

## **THE FRAUNHOFER-GESELLSCHAFT**

# **FRAUNHOFER AND ITS ROLE IN MOBILITY AND LOGISTICS**

**BY PROF. DR. UWE CLAUSEN**

**NEW DELHI, MARCH 6th**



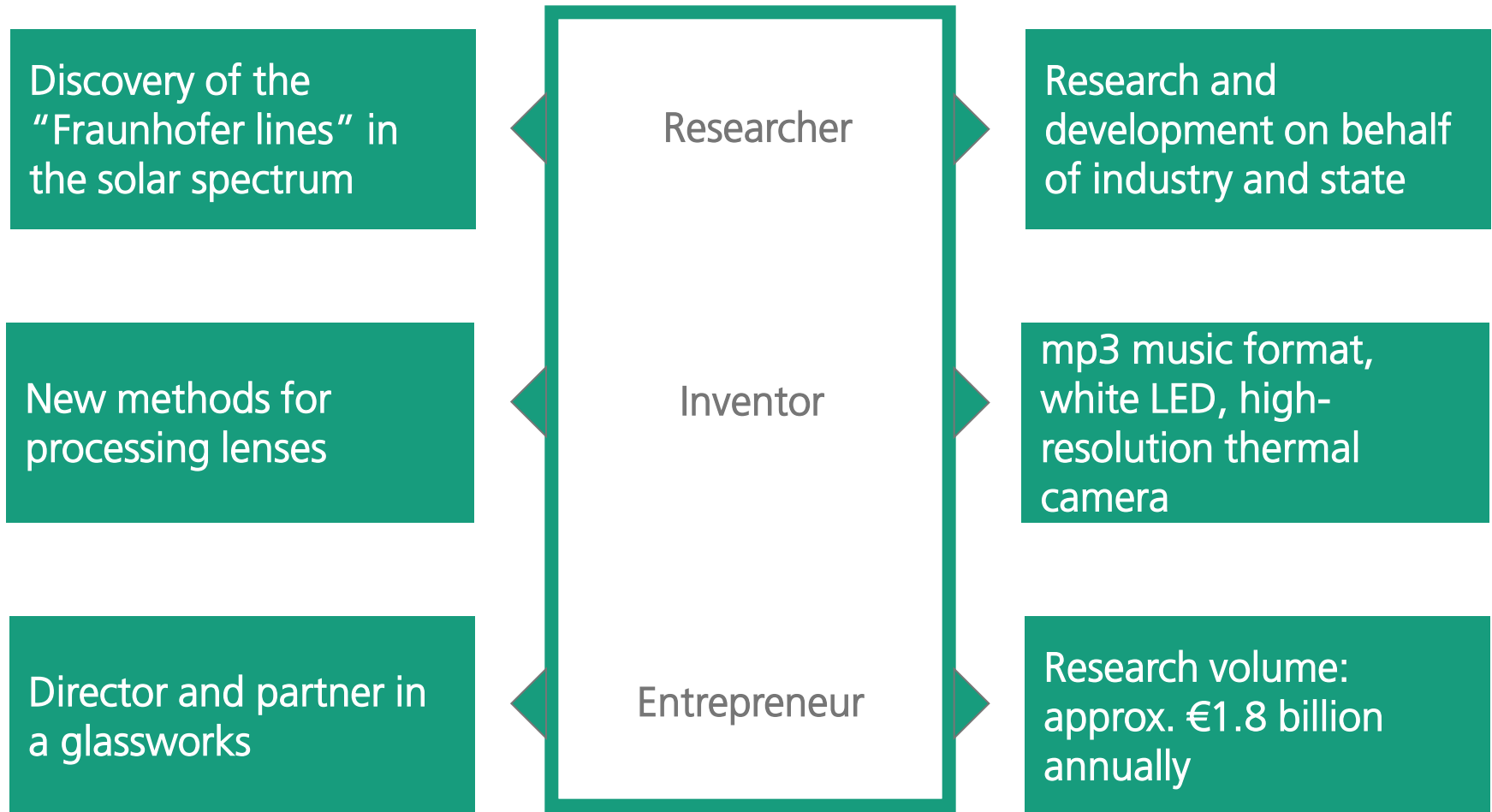
**JOSEPH VON FRAUNHOFER  
RESEARCHER  
AND ENTREPRENEUR**



Joseph von  
Fraunhofer

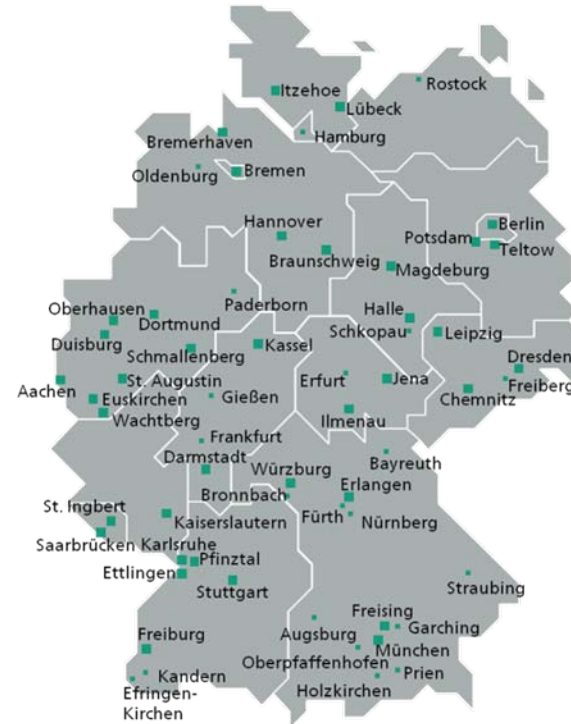


The Fraunhofer-  
Gesellschaft

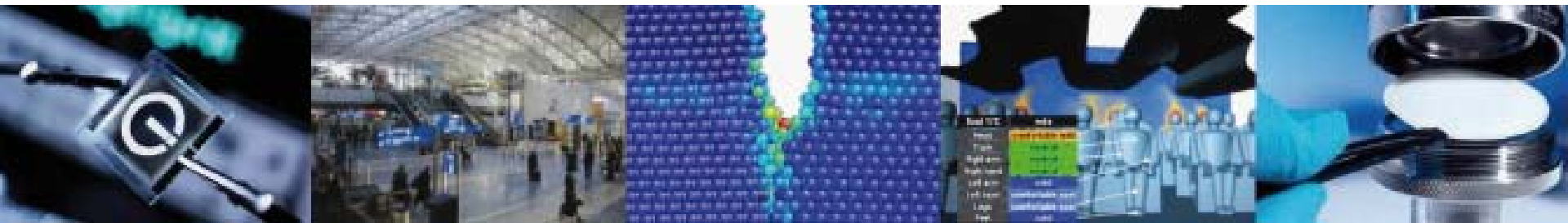


# The Fraunhofer-Gesellschaft Locations in Germany

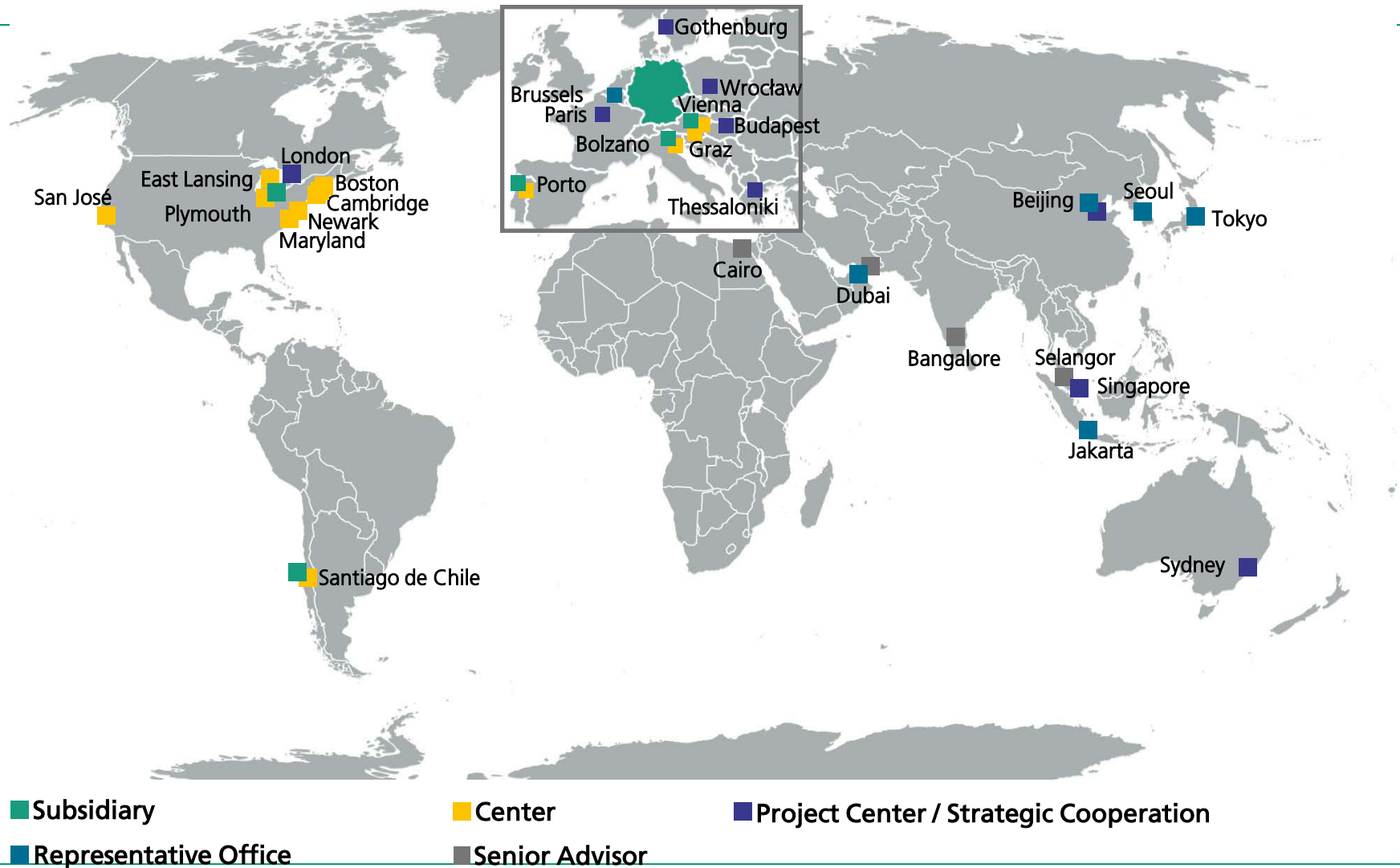
- 60 Institutes
- 18,000 employees



- Institutes and facilities
- Further locations



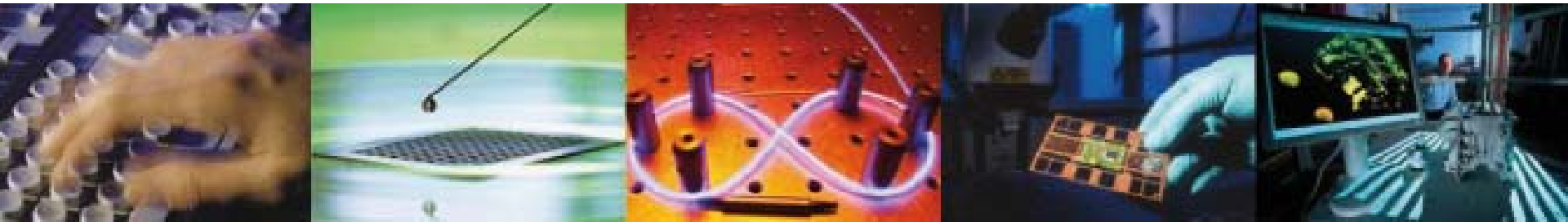
# Fraunhofer worldwide



# The Fraunhofer-Gesellschaft

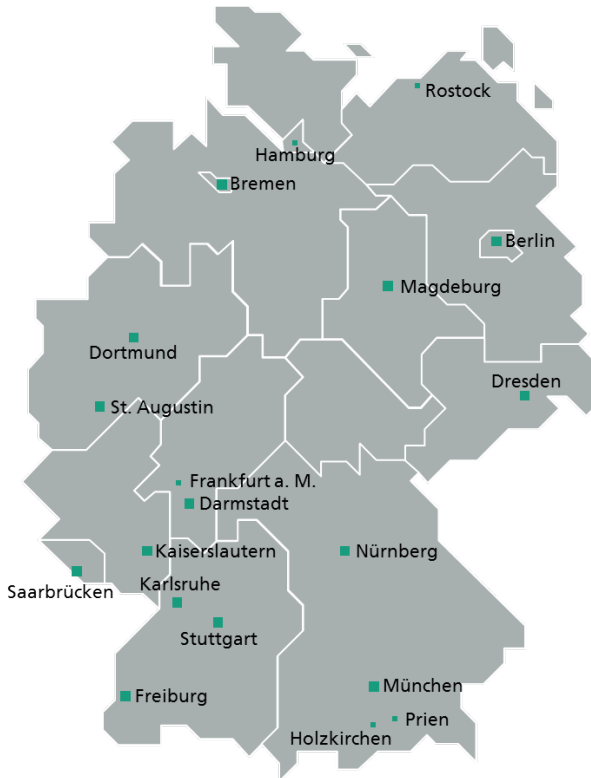
## Data and Facts

- More than 80 research facilities, 60 of which are Fraunhofer-Institute
- 18,000 employees , mainly with education in sciences or engineering
