

**Galić, Tomislav**

**Master's thesis / Diplomski rad**

**2022**

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**University of Split, Faculty of Civil Engineering, Architecture and Geodesy / Sveučilište u Splitu, Fakultet građevinarstva, arhitekture i geodezije**

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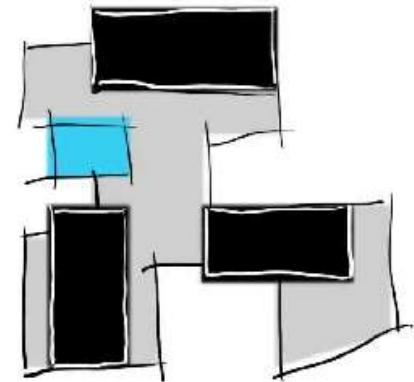
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UNIVERSITY OF SPLIT



DIGITALNI AKADEMSKI ARHIVI I REPOZITORIJI



CENTAR URBANE KULTURE **SINOKOŠA**

VIŠEKRITERIJALNA METODA DOBIVANJA PROGRAMSKOG ZADATKA

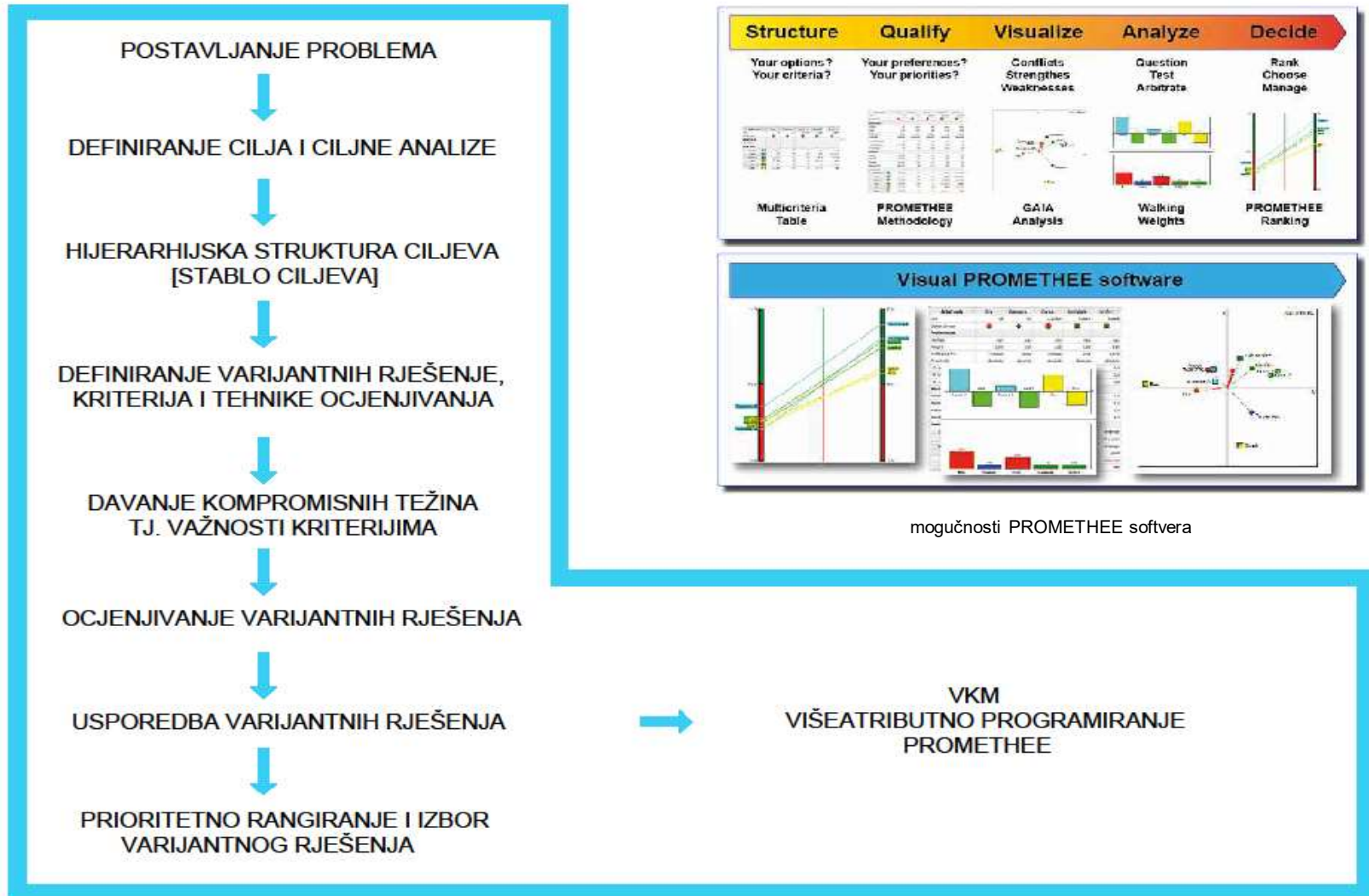


# P R O M E T H E E

## M E T H O D S

PROMETHEE METHODS logo

# planiranje investicije

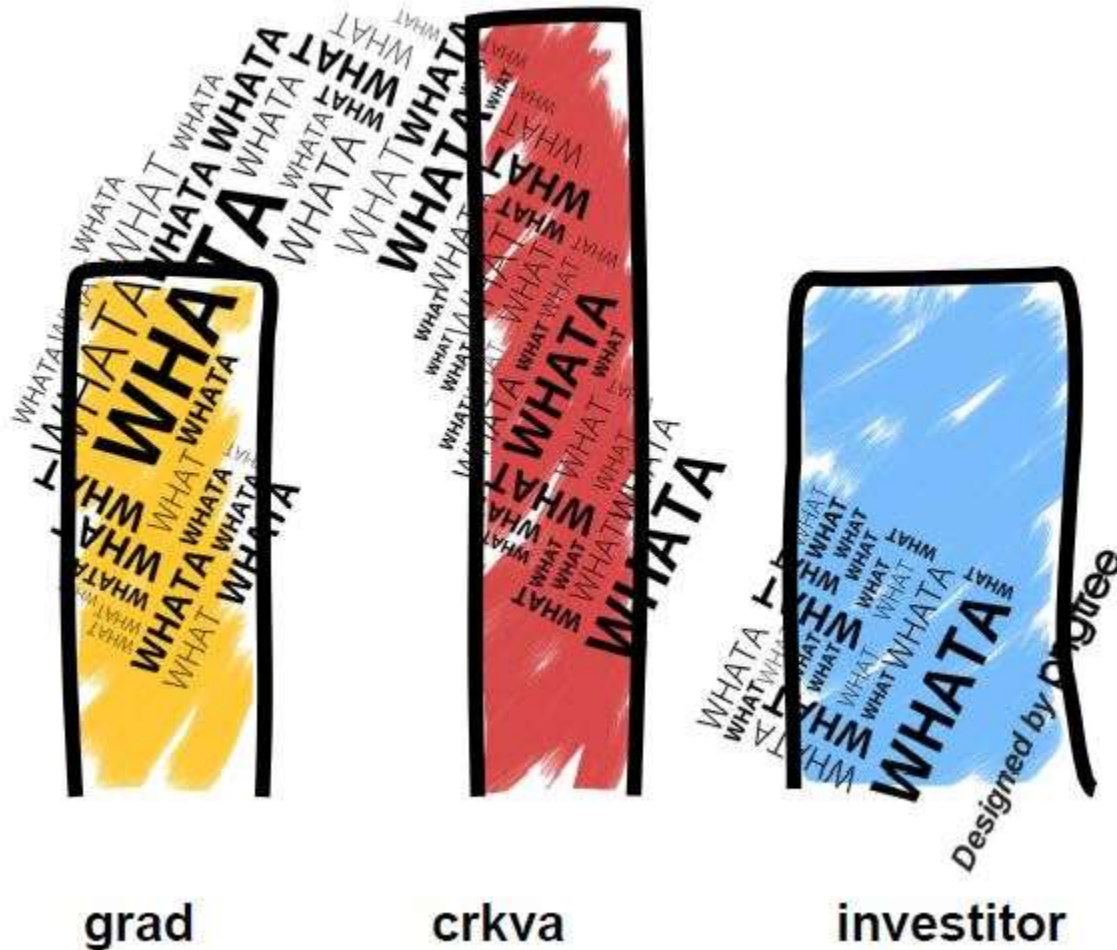


# postavljanje problema



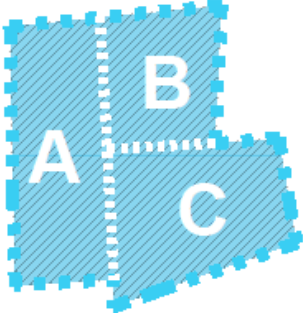
3 parcele, lokacija

# definiranje cilja i ciljne analize



# definiranje varijantnih rješenja, kriterija, tehnika

SET 1	SET 2	SET 3	SET 4
1 [A]	a [A]	A [A]	Xy [A+B+C]
2 [B]	b [B]	B [B]	Yx [A_B_C]
3 [C]	c [C]	C [C]	
4 [A+B]	d [A+B]	D [A+B]	
5 [A_B]	e [A_B]	E [A_B]	
6 [A+C]	f [A+C]	F [A+C]	
7 [A_C]	g [A_C]	G [A_C]	
8 [B+C]	h [B+C]	H [B+C]	
9 [B_C]	i [B_C]	I [B_C]	
10 [A+B+C]	j [A+B+C]	J [A+B+C]	
11 [A_B_C]	k [A_B_C]	K [A_B_C]	



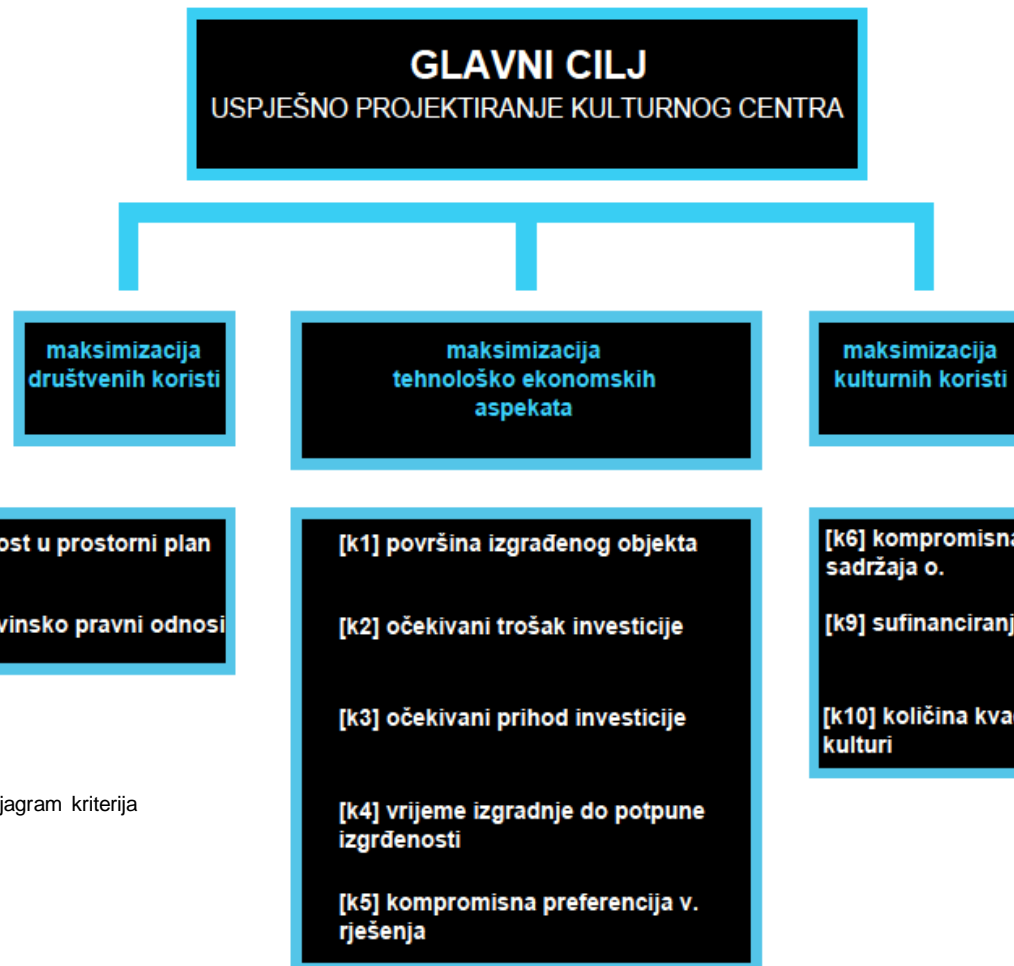
prikaz varijantnih rješenja i vlasništva

- [k1]** površina izgrađenog objekta  
npr. 1000 m<sup>2</sup>
- [k2]** očekivani trošak investicije  
npr. 1 000 000 €
- [k3]** očekivani prihod investicije  
npr. 2 000 000 €
- [k4]** vrijeme izgradnje do potpune  
izgrađenosti 12 mjeseci
- [k5]** kompromisna preferencija v. rješenja  
procjena dionika ocjenom 0-200
- [k6]** kompromisna preferencija sadržaja o.  
procjena dionika ocjenom 0-200
- [k7]** uklopljivost u prostorni plan  
da/ne
- [k8]** čisti imovinsko pravni odnosi  
da/ne
- [k9]** sufinanciranje grada  
da/ne
- [k10]** količina kvadrata namjenjeno kulturi  
5000 m<sup>2</sup>

prikaz raspisanih kriterija



# hijerarhijska struktura ciljeva, vrednovanje ciljeva



dijagram kriterija

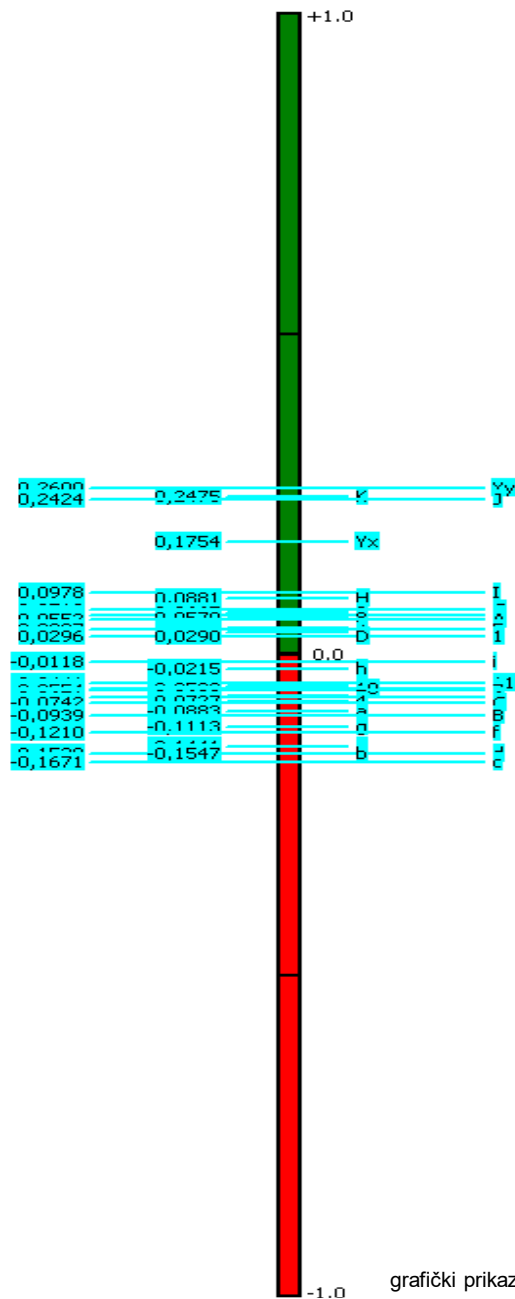
KRITERIJI	OCJENE			
	Crkva	Grad	Investitor	Ukupno
[k1] površina	7	10	8	8.33
[k2] trošak	0	3	0	1.00
[k3] prihod	20	0	77	32.33
[k4] vrijeme	0	7	11	6.00
[k5] preferencijaV	12	4	1	5.66
[k6] preferencijaS	6	11	3	6.66
[k7] prostorni plan	0	8	0	2.66
[k8] vlasništvo	37	5	0	14.00
[k9] sufinansiranje	0	10	0	3.33
[k10] kultura	18	42	0	20.00

tablica vrednovanja kriterija prema dioniku

# ocjenjivanje varijantnih rješenja

	površina	trošak	prihod	vrijeme	preferencijaR	preferencijaS	prostorni plan	vjerošstvo	sufinansiranje	kultura
unit	m2	€	€	mjeseci	ocjena	ocjena	da ne	da ne	da ne	m2
Cluster/Group	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
<b>Preferences</b>										
Min/Max	max	min	max	min	max	max	max	max	max	max
Weight	8333333333.0	1.00	323333.00	6.00	566.00	866.00	266.00	14.00	333.00	20.00
Preference Fn.	V-shape	V-shape	V-shape	V-shape	V-shape	V-shape	Usual	Usual	Usual	V-shape
Thresholds	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute
- Q: Indifference	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
- P: Preference	6200	\$21,392,800	\$4,840,000	9	120	75	n/a	n/a	n/a	4910
- S: Gaussian	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>Statistics</b>										
Minimum	1800	\$6,679,200	\$0	15	50	25	0	0	0	190
Maximum	8000	\$28,072,000	\$4,840,000	24	170	100	1	1	1	5100
Average	463237142857	\$167,922,342	\$206,592,757	180571428571	87	67	314285714285	6	542857142857	184834285714
Standard Dev.	167714563786	\$564,820,912	\$166,214,888	226706679141	267314688816	262732889887	464230765979	489897948556	498159879261	151654445449
<b>Evaluations</b>										
1	3000	\$10,890,000	\$0	16	100	100	yes	yes	yes	3000
2	1800	\$6,679,200	\$0	15	50	100	yes	yes	yes	1800
3	2000	\$7,744,000	\$0	16	50	100	yes	yes	yes	2000
4	4000	\$15,488,000	\$0	17	90	100	yes	no	yes	4000
5	4000	\$15,488,000	\$0	17	110	100	yes	no	yes	4000
6	4500	\$17,278,800	\$0	17	50	100	yes	no	yes	4500
7	4500	\$17,278,800	\$0	17	70	100	yes	no	yes	4500
8	4000	\$15,197,600	\$0	17	60	100	yes	yes	yes	4000
9	4000	\$15,197,600	\$0	17	80	100	yes	yes	yes	4000
10	5100	\$21,054,000	\$0	18	60	80	yes	no	yes	5100
11	5100	\$21,054,000	\$0	18	80	80	yes	no	yes	5100
a	3000	\$10,890,000	\$1,815,000	16	55	30	no	yes	no	730
b	1800	\$6,679,200	\$1,089,000	15	70	35	no	yes	no	240
c	2000	\$7,744,000	\$1,210,000	16	60	25	no	yes	no	190
d	1000	\$15,488,000	\$3,420,000	17	80	50	no	no	no	775
e	4000	\$15,488,000	\$2,420,000	17	100	50	no	no	no	775
f	4500	\$17,278,800	\$2,722,500	17	90	50	no	no	no	800
g	4500	\$17,278,800	\$2,722,500	17	110	50	no	no	no	800
h	4000	\$15,197,600	\$2,420,000	17	100	40	no	yes	no	475
i	4000	\$15,197,600	\$2,420,000	17	120	40	no	yes	no	475
j	5100	\$21,054,000	\$3,085,500	18	90	40	no	yes	no	745
k	5100	\$21,054,000	\$3,085,500	18	100	40	no	yes	no	745
A	4000	\$13,310,000	\$2,420,000	17	100	100	no	yes	no	975
B	2600	\$8,615,200	\$1,573,000	17	70	60	no	yes	no	435
C	3333	\$10,455,000	\$2,016,465	17	60	40	no	yes	no	512
D	6600	\$19,021,200	\$3,993,000	20	80	50	no	no	yes	1410
E	6600	\$19,021,200	\$3,993,000	20	100	50	no	no	yes	1410
F	7000	\$22,360,800	\$4,235,000	22	70	50	no	no	yes	2140
G	7000	\$22,360,800	\$4,235,000	22	90	50	no	no	yes	2140
H	6000	\$20,328,000	\$3,630,000	19	70	50	no	yes	no	960
I	6000	\$20,328,000	\$3,630,000	19	90	50	no	yes	no	960
J	8000	\$28,072,000	\$4,840,000	24	100	70	no	yes	yes	1300
K	8000	\$28,072,000	\$4,840,000	24	120	65	no	yes	yes	1300
Xy	7000	\$25,652,000	\$4,888,000	22	150	100	no	yes	yes	1200
Yx	6000	\$23,232,000	\$2,904,000	19	170	100	no	yes	yes	1200

