ITA TUNNELLING AWARDS 2017

INNOVATIVE UNDERGROUND SPACE CONCEPT
- OF THE YEAR -

BOSTANCI INTERMODAL HUB

speaker

Arch. Stefano Ceccotto

MSAUD, LEED AP BD+C, ENVISION SP

GEODATA

STAKEHOLDERS

DESIGNER

GEODATA

CLIENT

İSTANBUL BÜYÜKŞEHİR BELEDİYESİ

GOVERNMENT & CITY AGENCIES

KADIKÖY BELEDİYESİ

MALTEPE BELEDİYESİ 1992

Ümraniye Belediyesi

ATAŞEHİR BELEDİYESİ
Gelecek burada

T.C. BAŞBAKANLIK DPT DEVLET PLANLAMA TEŞKİLATI

T.C. ÇEVRE VE ŞEHİRCİLİK BAKANLIĞI

TRANSIT & ENVIRONMENT AGENCIES

Marmaray

İSTANBUL BÜYÜKŞEHİR BELEDİYESİ

T.C. Ulaştırma Denizcilik ve Haberleşme Bakanlığı

ISPARK

İDO

İSKİ
İSTANBUL SU ve KANALİZASYON İDARESİ

ayedaş

İSTANBUL BÜYÜKŞEHİR BELEDİYESİ
İstanbulUlaşım
Bizimle Ulaşım Rayında

İGDAŞ
"Gökyüzüyle Arkadaş"

DESIGN CONSULTANTS

TECH & RESARCH

POLITECNICO DI TORINO 1859 1906

İSTANBUL TEKNİK ÜNİVERSİTESİ 1953 MADEN FAKÜLTESİ

INTERIOR DESIGN

MAMA + TA SCA

PROJECT FRAMEWORK

PROJECT FRAMEWORK

THE CITY OF ISTANBUL

14-millions inhabitants, 2,400 inhab./km^2

Mixture of its historic heritage, natural beauty and uncontrolled urbanization.

At peak hours commuting time European/Asian side can reach **4hrs to travel 30km**

THE CURRENT TRANSIT OFFER

One single transit ticked provides access to multimodal services such as

FERRY BOAT

BUS

BRT

LRT

SUBWAY (AT GRADE)

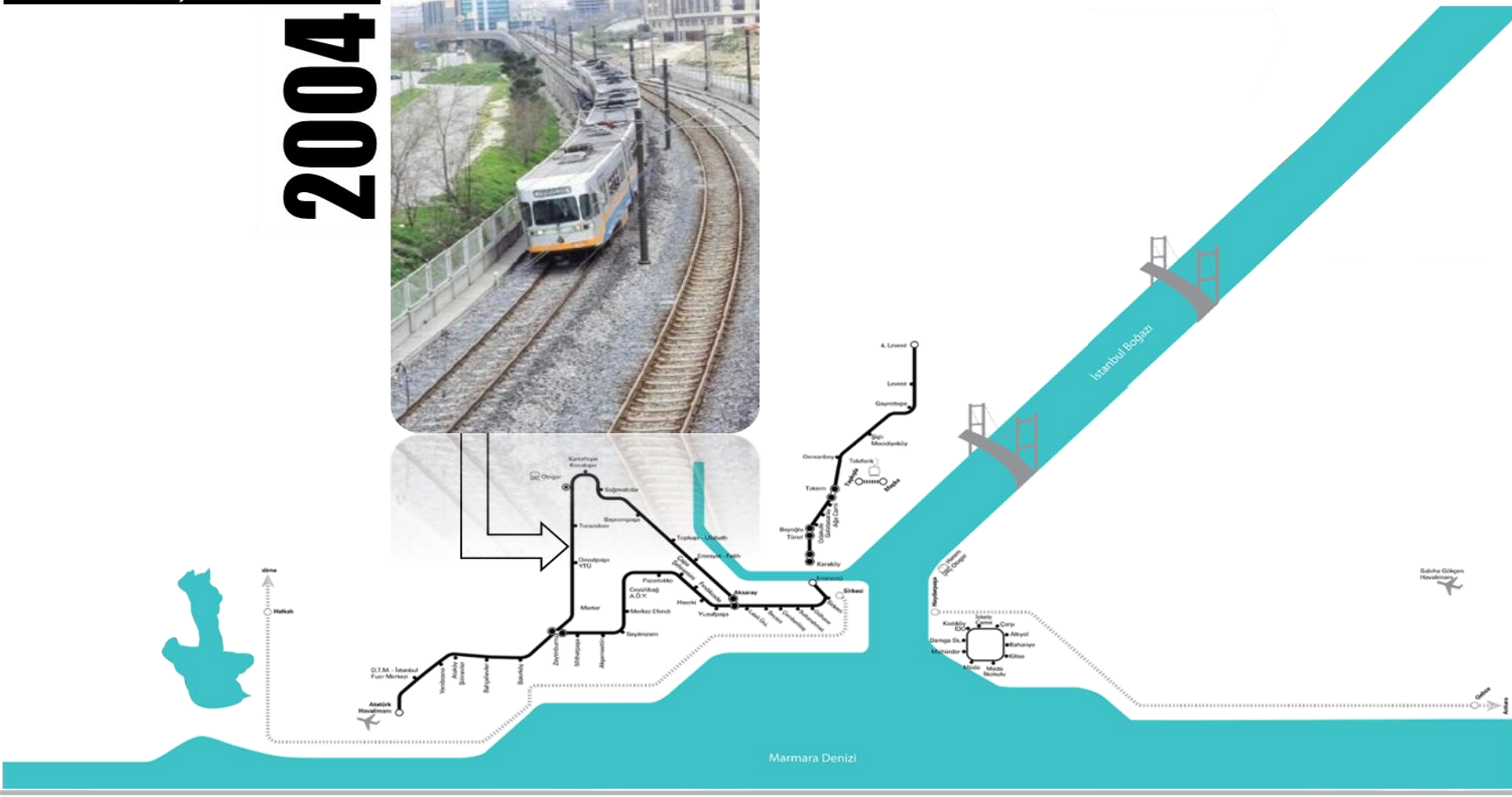
SUBWAY (UNDERGROUND)

