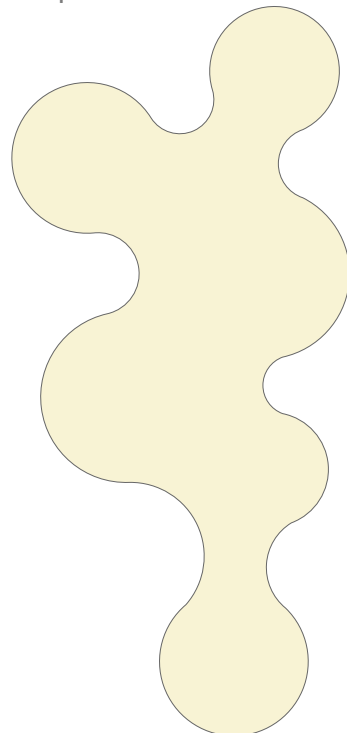




## metropol parasol

Redevelopment of „Plaza de la Encarnacion“ in Sevilla / Spain

### Project booklet



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# Project Description

J. MAYER H., Berlin

## METROPOL PARASOL

Redevelopment of „Plaza de la Encarnacion“ in Sevilla / Spain

„Metropol Parasol“ is the new icon project for Sevilla - a place of identification and to articulate Sevillas role as one of Spains most fascinating cultural destinations. „Metropol Parasol“ explores the potential of the Plaza de la Encarnacion to become the new contemporary urban centre. Its role as a unique urban space within the dense fabric of the medieval inner city of Sevilla allows for a great variety of activities such as memory, leisure and commerce. A highly developed infrastructure helps to activate the square, making it an attractive destination for tourists and locals alike.

The „Metropol Parasol“ scheme with its large mushroom like structures offers an archaeological site, a farmers market, an elevated plaza, multiple bars and restaurants underneath and inside the parasols, as well as a panorama terrace on the very top of the parasols. Thought of as a light metal structure, the parasols grow out of the archaeological excavation site into a contemporary landmark. The columns become prominent points of access to the museum below as well as to the plaza and panorama deck above, defining a unique relationship between the historical and the contemporary city. „Metropol Parasols“ mixused character initiates a dynamic development for culture and commerce in the heart of Sevilla.

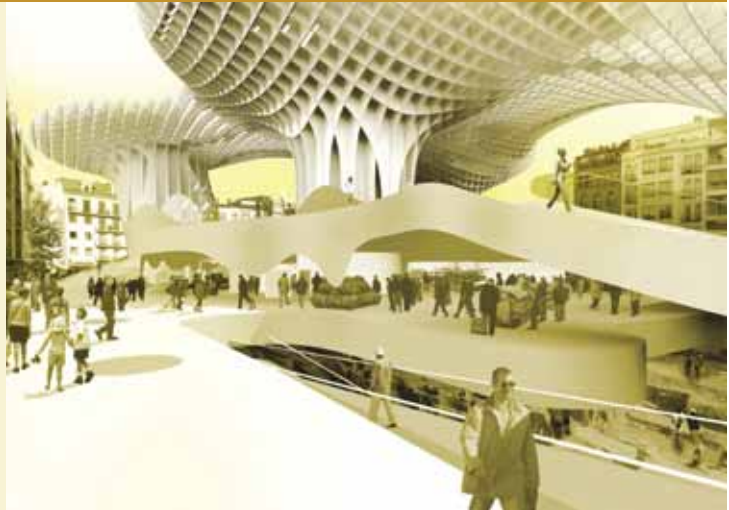
„Metropol Parasol“ is innovation at the forefront of sustainable construction by long lasting adaptability of various programs, unique architectural design of highest standard, efficient construction and environmental concerns. Its intelligent use of logistics in planning and construction in combination with craftsmanship joins both extremes of production methods. Its strong concern for the specific ethical and social situation will move the Plaza de la Encarnacion into the centre of urban activity of Seville The local effect is an activation and renovation development in the neighbouring areas as well as an attraction and meeting place for the entire city and surroundings. The global effect puts Seville back on the map as a city that is concerned with bringing its rich cultural and architectural history to our times - a prototype for urban space in the 21st century.

## Project Data

Project title	Metropol Parasol
City	Seville
Country	Spain
Project type	Other
Start of construction	May 2005
Client	Ayuntamiento de Sevilla - Gerencia de Urbanismo Avenida Carlos III., s/n Isla de la Cartuja Sevilla 41092  Manuel Jesus Marchena Gomez, gerente Jose Muguel Chinchilla Mata, director tecnico
Ingenieros	Arup Madrid Alcala, 54 28014 Madrid Spain  Jose de la Pena Coronado, director  Arup Berlin Uhlandstrasse20-25 10623 Berlin Germany

## Target Issue 1

## Quantum change and transferability



- Integration of historic site, commercial program and cultural representational spaces
- Concept of a „3-layered square“ with permeability between the 3 levels (museum, market, elevated plaza)
- Excavations of archeological remains inform the design and continue after the construction
- Programmatic flexibility by highly specific unique architectural form
- Prefabrication for lean construction on site and cost efficiency
- Climatic sensitive materials (energy embodied)
- Combination of natural materials, conventional construction and smart materials (wood structure, polyurethane coating, recycled plastics and recycled cement)
- Natural climate through material and shading with low air conditioning input
- Sensitive efficient evaluation of fire coding in relationship to materials and structure (saving materials => saving natural resources)
- Intelligent use of logistics in planning and construction



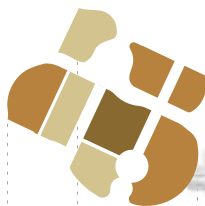
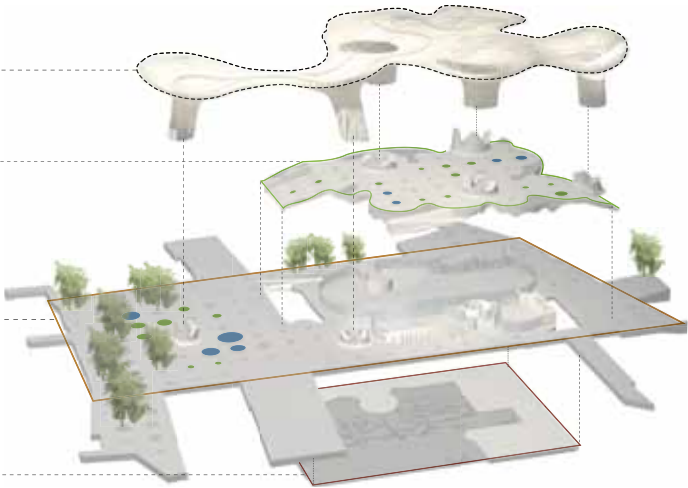
• • • • • Medieval towncenter and Plaza de la Encarnación