Ocjenjeni kriteriji prema svim varijantnim rješenjima



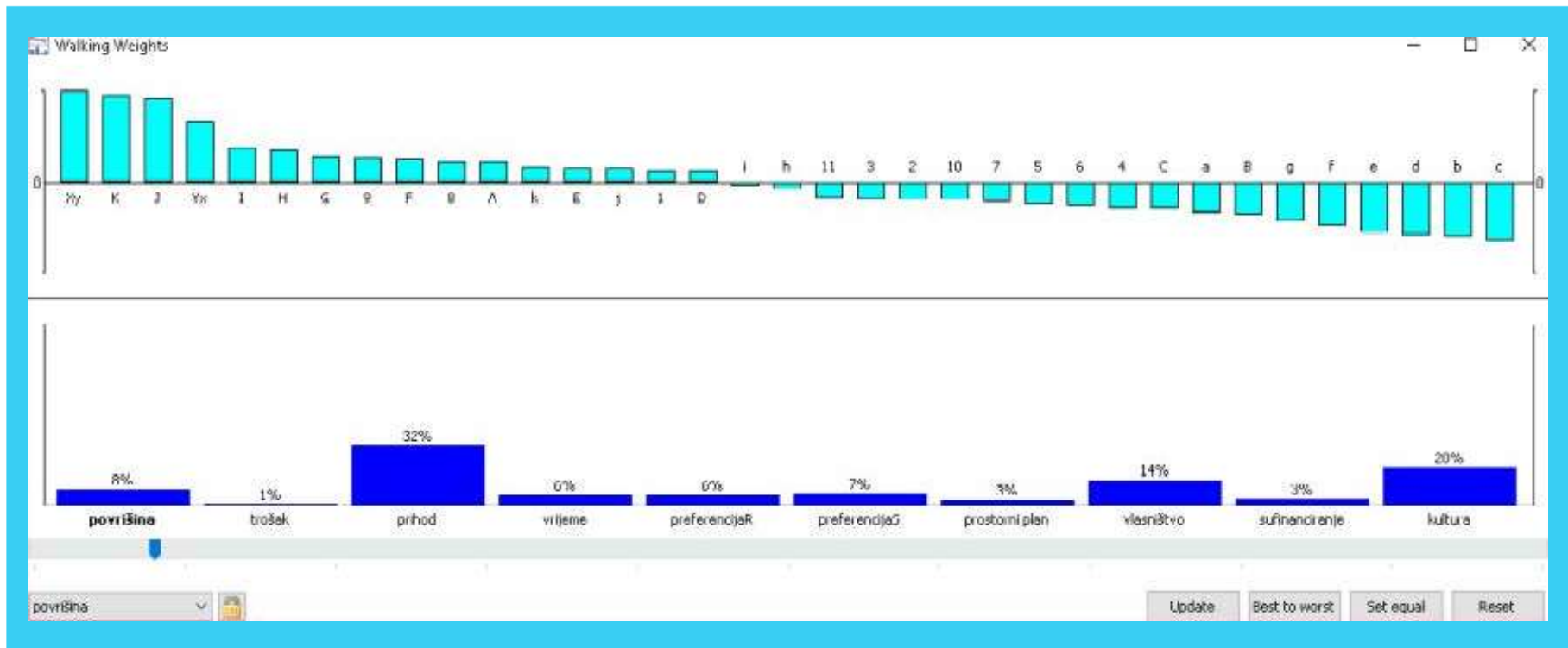
grafički prikaz rangiranja varijantnih rješenja

# usporedba varijantnih rješenja

PROMETHEE Flow Table

	action	Phi	Phi+	Phi-
1	Xy	0,2600	0,3398	0,0798
2	K	0,2475	0,3511	0,1036
3	J	0,2424	0,3454	0,1030
4	Yx	0,1754	0,2620	0,0865
5	I	0,0978	0,2168	0,1189
6	H	0,0881	0,2126	0,1245
7	G	0,0713	0,2460	0,1747
8	9	0,0667	0,2349	0,1682
9	F	0,0616	0,2419	0,1803
10	B	0,0570	0,2320	0,1750
11	A	0,0552	0,1795	0,1243
12	k	0,0411	0,1797	0,1386
13	E	0,0387	0,2125	0,1738

tablični prikaz rangiranja varijantnih rješenja



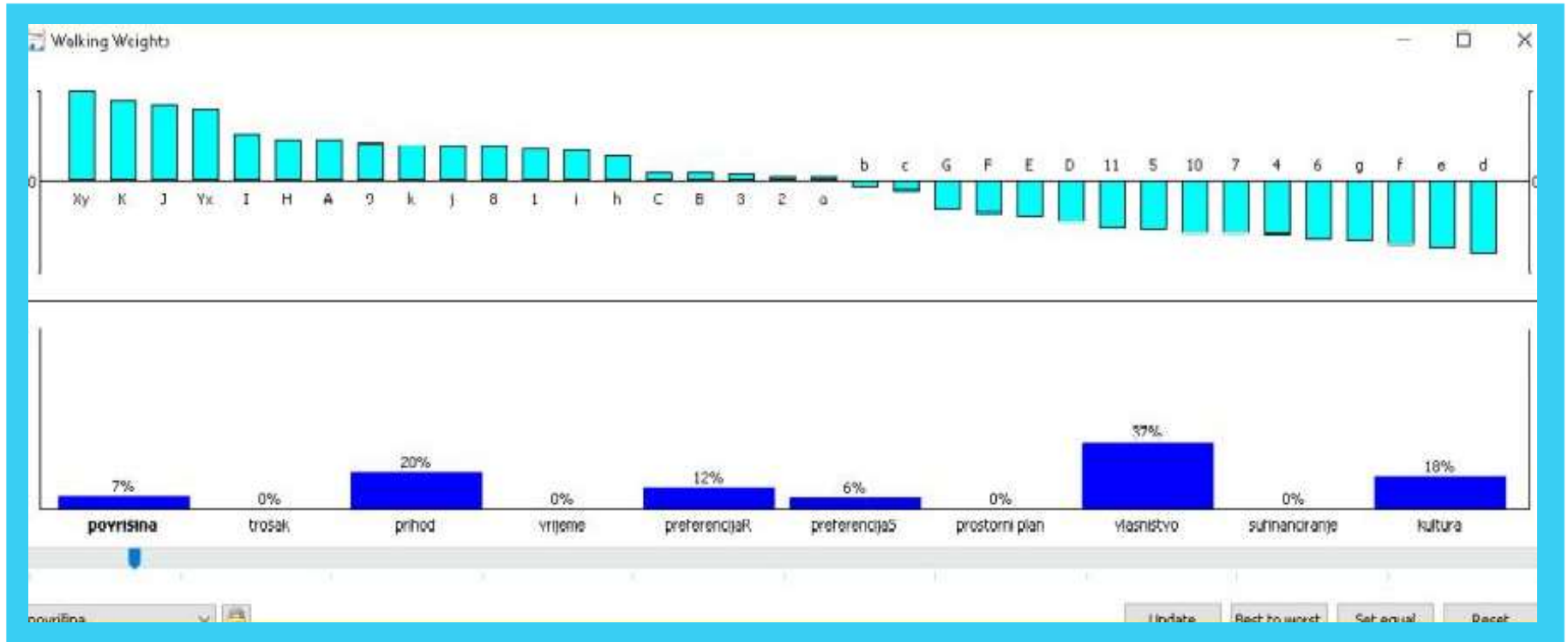
grafički prikaz rangiranja varijantnih rješenja i stupičasti odnos težina kriterija i preferencija varijantnih rješenja

	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
kriterij	površina	trošak	prihod	vršene	preferencijaR	preferencijaS	prostorni plan	vlasništvo	sufinansiranje	kultura
Unit	m2	€	€	mjeseci	ocjena	ocjena	da/ne	da/ne	da/ne	m2
Cluster/Group	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
<b>Preferences</b>										
Min/Max	max	min	max	min	max	max	max	max	max	max
Weight	0,33	1,00	32,33	6,00	5,66	6,66	2,66	11,00	3,33	20,00
Preference Fn.	V-shape	V-shape	V-shape	V-shape	V-shape	V-shape	Usual	Usual	Usual	V-shape
Thresholds	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute
- Q: Indifference	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
- P: Preference	6200	€ 21.392.800	€ 4.840.000	9	120	75	n/a	n/a	n/a	4910
- S: Gaussian	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>Statistics</b>										
Minimum	1800	€ 6.679.200	€ 0	15	50	25	0	0	0	190
Maximum	8000	€ 26.072.000	€ 4.840.000	24	170	100	1	1	1	5100
Average	4632	€ 16.792.234	€ 2.054.499	18	88	67	0	1	1	1651
Standard Dev.	1677	€ 5.648.209	€ 1.646.066	2	28	26	0	0	0	1515
<b>Evaluations</b>										

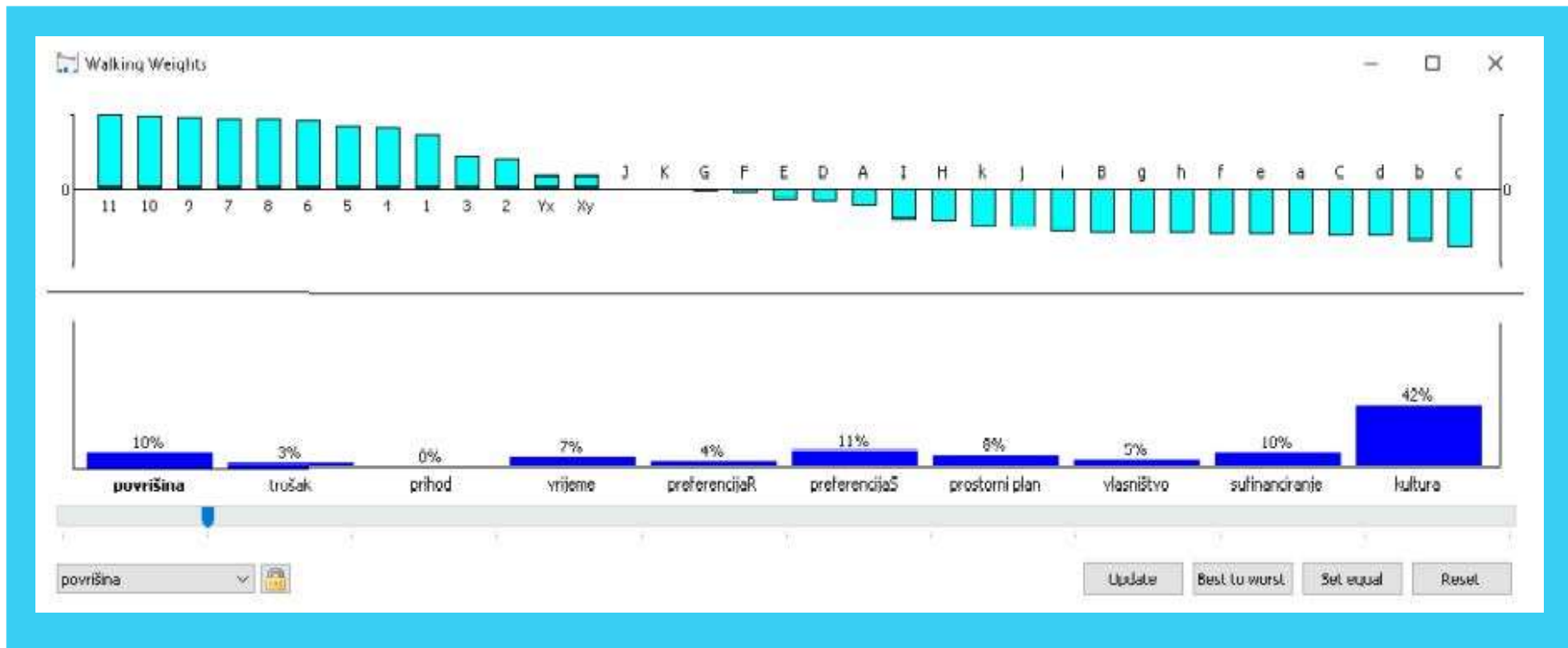
<input checked="" type="checkbox"/>	F	700C	€ 22.36C.800	€ 4.235.000	22	70	50	no	no	yes	2140
<input checked="" type="checkbox"/>	G	700C	€ 22.36C.800	€ 4.235.000	22	90	50	no	no	yes	2140
<input checked="" type="checkbox"/>	H	500C	€ 2C.32E.000	€ 3.630.000	19	70	50	no	yes	no	9E0
<input checked="" type="checkbox"/>	J	300C	€ 2E.072.000	€ 4.840.000	24	100	70	no	yes	yes	13C0
<input checked="" type="checkbox"/>	K	300C	€ 2E.072.000	€ 4.840.000	24	120	55	no	yes	yes	13C0
<input checked="" type="checkbox"/>	Yx	500C	€ 2C.202.000	€ 2.904.000	19	170	130	no	yes	yes	12C0
<input checked="" type="checkbox"/>	Yy	700C	€ 2E.652.000	€ 4.188.000	22	170	130	no	yes	yes	13C0

grafički prikaz rangiranja varijantnih rješenja i odabir 4 najbolja

# raličiti scenariji

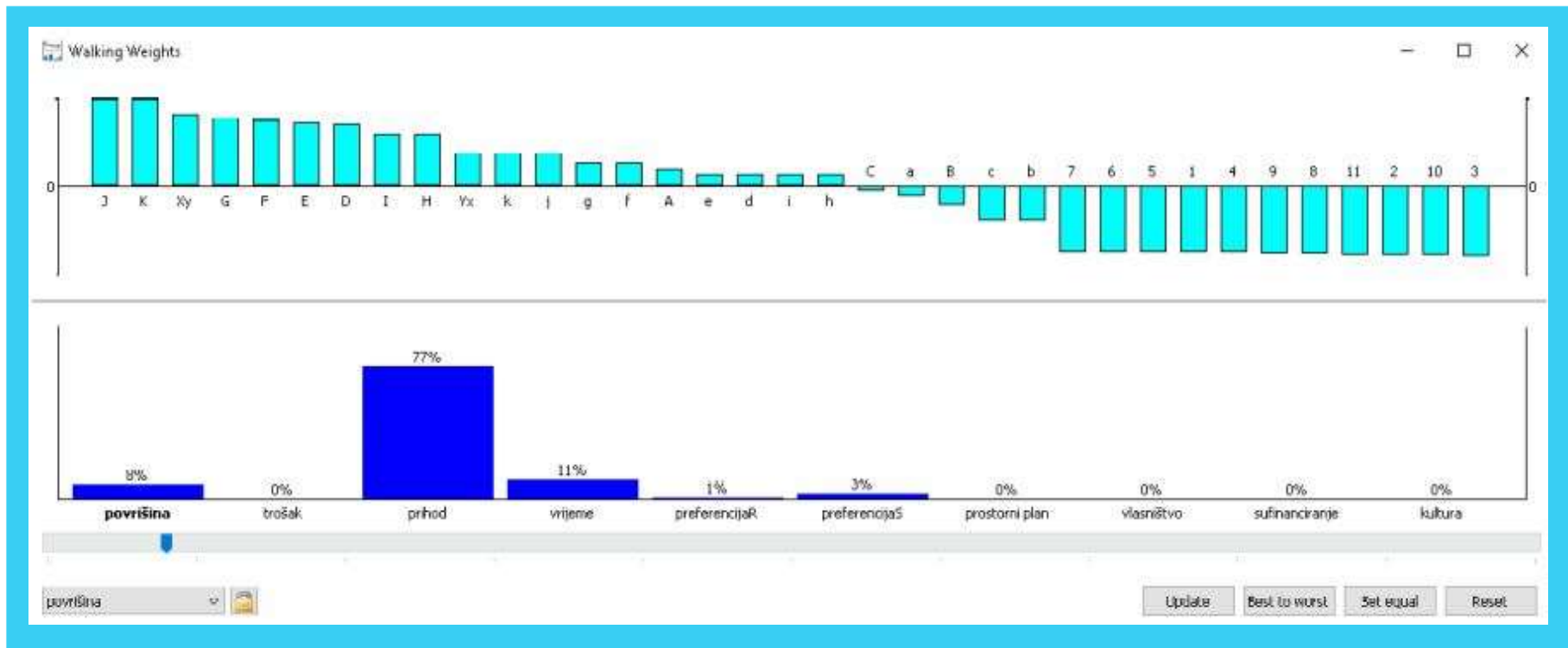


prikaz „walking weights” – stupičasti odnos težina kriterija i preferencija varijantnih rješenja u pogledu Crkve

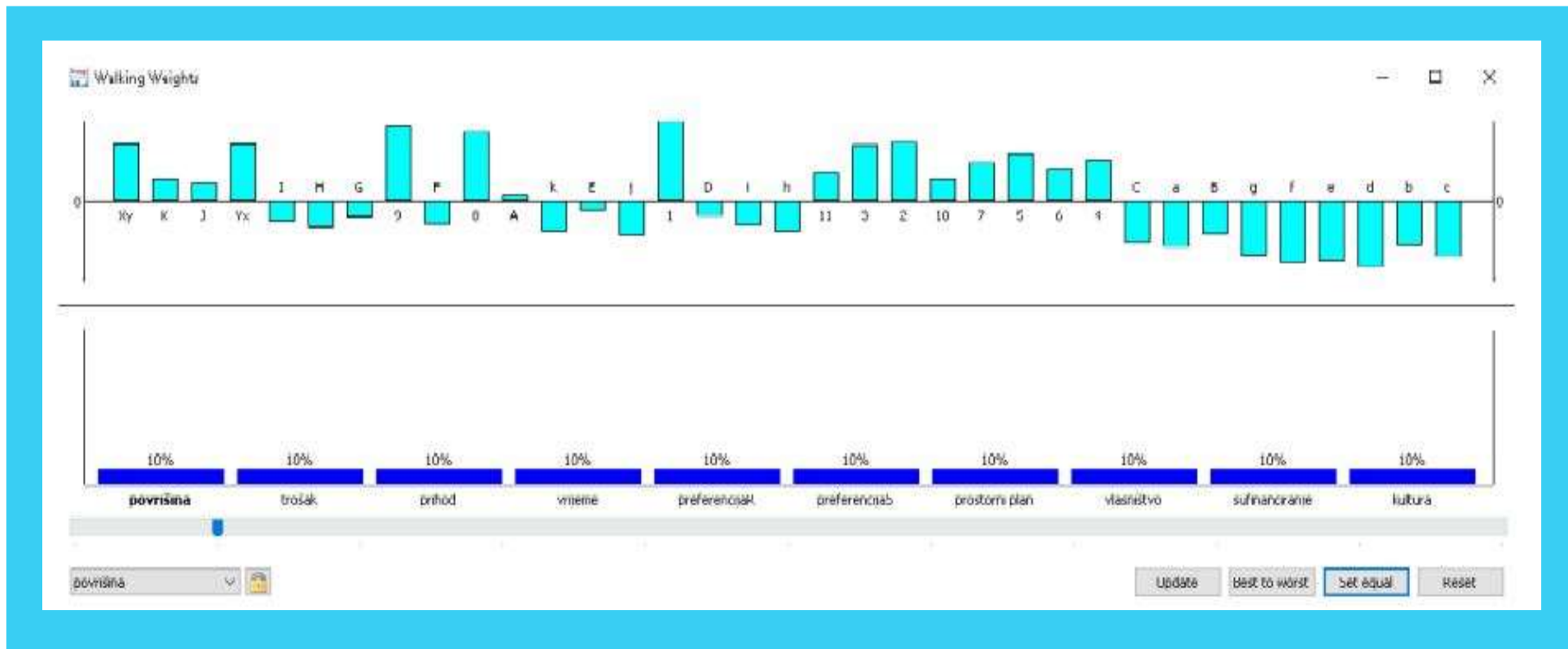


prikaz „walking weights” – stupičasti odnos težina kriterija i preferencija varijantnih rješenja u pogledu grada





prikaz „walking weights” – stupičasti odnos težina kriterija i preferencija varijantnih rješenja u pogledu investitora

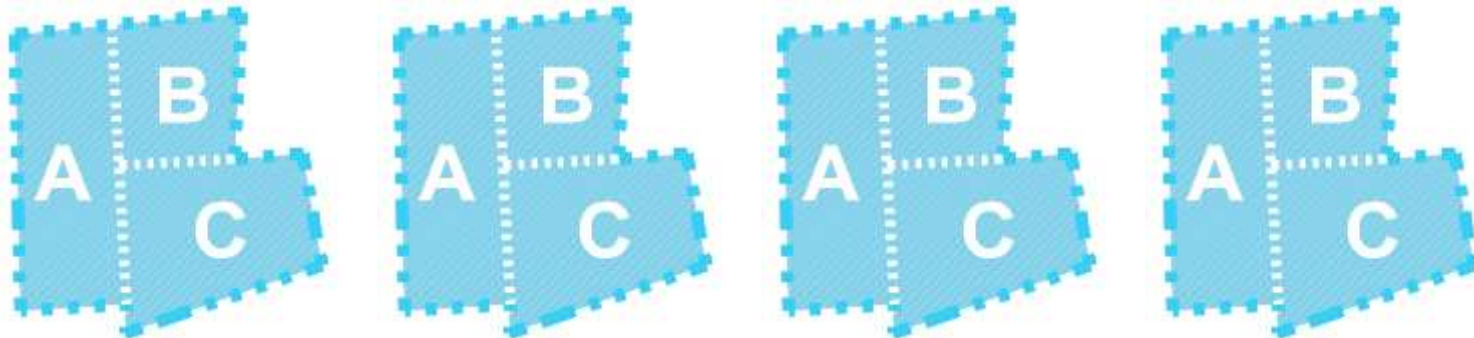


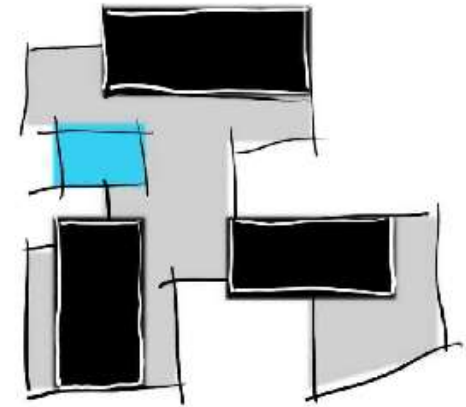
prikaz „walking weights” – stupičasti odnos težina kriterija i preferencija varijantnih rješenja, svi kriteriji su jednaki!

