SATAMALAHTI ARCHITECTURE COMPETITION

PSEUDONYM: onthewaterfront 1954

1. IDEA

Urban quality depends on the shape of the city, which is bound to the limitations imposed by the relations with what was pre-existent and with the morphological and cultural characteristics, and is the result of the city planning's specific goals.

The importance of the city shape is always top priority (and it has always been, considering the history of the best city planning examples) over quantitative options of density (construction), capacity (inhabitants, parking lots, green areas) and performance (pedestrian and bicycles mobility; transportation mobility by car, train and boat; services; energetic consumption and air pollution)

Following this orientation, the present project is primarily based on a specific formal characterization responding to the urban extension requested for the city of Mikkeli.

The work presented revolves around the development of a specific urban model, elaborated from the view point of morphology and urban typology, and independent from quantitative and performance limitations, which are, only at a later time, their direct result.

The model of city proposed is an ideal starting point in relation to which it is possible, with respect to the original idea of the town, to envision the appropriate action plan, not included in the final scheme, as the competition requires.

This solution, indeed, starting from the formal idea of reference and as a result of it, suggests to operate by subtraction, separating the completed scheme from those parts necessary to achieve the quantitative tasks demanded by the Mikkeli Administration.

The competition requires the development of the theme on four areas which are extremely different in their locating, functional, physical and naturalistic features.

The interpretative philosophy, in designing and planning a new model for these four areas, has been to avoid urban solutions that could be similar for formal and typological analogies.

The final solutions provided seem to actually go the opposite direction.

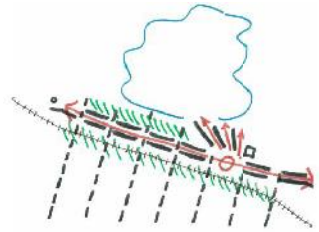
In fact a typological and morphological differentiation is the direct result of an in-depth study of the intervention based on each area and its peculiar trait.

Therefore, without prejudice to the need for efficient solutions aimed at ensuring the appropriate functionality (mobility, liveability, services, facilities and eco-sustainability), the urban model here proposed, in spite of the fact that its characterization is centred on differences between the elements, does offer an unusual harmonious effect.

2. SOLUTION ELEMENTS FOR THE 1 AREA

The formal model used as reference for design solutions in area 1, is based on the following elements.

1.1. Confirmation of the orthogonal grid for Mikkeli center



The town of Mikkeli is characterized by an orthogonal grid scheme that defines the shape of the main blocks in the city centre.

This configuration is confirmed by the present solution which intends to recover the same dimensional pace of the city centre and its pre-existing blocks.

1.2. Realization of a pedestrian boulevard developed between two visually significant ends, represented by symbolic elements such as the Green Tower and the Wind Tower

The boulevard is a pedestrian area 20 meters wide, developed parallel to the railway and extending the full width of the given area.

The urban space is enriched by the presence of two lines of trees that in addition to enhance the urban environment, also provide convenient shelter during the summer season.

The avenue course is never interrupted, except for the perpendicular crossing of the streets connecting the new urban settlements to the rest of the town, which provide access to the new built-in underground parking garages situated below the line of buildings that define the perimeter of the pedestrian area.

The above mentioned interruptions, however, don't impede the flow of the pedestrian course.

At about half of its length, in conjunction with the area housing the Science Center, the boulevard crosses the main square, from which the new urban complex's principal connections branches off.

In proximity to the boulevard ends are located two towers 50 meters tall: The Green Tower (north), and The Wind Tower (south).

The Green Tower is a steel structure covered with sheet metal mesh containing a helicoidal ramp that allows visitors to reach a belvedere located on the top floor.

Green facades with a rich variety of naturalistic essences are to cover the sheet metal mesh, within the helical structure, in order to realize a vertical botanical garden.

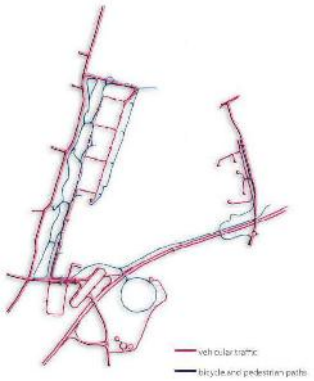
The Wind Tower, on the contrary, is a large arch which has, along the vertical elements, a vertical sequence of helical turbines for the exploitation of wind energy.

The structure will be available for visits only on the ground floor where is located a laboratory where visitors can learn about the energy recover mechanism in use in the Wind Tower.

1.3. The Science Center square becomes the lung of the new urban extension of the city of Mikkeli and an important link with the old city

The request of the competition is to locate the new Science Center in the 1 area, close to the railway station, in a particularly strategic spot of the city where various components of Mikkeli's mobility (cars, boats, walking and bike path) converge in a centripetal manner. This has offered to the present solution the opportunity to place in this particular space the most significant urban space of the entire project proposal.
The new Science Center will in fact be an important reference point for the town of Mikkeli, a link between the new commercial harbour and the walking path coming from the train station, which beyond the railway reaches the existing central square.
The new pedestrian path replacing the existing one, is located in a more barycentric position in order to create the most effective relationship between the old square of Mikkeli and the new urban extension provided by the project, directly connected to the railway station and the bus station.
The space typology of this path itself develops between skylights, stairways and elevators, running under the station building and the trains platform, and arriving into the open as it reaches the new square in the Science Center. In this way the whole walking experience won't suggest the unpleasant sensation of cramped space, so common in the traditional pedestrian underpasses.
The building in the Science Center has an impressive double irregular spheroid structure, where, next to the conjunction between the two bodies, there is a slit along the same axis of the pedestrian boulevard, below which are located the entrances to the museum and the related business services.
On the inside, the new Science Center will present two spiral flights of stairs for each spheroidal body, one for the ascent and one for the descent.
At the top of one of the two spheroids is the departure point of a cableway which allows to reach the scientific laboratory located on the artificial lake of the 3 area and, though it has been thought as a separate construction, is still part of the same museum system.
Exhibition activities would mainly concentrate at the Science Center, while the laboratories will be in the 3 area and will house learning and interaction activities.
To the east, the square overlooks the lake, where the new commercial harbour is situated, with its radiating buildings converging on the square and framing a telescope view of the lake.
The buildings by the harbour are intended to symbolically recall the rules and mode of ship construction.
On the roof of these buildings, a large vaulted belvedere can house business and representation services.
On the ground floor the prominent canopies are designed to characterize the public areas along the line of buildings, as a space dedicated to commercial use (bars, restaurants etc.).

