



Skills for innovation in the European chemical industry

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Dr. Sophie Wilmet
Cefic Research & Innovation

Chemical industry in the Value Chains



Raw Materials



Process Industry:

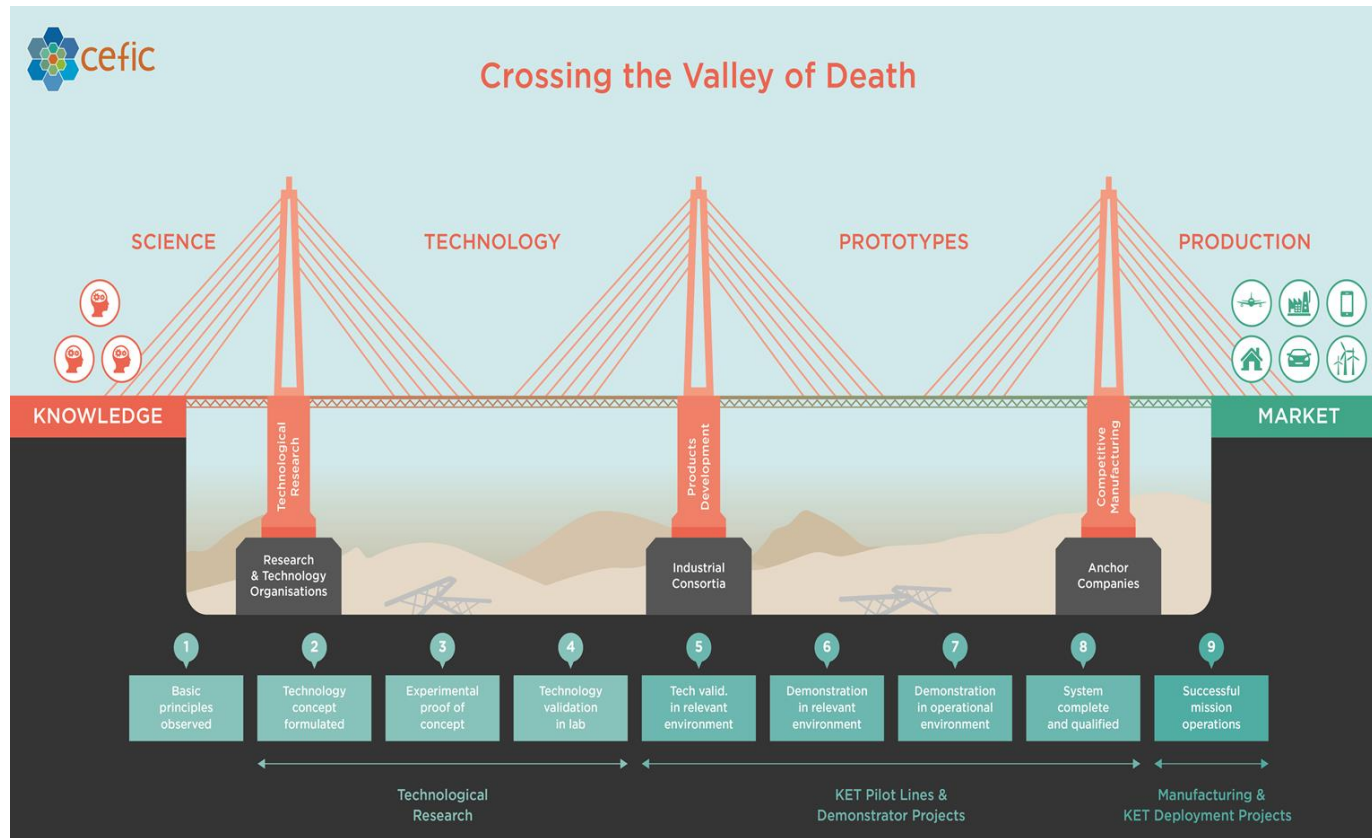
Chemical, biochemical, and physical transformation and formulation of raw materials using continuous and batch processes into **materials with specific properties and functionalities**

Discrete Manufacturing:





Innovation chain



Skills needed to build all pillars

Skills for innovation - industry needs



Skills for Innovation

in the European Chemical Industry

In order to speed up the delivery of solutions to societal challenges and to remain competitive, the European chemical industry needs the right workforce, prepared to push innovation forward.

