

The Control Systems Integrator

COSYLAB

AVA Career Development Plan

Andreja Smole

Your **TRUSTED** Control System Partner



2



Customers From Nearly All Major Labs Worldwide



Who are we?

Recognition by the Community



Best Employer in Slovenia 2015 Award



Member EU-Jap Business Round Table 50 largest corporations, e.g.: Airbus, BASF, Daimler, Fujitsu, Mitsubishi, Phillips, Rolls-Royce, Siemens, Sumitomo, Toshiba, VW and Cosylab



Prime Minister Cerar with Cosylab USA team

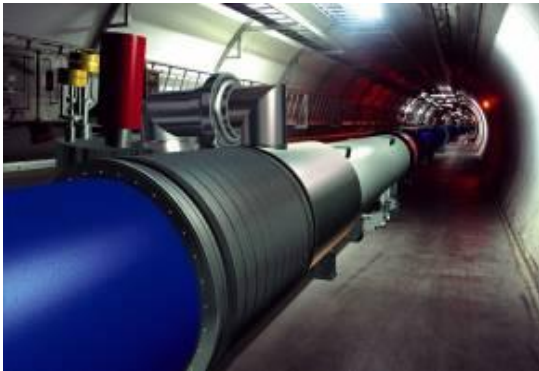


Meeting with EU VP Tajani and Chinese Minister Miao

We Participate at 6 of the 10 Largest Big Physics International Projects

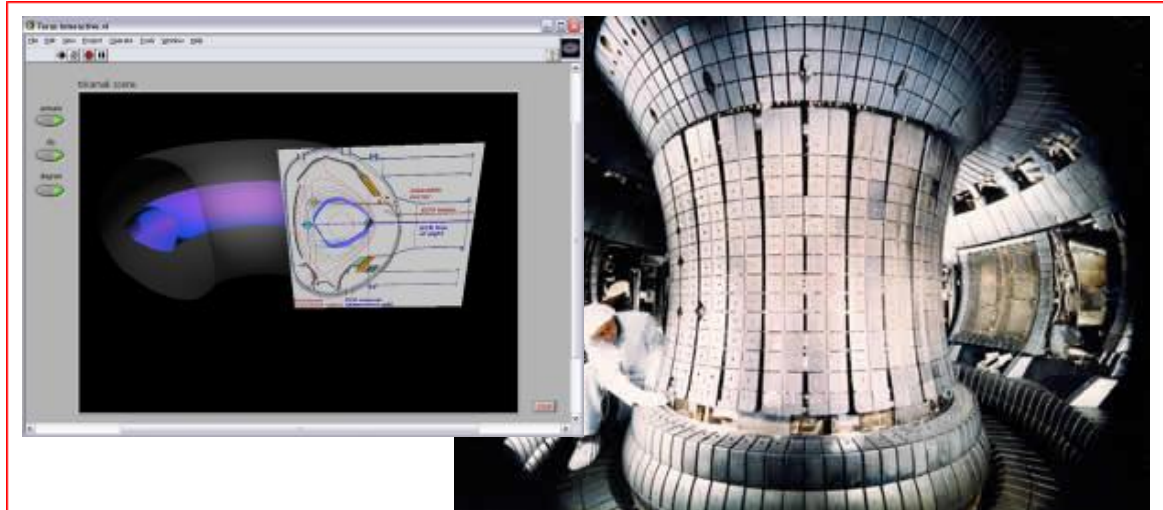


- ❑ Radiotelescope: ALMA (Munich, Atacama Desert)
- ❑ Neutron source: SNS (Oak Ridge), ESS (Lund)
- ❑ Nuclear physics: FAIR (Darmstadt), LHC (CERN)
- ❑ Fusion: ITER (Cadarache)



