



**DIGITAL MANUFACTURING ECOSYSTEM**  
EUROPE

July .2016



## Create the main digital manufacturing ecosystem in Barcelona

In the coming years the industry 4.0 will transform the way of producing and creating services with a transformative capacity similar to the appearance of the Internet.

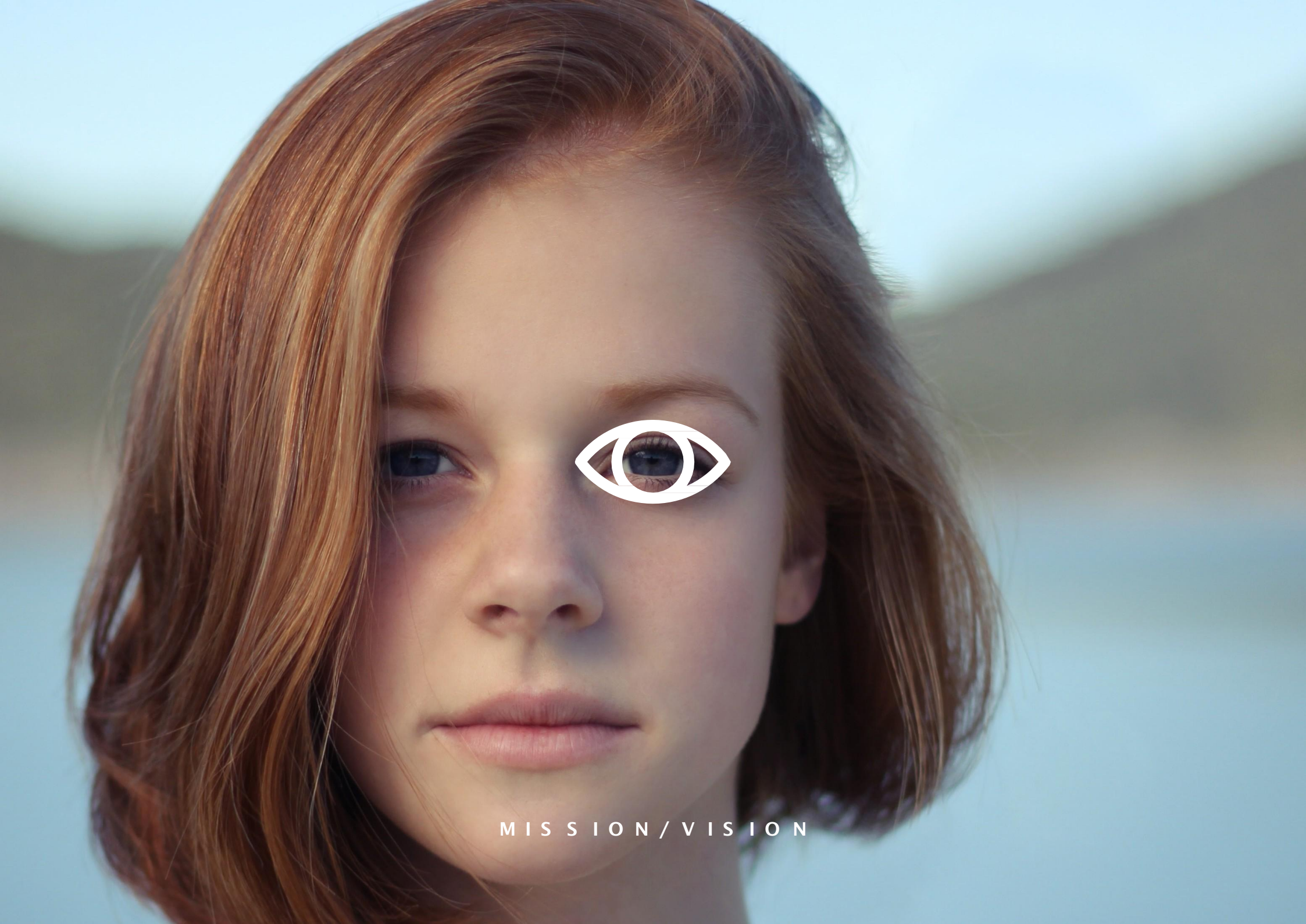
What is known as the fourth industrial revolution will be based on the convergence of other vectors of the Internet of Things, Big Data, Artificial Intelligence, Robotics and 3D Printing.