skycafé

elevated plaza

market

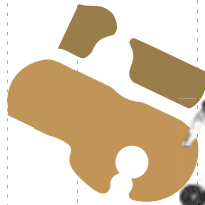
museum



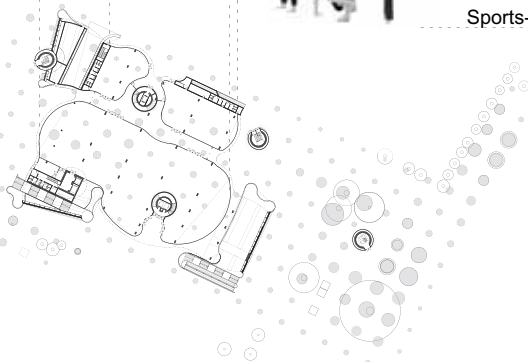
Retail, Shop, Restaurant Café



Marketsquare, Faire



Sports- and Leisurecentre



Metropol Parasol in 2007



Excavation of archeological findings 2005



Parking lot on the square after 1973

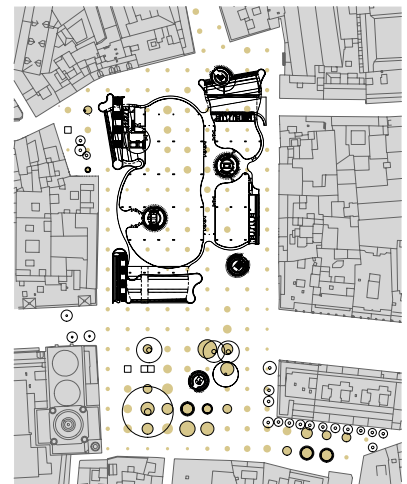
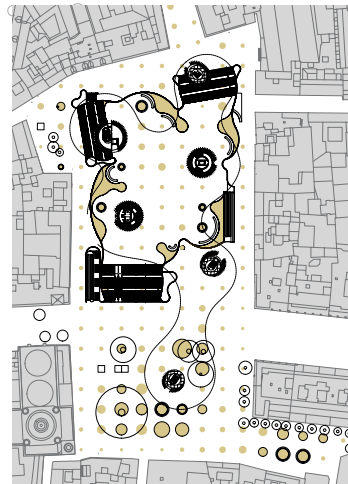
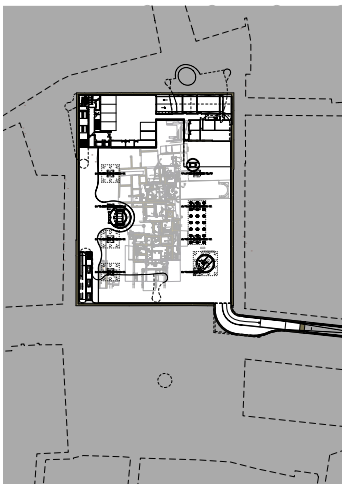
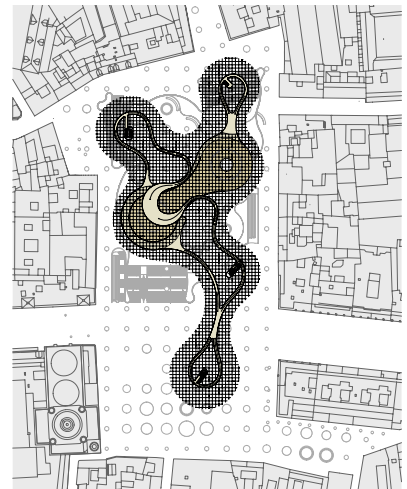
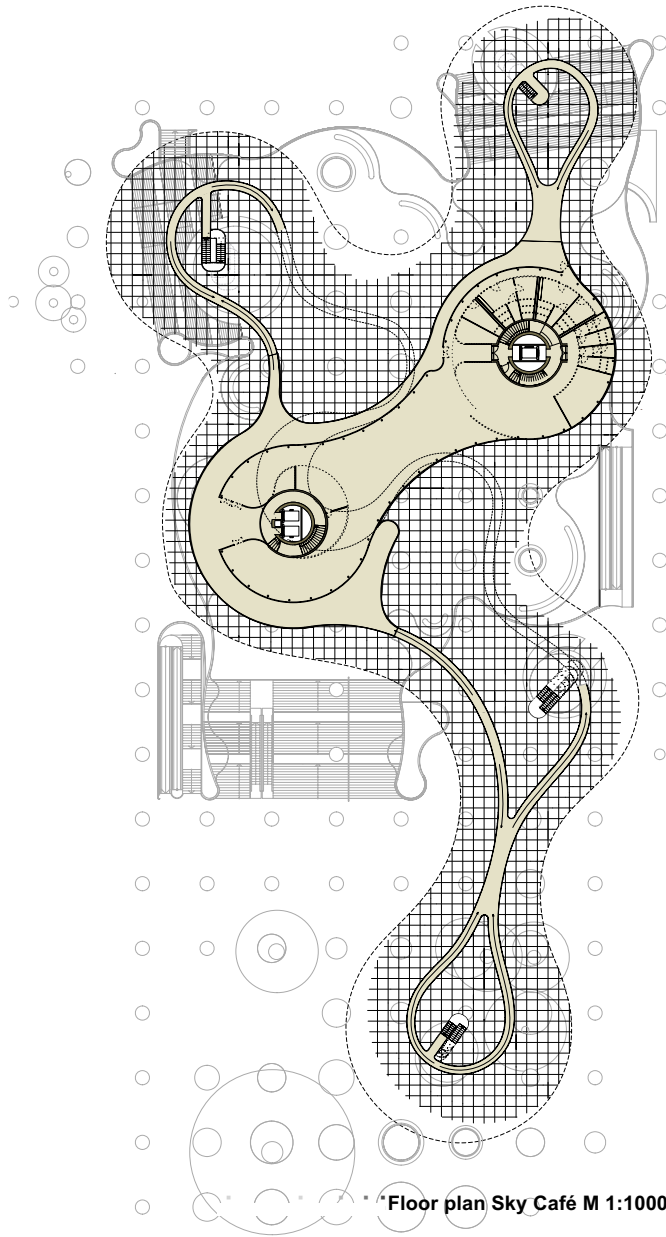


