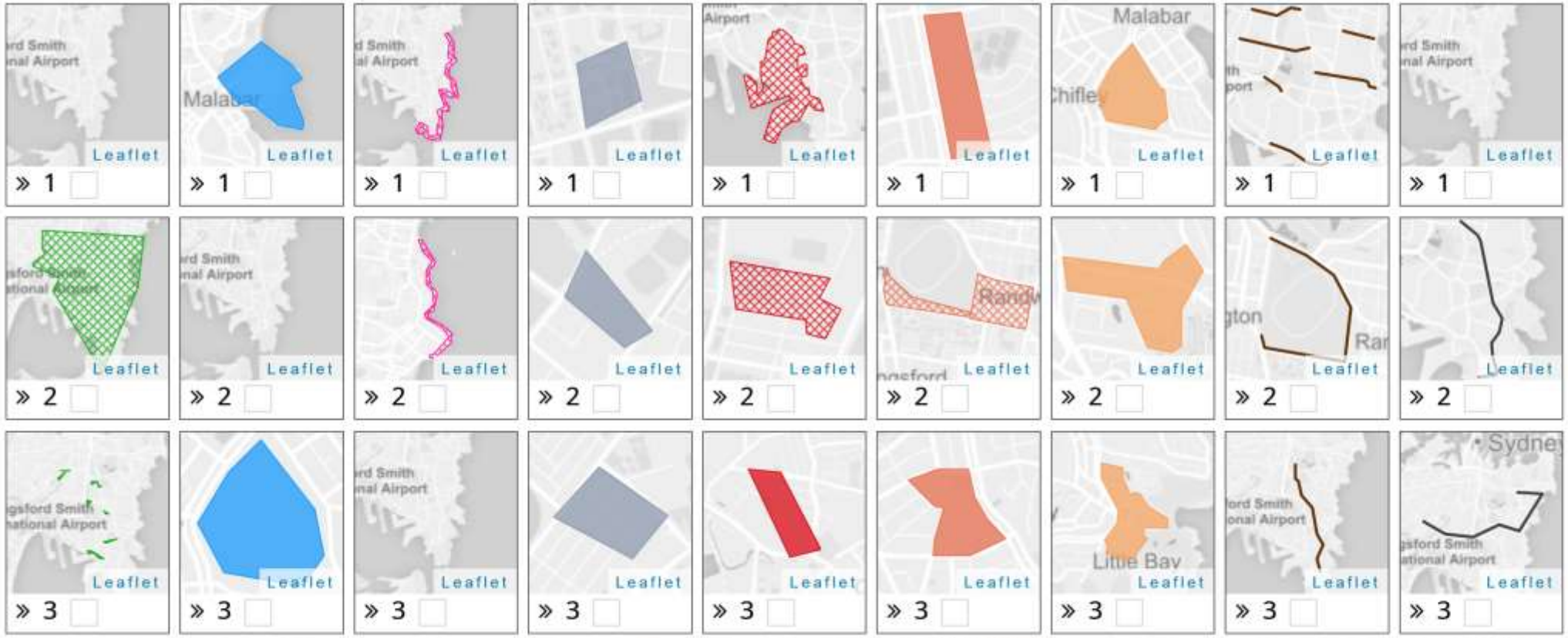
GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS

GEODESIGN HUB

ALL DIAGRAMS

+ ADD A DIAGRAM COPY AND EDIT A DIAGRAM CLEAR ALL SELECTIONS

GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS



Ask me anything

1:32 PM
12/7/2016

Day 1 1:00pm
TUTORIAL:
CHANGE VERSIONS
AND ASSESSING IMPACTS

CHANGE TEAMS, SCENARIOS AND TARGETS

Environmental Sustainabilty and Resilience: Economic and population growth will continue to put pressure on resources, and climate change would lead to sea level rise and extreme weather. The study area may see increased rain fall, and the Botany Bay side of the map could be subject to increased nuisance flooding due to its low-lying topography. Keeping this in mind, how would you address increased demand on housing and services within the study area, and how would you mitigate the potential effects of climate change mentioned?

Housing Development: It is forecast that 1-2-person households will be an increasing trend in the study area towards 2050. But while the study area is also projected to have an increase in younger working population, it will also be faced with an ageing population. How would you plan for housing that would cater to such demographic changes?

University + Hospital employment cluster:

UNSW and Prince of Wales Hospital are major employers in the study area. How would you incorporate the expansion of UNSW and the hospital as major knowledge and health economy precincts in your design? Keeping in mind that such an expansion will increase flow of human capital and global job opportunities in the study area.

Efficient Public service:

How would you design a 'Just City' with services aligned to support a multi-cultural diverse society and high quality amenity, with policy mechanism for 'value sharing' in the investment of supporting initiatives as affordable housing? A driver for this scenario is about improving the liveability and quality of life for residents and visitors to the area.

Tourism and Recreation: The beaches and coastal walk are the main draw for tourism within the study area. Tourism flows will continue to increase, putting pressure on existing infrastructure. How will you design the study area that responds to this increase and also caters to potentially diversified cultural interests to accommodate international tourism and activities from China, India and other Asia markets.

Compact City

Accessibility driven scenario based on the concept of the 30 minute city; and minimising travel and commute times. This will lead to healthy city outcomes with people spending less time in cars and more time using public and active transport modes.

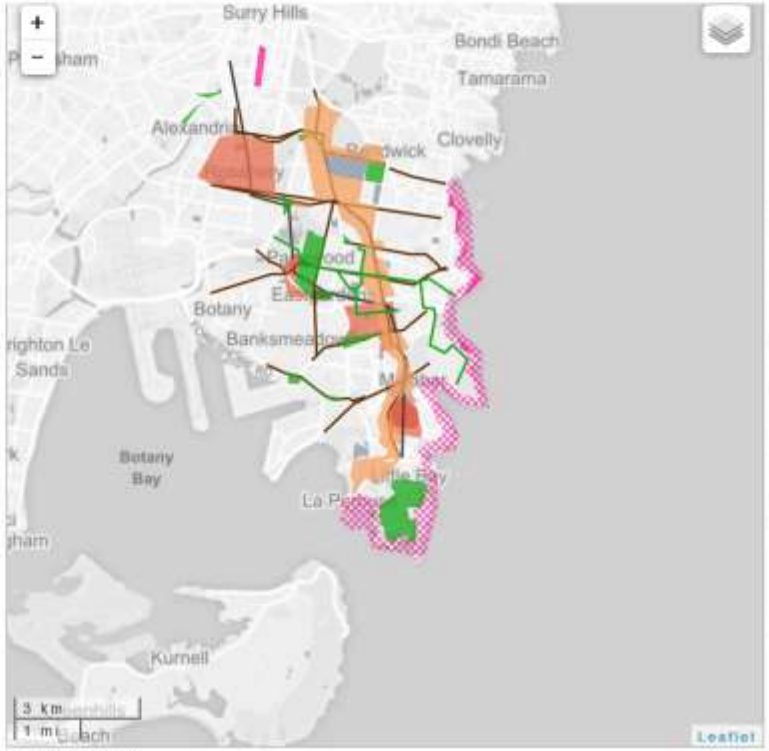
Day 1 1:20pm
CHANGE VERSION 1
AND IMPACTS,
INDEPENDENTLY BY TEAM

Geodesign Hub

https://www.geodesignhub.com/p/10de5ee7c3a1ba23/design/#synNavCont

GEODESIGN HUB

GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS



TIME SCALE

Nov 2016 — Nov 2041

Nov 2016 May 2022 Nov 2028 May 2035 Nov 2041

▶ ANIMATE

COMPUTE INTERVAL IMPACTS RESET

Most Negative Impact ■ ■ ■ ■ ■ ■ Most Positive Impact

Impacts: • System ○ Cross System

✔ GINFRA ✔ BINFRA ✔ TOUR ✔ EDU ✔ COMIND ✔ HDH ✔ MDH ✔ ATRANS ✔ PTRANS ✔ Constraints ☐ Second Boundaries ☐ First Boundaries

SYSTEM AND CROSS SYSTEM IMPACTS

GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS

Ask me anything

11:24 AM
12/9/2016

Geodesign Hub

https://www.geodesignhub.com/p/10de5ee7c3a1ba23/design/#synNavCont

GEODESIGN HUB

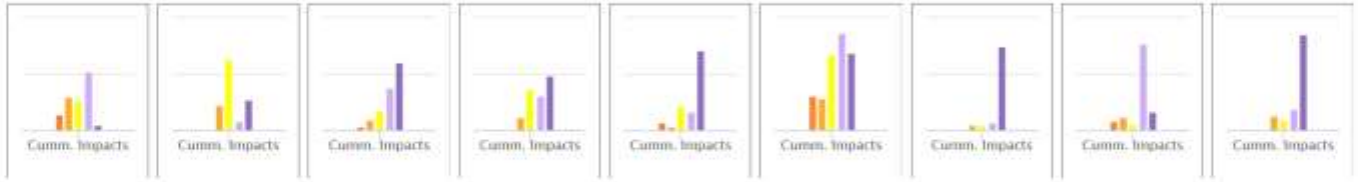
GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS

