# Organ-on-chip Networking in Europe

## *Joining forces for the future*

**Janny van den Eijnden – van Raaij**
Managing director *h*DMT

*EMA workshop Organ-on-Chip*
*London*
*5 October 2017*

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HUMAN ORGAN AND DISEASE MODEL TECHNOLOGIES

# Topics to be addressed

- hDMT Organ-on-Chip Consortium
- European Organ-on-Chip network
- Future EU funding opportunities
- EU ORCHID project

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# *h*DMT's dream

Imagine:

organ-on-chip models
that mimic any part of the human body,
to study human sickness and health,
for personalized disease treatment
or even prevention
– available and affordable for everyone.

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# Towards an Organ-on-Chip Institute

- Organ-on-chip on Dutch scientific agenda in 2011
- Royal Netherlands Academy of Arts and Sciences *Beyond Borders program* (2011-2013)
- Dutch Technology Consortium in 2012
- International Lorentz conference Leiden in 2012
- Bottom-up development of new technology-based institute (2013-2014)
- hDMT Foundation in February 2015
- hDMT Consortium in September 2015

**Regenerative Medicine**
**Personalised Medicine**
**Brain, recognition and behavior**


**Organ-on-chip/hDMT in Topsectors:**
***Chemistry (Roadmap Chem. Nanotech.and Devices)***
***LSH (Roadmap Regenerative Medicine)***
***HTSM (Roadmap Nanotechnology)***

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# Organ-on-chip Consortium

***Since 2015***

**Partners**

# Organ-on-chip Consortium

***Since 2015***

## Expertise

Stem cell technology
- iPSC
- Adult stem cells (organoids)
- Tissue slices

Read-out technology

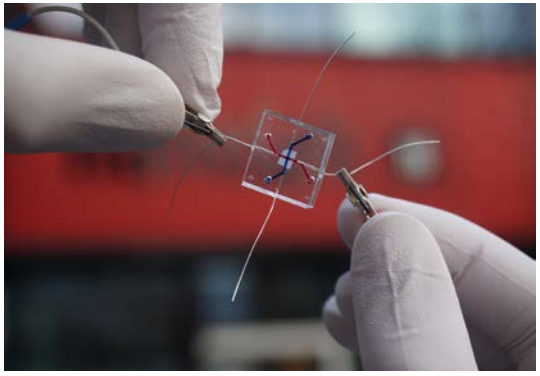
Microfluidics
Microelectronics
Microfabrication
Polymer chemistry
Computational modeling

Metabolism
Food toxicology

Drug development expertise
Validation/valorization

## Focus

- Human organ and disease models
  - Brain-on-chip
  - Cancer-on-chip
  - Heart-on-chip
  - Vessels-on-chip
  - Gut-on-Chip
  - Skin-on-Chip
  - Other
- Organ-on-chip technology platforms