CERN Large Hadron
Collider

*“the most powerful
instrument on earth”*

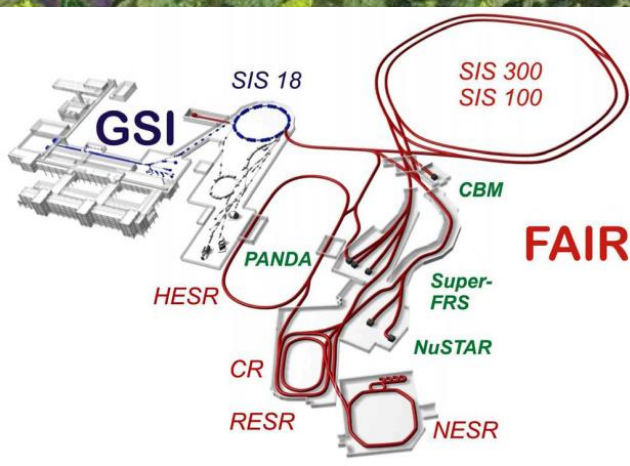


ITER

*“one of the most challenging and innovative
scientific projects in the world today”*

□ FAIR – Heavy Ion Research (Darmstadt, Germany)

- Heavy ion accelerator complex @ GSI, Darmstadt
- In kind Contribution of Slovenia: e.g. Cosylab
- The duration of the project: 2010 - 2018
- Work is ramping up in 2012 to peak in 2015
- On-site presence in Darmstadt, Germany → 1FTE
- The investment: ~1,55 GEUR

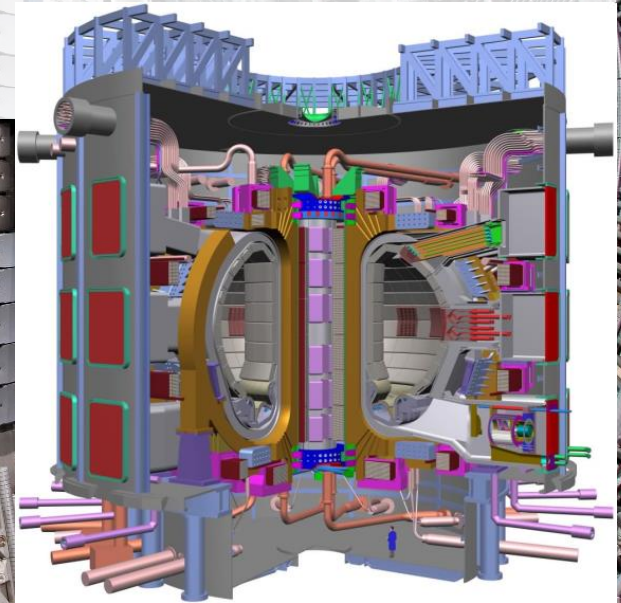


ITER – International Thermonuclear Experimental Reactor (Cadarache, France)



7

- ❑ We are creating the sun on the earth.
- ❑ ITER is an international nuclear fusion research and engineering megaproject.
- ❑ The ITER project aims to make the long-awaited transition from experimental studies of plasma physics to full-scale electricity-producing fusion power plants.
- ❑ We are part of the control grupe
- ❑ On-site work in Cadarashu
- ❑ The duration of the project: 2010 →
- ❑ CODAC control sistem for Tokamak



“one of the most challenging and innovative scientific projects in the world today”

ELI-NP (750MeV electron linac)

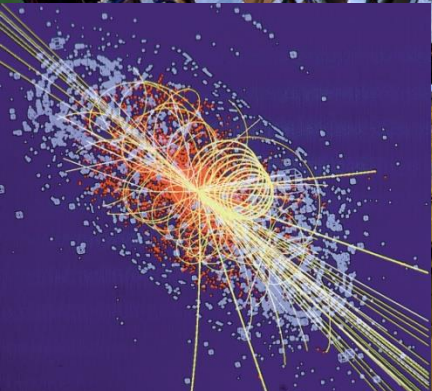
Magurele, Romania



- Provide all major aspects of the control system
- EPICS SW and HW
- Reuse of Software
- Turnkey Control System
- Lower costs and development time