3D printing and digital manufacturing in general, will be key elements in this process of transformation of 4.0, a factor that will determine not only the economic but also the social century.

The presence of the world center of HP, as well as other players in the sector with expertise like Renishaw, Leitat Technological Center and many others, allow a solid bet to create in Barcelona the main European digital manufacturing ecosystem.

The heart of this ecosystem should be the Digital Manufacturing Center of Excellence, I4AM, whose project is presented in this proposal.

**I4AM** stands for International Institute for Industrial Innovation in Additive Manufacturing and 3D Printing



MISSION / VISION

## MISSION

I4AM –Bcn is envisaged as a private foundation with an **European scope** that has as mission:

**To accelerate the development and adoption of AM / 3DP technologies in the European Union manufacturing sectors as an alternative way to design, develop and manufacture new competitive products that strengthens its manufacturing competitiveness**



## VISION

Create the referral digital manufacturing ecosystem in Europe

***End-to-end solutions***  
facility for AM/3DP  
technology adoption

***R&D environment*** for  
innovating and scaling  
up AM/3DP  
technologies

***Collaborative*** infrastructure  
for AM/3DP Technology ***open  
exchange & transfer***

Hub to attract the ***best  
international talent***  
in AM/3DP

Engaged with ***educational  
and training*** to create  
adaptive and leading  
workforce

Committed to start off  
and boost ***AM/3DP  
businesses***



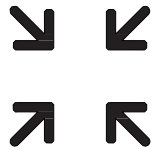




**VALUE PROPOSITION**

# VALUE PROPOSITION

I4AM aims to be:



**Champion** of Industrial Commons for innovation in AM/3DP and digital manufacturing

**Concentrator** of knowledge & talent, AM/3DP technological assets and characterization, validation & certification labs

**Core of the AM/3DP Ecosystem** formed by Technology Providers, Industrial Users, R&D and Training Institutions, Economic Organizations and Public Administration

**Collaborative, transparent, open and trusting environment** with shared purposes and shared resources



# VALUE PROPOSITION

Core of the AM/3DP  
Ecosystem for:

## **AM/ 3DP ADOPTION**

using a three level approach:  
Initiation, adaptation and inte-  
gration

## **R+D**

in Design for AM, Materials develo-  
pment, management and recovery,  
Processes, Post processes,  
Validation, Certification and  
Standardization

## **TRAINING AND EDUCATION**

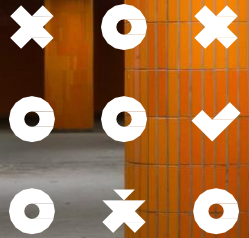
an efficient use and implemen-  
tation of AM/3DP along the  
whole Product Value Chain

## **BUSINESS INNOVATION**

on the basis of AM/3DP,  
for all kind of companies







**ORGANIZATIONAL MODEL**

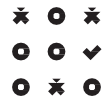
# ORGANIZATIONAL MODEL

## I4AM IS ENVISAGED UNDER THE LEGAL FORM OF A FOUNDATION

Members belonging to Industry, Economic Organizations, Science & Technology Institutions, Academia and Public Administration, participate under Platinum, Gold, Silver and Bronze categories with specific rights and obligations



Governance is formed by a Board of Trustees and Executive Committee and a Director



# ORGANIZATIONAL MODEL

## Industrial Users:

Automotive, Machinery and Tooling, Energy, Aeronautical and Aerospace, Oil & Gas, Health, Transport, Creative industries, Consumer goods...

## Technology providers:

AM/3DP OEMs, material developers, software developers, Post processes technology, inspection technologies..