# zaključak

varijanta XY

grad -	1500 m <sup>2</sup>
Crkva -	500 m <sup>2</sup>
investitor -	5000m <sup>2</sup>





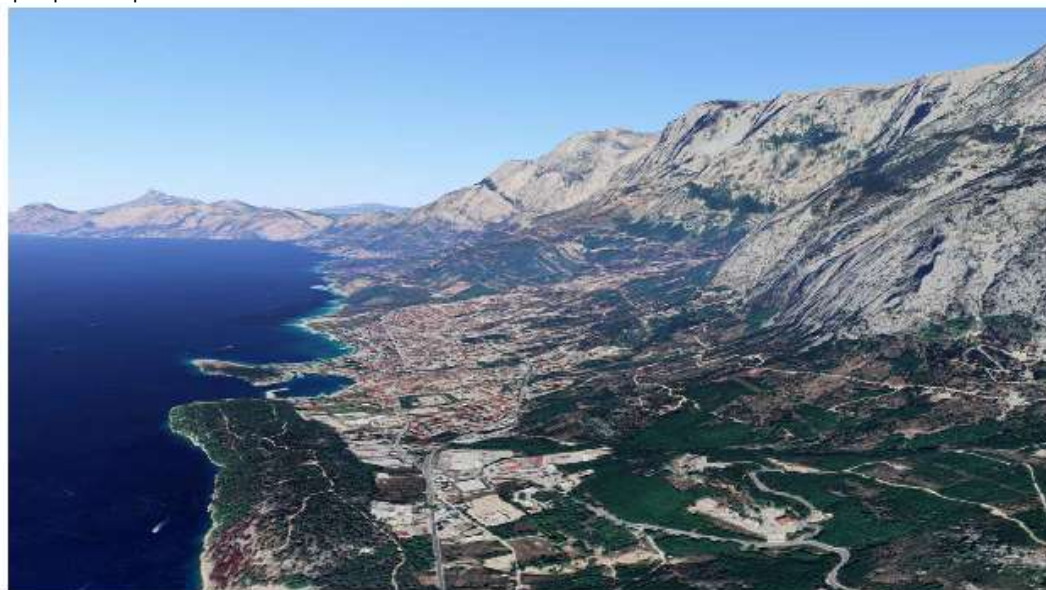
IDEJNI PROJEKT CENTAR URBANE KULTURE **SINKOŠA**

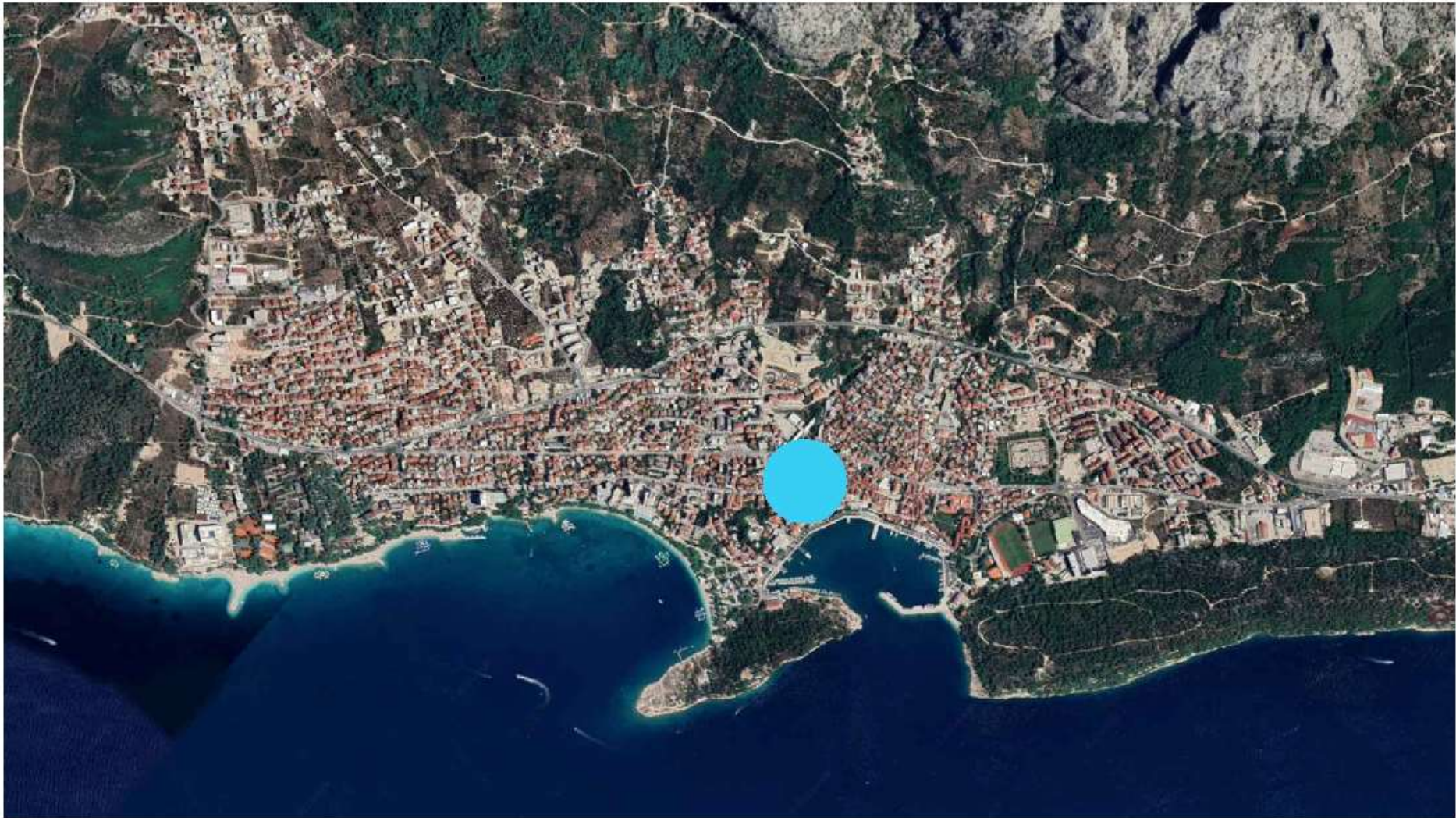


Položaj Makarske na karti Hrvatske



perspektivni prikaz Makarske





položaj odabrane parcele u Makarskoj



položaj parcele na orto foto snimci Makarske





položaj parcele na orto foto snimci Makarske



STAMBENJAK/HOTEL



ZVONIK/SPOMENIK

Analiza makarskih „nebođera”



Fotografija iz traka užeg obuhvata

urbanistička analiza užeg obuhvata



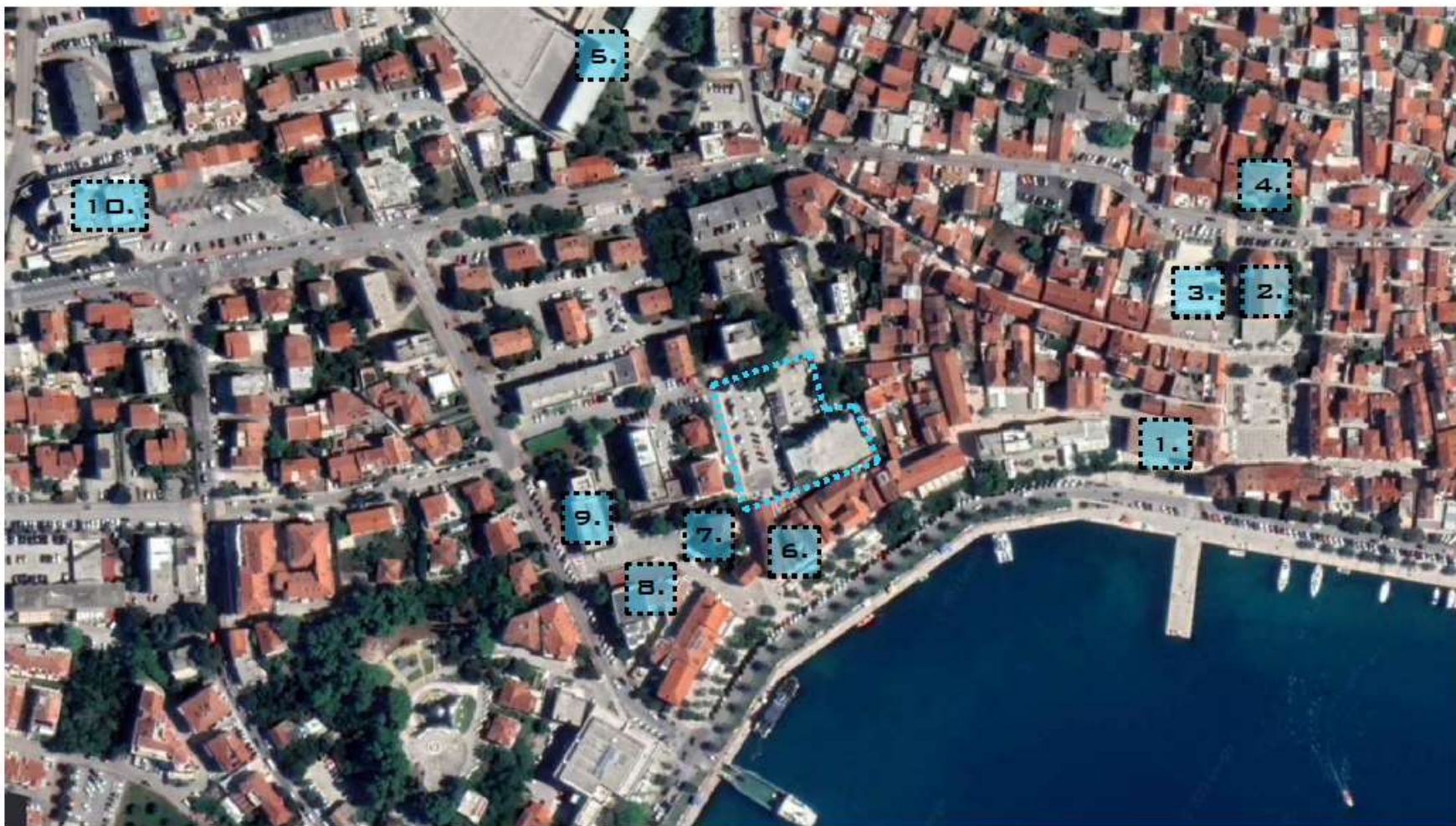
**OBUH VAT**



**ŠTAPIČASTI URBANIZAM**



**STARA JEZGRA GRADA**



Analiza objekata društvene namjene

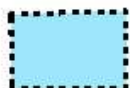
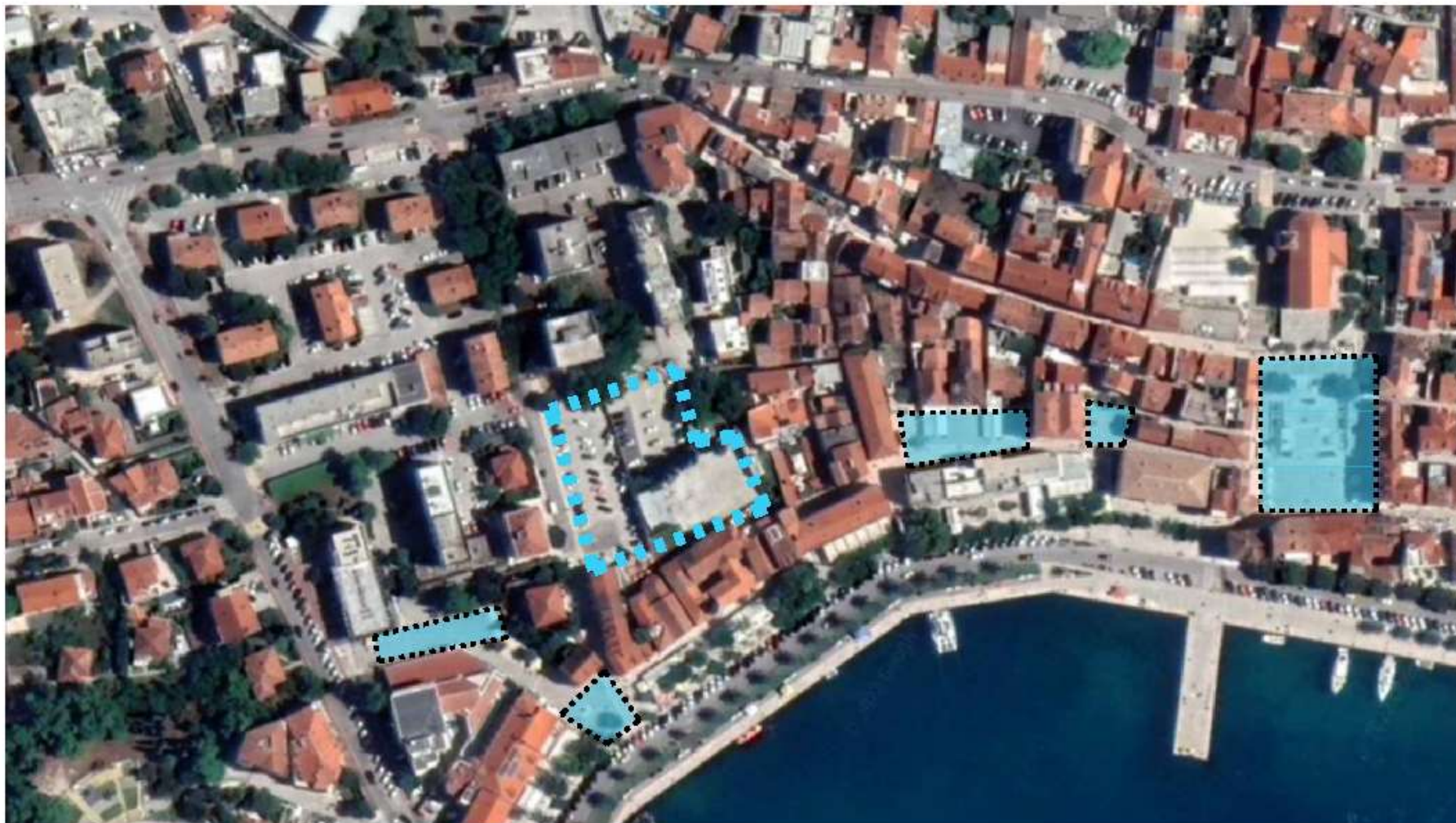


**OBJEKTI DRUŠTVENIH NAMJENA**



**OBUHVAT**

1. Općina 2. Crkva Sv. Marka 3. Tržnica na otvorenom 4. Glazbena škola 5. Osnovna škola 6. Crkva Sv. Filipa Nerija 7. Škola stranih jezika 8. Pošta 9. FINA 10. Autobusni kolodvor