Business skills

Personal skills

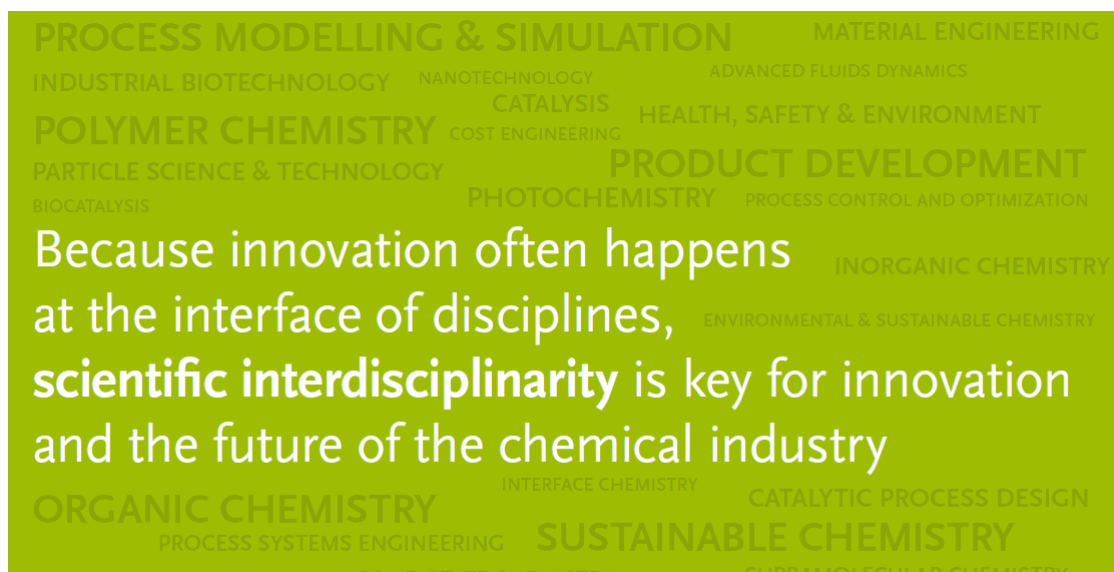
Scientific & Technical skills



Skills needs for innovation : main findings

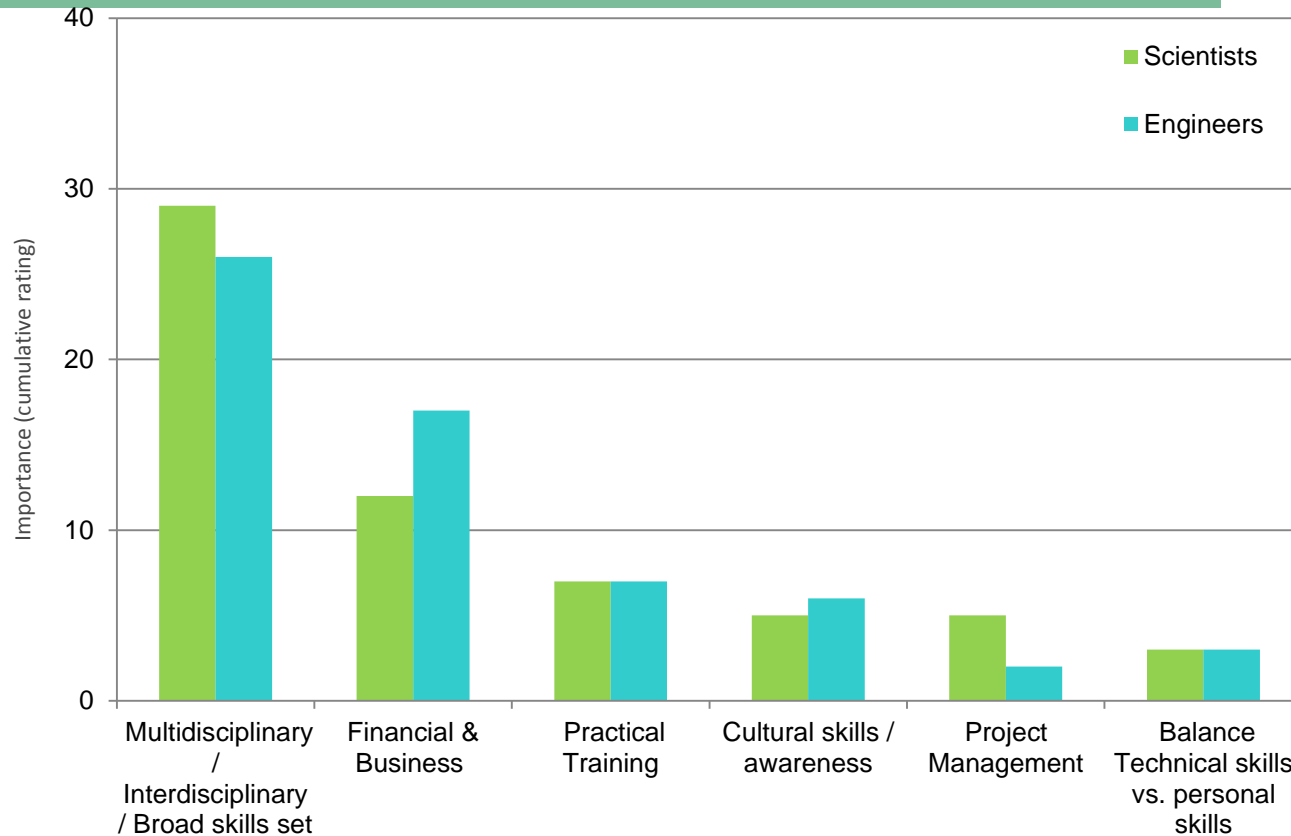
Critical skills	For engineers	For scientists
	<i>Business</i> <i>Project management</i> <i>Innovation management</i> <i>Understanding customers & suppliers</i>	<i>IPR</i> <i>Innovation management</i> <i>Understanding customers & suppliers</i>
	<i>Personal</i> <i>Communication</i> <i>Team work</i> <i>Problem solving</i>	<i>Creative thinking</i> <i>Team work</i> <i>Communication</i>

Scientific
and
technical





Industry expectations of HE



European chemical sector, needs future engineers and scientists with:

- a broader scientific skill set that goes beyond traditional single discipline teaching
- a strategic awareness of business and innovation management issues

Opportunities for context- and problem-based learning need to be considered when developing courses