Market Hall de la Encarnación, after 1960

Programmatic flexibility

Integration of historic site





\* Floor plans Plaza level 0,1 and 2, top view Plaza de la Encarnación

## Target Issue 2

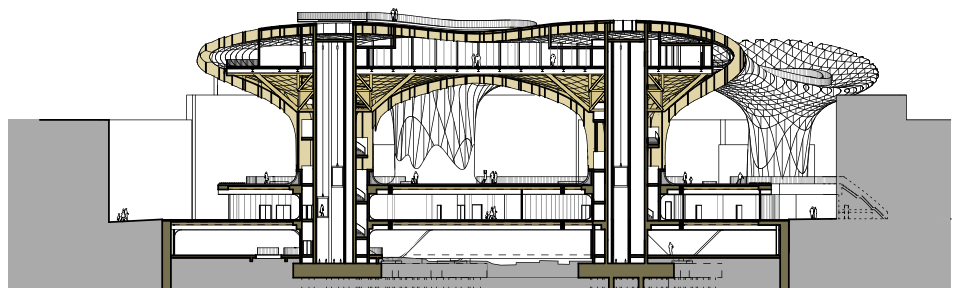
## Ethical standards and social equality



- Team selected via an international competition, with a jury composed of representatives of all stakeholders
- From the very beginning the public was involved (symposiums, internet-forum) => process of identification
- Local effect = activation development in the neighbouring areas; attraction and meeting place for entire city / surroundings.
- Non-governmental organisations form the part of the local authority committees that evaluate the design
- Local hearings and presentations of the design
- Plaza becomes a new unique space of urban communication (bus terminal, event spaces, panorama platform) - prototype for urban space in the 21st century
- Mixture of strata because of multipurpose square
- Public access to viewing platform - „democratic views“
- Public access to archaeological findings
- Creation of space for new businesses

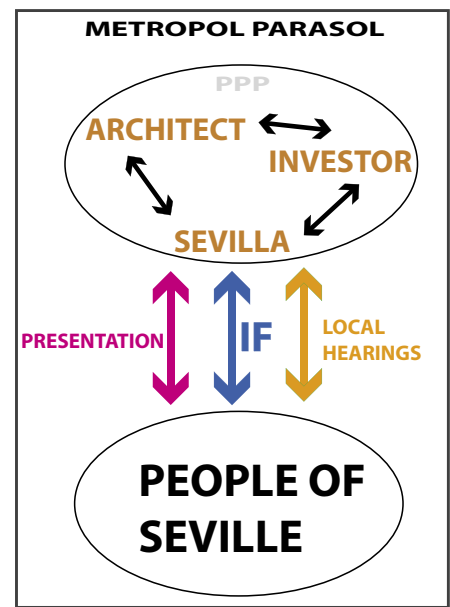
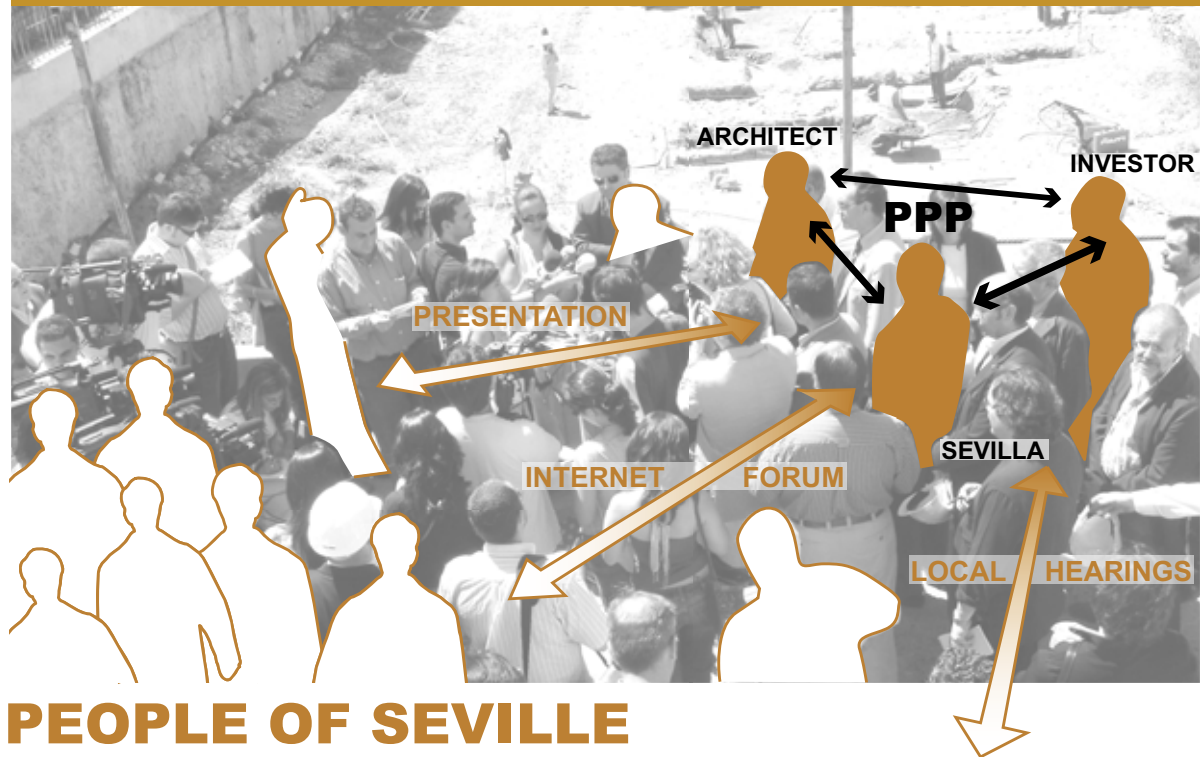


