

A method based on **samples** to capture user needs for generalisation

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The automation of generalisation

- Most of today approaches relay on constraints
 - ⇒ Mimic cartographers
 - Apply a set of algorithms one after the other to gradually solve the conflicts
 - e.g. Agent Techniques
 - ✂ Apply a global method that changes the co-ordinates up to a balance
 - the same algorithm is applied iteratively
 - e.g. Harrie, 02 ; Bader; 00
 - ✂ Try different combinations of solutions and take the best
 - simulated annealing techniques
 - e.g. Ware and Jones 03

Constraints ...

- a convenient way to represent the final product specifications
- Constraints are **functions** on objects **properties** :
 - on each object :
 - **size** (building) > 200m²
 - **granularity** (geometry(building)) > 10m
 - | **elongation** (obj-ini) - **elongation** (obj-fin) | < 0.2
 - two objects :
 - **minimum-distance** (obj1, obj2) > 5m
 - a set of objects :
 - **density** (objects) < 0.8
 - | **density** (objs-ini) - **density** (objs-fin) | < 0.2

But

- to obtain different types of generalisation (fitness for use) it is necessary to be able to **specify (parametrise) the functions of constraints**
- e.g. Building constraints :
 - **size** (building) > **200m²**
 - **granularity** (geometry(building)) > **10m**
 - | **elongation** (obj-ini) - **elongation** (obj-fin) | < **0.2**

**How to allow a user to introduce his
requirements**

**without being
an expert on generalisation?**

AND EVEN WORSE

an expert on the system of generalisation ?

CARTABLE

- a system to acquire (to understand) user need
- that presents only WHAT THE (GIS) SYSTEM CAN DO

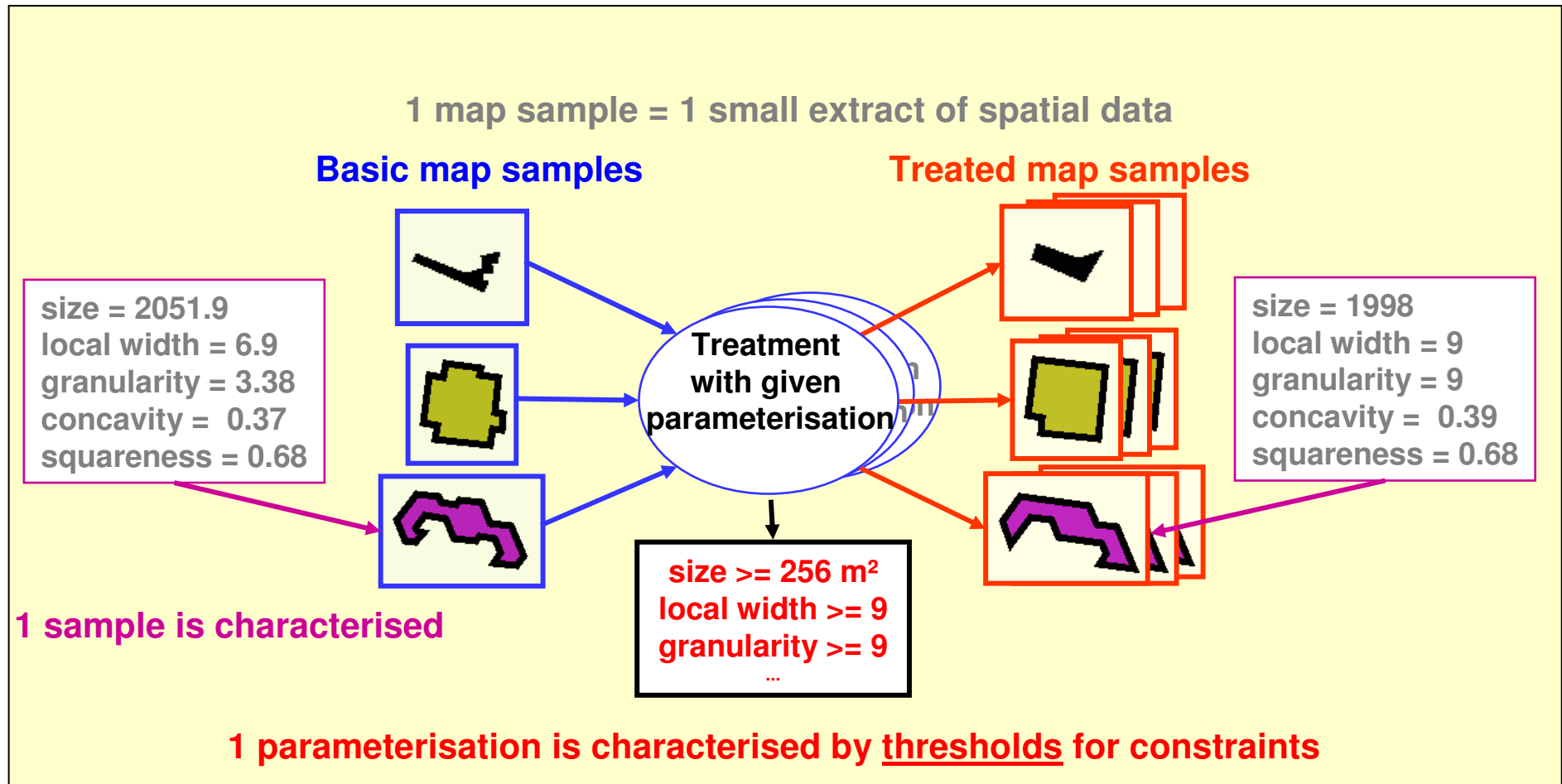
- **STEPS :**
 - **THE USER SEES SOME IMAGES OF DIFFERENT RESULTS**
 - **HE CHOOSES THE ONES THAT ARE CLOSE TO HIS NEEDS**
 - **THE SYSTEM 'INTERPRETS' THE USER CHOICES**
 - AFTER THE DETECTION OF THE APPROPRIATE CHOICE THE PROCESS IS SPECIFIED