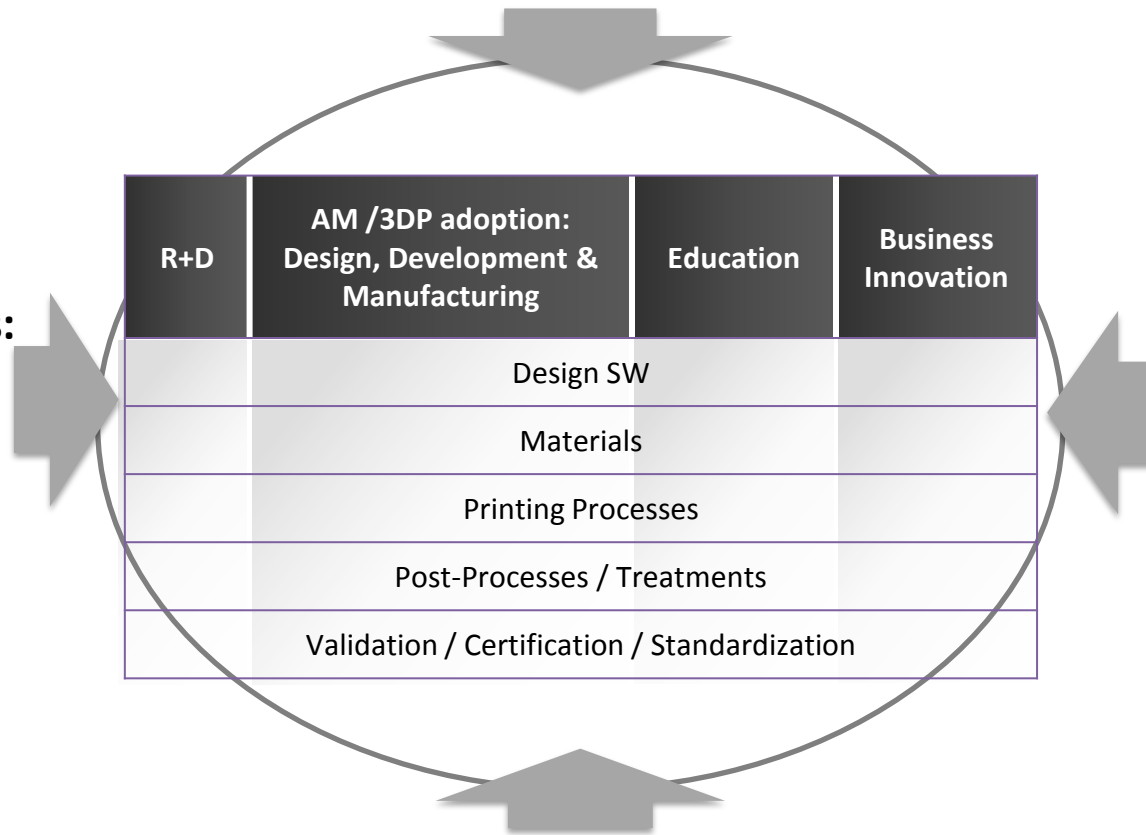
## Public Administration / Economic Organizations:

Governments, Venture Capital, Investors...

R+D	AM /3DP adoption: Design, Development & Manufacturing	Education	Business Innovation
	Design SW		
	Materials		
	Printing Processes		
	Post-Processes / Treatments		
	Validation / Certification / Standardization		

## R&D and Educational Entities:

Technological Centers, Research Institutes, Universities, schools...



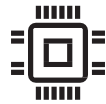


# ORGANIZATIONAL MODEL

**FOUNDER  
MEMBERS:**

LEITZ /  / RENISHAW  ...

**TECHNOLOGY  
PROVIDERS**



*Design*

*Materials*

...