- 1.8 billion Euro research volume each year
  - 2/3 of this volume are generated with orders from industry and with publically financed research projects.
  - 1/3 of it is contributed as basic funding by the federal and Länder governments.
- Affiliated international research centers and representative offices provide contact with the regions of greatest importance to present and future scientific progress and economic development





# 17 Institutes from the Fraunhofer Transport Alliance



- The Fraunhofer Transport Alliance develops adequate technical and conceptual solutions for the public and industry partners and puts transport-related research solutions into practice.
- The Fraunhofer Transport Alliance focuses and communicates existing core competencies in transport-related research and ...
- ... develops integrated solutions by means of co-operations between Fraunhofer-Institutes



# Fraunhofer Transport Alliance

## Steering committee



Prof. Dr.-Ing  
Uwe Clausen

Prof. Dr.-Ing.  
Holger  
Hanselka

Prof. Dr.-Ing.  
Stefan  
Jähnichen

Dipl.-Ing.  
Siegfried  
Kraus

Prof. Dr.-Ing.  
Matthias  
Busse

IML,  
Dortmund

LBF,  
Darmstadt

FIRST,  
Berlin

IZF P,  
Saarbrücken

IFAM,  
Bremen

# Fraunhofer Transport - R&D clusters



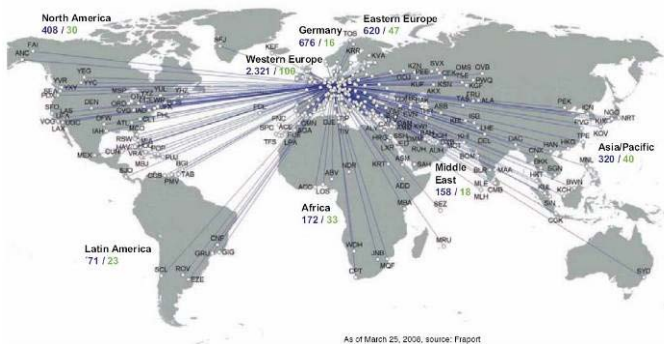


# Aircargo Master Planning Cargo 2020+ at Munich Airport

- Long term master plan for cargo handling based on the evaluation of location alternatives and on a cost benefit analysis
- Cargo volume and areal demand development
- Determining the cargo volume of each local handling agent and its specific floor space deficit
- Dimensioning the ULD handling facilities, staging areas, and ULD buffer space
