P5 Thesis project presentation

DEFINING ISLANDS OF INNOVATION
High-tech clusters as an urban development strategy for the suburban area of Thessaloniki

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1. Brief introduction to project and problem statement

2. City conclusions and area analysis

3. Vision/Program definition

4. Strategic locations and structure models

5. Strategy for the area

6. Layers of intervention

7. Local scale design

8. Evaluation/Stakeholders

9. Phasing/Reflection
**HIGH-TECH INNOVATION CLUSTERS**

**High-tech centers**

**Defined areas**
Host research-based and hi-tech companies and firms

**Objective**
Stimulate innovation and generate economic benefits for a region

**Innovation clusters**
Variations in internal structure, low transaction costs, flexibility and productivity

→ Adopted as a means for regional development; how can it activate a locality?

→ Need to consider the interaction in all scales

**INTRODUCTION** | **ANALYSIS** | **VISION** | **PROGRAM DEFINITION** | **STRATEGY** | **DESIGN** | **EVALUATION**

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Technopoles

Science parks

Microenvironments
PROBLEM STATEMENT

Program: **Innovation Zone**

→ **Characteristics**
  - attract R&D firms
  - promote cooperation with universities & industry
  - specific thematic/context of 150Ha

→ **Criteria**
  - **proximity** to airport, urban areas & facilities
  - concentration of an enabling **number of research units**
  - high quality **services** and a **specialized labor force**

→ **Goal**
Create a **free-of-regulations zone** offering a number of **incentives**
Main Question

“What spatial interventions can support the development of the south-eastern Thessaloniki suburban area as a knowledge and innovation pole?”

New Program

- **strategic location** of the innovation clusters?
- **spatial conditions** for an **attractive area**?

- **Nature & specialization** of clusters?
- **Strategic location**?
- **Effects** for area & relation to the city?

- **Monofunctional or mixed-use**
- **Based on provision of large public-owned land**
- **Fragmented and sprawled area**

- **Focus only on economic competitiveness**
- **Dependence on many actors & variables**

- **However**

- **Parameters**
- **qualities in living and working**
- **knowledge basis city conditions**

- **people**
- **companies**
- **Transportation hub** for the country & southeastern Europe
- Strong **connection with** the towns of the **periphery**
- **Centralized** city with a **monocentric** structure results in daily movement to city centre and traffic
- **Sprawl** of functions mainly in the **suburban area**
**CONTEXT OF THESSALONIKI**

**Key elements**

- **Facilities concentrated** in city centre
- **Accessibility** in terms of main road network
- **Future transportation system**
- **Linear open space** along coastline
## CONCLUSIONS OF THE ANALYSIS OF THESSALONI KI

### Criteria for successful high-tech centers

<table>
<thead>
<tr>
<th>Location criteria</th>
<th>What the city offers</th>
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<td>Existing knowledge basis</td>
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<tr>
<td>Business Infrastructure</td>
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<tr>
<td>Human Resources</td>
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<td>Quality of services</td>
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<td>Attractiveness</td>
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### What the city offers

- **people**
  - Inadequate city conditions to attract target group

- **firms**
  - Incentives reducing cost of business offered but a strategic location is important
POSSIBLE LOCATIONS AND EVALUATION – METROPOLITAN LEVEL

**South-eastern suburban area**

- Existing/actual development
- Possibility to combine knowledge related with regional functions
- Attractiveness potential in the landscape; possible evaluating tool
- Proximity to airport and public transport node
**Transformation of the suburban area**

- Area ‘divided’ in 4 municipalities, difficult to manage
- Still a large number of vacant areas available
- Urban control zones plan attributed areas with specific land use but is still neglected
Diverse urban patterns

- **Road network:** Sparse mainly wider roads to channel cars quickly

- **Scale of plot:** very large parcels subdivided by minimal street system

- **Scale** affects the distance between major roads, size of blocks, size of buildings

- **Disengagement of street, lot, building**

  Lack of order, haphazard/random relationship between buildings and streets
Landscape/ Coastline

-City development halts on the peripheral stream estuaries

-Two more undeveloped streams complete the water body of the area

-Hilly landscape (190m) – Mountains and sea provide sense of uniqueness and many attractive views
Infrastructure

- Transportation **nodes**

- Future **connections** by metro & highway

- Highways make **coast inaccessible**

- Traffic lights, tunnels & bridges make **vertical connections possible**
Main functions

- **Sprawl** of diverse functions occurring along main infrastructure

- Edge city effects

- **Shopping malls** have become recreational regional centers and attract people but work as individual entities
Results

**Fragmented & disconnected** from the coast

Very **car-oriented** area with **huge parking spaces**

**Roads serve only** regional functions

**Insufficient** public transportation system

Potentials

**Space available** for new development

Neglected **public space** may become a potential

How to combine existing functions with the new program to create an active locality?
VISION & PROGRAM DEFINITION
Present