POSTOJEĆI TRGOVI

analiza veličina makarskih trgova



OBUHVAT



analiza kolnog prometa



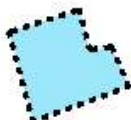
DVOSMJERNA



JEDNOSMJERNA



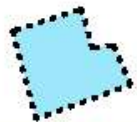
STOPIRANA ULICA



OBUHVAT



analiza pješačkog prometa



**OBUHVAT**



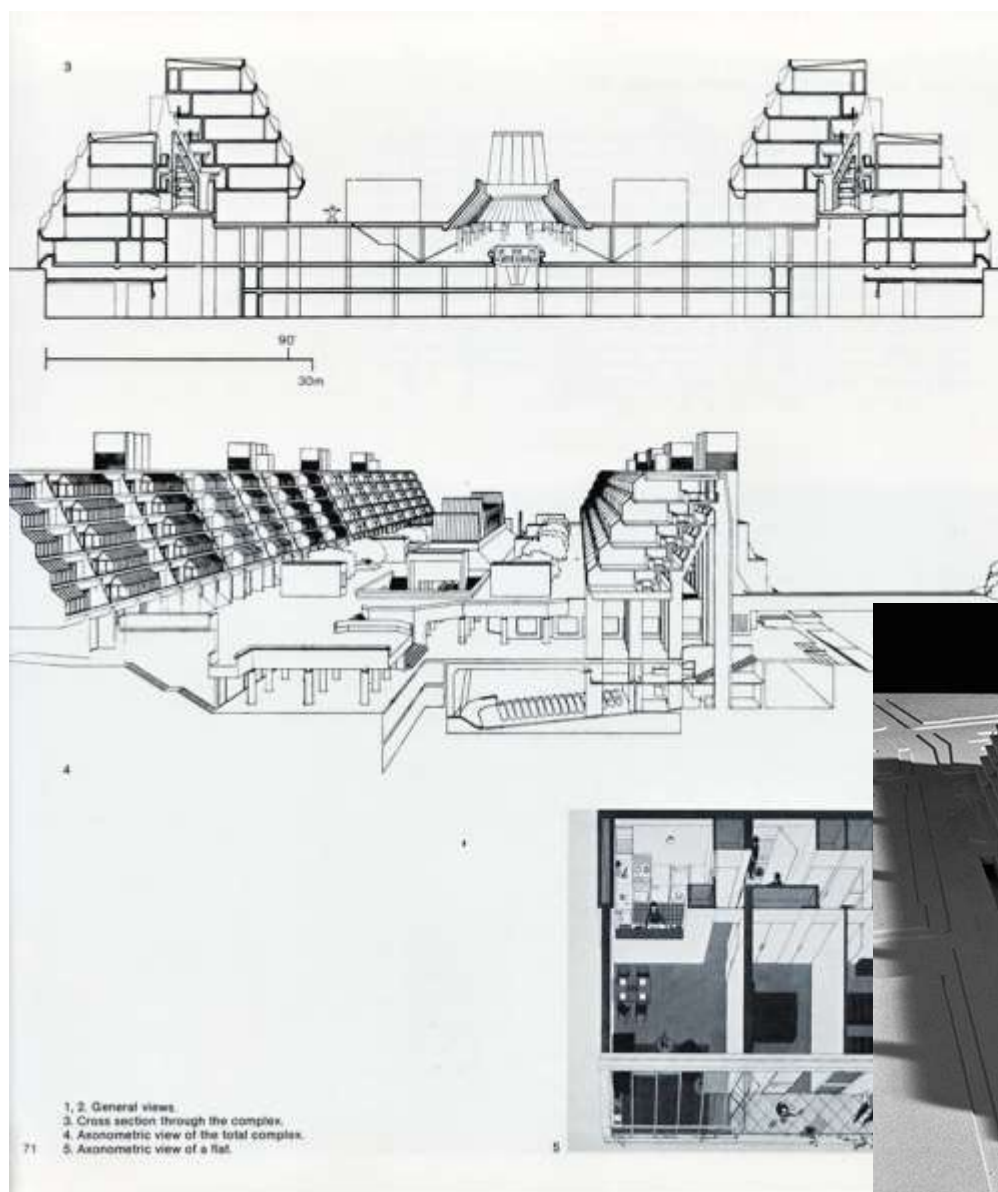
**PJEŠAČKA OS**



**PRISTUP S JUGA KROZ BISKUPSKI DVOR**



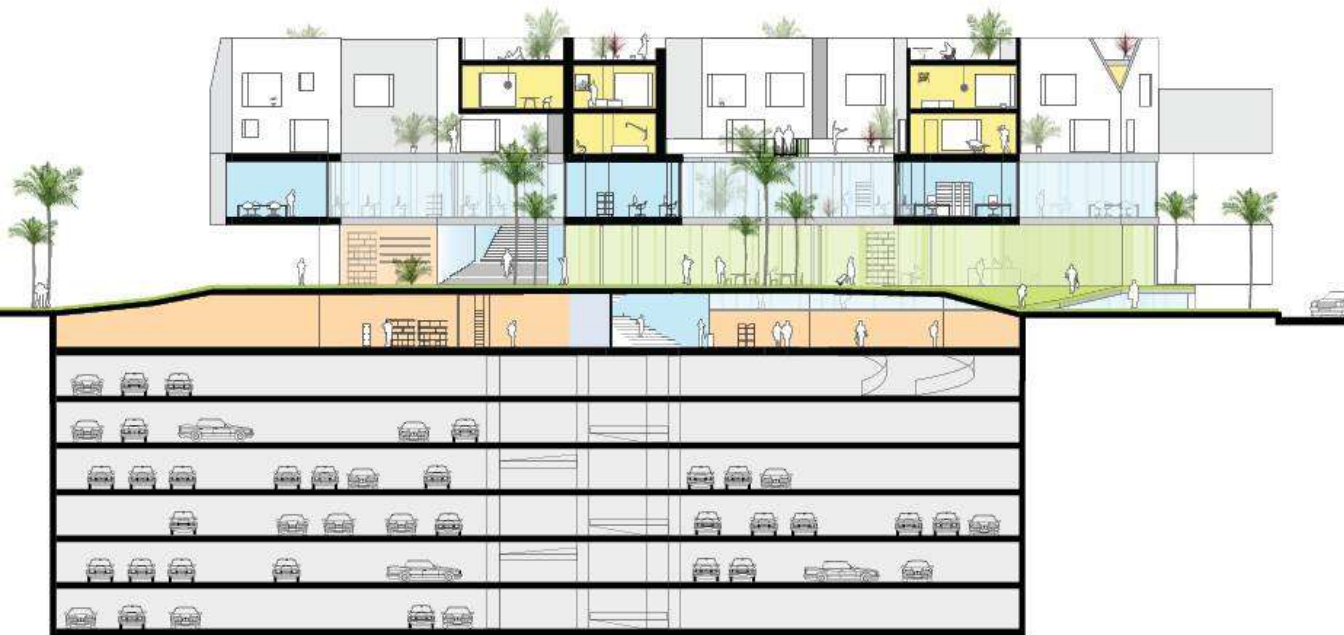
**NAJPROMETNIJA PJEŠAČKA OS**



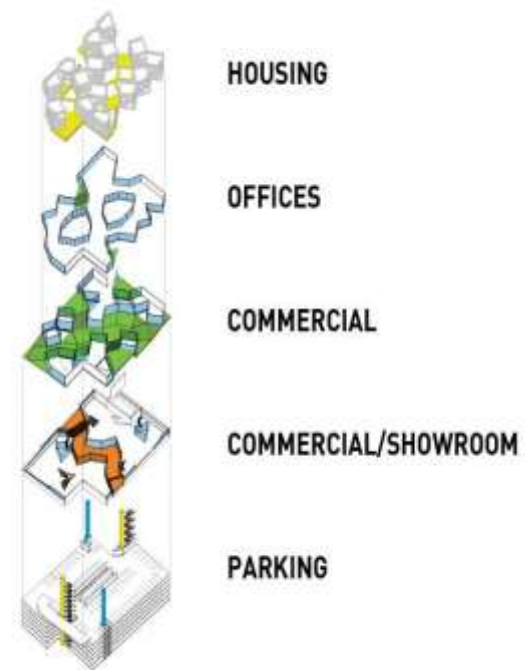
PATRICK HODGKINSON, BRUNSWICK CENTRE, 1972.





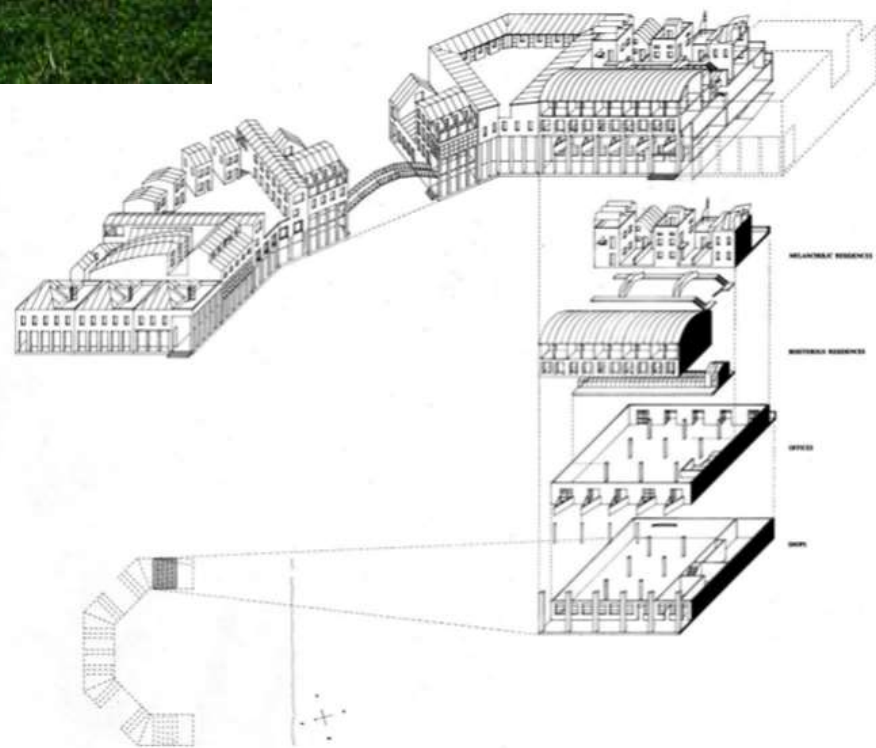


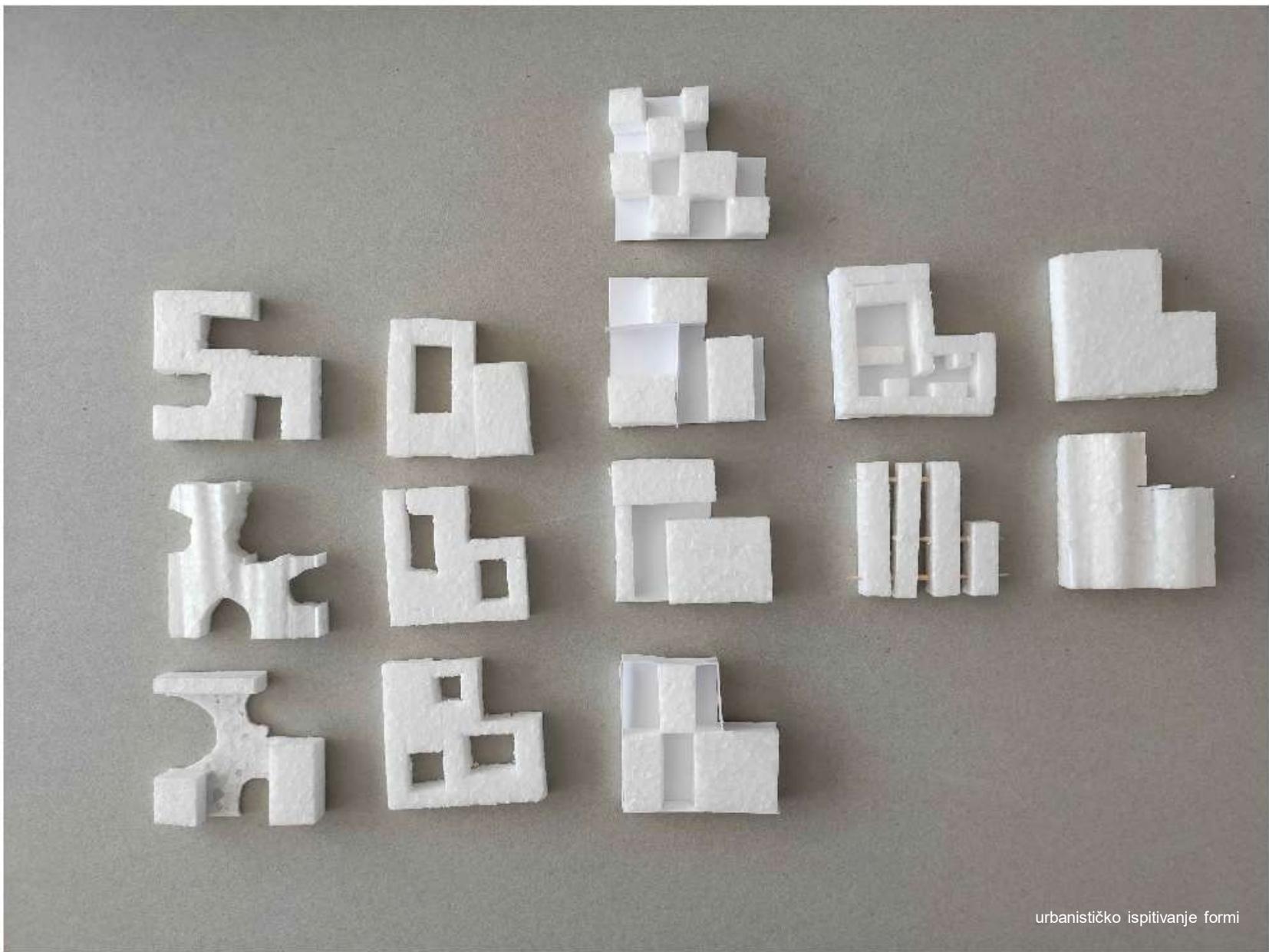
JULIEN DE SMEDT, ARCHITECTURAL MOUSSAKA, 2007.



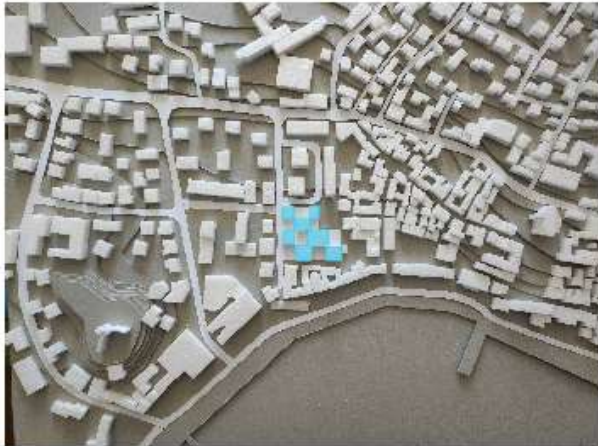


STEVEN HOLL, SEASIDE HYBRID, 1988.

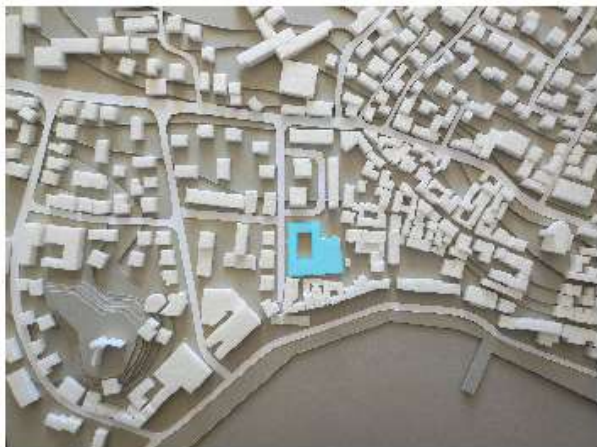




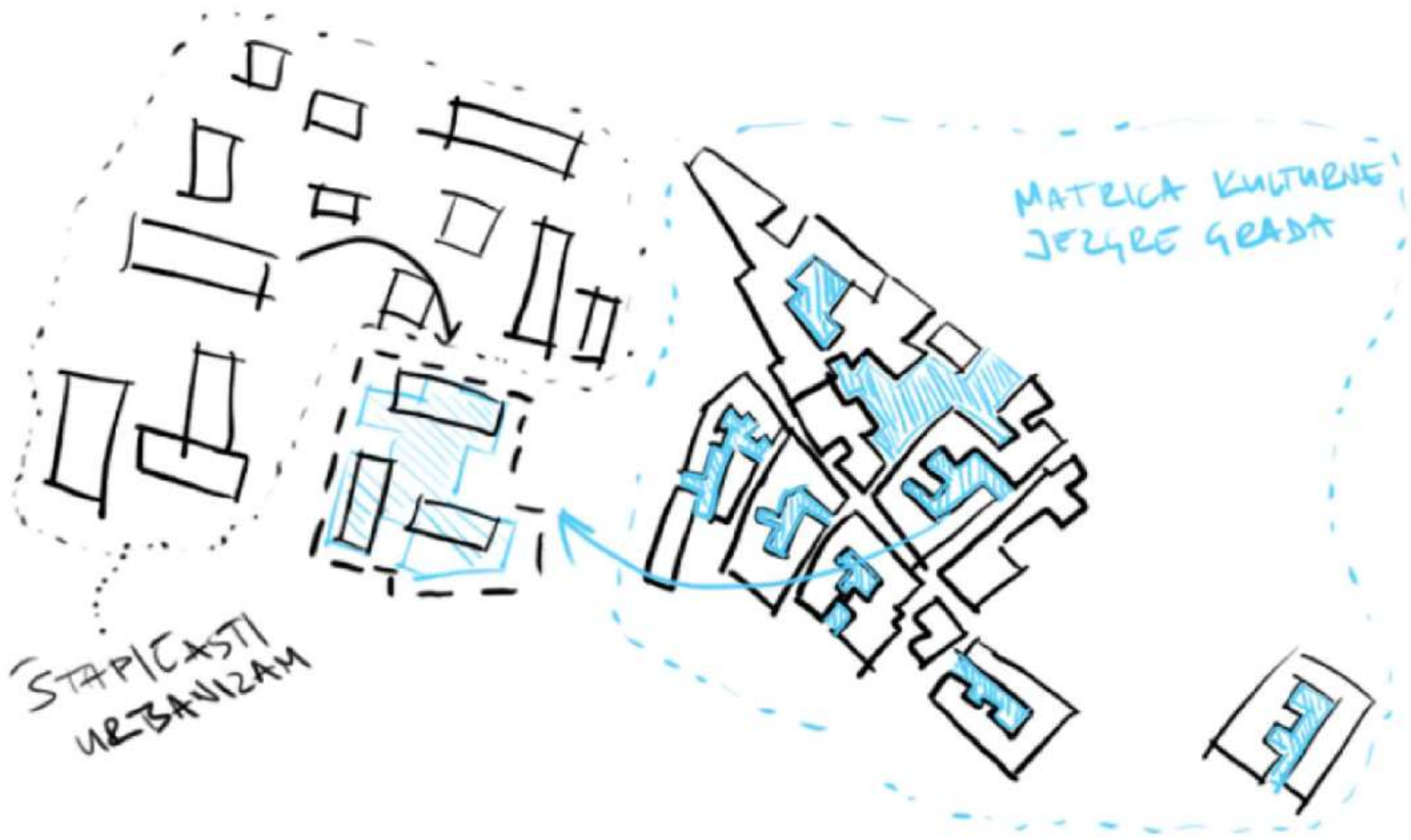
urbanističko ispitivanje formi



koncept na razini urbanizma



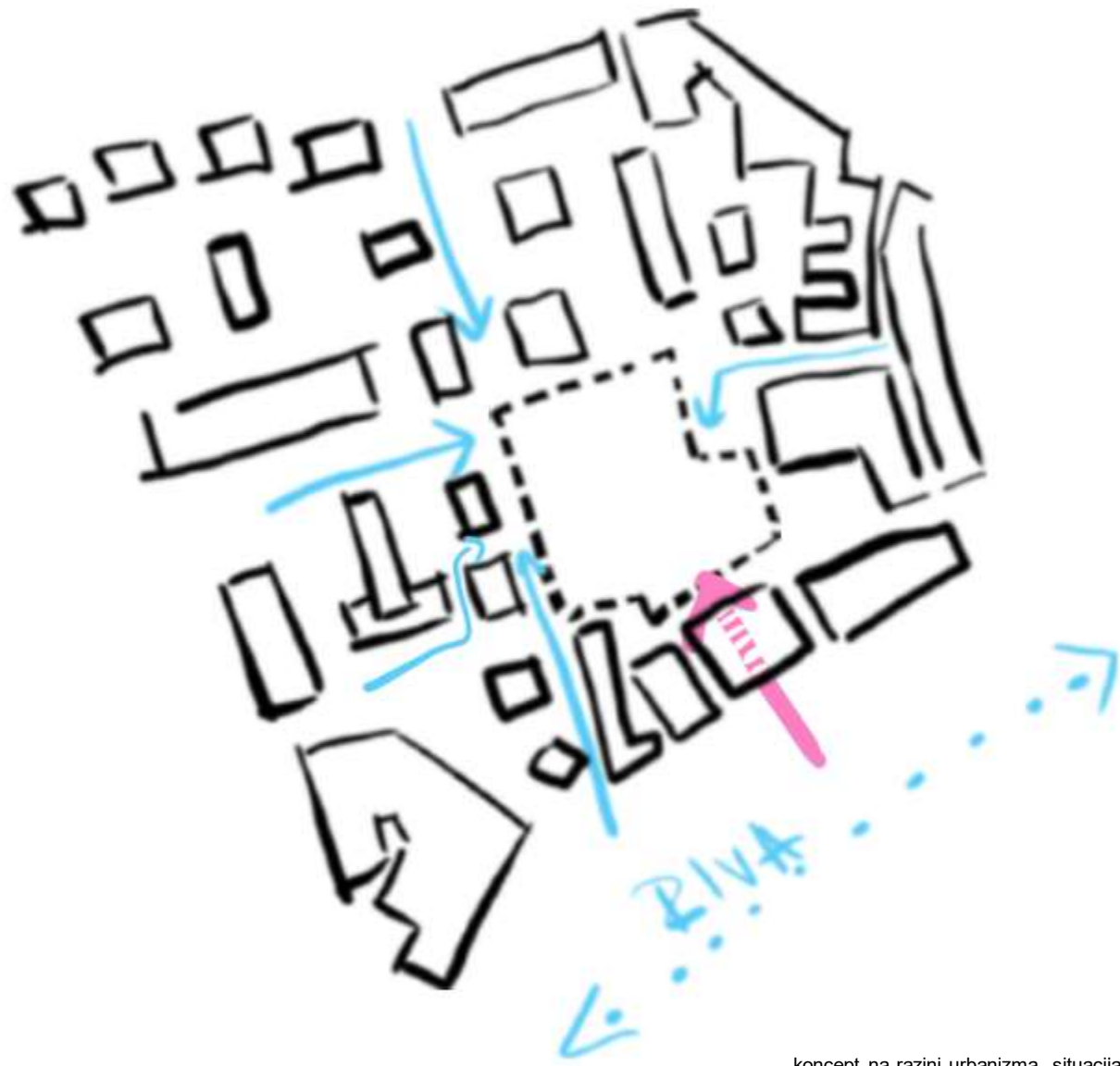
koncept na razini urbanizma



koncept na razini urbanizma



koncept na razini urbanizma, situacija



koncept na razini urbanizma, situacija sa pješačkim putevima





koncept na razini urbanizma, potencijalni novi pješački putevi



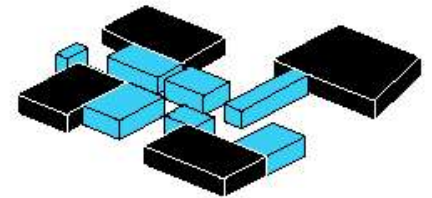
koncept na razini urbanizma, maksimalno iskorištavanje tlocrtno površine parcele



