Fostering successful partnerships between industry and academia

A practical approach

ITMATI-REPSOL Joint Research Center

J. Francisco Rodriguez

June 2016

European Conference on Mathematics for Industry

Repsol Technology Center

>200 Scientists and Engineers

Exploration and Production of Oil and Gas

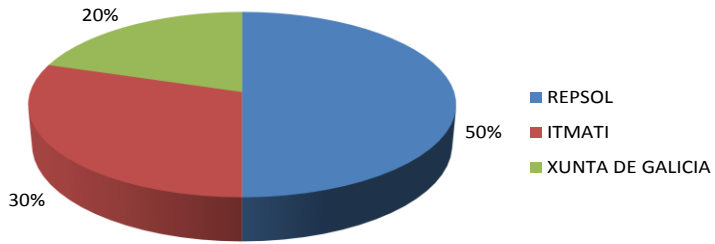
Oil refining

Petrochemicals

ITMATI – Repsol *Joint Research Center*

Three lines of research:

1. **Optimization** of **production plans including uncertainty**.
2. **Optimization** of **designs of batteries for electric vehicles**.
3. **Identification of chemical kinetics** in industrial reaction systems.



A Joint Research Center

in the field of Industrial Mathematics

1. **Motivation.** *What benefits to expect?*
2. **Initial steps.** How to start it up?
3. **Advice on management.** How to run it?

1. Motivation.

Which benefits to expect?

- ✓ **Network** of excellence.
- ✓ **Maths** as a powerful machinery.
- ✓ **Strategic partnerhips** vs one-time collaborations.

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1. **Show own successful examples** of collaboration.
2. Fix not only final results, but also **intermediate milestones**.
3. Show that **people in the academia are committed** to solving **industrial problems.**
4. Search for **public funding.**

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3. Advice on Management.

Where to place the money?

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1. Invest on **grey matter**

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4. **Communication of results**.

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Focus on PEOPLE

- **Company must be involved in** the **recruitment** process

  -> Goals-oriented people.
  -> Good communication skills.
  -> “Gantt-creation” abilities.

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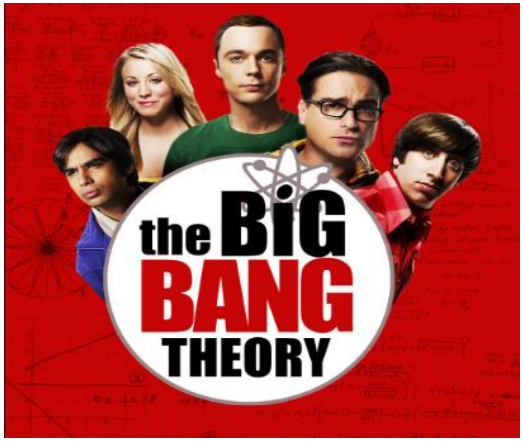

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  - Encourage publications, PhDs...

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➢ Both Company + Academia -> responsible for meeting deadlines.

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✗ Solve by Lagrangean Decomposition a multi-stage stochastic NLP using a parallel-efficient progressive hedging algorithm

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- ✗ Solve coupled multilattice non-linear systems of PDEs using discontinuous Galerkin methods

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Final notes

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  - ....among lines of research.

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....a “LP problem”....

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.....Define a communication matrix and stick to it.

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Thanks for your attention!

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