

ACTIVITAT EN: *DESIGN THINKING* I GEOINFORMACIÓ - 1

Àrea d'Observació de la Terra (CS_PCOT)

Dr. Jordi Corbera

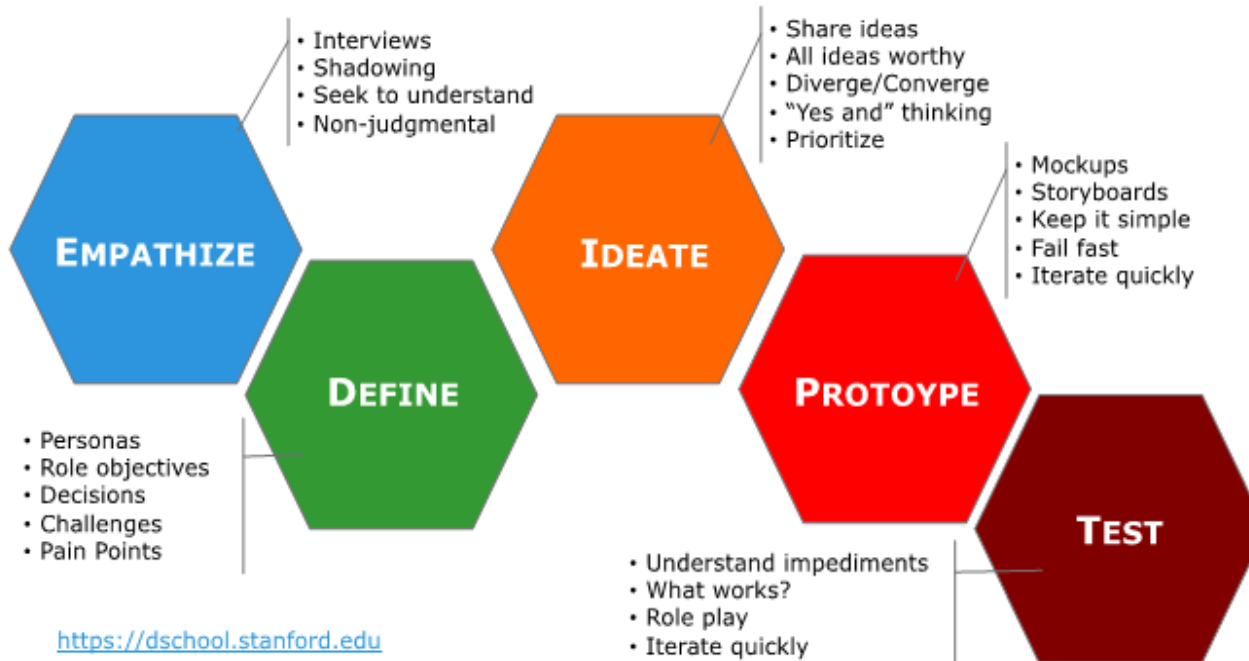
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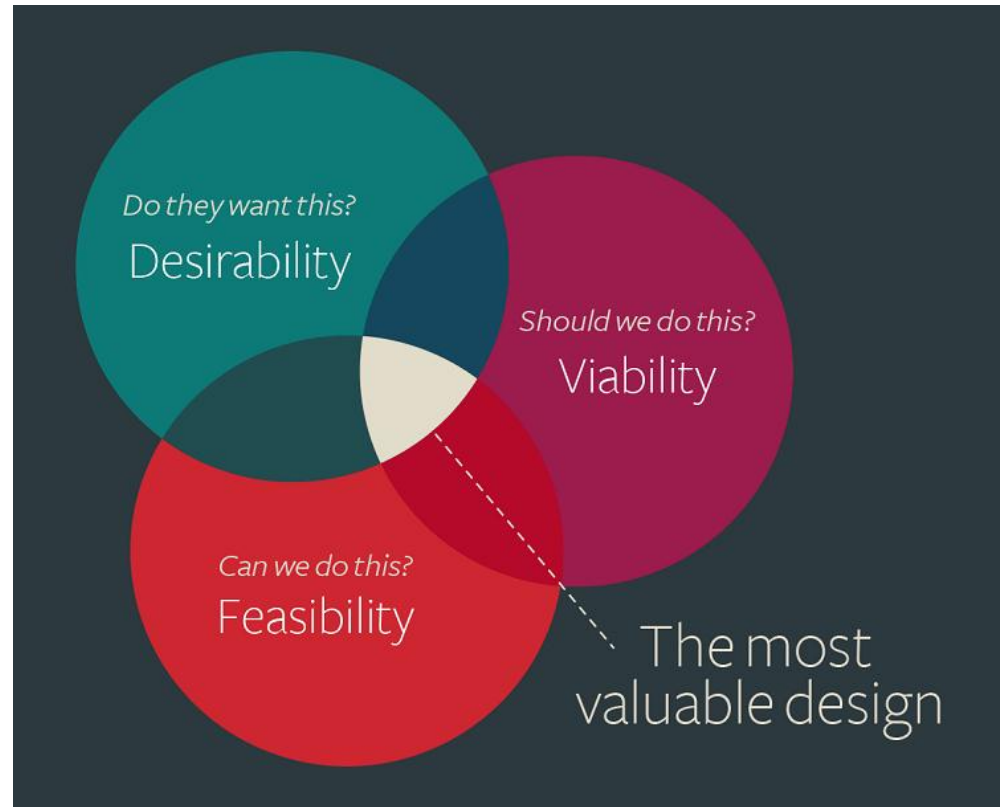
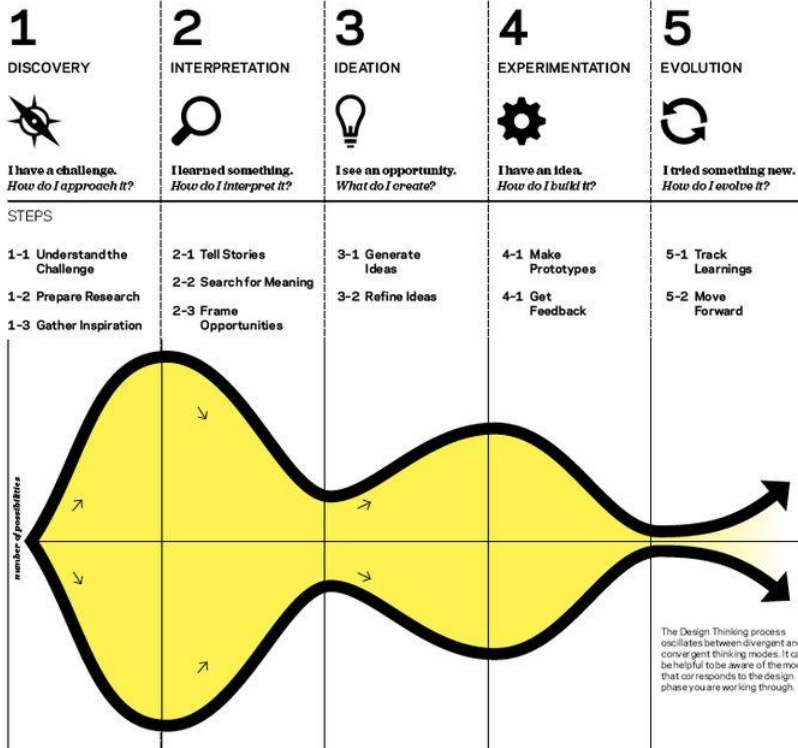
Design thinking

Design thinking can be described as a discipline or set of creative strategies to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity.

