



POLITECNICO
MILANO 1863



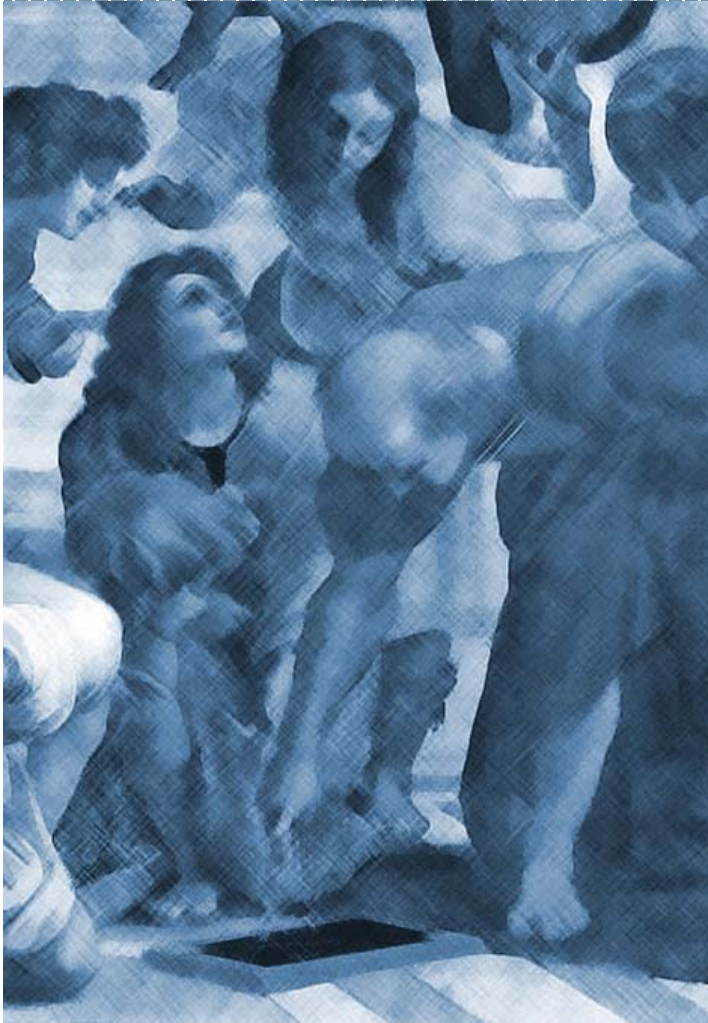
Milano, 26 settembre 2019 – Auditorium Federchimica
Conferenza Chimica 4.0: la gestione della security nell'era della digitalizzazione

Il Politecnico di Milano nella formazione professionale dell'ingegnere chimico 4.0

Flavio Manenti

Centre for Sustainable Process Engineering Research (SuPER), CMIC Dept. 'Giulio Natta'

The Politecnico di Milano's Logo



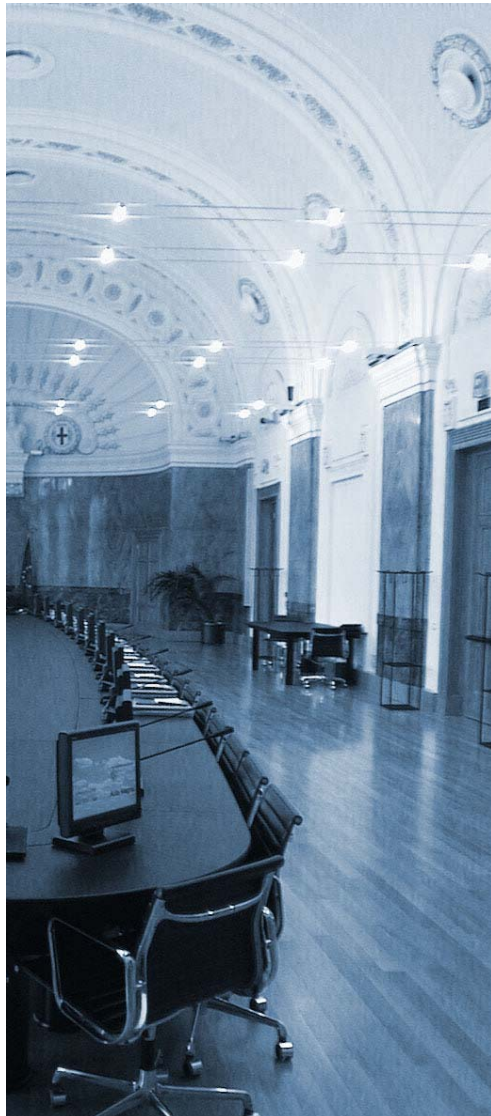
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MILANO 1863