SYSTEM IMPACTS

SYSTEM IMPACTS AREAS

CROSS SYSTEM IMPACTS

CROSS SYSTEM IMPACTS AREAS

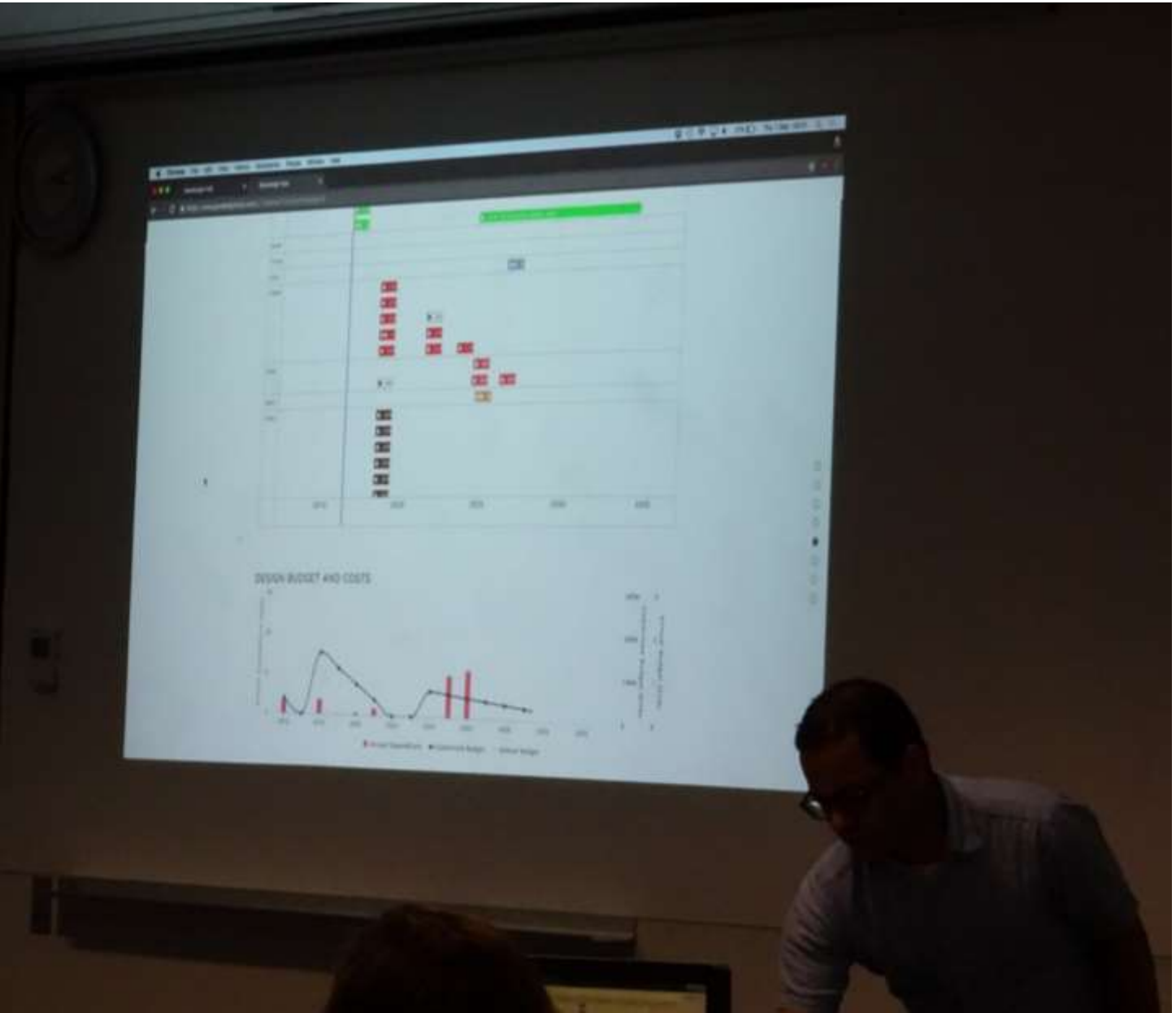


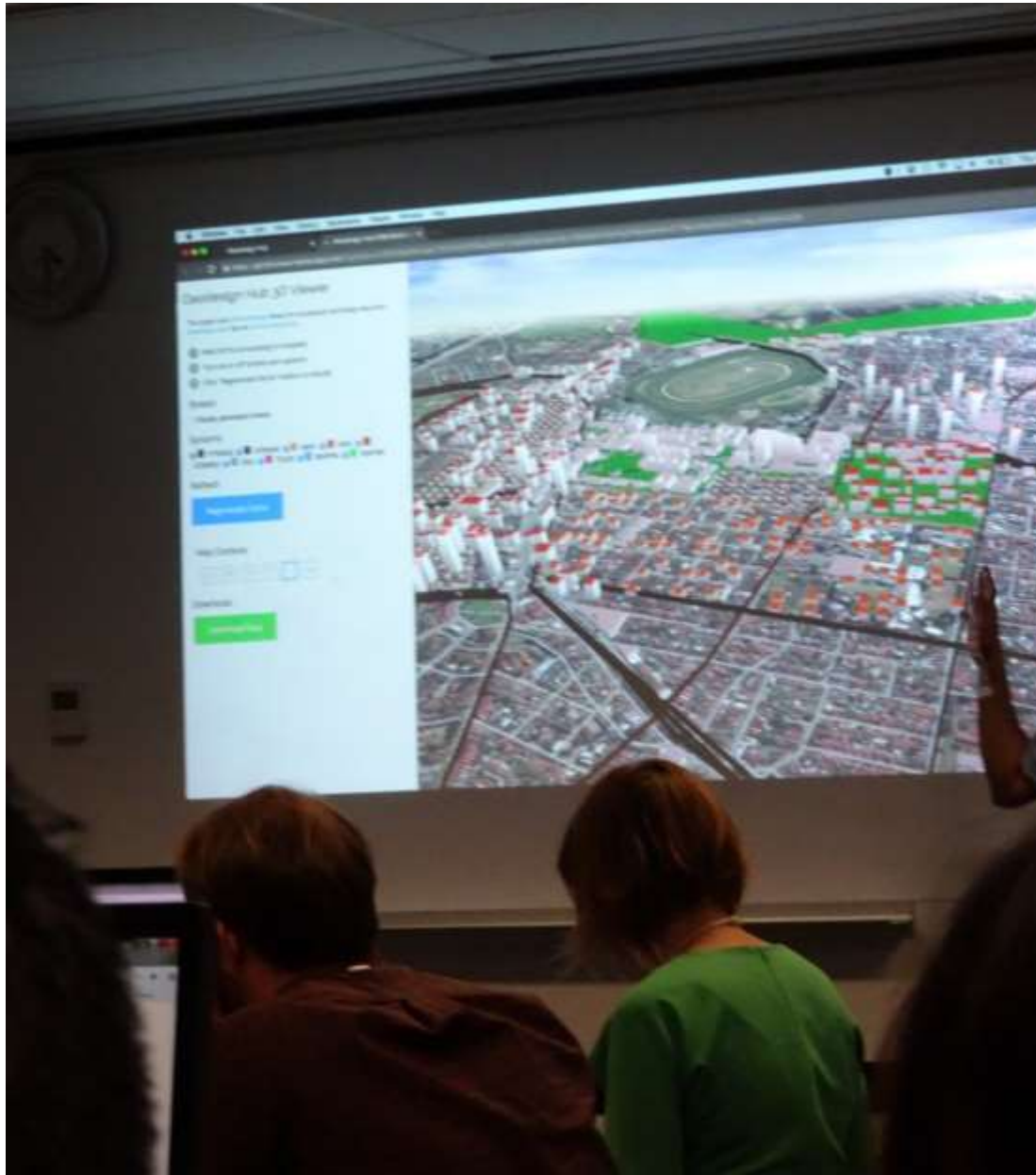
Positive Impact Neutral Impact Negative Impact

Ask me anything

11:25 AM
12/9/2016

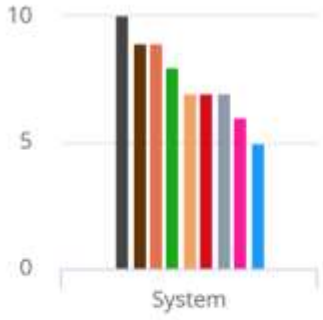
Day 1 2:30pm
TUTORIALS
TIMELINE AND COST, AND 3-D

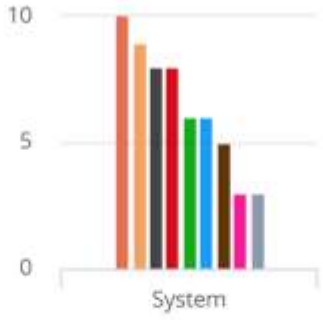


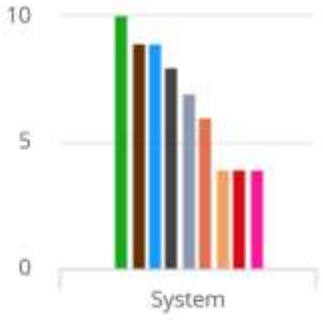


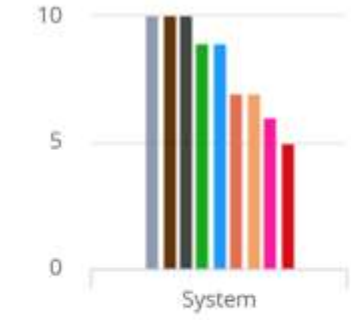
Day 1 3:00pm

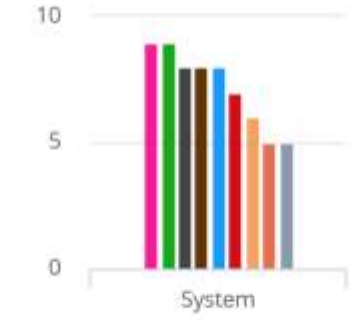
**CHANGE VERSION 2+
AND IMPACTS,
TIMELINE AND COST
AND 3-D,
INDEPENDENTLY BY TEAM**

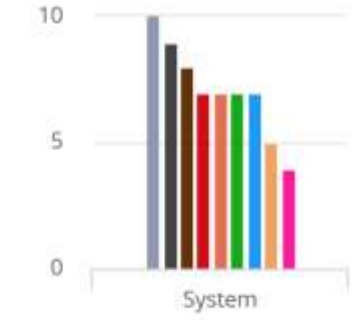




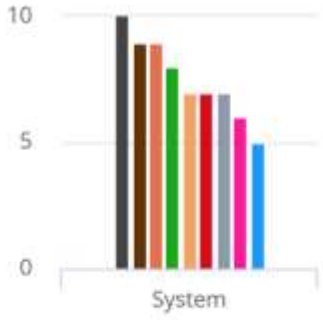


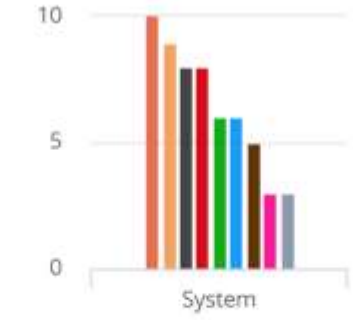


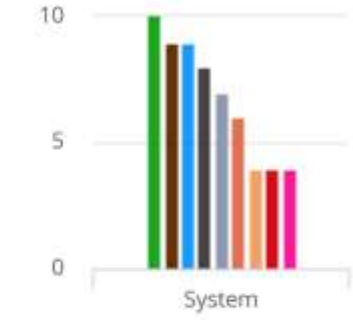


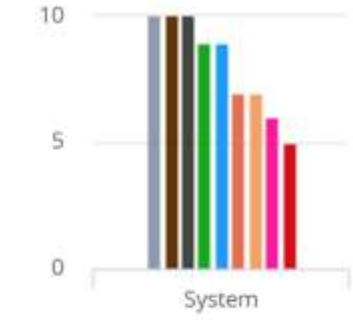


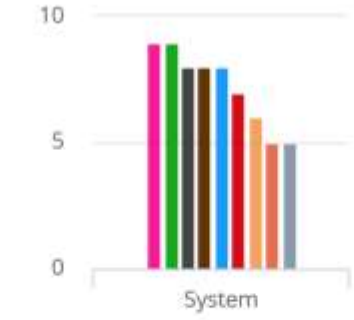
VERSION 1 MAJOR SAVED

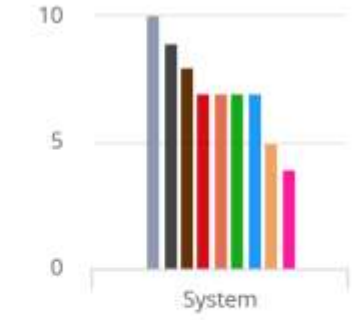


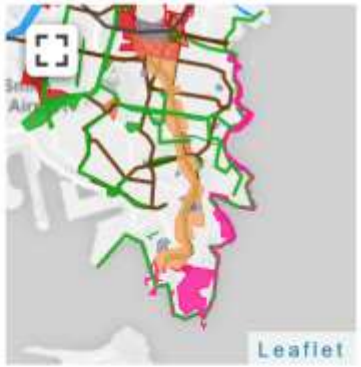












VERSION 2 MAJOR SAVED

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COMC 2.1
DEV2.2
ENV2.4
PUB2.2
TOUR 2.5
UNIH 2.6

Day 2 9:00am
REVIEW AND PRESENTATIONS (6)

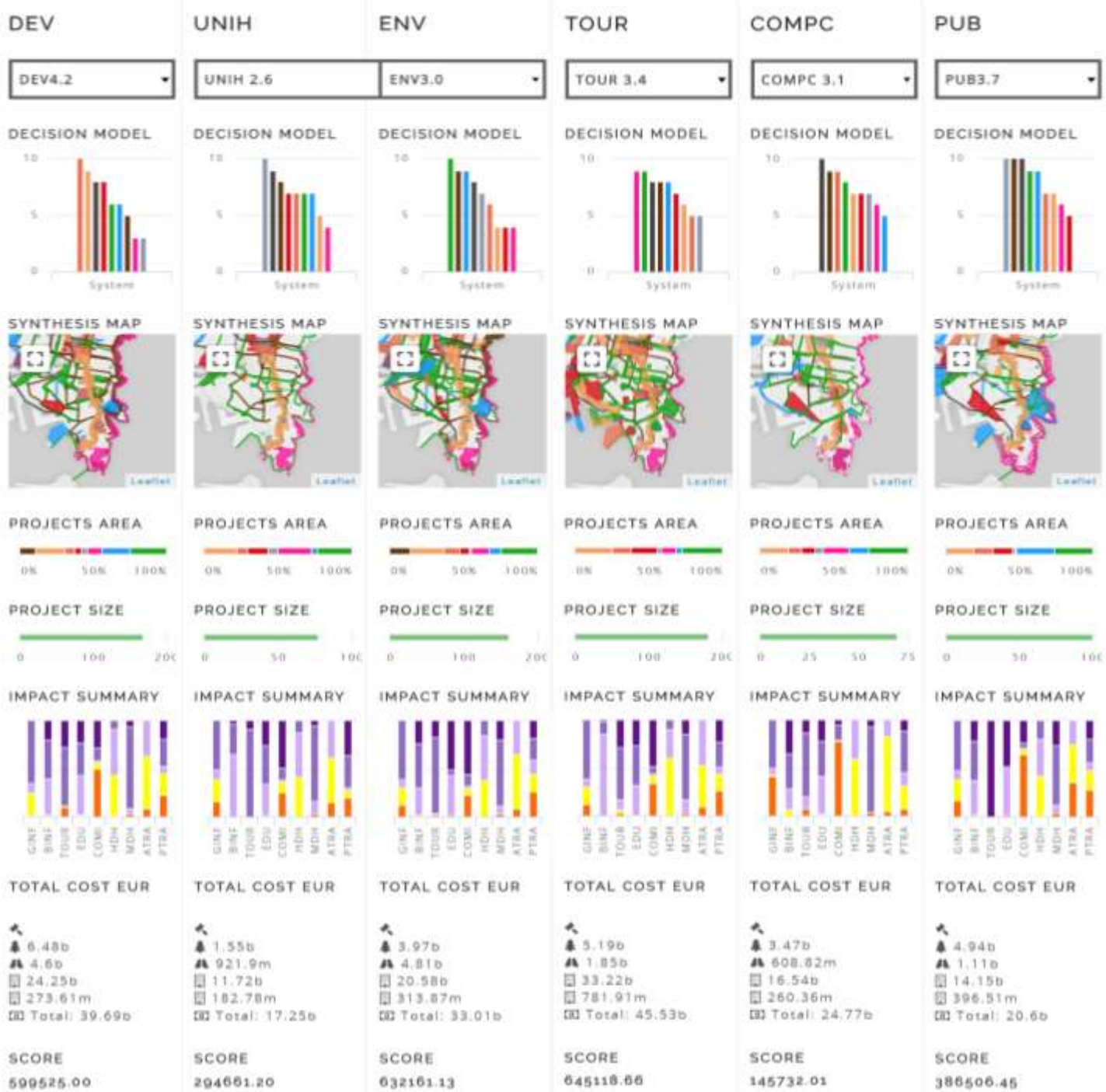
Day 2 10am
CHANGE VERSION 3+
WITH NEGOTIATION
AMONG TEAMS AS NEEDED

Day 2 1:15pm
TUTORIAL:
COMPARISON TOOLS
NEGOTIATION TOOLS

COMPARING ALL DESIGNS

VERSION 3

Note how the designs are moving towards even more similarity because of negotiation among teams.



COMPARING ALL DESIGNS

VERSION 3

"BEST"
(C S)

Geodesign Hub | Geodesign Hub OSM Buil...

https://gdh3dviewer.herokuapp.com/?a GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS

Geodesign Hub 3D Viewer

This plugin uses OSM Buildings library for visualization and design data from Geodesign Hub. See the GitHub repository.