THE METRO SYSTEM

PROJECT FRAMEWORK

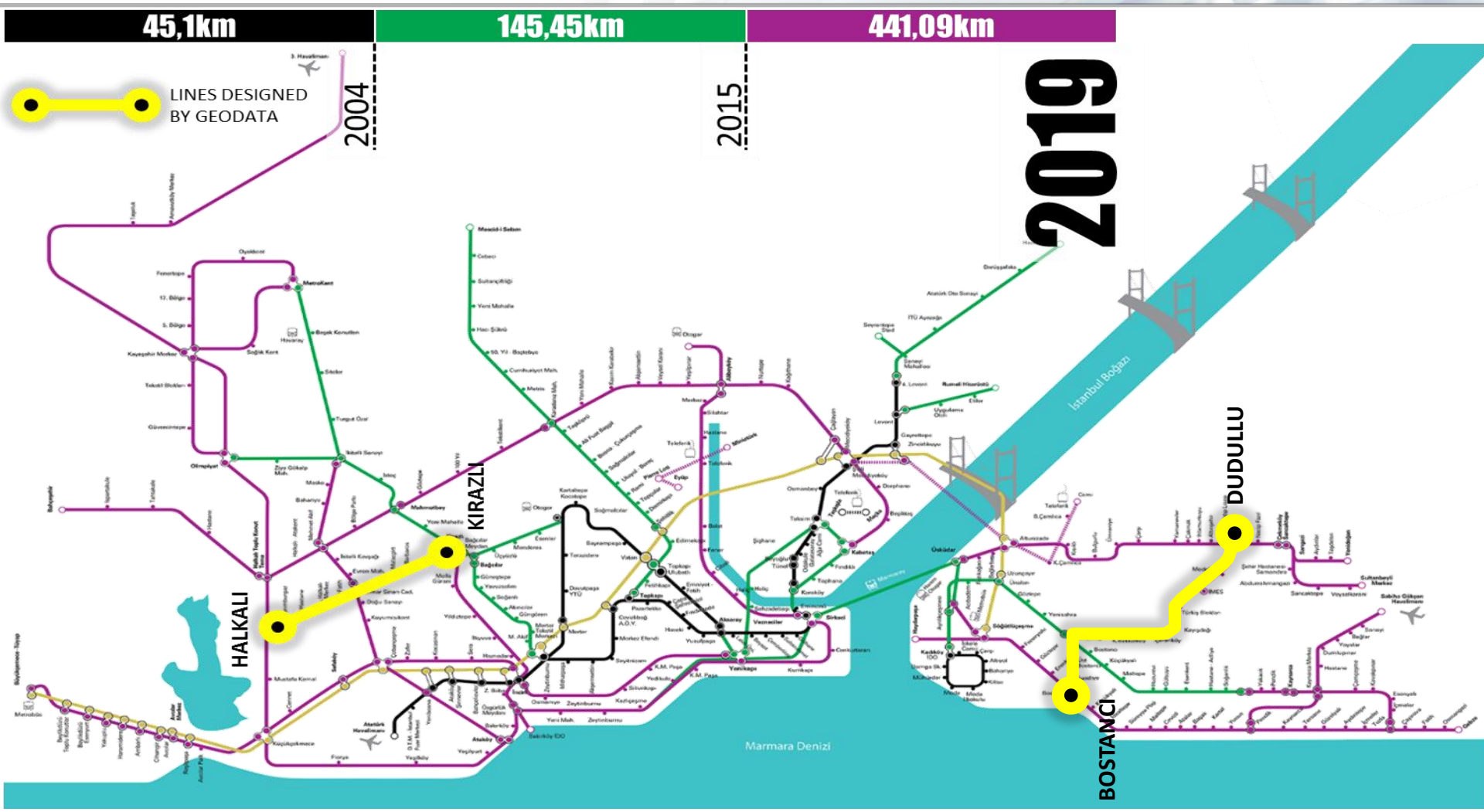
45,1km

2004

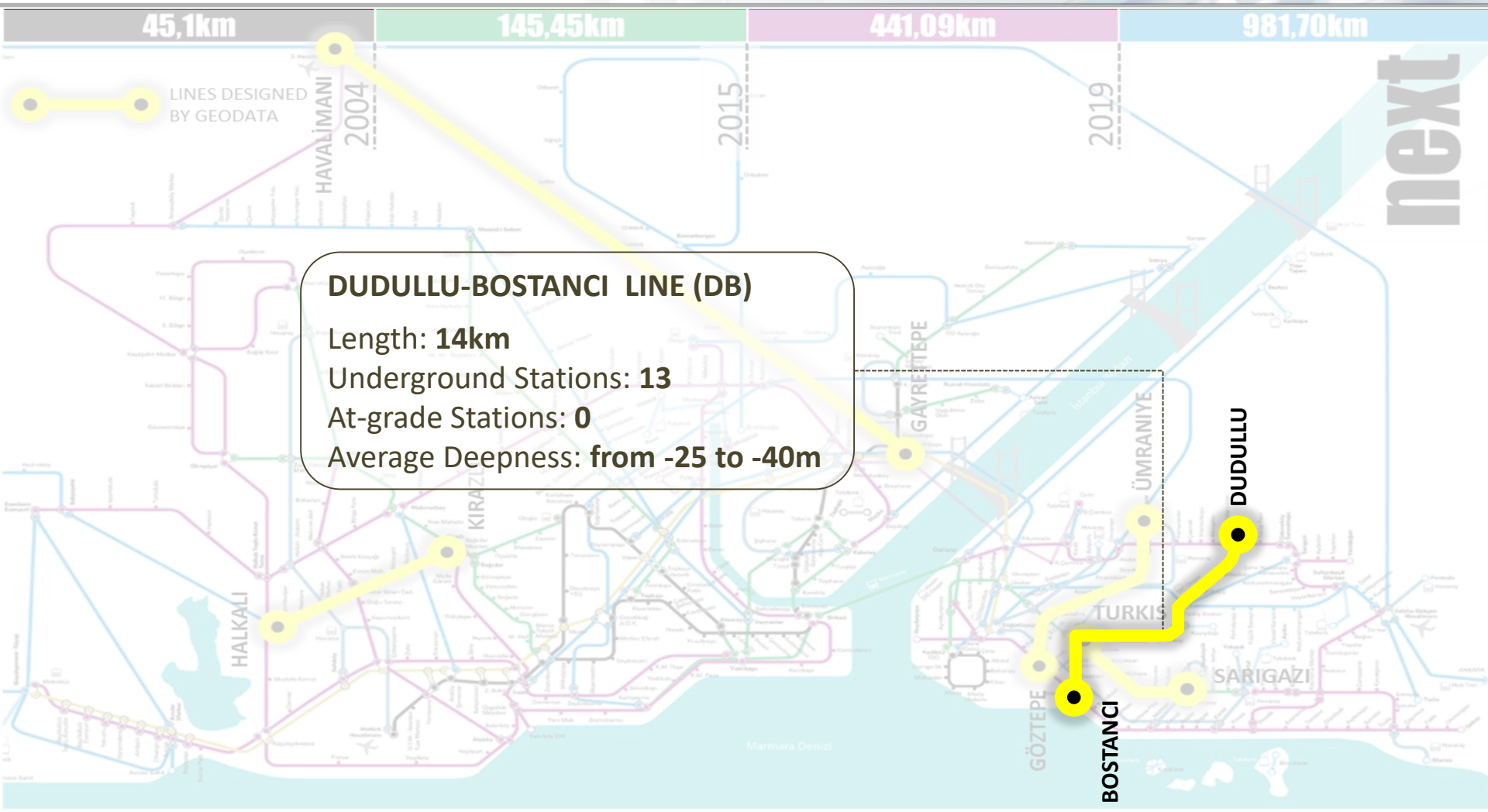


PROJECT FRAMEWORK

PROJECT FRAMEWORK



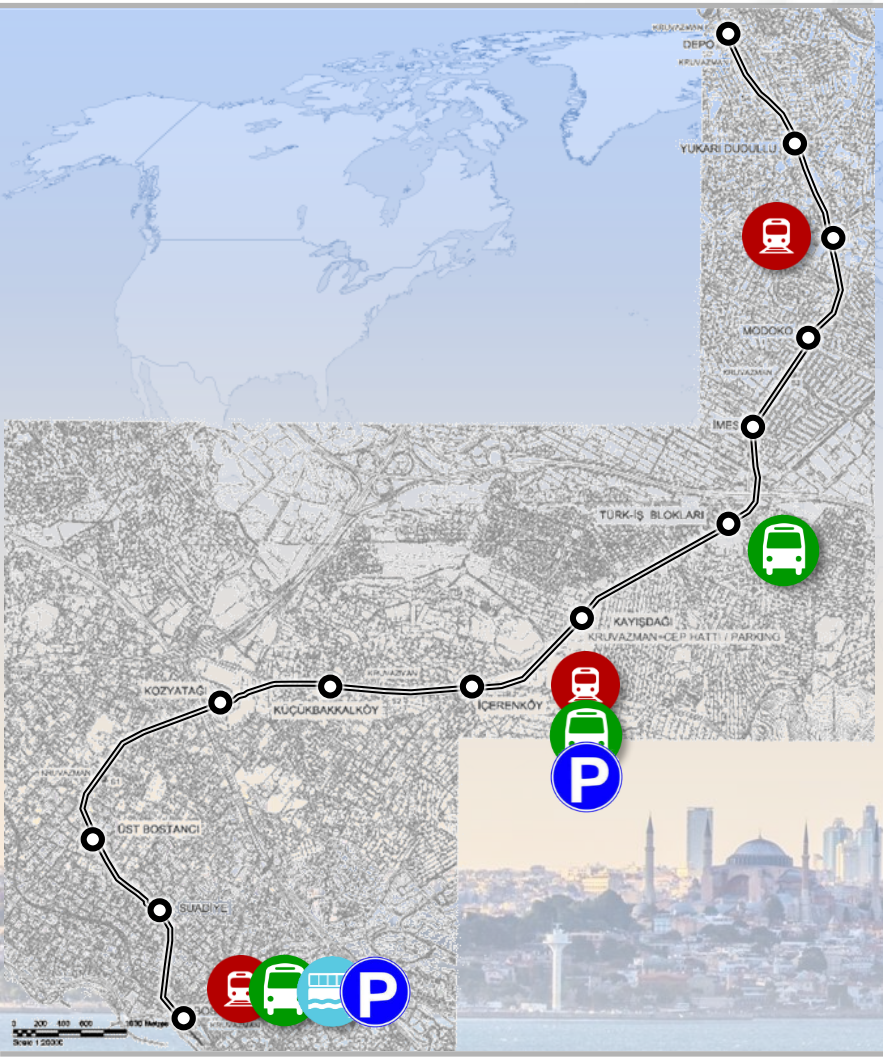
PROJECT FRAMEWORK



DUDULLU-BOSTANCI LINE (DB)

Length: **14km**
Underground Stations: **13**
At-grade Stations: **0**
Average Deepness: **from -25 to -40m**

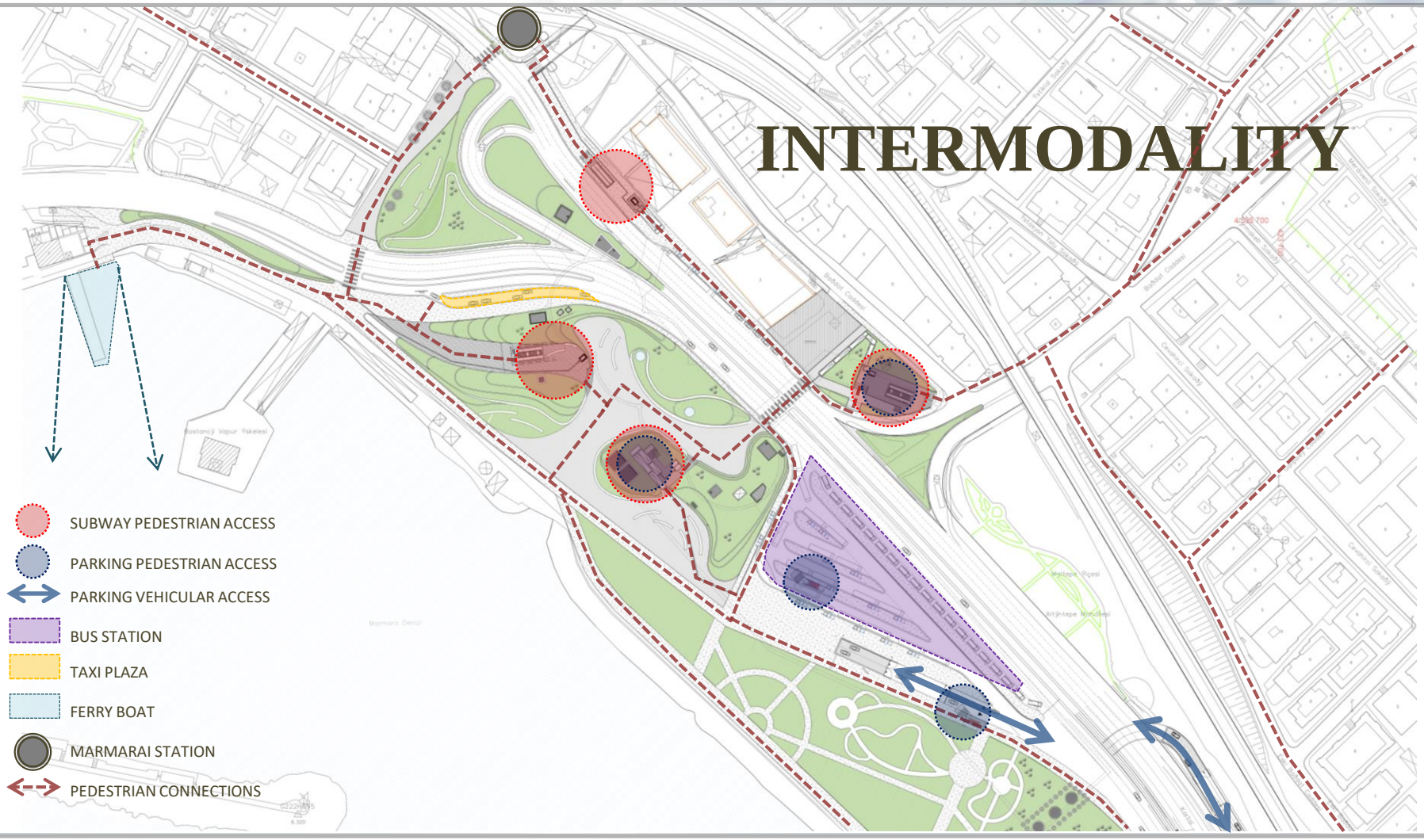
PROJECT FRAMEWORK



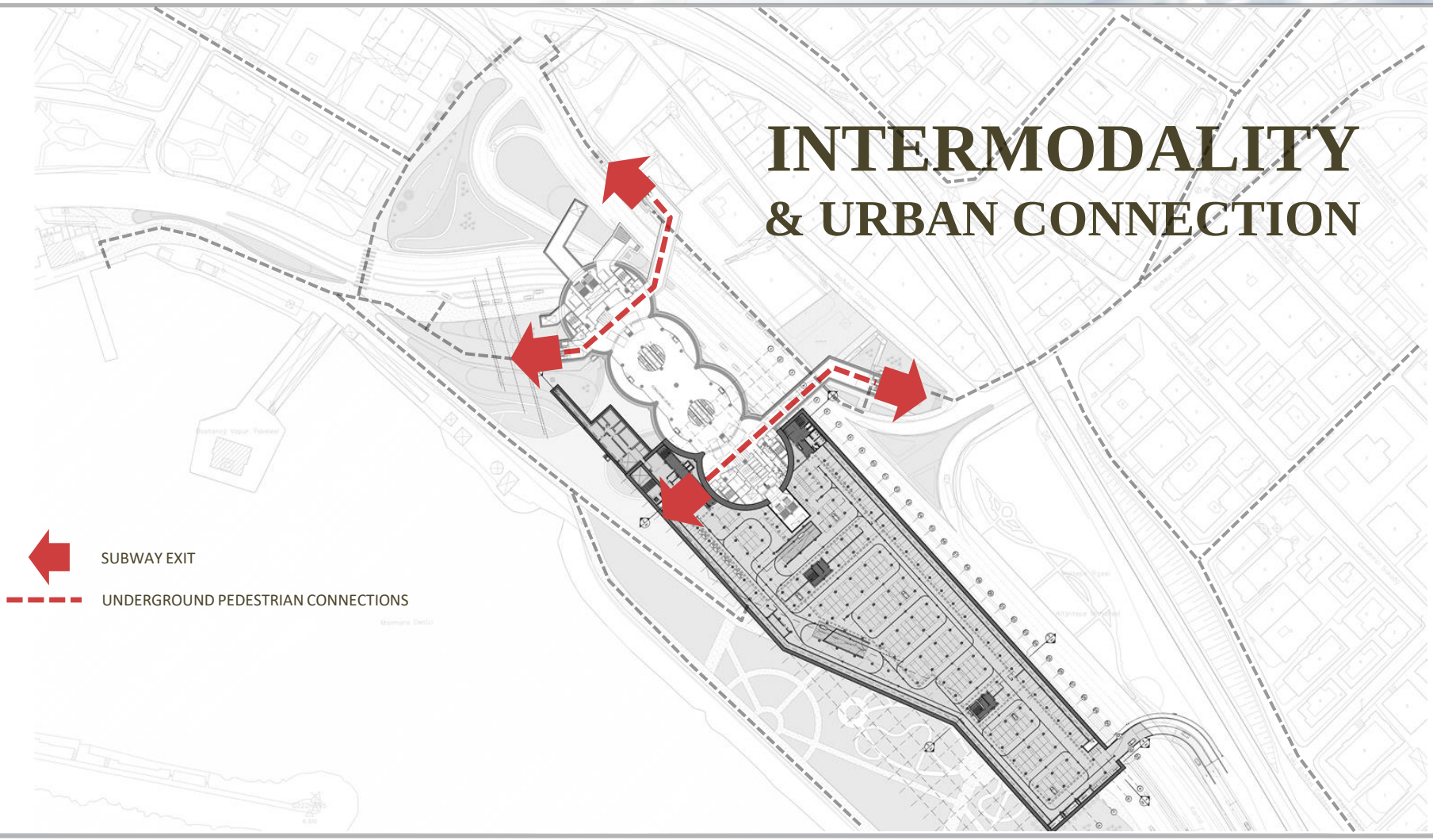
INTERMODALITY

- **3** Intermodal stations (connection with different subway/railway lines)
- **3** Intermodal stations (connection with bus lines)
- **1** Intermodal station (connection with ferry boat)
- **2** Integrated stations with public parking