- ❑ CERN (Geneva, Switzerland)
 - Is the largest, the most expensive and highest performing particle physics laboratory in the world
 - The investment: ~4GEUR za LHC, + experiments before the discovery of the Higgs boson 10,2 GEUR
 - Cosylab:
 - Integration of the hardware into the control sistem
 - Development of the drivers for the hardware



“the most powerful instrument on earth”



We are building the pyramids and look into the space

- ❑ ALMA (Atacama Large Millimeter/submillimeter Array), (Chile)
 - The largest, most complex and most expensive astronomical project
 - astronomical interferometer of the radio telescopes
 - Investment: 1GEUR
 - Komplex of 66 12-meters radio telescopes in Atacama desert
 - CosyLab – developed the core of kontrol sistem
 - ALMA is an international partnership among Europe, the United States, Canada, East Asia and the Republic of Chile



Palomar
Observatory
5,600 FT

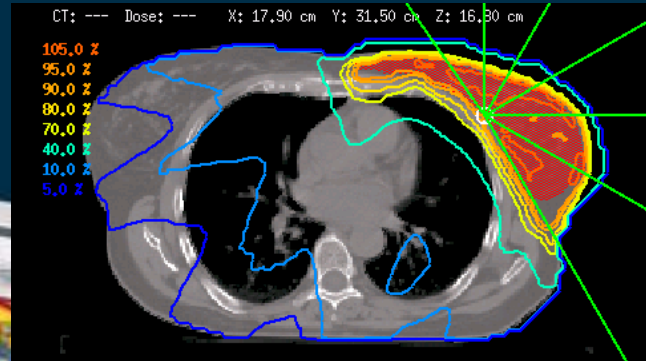
Kitt Peak
Observatory
6,900 FT

Very Large
Array
7,000 FT

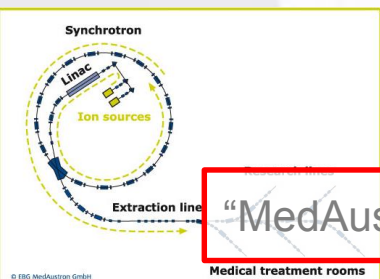
Keck
Observatory
14,000 FT

ALMA
Observatory
16,500 FT

11 The cancer therapy



- ❑ MedAustron - Cancer therapy and research center (Wiener Neustadt, Austria)
 - Ion Beam Therapy: Cancer treatment with Carbon
 - Wiener Neustadt, Austria
 - First patient treatment planned in 2015
 - The investment: ~200MEUR



“MedAustron will give cancer patients and their families’ reason to hope.”

Cancer Treatment Control For Different Systems:



- Ion Beam Therapy: Cancer treatment with **Carbon Ions**
- Wiener Neustadt, Austria
- One of 4 such facilities in the world

Proton Therapy

For Varian, Inc.