Detail of the Raffaello's fresco
The School of Athens, whose
cartoon (Ambrosiana Picture
Gallery, Milano) originates the logo
of the Politecnico di Milano



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Faculty & Students



Architecture	Professors & Researchers	Students
	297	8260
Design	Professors & Researchers	Students
	94	4054
Engineering	Professors & Researchers	Students
	925	30430



QS Rankings 2019

Politecnico di Milano

Employers Reputation

EU Rank

4th

Engineering & Technology

World Rank

16th



European 4.0 @ Process Engineering (CAPE) Community



EFCE

European Federation of Chemical Engineering
Europäische Föderation für Chemie-Ingenieur-Wesen
Fédération Européenne de Génie Chimique



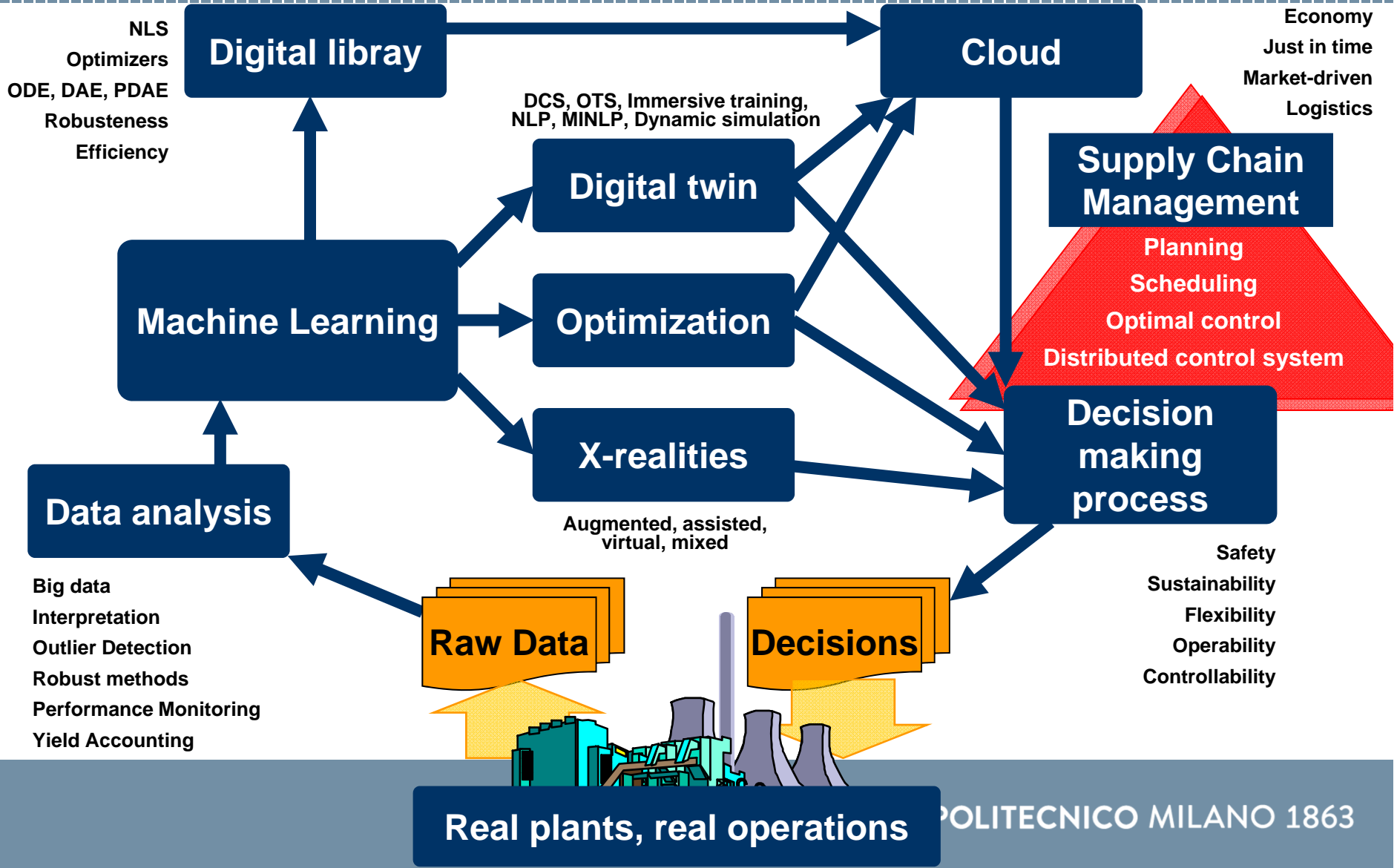
www.wp-cape.eu



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Academic 4.0 formation
Big challenge... or semantic issue?