1.4. Urban regeneration of the railroad, thought as a functional connection with the old town, and as a tool for reducing noise pollution generated by road and rail infrastructures



The presence of the railroad track is the biggest problem for the Mikkeli town, for its center is deprived of a good connection with the lake.
The city center and all the most important activities (central square, railway station, shopping malls, etc) are all concentrated and oriented towards the urban sector adjacent to the rail, as if to suggest the desire of developing closer to the lake, an intention which is actually frustrated by the presence of the rail-track boundary.
The urban expansion planned for Mikkeli deals specifically with the definition of the way the city faces the lake, and must reconsider the relationship between center of town and the lakeshore, solving the problem of architectural and functional connection by taking into account the appropriate intervention on the railroad.
Having discarded the hypothesis of an underground railroad, too expensive and technically unworkable (longitudinal profile too invasive), it was then preferred to consider a mitigating-oriented action on the railway, which would lower its impact, and at the same time a functional enhancement, which intends to realize elevated embankments on the edges of the railroad track, that will give form to the new park in the center of Mikkeli.
This solution implies large scarps equipped with green, both on the side of the town center and on the lake side: starting from the lower segment of Mannerheimintie, on the one side, and from the boulevard on the opposite side, they extend in soft slopes on the extrados, with rampant overhangs covering the rails below. They always ensure the required height for the passage of trains, and for this purpose they have variable heights only for the first few meters, as they follow the perimeter of the railroad.
Approximately every 200 meters, the rampant overhang of the park support structures are more prominent and the height of the pedestrian plan reaches 6 meters above the railway, in order to unite the opposite leaflets with footbridges able to restore a walking and bike connection between the city center and the future neighborhood that will rise by the lakeshore.
This new configuration on the ground level, in addition to making a new green lung for the city of Mikkeli, gives the opportunity to build, on the edge of the rail, under the park level on the lake side, the new road infrastructure with low environmental impact, necessary for the new area.
The implementation of the new gallery road route and the elevation of the park structures on the edges of the rail, also makes it possible to reach the further result of a satisfying solution for the potential reduction of noise pollution derived from the predictable growing number, of road and rail networks.

1.5. The new relationship between lake, new harbour and new gardens

One of the most important themes of the competition consists in the urban redefining of the lakeshore.
To fulfil this task, the present work pursued the following goals:

- Architectural solution compatible with the environmental character of the place;
- The realization of a new scenario: from the city viewpoint, watching the lake; from the lake viewpoint, watching the city;
- The functional characterization of the new lakeshore space, obtained by intensifying the functional relationship between harbour, recreational activities, new urban spaces and new commercial structures.

The above mentioned topics are represented in the project through two areas with different characteristics.
The north area (between the river mouth and the Science Center square) will house gardens with trees that invite to stroll in the shed watching the lake.
The south area, in proximity to the large square in the Science Center facing the lake, will house buildings arranged in a radial pattern.

The locational mode of these structures provides a telescope system that frames the lake sight from the square viewpoint.
Buildings, as already explained in the chapter describing the Science Center square, are strongly assimilated in their architectural forms to naval design and construction.
On the ground floor, located on the perimeter of the buildings and on the harbour shore, shops and commercial services are located.
The intermediate floors are intended for tertiary activities, while the roof is a belvedere, characterized by a vaulted structure dedicated to hosting representation activities, exhibitions etc.

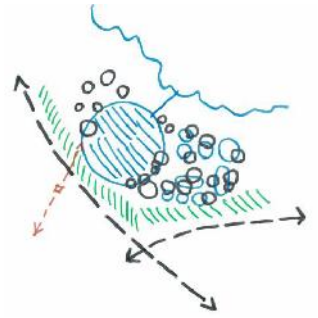
1.6. A new sustainable system of road interconnections compatible with the formal structure of the intervention

Starting from the connection with the Kuopiontie (V5), where the roundabout will be enlarged to let a more efficient sorting of the various road ramifications, the goal of the project is to enhance sustainability solutions for the automotive mobility.
The above mentioned roundabout has been thought in the shape of a hippodrome which connects all the road components converging on it, and ensures at the same time the appropriate space where drivers can perform switching lines manoeuvres in complete safety.
Furthermore, a system of connections with the new lake district branches off from the top height of the roundabout and descends through ramps, reaching the underlying area, next to the train track, where the new road axis enters the gallery, as already mentioned in the chapter describing the intervention for the railway park.
The gallery course continues parallel to the railway lines and emerges in proximity of each entrance of the parking garages, reachable through a traffic roundabout in one direction only. From here, by the northern boundary of the area, it is possible to enter the existing railway underpass, a track road that has been preserved as a second link to the city center.

3. SOLUTION ELEMENTS FOR THE 2 AREA

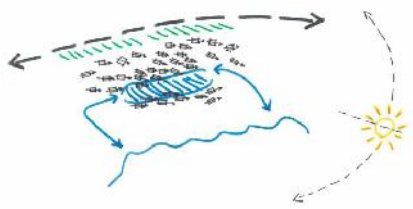
Area 2, from the locating point of view, must combine the presence of the nature reserve with the possibility of exploiting the adjacent area, potentially very attractive for logistic and technique reasons (proximity with the railroad and wide transit motorway).
For these reasons, without prejudice to the confirmation of the wildlife area, duly bounded with re-greening elements utilized to separate the adjacent area's activities, it has been established, near the railway service section, an area for logistic and engineering plant needs, necessary for the sustenance of the new urban system proposed (see chapter on eco-sustainability).

4. SOLUTION ELEMENTS FOR THE 3 AREA



The goal inherent the hypothesis for the 3 area is the construction of a new settlement
inspired, in its shape, by the old water purifier technological plants.
The circular shape of the old water purifier's tanks for collecting water, have in fact provided the inspiration for the architectural typologies and external layouts.
The 3 area urban complex is, in fact, characterized by the development of circular plan buildings, irregularly distributed among old tanks which have been reused for recreational and ornamental purposes.
Circular shape also inspired the solution for a new artificial lake, whose waters can be used to serve the need of the new Science Center's appendix.
The new pond, which can be exploited for scientific and informative purposes in order to emphasize the biologic, botanic and natural cultural tradition of the city of Mikkeli, will be surrounded by laboratories, supply buildings and the station of the gondola cableway, which ensures the connection in heights with the top of the new Science Center.

5. SOLUTION ELEMENTS FOR THE 4 AREA



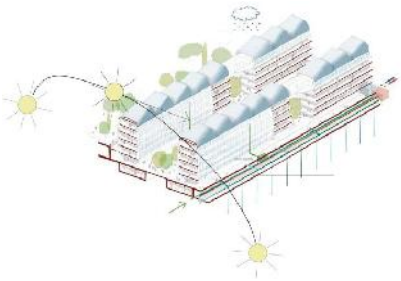
For the 4 area, the settlement system used is the result of the need to produce a typology of structures able to reach at the same time the appropriate compatibility with the given environment, and significant performance in terms of active and passive energy saving and recovery systems.
It has been chosen the solution of a suburban condo, consisting of an aggregation of architectural types with a formally equivalent trait, but different in their structure for dimensional variations in height and width.
In this way we have an extremely diversified complex, which at the same time has a formal homogeneity empowering the whole structure with a strong identity trait.
The residential complex for the 4 area is enriched by the solution of a private small harbour obtained in the very center of the new condominium, and linked to the lake via new channels of connection.
The new pool of water, in substitution of the square or the courtyard, will have the function to respond to the needs of the new complex urban space.