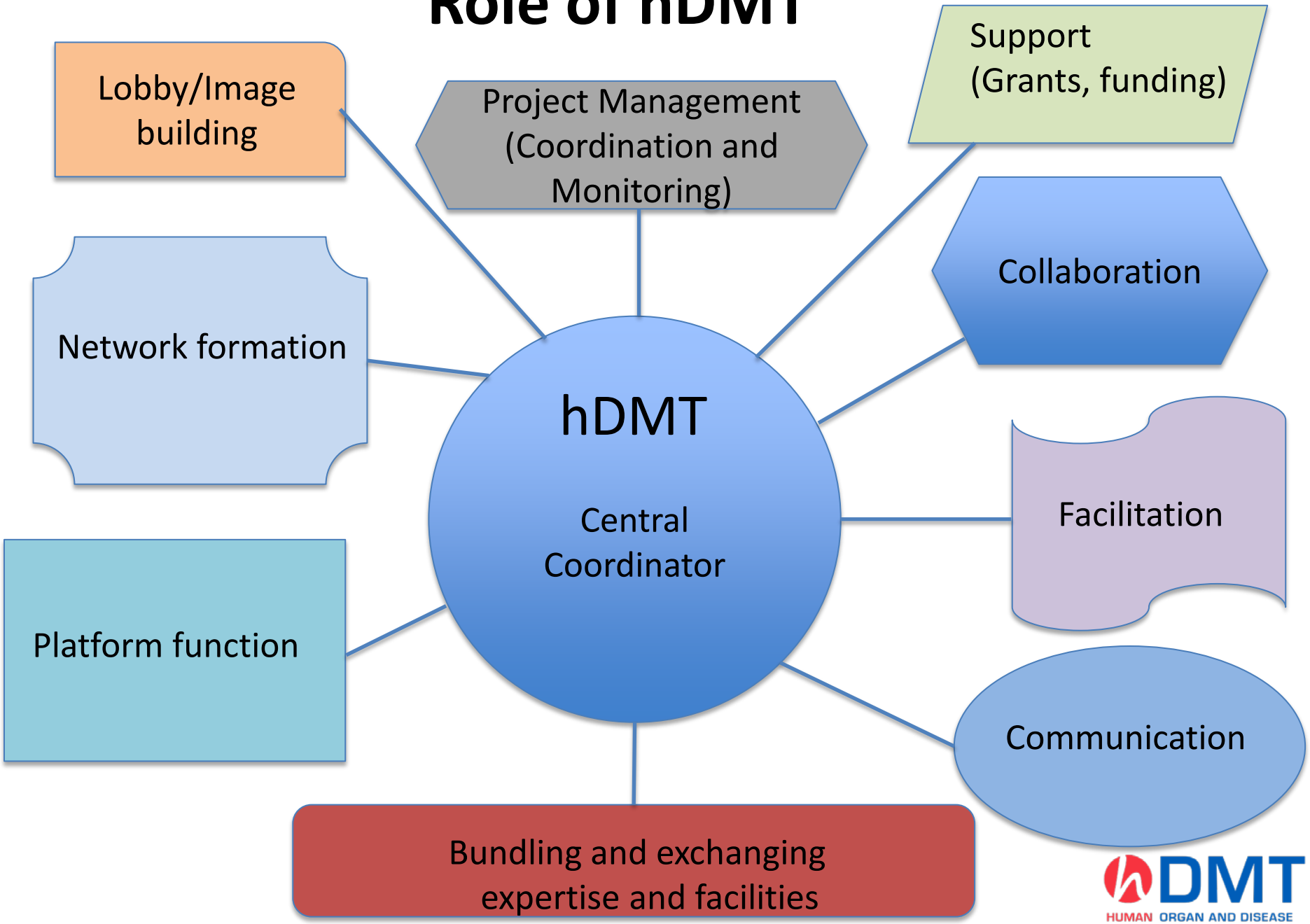
# Organ-on-chip Consortium

***Since 2015***

## Organization

- Not for profit precompetitive technology institute
- hDMT Foundation + 14 partners, hDMT Partner Agreement
- Public-private partnership, multiple locations
- Unique integration of multidisciplinary expertise, technologies and facilities
- Open access publication
- Clinical Advisory Board, Patient Advocacy group (to be established)
- *Collaboration with world-wide scientific research organizations (Europe, USA (Wyss))*
- *Towards a Center of Excellence on human organ and disease models-on-chip*

