

OPEN SOURCE OPPORTUNITIES IN GIS

Summer School

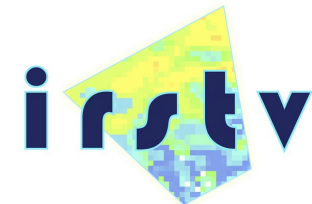
28th June - 9th July, 2010. Girona



Erasmus IP

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Partners Contribution



Partner Collaboration



Universitat de Girona
Departament de Geografia

Analysis of Vulnerability of flooding area in Girona, Spain

Zhe Zhang
Bogdan Apostol
Caro Coll
Ricky Jacob

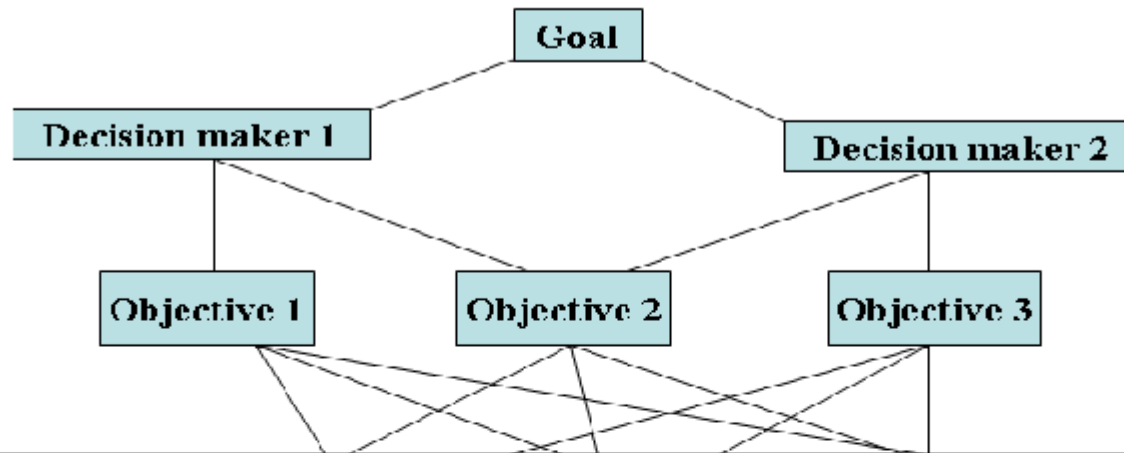


Motivation

Girona is a place with a high flood risk. So it's necessary to study this risk, how it is distributed along the different places and how we can react in an flooding episode. On the other hand, it's necessary to make this information accessible to everybody in an open source.



