

# ibD

Intensified by Design

A holistic approach: Intensified-by-Design

[www.ibd-project.eu](http://www.ibd-project.eu)

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## A holistic approach

### Intensified-by-Design (inspired by Quality-by-Design)

“...the use of robust data about a process and statistical, analytical and risk management methodologies to ‘redesign’, modify, adapt and alter that process in a continuous, intensified system.”

# 1. IbD Project



Months

**36**



Budget

**10 M€**



Partners

**22**



Countries

**8**

## 2. IbD Dream Team



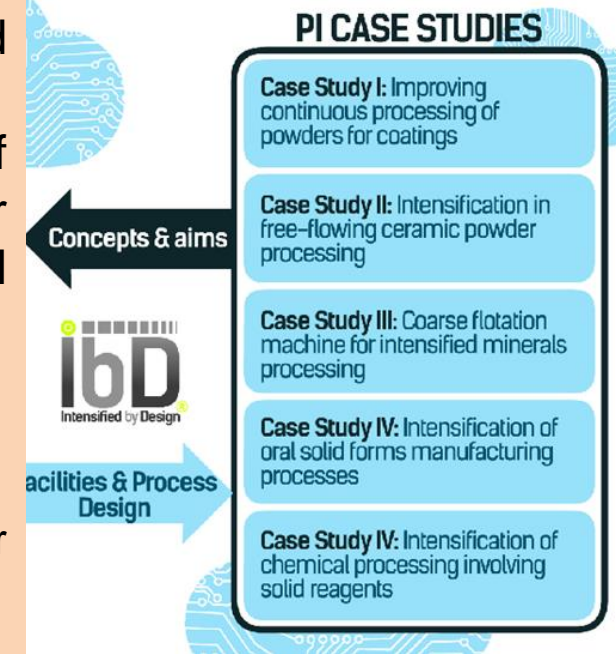
- PI technology and methodologies (*UNEW, DRA, HSO*)
- Equipment manufacturers (*AMT, OUTOTEC*)
- Reactor and process design, including downstream processes (*DRA, UNIVLEEDS, TUE*)
- Powder handling and control technologies (*VTT, OULU, TELTEK, ZHAW, ITC*)
- Solids metering (*FREEMAN*)
- Numerical and simulation tools (*LEITAT, A-DSC*)
- LCA, waste management and energy management (*LEITAT, ZHAW*)
- ICT and software platform development (*IRIS*)
- Process Industries
  - Minerals processing (*PYHASALMI*)
  - Ceramics processing (*EUROATOMIZADO*)
  - Non-ferrous metals (*MBN*)
  - Pharmaceuticals (*ALMIRALL, SANOFI*)
  - Outreach to the wider EU Process industry (*DECHEMA*)