PROJECT FRAMEWORK



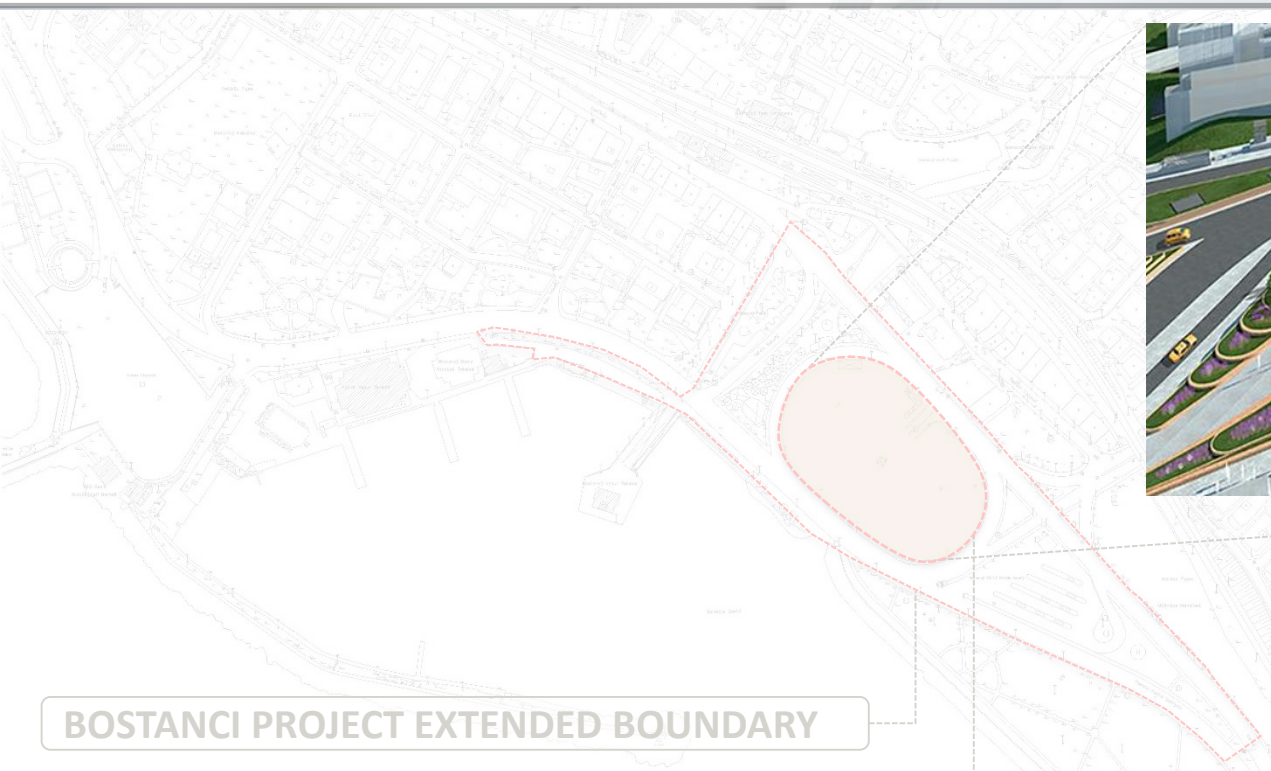
PROJECT FRAMEWORK



ITA CRITERIA

REHABILITATION
OF A BROWNFIELD

REHABILITATION
OF A BROWNFIELD



BOSTANCI PROJECT EXTENDED BOUNDARY

BOSTANCI EXISTING PARKING (2014)

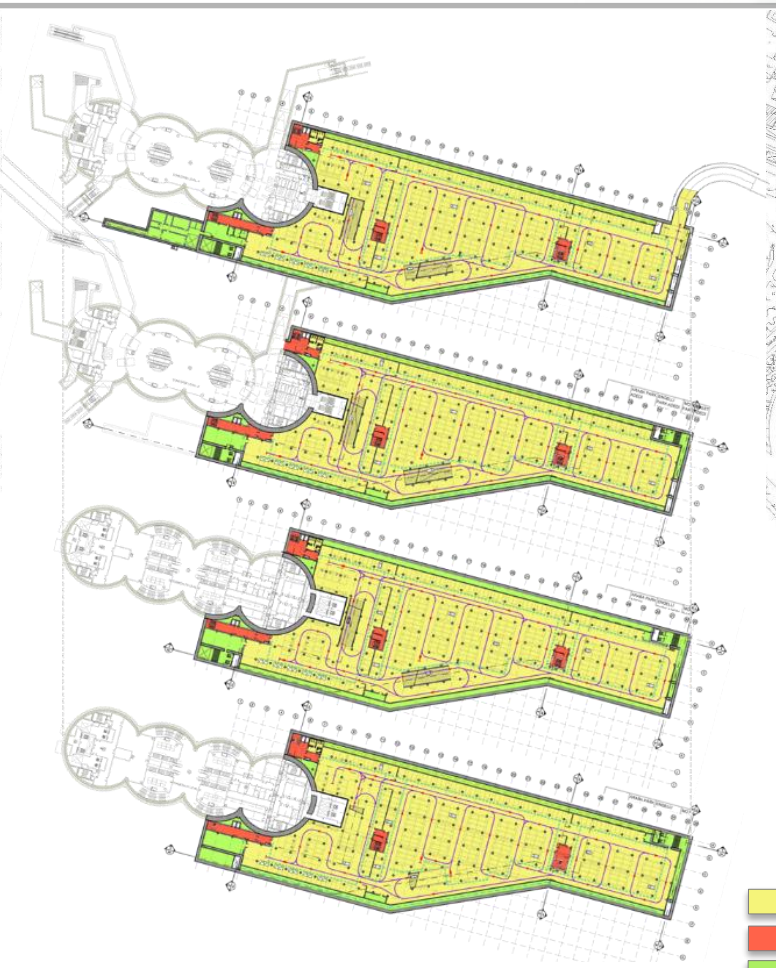
- OFTEN FLOODED AREA
- WITHOUT DEGREASERS FOR CAR OIL
- HEAVY TRANSITED ROADS CREATE A BREAK BETWEEN NEIGHBORHOODS AND THE SEASIDE

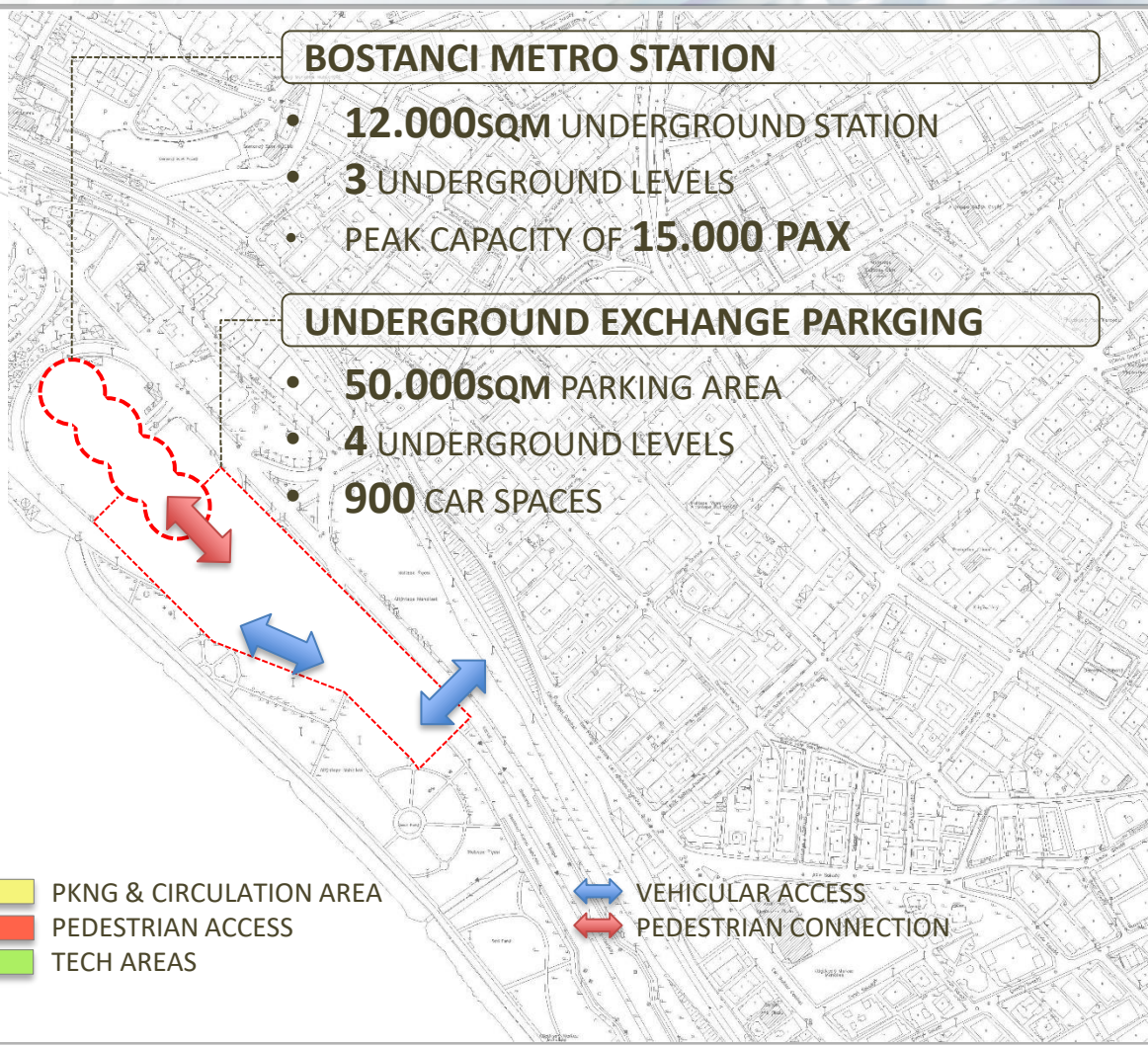
BOSTANCI GARDENS

- LANDSCAPE INCLUDES FLOODING PREVENTION
- GREEN AREAS REPLACE BROWNFIELD
- PEDESTRIAN PATHS RECONNECTING THE TWO SIDES OF THE NEIGHBORHOOD

COMBINED
FACILITIES

COMBINED FACILITIES





BOSTANCI METRO STATION

- **12.000SQM** UNDERGROUND STATION
- **3** UNDERGROUND LEVELS
- PEAK CAPACITY OF **15.000 PAX**

UNDERGROUND EXCHANGE PARKGING

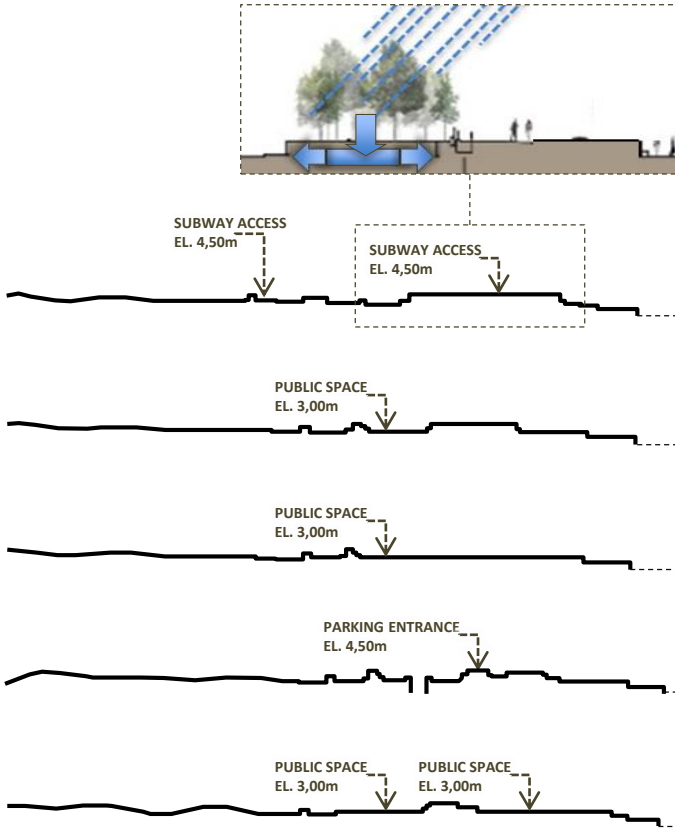
- **50.000SQM** PARKING AREA
- **4** UNDERGROUND LEVELS
- **900** CAR SPACES