1. Wait till the processing is complete
2. Turn on or off streets and systems
3. Click "Regenerate Scene" button to rebuild

Streets

☐ Display generated streets

Systems

☑ PTRANS ☑ ATRANS ☑ MDH ☑ HDH ☑ COMIND ☑ EDU ☑ TOUR ☑ BINFRA ☑ GINFRA

Refresh

Regenerate Scene

Ask me anything

2:23 PM
12/7/2016

GEODESIGN HUB GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS

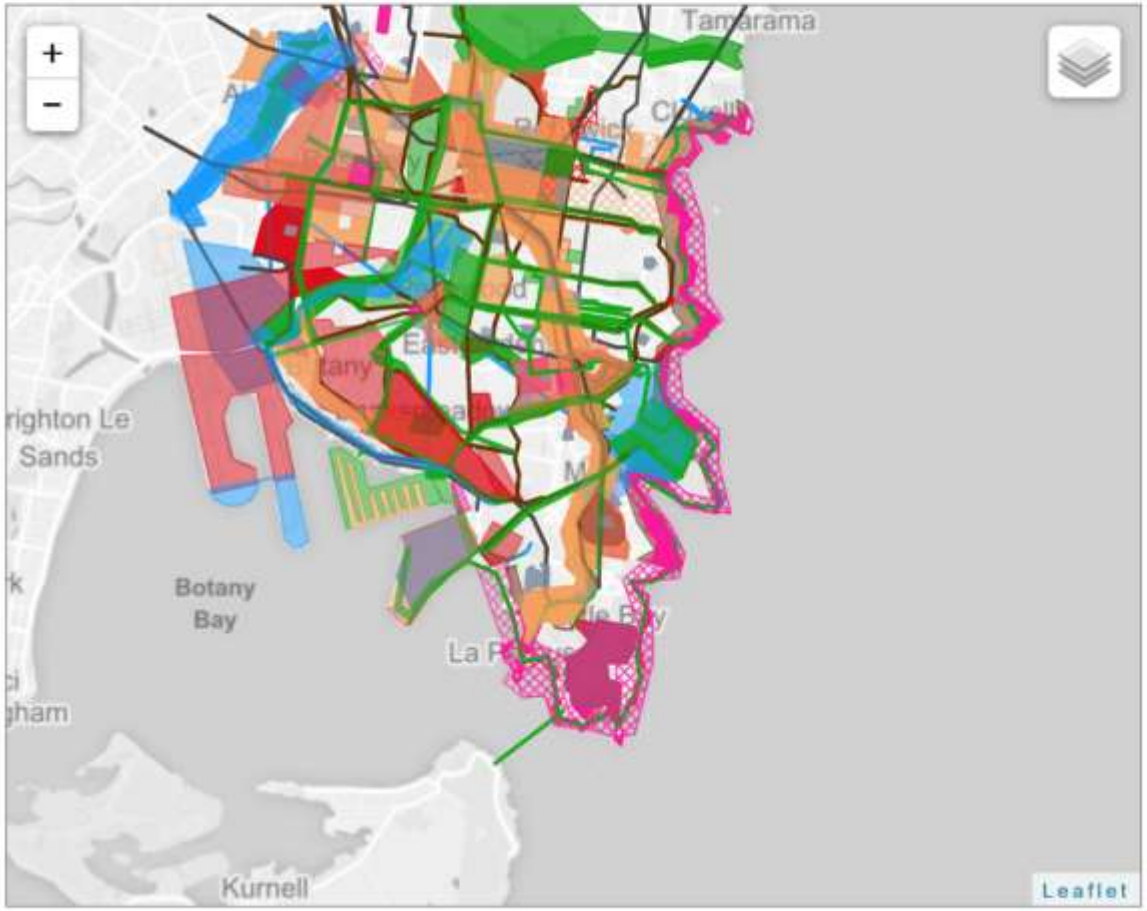
COMBINED ANALYSIS

Combined synthesis of all the change team designs selected above.
Change features visibility using slider below:

0 = No Visibility / 100 =

Max Visibility

0 % 100 %



FILTER BY SYSTEM

☑ GINFRA ☑ BINFRA ☑ TOUR ☑ EDU ☑ COMIND ☑ HDH ☑ MDH
☑ ATRANS ☑ PTRANS

SHOW ALL DIAGRAMS

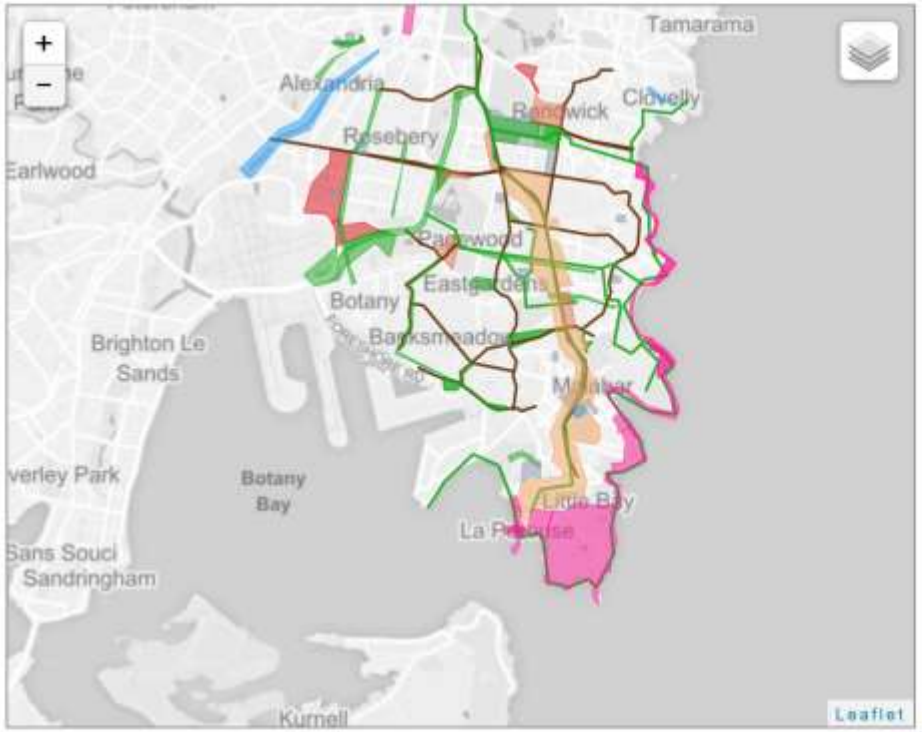
GEODESIGN HUB

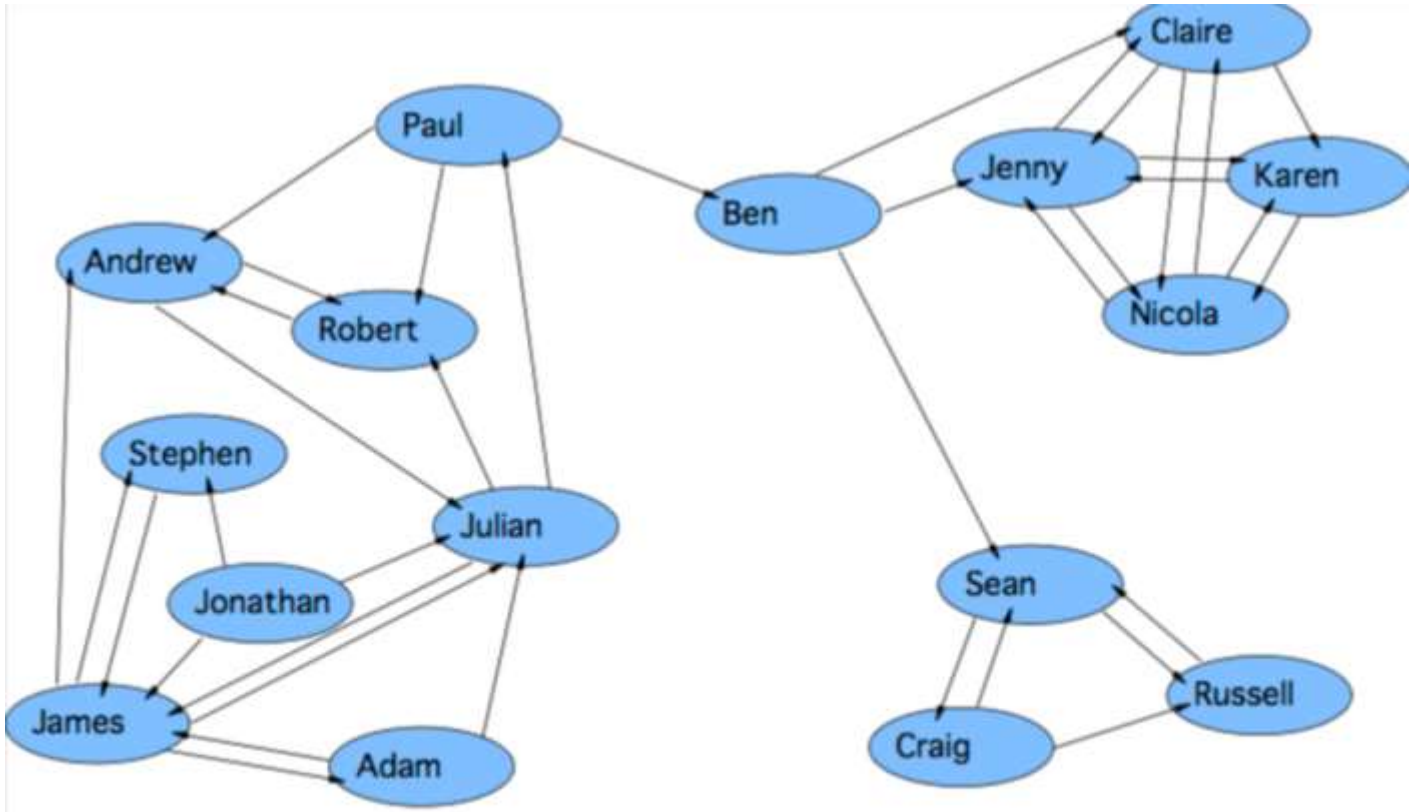
GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS

DIAGRAM FREQUENCY

The grid below shows the count of the diagrams for the synthesis that are loaded.

	GINF	BINF	TOUR	EDU	COMI	HDH	MDH	ATRA	PTRA
1	2	1	1	5		5	5	5	
2		3	2	5		1	1	3	2
3	5	2	2	5	1	3	2	5	3
4	5	2	2	5	4	1		3	1
5	5	1	3	1			2	3	1
6	5	5	1	5	5	1		3	2
7	3		2	3	2	1	2	3	3
8	5	1	1	6		1	2	3	
9	1	3	1	6	3	1	3	4	
10	5	2		5	1	5	1	4	3
11	1	3	5	5	3	5	2	3	1
12	5						1	3	2
13		3	2		3	2		4	
14	2			6	3	1		3	
15		3		5	3	1		5	2
16		3	2	5	4	1		5	
17		2		6	2	1		5	
18	5	5		6	3	2			1
19	5		1	5	3	2			