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*Post-processes*

*Processes*

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*Validation*

*Standardization*



**R&D AND TRAINING  
INSTITUTIONS:**



**INDUSTRIAL USERS**



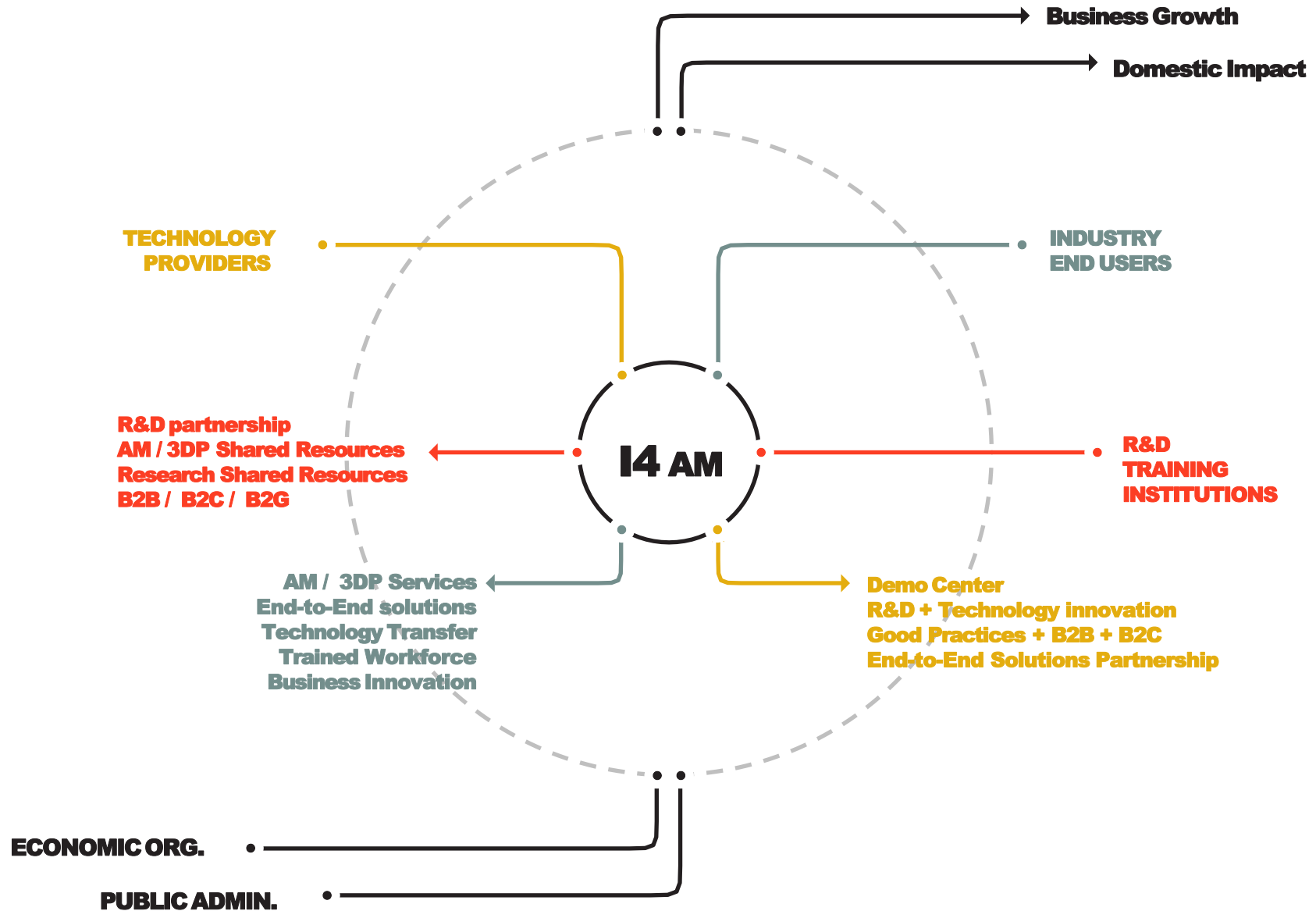
**PUBLIC ADMIN**



**BUSSINESS ECONOMICAL**

✘ ○ ✘  
○ ○ ✓  
○ ✘ ○

# AM / 3DP ECOSYSTEM FLOW



## AM / 3DP ECOSYSTEM BENEFITS

### For OEMs members: ...

- Gathering customer requirements and market trends.
- Engaging customers with E2E solutions. Pilot lines. **Developing and integrating End to End (E2E) solutions with customers. Incubator cells.**
- Provide E2E dry runs for OEM customers. Demo Rooms
- Service Bureau of all 3D printed parts required by the OEM company areas (R&D, MKTG, -benchmarking- OPS...).
- Provide laboratory services to OEMS customers.
- Certification and development of new materials.
- Customer, sales, presales and service training on AM/3DP technologies and the whole E2E solution.
- Talent and expertise attraction.
- Updating on latest technologies and applications in all verticals