PKNG & CIRCULATION AREA
PEDESTRIAN ACCESS
TECH AREAS

VEHICULAR ACCESS
PEDESTRIAN CONNECTION

GREEN
INFRASTRUCTURE

GREEN INFRASTRUCTURE



"TERRACES" LANDSCAPING CONCEPT

PROVIDE

SOCIO/ECONOMIC BENEFITS

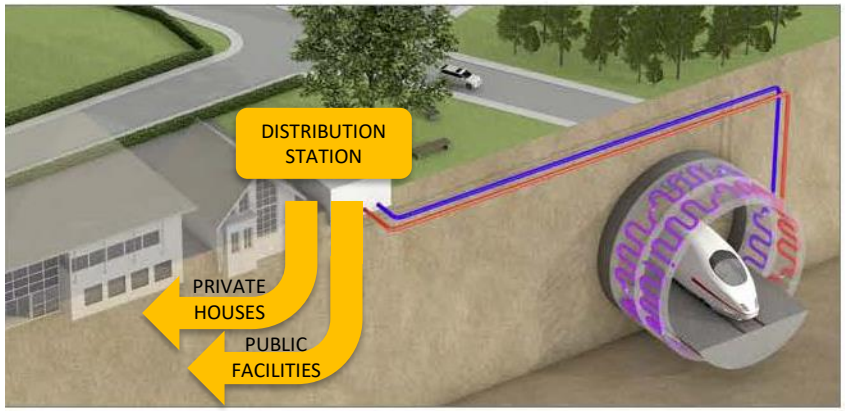
PROVIDE

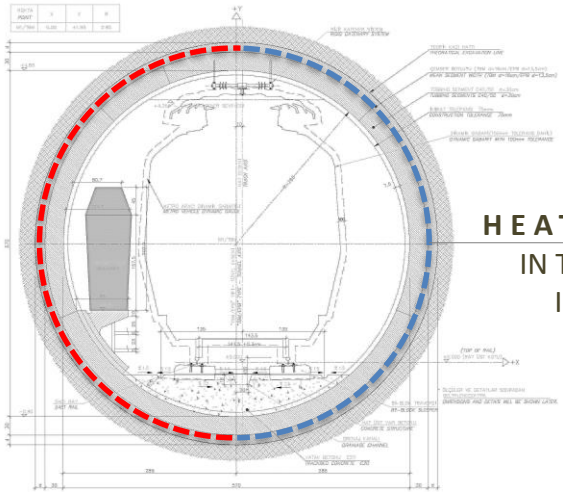
SOCIO/ECONOMIC BENEFITS

"ENERGY" TUNNELS

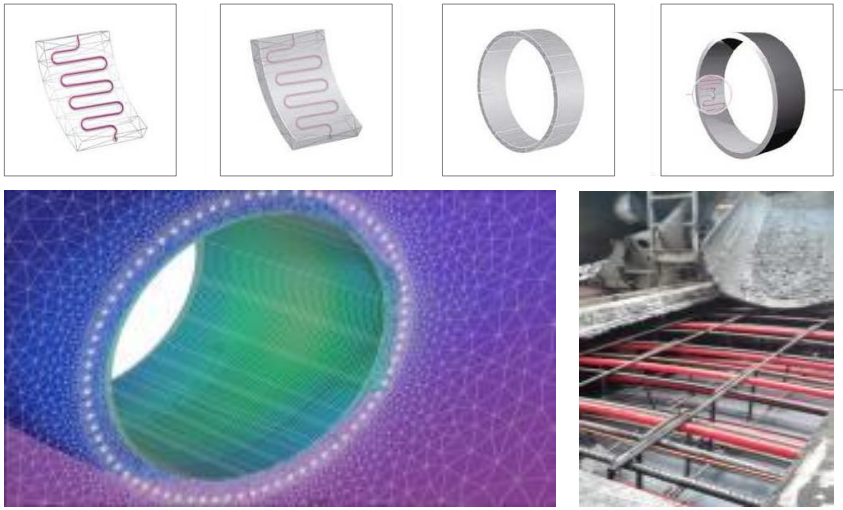
Together with Politecnico di Torino, a testing study demonstrated that over a sample lining of **280m** the "ENERGY" TUNNEL systems allows for:

- **20W/SQM** POTENTIAL OF EXTRACTED ENERGY
- **1000 MWH** YEARLY TOTAL EXTRACTED ENERGY
- **37,5TON** CO2 EQUIVALENT





HEAT EXCHANGERS
IN THE LINING SEGMENTS
INSTALLED BY THE TBM

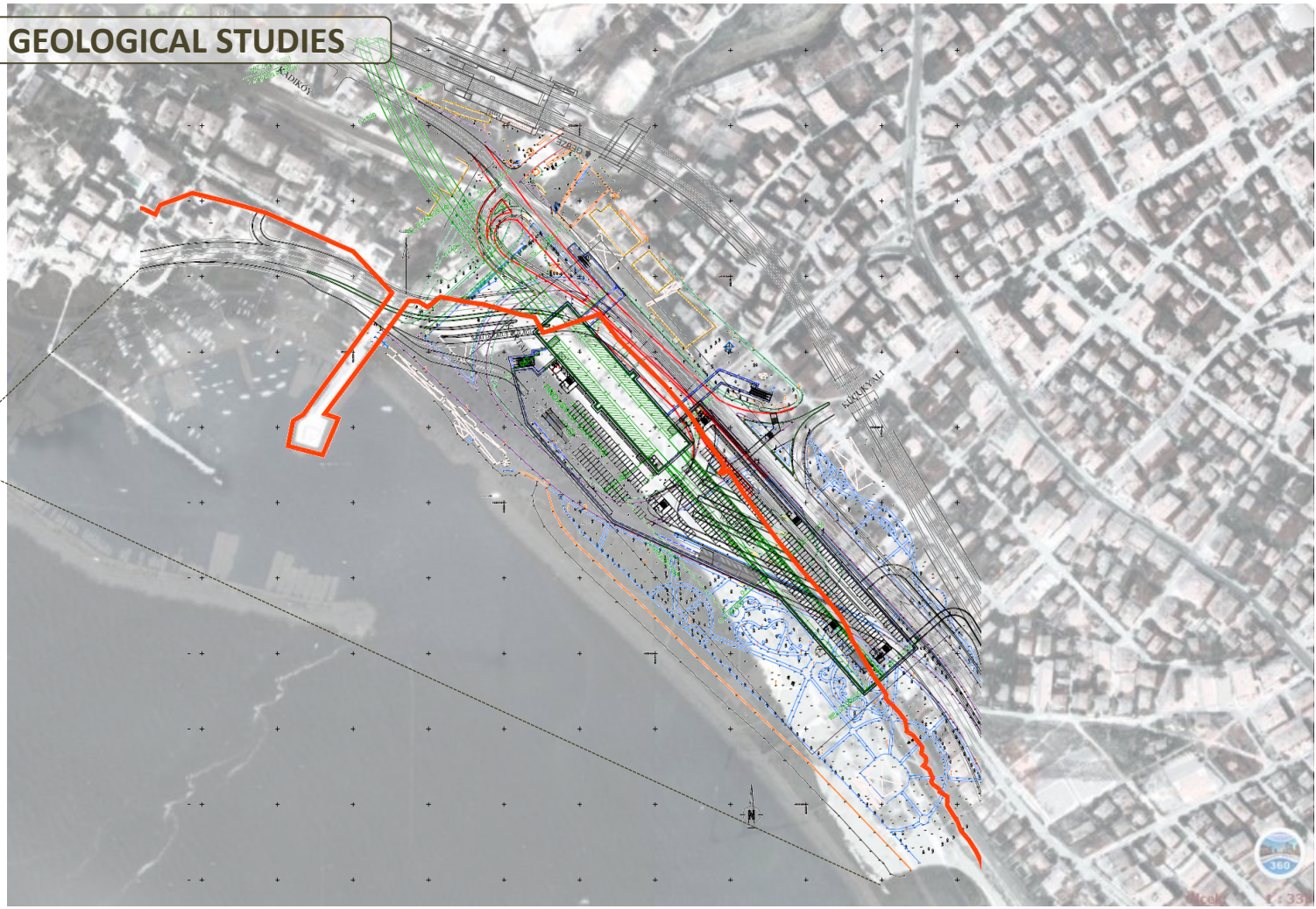


RESILIENT
INFRASTRUCTURE

"ROBUST" DESIGN – GEOLOGICAL STUDIES

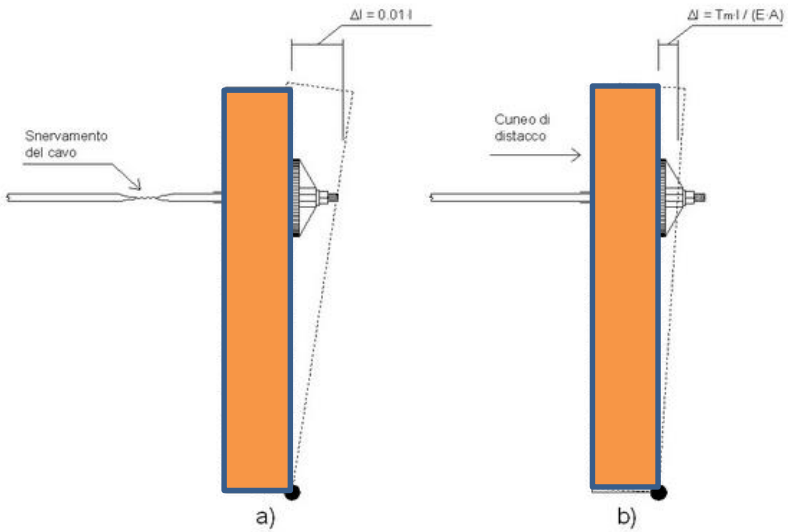
PREVIOUS SHORE
(1980)