6. ECO-SUSTAINABILITY

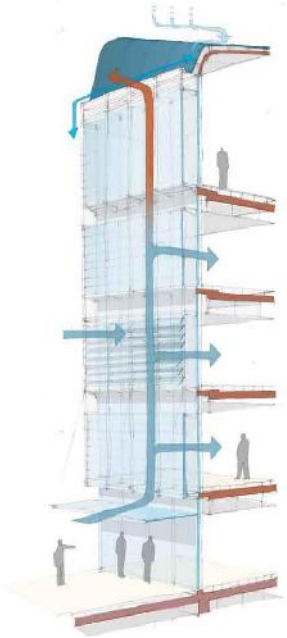
The architectural and urban intervention solutions here proposed are strongly characterized by clear sustainability aims and respect for the environment.
The project design ideas developed for each of the four given areas have been studied in different specific solutions, in terms of bio-climatic architecture, energy saving, and active and passive air conditioning systems.
In this respect architectural layouts and urban planning were subjected to in-depth analyses and reflections and consequently to relevant constraints.

1.7. Area 1

For the A area, the particular urban morphology chosen reflects the goal of obtaining an integrated network system with relevant returns in terms of cost savings, energy performance and the consequent pollution agents' reduction.



In fact, the boulevard solution that allows to group on a single axis most of the buildings with different cubic volumes, takes into consideration the opportunity to concentrate on a single linear system all the related plant infrastructures.
The opportunity to develop a single linear system has obvious advantages in terms of efficiency and allows a high strategic flexibility.
The presence of a large underground gallery, dedicated to public services and to plant connections, developed parallel to the pedestrian boulevard, allows to consider several options regarding energy-saving and sustainability of the intervention.
In addition to conventional network connections (electricity, communication, etc), the project provides, in the gallery, a network connection system for district heating, geothermal and solar photovoltaic systems, and the hydraulic system intended to recover waste water and use it for watering and toilets discharge.
In the chosen urban planning solution, the underground tunnel containing plants is directly connected to the South end, in the 2 area. Here, due to the railway and motorway structures' proximity, the project suggests to establish logistics and plant system serving all the new settlements (centralized production plants and switchyard for the systematized transportation of supplies and dismissing materials).
From this point of view, even if not recommended by the competition and not specifically addressed by Mikkeli Government's programme, the above mentioned urban planning, engineering, functional and logistic configuration would suggest to take into consideration the opportunity to develop, along the axis of the boulevard, also the disposal of waste tyres.
According to the above mentioned hypothesis, it would be a matter of providing a collection centre in the 2 area, where it will be possible to perform treatment, separation and composting of waste. It is also recommended to include in the program a incinerator with energy recovery, for the needs connected to an integrative energy need related to district heating. The 2 area should also house the logistic disposal area for not treatable residual materials, which are to be sent (via rail or road) to their final destination.
The above mentioned hypothesis is presented as a possible solution, elaborated on the basis of the high performance potentiality, as indicated from the verifications that have been made when processing and examining in depth the architectural and planning design solutions.
The specific morphology of the area on which to elaborate the planning proposal has determined the choices just shown, motivating the linear development of this new important infrastructure conveying plant services and creating a network of connections serving the above buildings.
While this hypothesis has allowed, on the one hand, to obtain high advantages in terms of efficiency of the plant system, on the other hand it has also influenced the choice of the main structures location, which have to be aligned longitudinally, along the north-south axis.
In respect of this, the conditions of sun exposure, in terms of solar energy recovery systems, has made it necessary to take some planning measures which also had the merit to architecturally characterize the developed solutions.
As for the use of photovoltaic systems, buildings located parallel to the pedestrian boulevard have shed roofs orthogonal to the axis of the rail, with the flaps conveniently south oriented, and with monocrystalline silicon photovoltaic modules placed on them.
The faces of buildings arranged along the pedestrian boulevard, present a "double-skin" glazed facade that creates a gap between the glazed walls.
The external glass surface is equipped with darkening systems and the internal one is a double glazing with a high level of thermal insulation and light transmission.
The obscuration system of the external glazed wall is intended to blocking the direct radiation of the sun light.
The internal glazed surface has a system of openings that when appropriate, depending on the time of the year, can be controlled in order to activate the greenhouse or chimney effect for the passive exchange of thermal energy.
Within these same buildings, the chosen architectural typology provides another passive air conditioning system. Full height atria, rhythmically located, enriched by the presence of arboreal species, offer a further humidity contribution. At the occurrence, when the seasons change, they work as aspirating chimneys thanks to the openings in the roof, which, if closed, will guarantee the opposite effect for the winter months, providing a greenhouse solar heating system, given the fact that the casing of these environments is mainly made of glass.
The claddings of the atria facades have specific tools for the thermal regulation of the exposure peaks determined by directed light radiation along the east-west axis.
The buildings in the 1 area, which are orthogonal to the rail, oriented on an east-west axis, have on the other hand optimal exposure conditions and thus require less complex solutions both with regards to the photovoltaic systems and to the passive air conditioning systems.

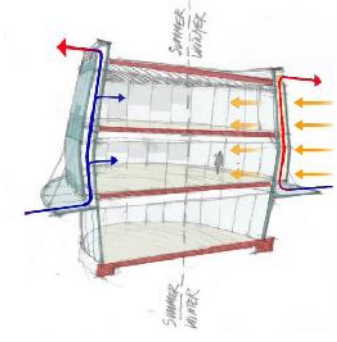


1.8. Area 2

The 2 Area is fundamentally conceived as support for the other three areas, and therefore the facilities provided on this area are to be considered as means to reach the given sustainability parameters, and are indispensable for the effectiveness of the entire urban intervention's proposal.

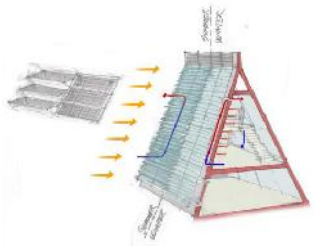
Instead, the windows panes with opaque cladding have an outer surface of glass a few inches far off from the wall below, that represents the thermal mass for the storage of energy. Through appropriate openings at the bottom and on top, they create a seasonal advantage, heating in the winter and cooling in the summer.

1.9. Area 3



The 3 area type of building is characterized by the presence of the old circular tanks belonging to the dismiss purifier.
The circular buildings are intended to exploit the semi-cylindrical part, facing south, by a double-sided façade that can be used to sustain photovoltaic edge panels and to produce similar passive air conditioning systems (greenhouse effect, , a chimney effect, solar walls).
The roof covering will be south oriented so to increase the size of photovoltaic surfaces.

1.10. Area 4



The solutions chosen for the 4 area present a housing system based on triangular residential buildings with double pitched glazed roof directly connected to the ground. One of the two side is completely oriented to the south.

This settlement organization in its entirety provides extremely diversified structures in terms of dimensions, both in width and in particular in height, which are specifically shaped to search for and capture the greatest possible quantity of solar radiation.

In this regard, this settlement feature can be associated to the sunflowers plantations' behaviour.

Given the quite optimal orientation to the sun, it was possible to pursue an in depth development of solar thermal tools for active and passive integrated conditioning systems.

Facades facing south are composed of a glass cladding under which is organised a structure in a irregular checkerboard pattern.

Thanks to this configuration it is possible to develop on the surfaces the two chosen conditioning systems for the interior.

In fact, some surfaces contain monocrystalline silicon photovoltaic modules of last generation combined with the stained glass windows of the house space.