- Developing suitable layouts and defining milestones

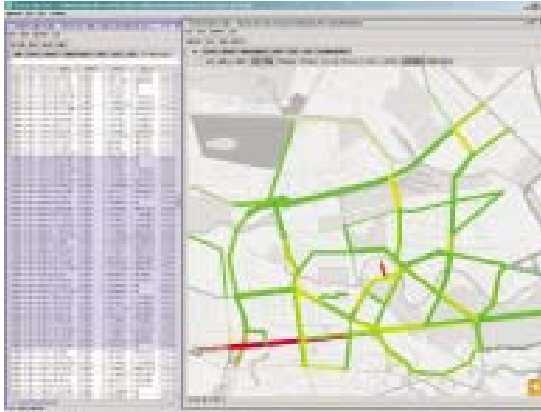


# Airport Construction Logistics at Frankfurt Airport



- Frankfurt Airport (FRA) is one of the world's most important international airports
- at the center of the major part of intra-European air service **networks** and offers connecting services to long-haul destinations worldwide
- FRA plans to expand with a fourth runway and a **new Terminal 3**
- modifications of the airport to make it **Airbus A380** compatible have already started
- The overall construction volume is more than **7 billion Euros** in the next 8 years
- Over 400 projects need to be coordinated on the airport area
- **Fraunhofer** helped FRAPORT with supply and disposal concepts (delivery strategies, stock and field management, waste disposal management)