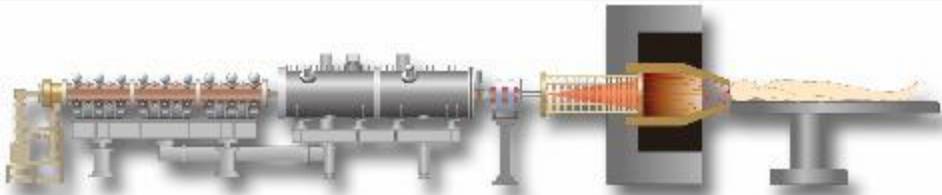
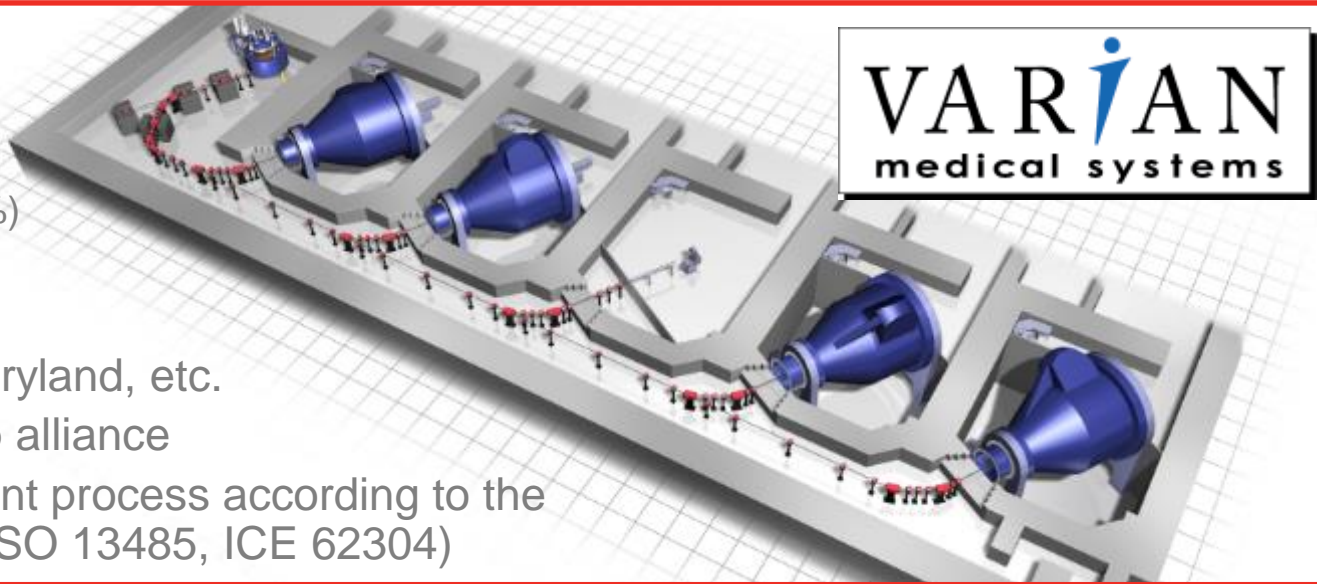
- RT market leader (70%)
- Stock: VAR (NYSE)

industrial customer

Köln, San Diego, Maryland, etc.

Strategic partnership alliance

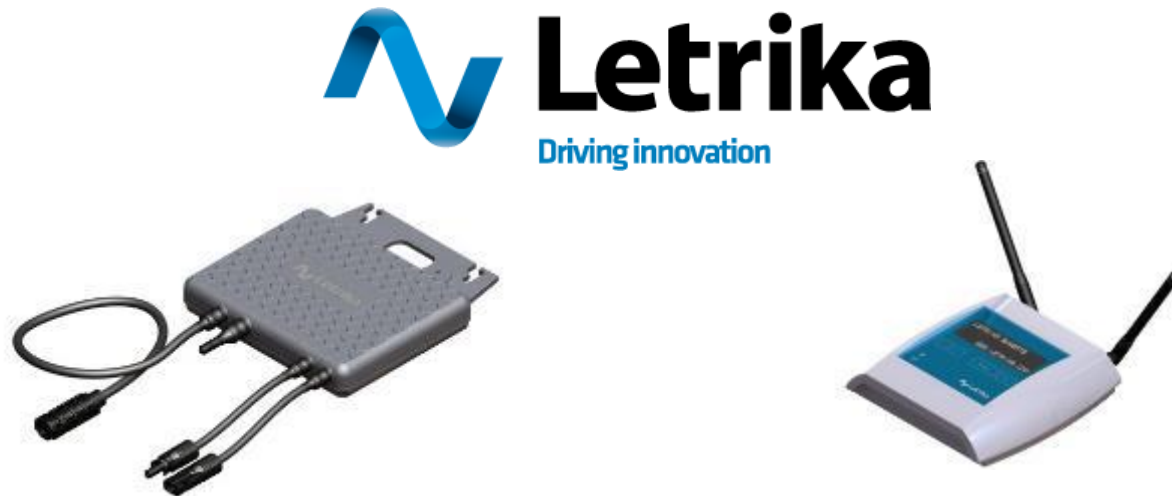
Rigorous development process according to the medical standards (ISO 13485, ICE 62304)



BNCT– Boron Neutron Therapy
Ibaraki Neutron Medical Research Center, Tokai, Japan

Investing into our future

- ❑ 2007 Evolve d.o.o. (productions of comprehensive solutions for financial institutions)
- ❑ 2008 Kyma s.r.l. (designing and undulators production)
- ❑ 2012 Letrika Sol d.o.o. (Photovoltaic micro-inverter)



We are doing good, that is why now we must think ahead

How Do We Do It?