Stanford d.school Design Thinking Process

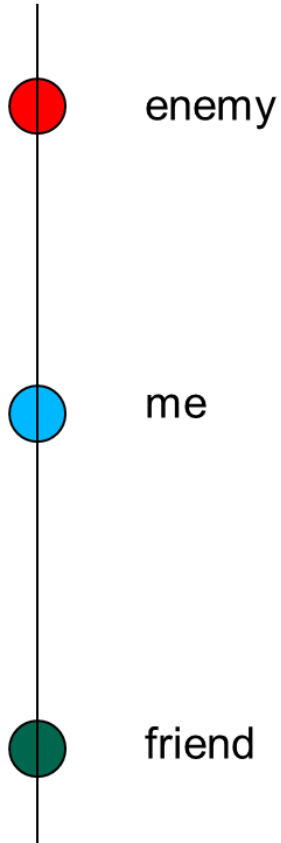


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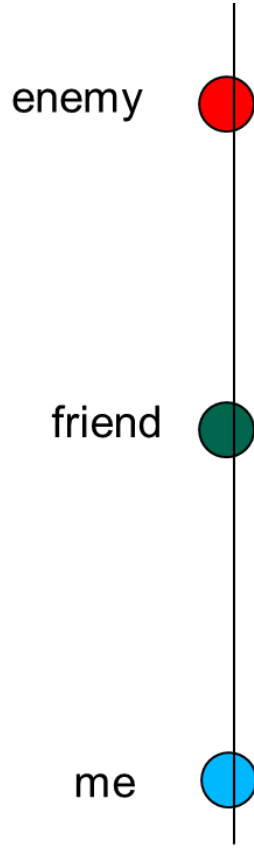


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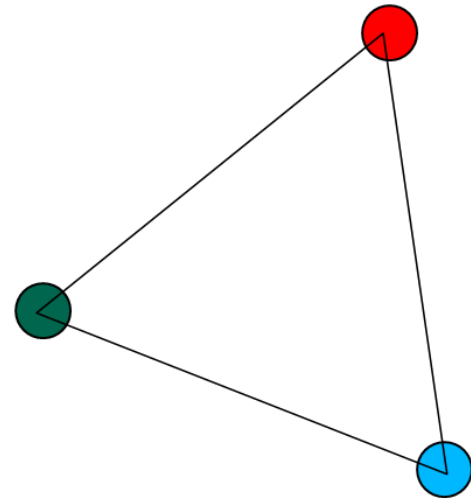
STEP 1



