

## The City of Knowledge – A Triple Helix Organization

Methods for an alternative value chain

Thanks to all colleagues from CITIES Research Centre EnergyLab Nordhavn City of Knowledge and many more ...

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Caroline Arends, CEO September 2016

DTU

RBÆK

### **THE VISION FOR 2020**

- To be one of Europe's leading scientific centres and university towns with a world-class level of research and education
- To be a centre for the development of knowledge-intensive business clusters
- To be an international hub for work, culture, trade and urban life
- To be a living laboratory for a sustainable urban and business development

### TRIPLE HELIX MODEL



More than 40 member organisations.



## Cities (demand, size, opportunities)

## Companies, Financing, ...

Knowledge Chain

## Universities, Knowledge Industry



Data collection Economical frames that are not possible else





## **MOVES IN**

#### BOOM IN ST More startup corr

Denmark (DTU) 1

READ MORE City of Analyticity inspires others & Commercial city Why Meensk starys in Lynghy & Natural sciences must # Students from all over Europe at the Openhagen Busing

### **URBAN DEVELOPMENT**

and activities

**CITY LIFE** 



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## Methodologies that work



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Y-TAARBÆK



### Innovation District

In•no•va•tion Dis•trict

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Geographic area where anchor institutions and companies cluster and connect with small firms, startups, business incubators and accelerators.

Physically compact, transit-accessible, and technically wired, they offer mixed-use housing, office and retail



## **Actors and involvement**

#### LOCAL ENGAGEMENT IN DEVELOPING THE CITY OF KNOWLEDGE

By engaging local businesses, the university and local government, we work together creating a vibrant university town that can attract and retain the talents we need to drive business and research.

### **ENTREPRENEURSHIP**





### UNIVERSITY AND ECONOMIC LIFE

Research collaborations • Student projects and -internships • Innovation • Recruitment



### CLIMATE AND GREEN TECHNOLOGY



PhD-projekt "Sharing City" -Facility Management

 Smart Data Hub – working with Big Data and Data Management

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## **Results – Infrastructure Developments**

### **DTU EXPANDS FOR 4 BILLION DKK**

## MICROSOFT NEW DOMICILE IN LYNGBY

20.000 m2 • 400 apartments • 1.000 workplaces • 800 parking spaces • 1,2 bn. DKK investment

#### **CAMPUS ADJACENT AREAS**



185.000 m2 construction • 40.000 m2 parking • campus-related business and housin

### **NOVOZYMES INNOVATION CAMPUS**



#### STUDENT AND PHD HOUSING



34.500 m2 housing • student and PhD apartments • housing • recreative spaces



#### LYNGBY COMPANY HOUSE - DTU NORD



75.000 m2 • 2500 workplaces • research and development facilities • learning centre • park and nature trail





## **Results – Solutions**

Municipality

(learning

organization)

Company

Hackathon

Partner innovation and solutions

### NIRAS

### EXAMPLE GROWING FROM A SMALL DEMAND







## **Research Labs at universities**



Controlled experiments

Consequences covered



## Living Lab: Smart Campus DTU





## Living Lab: Lyngby (City of Knowledge)





## **Innovation for the world**





Markets





## EnergyLab Nordhavn (Copenhagen, Denmark)



Source: Google Search images

### • Facts

- 50 years of development
- 40,000 citizens
- 40,000 working places
- Living Lab for Copenhagen
  - = Aiming at CO<sub>2</sub>-free from 2025
- Building Code +1 (< 20 kWh/m<sub>2</sub>/anno)



## EnergyLab Nordhavn Large Size Living Lab





### EnergyLab Nordhavn – Smart Energy Systems



Source: http://www.byoghavn.dk/byudvikling/bydele/nordhavnen/landvindingsprojektet+i+nordhavnen.aspx

- Measurements
  - 17 mil. €
  - Ca 50 buildings monitored in detail, 2 offices, ...
    - Measuring density pr. building e.g. 10,000 points
    - Frequency e.g. 1 pr. minute
  - All energy flows, water ... mesh monitoring
  - Special energy sources/sinks monitored individually
    - Cruise ship terminal, solar, wind power ...

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## Thank you for listening



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