koncept na razini urbanizma, oduzimanje od maksimalnog u vidu zasjeka otvaranje prema ulici pješačkim putevima



koncept na razini urbanizma, dodavanje lamela po uzoru na štapičasti urbanizam



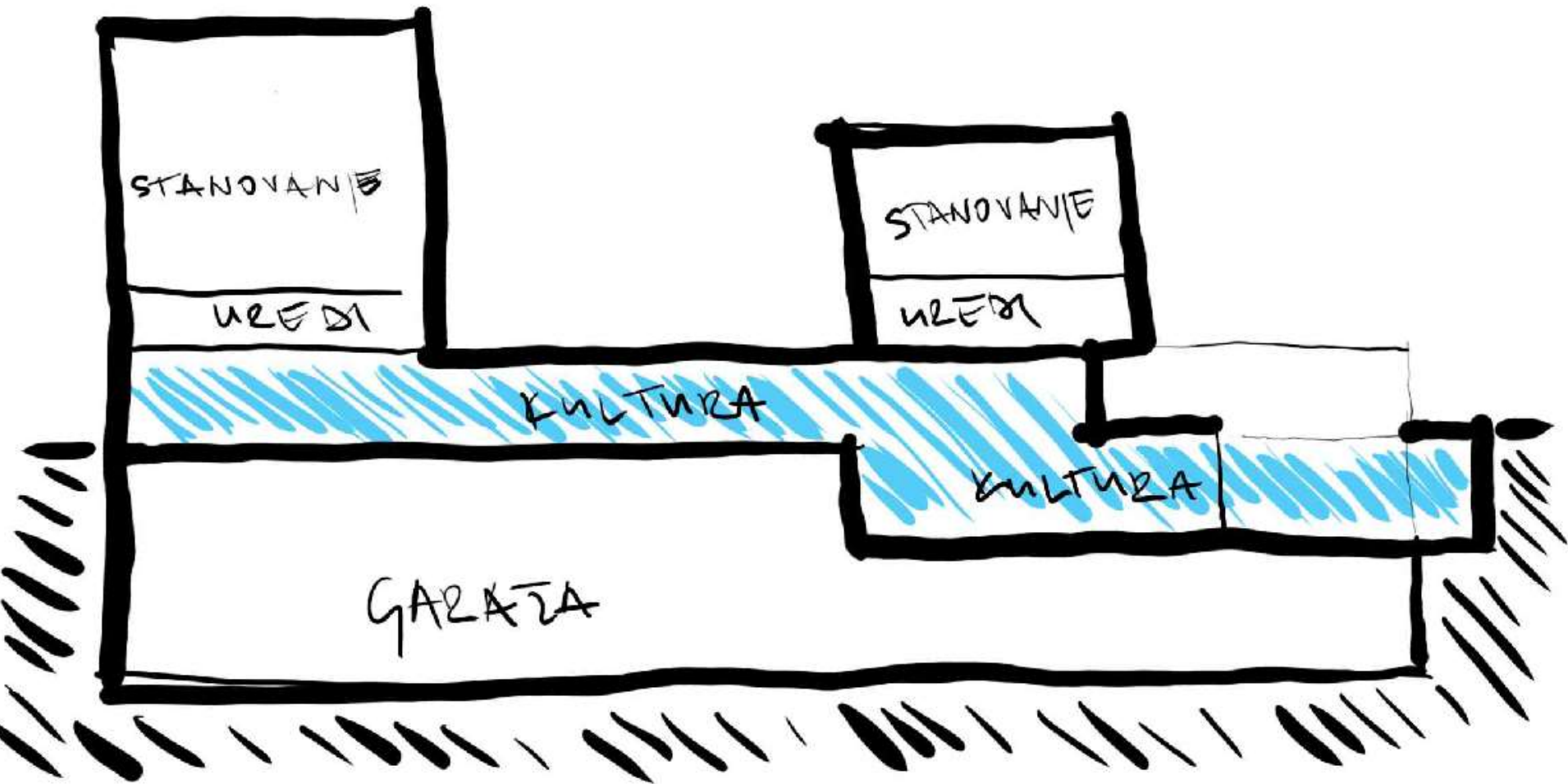
KOMERCIJALNO

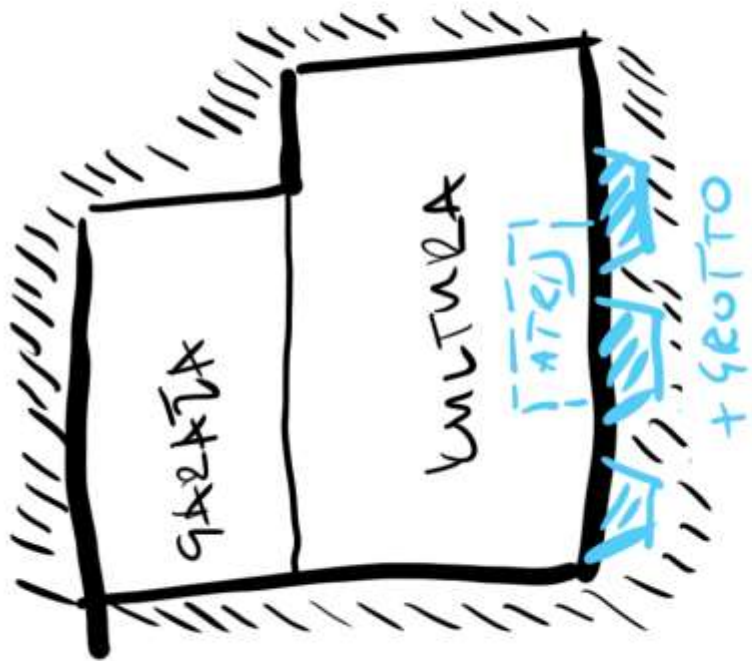
KULTURA

aksonometrijski prikaz partera

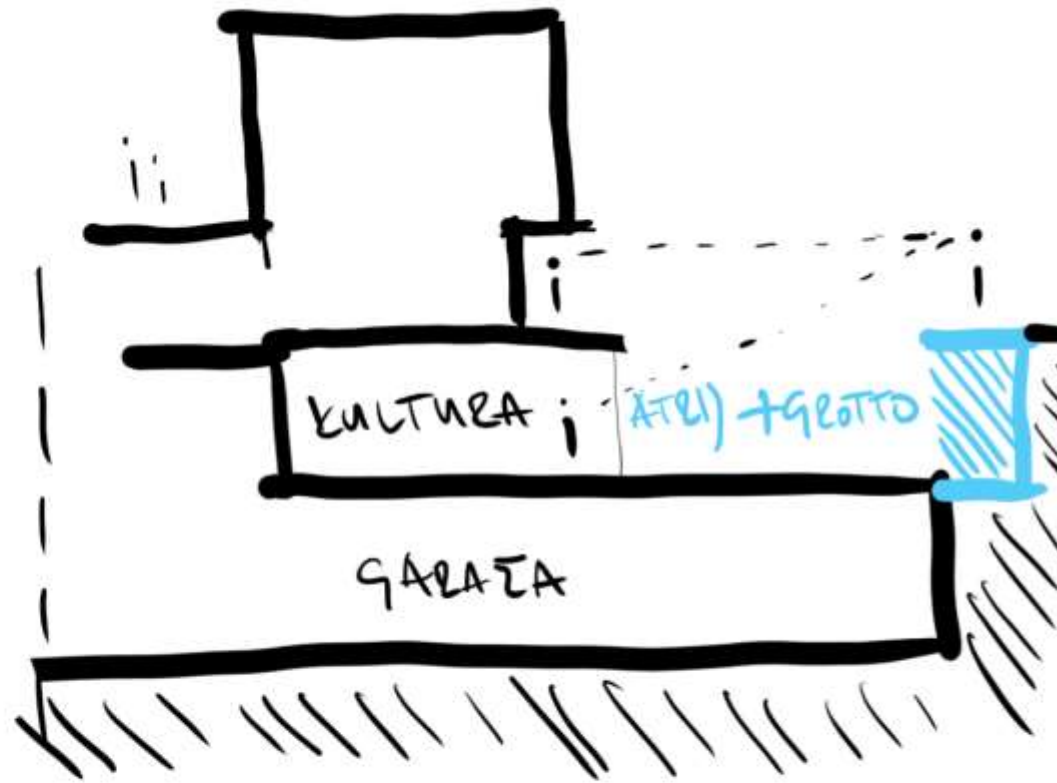
Shematska podjela na razini partera

shematska podjela programa po presjeku

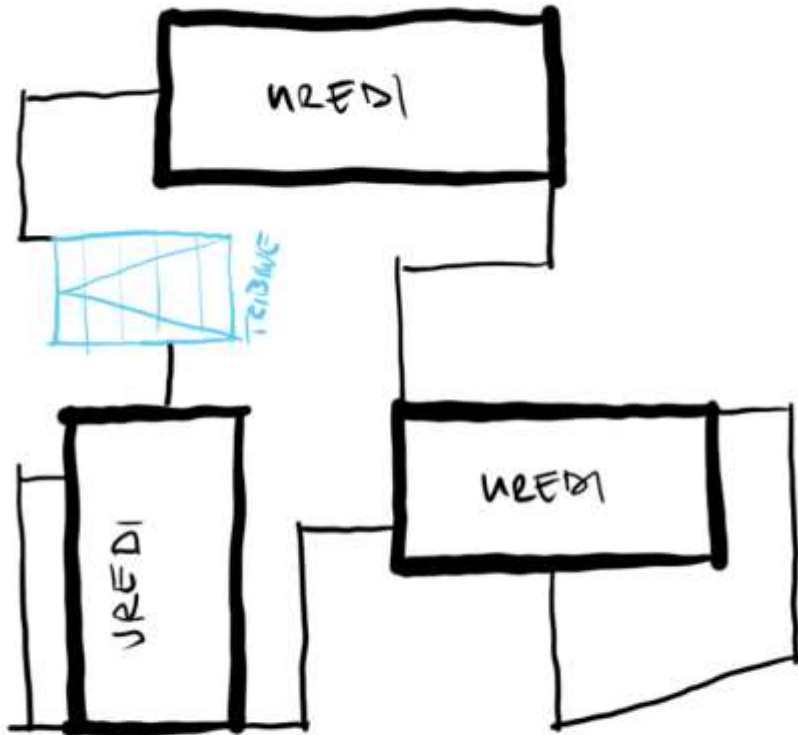




tlocrt, adicija grotto



presjek, adicija grotto, vizualne konekcije

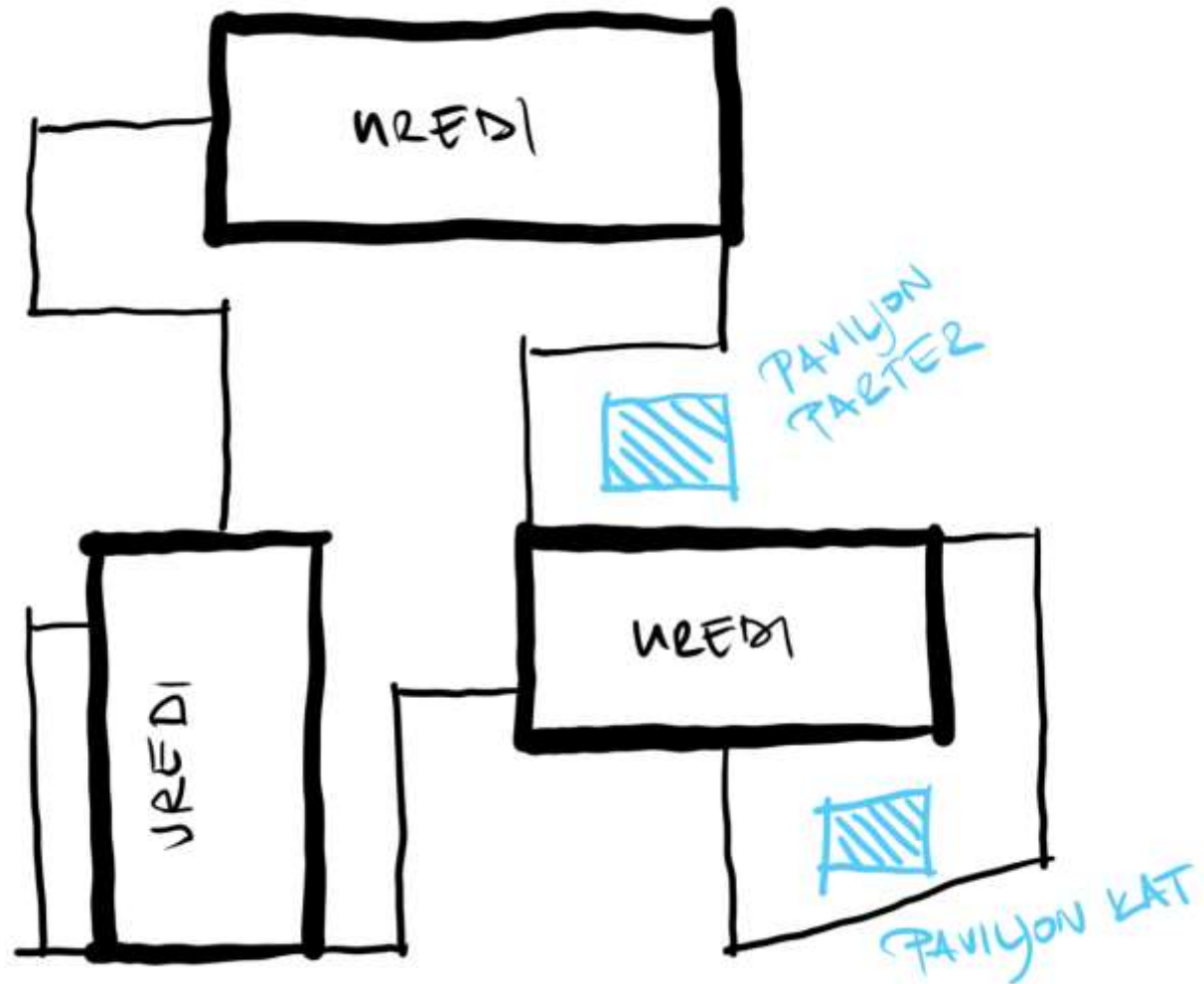


tlocrt, adicija tribina

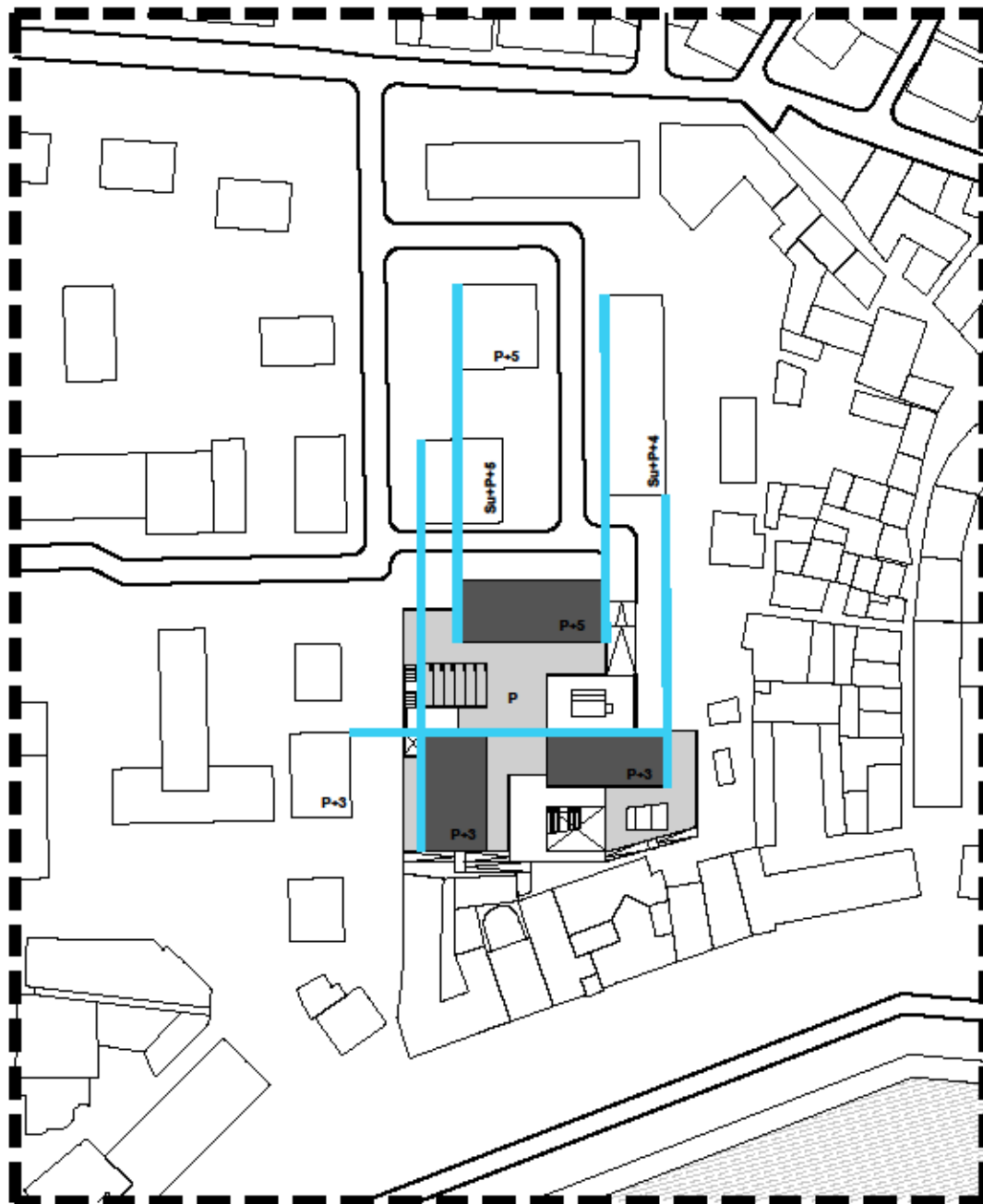


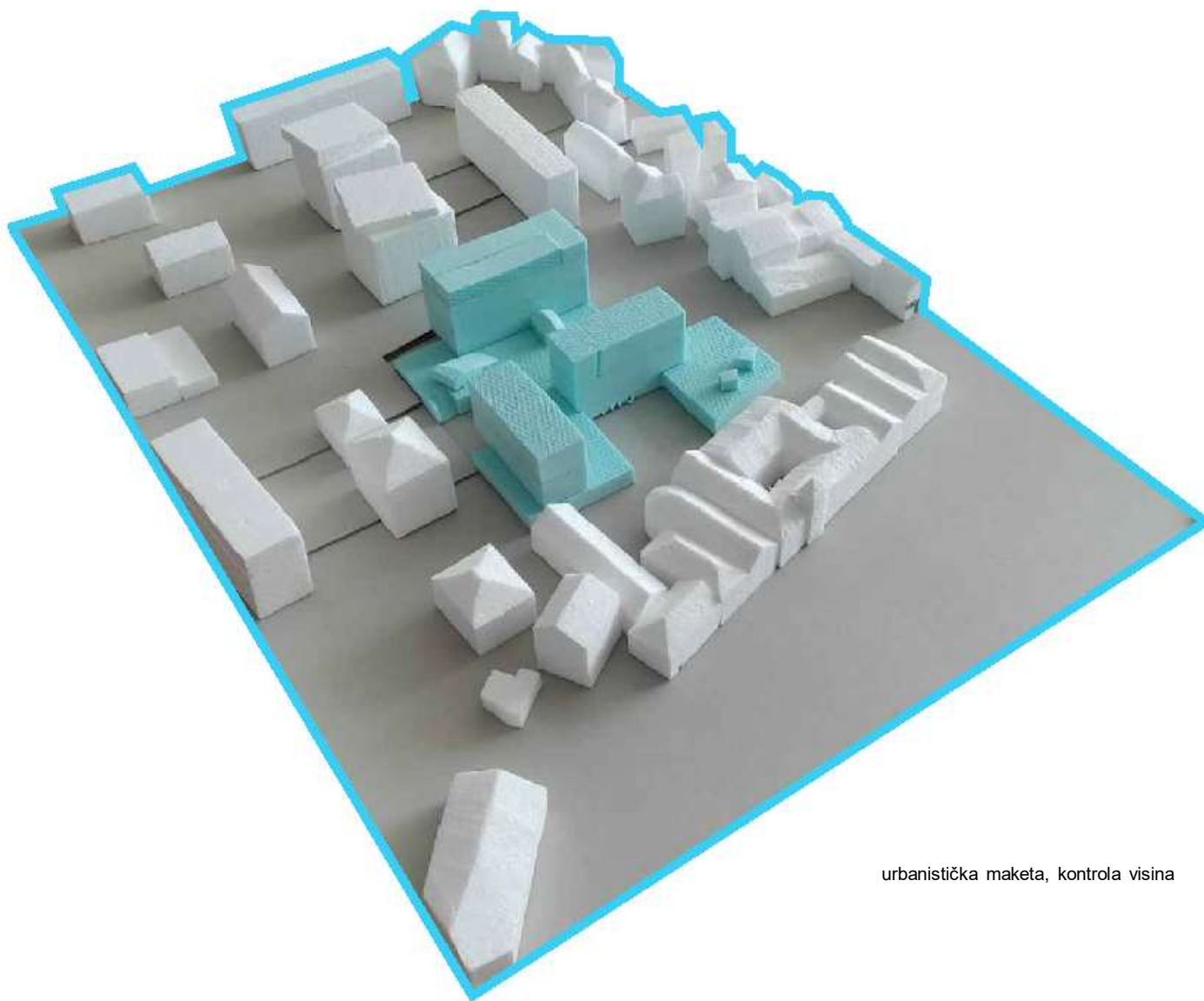
presjek, adicija adicija tribina, vizualne konekcije



