



Consiglio Nazionale delle Ricerche



Istituto di Elettronica e di Ingegneria dell'Informazione e delle Telecomunicazioni

2nd Italian Workshop on Embedded Systems

IWES 2017

September 7-8, 2017 — Roma, Italy

Computer Engineering and Networks Group (CE&NG)

I. Cibrario Bertolotti et al.

CNR-IEIIT (Torino)

Computer Engineering & Networks group

- Main research areas of the group
 - industrial communication protocols and networks
 - real-time networked embedded systems
 - formal techniques and CAD tools for industrial cyber-security
 - ... with important applications in several areas of engineering
- Research is also carried out in cooperation with
 - The IEIIT territorial research team in Padova
 - The Department of Control and Computer Engineering of the Politecnico di Torino
 - National/international industrial and academic partners



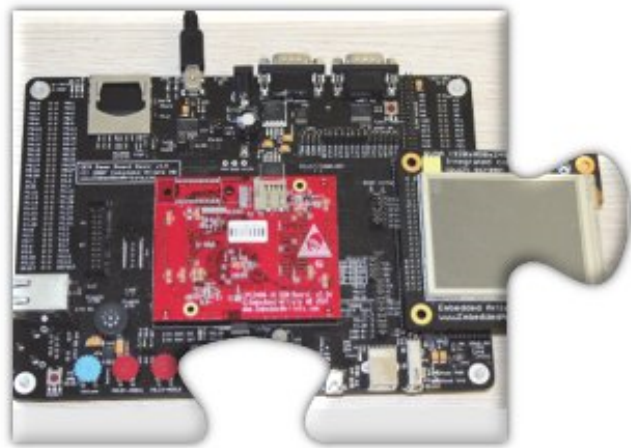
CE&NG People

- Just counting people in Turin:
 - Adriano VALENZANO (Group Coordinator – Director of Research)
 - Gianluca CENA (Director of Research)
 - Manuel CHEMINOD (Technologist)
 - Ivan CIBRARIO BERTOLOTTI (Researcher)
 - Luca DURANTE (Senior Researcher)
 - Gilda GHAFOUR ZADEH KASHANI (Research Fellow)
 - Stefano SCANZIO (Technologist)
 - Lucia SENO (Technologist)
 - Fulvio VALENZA (Research Fellow)
 - Claudio ZUNINO (Researcher)
 - ... plus 3 Research Associates from University

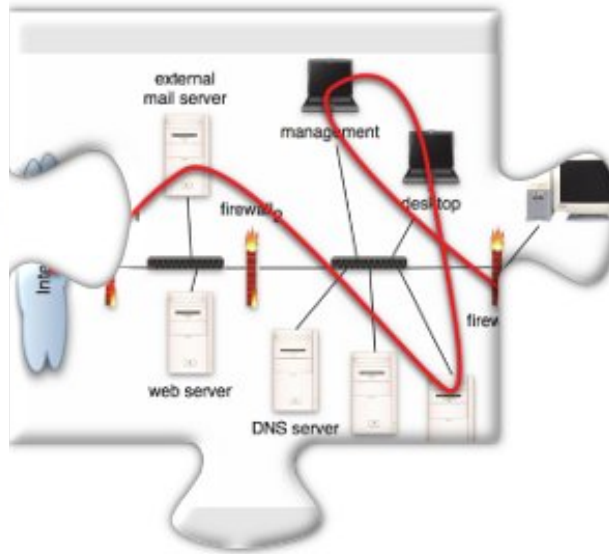


CE&NG Research

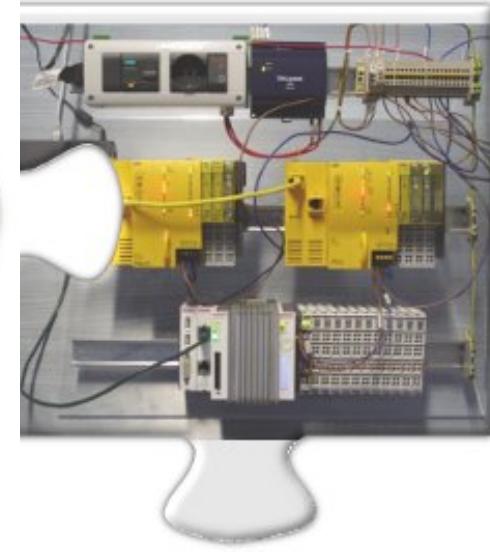
- The group is active in *three* main *research areas*:



Real-Time and Embedded Systems



Techniques and CAD Tools for Industrial Cyber-security



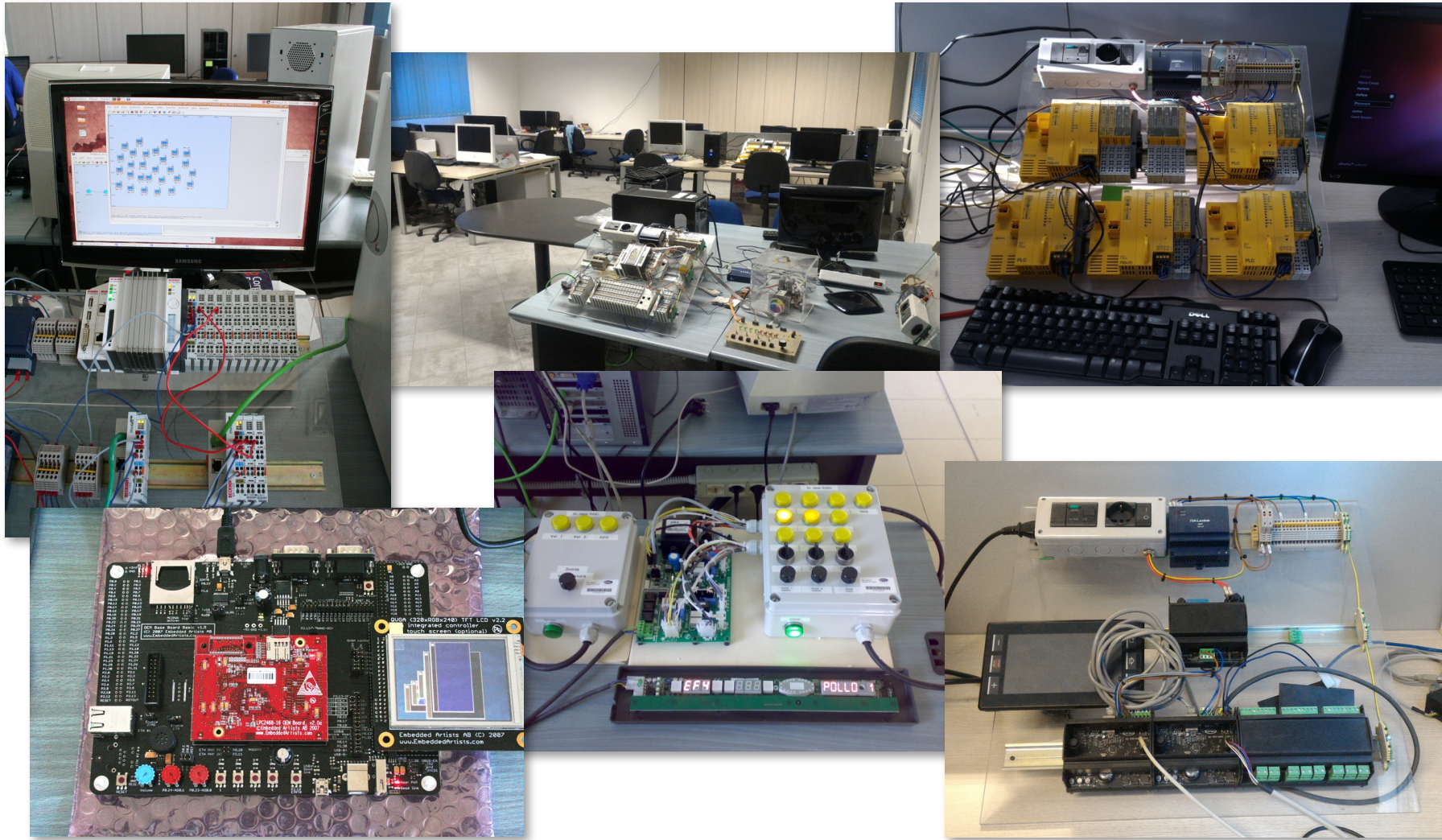
Industrial Communication Systems

CE&NG Industrial ICT Laboratory

- The *Industrial ICT Laboratory* (I²LAB) is located in the main site of the IEIIT in Torino
 - Development, experimentation and testing of advanced ICT solutions and technologies oriented to industrial applications
- CE&NG I²LAB is a member of:
 - *Italian National Association for Automation* (ANIPLA)
 - *CAN in Automation* (CiA)
 - *PROFIBUS and PROFINET International – Italy* (PI)
 - *EtherCAT Technology Group* (ETG)
 - *Safety Network International e.V.*
 - *Affidabilità e Tecnologie* (A&T)
 - *SPS IPC Drives Italia*



Industrial ICT Laboratory (II)



Recent Projects and Contracts



Network Technologies for Automation (NEAT)



Small Scale, Open Source Systems (SSOSS)



Generic Evolutionary Control Knowledge-based Module (GECKO)



Wireless FACTory and beyond (Wi-Fact)

IMET²AL



Genomic Model Predictive Control Tools for Evolutionary Plants (IMET2AL)

• **VELARCH** •



Design of a next-generation real-time software architecture for consumer appliances (VELARCH)



Analysis of security countermeasures in plants including Emerson AFC chiller units (SECAFC)



Human centered Manufacturing Systems (HuManS)

CE&NG Publications

- Some raw numbers about the group
 - Scientific papers in Journals (115) and Conference Proceedings (195)
 - Books (5) and Book Chapters (24)
 - Patents (5)
- Organization of scientific events
 - Organization of the 2006 and 2018 editions of the IEEE International Workshop on Factory Communication Systems (WFCS)
 - Program chairs in IEEE WFCS 2008, RTSI 2015, and WFCS 2017
 - Tracks chairs in many other international conferences (mostly IEEE ETFA), not counting participation to TPCs...
 - Best paper awards: IEEE WFCS 2004, AINA 2004, WFCS 2010, WFCS 2017, IEEE TII 2017
 - ABB & IEEE lifetime contribution award to Adriano Valenzano in 2013



Thanks for your attention

Any questions?