## ▪ A devices-and-processes design-platform

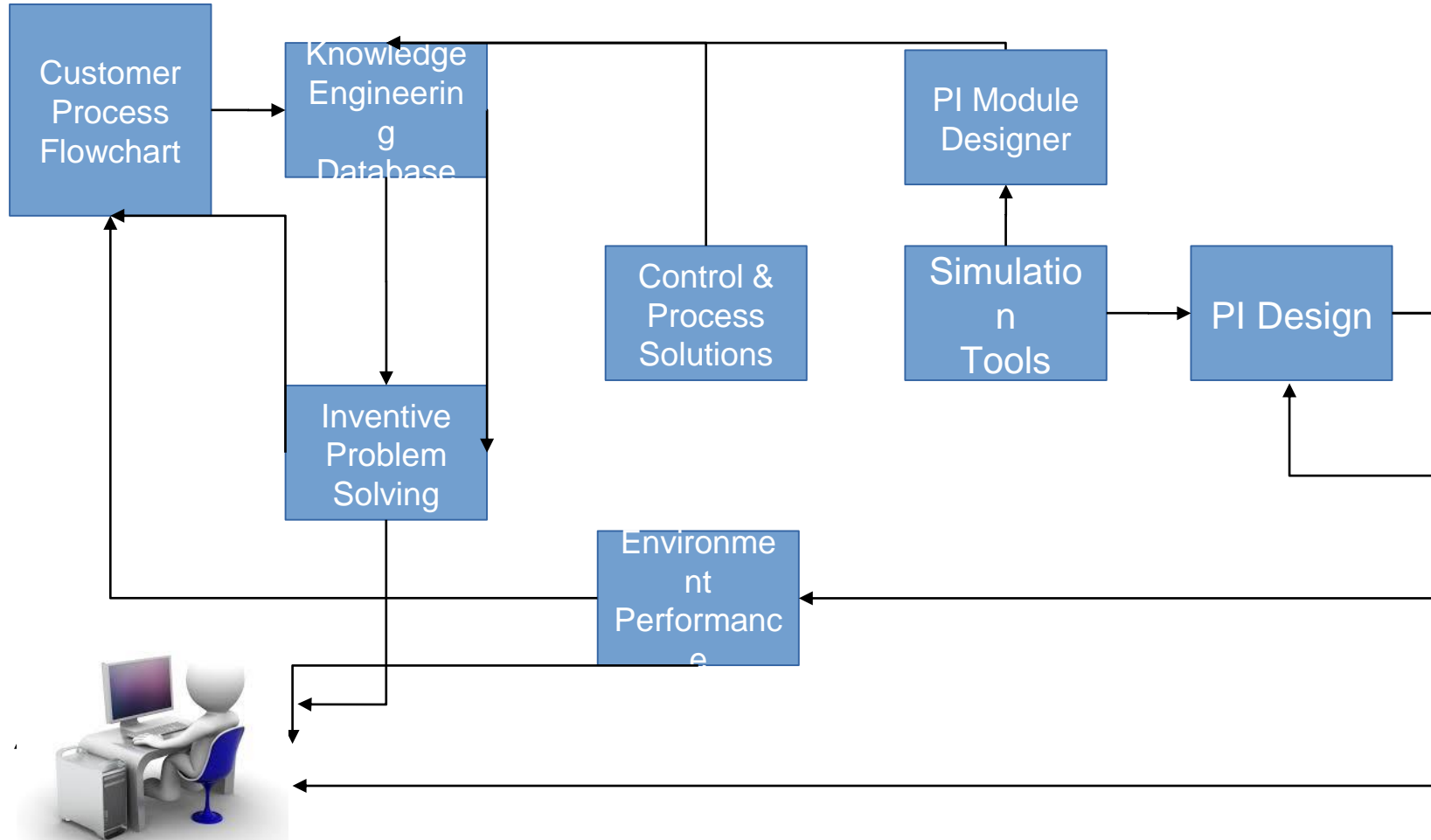
- ❑ **Design modules for the commonest intensified reactors**-Rotating fluidized beds, micro-structured reactor and spinning disk, etc.
- ❑ **A generic Module Builder** -equipped with a set of both proprietary and third-parties design tools- for designs carried out on the basis of radically novel ideas.

### Outputs datasets:

- ✓ Intensified reactor design
- ✓ Upstream/downstream intensified unit operations and their solids handling capability
- ✓ Cleaning methods etc.
- ✓ An optimised whole process design and the expected economic and environmental quantitative impacts



# 3. The IbD platform



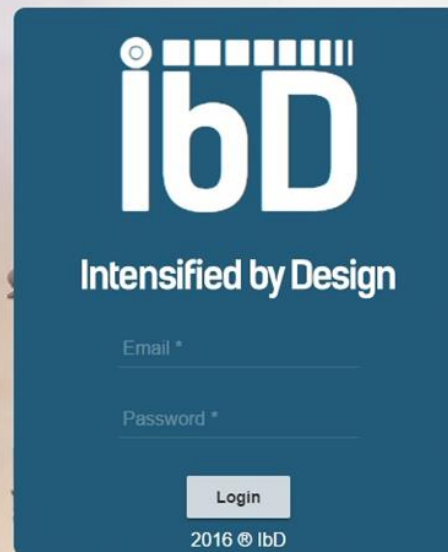


- Direct impact of PI technologies implementation
- The implementation of intensified processes and equipment will render huge benefits to the process industry in terms of:
  - Carbon footprint reduction (Smaller and “greener” processes)
  - Improved efficiency (Increased productivity and yield)
  - Cost reduction (Based on previous benefits, the gross margin of the products will increase leading to higher profitability)
- Impact of making a platform available for the identification of PI solutions
  - The platform itself will be of great help and will facilitate the introduction of PI into process industry.
  - To use the platform an insight on the current processes will be needed, leading to increased process knowledge.

# 4. Outcomes of IbD project



- IbD platform





Thank you for listening!

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Partners



ANALISIS DSC



freeman  
technology



Outotec



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