WARM UP 1



WARM UP 2



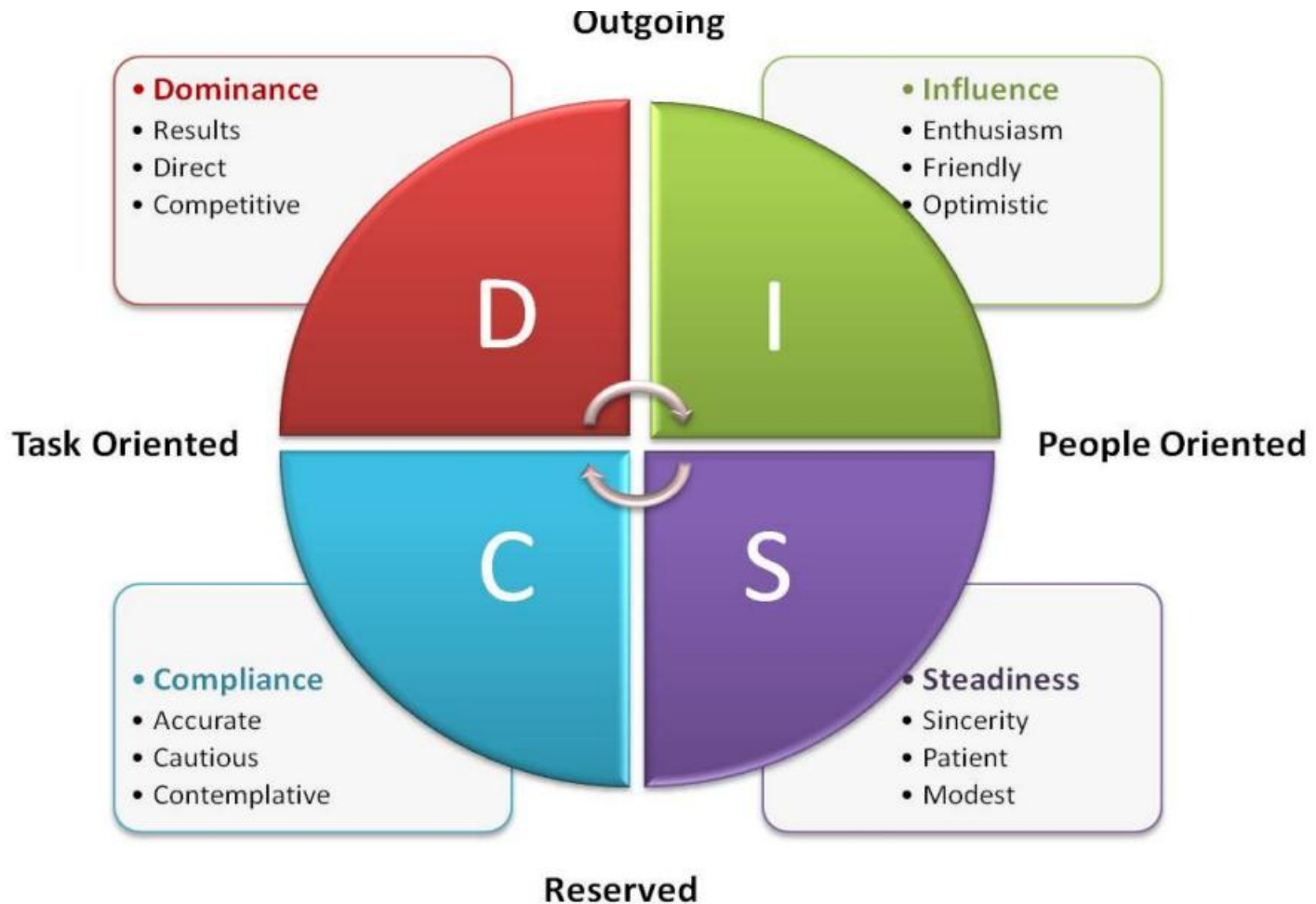
Equilateral triangle

WARM UP 3



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STEP 2



Design thinking



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STEP 8: BENEFITS MAP

HIGH BENEFIT

EASY TO IMPLEMENT

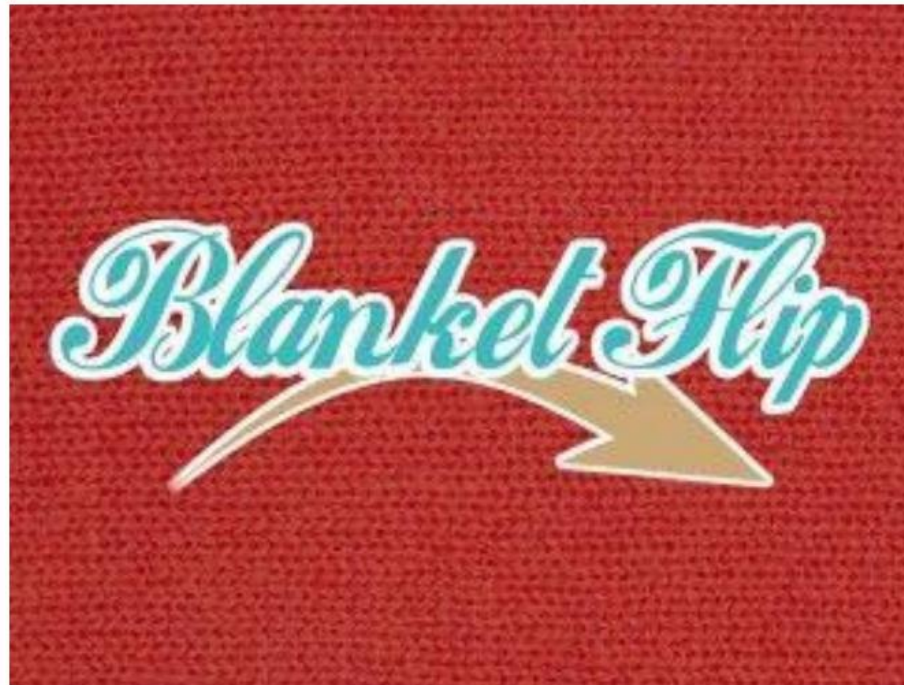
DIFFICULT TO IMPLEMENT

LOW BENEFIT



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STEP 9: FINAL WARM UP AND DISCUSSION

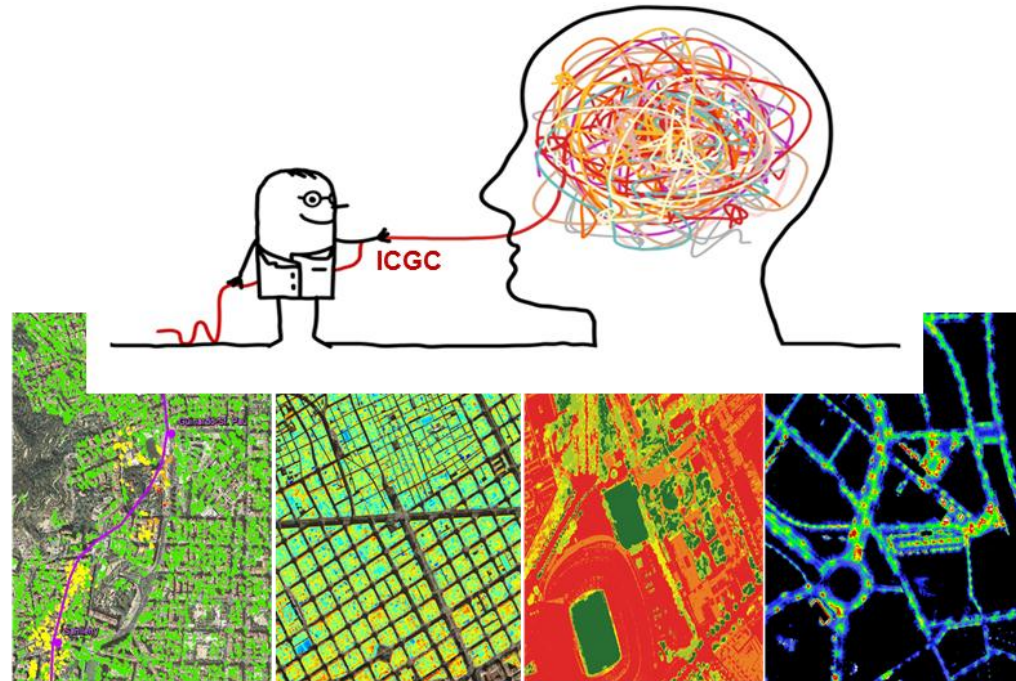
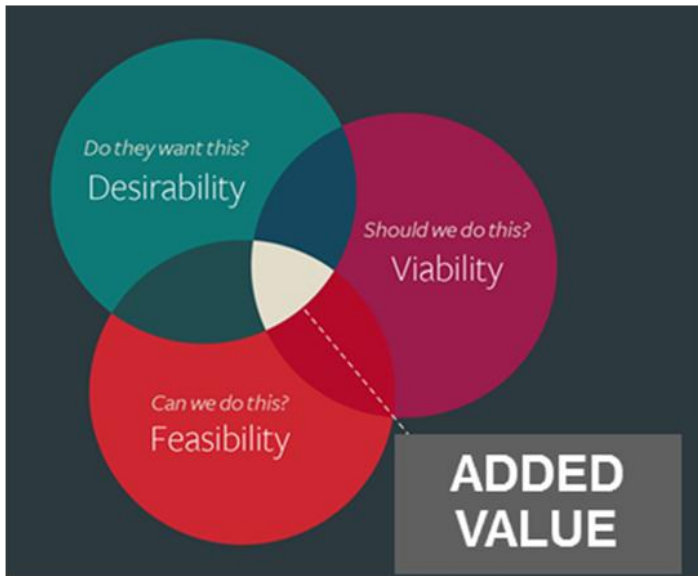


When everyone is situated, explain to them that they must work as a team to turn the towel completely over (so that it is face up) without having anyone on their team touch the ground with any part of their body.



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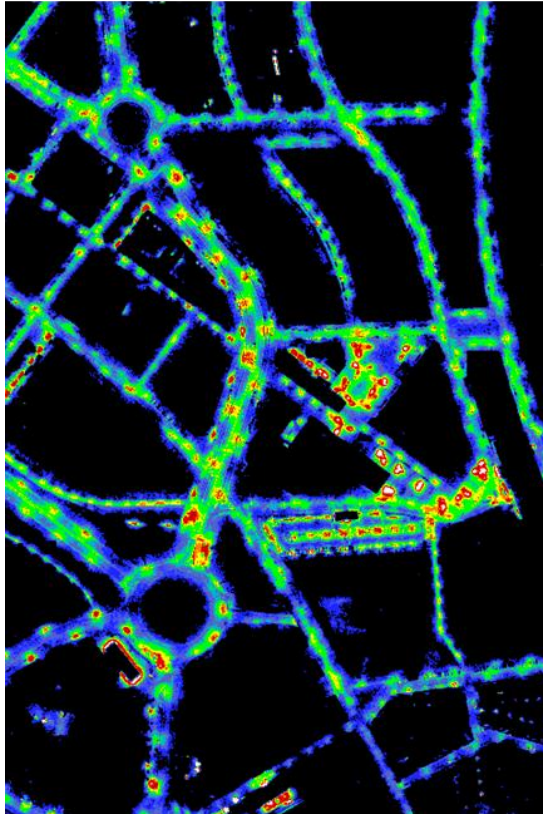
CIÈNCIA + TECNOLOGIA + PROBLEMES REALS A RESOLDRE = VALOR AFEGIT