Decision Making: Multi-attribute value theory

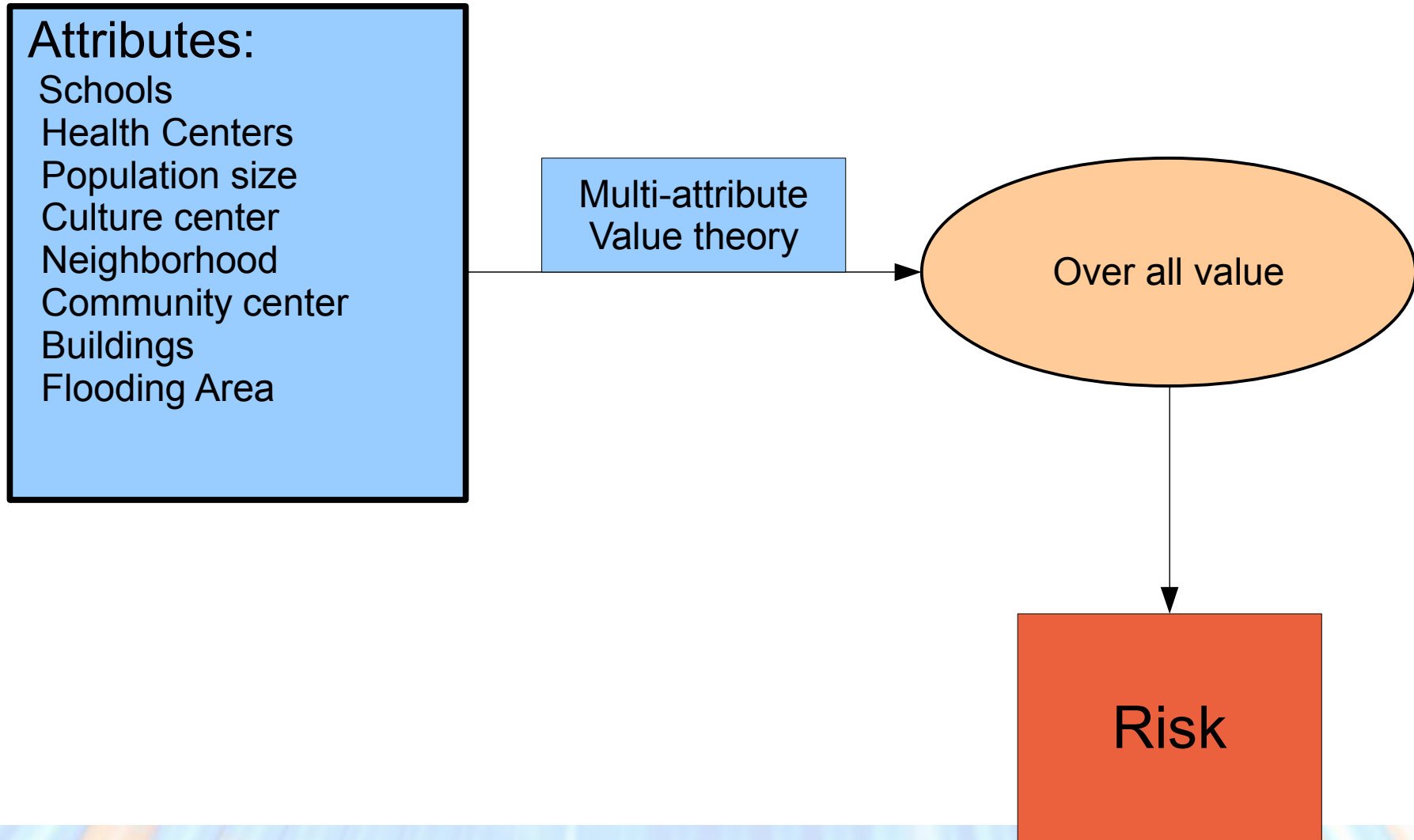


	Attribute 1 (Cut edge)	Attribute 2 (Betweenness)	.....	Attribute n (Population size)	Overall value (Additive model)
Alternative 1	Outcome 11	Outcome 12	... ..	Outcome 1n	Outcome 11 * Weight 1 + Outcome 12 * Weight 2 + Outcome 1n * Weight n
Alternative 2	Outcome 21	Outcome 22	... ..	Outcome 2n	... ..
...
Alternative m	Outcome m1	Outcome m2	... ..	Outcome m3	... ..
Preferences	Weight 1	Weight 2	... ..	Weight n	... ..

Swing Weighting Method

- Decision maker was asked to give 100 points to the most preferred attribute, and less than 100 point to the other attributes that relevant to the most important attribute.
- Results are normalized

Methods



Technical Solution

- All the shape files are imported to the orbisGIS, and exported to Postgres
- We select all the attributes(schools, buildings...) within the flooding area, and merge them into one table.

Flooding Area	Schools	Population	...	Community	Overall value
1	0	38		0	
2	2	0		0	
...					
10	0	3		2	

Open Layers

Applications Places System Thu Jul 8, 9:06 PM summerschool

Girona - Flooding Risk Map - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost/home.html

Most Visited Getting Started Latest Headlines

Girona - Flooding Risk Map

GetMap!

Please Set Weight:

Buildings:
0.09

Community Centers:
0.06

Cultural Centers:
0.15

Health Centers:
0.18

Neighbour:
0.09

Population:
0.26

Schools:
0.21

Base Layer

- Mapnik
- Osmarender
- CycleMap
- OpenLayers WMS

Overlays

- Markers
- Vector Layer
- Polygons-Drogheda

Done

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GetMap!

Please Set Weight:

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Data - local (localhost:5432) - postgres - a360

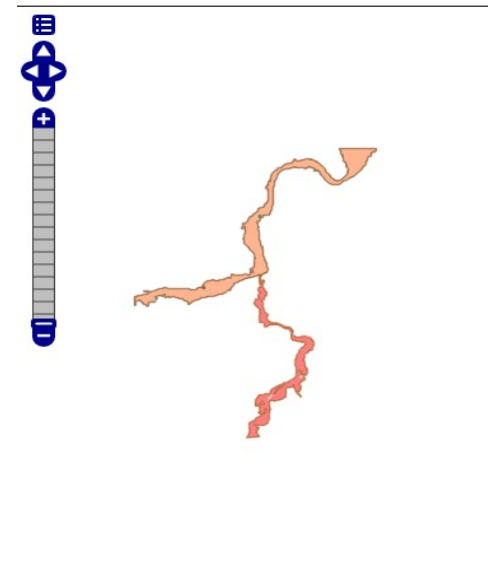
No limit

ulation nt	Neighbour bigint	wresult double pr	s1 double pr	b1 double pr	c
0	0	0	0	0	0
4	0.01636363	0	0	0	0
1	0.00409090	0	0	0	0
1	0.00409090	0	0	0	0
1	0.00409090	0	0	0	0
4	0.33303030	1	1	0	0
4	0.18668883	0	0	0	1
5	0.15801552	0	0	0	0
1	0.26953806	0	0	0	0
1	0.00409090	0	0	0	0

WMS Settings

Default Style
style_poligon

- 0 to 0.0041
- 0.041 to 0.0164
- 0.0164 to 0.35
- 0.35 to 0.36
- 0.36 to 0.38
- 0.38 to 0.63



Applications Places System Thu Jul 8, 9:28 PM summerschool

Girona - Flooding Risk Map - Mozilla Firefox

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Data CC-BY-SA by [OpenStreetMap](#)

Done

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Thank You!