\* Atmospheric section



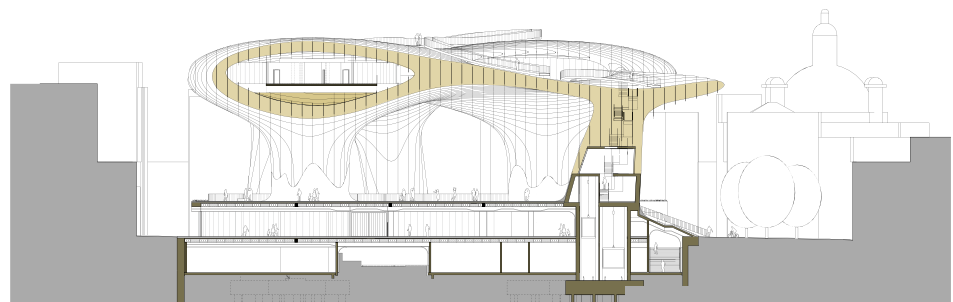
\* Section East West



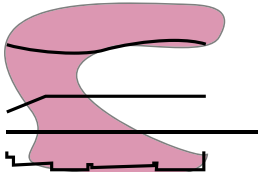
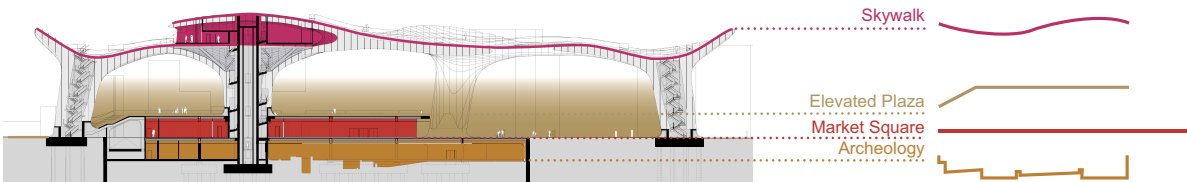


INSTRUMENTS OF INTERACTION AND EXCHANGE

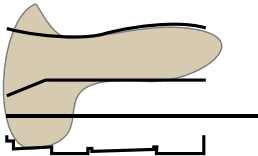
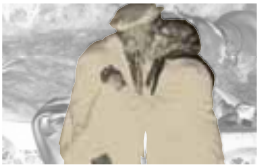
\* \* \* \* \* Involvement of public, PPP



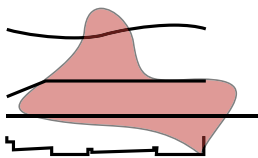
\* \* \* \* \* Section East West M 1:1000



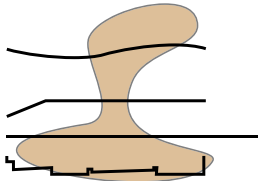
Tourists



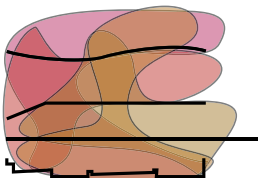
Locals leisure



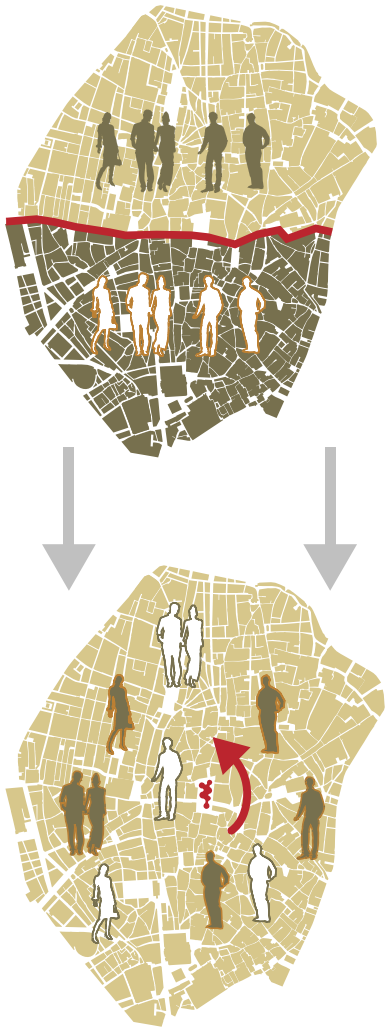
Locals shopping



Intellectual



Overlay



Local effect = activation development in the neighbouring areas

Mixture of stratum, Preferences of staying

## Target Issue 3

## Ecological quality and energy saving



- Responsible use and management of natural resources (eg. timber from sustainable forests and certified sources)
- Reduced embodied energy due to use of timber instead of steel for parasols
- Use of growing material, local materials, recycled and recyclable materials
- Long life cycle of construction due to long lasting low maintenance components
- Operation and maintenance: self cleaning skin with polyurethan coating as long lasting weather protection and solution liquid free
- Low impact construction process (prefabrication, minimal dust, noise etc.)
- Creation of an improved microclimate by shading of the plaza and evaporative cooling over water features (adiabatic cooling ... )
- Shading imitating the traditional Seville way (tree form)
- Adaption of the scheme, keeping existing monumental trees in the square
- Natural lighting (openings in Plaza-floors), Low-energy public lighting
- Careful use of materials to provide an efficient thermal inertia to the building
- AHU: free cooling, variable speed fans and pumps => match demand and production
- Public furniture made of recycled materials
- Construction on columns provides additional usable space without reducing the space available on the



timber - 15,9 GJ/t



steel - 25,5 GJ/t

\* Reduced embodied energy by choosing a timber structure

### 1 Surface water

To reduce the impact of the project on the sewage infrastructure, the surfaces on the plaza are made of permeable finishes to allow a direct drainage of the locally intense rainfall to the ground rather than to the public sewage

### 2. Green power generation

Apart from "free views for all" the Parasol structure integrates solar-thermal and solar-electric panels for hot water production for the restaurants and bars and photovoltaic power generation for fountains and public lighting. Spaces for air-handling equipment are generously sized to allow the use of adiabatic cooling

### 3. Permeability

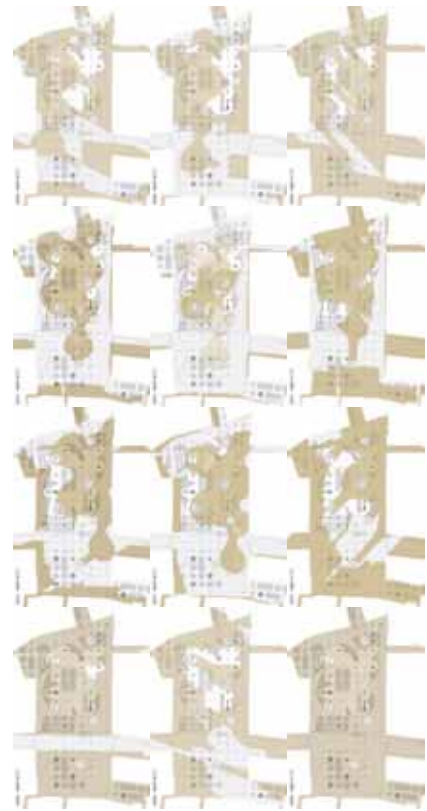
At the same time the Parasol structure was deliberately not made continuous but left permeable, to let some filtered light to the plaza and avoid an overtowering effect, and to allow any warm air generated on the plaza or the air-conditioning equipment to escape.