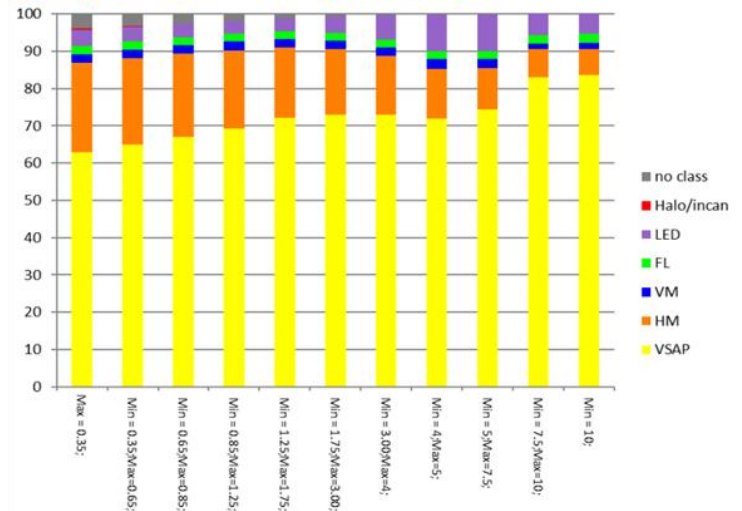
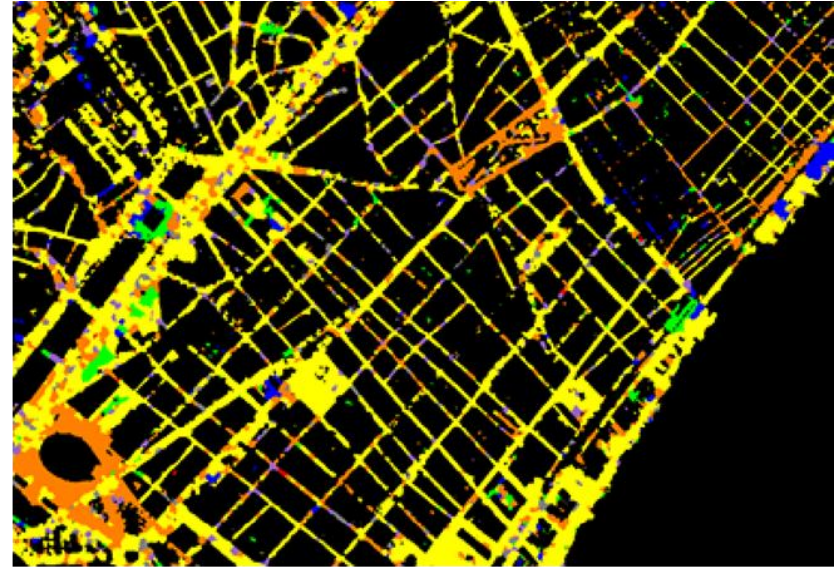
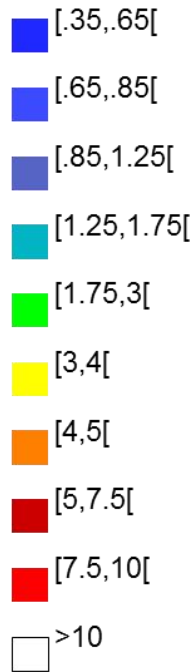
... ALGUNS EXEMPLES EN L'ECOSISTEMA URBA



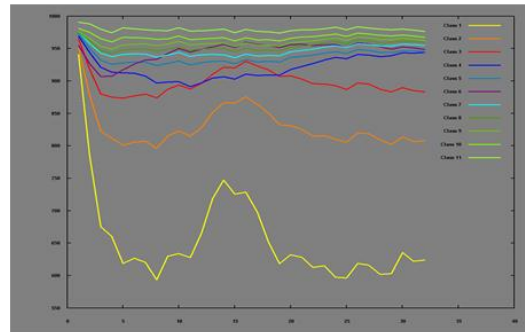
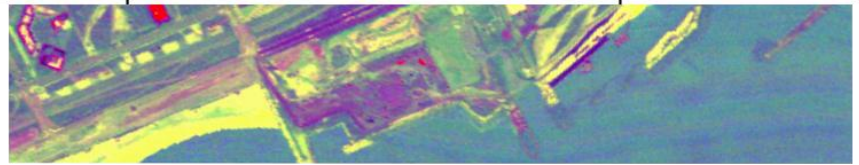
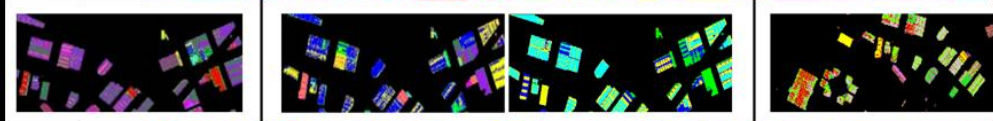
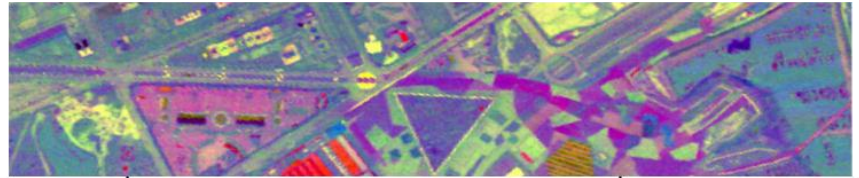
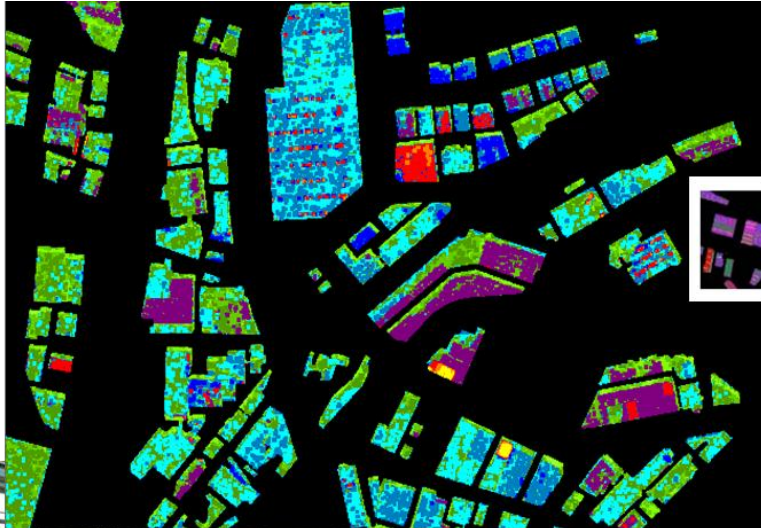
Design thinking