In general, for the areas 2, 3 and 4, it is planned to equip their respective bodies of factory with the waste water recovery system, and with the supplemental systems for collecting energy (photovoltaic, geothermal, etc.), as it has been already planned for the architectural complexes in the 1 area.

7. QUANTITATIVE DEVELOPMENT OF THE GIVEN SOLUTION

1.11. Buildings surfaces

Area 1		m²/level	n. level	m²
	offices/residencial/shops	15.760	6	94.560
	offices	2.160	5	10.800
	centre of the science	1.000	7	7.000
	offices/shops	4380	6	26.280
	offices/shops	1.440	3	4.320
	TOTAL			142.960
Area 2		**m²/level**	**n. Level**	**m²**
	offices/residencias/shops	1.920	6	11.520
	offices/logistics/equipment	2400	6	14.400
	TOTAL			25.920
Area 3		**m²/level**	**n. level**	**m²**
	residencial	6.936	6	41.616
	offices	450	5	2.250
	shops	244	4	976
	centre of the science (laborator	330	6	1.980
	TOTAL			46.822
Area 4		**m²/level**	**n. level**	**m²**
	residencial	3.750	4	15.000
	shops	560	3	1.650
	offices	230	4	920
	TOTAL			17.570

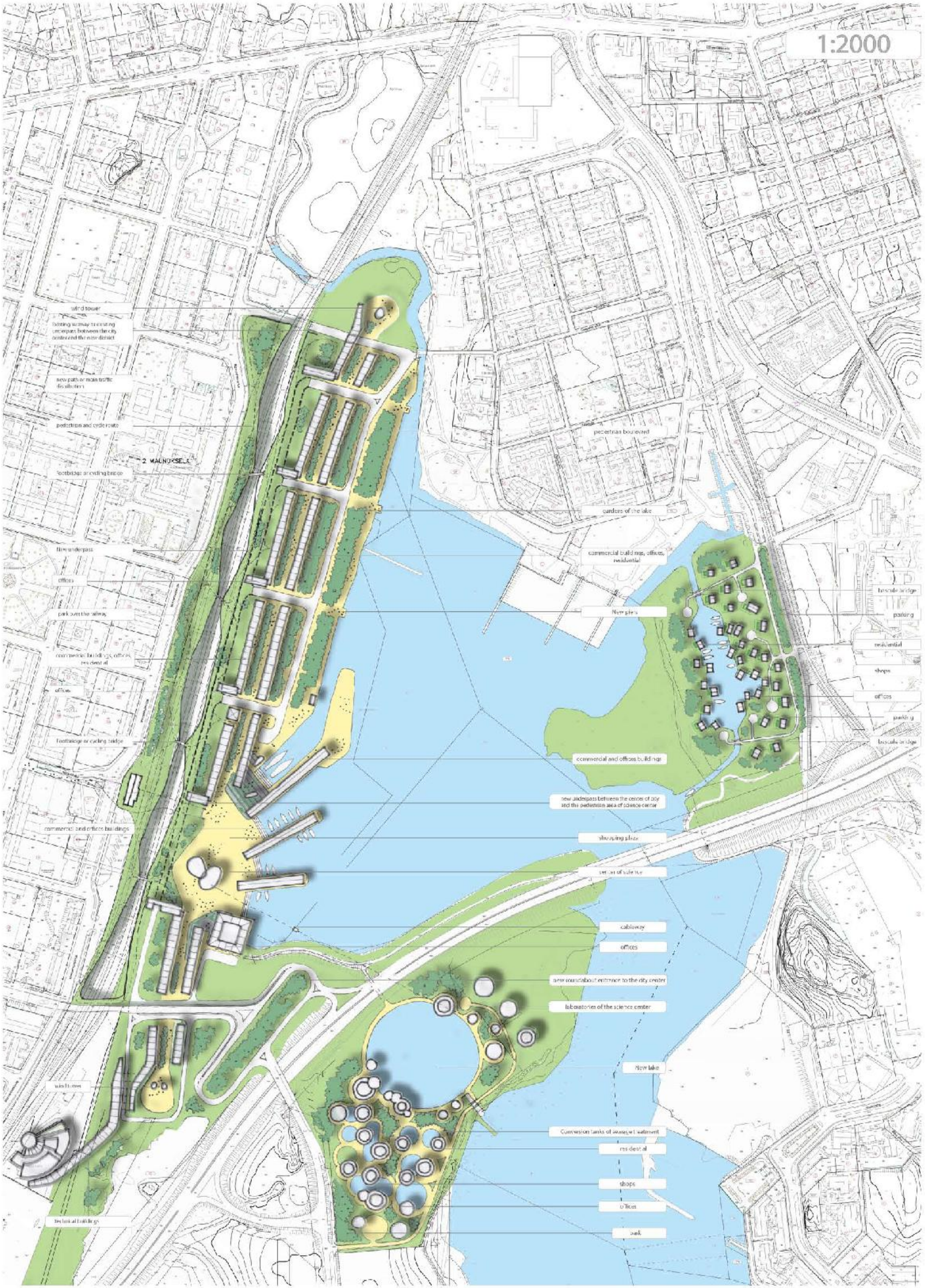
1.12. Parking surfaces and capacity

Area 1/2	size (m²)	capacity	units of mis.	type
A1	3.500	140	25 m²	underground
A2	4.200	168	25 m²	underground
A3	4.550	182	25 m²	underground
A4	4.550	182	25 m²	underground
A5	4.200	168	25 m²	underground
A6	4.200	168	25 m²	underground
A7	7.200	288	25 m²	underground
A9	3.500	140	25 m²	underground
TOTAL	25.200	1.436		

Area 1/2	size (m²)	capacity	units of mis.	type
B1	1.200	60	20 m²	park corte
B2	1.200	60	20 m²	park corte
B3	1.200	60	20 m²	park corte
B4	1.200	60	20 m²	park corte
B5	900	45	20 m²	park on the square
B6	1.800	90	20 m²	park corte
B7	1.950	98	20 m²	park corte
B8	1.950	98	20 m²	park corte
B9	400	20	20 m²	park on the square
B10	1.200	60	20 m²	park on the square
B11	1.200	60	20 m²	park corte
B12	1.200	60	20 m²	park corte
TOTAL	14.200	711		

Area 3	size (m²)	capacity	units of mis.	type
C1	1.600	80	20 m²	park on the square
C2	4.100	205	20 m²	park corte
C3	1.225	62	20 m²	park on the square
TOTALE	6.925	347		

Area 4	size (m²)	capacity	units of mis.	type
D1	3.600	180	20 m²	park on the square
D2	4.100	205	20 m²	park corte
TOTAL	7.700	385		


1:2000
wind tower
Existing railway creating underpass between the city center and the new district
new path or main traffic for children
pedestrian and cycle route
footbridge or cycling bridge
New underpass
offices
park over the railway
commercial buildings, offices, residential
offices
footbridge or cycling bridge
commercial and offices buildings
wind tower
technical buildings
pedestrian boulevard
gardens of the lake
commercial buildings, offices, residential
New piers
commercial and offices buildings
new underpass between the centre of city and the pedestrian area of science center
shopping plaza
center of science
cableway
offices
new roundabout entrance to the city center
laboratories of the science center
New lake
Conversion tanks of sewage treatment
residential
shops
offices
park
bascule bridge
parking
residential
shops
offices
parking
bascule bridge

AREA 1

The formal model used as reference for design solutions in area 1 is based on the following elements:

Confirmation of the orthogonal grid for Mikkeli center

The town of Mikkeli is characterized by an orthogonal grid scheme that defines the shape of the main blocks in the city centre. This configuration is confirmed by the present solution which intends to recover the same dimensional pace of the city centre and its pre-existing blocks.