## AM / 3DP ECOSYSTEM BENEFITS

### For MATERIALS Developers members: ...

Access to the latest AM/3DP technologies.

Engaging with OEMS to develop parameters for materials processing and machines improvement.

Provide E2E dry runs for customers.  
Demo Rooms

Service Bureau of all 3D printed parts required by the company areas (R&D, MKTG, -benchmarking- OPS...).

• Laboratory services for materials characterization.

• **Test, development and certification of new materials for different AM technologies.**

• **Design, development and validation of cutting edge applications of new materials**

• Talent and expertise attraction.

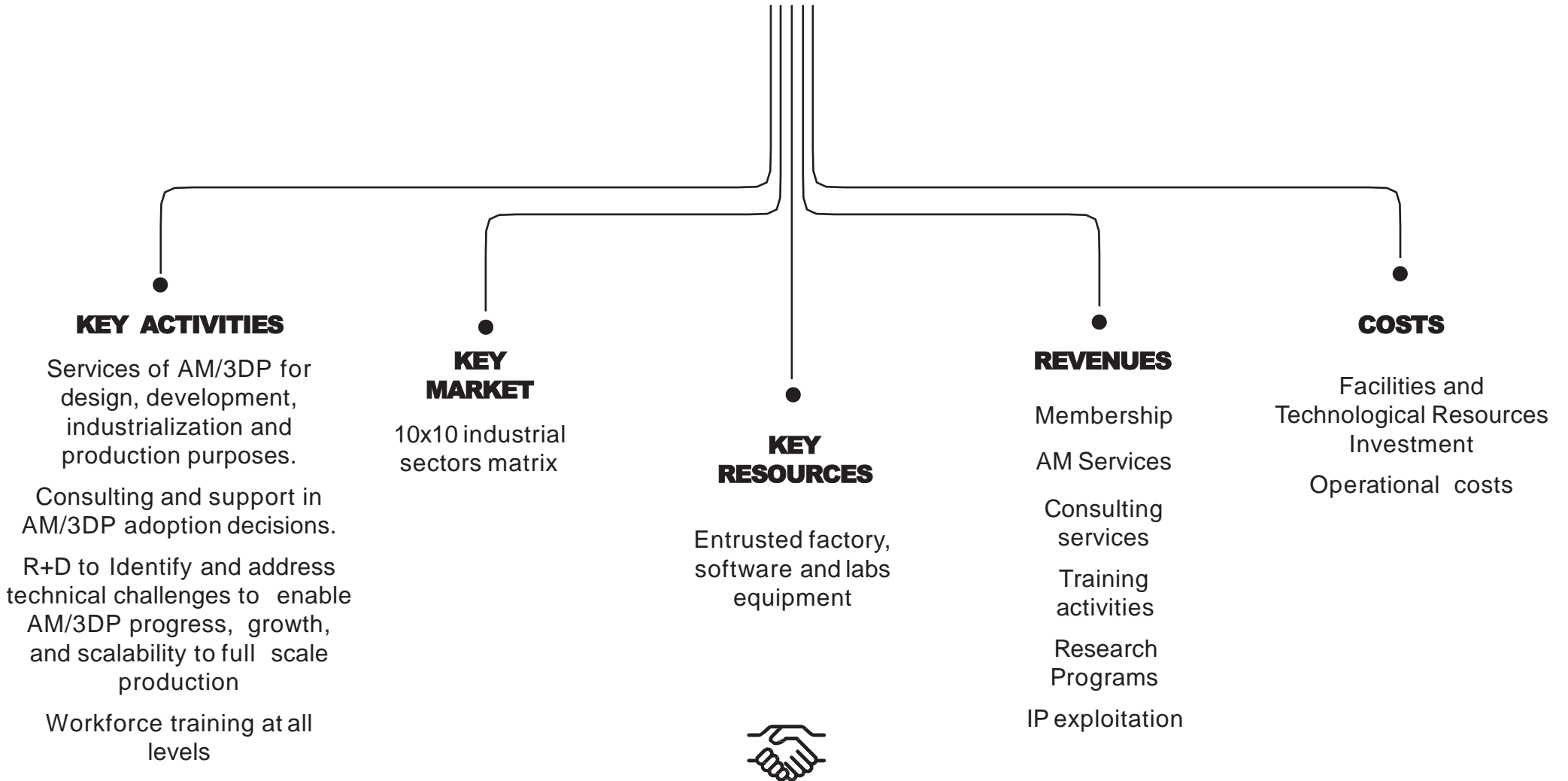
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**B U S S I N E S S   M O D E L**