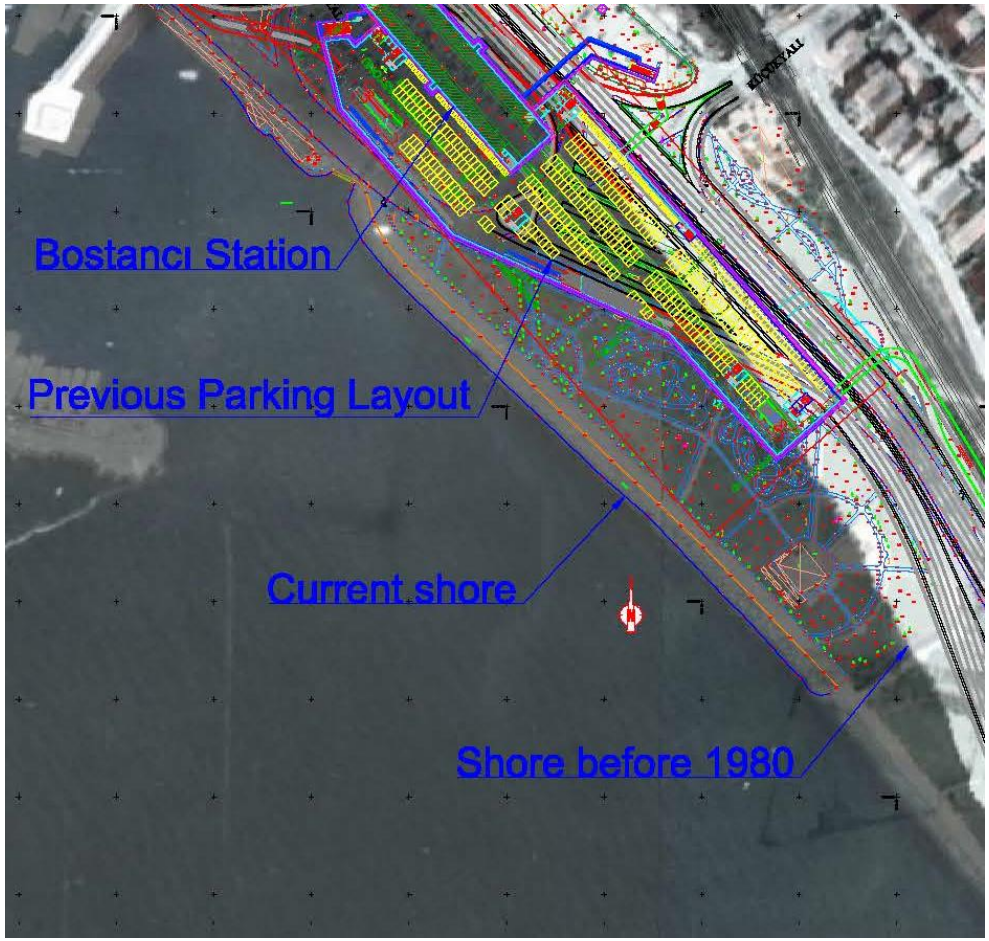
SUPERIMPOSITION
OF MAN – FILLING

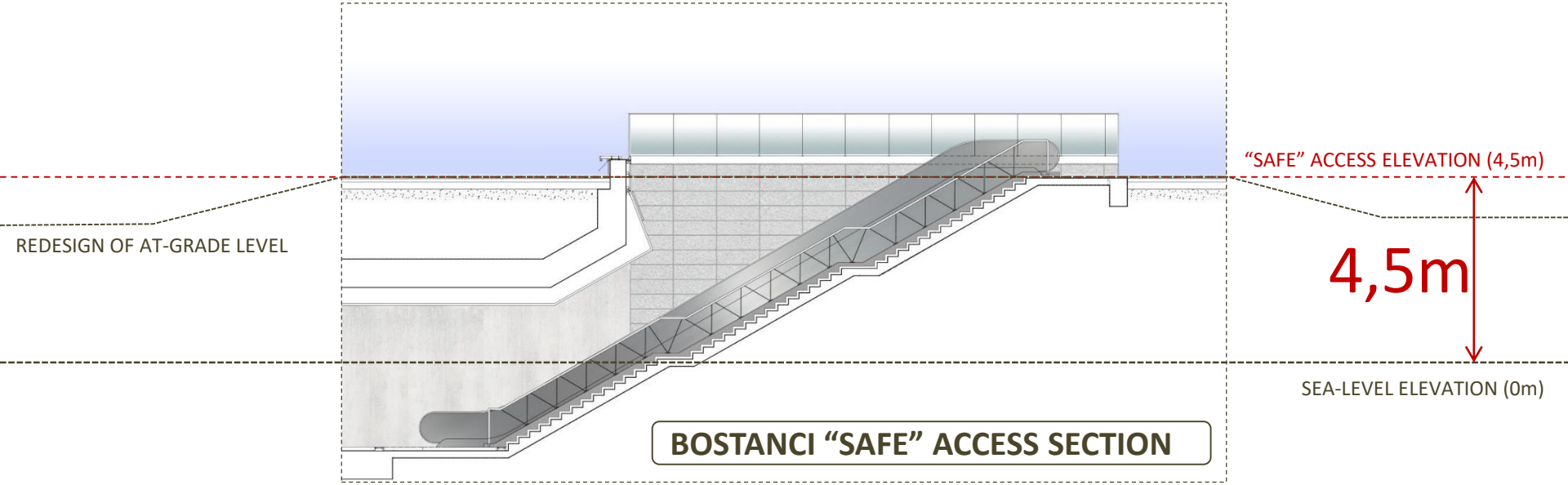


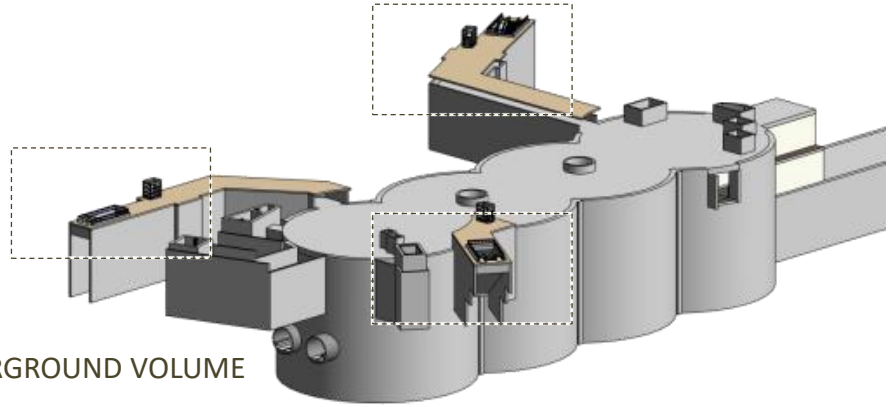
"ROBUST" DESIGN – GEOLOGICAL STUDIES

1. VERY POOR GEOLOGICAL FORMATIONS (FILLING AND SULTANABELY)
2. DEPTH OF THE BEDROCK > 30M
3. HIGH WATER LEVEL (PROXIMITY OF THE SEA)
4. COMPLEX HIGHWAY NETWORK ON THE SURFACE



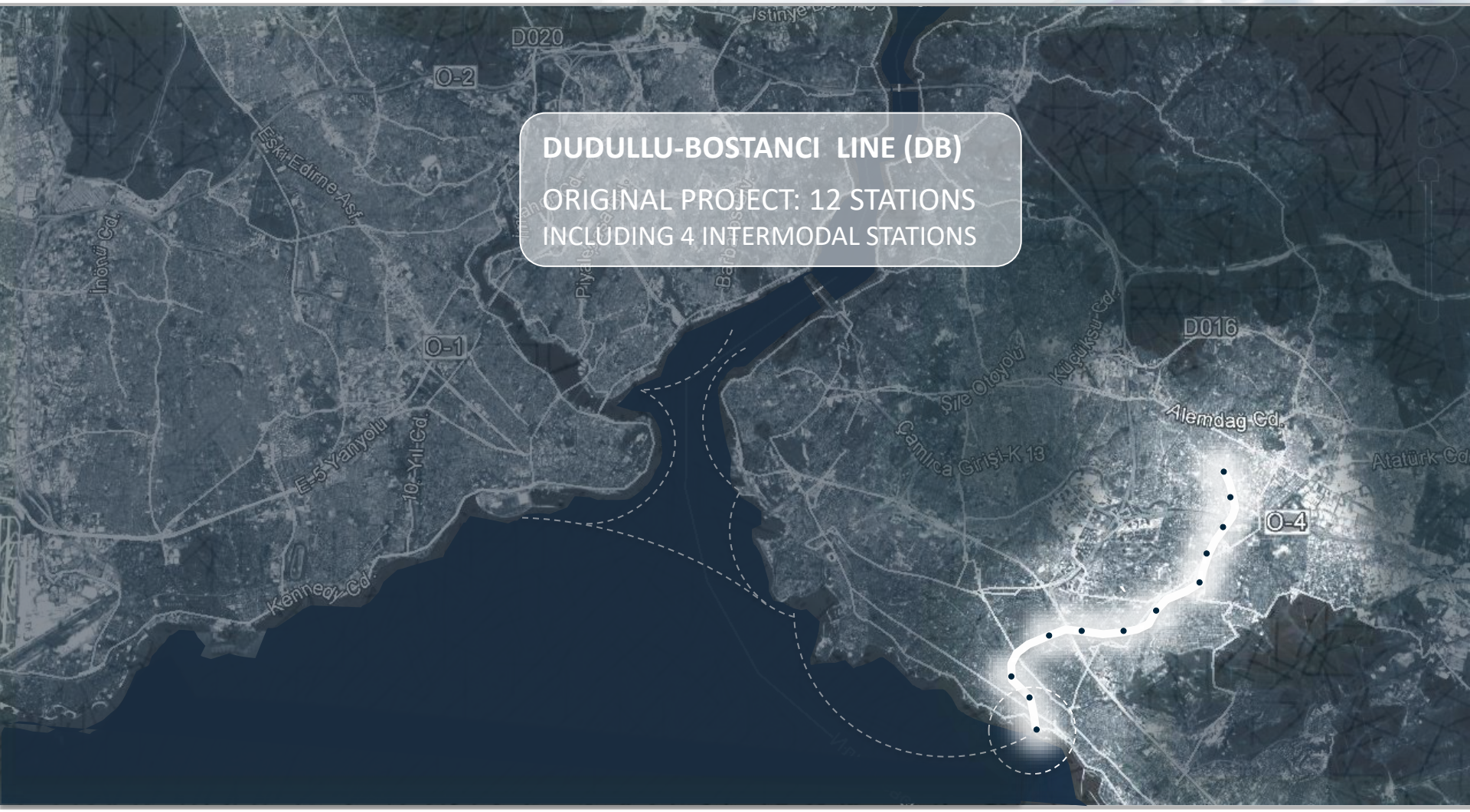






STATION'S UNDERGROUND VOLUME

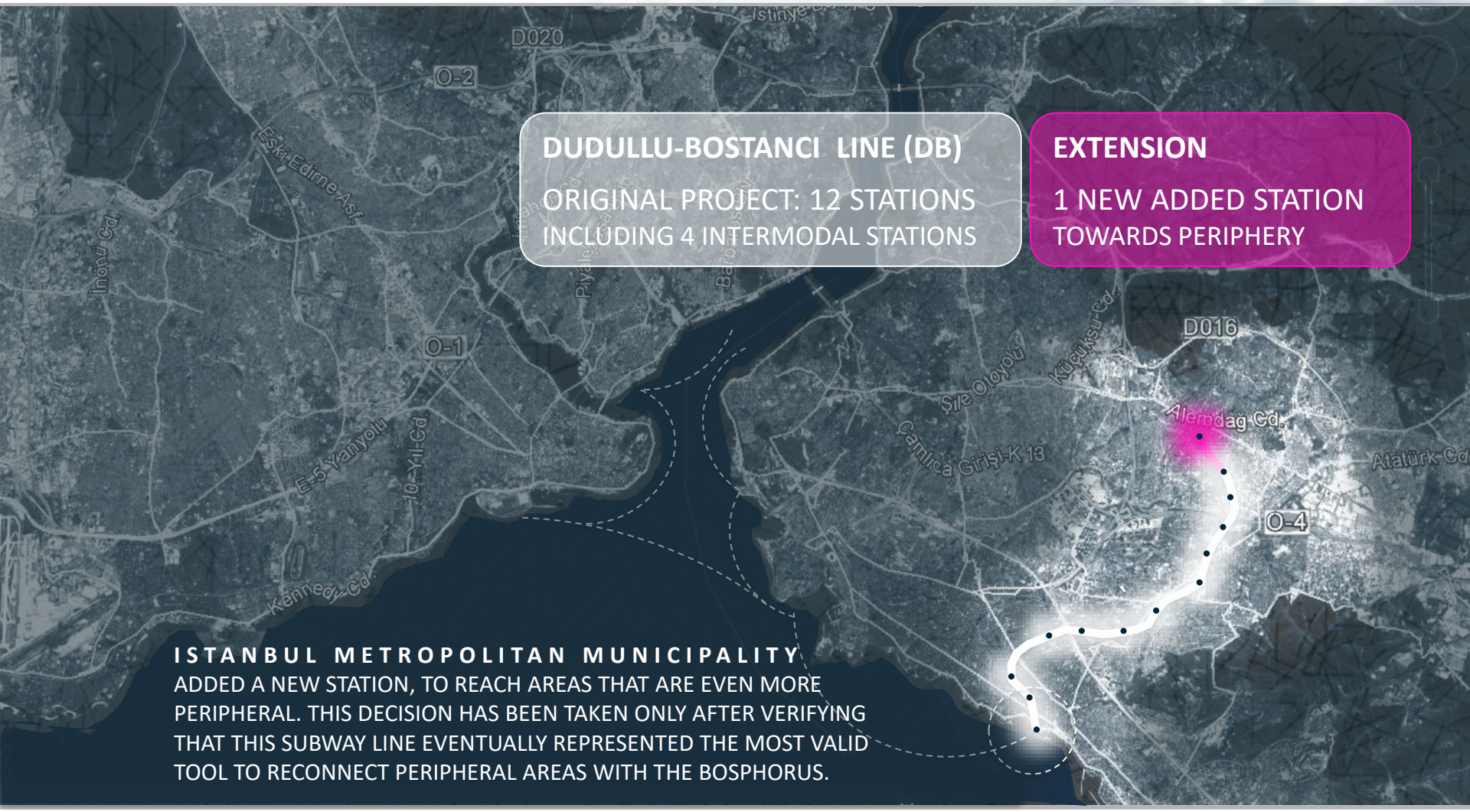
PROMOTE
AWARNESS



DUDULLU-BOSTANCI LINE (DB)

ORIGINAL PROJECT: 12 STATIONS
INCLUDING 4 INTERMODAL STATIONS

PROMOTE AWARNESS



DUDULLU-BOSTANCI LINE (DB)