### 4. Shading

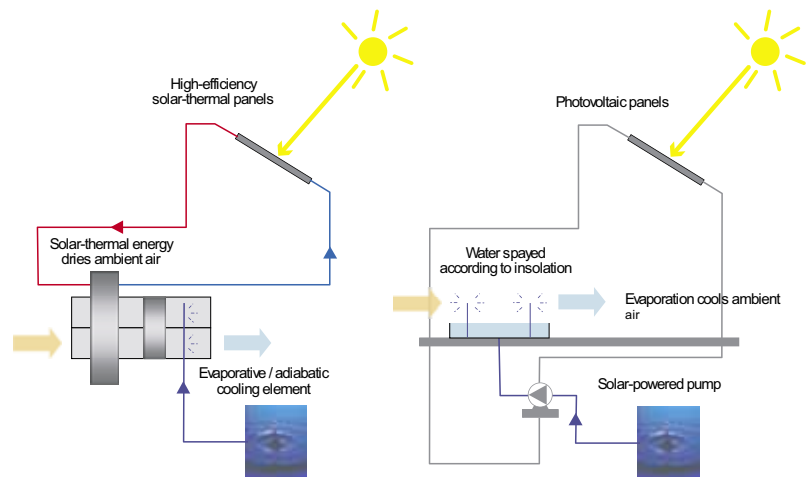
The Parasol structure provides shading from the intense sun in Southern Spain; this applies both to the public plaza level and the roof of the market. On the plaza level this leads to an extended usability and increase in attractiveness of the public space, while for the market this reduced the cooling loads for the air-conditioning equipment.

### 5. Free cooling

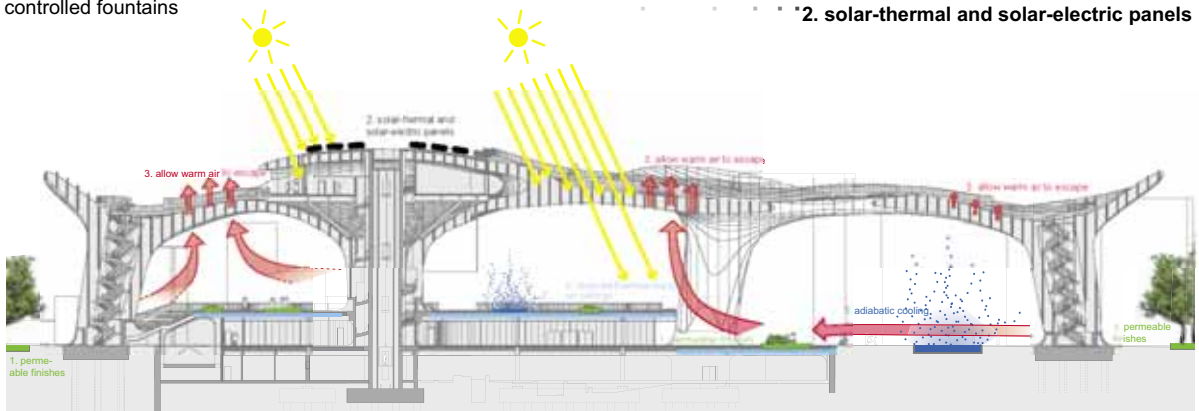
Water features distributed on the plaza provide - apart from an eye-catcher and focal point for social activities - a source of free cooling by evaporation; in summer the evaporation is further promoted by solar powered and irradiation-controlled fountains