- **Monocentric** city structure
- Small *neighborhood centers*
- Suburban *settlements dependent* on Thessaloniki city center
- *Sprawl* of functions in the periphery

The area requires a new **system of organization**

- to host the functions required for the clusters
- to be attractive for the people
- to become part of the metropolitan mechanism
A tertiary sector **pole** with **emphasis** on research and technology

- **Activate** the localities

- **Connect** regional to the local level physically and functionally

- **Promote** poly-nuclear development

- **Interaction** with city and surrounding settlements

Internal network will **strengthen periphery**

Peripheral settlements able to **diversify their centers** and complement in synergy
Identify existing anchor points and define possible future ones

Existing points are sparse and loosely connected in terms of functional, physical or natural links
Position
→ Utilize existing points, activate and create new ones
→ Integrate them in a new relation structure

Model conditions
→ Need of character definition of industries
→ Development of strategic areas
→ Attention on infrastructure
→ Focus on landscape, especially the coastline
POSSIBLE INNOVATIVE SPECIALIZATIONS

Focus on existing types of industry

**Tracing** and **mapping** of research, education and development firms & institutions

RESULT

1. Agrotech-Biotechnology
2. IT & Logistics
3. Bio-Medical

3 cluster specializations

Supportive
STRATEGIC LOCATION

Mapping of vacant areas in the region and evaluation

CRITERIA

Infrastructure (accessibility, connectivity)

Landscape quality

Proximity to coast/functions/settlements

Size of the plot
Conditions based on case studies

**Flexibility**
Emphasis on a variety of space and plot sizes

**Spatial qualities**
Use of landscape elements, public space

**Accessibility** by an organized road network

**Connectivity** through an integrated public transportation system

Tagus Park, 180Ha Lisbon
Andalucia TechPark, 240Ha, Malaga
Bioscience Park, 130Ha, Leiden
CONDITIONS FOR THE CLUSTERS

- Different program per cluster
- Common elements depending on the needs of each specialization:
  - Good accessibility
  - Public transport
  - Parking spaces and
  - Link with existing functions

Possible mixing program

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<th>COMPACT</th>
<th>INTERMEDIATE</th>
<th>ZONED DEVELOPMENT</th>
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<td>MIXED CLUSTERING</td>
<td>I+L</td>
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- Mixed program and services: **office & research spaces**, infrastructure & open/public spaces

**Unique** characteristics for **agro-tech and logistics**
- Larger parcels for farmlands and warehouses
MODELS OF DEVELOPMENT

- Campus structure
  - Relatively loose and flexible
  - Agro-technology

- Strip structure
  - Organized development
  - ICT
  - Bio-medical

- Grid structure
  - Standardized environment
  - Logistics

Apply proposed structure to existing one combined with principles:

- apply a system of **road grid** to **connect parcels**
- utilize the **landscape**/ **provide public space**
Re-evaluate which areas are better suited for specific functions/ clusters

Keep hypothesis of 150Ha

Target group → Middle class

Initial estimate: 80-100 companies 4,500-5,000 labor force
Main principles

- Develop an **open structure** to accommodate more program → **flexibility**

- Relate **coast** with inner area and city & **settlements** with existing **functions** and airport

- Focus on landscape elements and **continue structures** coming from the city
CONCEPT/ AREA LEVEL

Strategy principle: Fill-in vacant areas & adapt sprawl to contemporary conditions

Goals
- **Re-organize** the area
- **Connect** the coast with hinterlands
- Take **advantage of landscape** and of existing **functions**
- Provide **coherence** in functions & **protect** from more **fragmentation**

3 Layers of intervention

→ **Landscape** (streams, coast, green corridors)

→ **Infrastructure** (roads, new grid system, public transportation)

→ **New structure** of the program (new organization for urban block, transformation of parking lots)

Interventions for the area
- **Quality** of public space, connectivity & accessibility

Interventions for the program/
- **Urban form**
Pedestrian/Bicycle friendly
Focus on water/environment
Openness to the coast

→ Linear green corridors

→ Bicycle routes provide an intermediate level of mobility

Improve accessibility

→ New primary arteries

→ System of secondary and local roads to increase organization in the area

Upgrade connectivity level

→ Light rail system

→ Improve bus system

→ Public transport brings new opportunities
Principles for designing the clusters

→ **Flexibility** in plot division

→ **In-between space** becomes functional

→ **Mixing** of common functions and services

→ **Variety** and **diversity** of types and sizes
COASTLINE/ CURRENT SITUATION

- Coastal part **highly urbanized** in specific spots

- Recreational, retail and educational **facilities**

- **Vertical** road connections are important to link the coast with the hinterlands