Classification

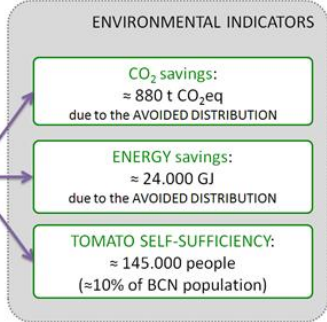


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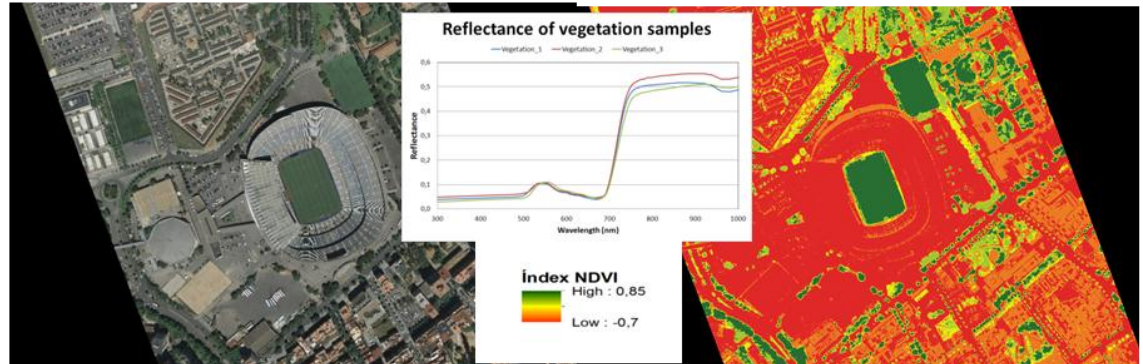
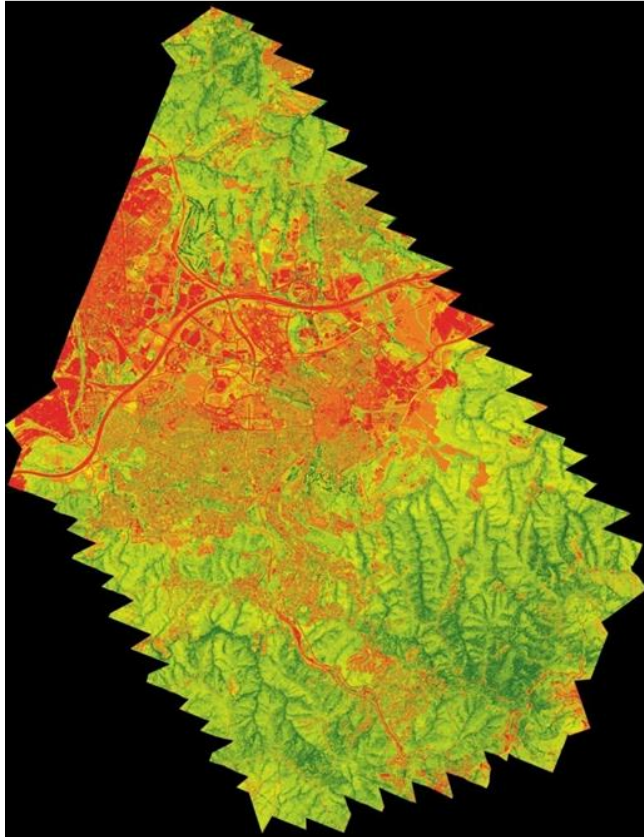


SHORT-TERM potential:
13,1 ha
≈ 8% poligon

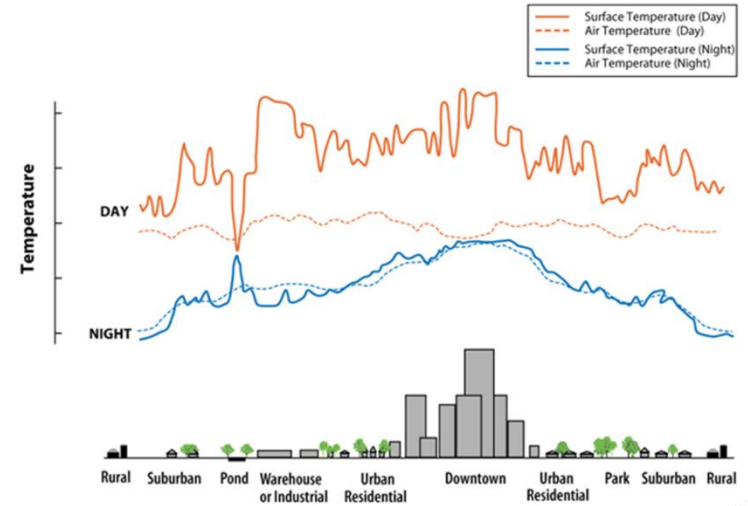
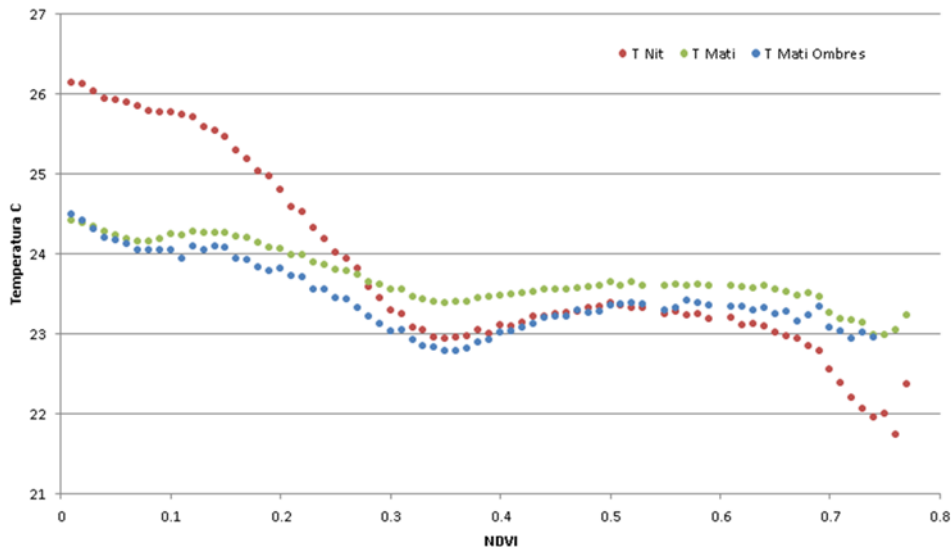
Potential PRODUCTION:
≈ 2000 t tomato
(per year)