CARTABLE

for the parametrisation of Buildings generalisation

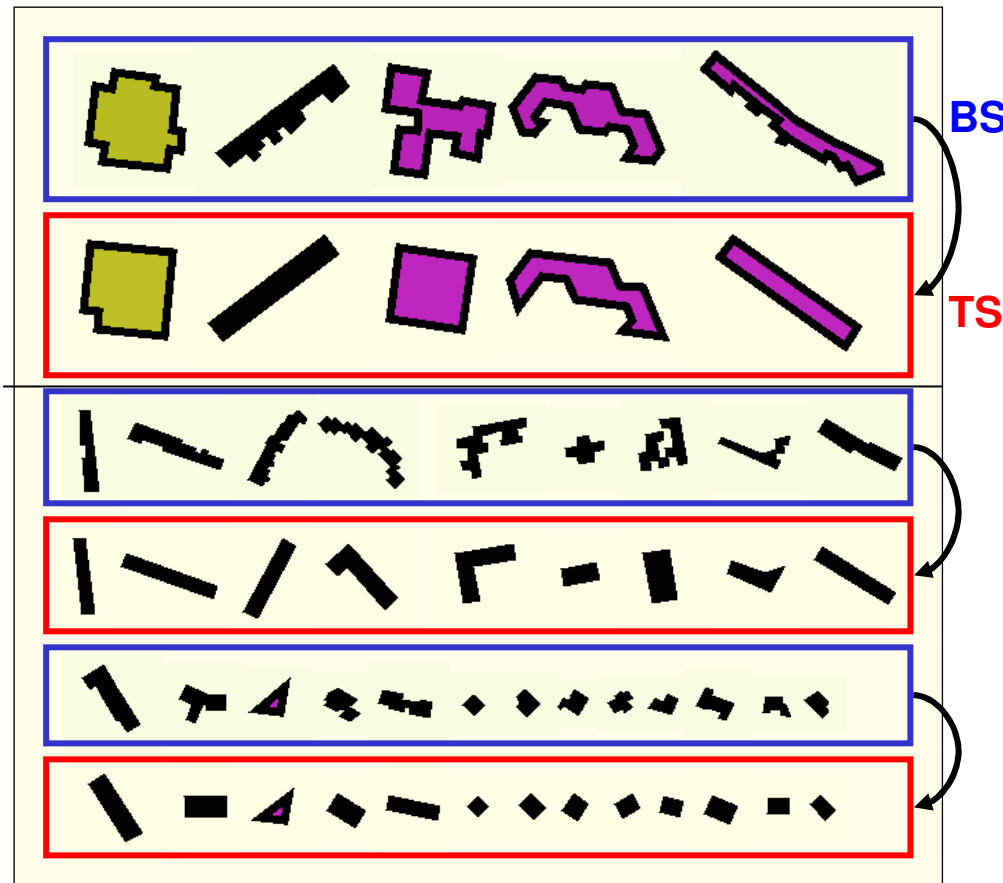
- we name SAMPLES the pre-generalised objects
 - **SAMPLES ARE ALREADY GENERALISED OBJECTS WITH A SPECIFIC PARAMETRISATION OF CONSTRAINTS**
- the user chooses already generalised buildings
- the system **deduces** the appropriate parameter values of the constraints function by means of a *mechanism of convergence*