ORIGINAL PROJECT: 12 STATIONS
INCLUDING 4 INTERMODAL STATIONS

EXTENSION

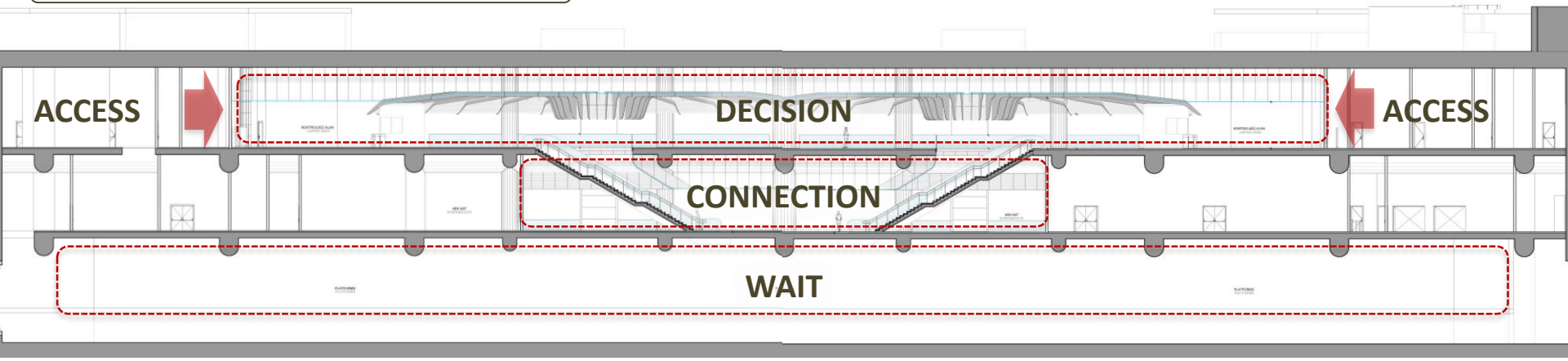
1 NEW ADDED STATION
TOWARDS PERIPHERY

ISTANBUL METROPOLITAN MUNICIPALITY
ADDED A NEW STATION, TO REACH AREAS THAT ARE EVEN MORE PERIPHERAL. THIS DECISION HAS BEEN TAKEN ONLY AFTER VERIFYING THAT THIS SUBWAY LINE EVENTUALLY REPRESENTED THE MOST VALID TOOL TO RECONNECT PERIPHERAL AREAS WITH THE BOSPHORUS.