# BUSSINESS MODEL





# **B U S S I N E S S M O D E L**

## **IP EXPLOITATION**

*Membership Agreement will outline a comprehensive Intellectual Property Structure and Strategy*

All Consortium developed IP is always owned only by inventing organizations.

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Project-level IP agreements will be also completed to include identification and protection of background IP.

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Rights to Consortium Developed IP are available only for IP developed during the time at which members are in good standing.

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Consortium Developed IP will be shared with the members in good standing, according to its category and conditions, set out in the Membership Agreement.





NEEDS & IMPACT FOR THE HOST CITY

## Needs to develop the Digital Manufacturing Ecosystem in Barcelona

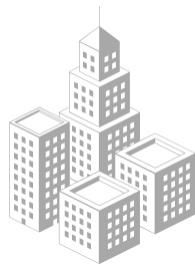


**Space** - Digital Manufacturing Center of Excellence I4AM ( 10.000 m2)  
Spaces in surrounding areas for the location of the key player of the sector (1.000m2/u)  
Idyllic Option: To transform part of the 22@ district into a 3DP district

**Public investment** will be similar to the one made in the Advanced Manufacturing Center on Aeronautics of the Basque Country or the one made in the Center for Automotive in Martorell, involving funds from all levels of the Administration.

The new DMCE project is self-sustaining in its operation, run by a nonprofit private foundation, which needs public support in the first five years of its commissioning.

The activities of the new center I4AM would begin in **early 2017 in provisional spaces.**



## IMPACT FOR THE HOST CITY

**a.**

Being international leader in digital manufacturing and 3D printing, occupying an outstanding position in the world's Industry 4.0 map

**b.**

Being a world center of high projection of one of the most decisive areas of the industry 4.0. With all that entails, attracting new businesses and 3D printing projects of reference.

**c.**

Being a center of creation and attraction of talent around on of the most promising industrial areas that has also the capacity of creating more job positions.

**d.**

Being a city leader in innovation thanks to the intensity of 3D Printing solutions.

**e.**

Being the headquarters of an international center with high entrepreneurial capacities and also corporate entrepreneurial capacities around the new digital manufacturing solutions.

**f.**

Concentrating an important part of the global research on digital industry and 3D printing. Concentrating a high academic activity as well as congress and events related to digital manufacturing and 3D printing in particular





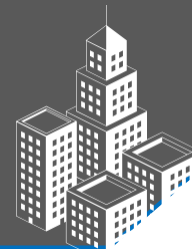
VISION DRIVING ROADMAP



## Vision driving roadmap...

### PHASE 1 – CENTER OF EXCELLENCE

- Reference implementation of a Digital Manufacturing plant
  - Visualization
  - Simulation
- R&D for application development: from need to how
- Training/Education
  - Design for 3D
  - 3D technologies and ecosystem
  - Supply chain implications



### PHASE 2 – DIGITAL MANUFACTURING INTERNATIONAL DISTRICT

- Preferential implementation location for 3D technology companies
- BCN as the European reference in digital manufacturing