Map sample

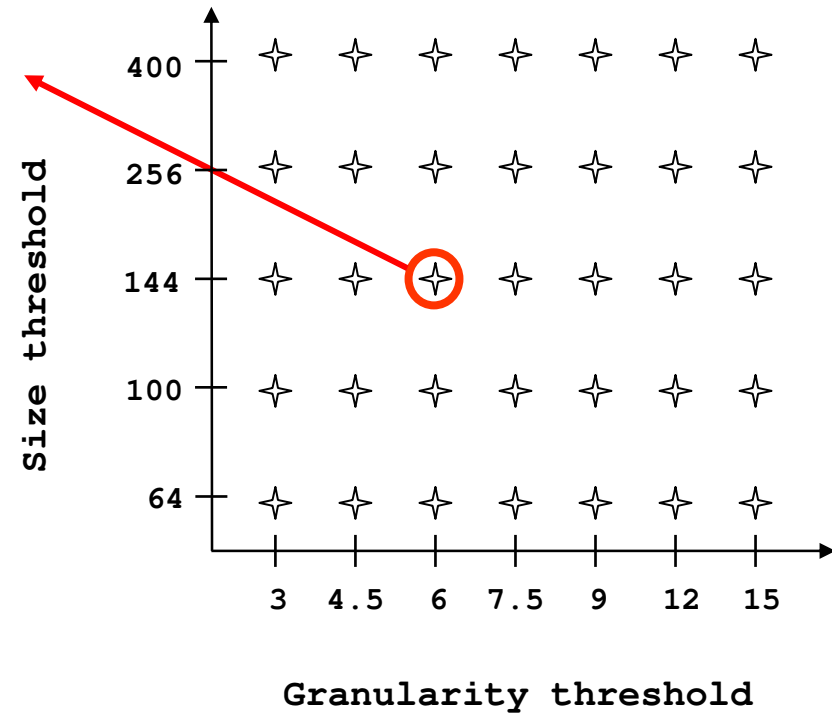


BECAUSE OF GENERALISATION COMPLEXITY

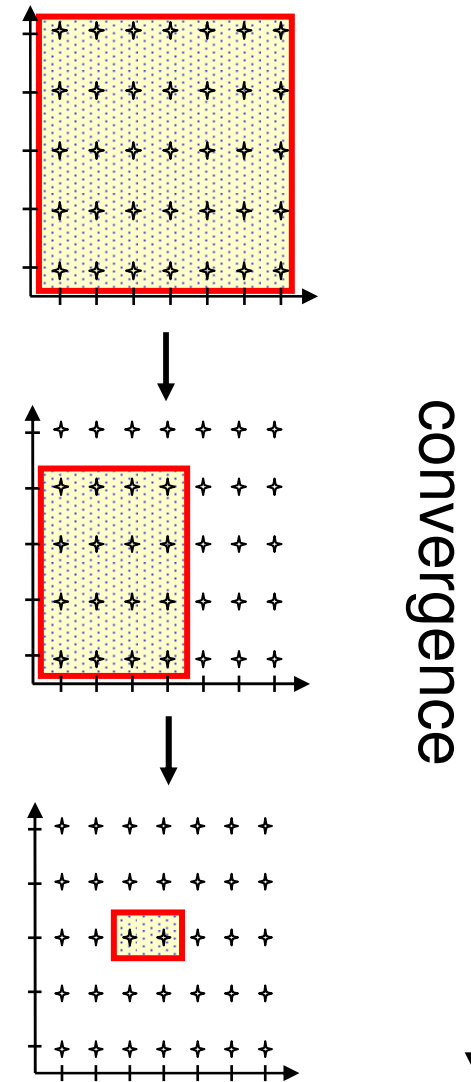
IT IS NECESSARY TO PROPOSE MORE THAN ONE SAMPLE ...