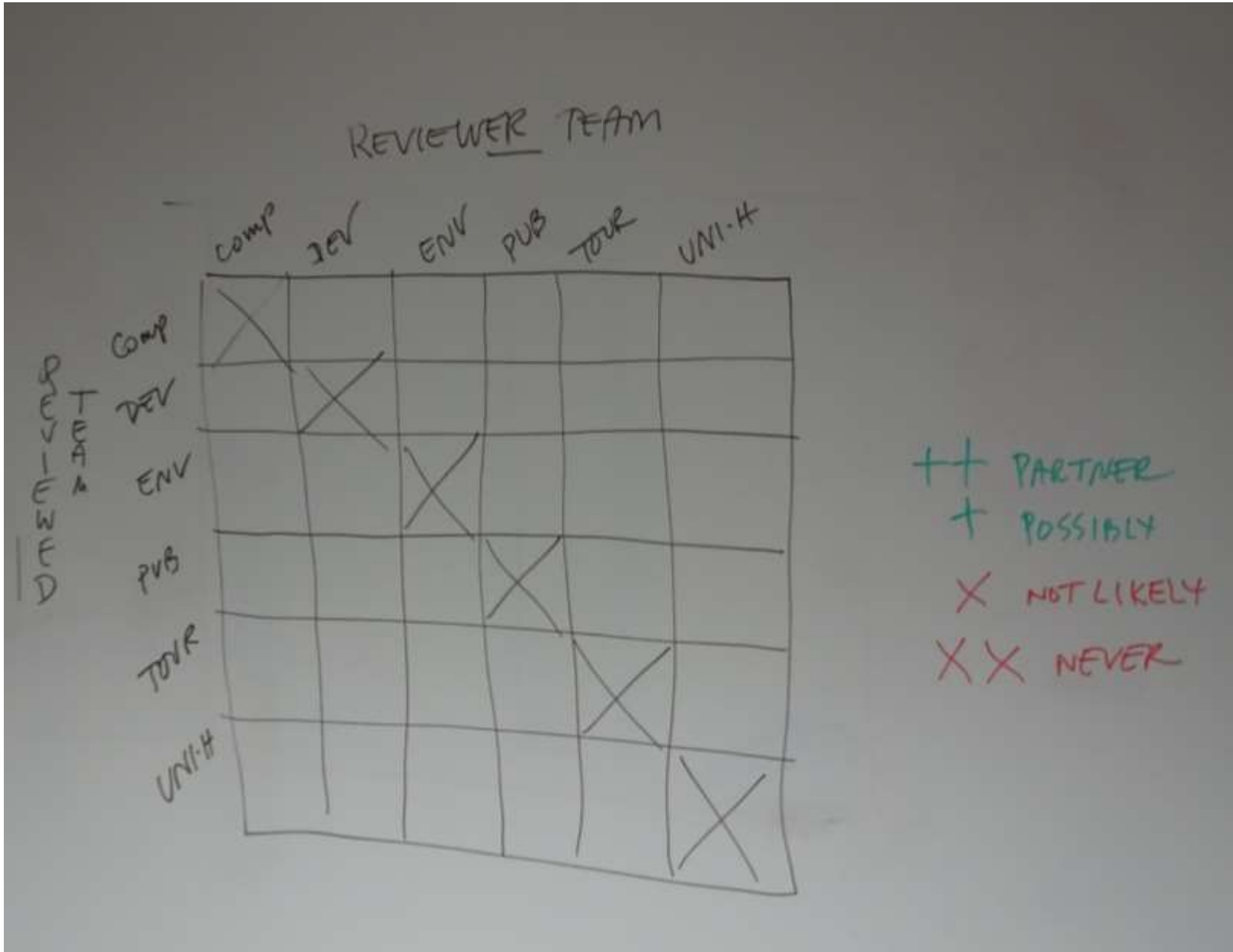


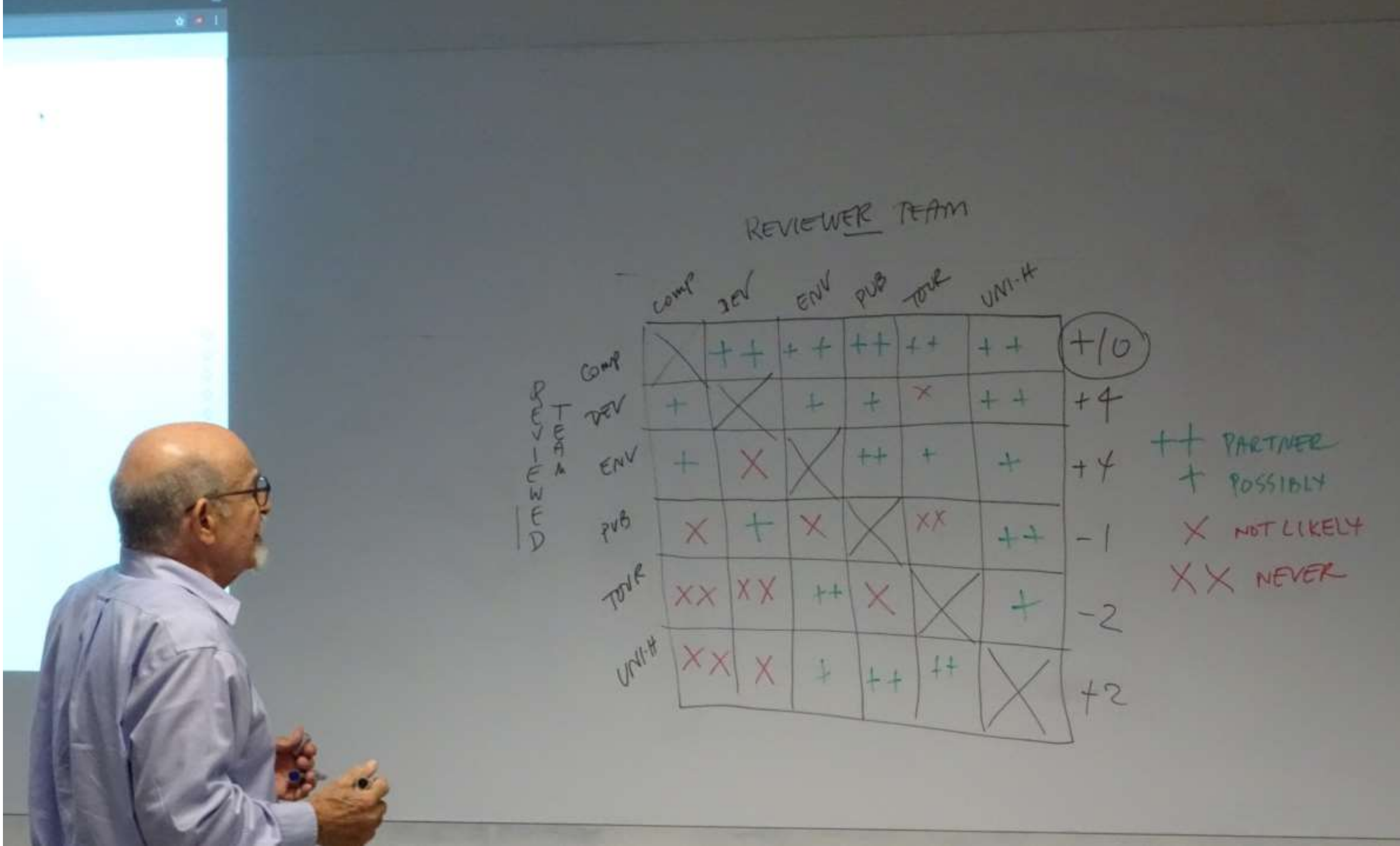
Sociogram showing positive choices made

Arrows point from person chosing to person chosen.

Day 2 2:00pm

SOCIOGRAM TO ORGANIZE NEGOTIATION




REVIEWER TEAM
COMP
DEV
ENV
PUB
TOUR
UNIV-H
REVIEWED TEAM
COMP
DEV
ENV
PUB
TOUR
UNIV-H
+10
+4
+4
-1
-2
+2
++ PARTNER
+ POSSIBLY
X NOT LIKELY
XX NEVER

REVIEWER TEAM

REVIEWED TEAM	COMP	DEV	ENV	PUB	TOUR	UNI-H	
COMP		+ +	+ +	+ +	+ +	+ +	+10
DEV	+		+	+	X	+ +	+4
ENV	+	X		+ +	+	+	+4
PUB	X	+	X		XX	+ +	-1
TOUR	XX	XX	+ +	X		+	-2
UNI-H	XX	X	+	+ +	+ +		+2

+ + PARTNER

+ POSSIBLY

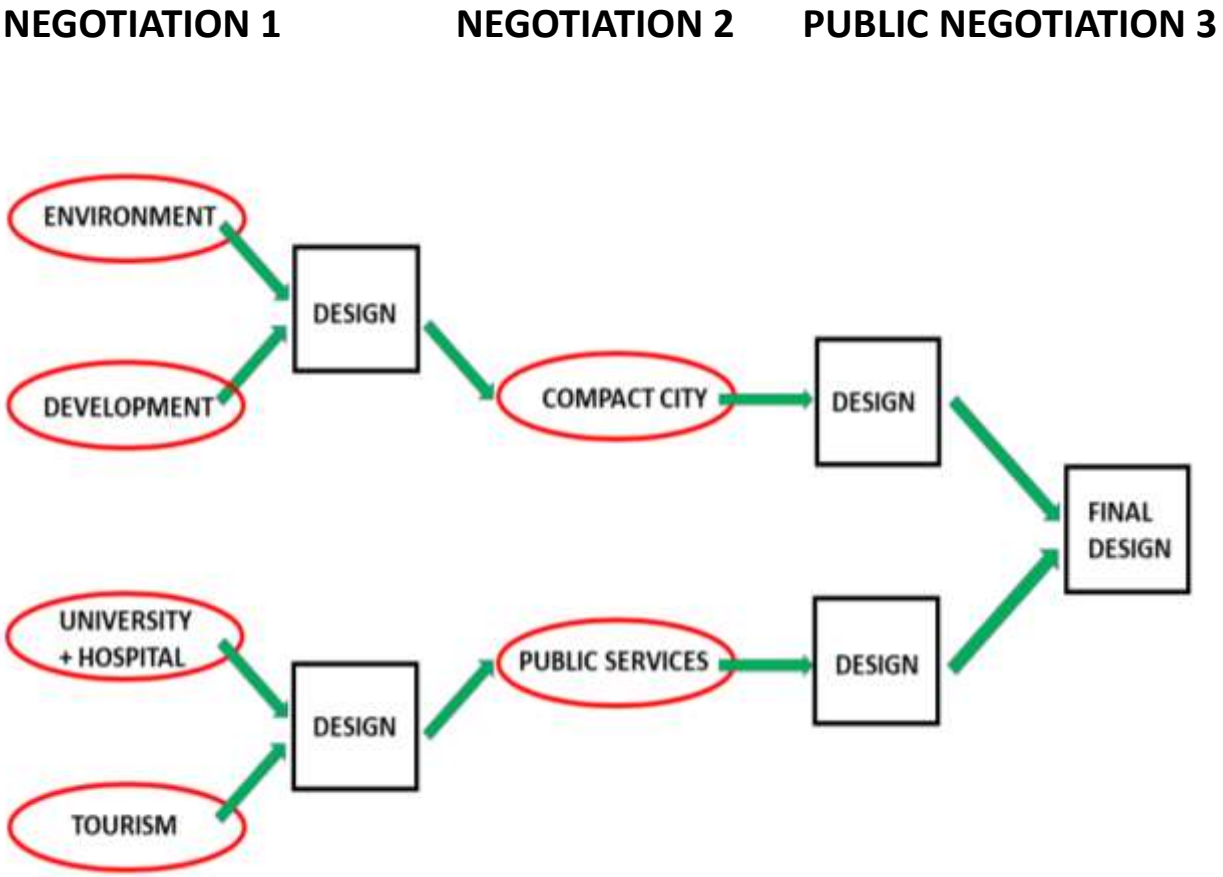
X NOT LIKELY

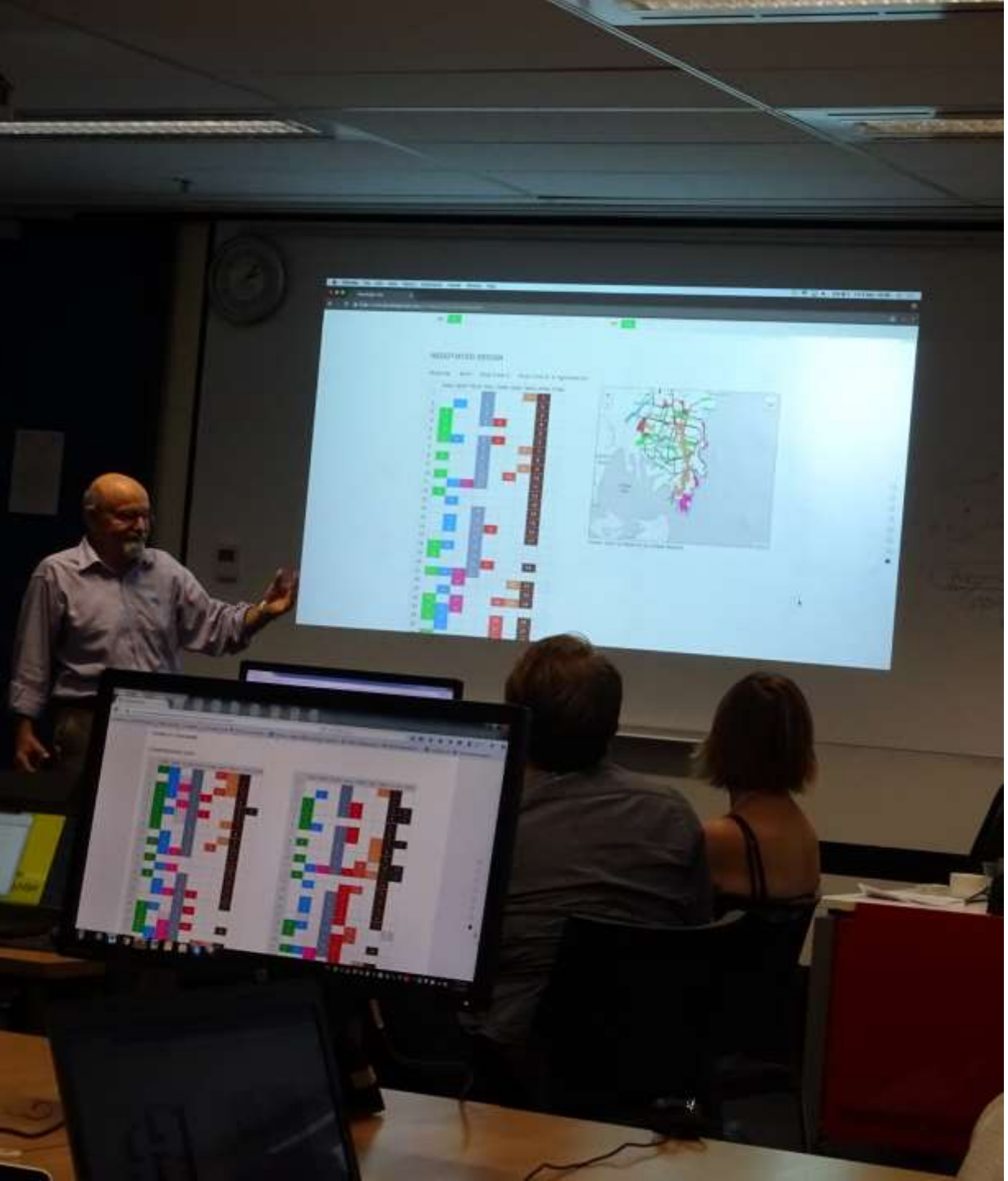
X X NEVER

REVIEWED TEAM \ REVIEWER TEAM	COMP	DEV	ENV	PUB	TOUR	UNI-H
COMP		++	++	++	++	++
DEV	+		+	+	✖	++
ENV	+	✖		++	+	+
PUB	✖	+	✖		✖✖	++
TOUR	✖✖	✖✖	++	✖		+
UNI-H	✖✖	✖	+	++	++	