2019

2020

2021

2022



# Vision driving roadmap...

## PHASE 0 – CRAWL / WALK / RUN

- Need to start
- Shared lab: Leitat / HP / Others
- Define how/when/what for Phase 1&2

## Leitat' s facilities



The activities of the new center I4AM would begin in **early 2017 in provisional spaces.**

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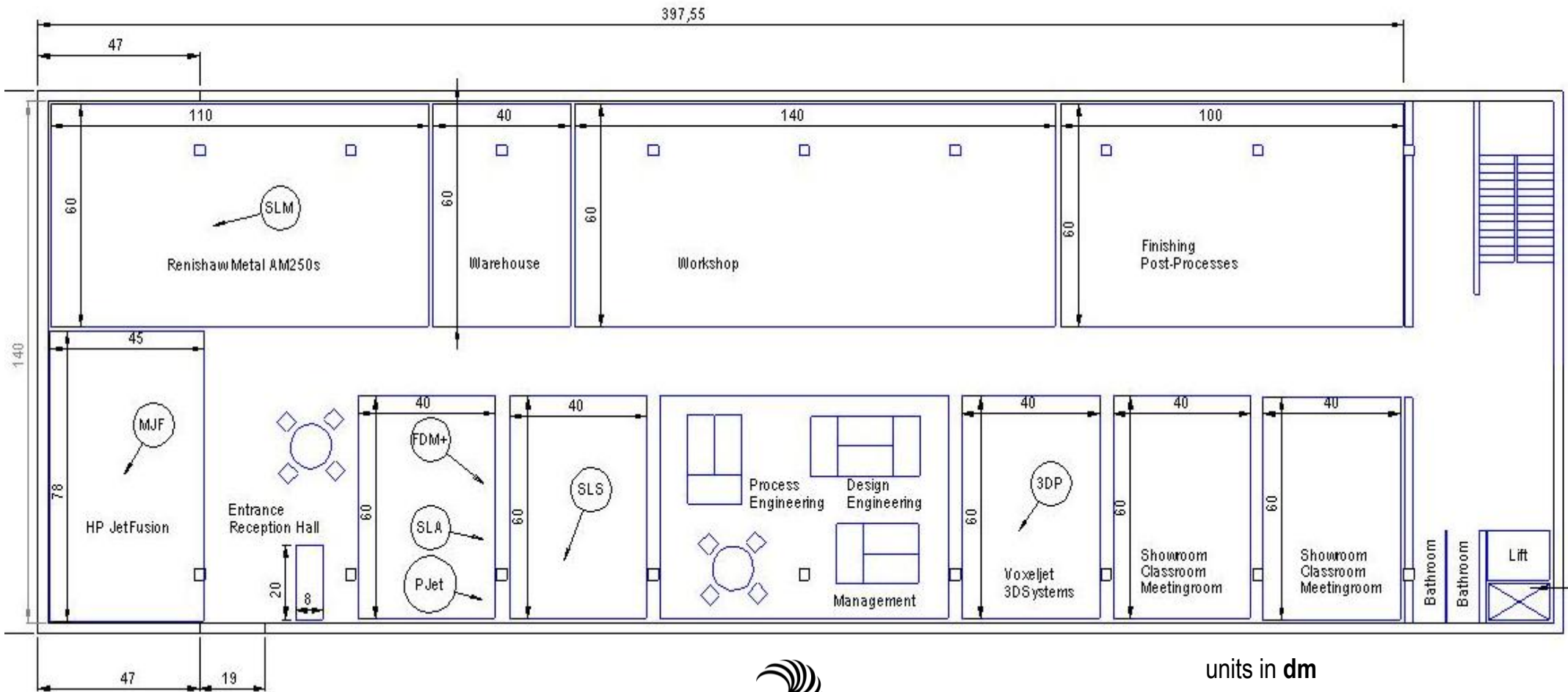


# Vision driving roadmap...



Total area: 648,24 sqm

## PHASE 0 – CRAWL / WALK / RUN



units in dm