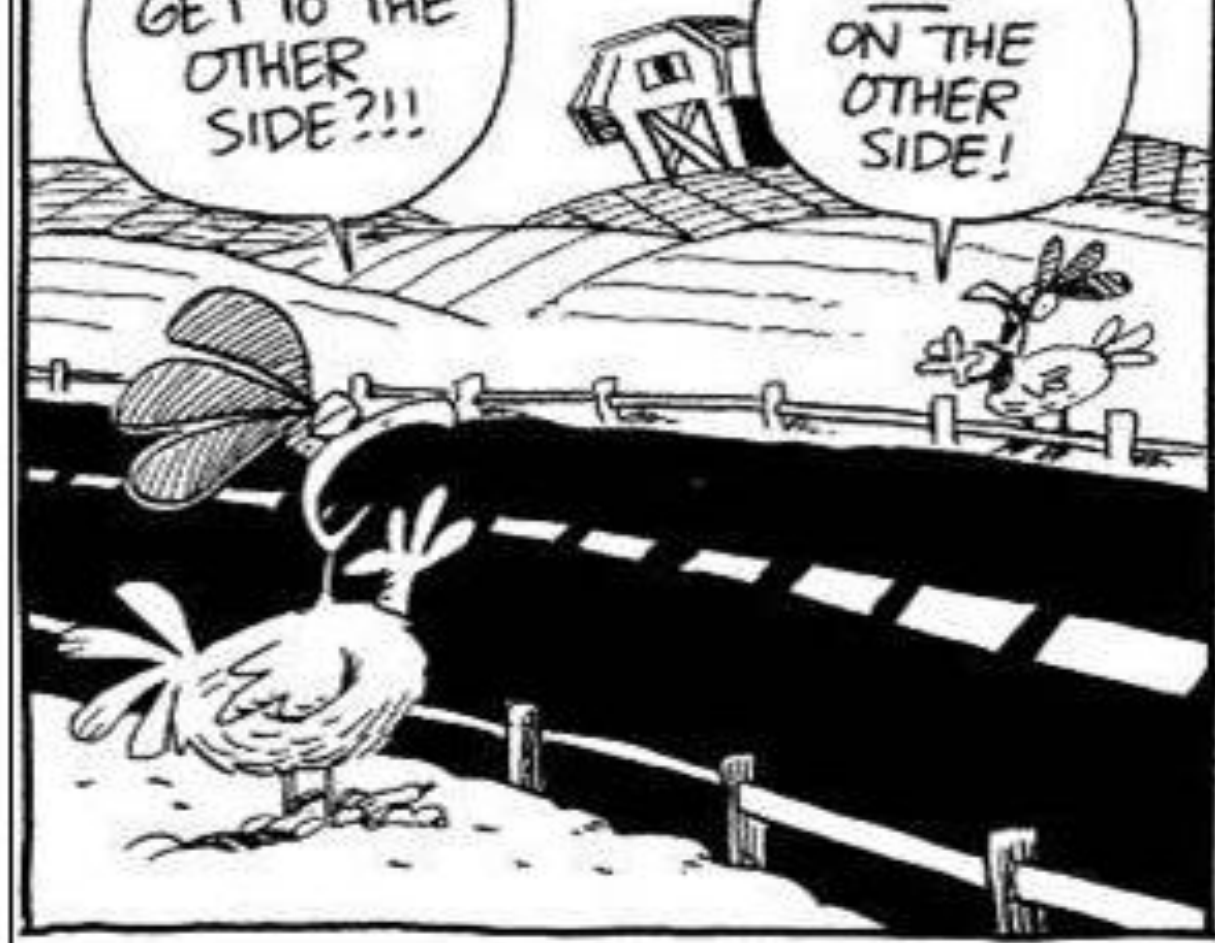
Barriers and constraints to integrating industry's needs in HE teaching

- Professors assessed on research output
- Existing curricula focused on research, not for the whole innovation chain
- Co-operation across disciplines is difficult in traditional HE structures

TWO STUPID CHICKENS:

HOW DO I
GET TO THE
OTHER
SIDE?!!

YOU
ARE
ON THE
OTHER
SIDE!