Realization of a pedestrian boulevard developed between two visually significant ends, represented by symbolic elements such as the Green Tower and the Wind Tower.

The boulevard is a pedestrian area 20 meters wide, developed parallel to the railway and extending the full width of the given area. The urban space is enriched by the presence of two lines of trees that in addition to enhance the urban environment, also provide convenient shelter during the summer season. The avenue course is never interrupted, except for the perpendicular crossing of the streets connecting the new urban settlements to the rest of the town, which provide access to the new built-in underground parking garages situated below the line of buildings that define the perimeter of the pedestrian area. The above mentioned interruptions, however, don't impede the flow of the pedestrian course.

At about half of its length, in conjunction with the area housing the Science Center, the boulevard crosses the main square, from which the new urban complex's principal connections branch off. In proximity to the boulevard ends are located two towers 50 meters tall: The Green Tower (north), and The Wind Tower (south). The Green Tower is a steel structure covered with sheet metal mesh containing a helicoidal ramp that allows visitors to reach a belvedere located on the top floor.

Green facades with a rich variety of naturalistic essences are to cover the sheet metal mesh, within the helical structure, in order to realize a vertical botanical garden. The Wind Tower, on the contrary, is a large arch which has, along the vertical elements, a vertical sequence of helical turbines for the exploitation of wind energy.

The structure will be available for visits only on the ground floor where is located a laboratory where visitors can learn about the energy recover mechanism in use in the Wind Tower.

The Science Center square becomes the hinge of the new urban extension of the city of Mikkeli and an important link with the old city.

The request of the competition is to locate the new Science Center in the 1 area, close to the railway station, in a particularly strategic spot of the city where various components of Mikkeli's mobility (cars, boats, walking and bike paths) converge in a centripetal manner. This has offered to the present solution the opportunity to place in this particular space the most significant urban space of the entire project proposal. The new Science Center will in fact be an important reference point for the town of Mikkeli, a link between the new commercial harbour and the walking path coming from the train station, which beyond the railway reaches the existing central square. The new pedestrian path replacing the existing one, is located in a more barycentric position in order to create the most effective relationship between the old square of Mikkeli and the new urban extension provided by the project, directly connected to the railway station and the bus station. The space typology of this path itself develops between skylights, stairways and elevators, running under the station building and the trains platform, and arriving into the open as it reaches the new square in the Science Center. In this way the whole walking experience won't suggest the unpleasant sensation of cramped space, so common in the traditional pedestrian underpasses. The building in the Science Center has an impressive double irregular spheroid structure, where, next to the conjunction between the two bodies, there is a slit along the same axis of the pedestrian boulevard, below which are located the entrances to the museum and the related business services. On the inside, the new Science Center will present two spiral flights of stairs for each spheroidal body, one for the ascent and one for the descent. At the top of one of the two spheroids is the departure point of a cableway which allows to reach the scientific laboratory located on the artificial lake of the 3 area and, though it has been thought as a separate construction, is still part of the same museum system. Exhibition activities would mainly concentrate at the Science Center, while the laboratories will be in the 3 area and will house learning and interaction activities. To the east, the square overlooks the lake, where the new commercial harbour is situated, with its radiating buildings converging on the square and framing a telescope view of the lake. The buildings by the harbour are intended to symbolically recall the rules and modes of ship construction. On the roof of these buildings, a large vaulted belvedere can house business and representation services. On the ground floor the prominent canopies are designed to characterize the public areas along the line of buildings as a space dedicated to commercial use (bars, restaurants etc.).

Urban regeneration of the railroad, thought as a functional connection with the old town, and as a tool for reducing noise pollution generated by road and rail infrastructures.

The presence of the railroad track is the biggest problem for the Mikkeli town, for its center is deprived of a good connection with the lake. The city center and all the most important activities (central square, railway station, shopping malls, etc.) are all concentrated and oriented towards the urban sector adjacent to the rail, as if to suggest the desire of developing closer to the lake, an intention which is actually frustrated by the presence of the railtracks boundary.

The urban expansion planned for Mikkeli deals specifically with the definition of the way the city faces the lake, and must reconsider the relationship between center of town and the lakeshore, solving the problem of architectural and functional connection by taking into account the appropriate intervention on the railroad. Having discarded the hypothesis of an underground railroad, too expensive and technically unworkable (longitudinal profile too invasive), it was then preferred to consider a mitigating-oriented action on the railway, which would lower its impact, and at the same time a functional enhancement, which intends to realize elevated embankments on the edges of the railroad track that will give form to the new park in the center of Mikkeli. This solution implies large scarps equipped with green, both on the side of the town center and on the lake side: starting from the lower segment of Maaherrankatu, on the one side, and from the boulevard on the opposite side, they extend in soft slopes on the extradios, with rampant overhangs covering the rails below. They always ensure the required height for the passage of trains, and for this purpose they have variable heights only for the first few meters, as they follow the perimeter of the railroad. Approximately every 200 meters, the rampant overhang of the park support structures are more prominent and the height of the pedestrian plan reaches 6 meters above the railway, in order to unite the opposite banks with footbridges able to restore a walking and bike connection between the city center and the future neighborhood that will rise by the lakeshore.

This new configuration on the ground level, in addition to making a new green lung for the city of Mikkeli, gives the opportunity to build, on the edge of the rail under the park level on the lake side, the new road infrastructure with low environmental impact, necessary for the new area. The implementation of the new gallery road route and the elevation of the park structures on the edges of the rail, also makes it possible to reach the further result of a satisfying solution for the potential reduction of noise pollution derived from the predictable growing number of road and rail networks.

The new relationship between lake, new harbour and new gardens

One of the most important themes of the competition consists in the urban redefining of the lakeshore.

To fulfil the task the present work pursued the following goals:

- Architectural solution compatible with the environmental character of the place;
- The realization of a new scenario: from the city viewpoint, watching the lake; from the lake viewpoint, watching the city;
- The functional characterization of the new lakeshore space obtained by intensifying the functional relationship between harbour, recreational activities, new urban spaces and new commercial structures.

The above mentioned topics are represented in the project through two areas with different characteristics.

The north area (between the river mouth and the Science Center square) will house gardens with trees that invite to stroll along the shed watching the lake. The south area, in proximity to the large square in the Science Center facing the lake, will house buildings arranged in a radial pattern. The locational mode of these structures provides a telescope system that frames the lake sight from the square viewpoint. Buildings, as already explained in the chapter describing the Science Center square, are strongly assimilated in their architectural forms to naval design and construction. On the ground floor located on the perimeter of the buildings and on the harbour shore, shops and commercial services are located. The intermediate floors are intended for tertiary activities while the roof is a belvedere characterized by a vaulted structure dedicated to hosting representation activities, exhibitions etc.