The Overview





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СИБУР



ТОМСКИЙ
ПОЛИТЕХНИЧЕСКИЙ
УНИВЕРСИТЕТ

Industrial 4.0 formation

Digitalization first...

Process operations management



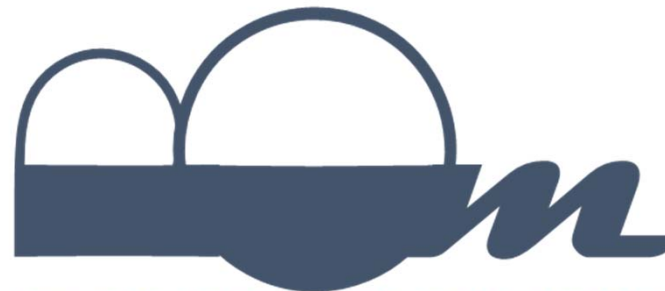


LEARN

TRAINEE

APPLY

SOLVE



PROCESS OPERATIONS MANAGEMENT
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GAS SEPARATION

PYROLYSIS

DEHYDROGENATION

POLYMERIZATION

PTA & PET



OPERATOR
FIELD & CONTROL ROOM



R & D
TECHNOLOGY

LEARN

	Full Course	Week 1	Week 2	Week 3	Week 4
GS1	16h	16			
GS2	16h	8	8		
GS3	24h		12	12	
GS4	40h	4	4	12	20
Project	24h		6	8	10
Total	120h	28	30	32	30





Imperial College London

New Technology Frontiers in Gas Production and Processing (**GS1**)
16h, frontal lectures



Università degli Studi di Milano

Gas Separation and Purification (**GS2**)
16h, Pilot experimentation



Alfa Laval



Heat Exchangers in Gas Processing (**GS3**)
24h, frontal lectures



EFCE

Gas Processing, Dynamics and Control (**GS4**)
40h, tutorials

┌ **TRAINEE**

Dedicated cabled/PC rooms



Dedicated industrial software for
Machine learning
Digital twin development
Decision-making process

e.g.:

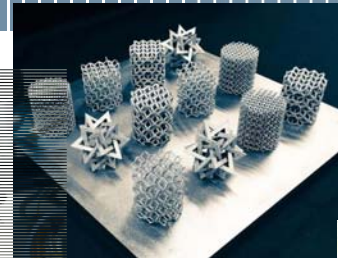
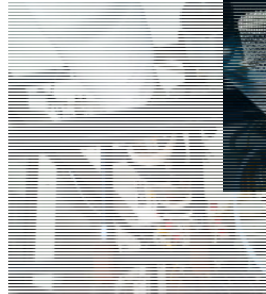
Schneider
Electric