\* Shadow studies

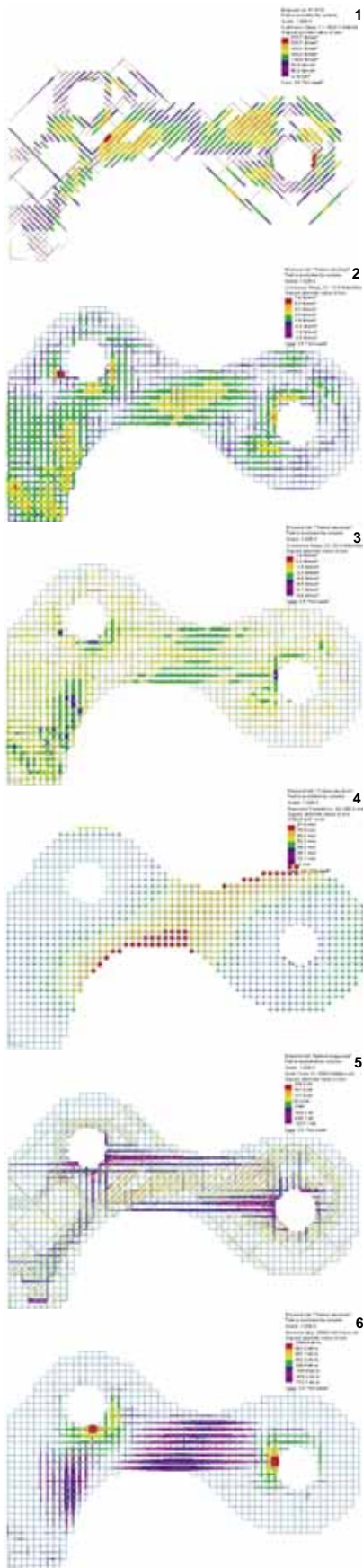


\* 2. solar-thermal and solar-electric panels

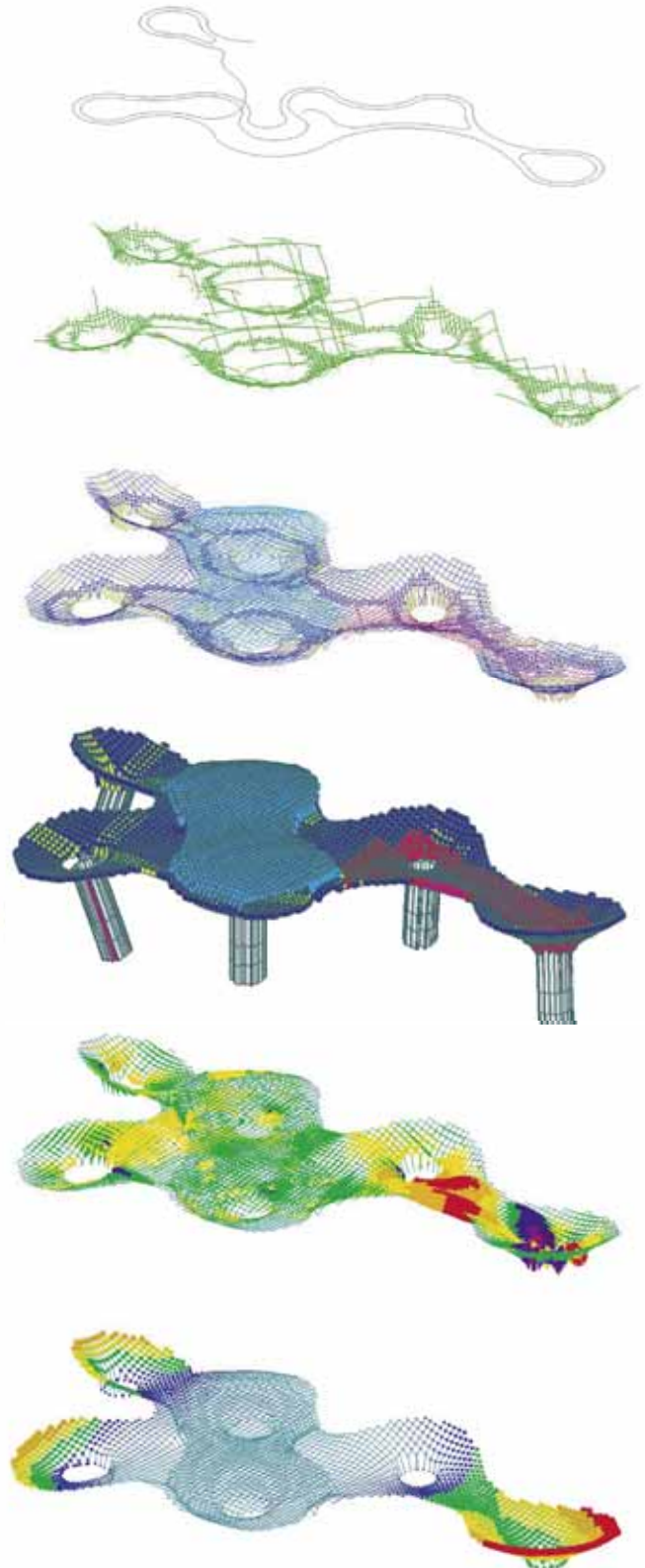


\* Improved microclimate of the plaza





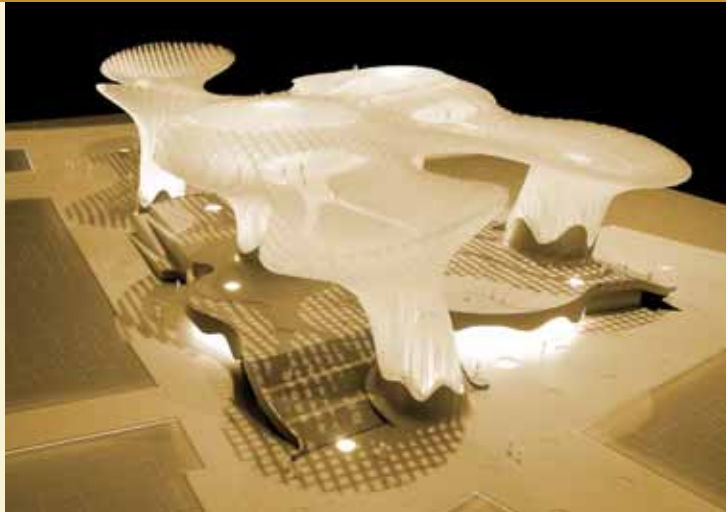
1. Stresses of diagonals between P5 and P6
2. & 3. Maximal and minimal combined stress for timber elements
4. Deflections between P5 and P6
5. & 6. Axial forces and bending moments of timber beams between P5 and P6