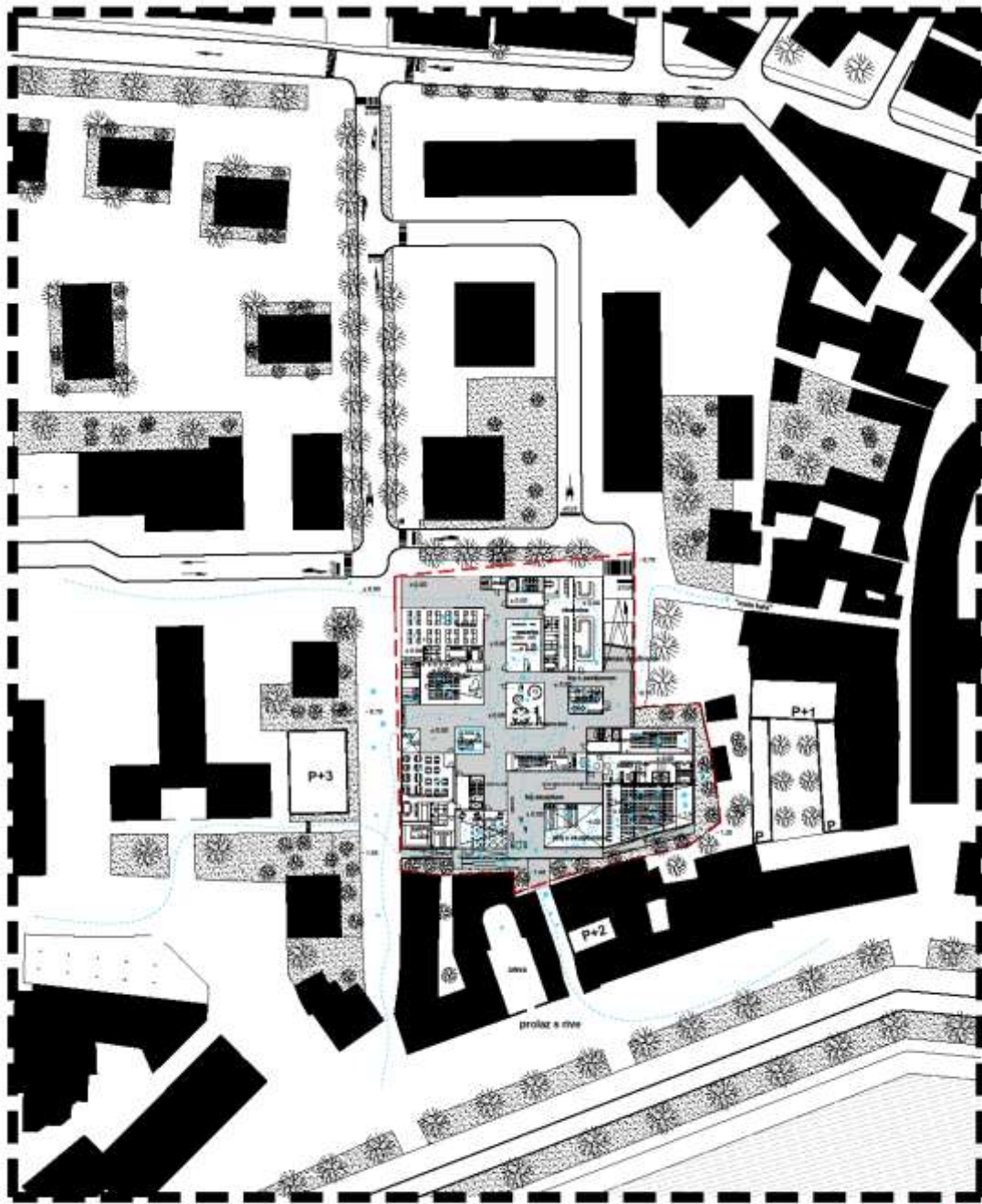


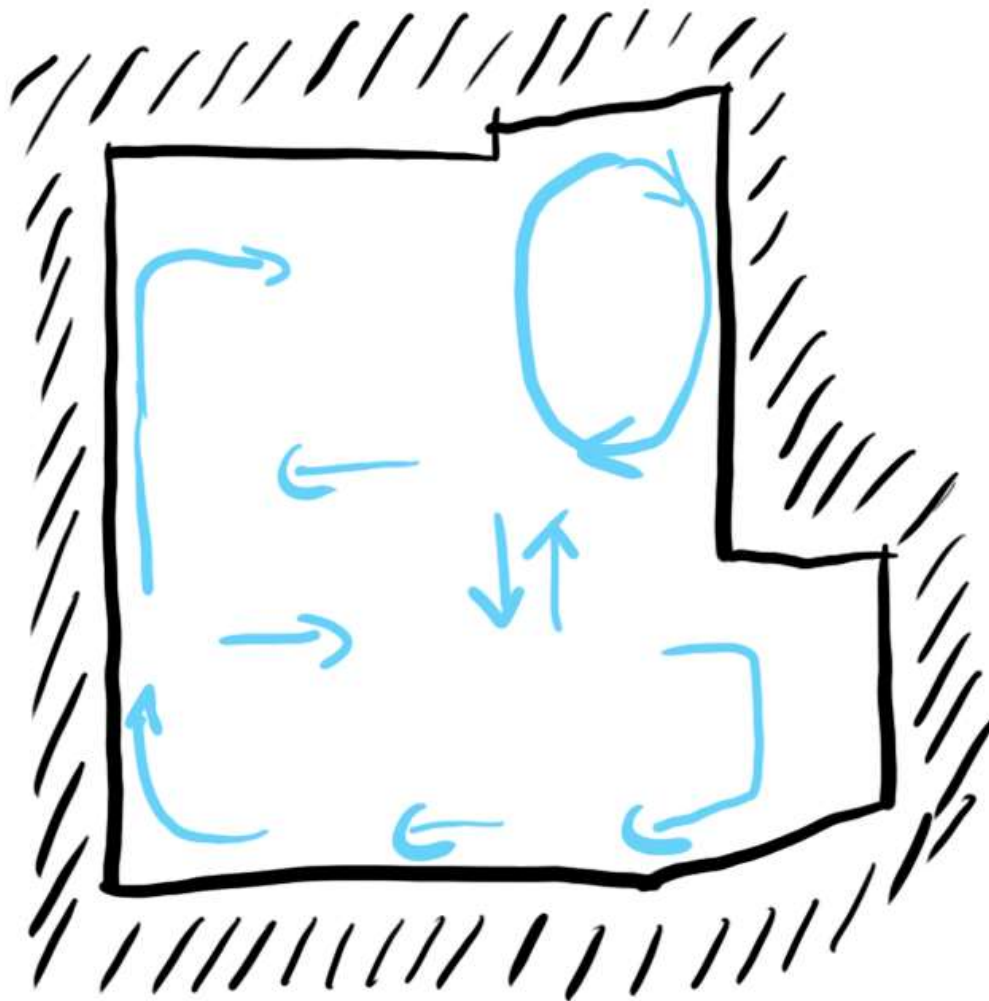
tlocrt, adicija paviljona



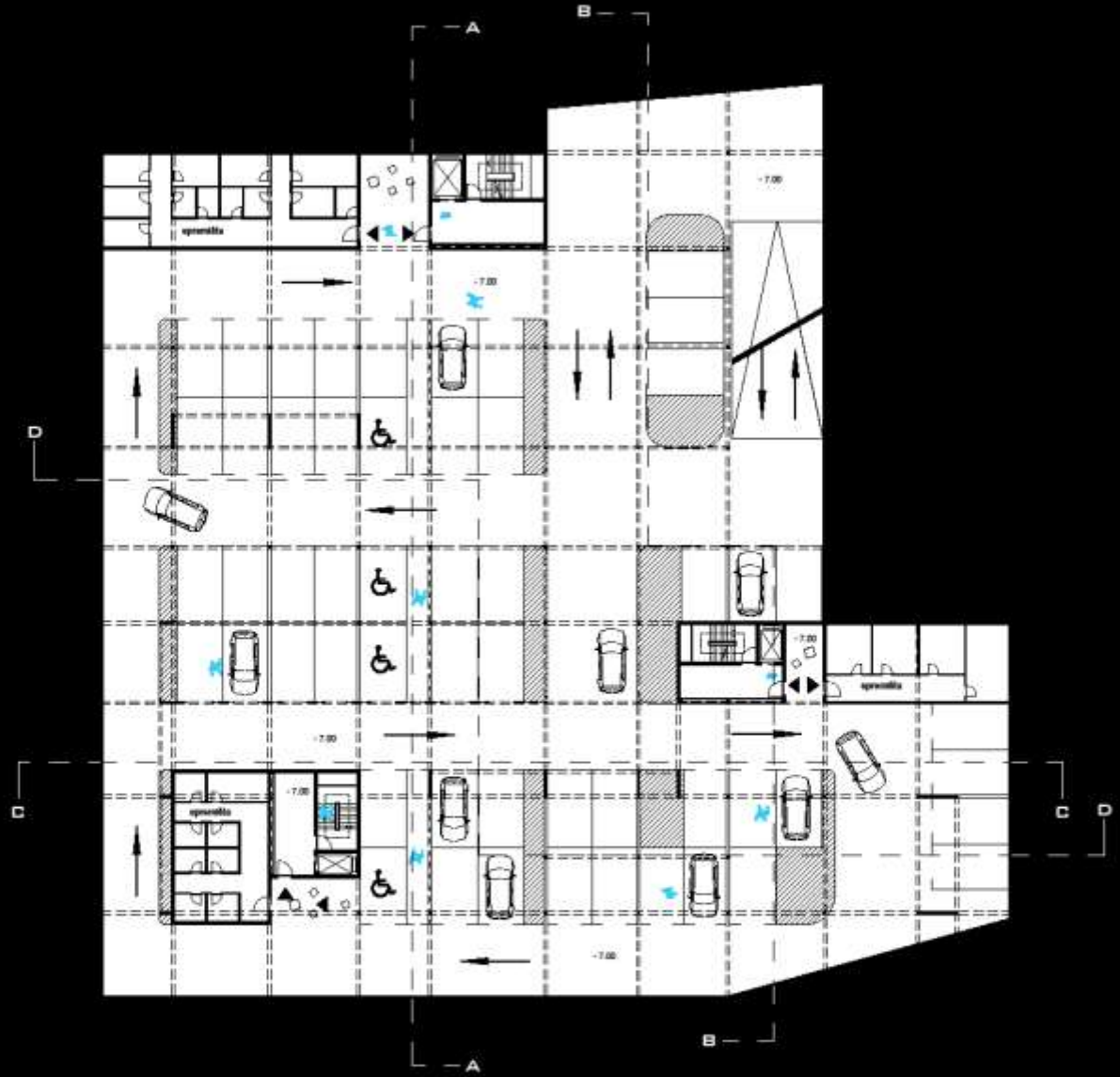


urbanistička maketa, kontrola visina





cirkulacija garaže





Shematski tlocrt organizacije programa na -1 etaži

KULTURNI KULturnna ULICA  
 GALERIJA  
 Lapidarij Vukovar kart  
 Valješka



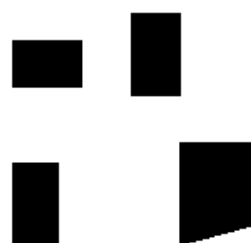




ULICA



KULTURA



KOMERCIJALNO



CENTAR URBANE KULTURE





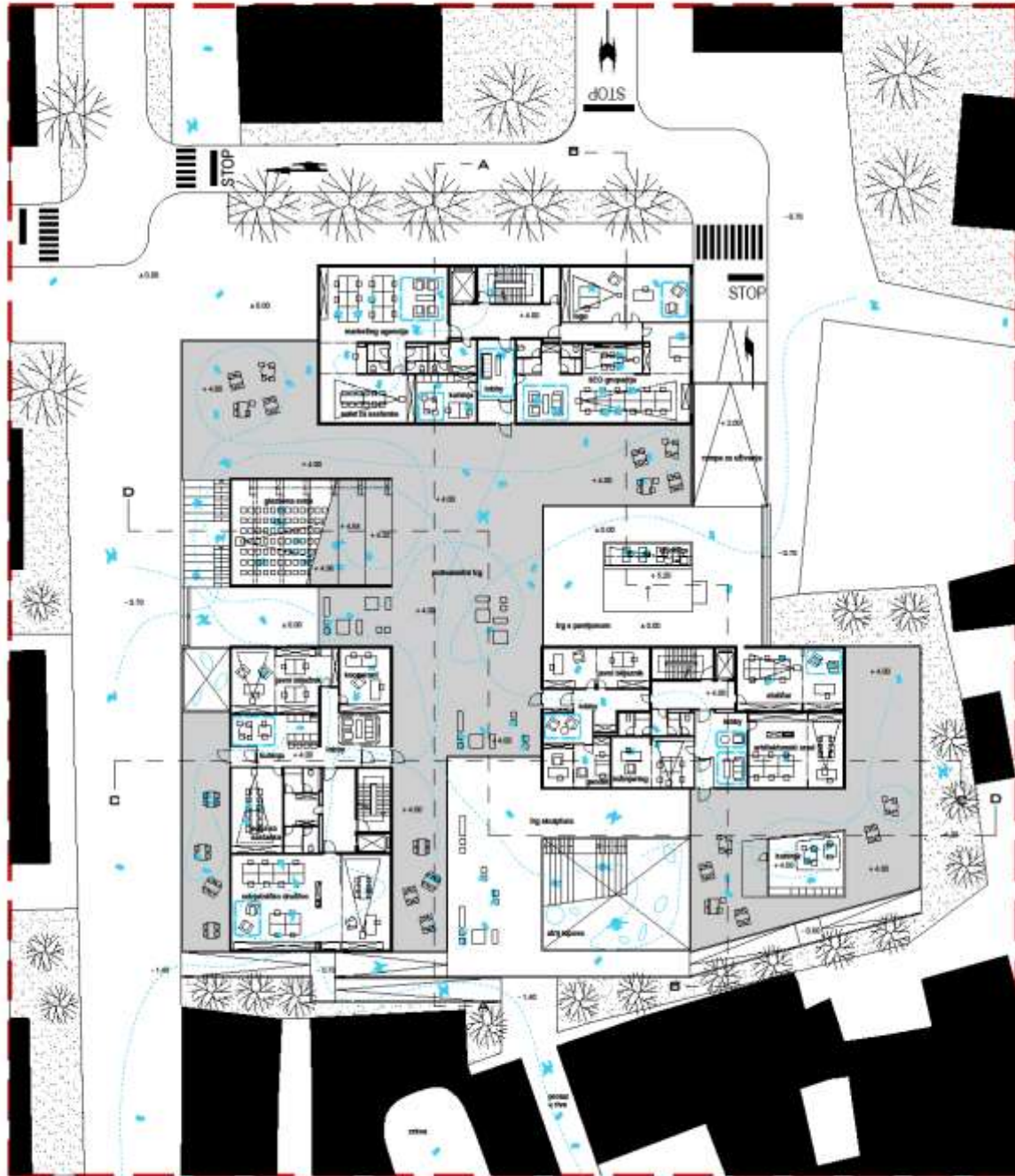
PVN TRG



POSLOVNI CENTAR



CENTAR URBANE KULTURE





**OVOJNICA**



**VANJSKI PROSTORI**



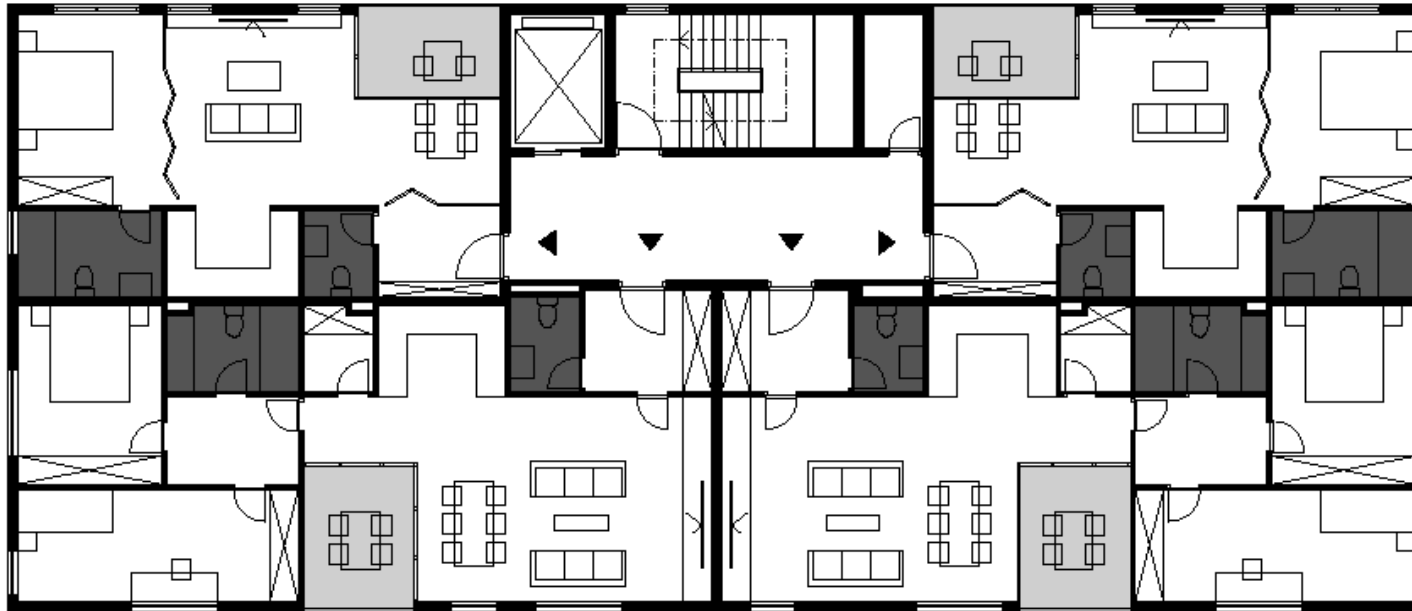
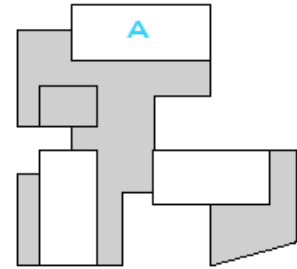
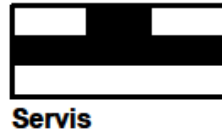
**SERVISNA ZONA**