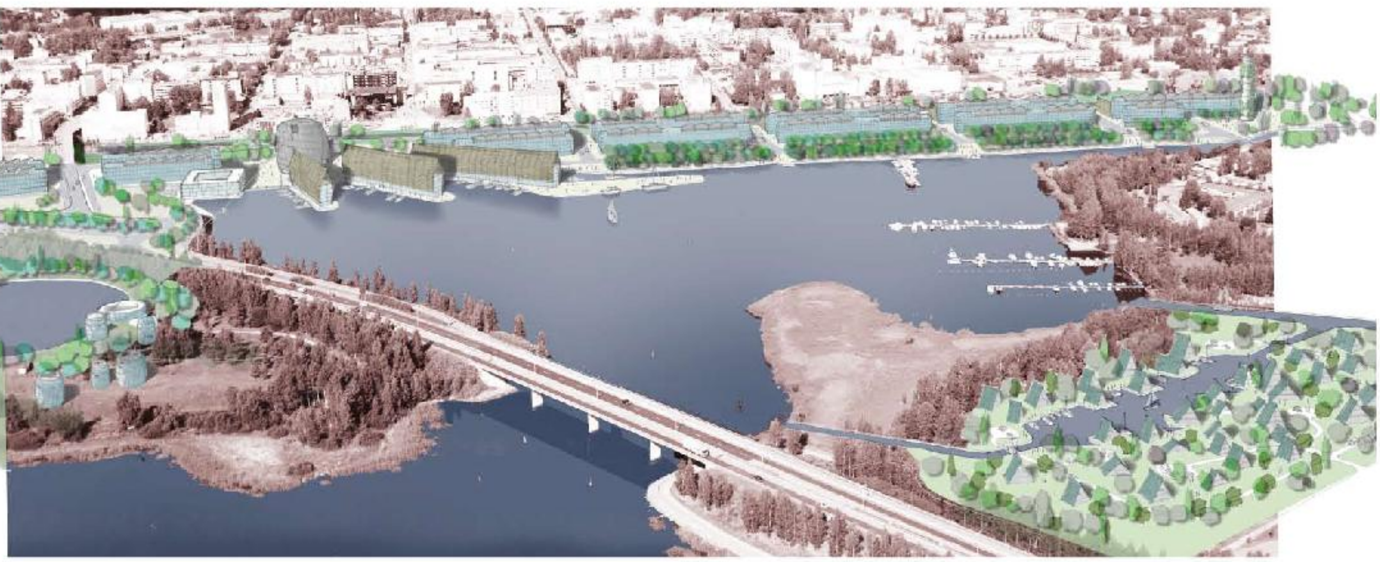
A new sustainable system of road interconnections compatible with the formal structure of the intervention.

Starting from the connection with the Kuopiontie (VT5), where the roundabout will be enlarged to get a more efficient sorting of the various road ramifications, the goal of the project is to enhance sustainability solutions for the automotive mobility. The above mentioned roundabout has been thought in the shape of a hippodrome which connects all the road components converging on it, and ensures at the same time the appropriate space where drivers can perform switching lines manoeuvres in complete safety. Furthermore, a system of connections with the new lake district branches off from the top height of the roundabout and descends through ramps, reaching the underlying area, next to the train track, where the new road axis enters the gallery, as already mentioned in the chapter describing the intervention for the railway park. The gallery course continues parallel to the railway lines and emerges in proximity of each entrance of the parking garages, reachable through a traffic roundabout in one direction only. From here, by the northern boundary of the area, it is possible to enter the existing railway underpass, a track road that has been preserved as a second link to the city center.

AREA 2

Area 2, from the locating point of view, must combine the presence of the nature reserve with the possibility of exploiting the adjacent area, potentially very attractive for logistic and technique reasons (proximity with the railroad and wide transit motorway).

For these reasons, without prejudice to the confirmation of the wildlife area, duly bounded with re-greening elements utilized to separate the adjacent area's activities, it has been established, near the railway service section, an area for logistic and engineering plant needs, necessary for the sustenance of the new urban system proposed (see chapter on eco-sustainability).



AREA 3

The goal inherent the hypothesis for the 3 area is the construction of a new settlement inspired, in its shape, by the old water purifier technological plants.

The circular shape of the old water purifiers tanks for collecting water have in fact provided the inspiration for the architectural typologies and external layouts.

The 3 area urban complex is, in fact, characterized by the development of circular plan buildings irregularly distributed among old tanks which have been reused for recreational and ornamental purposes.

Circular shape also inspired the solution for a new artificial lake, whose waters can be used to serve the need of the new Science Center's appendix.

The new zone, which can be exploited for scientific and informative purposes in order to emphasize the biologic, botanic and natural cultural tradition of the city of Mikkeli, will be surrounded by laboratories, supply buildings and the station of the gondola cableway, which ensures the connection in heights with the top of the new Science Center.

VIEW AREA 3

AREA 4

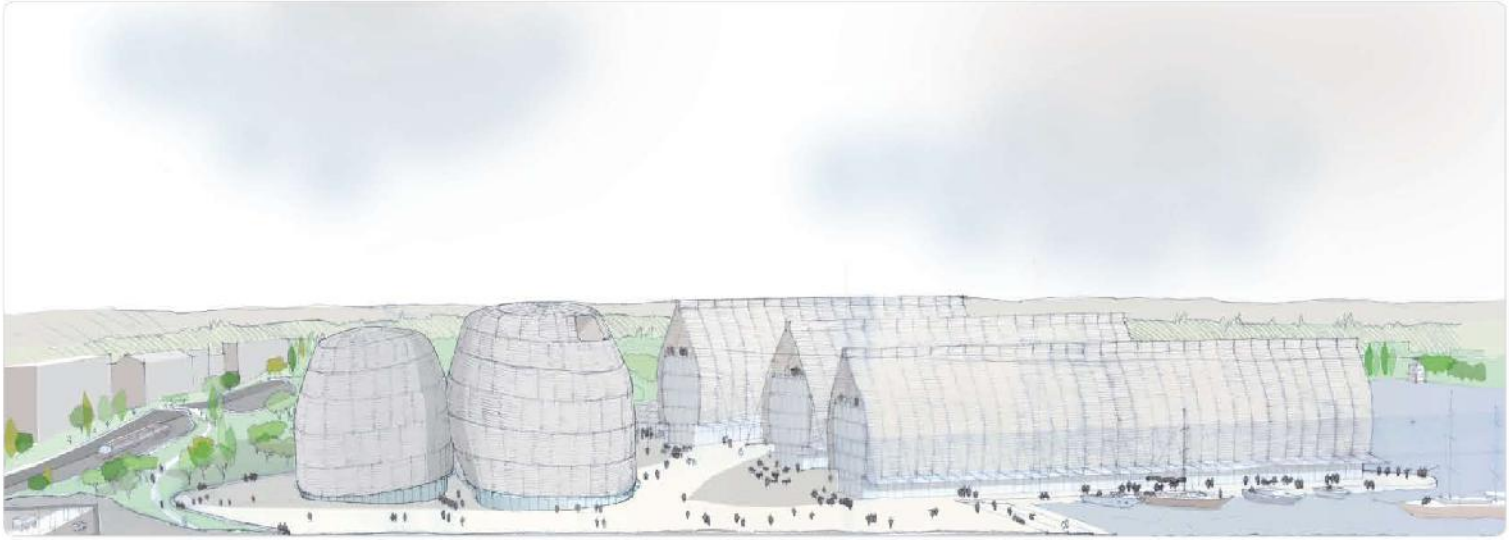
For the 4 area, the settlement system used is the result of the need to produce a typology of structures able to reach at the same time the appropriate compatibility with the given environment, and significant performance in terms of active and passive energy saving and recovery systems.