- Areas where **coast meets** local **streams** can become **attractive** spots
TRANSFORMATION OF THE COASTLINE

- **Extend** the coastal linear **boulevard** integrating it as part of a **public space network**

- **Coastal road defines the boundaries** of the coast

- **Connect** the recreational & residential areas in terms of **road system & pedestrian/ bicycle paths**
Peripheral stream

- **Boxed banks** of the peripheral stream
- Possibility to **serve** as a green corridor a larger urban area

Riverbanks project

- **Soft banks**/ focus on the landscape
- **Connection** with larger structures and **relation** with adjacent facilities
CURRENT SITUATION/LOCAL LEVEL

**Car-oriented** environment

Lack of order/**Random relationship** between buildings and streets

**Insufficient** public transport

Functions work **individually**

**Road** network **serve only** these regional **attractors**

Large parking spaces

Parking space facing the unused coastal part
CONCEPT PLAN

Principles

- Define a **pattern**
- **Activate** the locality spatially and functionally
- Public transport to **integrate** the area

Interventions in the local scale

- **Main avenue** works as a connector with **places** interest along it
- **Utilize** the variety of **attractors** for the locality
- **Mix** common spaces & functions
- **Re-organize** parking lots

Re-organized and upgraded parking lots, more space for pedestrians

Coastal part used, pedestrian & bicycle paths along it
BLOCK ORGANIZATION IN THE CLUSTERS

Flexibility in plot division and functional in-between space

Buildings organized in a way that they allow future interventions:

- internal **roads**
- in-between space becomes **open space**
- possibility of **extensions** of **functions** and parking lots
- **re-organized** parking lots
- functions **share** common **space**

Local road, relation between buildings, parking and open space
- Central avenue connects regional functions
- Park where coastal boulevard and green corridor meet
- Internal system of pedestrian routes connect functions with larger structures
INFRASTRUCTURE PLAN

→ New vertical roads provide better accessibility & clear entrances, while an internal system of local streets service the functions.

→ Tram-line/stops serve both workers and shoppers.
Main **structural element** in the area

**Connects** retail facilities **linearly** and reaches the marina by utilizing an existing tunnel.

Small **pavilions** along the avenue and near the marina provide with additional **recreation** facilities.

Large parts of the existing **parking** lots were **transformed** while a number was **relocated** in parking buildings.
→ **Attraction** with recreation facilities embracing it

→ Possibility for ferries to harbor; mainly smaller marina facilities
Main administration building along main avenue works as a landmark

Meeting point between structures
→**Tram stops** work as *entrances* to facilities or to open-space structures connecting facilities

→**Activates** the pedestrian flows

→**Public space** with recreation facilities, where parking space used to be, add to *attractiveness*

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**Main road with tram line and relation with adjacent space**

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**INTRODUCTION**  **ANALYSIS**  **VISION**  **PROGRAM DEFINITION**  **STRATEGY**  **DESIGN**  **EVALUATION**
DESIGN OUTCOME

- Physical and functional **links integrate** the area creating a network

- **Regional** commercial and recreational **functions** set in a broader context making the area **attractive**

- A **hierarchy of connections** in road network, public transportation, landscape elements offers **urbanity** to the existing sprawl

- **Mix of** innovation **activities**, regional and local functions open potentialities for future developments
RELATION TO VISION & STRATEGY

Model conditions achieved

- internal organization
- strategic areas developed
- connectivity & accessibility upgraded
- zoning and mixing where appropriate

Areas built based on:

- previous evaluations & existing functions
- new opportunities created by the infrastructure and landscape interventions

- Strong regional level

→ In-between scale (area level)

- Localities through existing functions

Creation of poles that interact & promote poly-nuclear development
STAKEHOLDERS

Companies → productivity growth and innovation
Governments → job creation
Educational institutes → involvement and commitment

Outcome
Thessaloniki will be able to utilize knowledge capital targeting the development of innovation and entrepreneurship.
PHASING

- **Public space** and **landscape** interventions together with the formation of the **clusters**

- **Balance** between investments and expenditures (cost and benefit)

- **Main avenue** and **tram line crucial** as opening potentials to improve attractiveness and connectivity
REFLECTION - AREA SCALE / RELATION WITH THE CITY

Goals achieved

**-Area integrated** spatially and **coherent functionally**

**-Halting** of continuing **fragmentation**

**-Open space quality** brings working standards to a higher level

**-Landscape** and existing **functions** in key positions

**-Continuation of structures** coming from the Thessaloniki
Strategically situated nucleuses of specialized and innovative firms and institutions in a buffer zone between city/airport and city/settlements.

Attractiveness and flexibility, main qualities offered.

Mono-functional sprawl condition is re-organized by connecting structures physically, naturally or functionally & encouraging interactions.

Promotion of poly-nuclear development through an expanding network of relations.
THANK YOU!