 **aspentech**

Honeywell

APPLY

Dedicated labs



Specific team projects



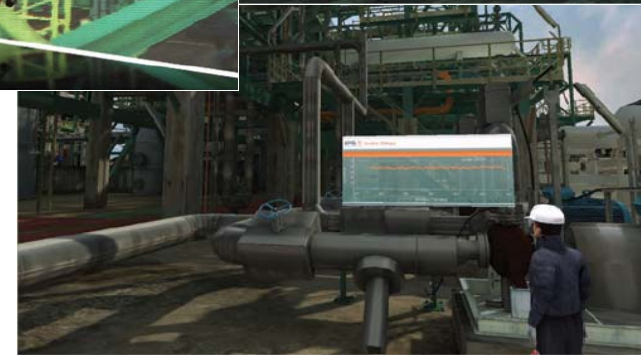
Dedicated experiences



Institutional virtual lab

Immersive training

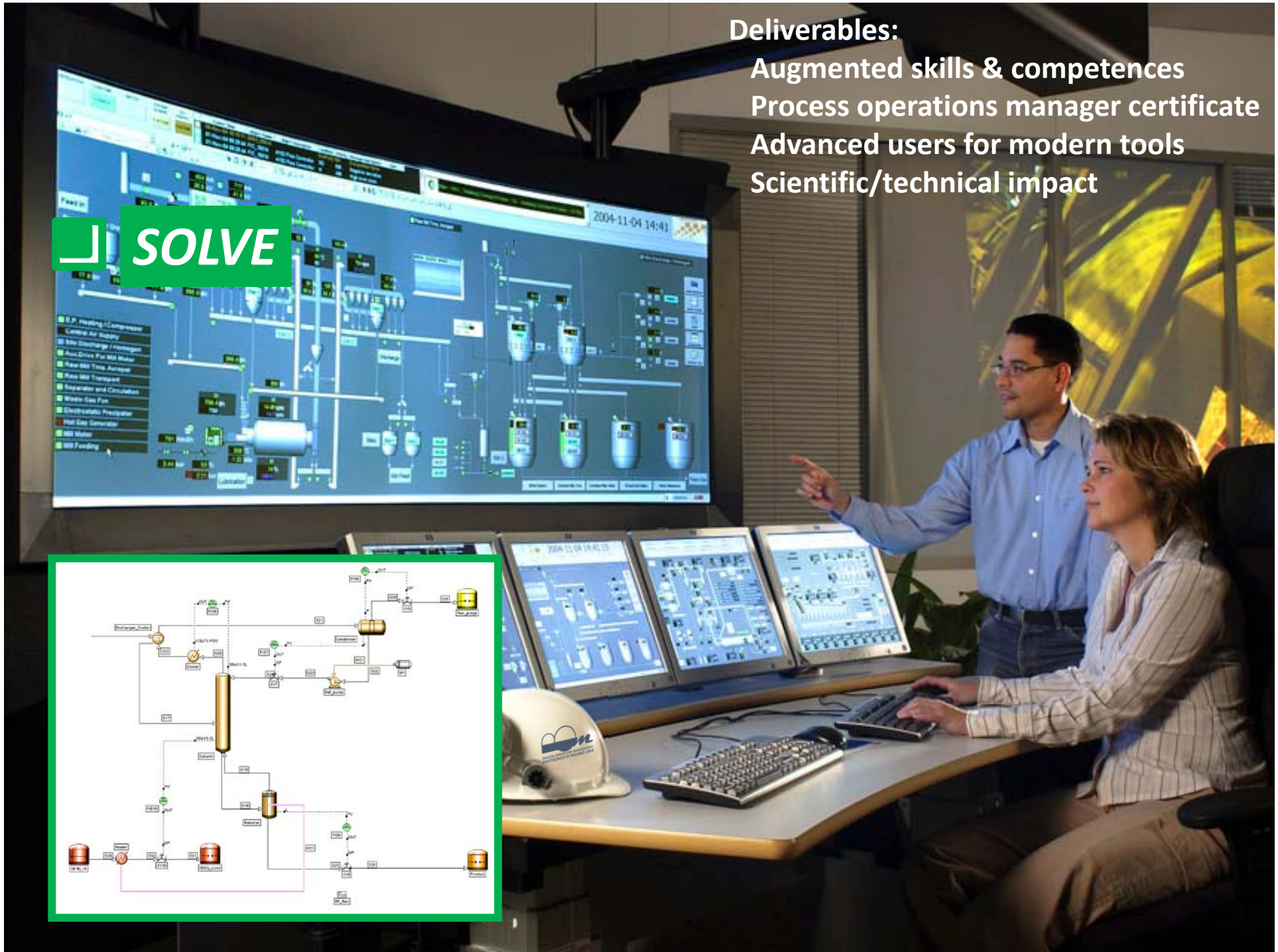
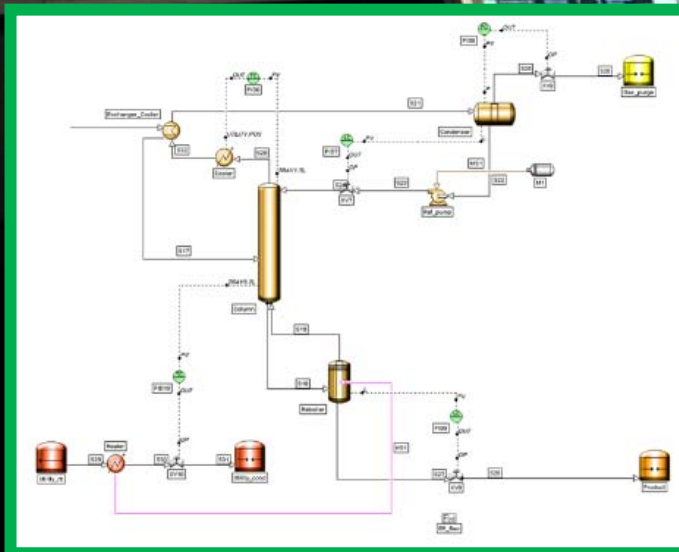
e.g.: **SIEMENS**
Schneider
Electric



Deliverables:

- Augmented skills & competences
- Process operations manager certificate
- Advanced users for modern tools
- Scientific/technical impact

 SOLVE





Thanks for the kind attention

Flavio Manenti

Professor of Chemical Plants and Operations
Alexander von Humboldt Professor of Chemical Plants at TU Berlin
President-elect of the Computer Aided Process Engineering (CAPE) – EFCE's Working Party
UEFA-licensed and Federal Soccer Coach (Nazionale Italiana U13; Virtus Bergamo U13)



POLITECNICO DI MILANO

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