Rating Legend

- ++ Likely to partner
- + Possibly
- ✖ Not likely to partner
- ✖✖ Never





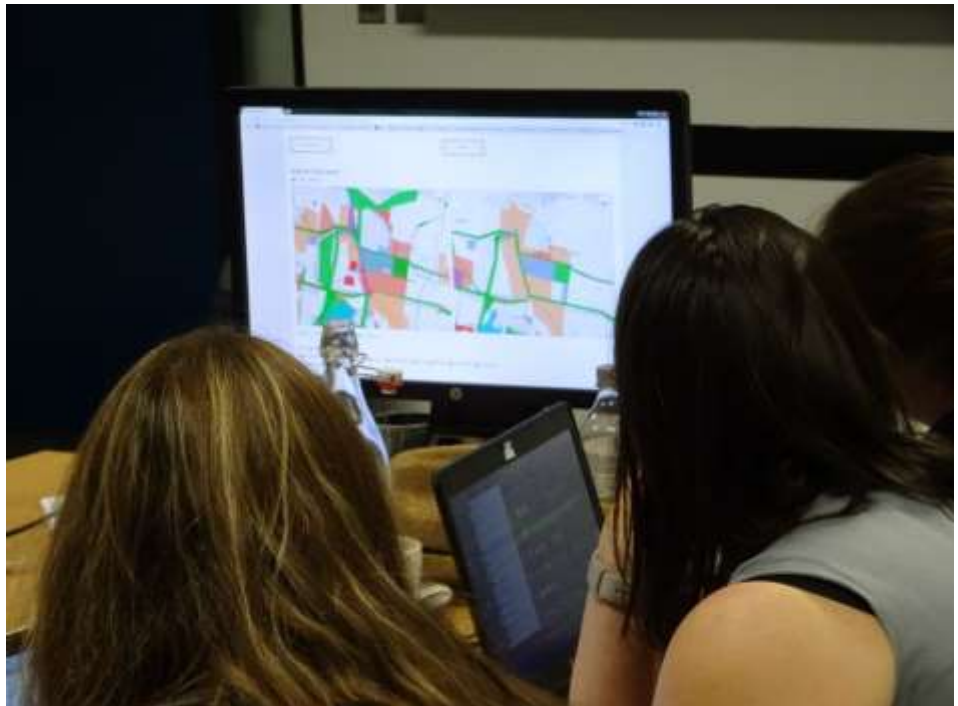

A
B
A
B
NEGOTIATORS
A conductor
RESULT
SAVE

Day 2 3:00pm
NEGOTIATION STAGE 1

DEVELOPERS
ENVIRONMENTALISTS
COMPACT

UNI-HOSPITAL
PUBLIC FACILITIES
TOURISM

EACH GROUPING
NEGOTIATES ONE DESIGN



Geodesign Hub

https://www.geodesignhub.com/p/10de5ee7c3a1ba23/design/#synTwoCompareCont

GEODESIGN HUB

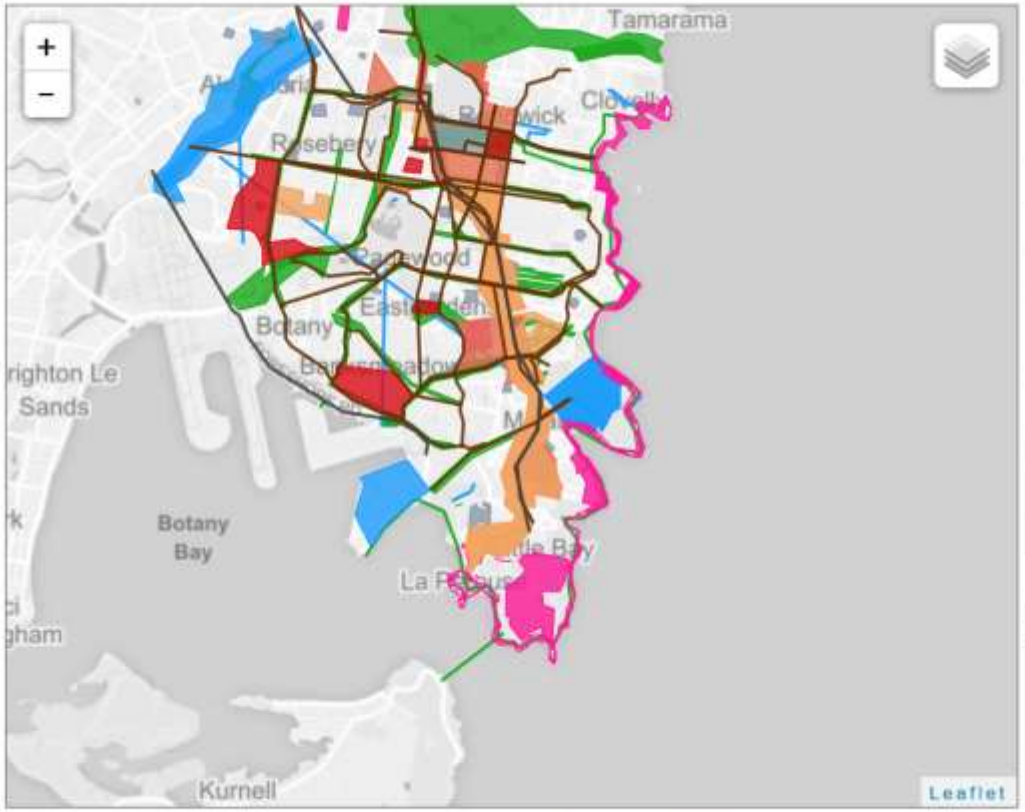
GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS

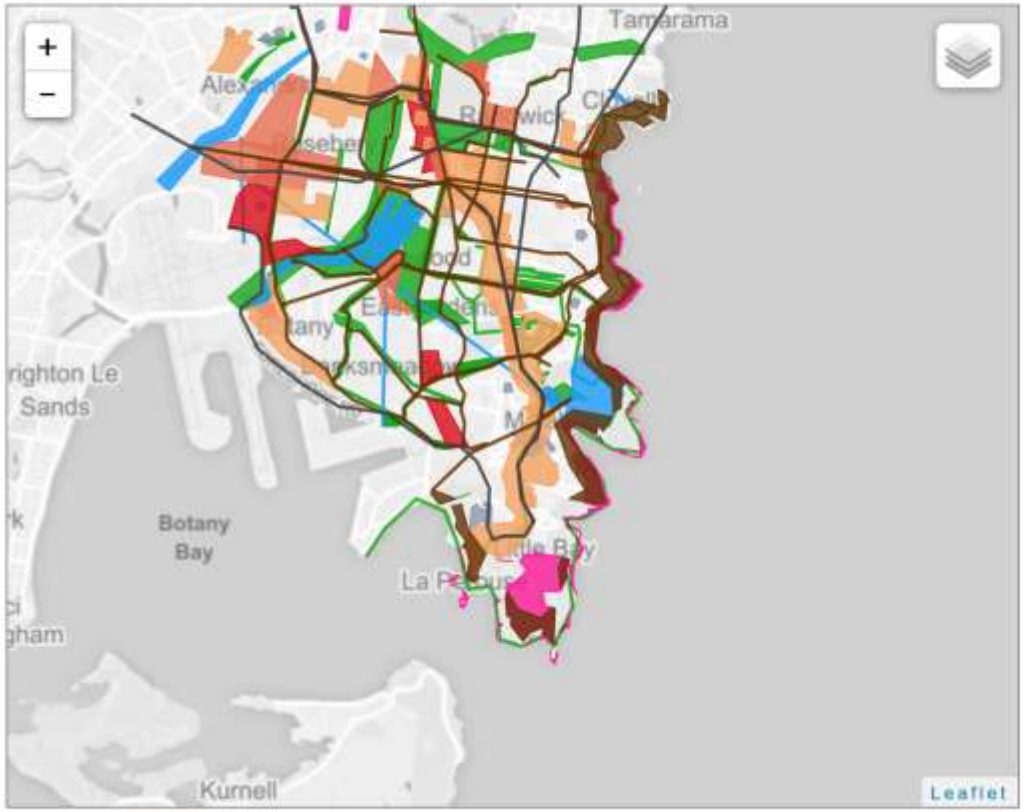
v12: DEV4.5

v10: ENV3.1

SIDE BY SIDE MAPS

Sync Maps





Ask me anything

12:50 PM
12/9/2016

Geodesign Hub

https://www.geodesignhub.com/p/10de5ee7c3a1ba23/design/#synTwoCompareCont

GEODESIGN HUB

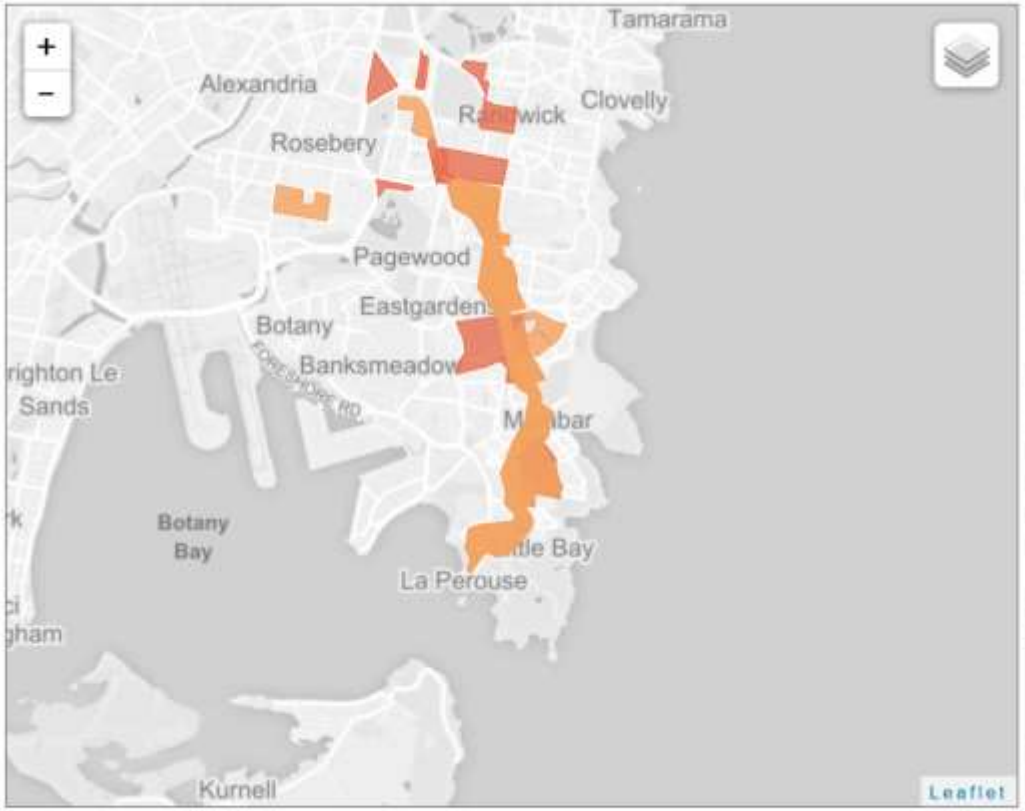
GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS

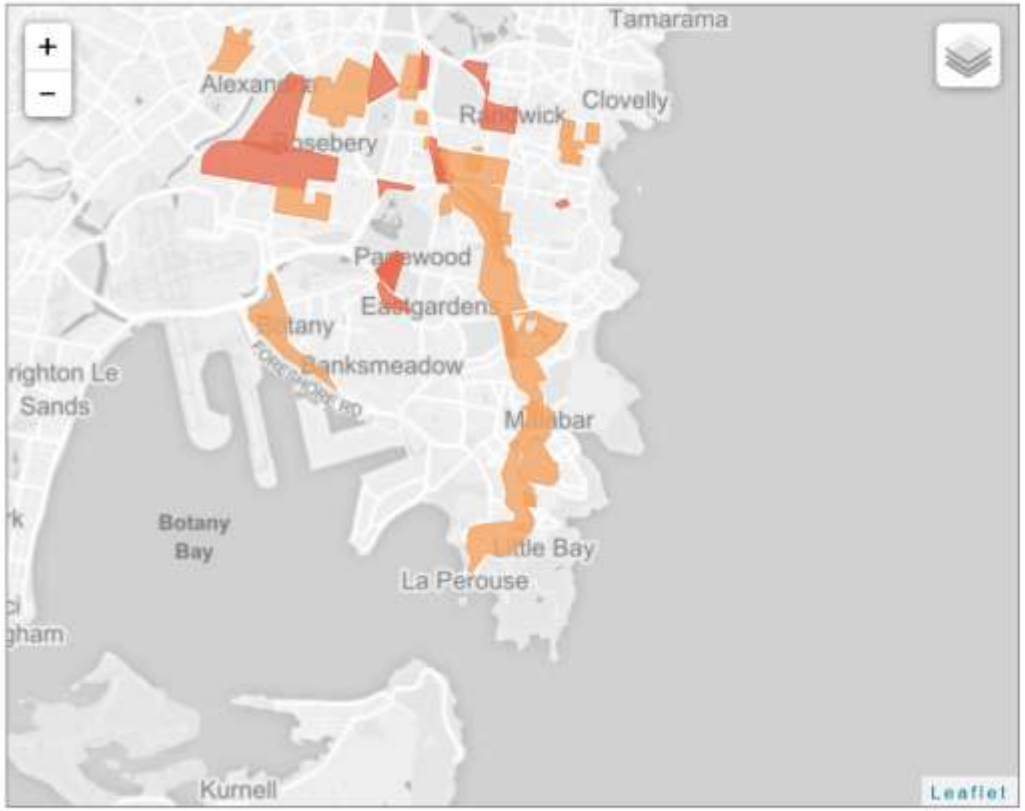
v12: DEV4.5

v10: ENV3.1

SIDE BY SIDE MAPS

☑ Sync Maps





Ask me anything

12:50 PM
12/9/2016

GEODESIGN HUB

COMPARISON GRID

	GINF	BINF	TOUR	EDU	COMI	HDH	MDH	ATRA	PTRA
1	1	1		1		1	1	1	
2		2	2	2			2	2	
3	3	3	3	3		3	3	3	
4	4	4	4	4	4			4	
5	5		5	5				5	5
6	6	6	6	6	6			6	
7	7		7	7			7	7	
8	8			8				8	
9		9		9			9	9	
10	10	10		10		10		10	
11		11	11	11				11	
12	12							12	
13		13	13					13	
14	14			14				14	
15		15		15				15	
16		16	16	16	16			16	
17				17				17	
18	18	18		18	18				
19	19		19	19					
20	20		20	20	20			20	
21	21	21	21	21					