**STANOVI**



Zgrada A



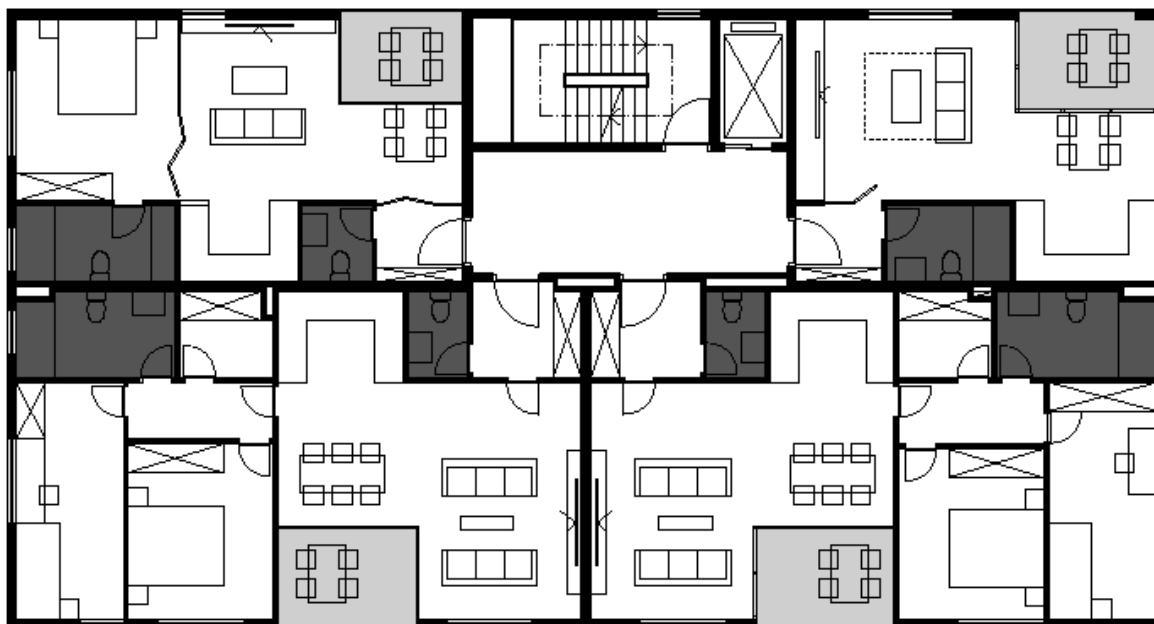
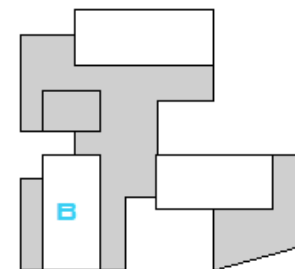
# Zgrada B



Servis



Stanovi

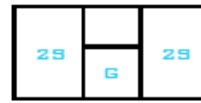




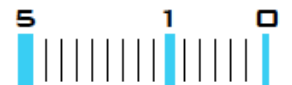
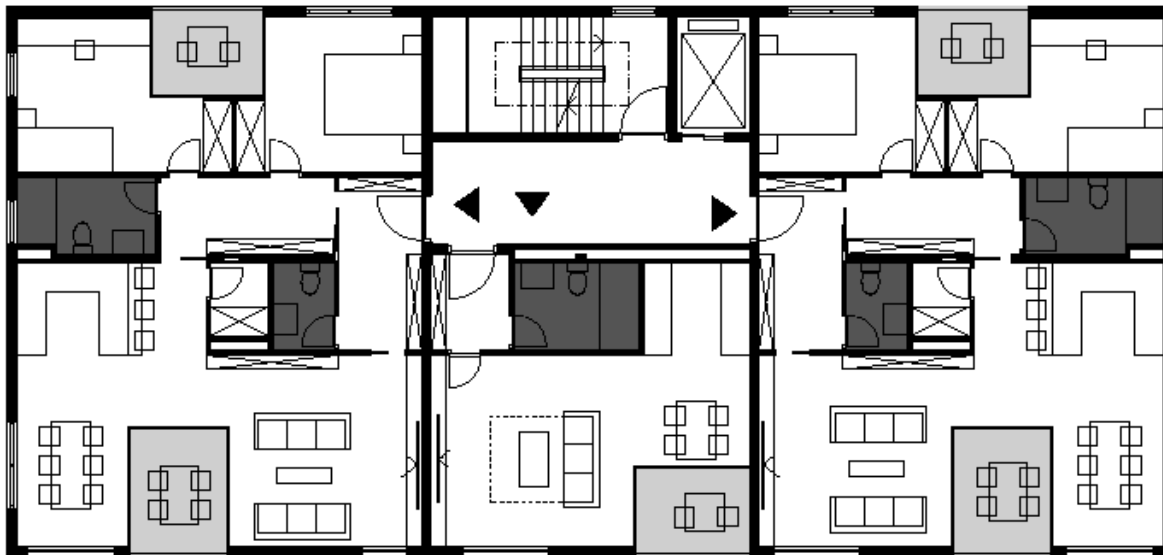
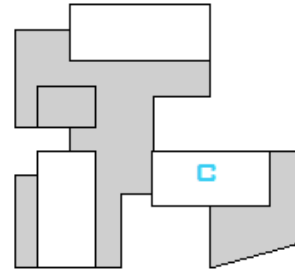
Zgrada C

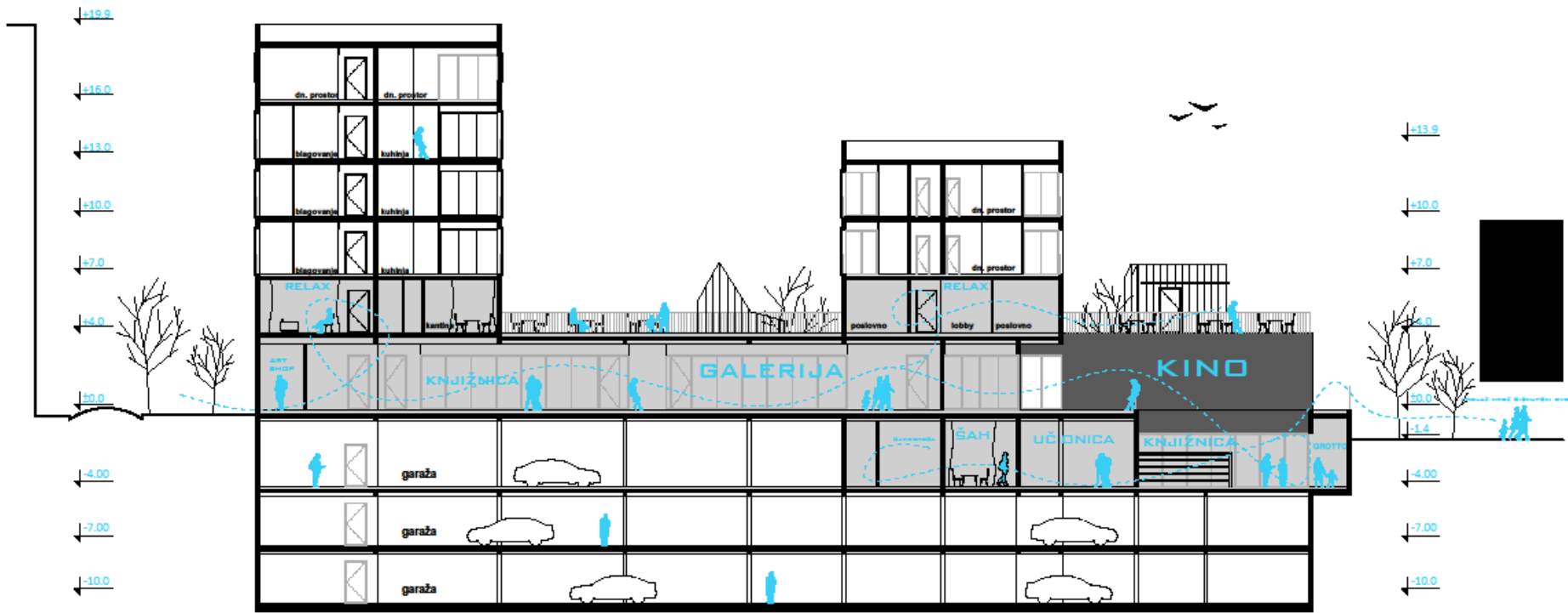
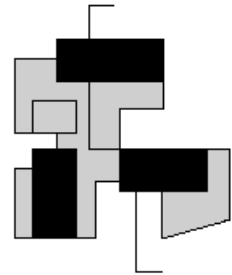


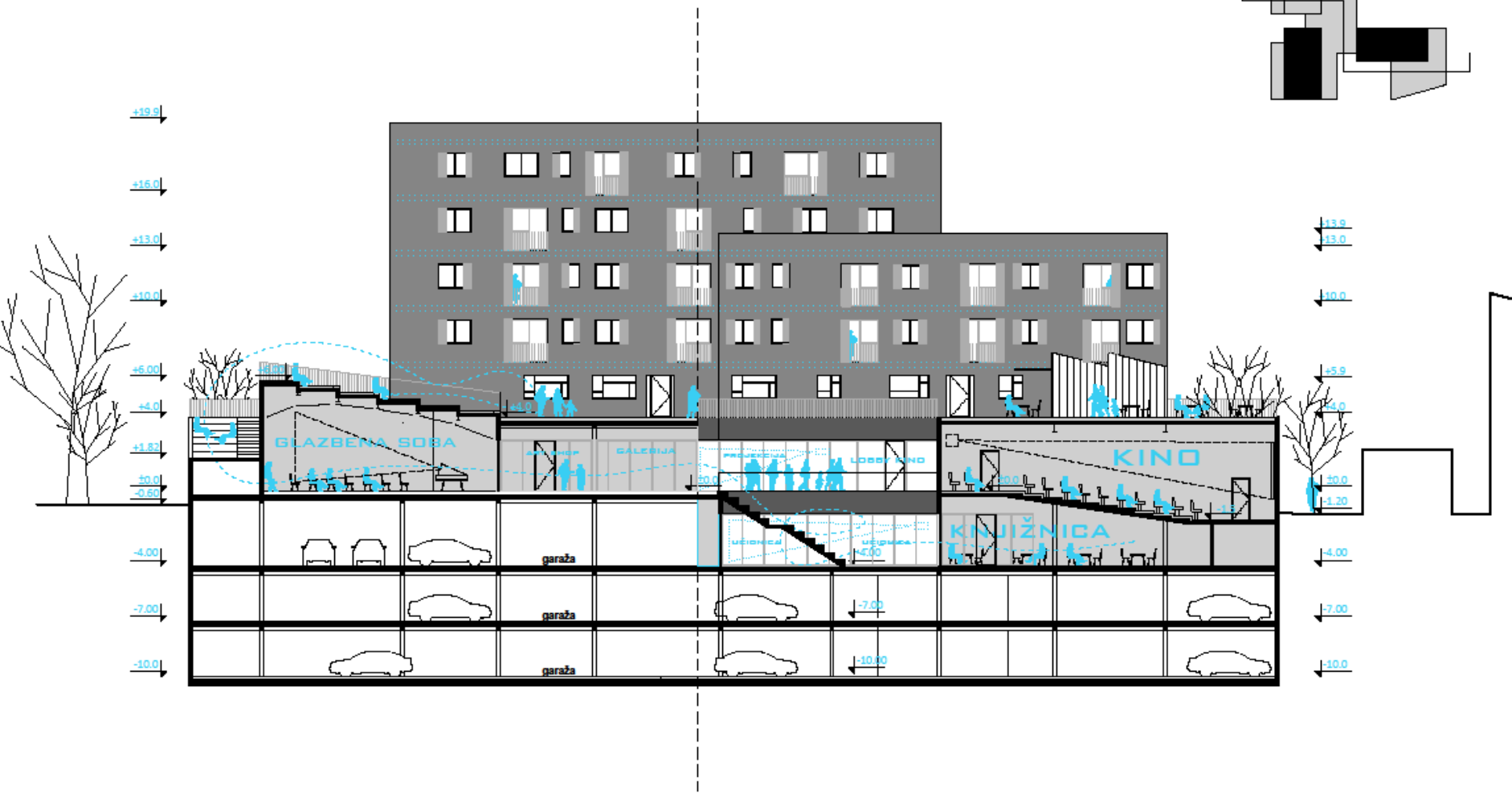
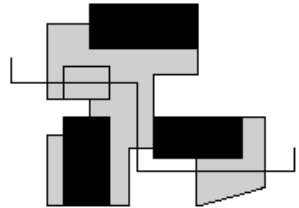
Servis

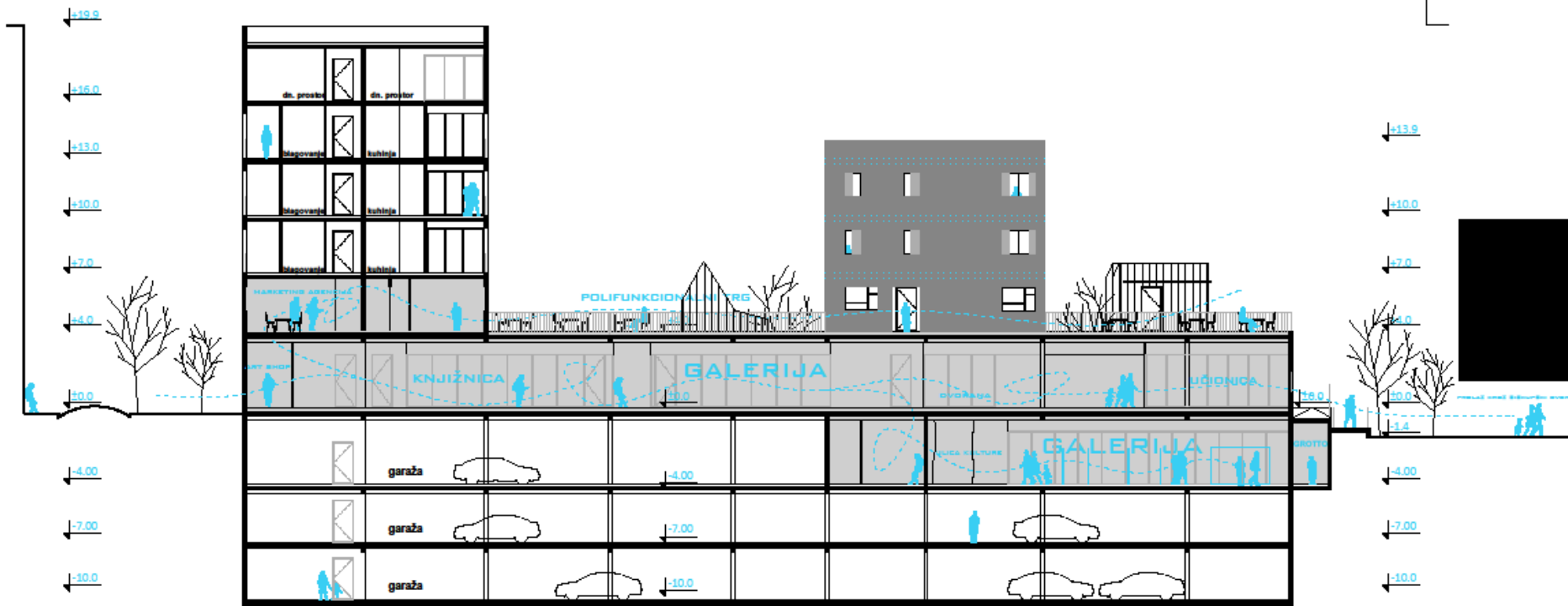


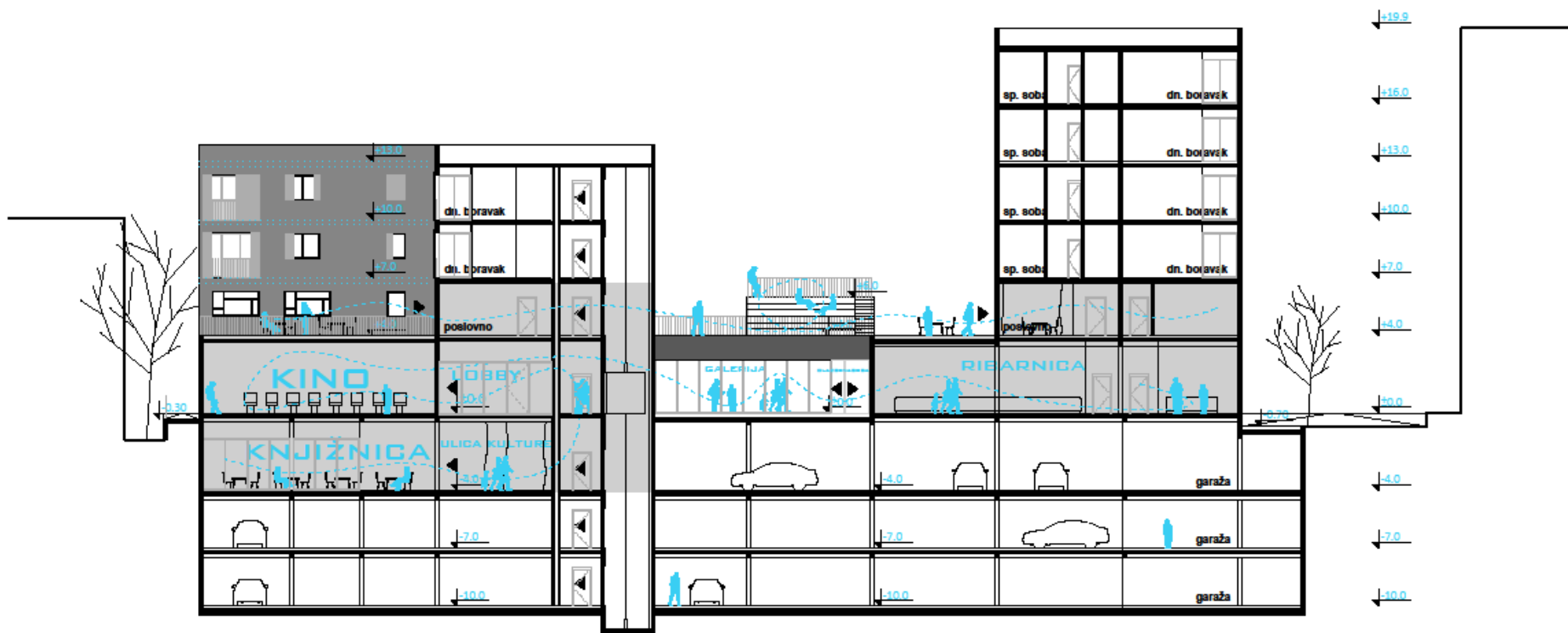
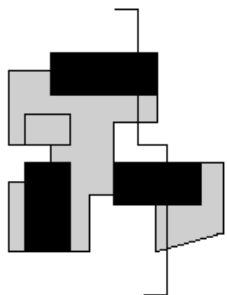
Stanovi

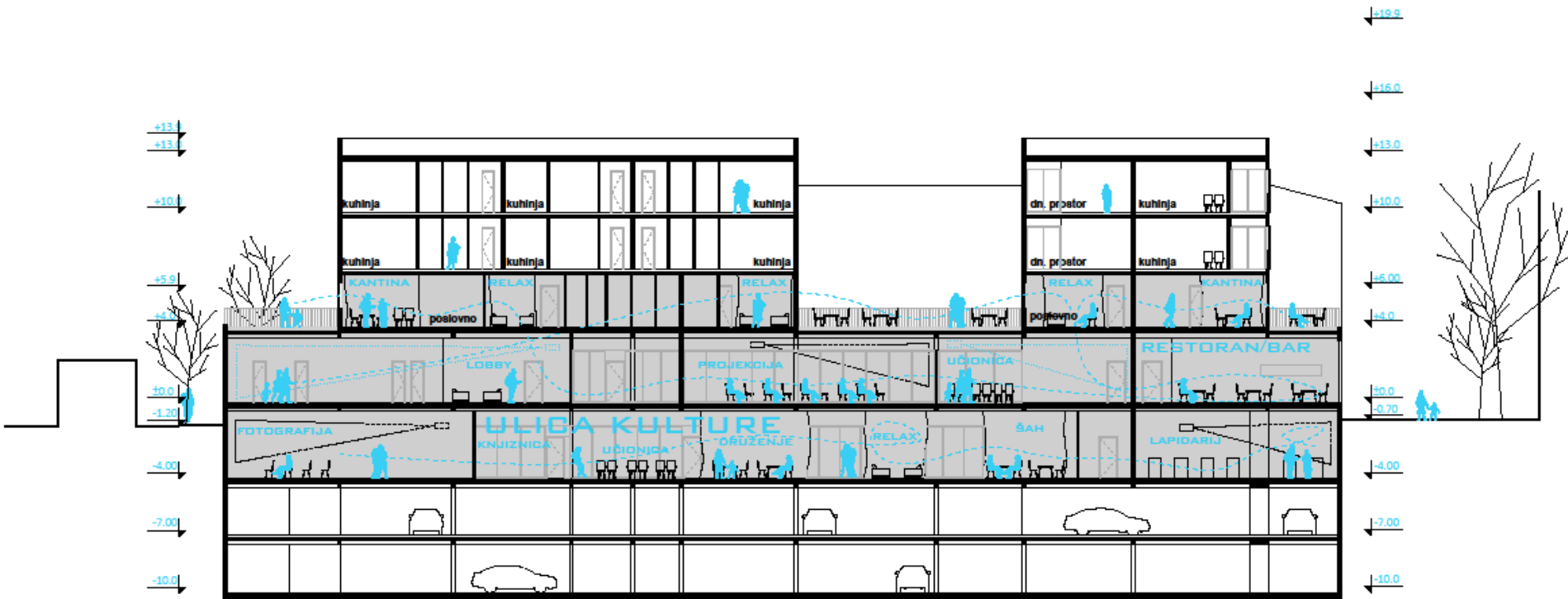
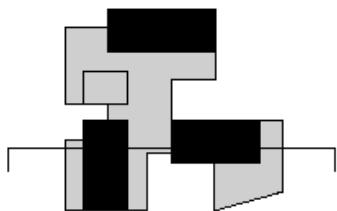