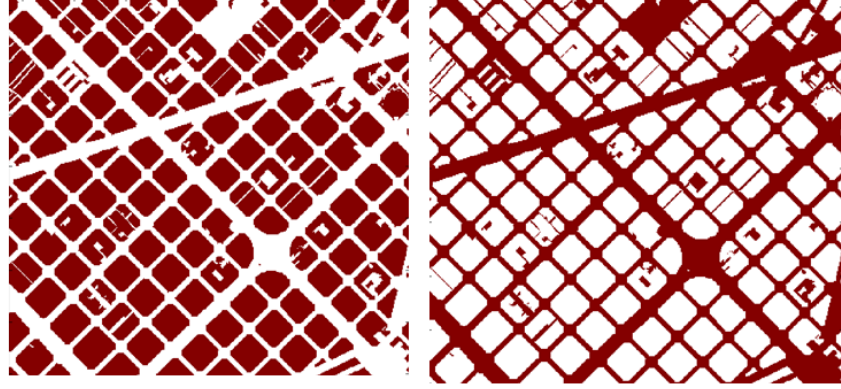
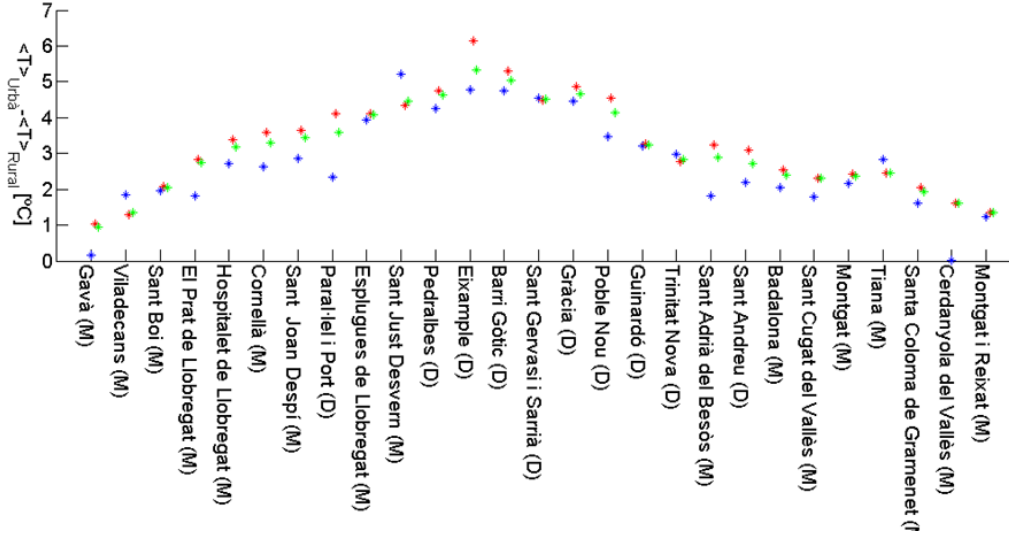
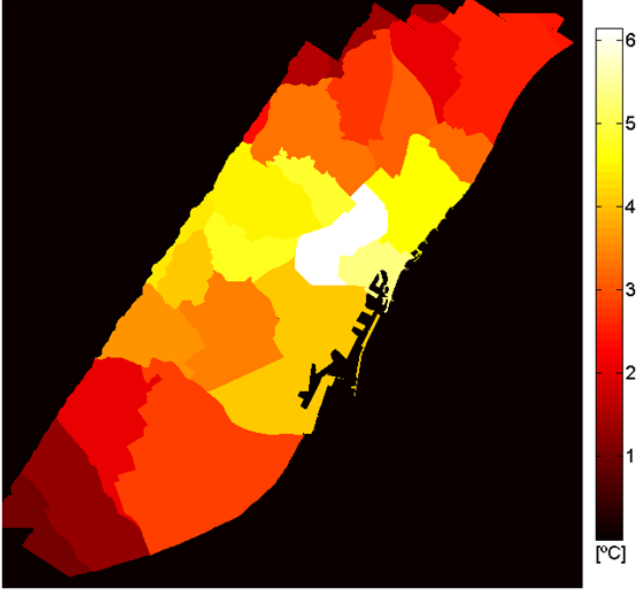
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Local climate zone (LCZ)	Sky view factor ^a	Aspect ratio ^b	Building surface fraction ^c	Impervious surface fraction ^d	Pervious surface fraction ^e	Height of roughness elements ^f	Terrain roughness class ^g
LCZ 1 Compact high-rise	0.2–0.4	> 2	40–60	40–60	< 10	> 25	8
LCZ 2 Compact midrise	0.3–0.6	0.75–2	40–70	30–50	< 20	10–25	6–7
LCZ 3 Compact low-rise	0.2–0.6	0.75–1.5	40–70	20–50	< 30	3–10	6
LCZ 4 Open high-rise	0.5–0.7	0.75–1.25	20–40	30–40	30–40	> 25	7–8
LCZ 5 Open midrise	0.5–0.8	0.3–0.75	20–40	30–50	20–40	10–25	5–6
LCZ 6 Open low-rise	0.6–0.9	0.3–0.75	20–40	20–50	30–60	3–10	5–6
LCZ 7 Lightweight low-rise	0.2–0.5	1–2	60–90	< 20	< 30	2–4	4–5
LCZ 8 Large low-rise	> 0.7	0.1–0.3	30–50	40–50	< 20	3–10	5
LCZ 9 Sparsely built	> 0.8	0.1–0.25	10–20	< 20	60–80	3–10	5–6
LCZ 10 Heavy industry	0.6–0.9	0.2–0.5	20–30	20–40	40–50	5–15	5–6
LCZ A Dense trees	< 0.4	> 1	< 10	< 10	> 90	3–30	8
LCZ B Scattered trees	0.5–0.8	0.25–0.75	< 10	< 10	> 90	3–15	5–6
LCZ C Bush, scrub	0.7–0.9	0.25–1.0	< 10	< 10	> 90	< 2	4–5
LCZ D Low plants	> 0.9	< 0.1	< 10	< 10	> 90	< 1	3–4
LCZ E Bare rock or paved	> 0.9	< 0.1	< 10	> 90	< 10	< 0.25	1–2
LCZ F Bare soil or sand	> 0.9	< 0.1	< 10	< 10	> 90	< 0.25	1–2
LCZ G Water	> 0.9	< 0.1	< 10	< 10	> 90	–	1

BUILT SERIES



LCZ 1
Compact high-rise



LCZ 2
Compact mid-rise



LCZ 3
Compact low-rise



LCZ 4
Open high-rise



LCZ 5
Open mid-rise



LCZ 6
Open low-rise



LCZ 7
Lightweight low-rise



LCZ 8
Large low-rise



LCZ 9
Sparsely built



LCZ 10
Heavy industry

0 100 m

LAND COVER SERIES



LCZ A
Dense trees



LCZ B
Scattered trees



LCZ C
Bush, scrub



LCZ D
Low plants



LCZ E
Bare rock or paved



LCZ F
Bare soil or sand

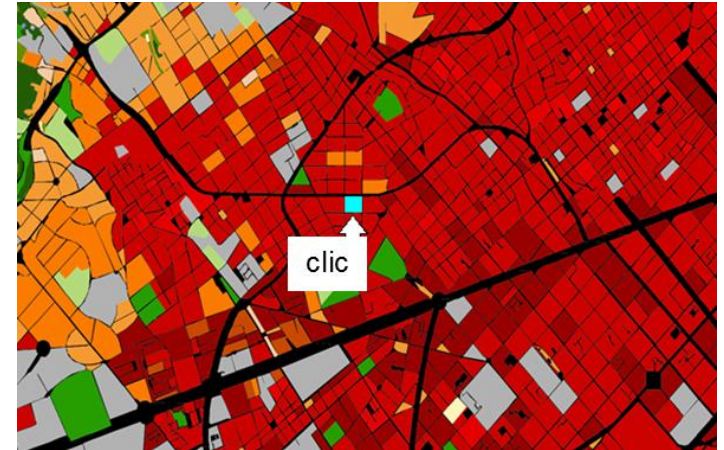
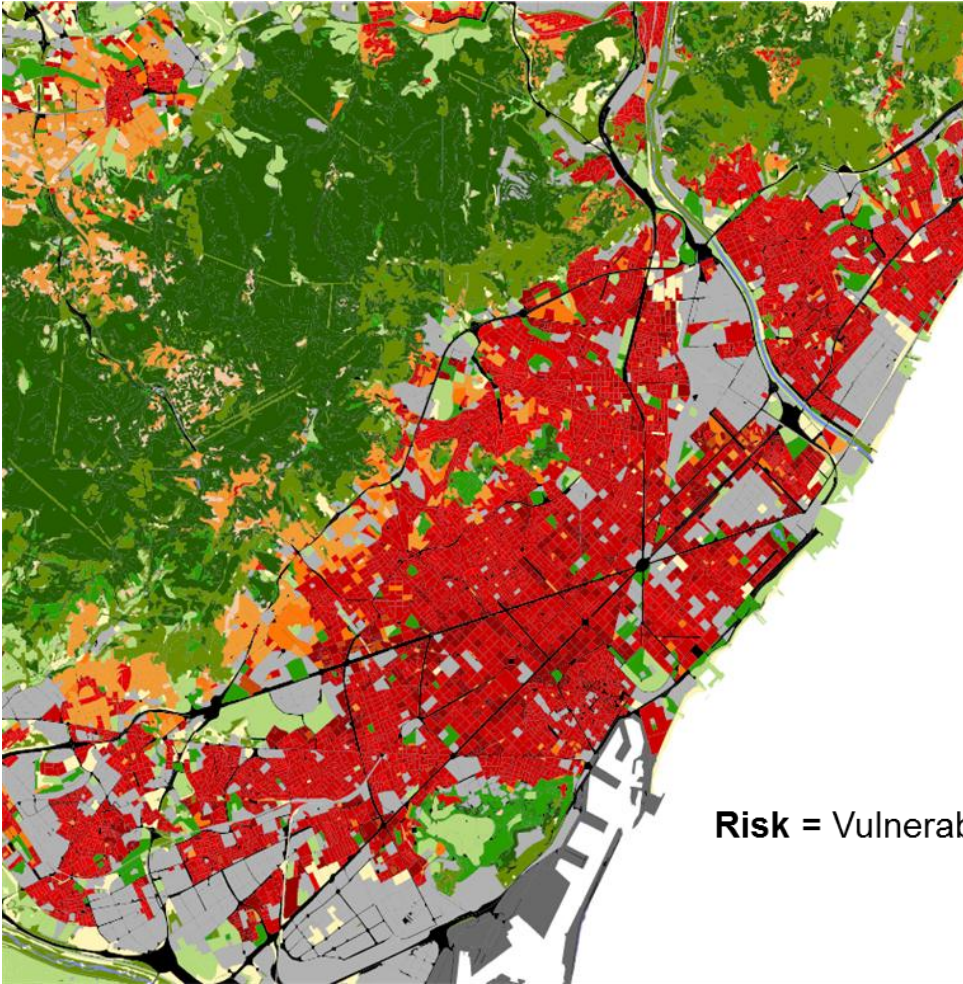