	GINF	BINF	TOUR	EDU	COMI	HDH	MDH	ATRA	PTRA
1				1			1	1	
2		2		2				2	
3	3			3	3			3	3
4	4			4	4			4	4
5	5							5	
6	6	6		6	6			6	
7				7	7		7	7	7
8	8			8			8	8	
9				9			9	9	
10	10			10		10	10	10	10
11		11	11	11	11	11	11	11	11
12	12							12	
13		13			13	13		13	
14				14	14			14	
15		15		15	15			15	
16		16		16	16			16	
17		17		17	17			17	
18	18	18		18		18			18
19	19			19	19	19			
20				20	20			20	
21	21	21	21	21	21				

Geodesign Hub

https://www.geodesignhub.com/p/10de5ee7c3a1ba23/design/#impactNavCont

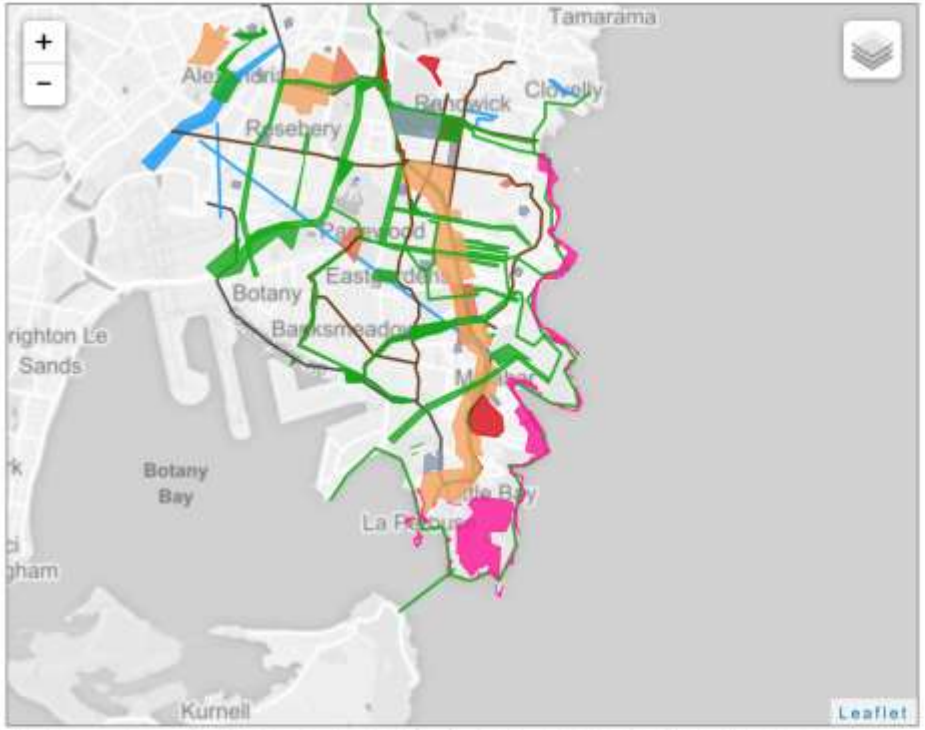
GEODESIGN HUB

THE AGREED POLICIES AND PROJECTS BEFORE THE FINAL NEGOTIATED DESIGN

NEGOTIATED DESIGN

Showing: Both Only from A Only from B • Agreements

	GINF	BINF	TOUR	EDU	COMI	HDH	MDH	ATRA	PTRA
1				1		1			
2				2					
3	3			3		3		3	
4	4			4					
5	5								
6	6			6					
7									7
8	8			8					
9				9	9			9	
10	10			10				10	10
11		11	11	11		11	11		
12	12								
13					13	13		13	
14	14			14	14				
15					15			15	
16		16		16	16			16	
17				17				17	
18	18	18		18		18			
19	19			19					
20	20			20					
21	21	21		21					



Hover over a feature on any of the two maps to show feature details.