Possible parameterisations



The aim of the Dialogue is to gradually reduce a solution space



The sample manager

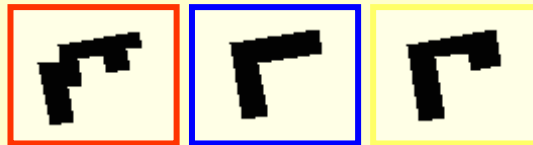
1- propose parameterisations

propose a restricted set of samples

3 basic and 3 treated map samples



BS1



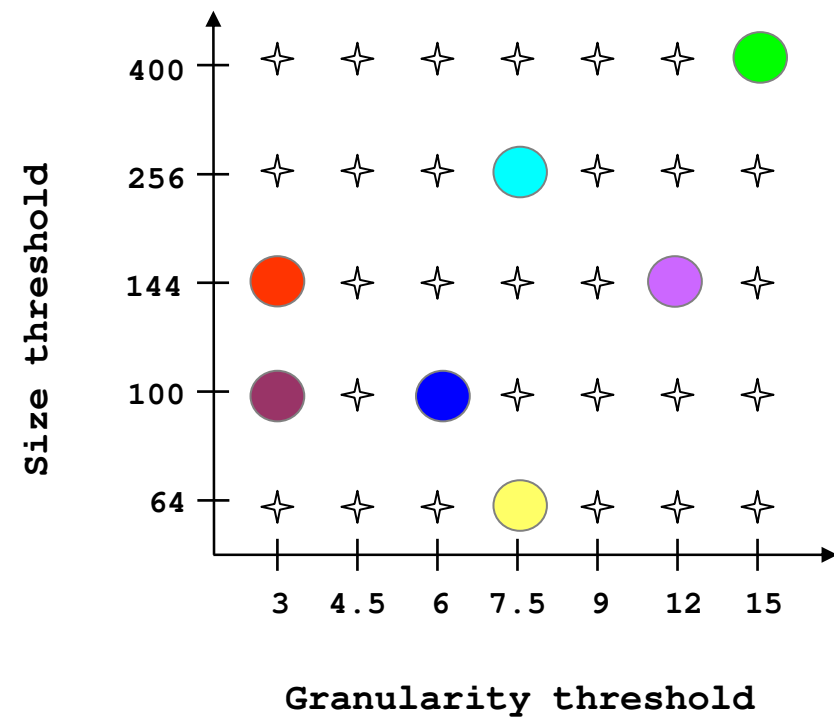
BS2



BS3



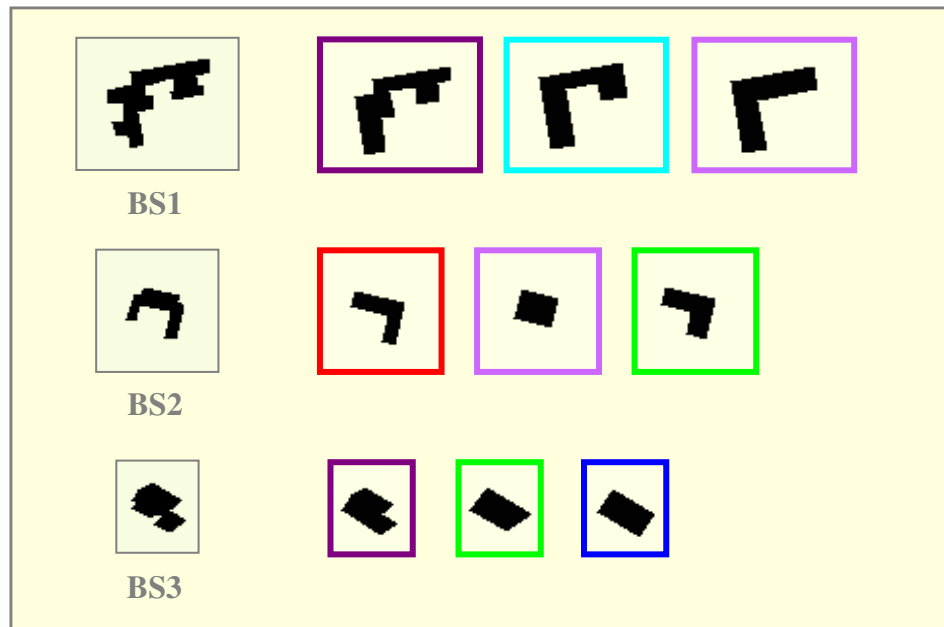
Possible parameterisations



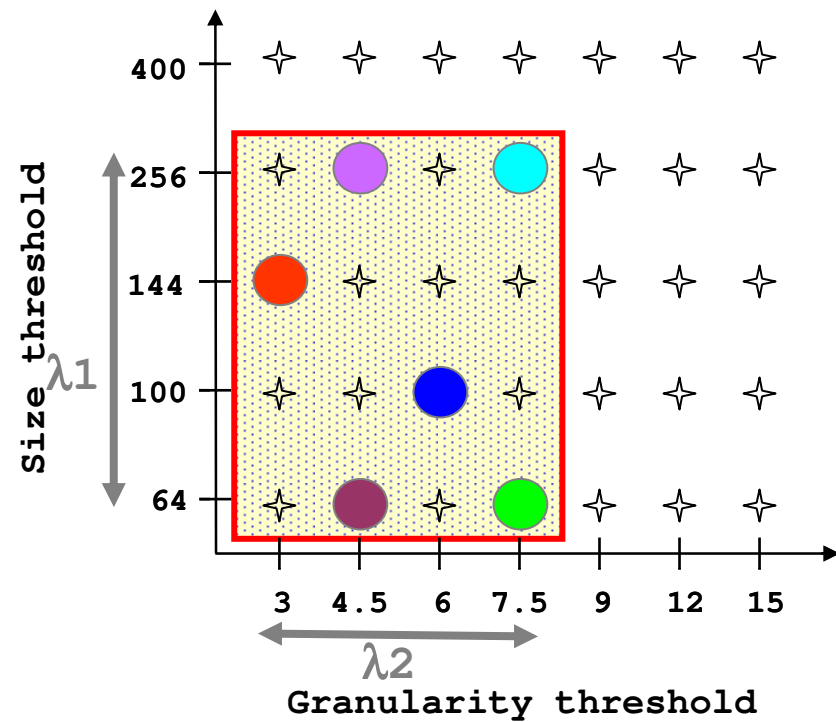
2- interpret the user reactions

3- seek for a solution

→ Convergence Analysis



Possible parameterisations



User Interface

FRED DEMO....

Conclusion

- **The use of map samples is a new space of research to interact with users on the Web.**
- **Fred prototype runs and includes a Web interface, a dialogue module and a map samples manager. Convergence analysis is implemented.**

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