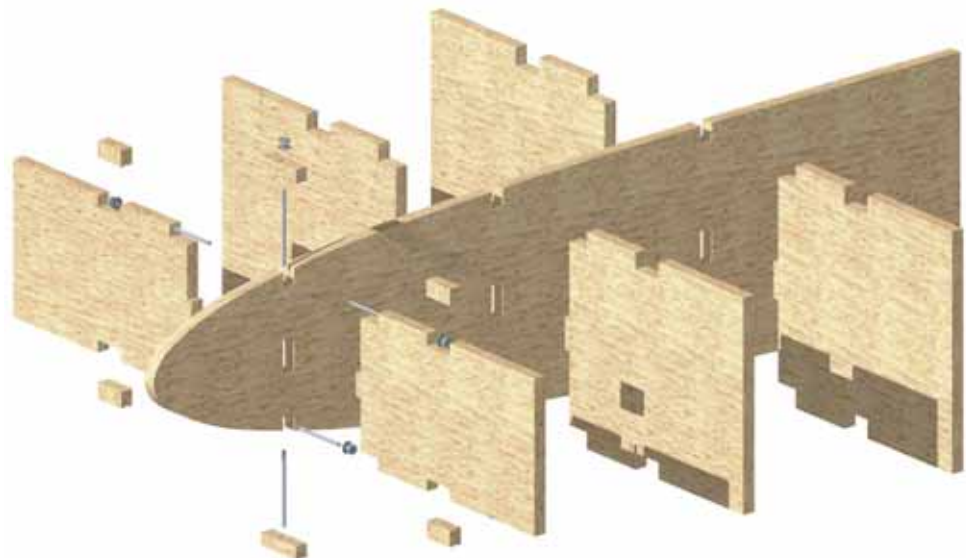


## Target Issue 4

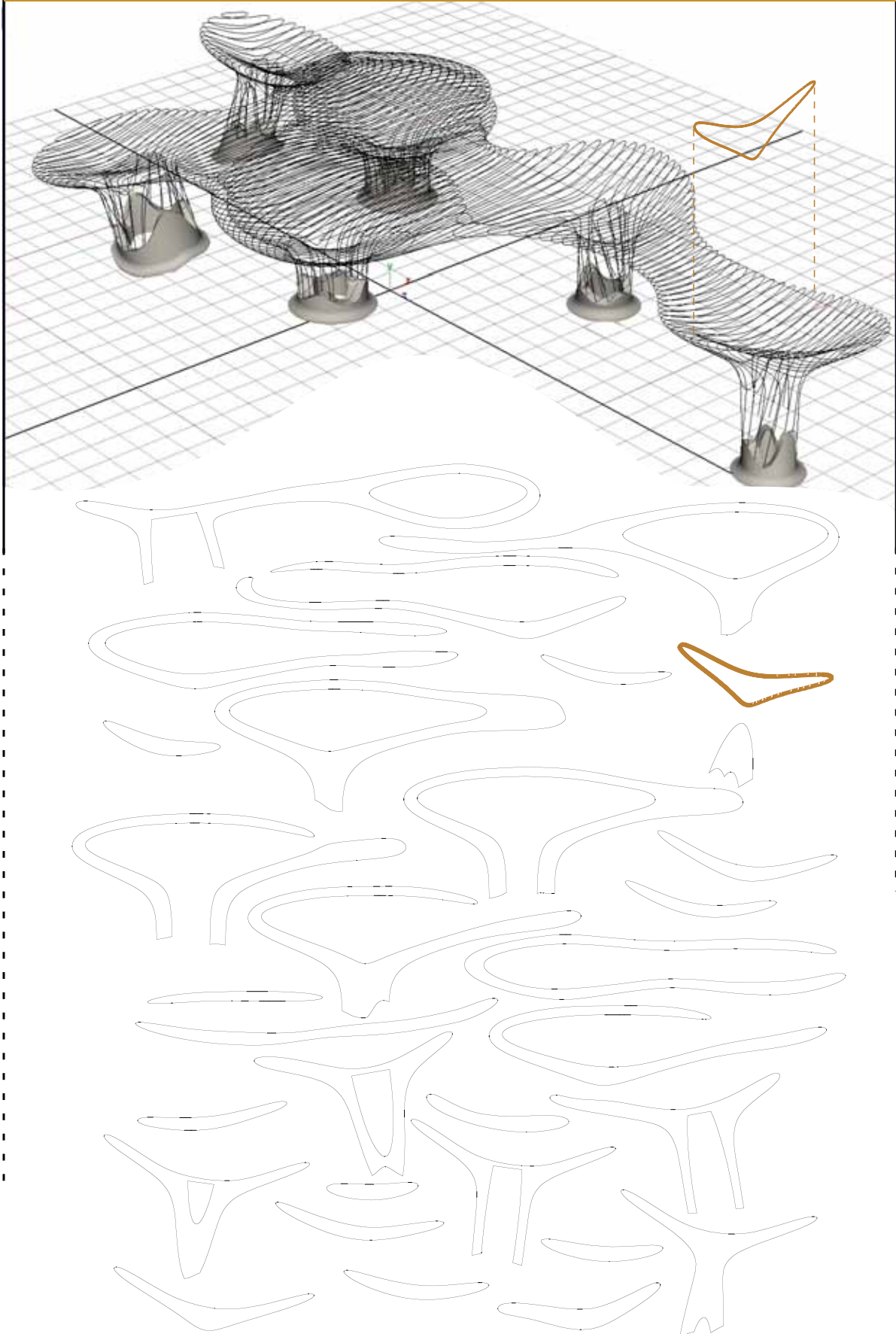
### Economic performance and compatibility

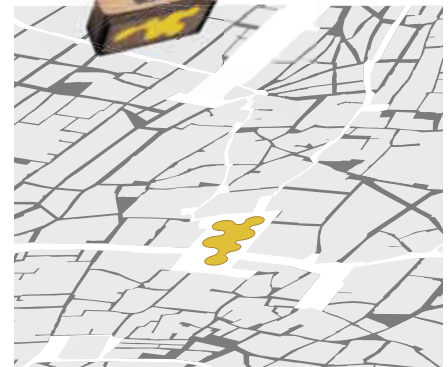
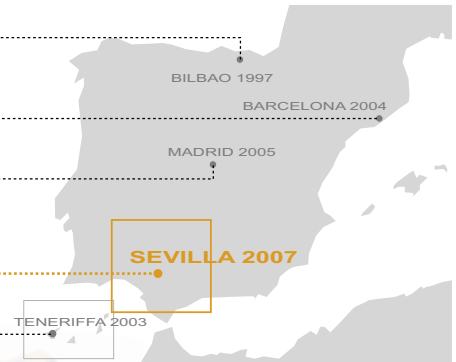
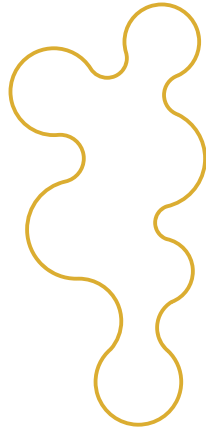


- Green areas for low building service equipment
- Public space as space for marketing
- Branding effect brings more tourism and economy to Seville
- Development by construction company, free construction for city, management by concessionaire (PPP)
- Raising the quality of the square and related businesses (i.e. Sky Café) - „sweep-along effect“
- Creates employment in the neighbourhood
- Providing a long-awaited premises for local market
- Traditional retail vs mall
- Integration of public transport for economic reactivation
- Computer aided design- and construction process
- Prefabrication reduces construction costs
- Reduced lifecycle costs due to low-maintenance finishes and materials
- Reduced costs for fire safety measures by performance-based approach