Ask me anything

1:59 PM
12/7/2016

Day 2 3:30pm
DEVELOPING THE FINAL NEGOTIATION STRATEGY

DEV-ENV-COMP

UNIH-PUB-TOUR

Day 2 3:30pm

THE FINAL NEGOTIATION IN PUBLIC

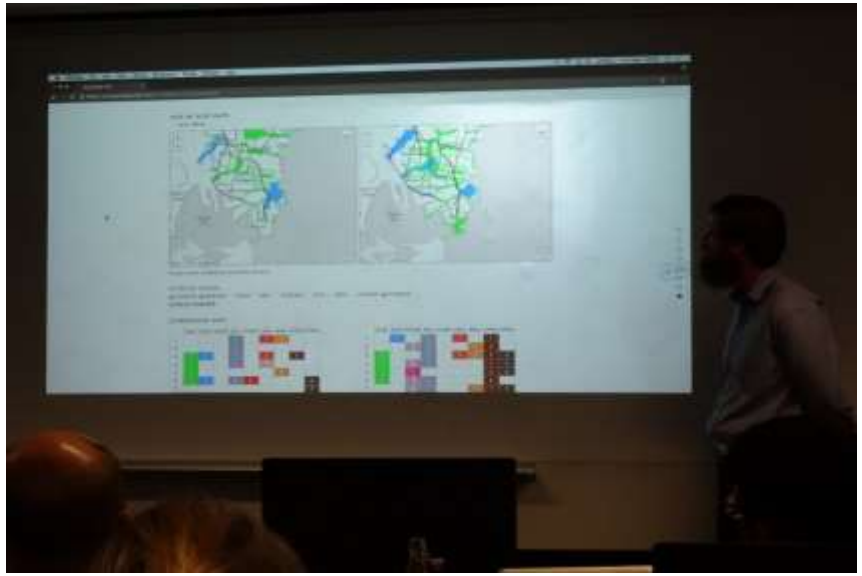
DEV-ENV-COMP

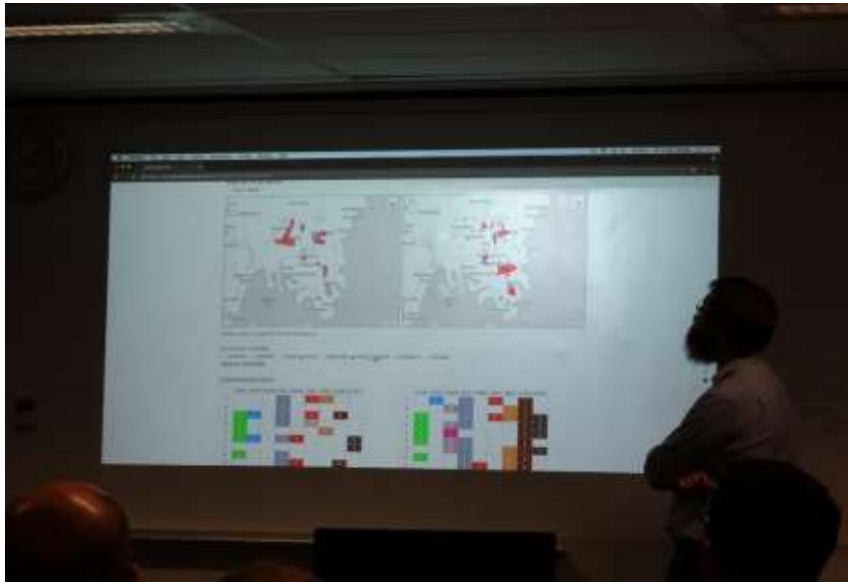
UNIH-PUB-TOUR

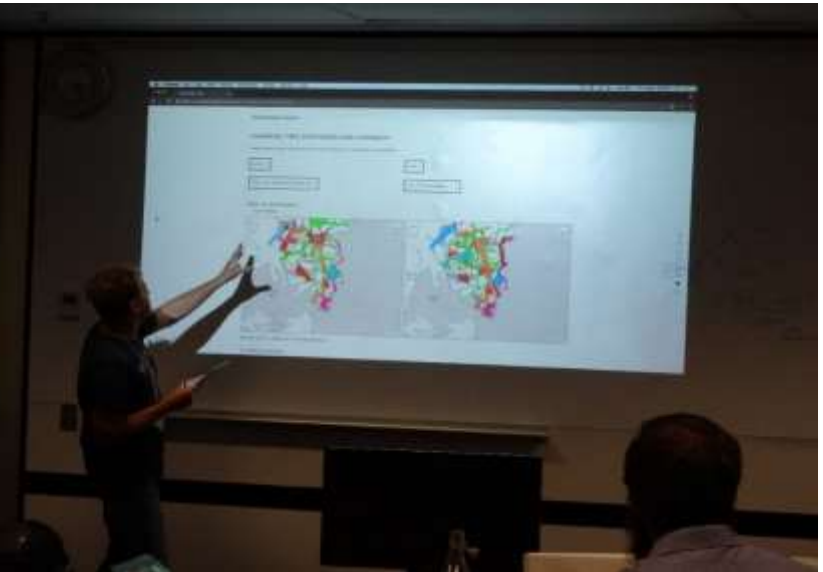
Day 2 3:30pm

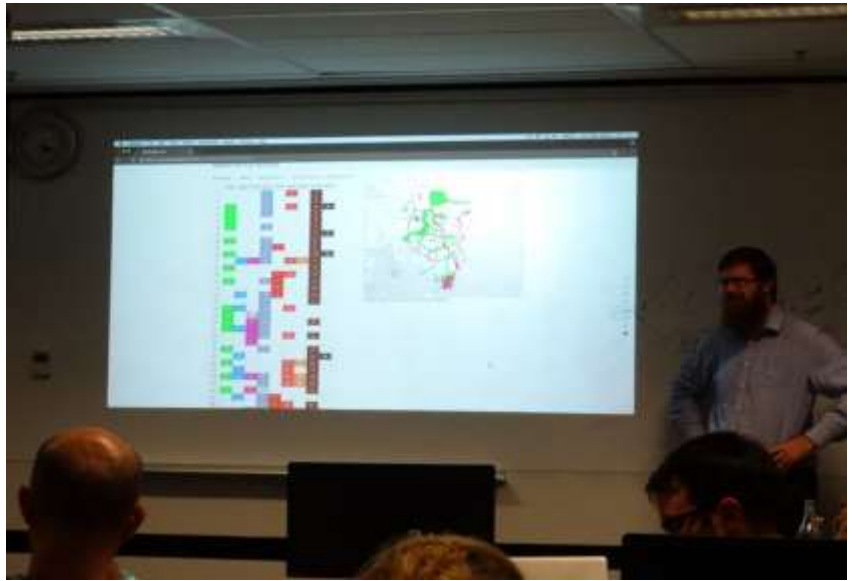
THE FINAL NEGOTIATION IN PUBLIC

DEV-ENV-COMP and UNIH-PUB-TOUR

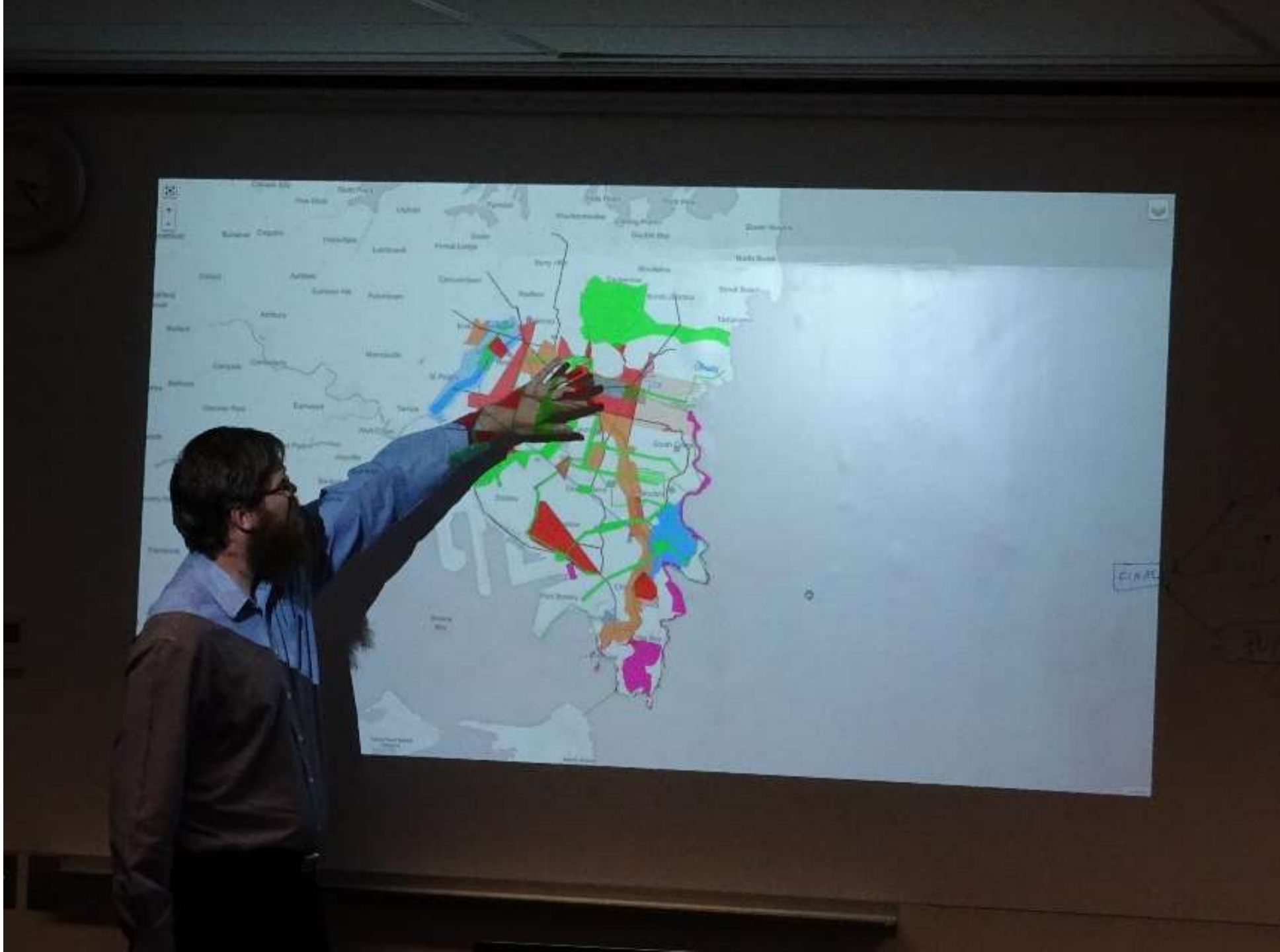








THE LAST BIG DECISION…
THE ALIGNMENT AND MAJOR STOP OF THE METRO



Geodesign Hub

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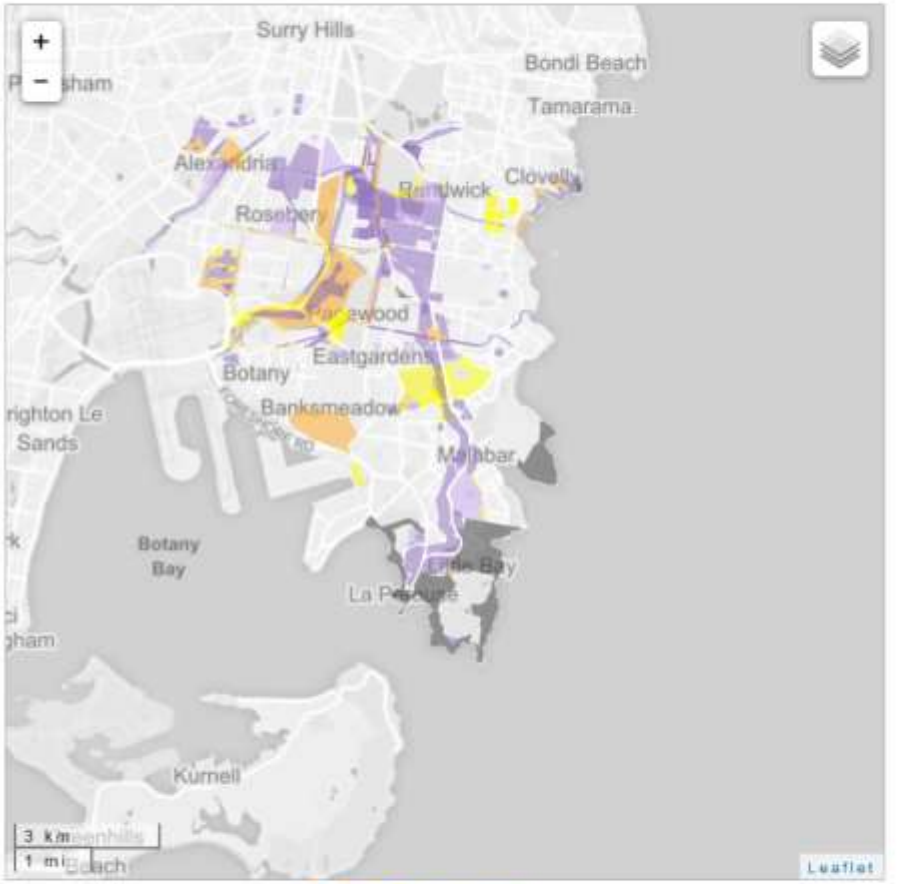
GEODESIGN HUB



TIME SCALE

Nov 2016 — Nov 2041

Nov 2015 · May 2022 · Nov 2028 · May 2035 · Nov 2041

▶ ANIMATE

Most Negative Impact ■ ■ ■ ■ ■ ■ ■ Most Positive Impact

Impacts: ● System ○ Cross System

✔ GINFRA ✔ BINFRA ✔ TOUR ✔ EDU ✔ COMIND ✔ HDH ✔ MDH

✔ ATRANS ✔ PTRANS ☐ Second Boundaries ✔ Constraints ☐ First Boundaries

N.4

DECISION MODEL

SYNTHESIS MAP

3D VIEWER

DESIGN HISTORY

PROJECTS AREA

REPORT

IMPACT SUMMARY

TOTAL COST EUR

6.5b
1.7b
17.14b
369.12m
Total: 27.19b

Ask me anything

12:09 PM
1/12/2017

Geodesign Hub

https://www.geodesignhub.com/p/10de5ee7c3a1ba23/design/#alldiagCont

GEODESIGN HUB

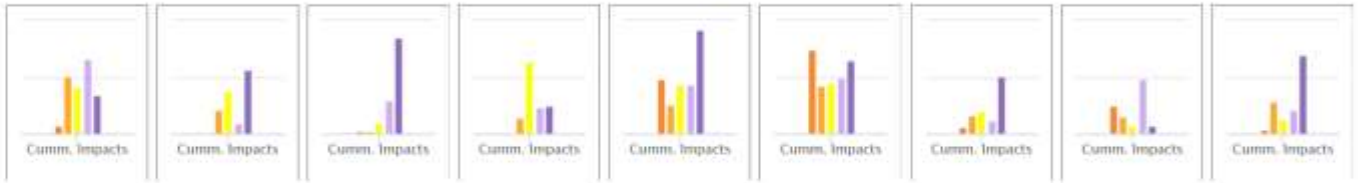
GINFRA BINFRA TOUR EDU COMIND HDH MDH ATRANS PTRANS

SYSTEM IMPACTS

SYSTEM IMPACTS AREAS

CROSS SYSTEM IMPACTS

CROSS SYSTEM IMPACTS AREAS



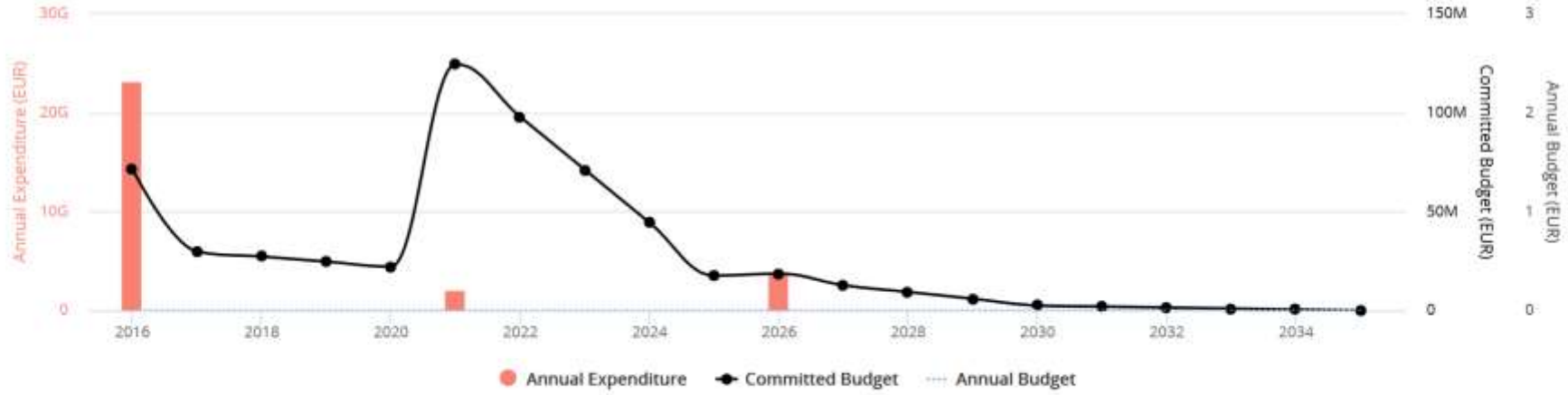
Positive Impact Neutral Impact Negative Impact

Ask me anything

12:09 PM
1/12/2017

GEODESIGN HUB

DESIGN BUDGET AND COSTS

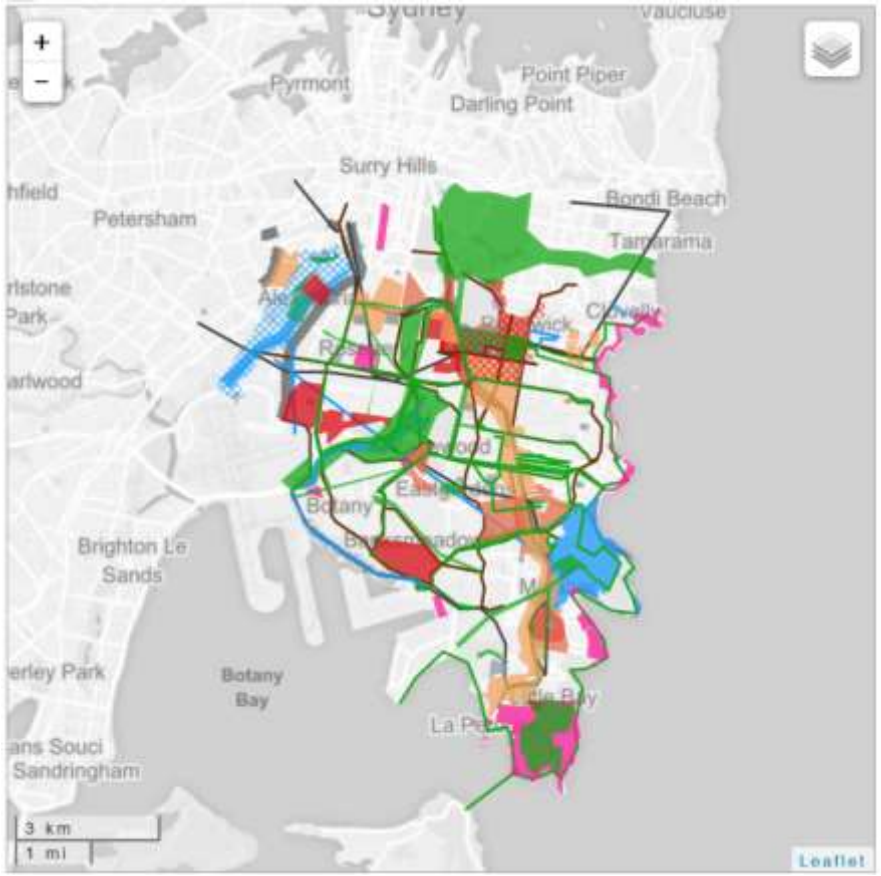


TOTAL PROJECT BUDGET: EUR 0.