ARCHITECTURAL
QUALITY

ARCHITECTURAL QUALITY

WAYFINDING *CONCEPT* ONE ARCHITECTURE PER EACH FUNCTION



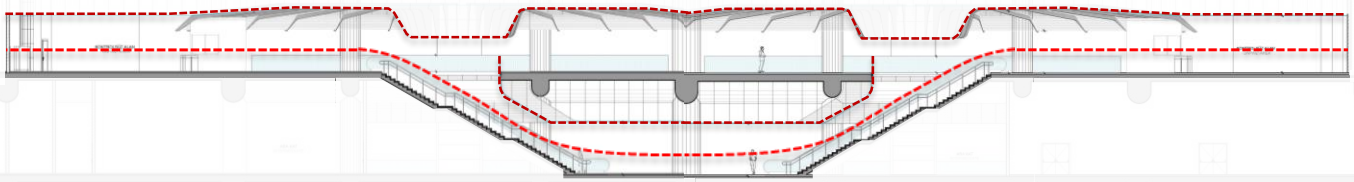
ACCESS
TUNNELS AT GRADE

DECISION
CONCOURSE LEVEL

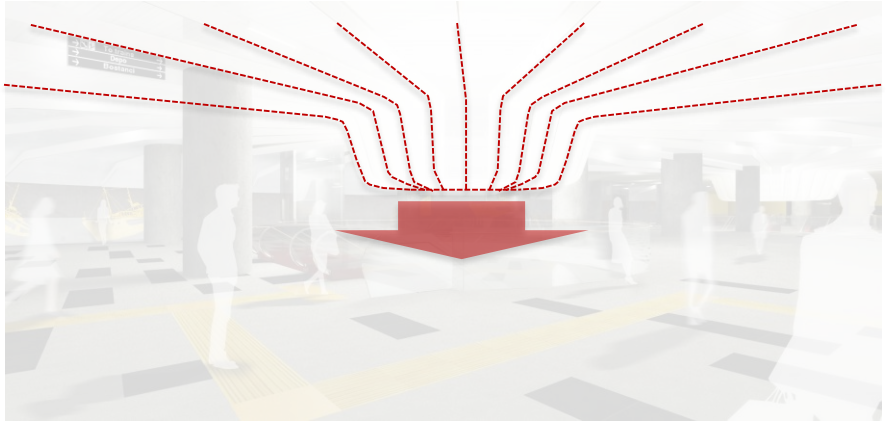
CONNECTION
INTERMEDIATE LEVEL

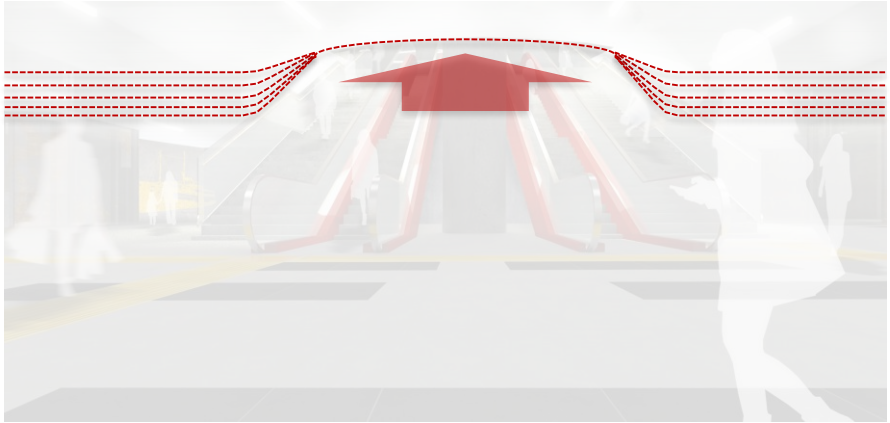
WAIT
PLATFORM LEVEL

WAYFINDING *trough architecture*



THE ARCHITECTURE GUIDES THE PASSENGER THROUGH THE STATION BUILDING A **"NATURAL" SENSE OF ORIENTATION**



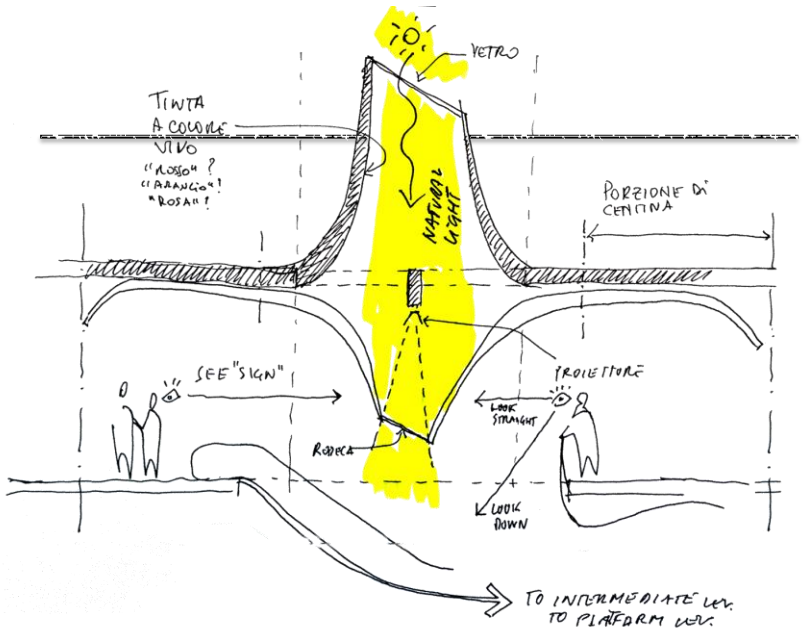


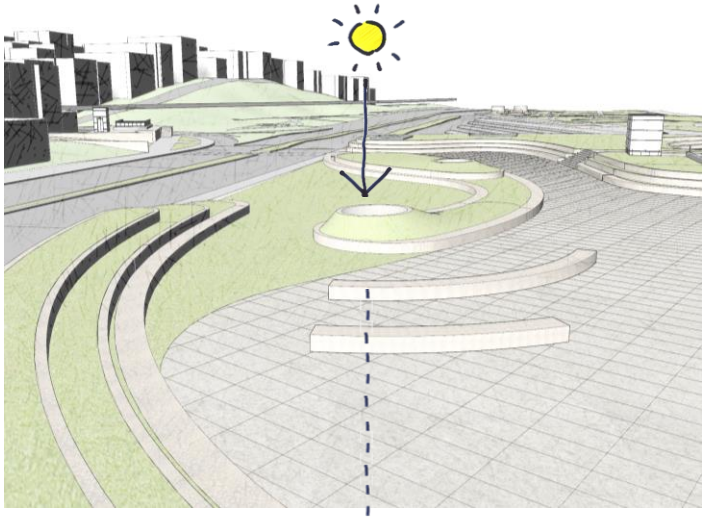
ITA TUNNELLING AWARDS 2017

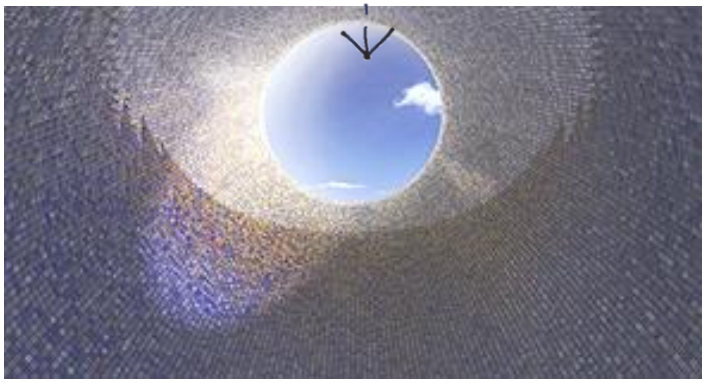
ARCHITECTURAL

QUALITY

WAYFINDING *trough daylighting*

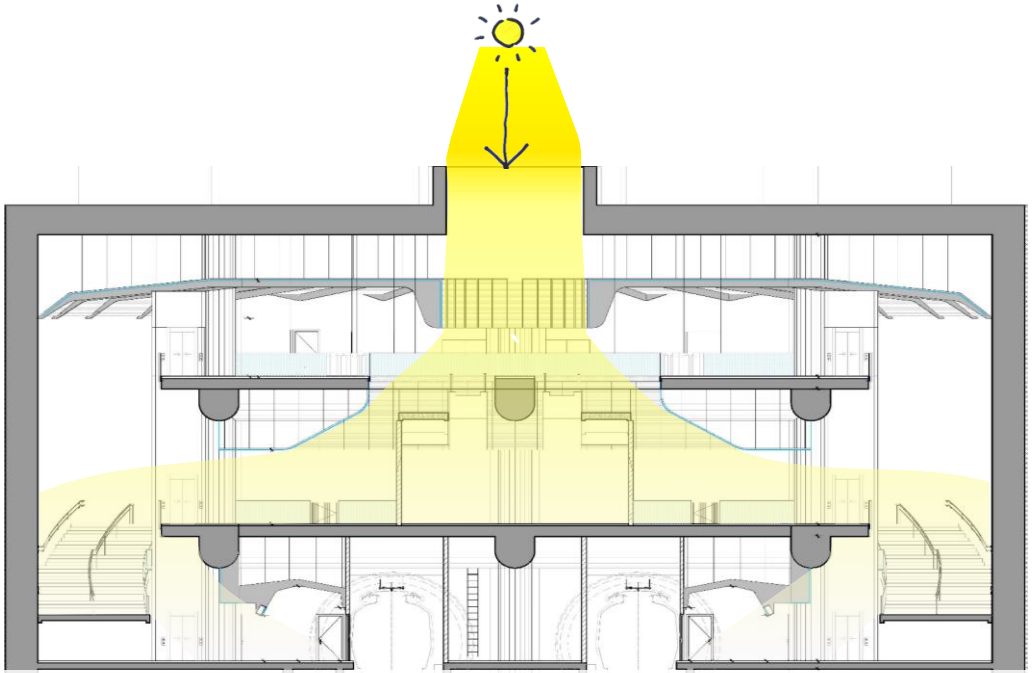






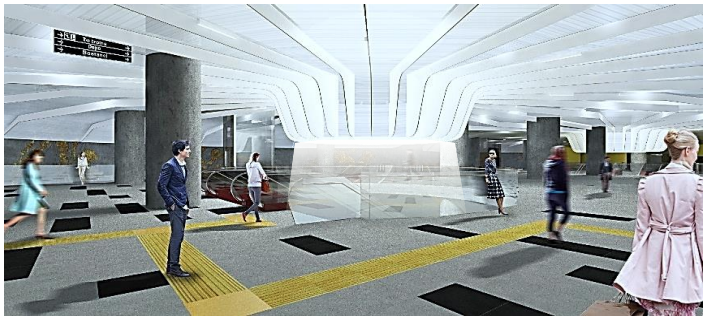
ARCHITECTURAL QUALITY

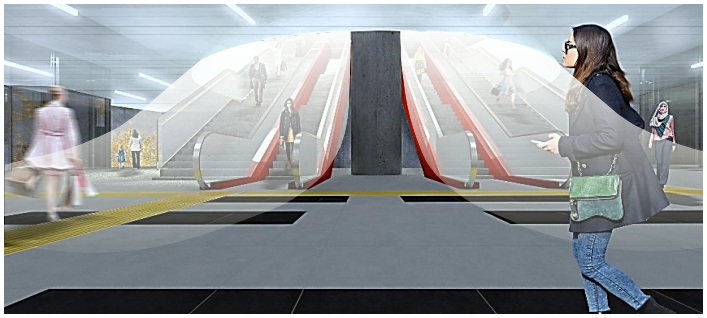
WAYFINDING *trough daylighting*



THE NATURAL LIGHT ENHANCES THE ARCHITECTURAL DESIGN BRINGING COMFORT

HIGH INDOOR ENVIRONMENT QUALITY





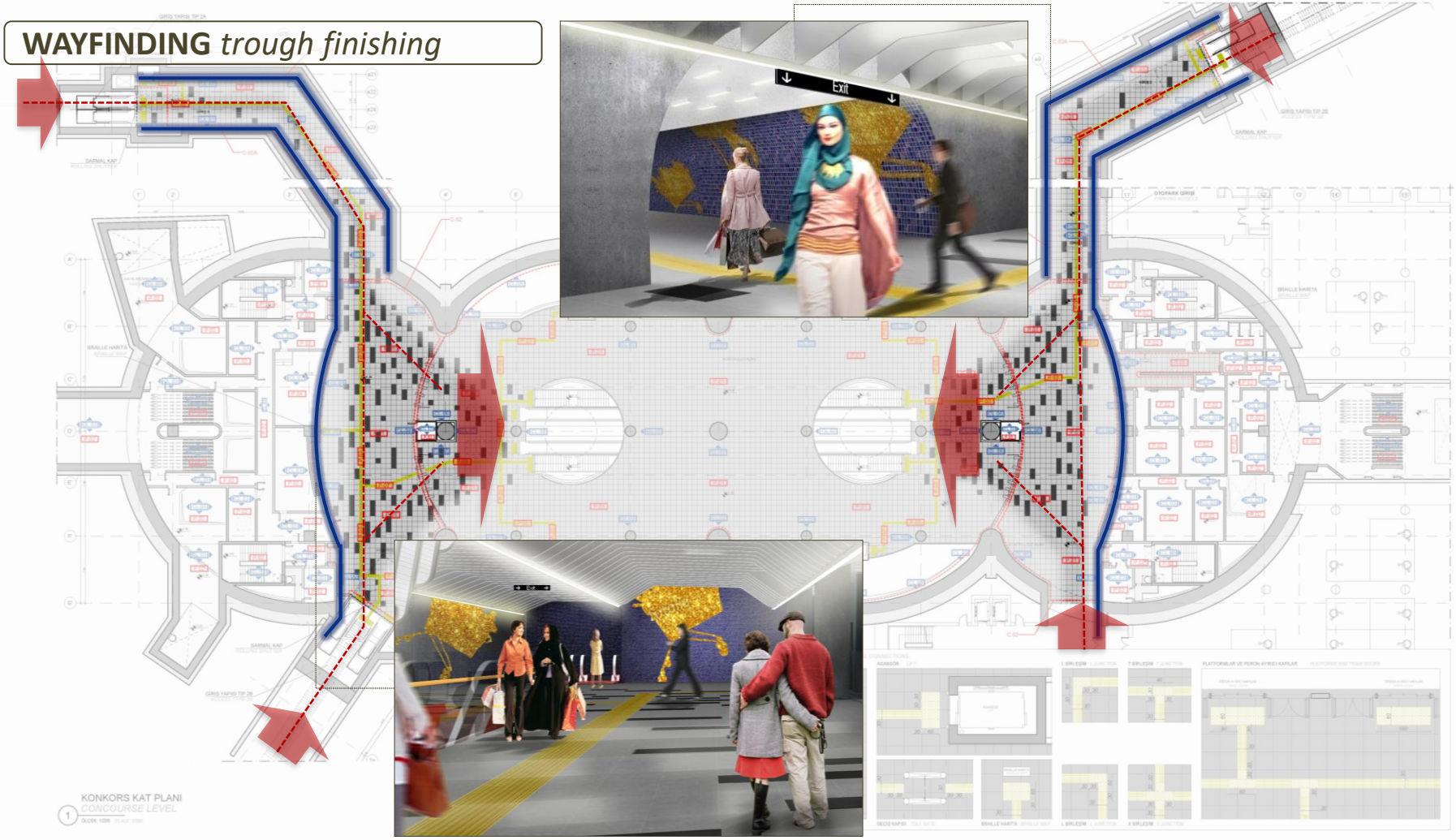
ITA TUNNELLING AWARDS 2017

ARCHITECTURAL

QUALITY

ARCHITECTURAL QUALITY

WAYFINDING *trough finishing*



URBAN DESIGN

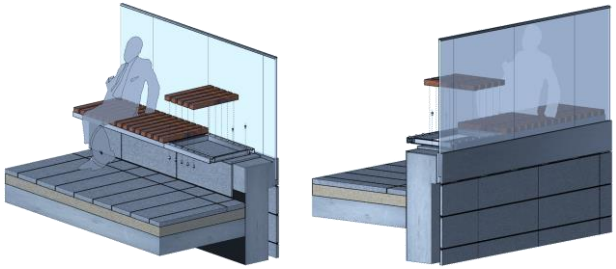
INTEGRATION

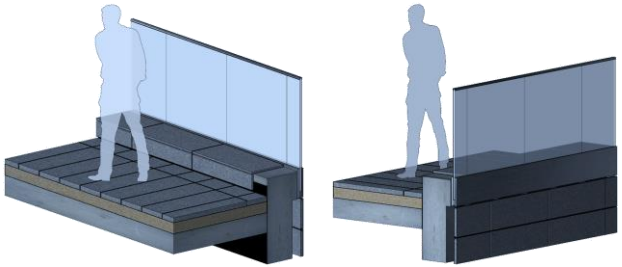
URBAN DESIGN
INTEGRATION

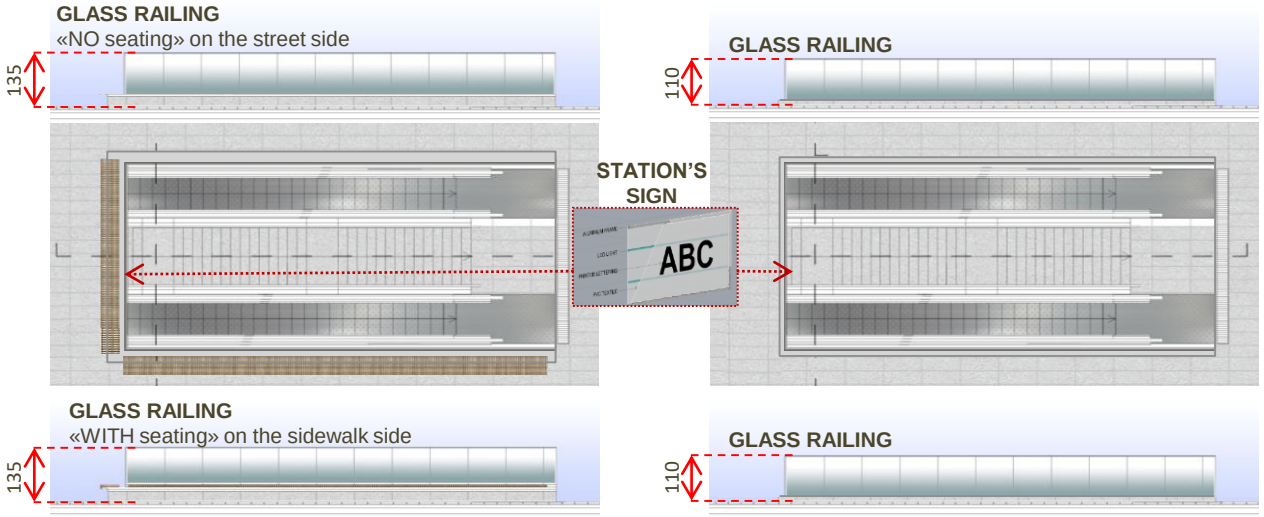
THE STATION'S ACCESS

TYPE 1 - WITH SEATING
H=135cm

TYPE 2 - WITHOUT SEATING
H=110cm

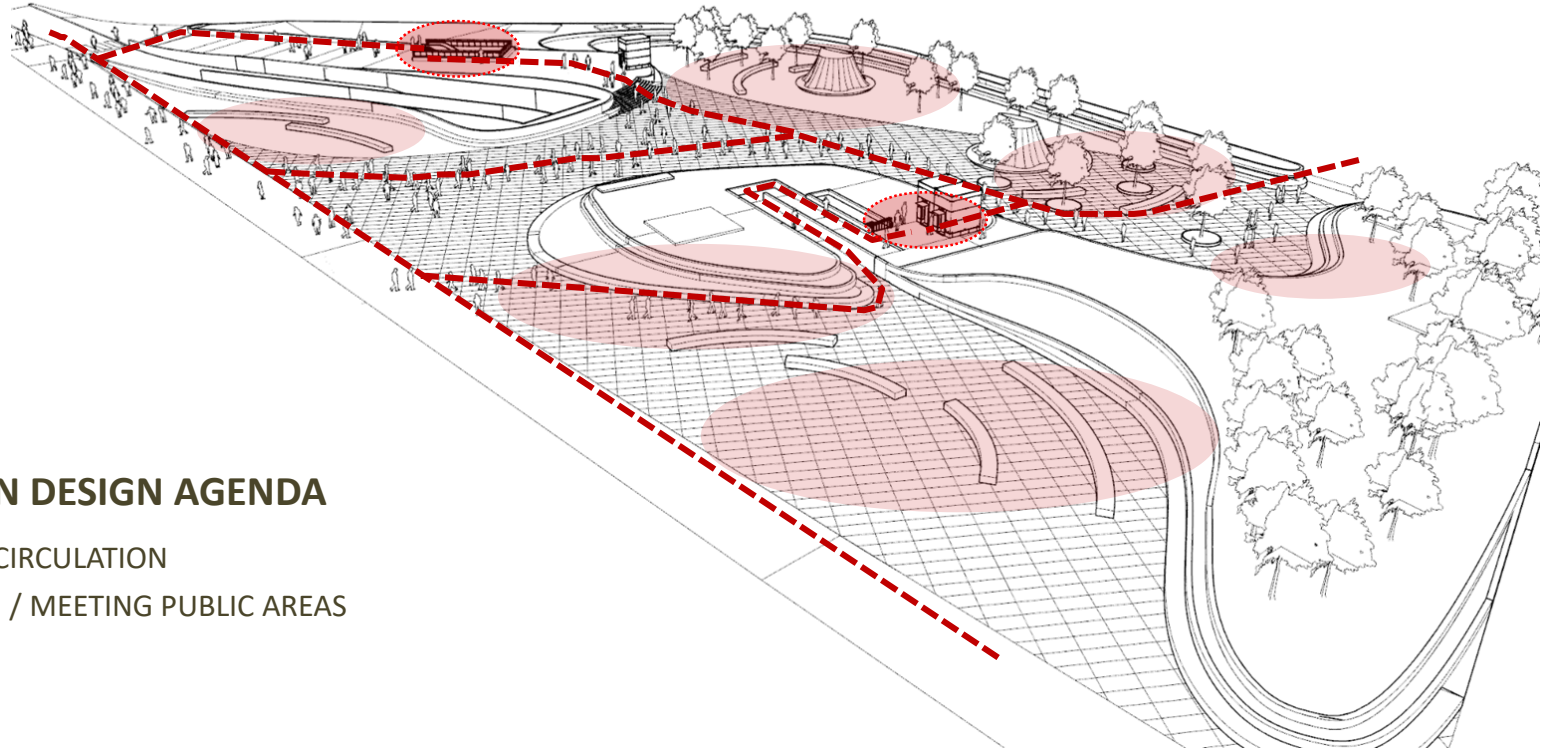






URBAN DESIGN
INTEGRATION

THE STATION'S ACCESS *CONCEPT* THE "METRO GARDEN"