\*timber structure and minimal joints

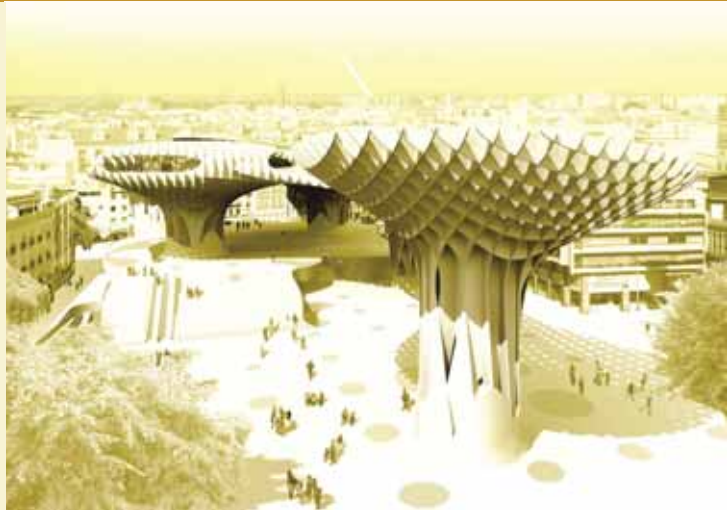




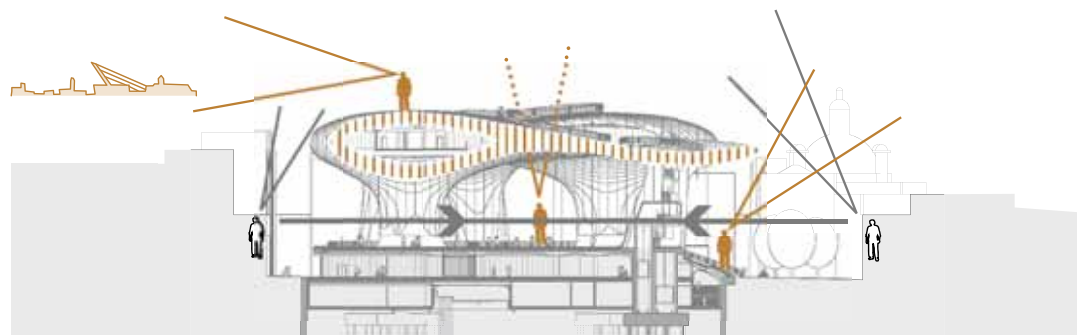
\*branding effects

## Target Issue 5

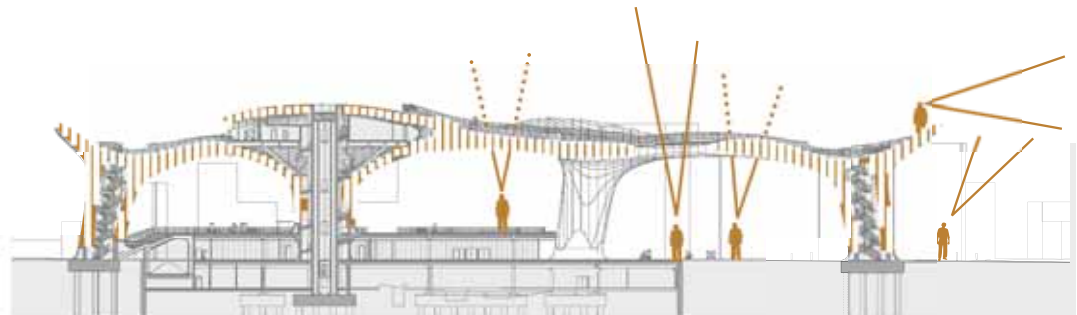
## Contextual response and aesthetic impact



- Design excellence through international competition
- Integration of computer technology in design and production with craftsmanship
- Design as site-specific for identification and uniqueness (city branding)
- Transformation of a parking lot into a vibrant inner-city square
- Architectural design as desirable place of cultural, political and commercial events
- Flexibility of use in commercial units
- Adaption of the scheme to leave the archeological remains intact
- „The right height“ for the structure is enough to provide views and avoid an over-towering effect and allow the square to „breathe“, but not protruding beyond the cityscape
- Use of existing urban land
- Inspiration by local vegetation (tree-shaded squares, olive trees) and architecture (undulating roofs of the cathedral)
- Continuation/ opening of main axis through the square
- Conservation of existing fountain with „nostalgic value“ for locals
- Use of local tree species for landscaping

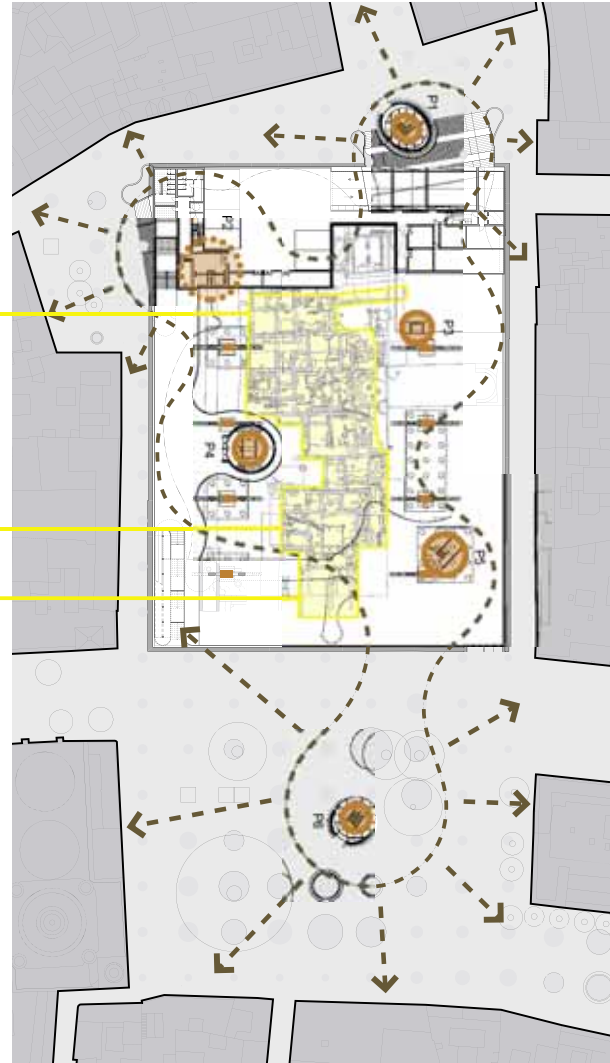


„Airiness“ of the structure, allowing the square to „breathe“

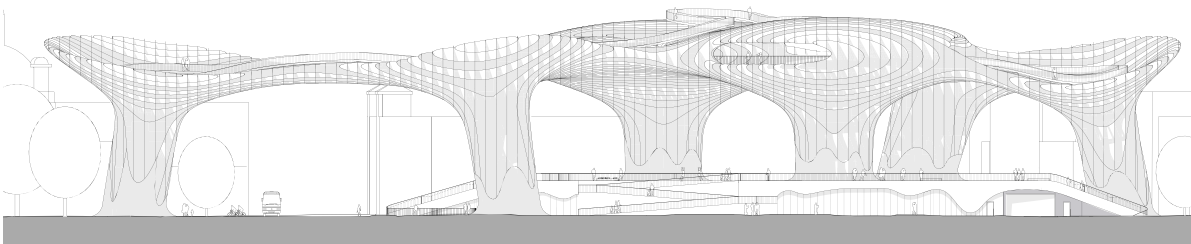


„The right height“ - providing views, avoiding over-towering effect





Adaption of the scheme



East elevation





"Inspiration by local vegetation and architecture"