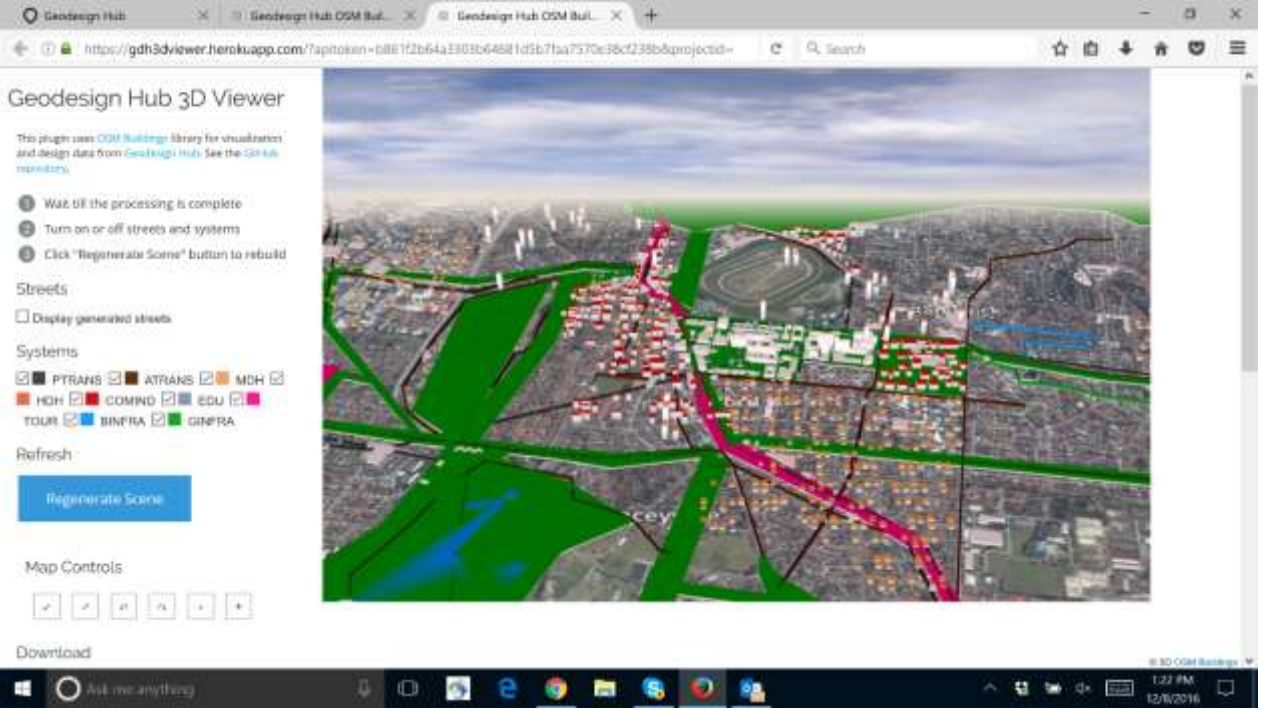
CHANGE AREA AND COSTS

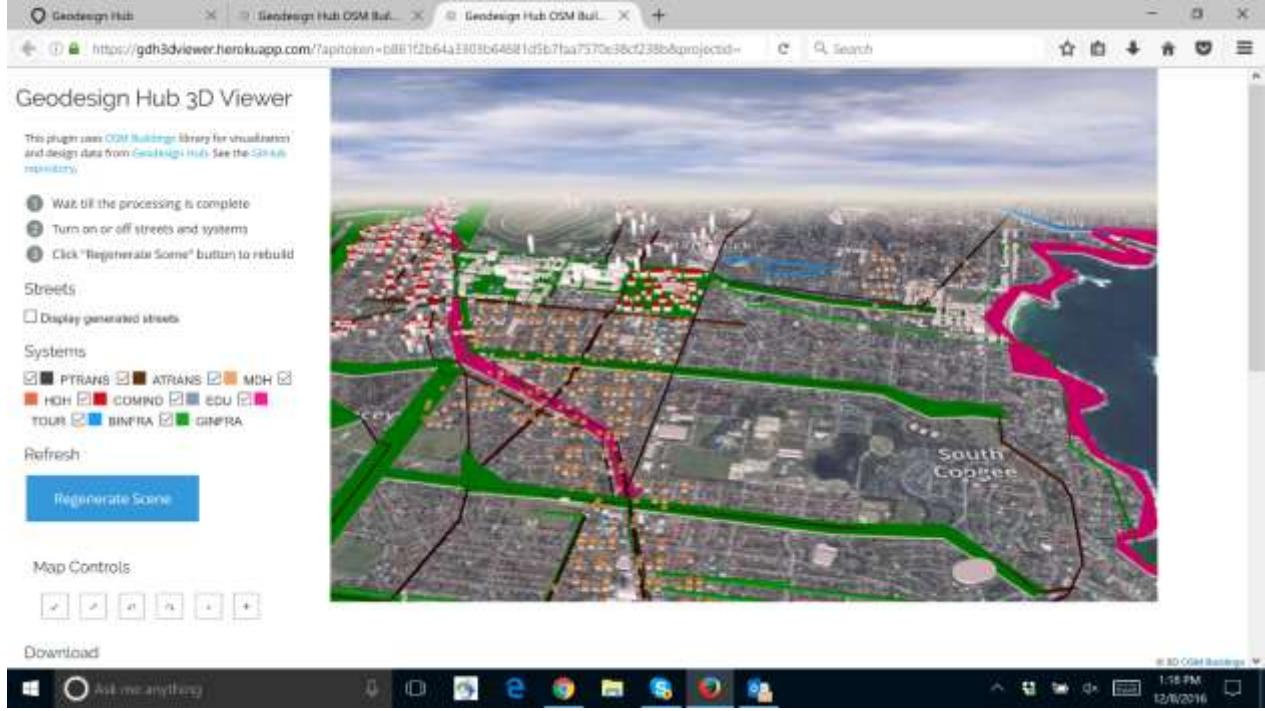
	GINFRA	BINFRA	TOUR	EDU	COMIND	HDH	MDH	ATRANS	PTRANS
Target (ha.)	700.0	400.0	200.0	200.0	200.0	300.0	900.0	50.0	15.0
Achieved (ha.)	1661.59	447.44	137.75	161.27	356.83	388.65	564.22	0.66	0.00
Costs (EUR)	1.66b	2.68b	1.79b	8.06b	357.54m	11.66m	12.98m	295.68k	0.00

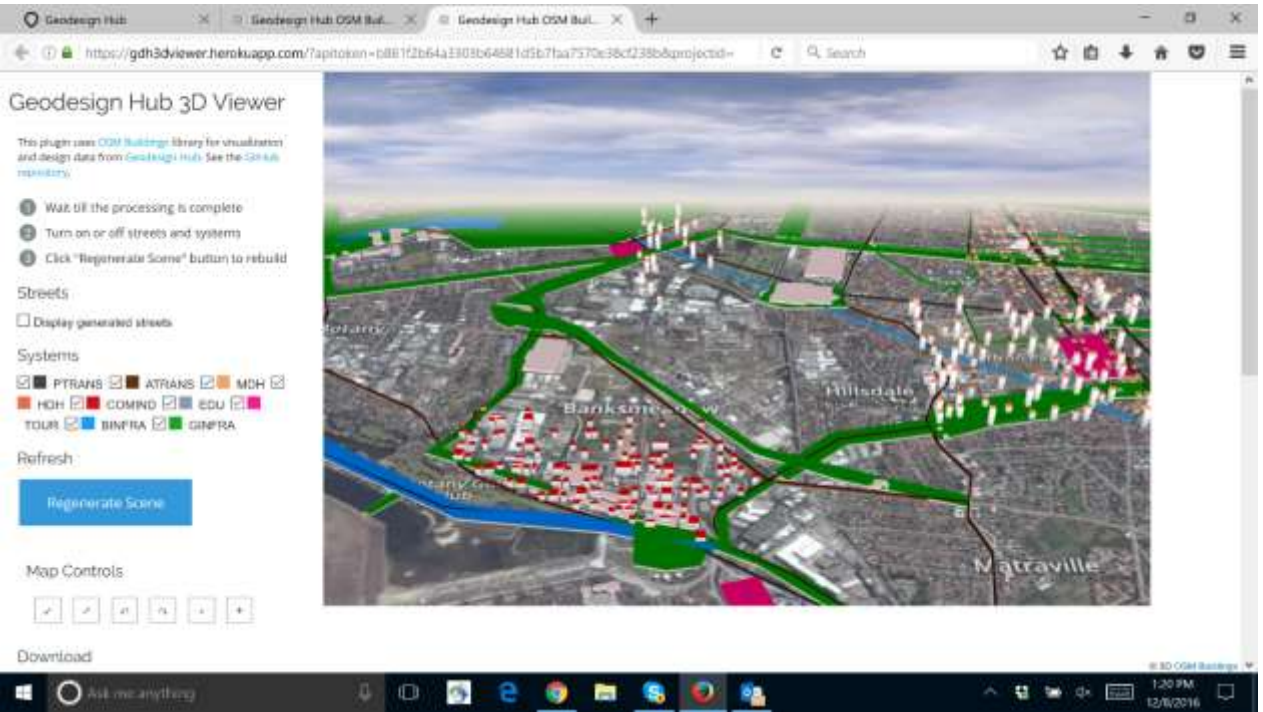
STAGING OF THE FINAL DESIGN

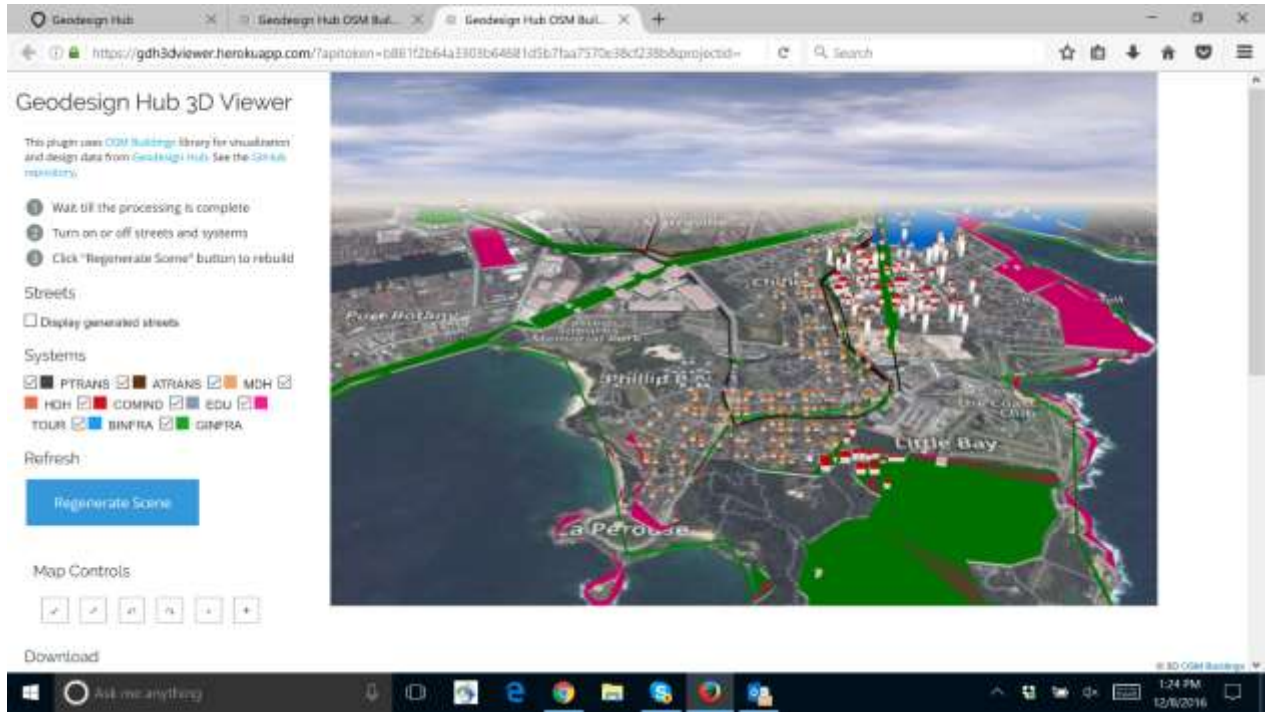


VIDEO


Geodesign Hub 3D Viewer
Wait till the processing is complete
Turn on or off streets and systems
Click "Regenerate Scene" button to rebuild
Streets
Display generated streets
Systems
PTRANS ATRANS MDH
HDH COMND EDU
TOUR BINFRA GINFRA
Refresh
Regenerate Scene
Map Controls
Download


Geodesign Hub 3D Viewer
Wait till the processing is complete
Turn on or off streets and systems
Click "Regenerate Scene" button to rebuild
Streets
Display generated streets
Systems
PTRANS ATRANS MDH
HDH COMND EDU
TOUR BINFRA GINFRA
Refresh
Regenerate Scene
Map Controls
Download
South Coopee


Geodesign Hub 3D Viewer
Wait till the processing is complete
Turn on or off streets and systems
Click "Regenerate Scene" button to rebuild
Streets
Display generated streets
Systems
PTRANS ATRANS MDH
HDH COMND EDU
TOUR BINFRA GINFRA
Refresh
Regenerate Scene
Map Controls
Download
Hillsdale
Natraville


Geodesign Hub 3D Viewer
Wait till the processing is complete
Turn on or off streets and systems
Click "Regenerate Scene" button to rebuild
Streets
Display generated streets
Systems
PTRANS ATRANS MDH
HDH COMND EDU
TOUR BINFRA GINFRA
Refresh
Regenerate Scene
Map Controls
Download
Little Bay
La Perouse

Day 2 5:00pm
REVIEW AND DISCUSSION
END

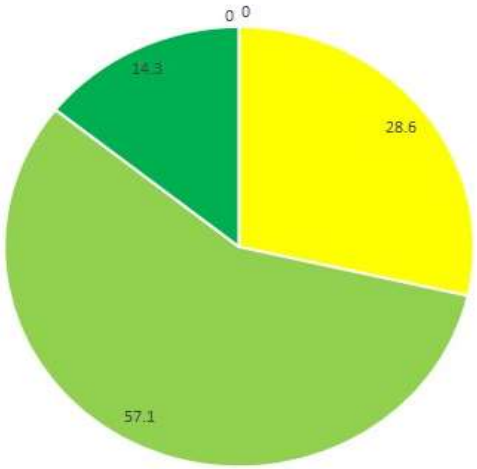
HISTORY OF THE DEVELOPMENT TEAM'S DESIGN DEVELOPMENT AND NEGOTIATION

TEAM'S.....NEGOTIATION.....

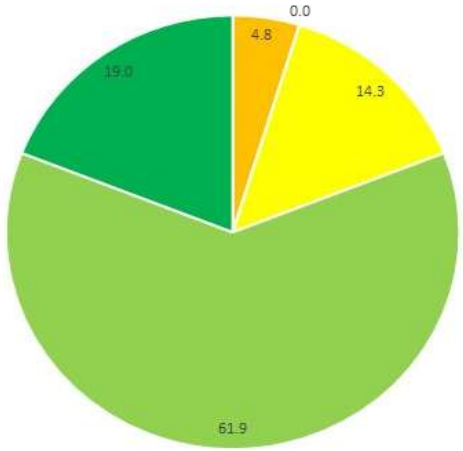
INITIAL | VERSION 1 | VERSION 2 | VERSION 3 | VERSION 4 | VERSION 5 | FINAL DESIGN

Feedback from participants

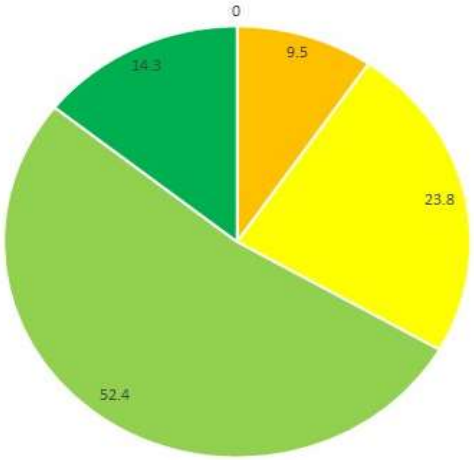
Did you find the Geodesign process difficult or easy to follow?



How well do you think your team's interests were addressed or included in the final proposal?



Do you agree with the final proposal?



- Difficult
- somewhat difficult
- fair
- somewhat easy
- easy

Which workshop tools/resources did you find most helpful and/or influential?

- Negotiation process
- Geodesignhub’s tools for comparing different team designs

Roderick Simpson
Environment Commissioner, Greater Sydney Commission
Professor, University of Sydney

“The Geodesign approach is most effective in dealing with complexity and emergence of the city in the context of the the city as a mosaic of places- this is an approach that is gaining currency at the Greater Sydney Commission. Place-based planning allows a wide range of factors to be considered concurrently by reducing the scale not the scope. It also allows a contextually specific response which Geodesign supports”.

“The selection process and negotiation in the geodesign process could be considered a form of emergence, particularly if emergence is seen to be a pattern or an idea that gains prominence. This is through the negotiation process and consensus - which is where the geodesign process adds significant value.”

1999

Designing a scenario-based study of alternative futures is an Art..
it requires judgement

It is NOT a science.. although it depends on science
There are NO perfect formulae... but there are methods
There is NO universal "tool-kit"... but there are "tools"
You cannot copy an example... but you can gain experience