# Role of hDMT

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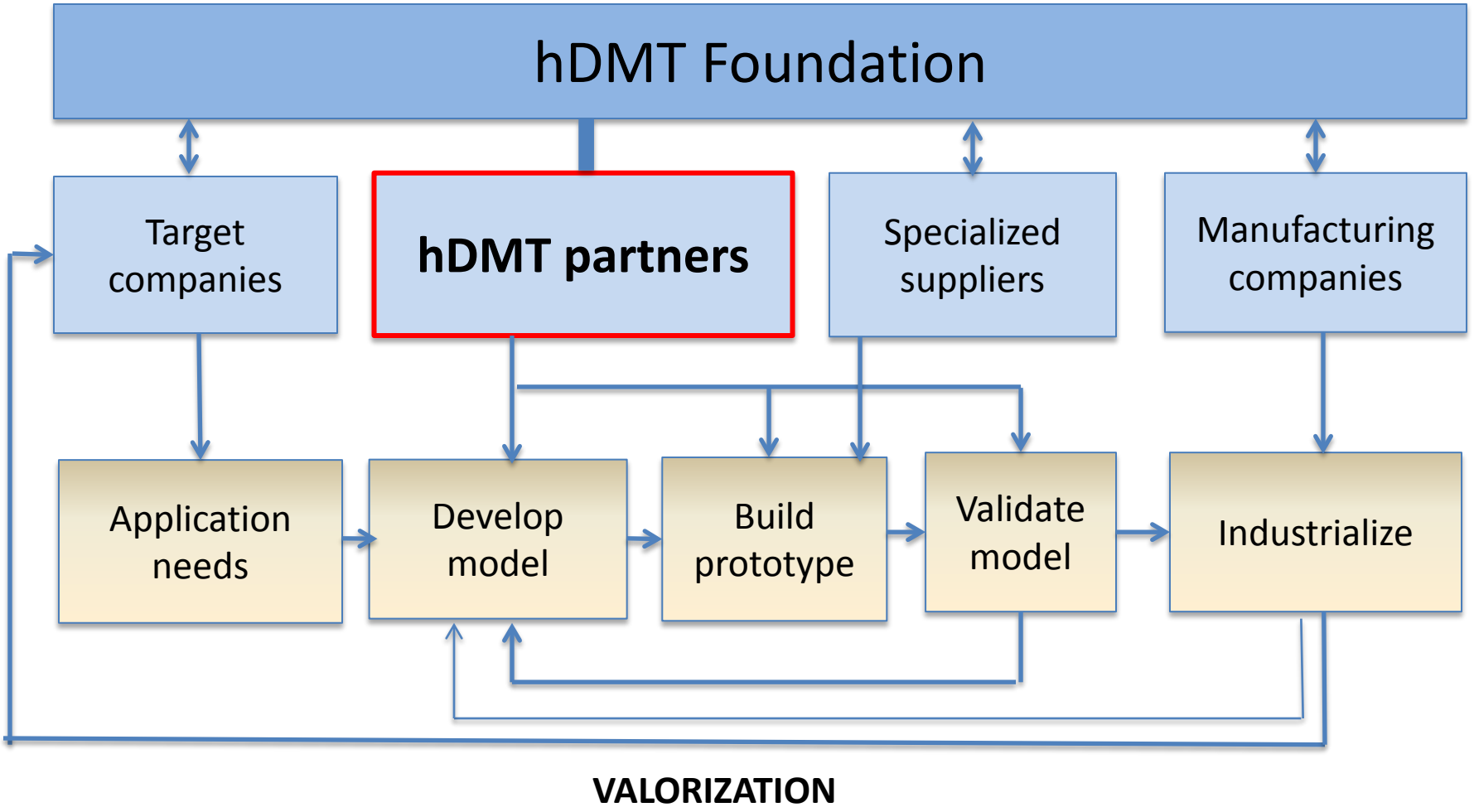
# hDMT Organ-on-chip Consortium

## COMPANY NETWORK



# Funding and networking

***NWO (Dutch Government)***
Netherlands organ-on-Chip Initiative (NOCI)
18.8 M, 10 yr (start 1 Oct 2017)


***H2020***
**EU programs 2018-2020**
FET-PROACTIVE
FET-FLAGSHIP
MARIE SKLODOWSKA-CURIE Action (ITN)
NMBP call DT-NMBP-23-2020
*(Next generation organ-on-chip (RIA**))***