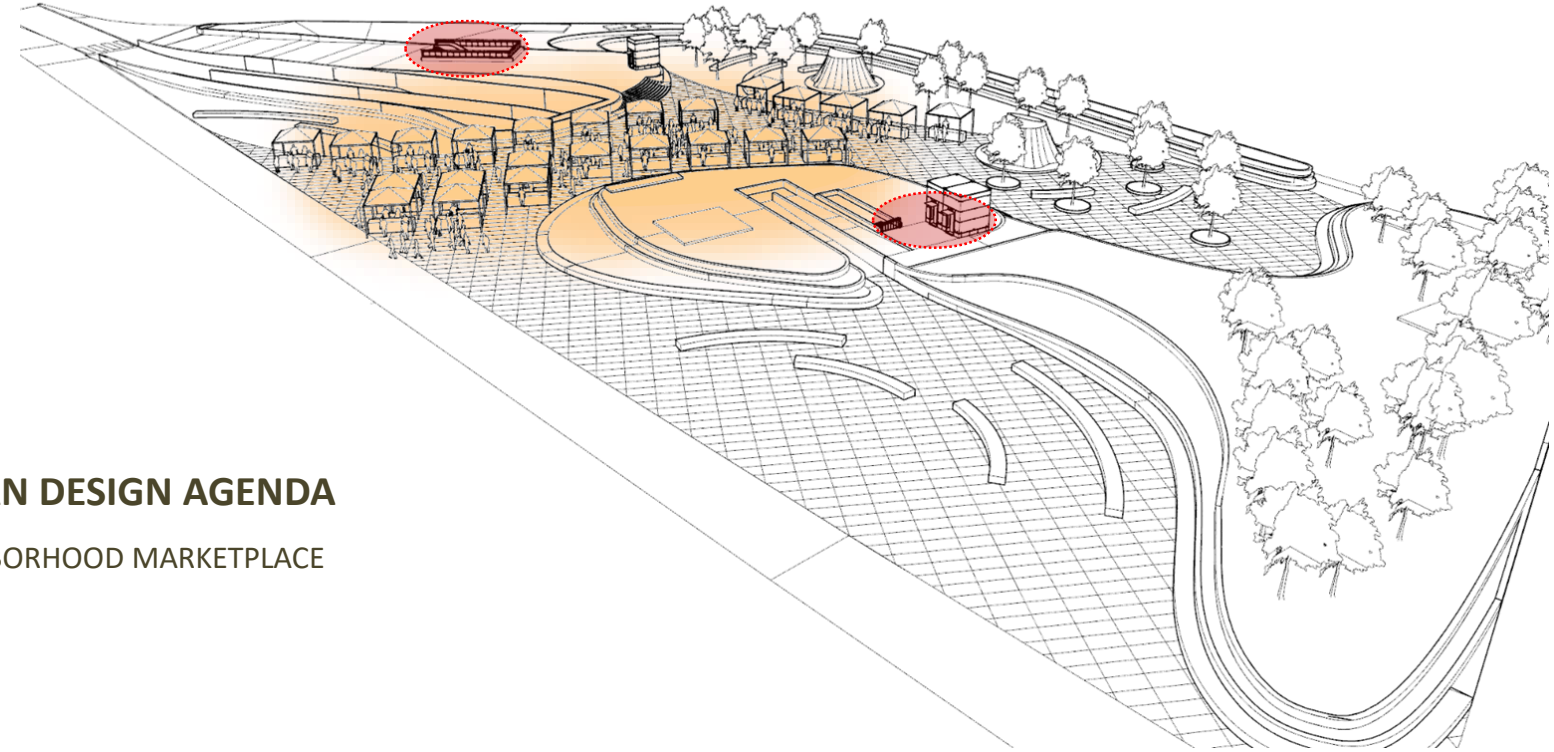


URBAN DESIGN AGENDA

PUBLIC CIRCULATION

SEATING / MEETING PUBLIC AREAS

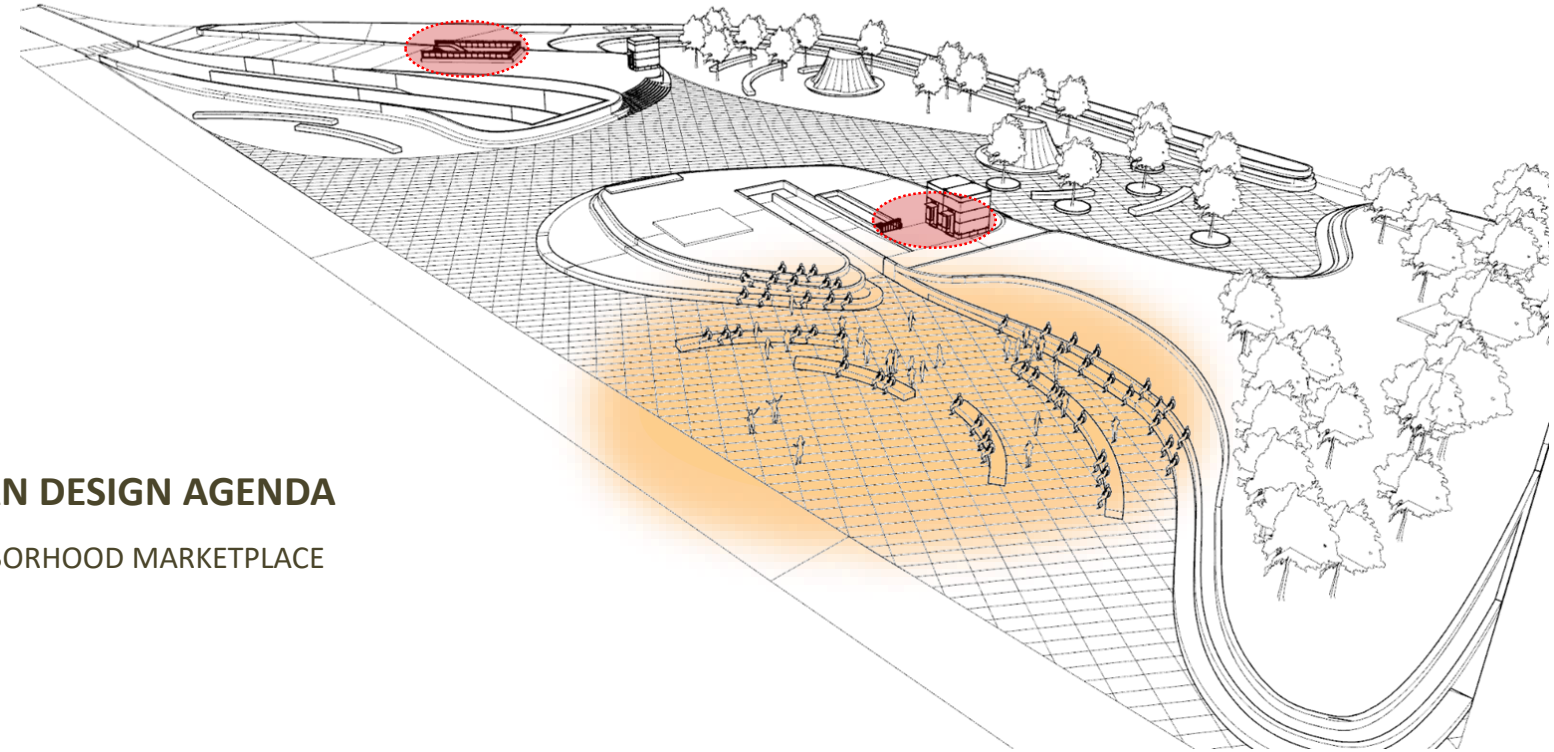
THE STATION'S ACCESS *CONCEPT* THE "METRO GARDEN"



URBAN DESIGN AGENDA

NEIGHBORHOOD MARKETPLACE

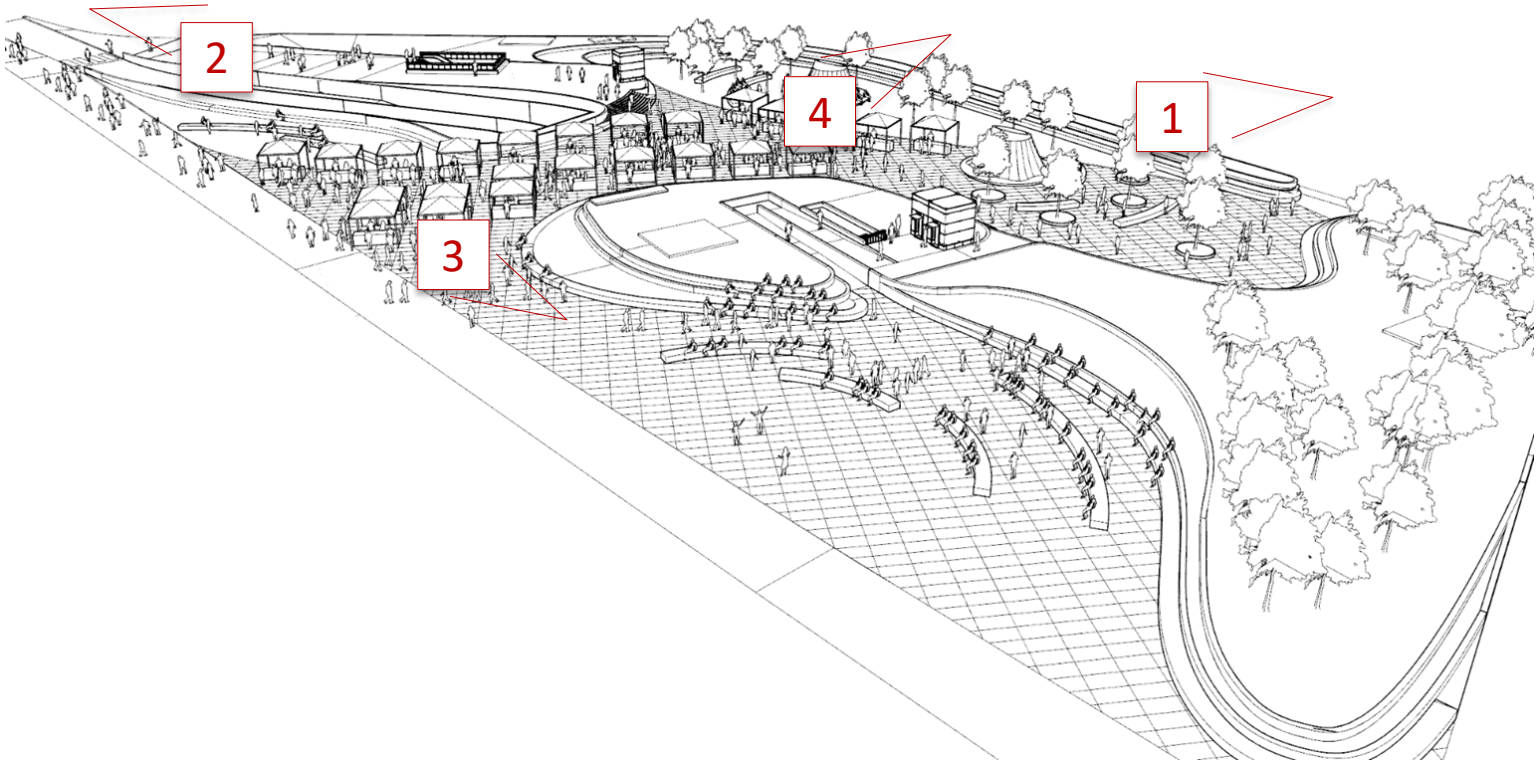
THE STATION'S ACCESS *CONCEPT* THE "METRO GARDEN"



URBAN DESIGN AGENDA

NEIGHBORHOOD MARKETPLACE

THE STATION'S ACCESS *CONCEPT* THE "METRO GARDEN"



WHY BOSTANCI INTERMODAL HUB SHOULD BE CHOOSEN?

This project should be chosen because it makes better a piece of the city of Istanbul. Bostanci hub realizes a massive public transit infrastructure in a "soft" way, without grand gestures, once again focusing on the quality of everyone's daily life.

THANK YOU!