LCZ G
Water

Variable land cover properties

- b** bare trees (i.e., deciduous, leafless)
increased sky view factor, reduced albedo
- s** snow cover (> 10 cm in depth)
low admittance, high albedo
- d** dry ground (e.g., parched soil)
low admittance, large Bowen ratio,
increased albedo
- w** wet ground (e.g., waterlogged soil)
high admittance, small Bowen ratio,
reduced albedo

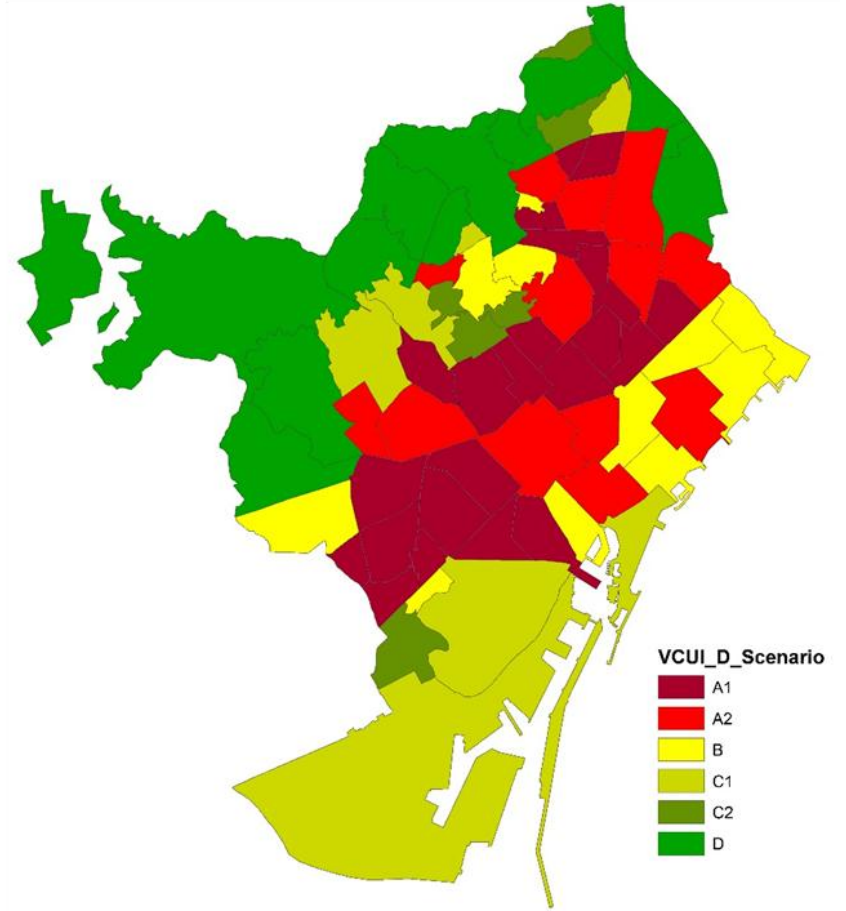
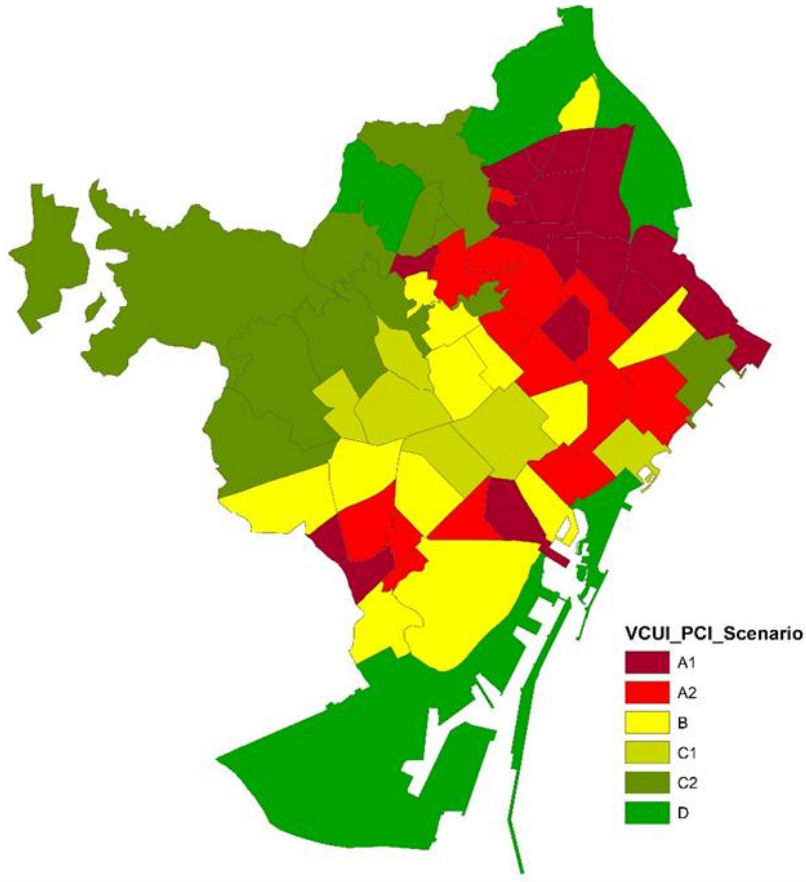