# Good data for good (traffic) management



Workspace data fusion



Web-service routing

## Efficient use of infrastructure

- traffic management system based on traffic state detection and real time traffic data processing
- combining conventional sensor systems with new methods of traffic detection (like FCD floating car data)
- adding real-time data to historical and statistical information already available
- Fraunhofer has developed a data fusion method with which traffic data from various sources and of diverse formats can be presented as one traffic state

# Connecting Long and Short distance networks for Efficient Transport - CLOSER

## Objective

- Based on existing research and practice the project will develop innovative tools for the analysis of interfaces and check these tools in a number of case studies

## Benefit

- Review of previous research results
- Definition of a set of indicators
- More standardized approach to the definition interfaces for mobility
- Share and learn about good practices in Europe



# Future satellite localisation services will help to improve traffic and security



- market-oriented **research project (MAVO) »Galileo«**
- collaboration with the aim to get into the market for applications of global satellite navigation systems
- focus is on the European system under development »Galileo« which will bring add-ons compared to the US-based GPS

## Projects & Labs

- localization technology
- freight traffic
- construction site logistics
- travel assistance
- immission monitoring
- safety



## Involved Institutes within Fraunhofer Transport

- FIRST, IFF, IIS, IML, IPK, ITWM, IVI, SCS



# .. and Fraunhofer helps globally

## Example: Sanshan Logistics Park



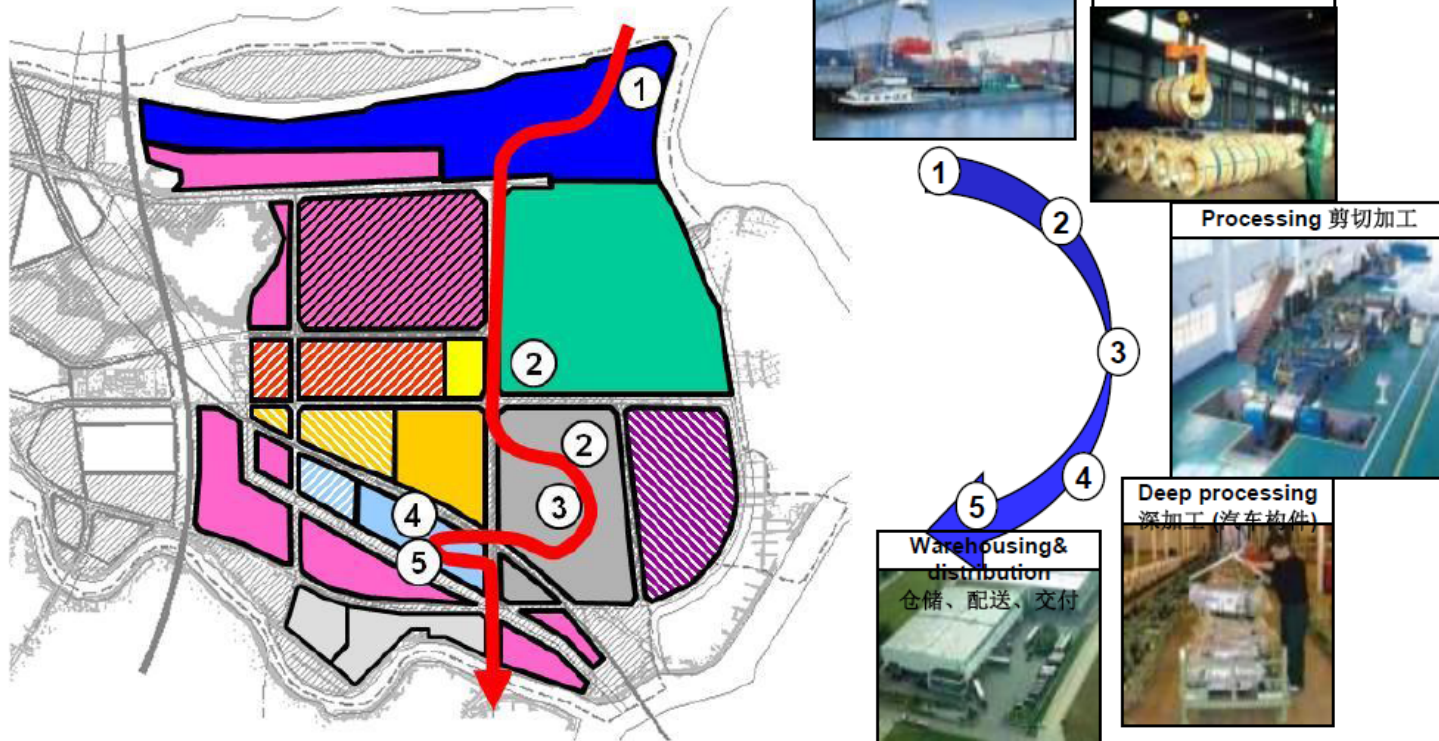
- Sanshan port lies in the junction of the two important waterways of Dongpin and Chenchun. The two rivers, run through Pearl River Delta District, connecting closely the Sanshan port and Hongkong together. Therefore, Sanshan is a very important logistics hub location in Pearl River delta .
- About 13 sq. km land is available for further development of port infrastructure and logistic park.
- Fraunhofer IML has made a professional planning for the Sanshan Logistics Park in 2004.