It has been chosen the solution of a suburban fabric, consisting of an aggregation of architectural types with a formally equivalent trait, but different in their structure for dimensional variations in height and width.

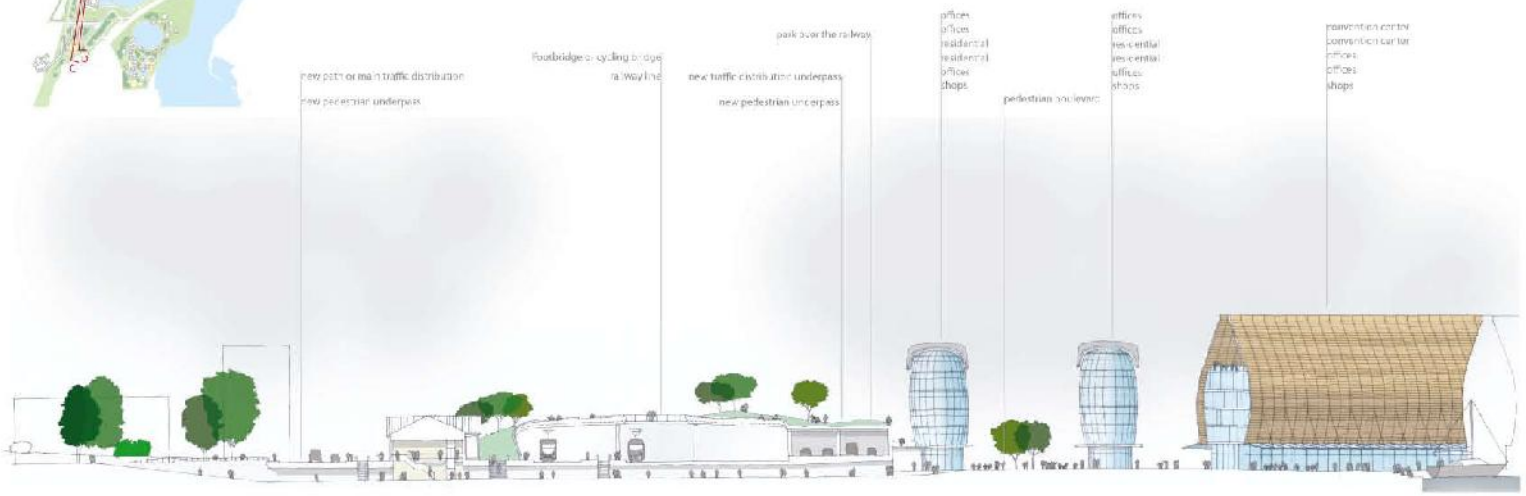
In this way we have an extremely diversified complex which at the same time has a formal homogeneity empowering the whole structure with a strong identity trait.

The residential complex for the 4 area is enriched by the solution of a private small harbour obtained in the very center of the new condominium and linked to the lake via new channels of connection. The new pool of water, in substitution of the square or the courtyard, will have the function to respond to the needs of the new complex urban space.

VIEW AREA 4



VIEW OF THE SCIENCE CENTER



section AA' 1:500

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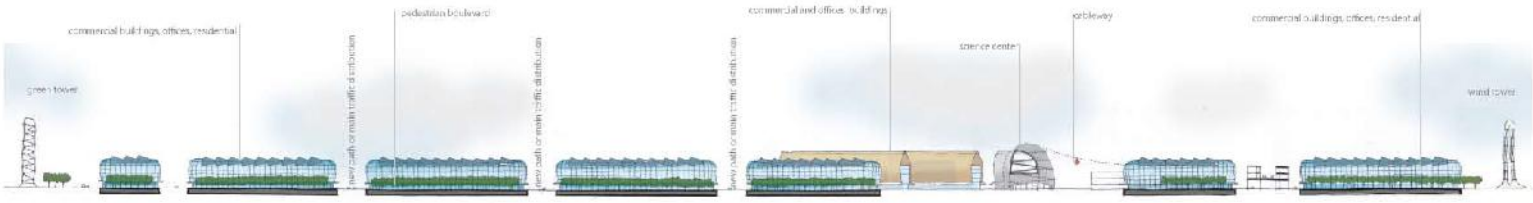

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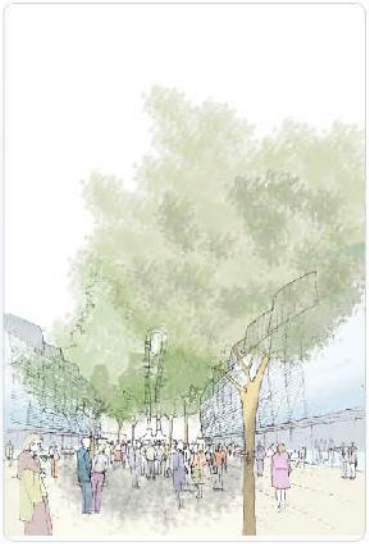
Urban quality depends on the shape of the city, which is bound to the limitations imposed by the relations with what was pre-existent and with the morphological and cultural characteristics, and is the result of the city planning's specific goals.
The importance of the city shape is always top priority (and it has always been, considering the history of the best city planning examples) over quantitative options of density (construction), capacity (inhabitants, parking lots, green areas) and performance (pedestrian and bicycles mobility; transportation mobility by car, train and boat; services; energetic consumption and air pollution). Following this orientation, the present project is primarily based on a specific formal characterization responding to the urban visions requested for the city of Mikkeli. The work presented revolves around the development of a specific urban model, elaborated from the view point of morphology and urban typology, and independent from quantitative and performance limitations, which are, only at a later time, their direct result. The model of city proposed is an ideal starting point in relation to which it is possible, with respect to the original rules of the town, to envision the appropriate action plan, not included in the final scheme, as the competition requires. This solution, indeed, starting from the formal idea of reference and as a result of it, suggests to operate by subtraction, separating the completed scheme from those parts necessary to achieve the quantitative tasks demanded by the Mikkeli Administration. The competition requires the development of the theme on four areas which are extremely different in their location, functional, physical and naturalistic features. The interpretative philosophy, in designing and planning a new model for these four areas, has been to avoid urban solutions that could be similar for formal and typological analogies. The final solutions provided seem to actually go the opposite direction. In fact a typological and morphological differentiation is the direct result of an in depth study of the intervention based on each area and its peculiar trait. Therefore, without prejudice to the need for efficient solutions aredelt ening the appropriate functionality (mobility, liveability, services, facilities and eco-sustainability), the urban model here proposed, in spite of the fact that its characterization is centred on differences between the elements, does offer an unusual harmonious effect.