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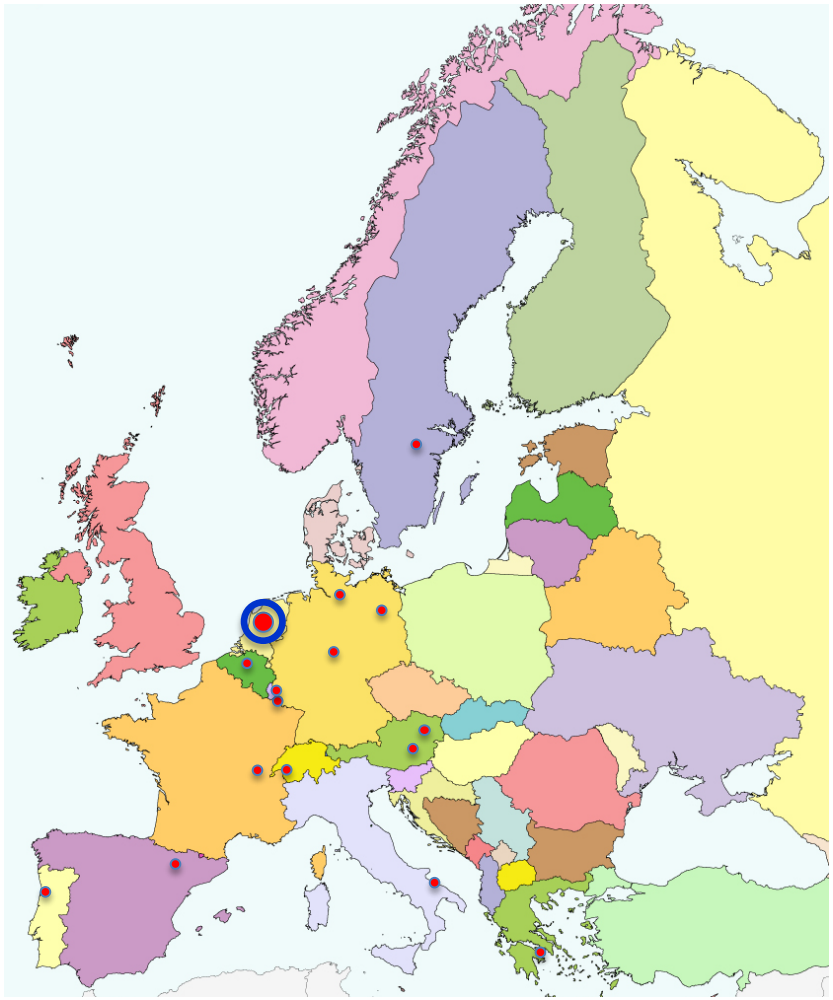
# European organ-on-chip network



## Organ-on-chip in Europe

Austria (University of Technology Graz, Vienna)
Belgium (IMEC)
France (CEA-LETI)
Germany (Fraunhofer, UMC Hamburg, Tissuse Berlin)
Greece (Nat. Techn University of Athens)
Italy (IMM-CNR)
Luxembourg (University)
Portugal (University of Coimbra)
Spain (University of Zaragoza)
Sweden (Uppsala University)
Switzerland (EPFL)
The Netherlands (hDMT)

and more partners to come……

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# ORCHID (ORgan-on-CHip In Development)

**H2020 Future and Emerging Technologies (FET) program**

**CSA Coordination and support action**

**Goal:**

- Create a roadmap for organ-on-chip technology
- Build a network of academia, research institutes, industry, regulatory bodies, patient organizations etc.
- Raise awareness by dissemination and communication

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# ORCHID objectives

1. Evaluation of the technology (state-of-the-art and unmet needs)
2. Identification of ethical issues, establishing standards and identifying measures for regulatory implementation
3. Analysis of economic and societal impact, training and education
4. Developing a roadmap which will guide the required R&D efforts
5. Raising awareness and building the ecosystem for organ-on-chip technology through a digital reference platform

# ORCHID Consortium

European Commission

Project Manager(PM)

Quality manager

Project Management Board
WP leaders

Advisory Board

| WP1 Project Management | WP2 Roadmap and strategy development | WP3 Societal and economic impact – training-education | WP4 Eco-system development and digital platform | WP5 Regulation, standardization and ethics | WP6 Dissemination and communication |
|---|---|---|---|---|---|
| **LUMC** | **hDMT** | **Fraun** | **CEA** | **Imec** | **UNIZAR** |

# ORCHID TAKE-OFF

1 October 2017 – 1 October 2019

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