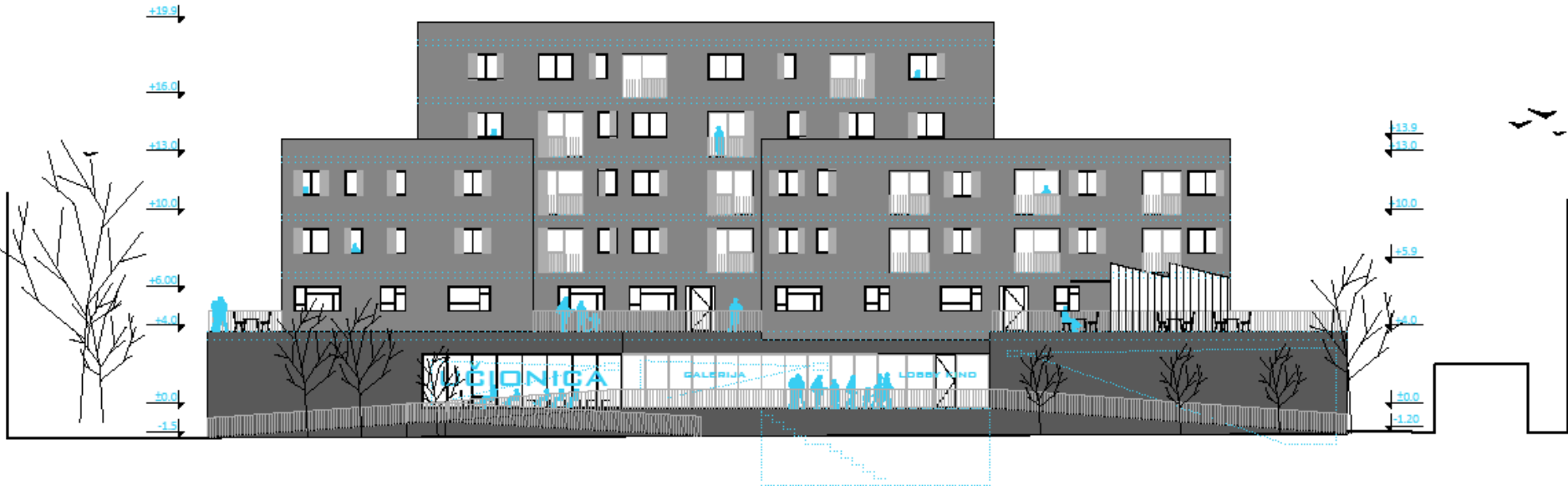
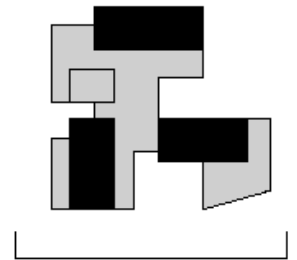


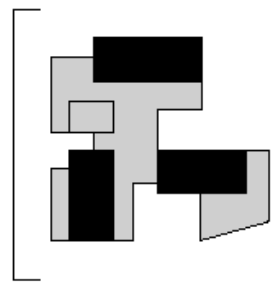




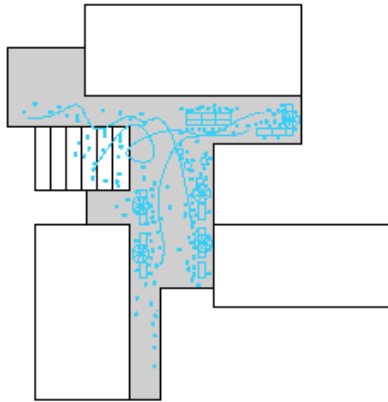




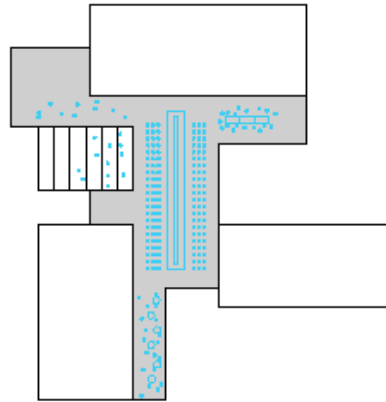




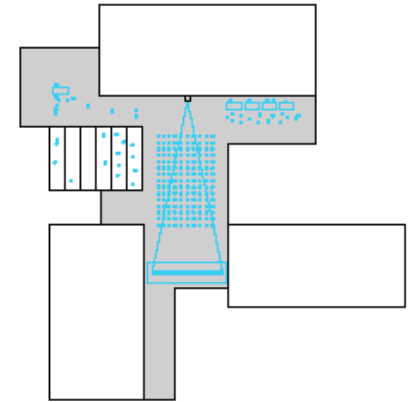




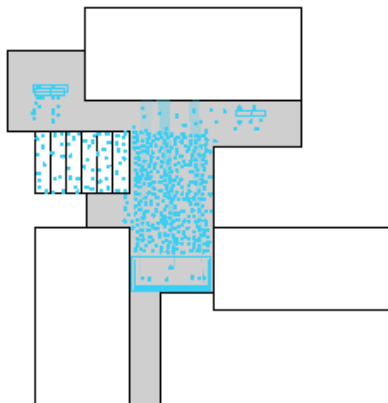
**Gastro sajam**



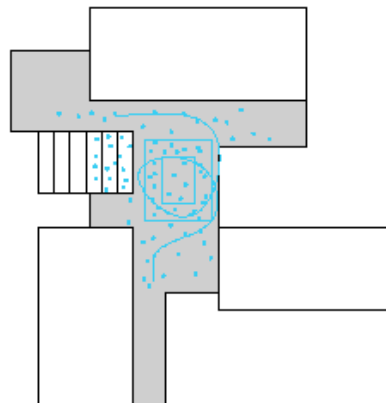
**Modna revija**



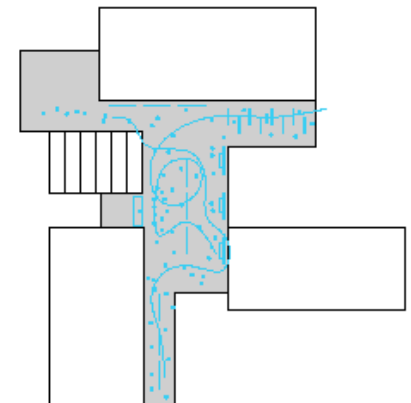
**Kino na otvorenom**



**Dječji koncert**

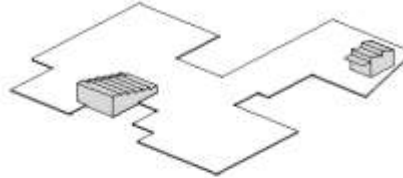
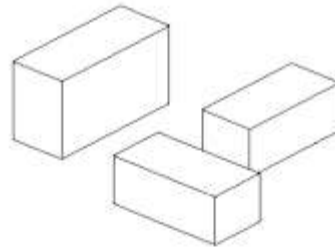


**Tribina**



**Izložba makarskih umjetnika**

STANOVANJE



PVN TRG I TRIBINE

PROHODNO PRIZEMLJE



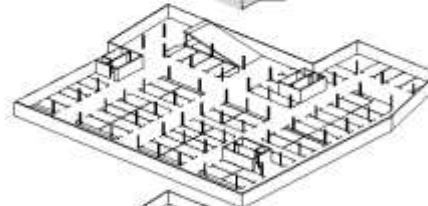
KULTURA

GARAŽA



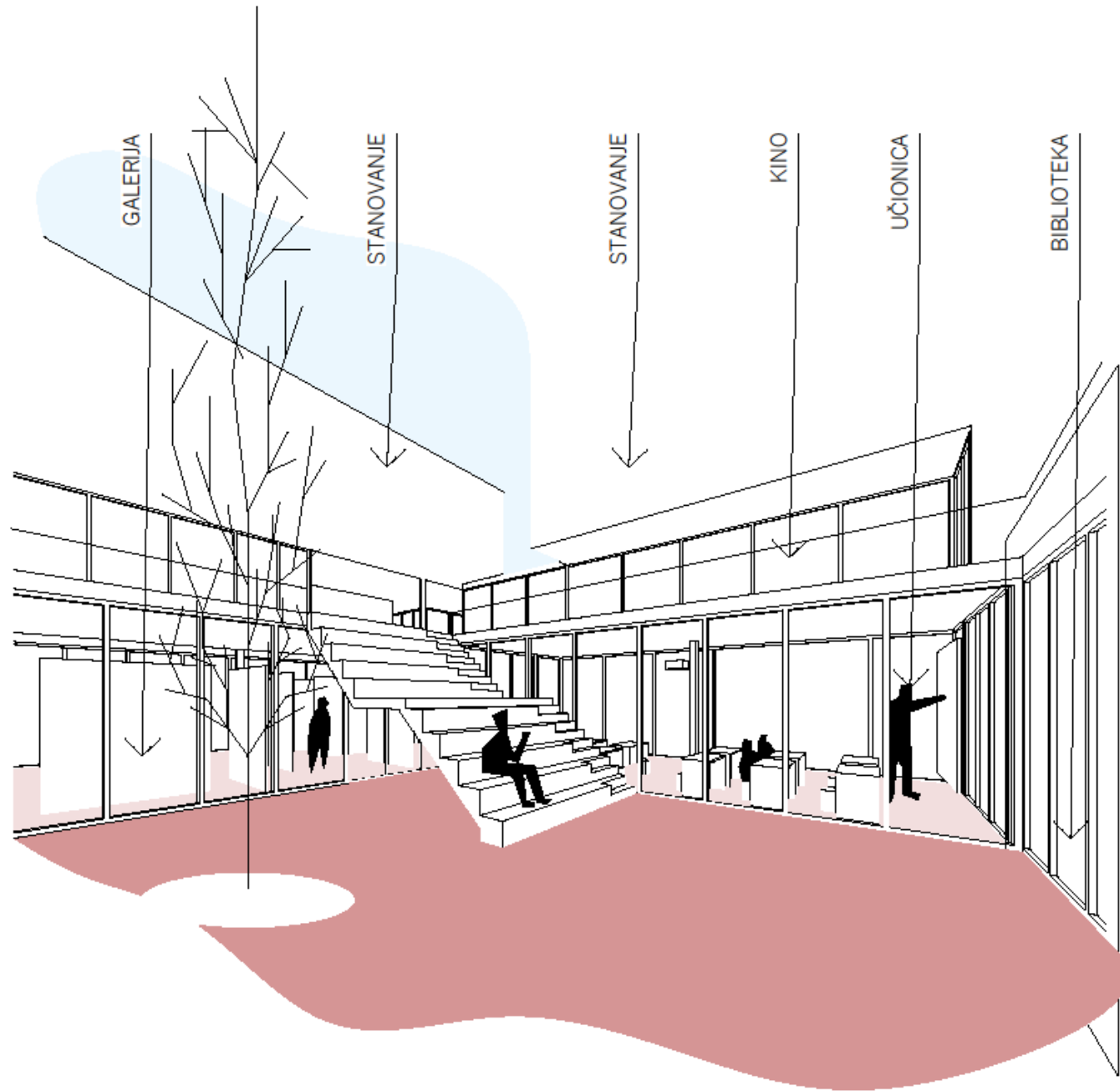
KULTURA

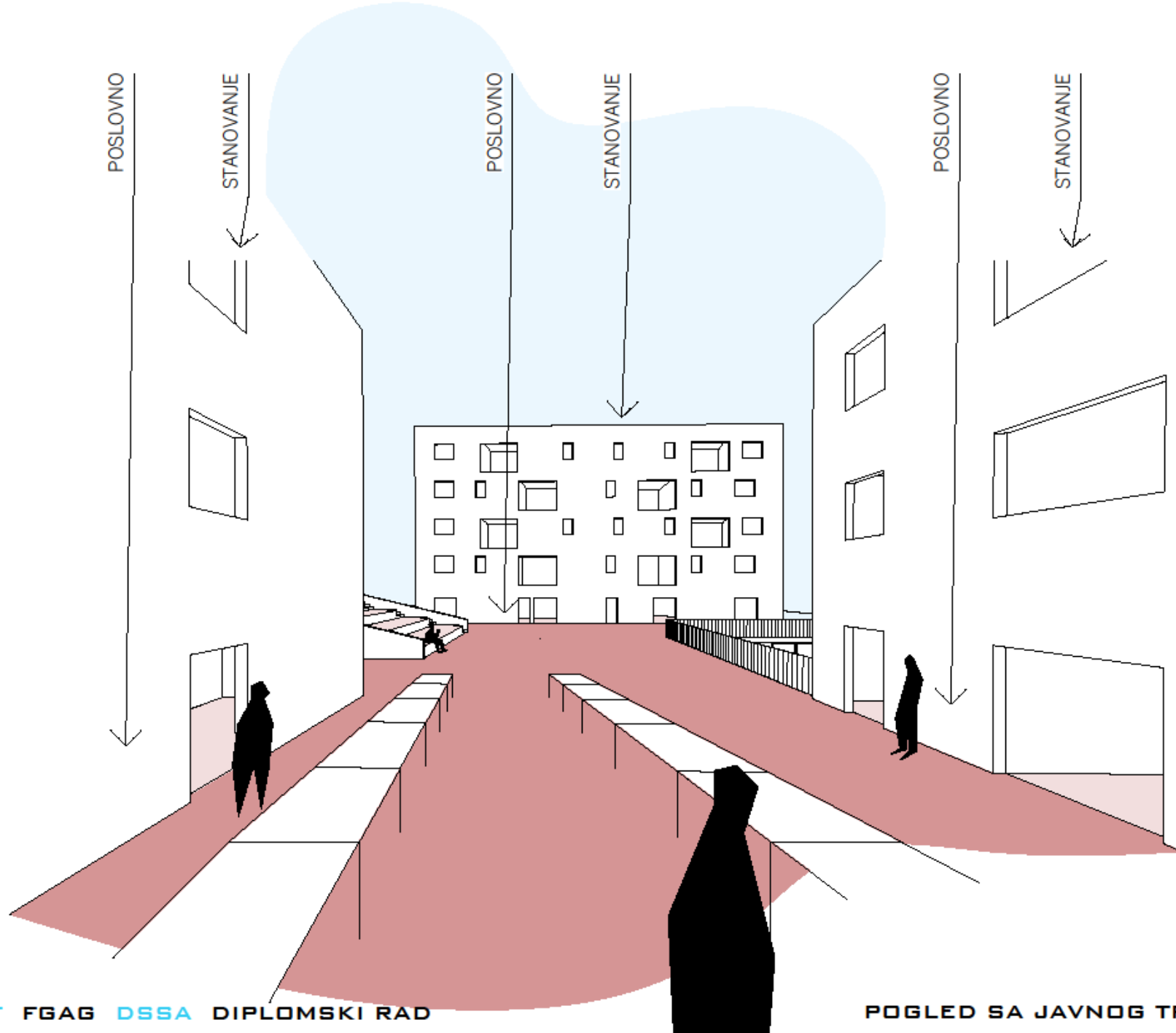
GARAŽA



GARAŽA









maketa etaže -1 kultura i garaža



maketa prizemlja



pomične staklene kubikule



atrij



1. kat, poslovni centar

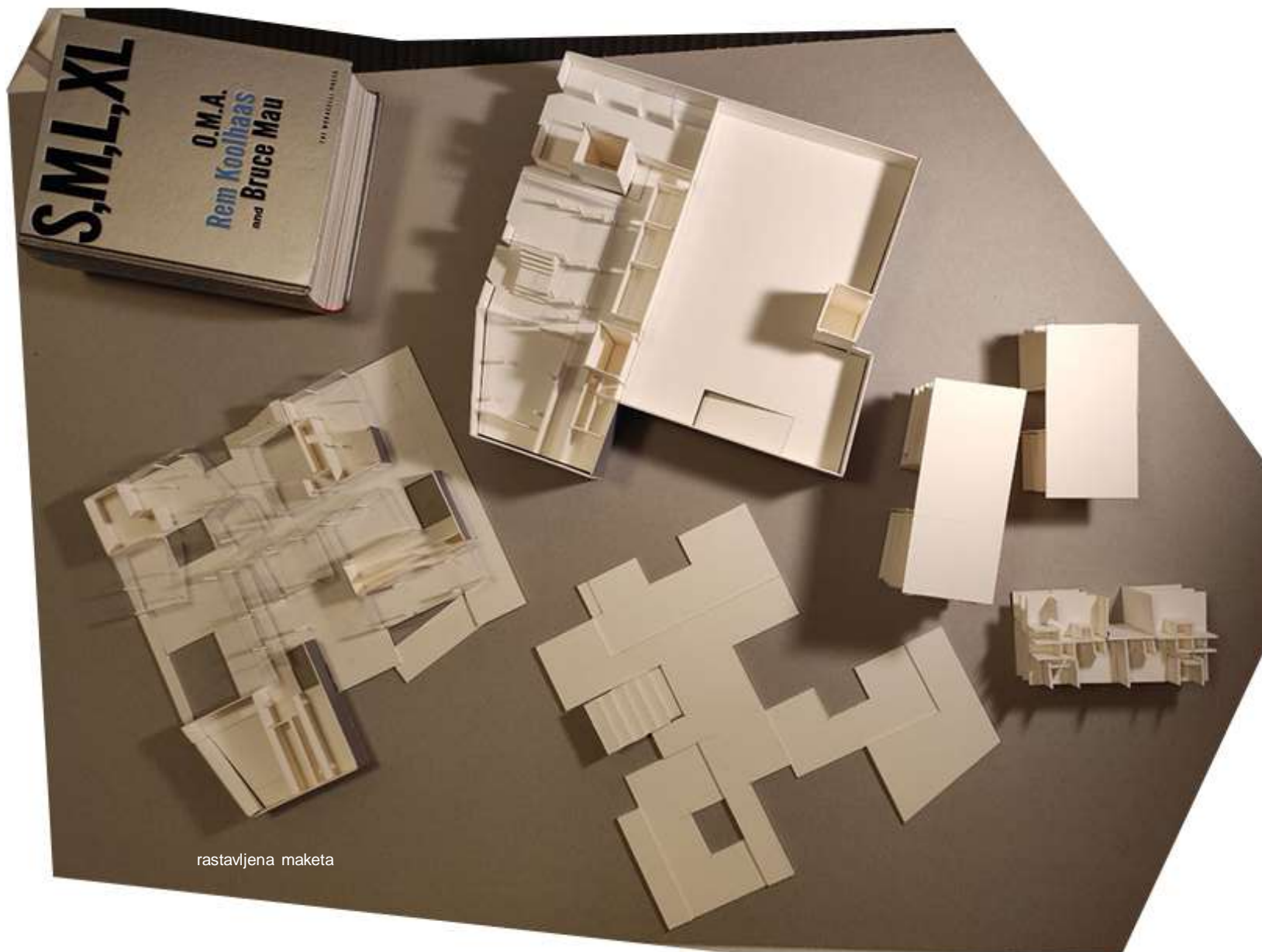




karakteristični stanovi







rastavljena maketa