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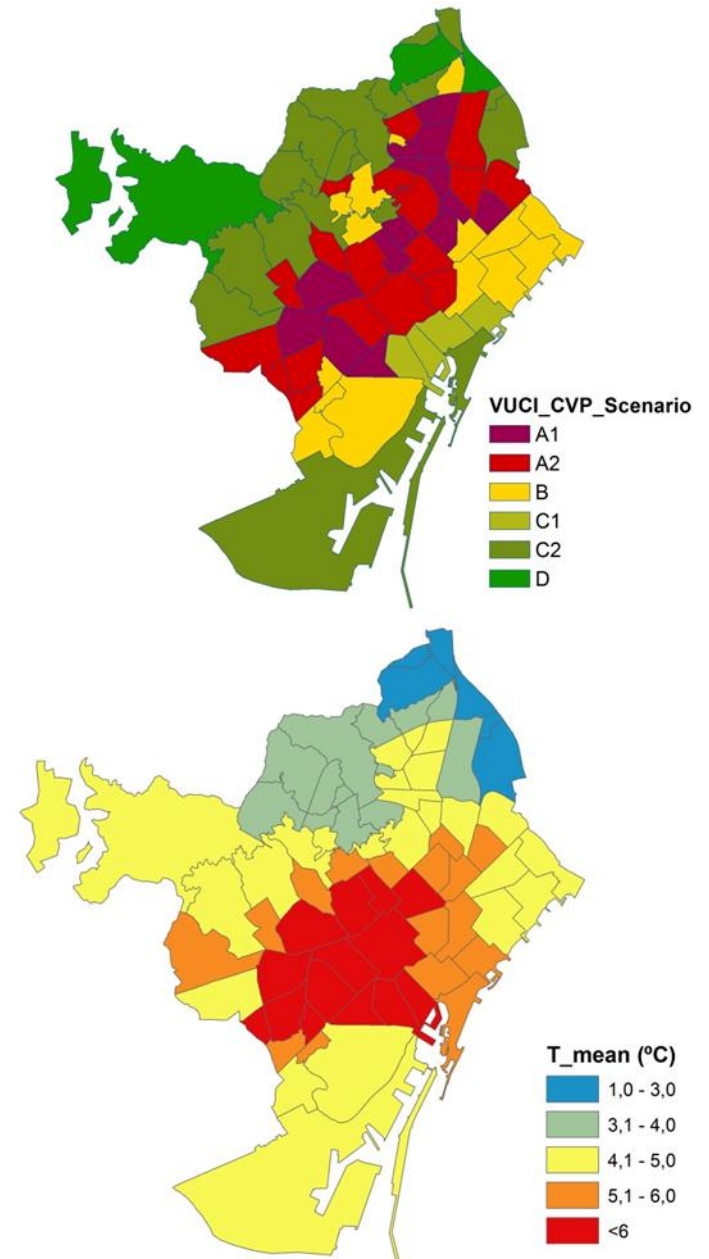
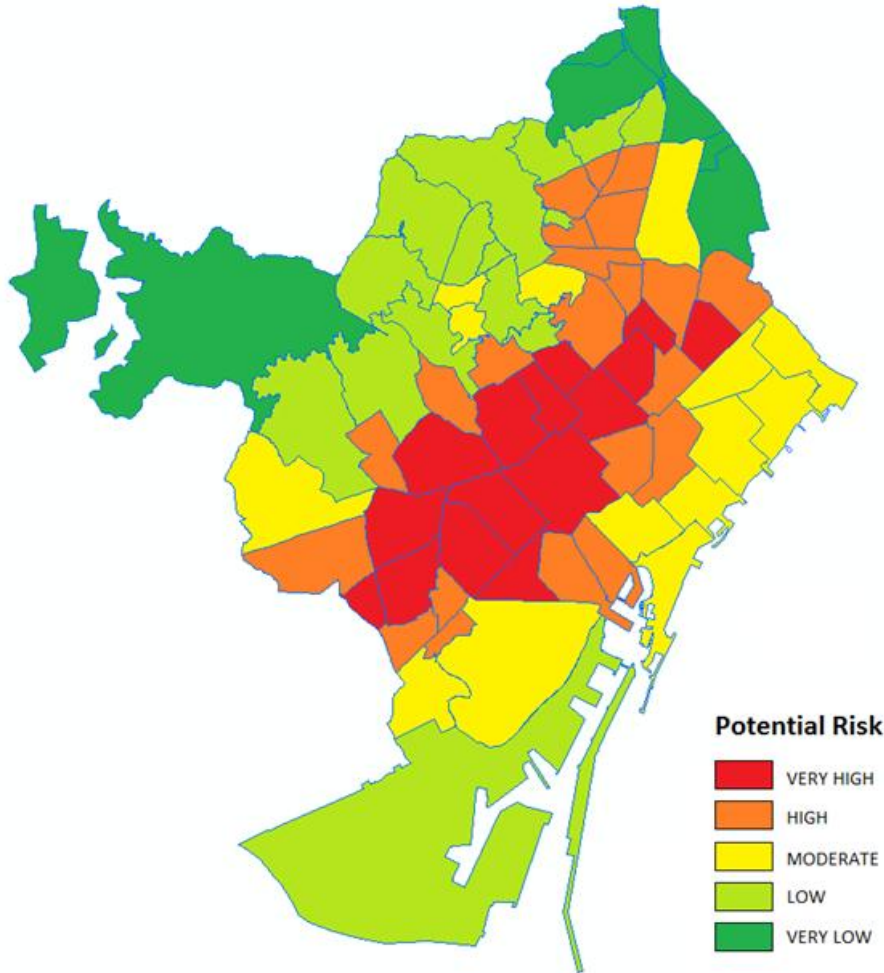
Risk = Vulnerability (LCZ + exposició) x Dangerosity (Climate M.)



Design thinking



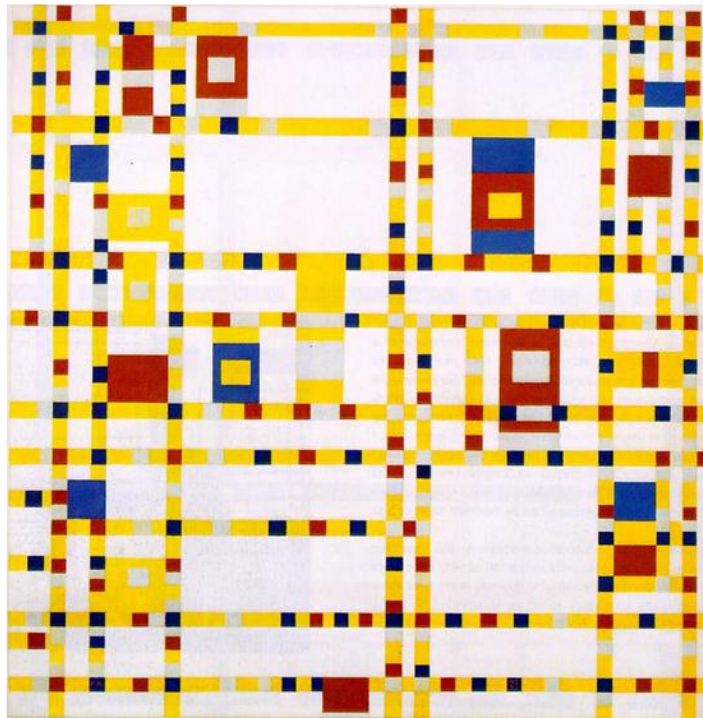
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GRÀCIES PER LA VOSTRA ATENCIÓ

*Piet Mondrian (1943):
Broadway Boogie Woogie*



*ICGC (2012):
Thermal Behaviour*