Source: Fraunhofer IML

# .. connecting technology to processes

## Example: Sanshan Logistics Park

Supply Chain Cluster was in focus of the planning of the Sanshan Logistics Park .



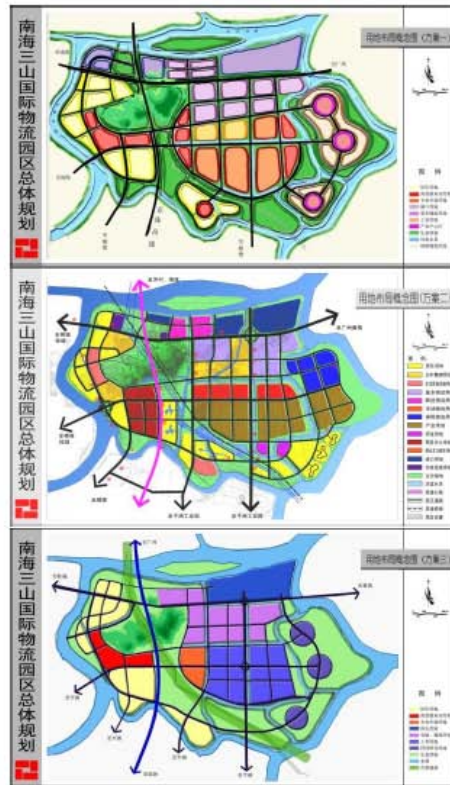
Source: Fraunhofer IML

# .. and turns ideas to reality.

## Example: Sanshan Logistics Park

### Planning

#### Sanshan Logistics Park



### and

### Reality

#### Sanshan Business and Recreation Center



Source: Sanshan

# Thank you !

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# Fraunhofer IML – material flow and logistics

## Selection of Latest Research Topics

**PLANNING OF INTRALOGISTICS**

**LOGISTICS MALL**

**MODELLING**

**PLANNING OF LOCATION**

**WAREHOUSE MANAGEMENT**

**LOGISTICS AS A SERVICE**

**MARITIME LOGISTICS**

**RFID APPLICATIONS**

**SUPPLY CHAIN MANAGEMENT**

**SOFTWARE FOR INTRALOGISTICS**

**AIR FREIGHT**

**DISTRIBUTION LOGISTICS**

**FACTORY PLANNING**

**MAINTENANCE**

**GREEN LOGISTICS**

**CONVERTIBLE LOGISTICS SYSTEMS**

**URBAN SUPPLY**

**LOGISTICS NETWORK**

**CELLULAR INTRALOGISTICS**

**MULTIMODAL LOGISTICS**