Building Skills Capacity Together

■ ■ ■ creating solutions together

Research

Industry

Right workforce for
Research
AND
Innovation

Industry and HEIs to build together the skills capacity for tomorrow

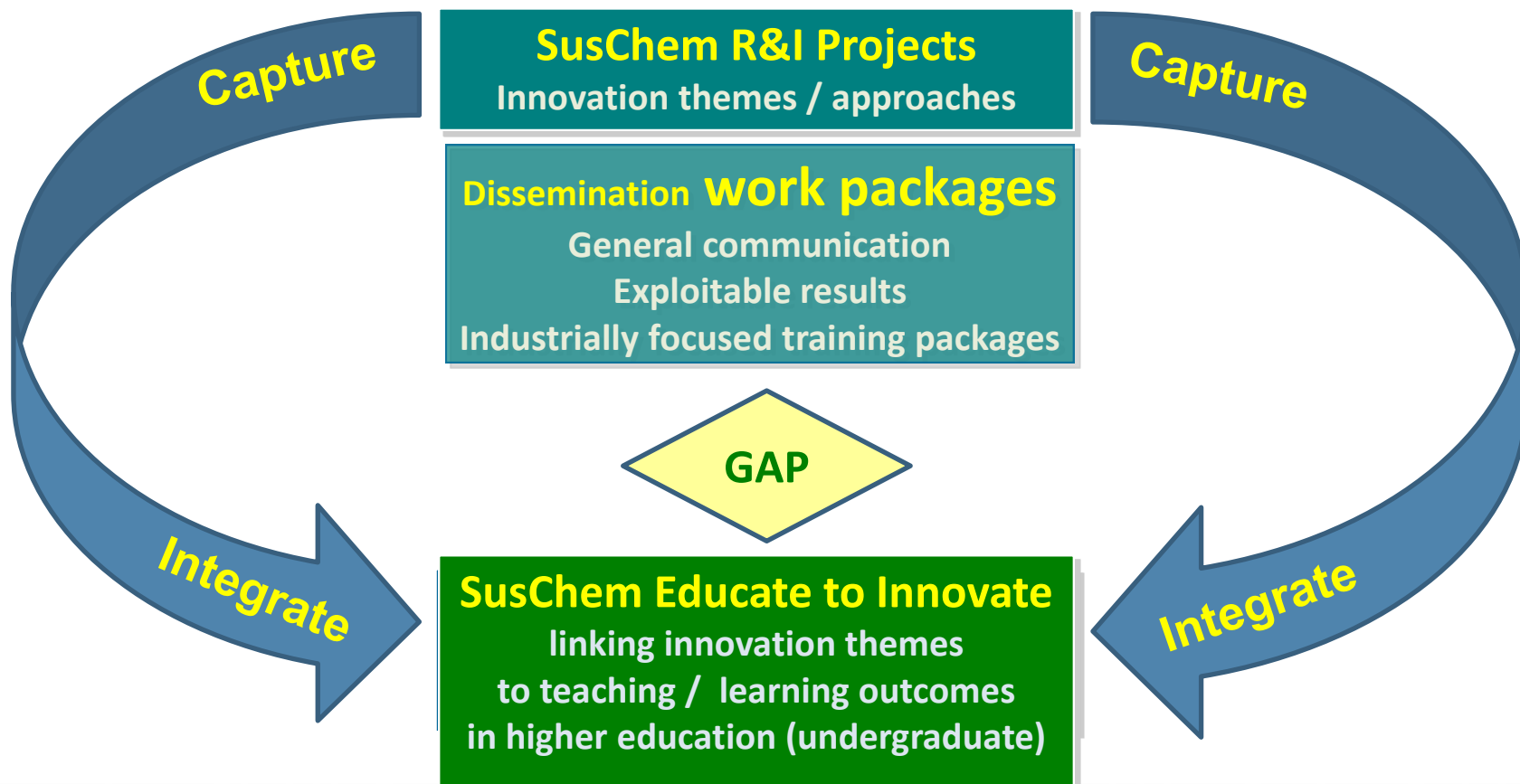
- Create synergies
- Define concrete actions

Higher Education

Building Skills Capacity: what needs to be done?