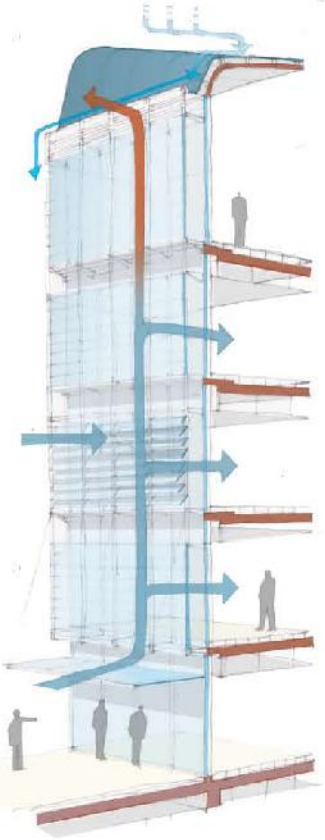
IDEA



VIEW OF PEDESTRIAN BOULEVARD

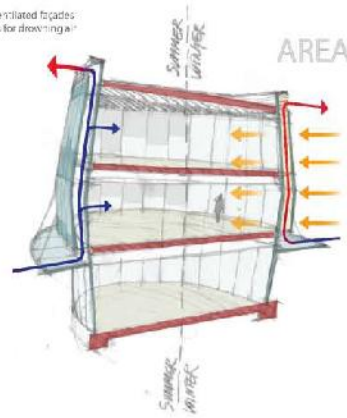
VIEW OF GREEN TOWER

AREA 1

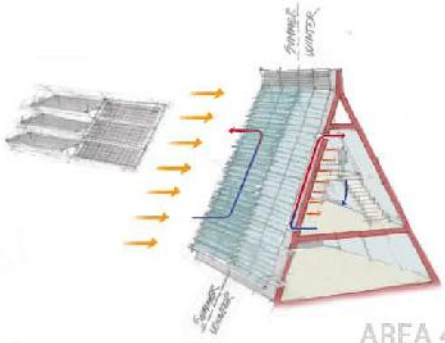


The project entails ventilated façades with openings for drowning air

AREA 3



THE PROJECT ENTAILS VENTILATED FACADES WITH OPENINGS FOR DROWNING AIR



AREA 4

PHOTOVOLTAIC SOLAR ENERGY

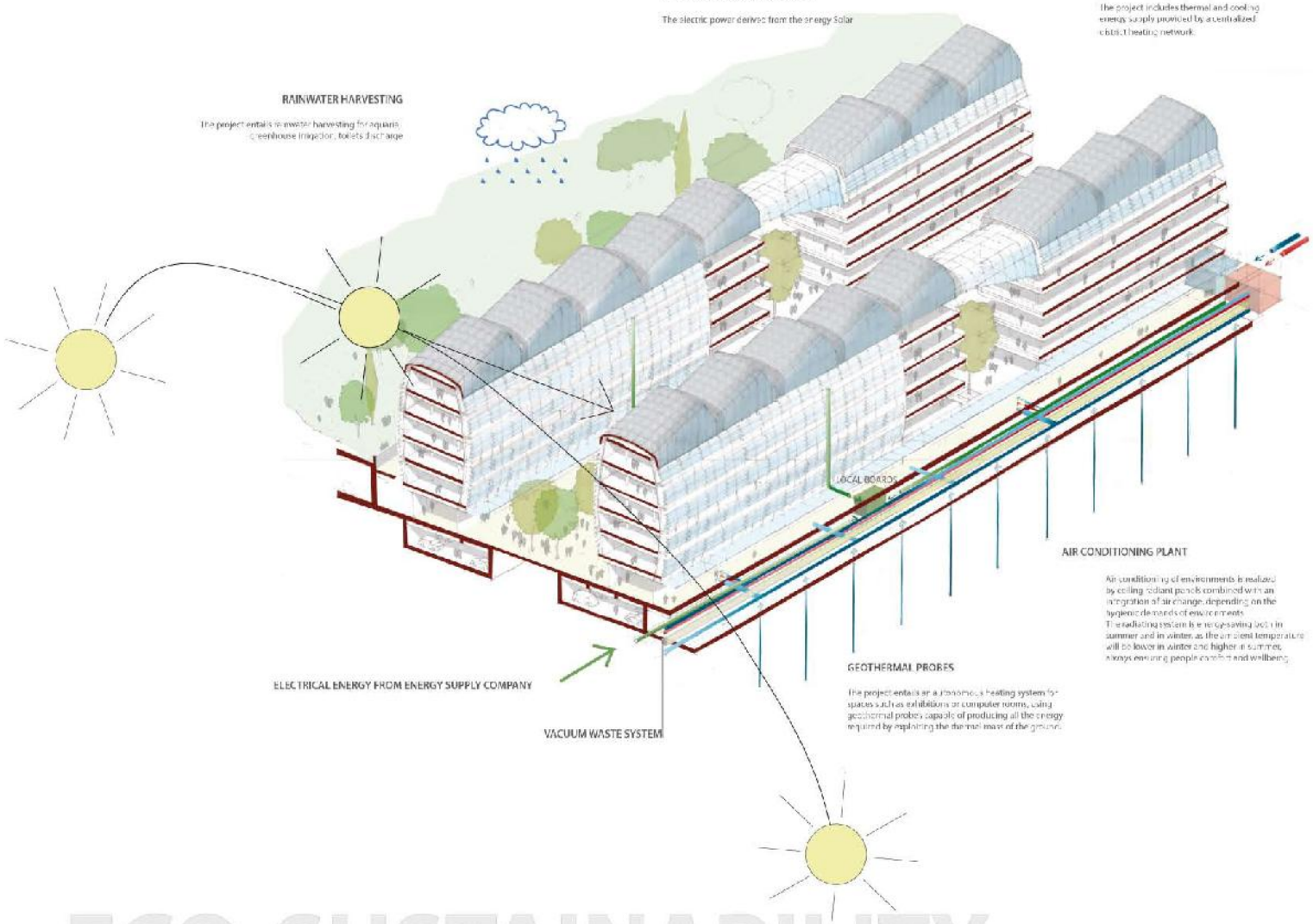
The electric power derives from the energy Solar

ENERGY FROM THE POWER STATION

The project includes thermal and cooling energy supply provided by a centralized district heating network.

RAINWATER HARVESTING

The project entails rainwater harvesting for aquaria, greenhouse irrigation, toilets discharge



AIR CONDITIONING PLANT

Air conditioning of environments is realized by ceiling radiant panels combined with an integration of air change, depending on the hygienic demands of environments. The radiating system is energy-saving both in summer and in winter, as the ambient temperature will be lower in winter and higher in summer, always ensuring people comfort and wellbeing.

GEOTHERMAL PROBES

The project entails an innovative heating system for spaces such as exhibitions or computer rooms, using geothermal probes capable of producing all the energy required by exploiting the thermal mass of the ground.

ELECTRICAL ENERGY FROM ENERGY SUPPLY COMPANY

VACUUM WASTE SYSTEM

ECO-SUSTAINABILITY