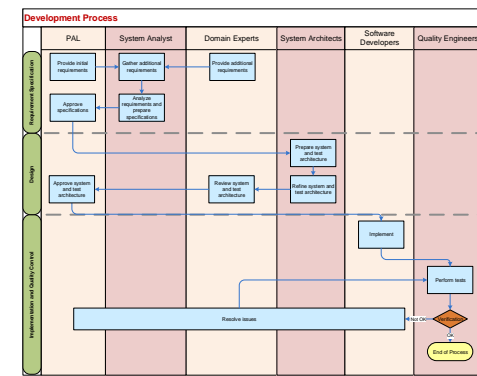
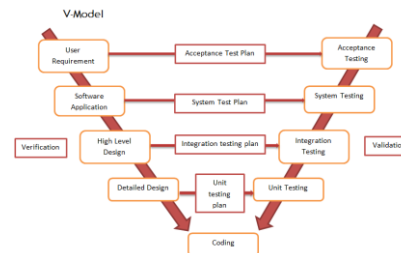


PEOPLE

- Hiring only the best people
 - 11 PhDs, tight link with Universities (also abroad)
 - We know how to recruit best people, also in our branches
 - own education and training system (CosyAcademy)
 - strong company culture and great employee loyalty
- Know and understand the science and the scientific community

PROCESS

- Standards: ISO9001, ISO13485, ISO14971, IEC62304
- Development process tailored to accelerator and medical control system development



National and EU framework research projects



- Horizon 2020 project AVA (Coordinator: University of Liverpool, Cosylab - partner)
- Horizon 2020 project ARIES (Coordinator: CERN, Cosylab - partner)
- Horizon 2020 project [MYRTE](#) (Coordinator: SCK•CEN, Cosylab - partner)
- Horizon 2020 project OMA (Coordinator: University of Liverpool, Cosylab - asociet partner)
- Eurofusion project POWER PLANT PHYSICS & TECHNOLOGY PROJECTS - WPDC: Diagnostic and Control.
- M-ERA-NET2015 - Thnology for high-quality piezoMEMS – **ENPIEZO**

- Finished EU framework projects
 - FP7: LAsers for Applications at Accelerators - LA3-NET – AP
 - FP7: optimization of Particle Accelerators - oPAC – PP, (1.12.2011->2015)
 - Mnt-era.net, Transnational Call 2011: Diagnostic chip based on OLED – PP

- Interesting to participate on any further initiatives**

AVA Career Development Plan – ESR at Cosylab



- ❑ training in **control system technologies**
 - less general programming courses/learning
 - **hand-on experiences** to provide expertise directly **applicable in the big physics environment**
- ❑ individual (coaching and mentoring) through Cosylab Academies
 - EPICS Academy, Java Academy, LabVIEW Academy, FPGA Academy, Tango Academy, Project Management Academy
 - control system courses, programming languages, machine physics seminars
- ❑ advanced management education
 - IEDC-Bled School of Management



Goals



- ❑ become an **expert in Big Physics control system technologies**
- ❑ become specialist for at least one area:
 - timing system, protection system, diagnostics and general design technologies, integrations and control system packaging, medical accelerator technologies, fusions control system technologies
 - internal regular weekly technical seminars
 - accelerator conferences and workshops
 - on-site developing, commissioning, testing



Slovenia and CERN



**Slovenia to enter the Associate Member
State family of CERN**



THANK YOU!

Andreja Smole

andreja.smole@cosylab.com

COSYLAB

www.cosylab.com

Your **TRUSTED** Control System Partner