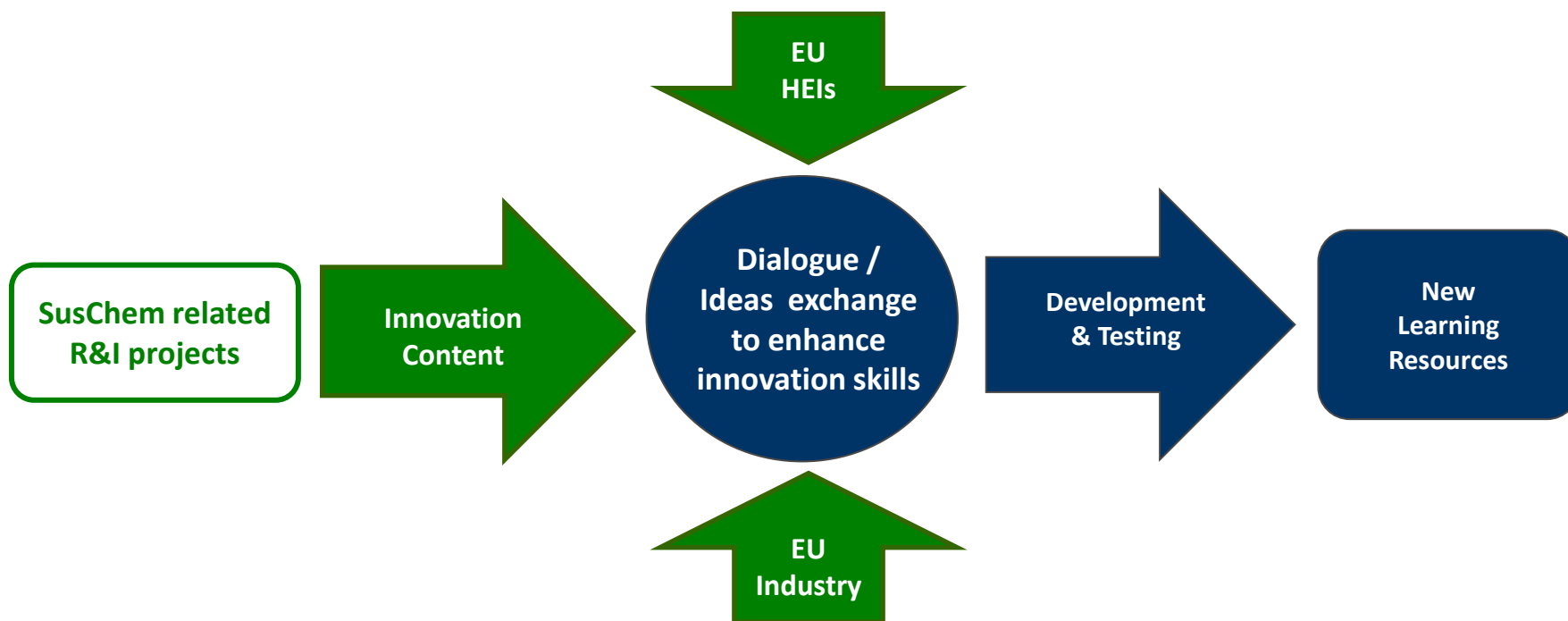
- **Enhanced dialogue and collaboration** between HEIs and industry on skills for innovation issues and course development
- **Greater awareness** among HE teaching staff of the benefits of **context-based teaching resources**
- **Better dissemination of 'good practices'** for the introduction of skills for innovation into HE courses (methodologies, course design, involvement of industry and to demonstrate the value active learning)

SusChem Educate to Innovate Leveraging value from investment in strategic innovation programmes



SusChem Educate to Innovate

(undergraduate / Masters level)



(chemical / industrial biotechnology)

SusChem Educate to Innovate for the development of flexible, exciting learning resources

- **Rich in content** from case studies / pilot lines /real world examples
 - Learn through failure as much as success
 - Documented methodologies for problem-based studies
 - Understand how /why decisions were made
 - Supported by good reference material
- **Accessible** across different media platforms
- **Adaptable** to different teaching curricula demand/ learning styles / approaches
- **Flexible** in use (not a standalone learning module)
- **Appeal** to a broad community

SusChem Educate to Innovate Effecting a Mindset Change

- Consideration of education potential as part of project impact assessment
 - from undergraduates to lifelong learning
- Integrate educational outputs into project exploitation plan
- Engagement of 'teaching' academics at appropriate stage of the project
- Enable effective exploitation of project outcomes into education beyond project timeframe
- Build appropriate framework into project funding mechanism



- Cefic's **online platform** and **multimedia magazine**
- Bridging the gap between **younger audiences** and the **chemical industry**
- 14 active **young chemists** from renowned European universities
- Sharing the **great innovations** taking place in Europe and pointing to a more **sustainable future**
- Growing support from the main **EU Scientific networks** & Partner with **key scientific events**
- Strong **social media** presence – Twitter, Facebook, Pinterest, Instagram - Follow us!



nuno@yourformula.eu

