



RADSAGA ESR12 progress

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General idea about ESR12

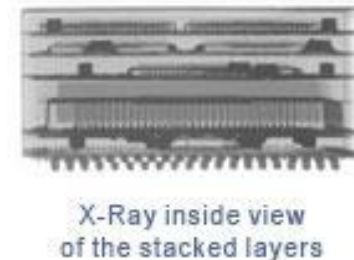
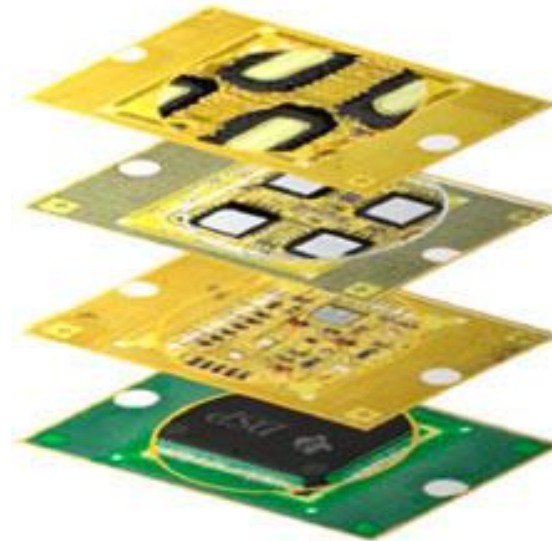
- ESR12 in RADSAGA – started in January 2018
- Joint project of 3D-Plus company and IES/RADIAC team
- Supervisor: Frédéric Saigné
- Company supervisor: Pierre-Xiao Wang
- Objective of my work: to determine an optimal strategy of radiation tests for full System-In-Package (SiP) modules or Individual PCBs with facilities available in the RADSAGA consortium.
- ESR12 as one of system-level topics in RADSAGA





Going into details

- Objective of my work: to determine an optimal strategy of radiation tests for full **System-In-Package (SiP) modules** or Individual PCBs with facilities available in the RADSAGA consortium.
- SiP:
 - compact system
 - generally based on COTS components (not rad-hard)



- In principle: how to test systems?



My current work

- First approach: tests of Point-of-Load DC/DC converter in CHARM facility
- Already available test results:
 - TID/SEE component level tests for all active components of PoL
 - SEE tests of 2D version of PoL
- What devices do I want to test:
 - 3D modules of PoL
 - 2D versions of PoL, also with slightly changed design (e.g. some ICs changed, some protection circuits removed)
- What do I expect:
 - to observe what is the system response for radiation, comparing to component-level tests
 - to observe how different versions of PoL design behave in radiation environment
 - how different hardening techniques impact on system response



Dziękuję za uwagę!
(Thank you for your attention!)

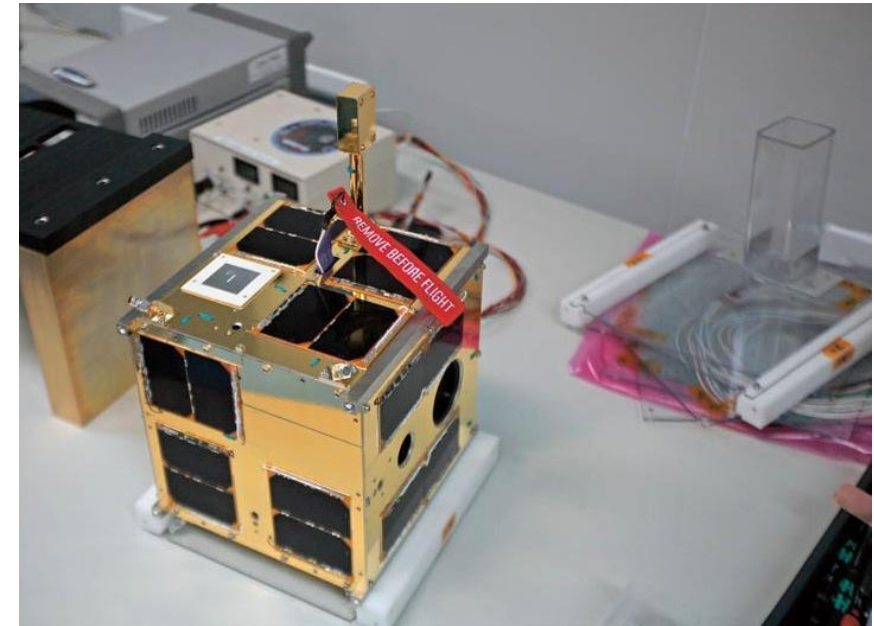
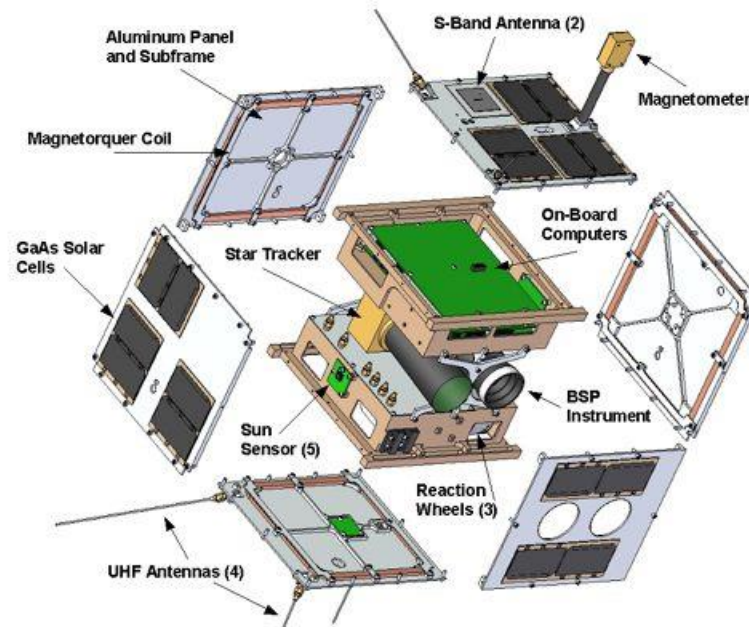


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Backup slides

My background

- 2011-2014: Space Research Center of Polish Academy of Sciences, project BRITE-PL:
 - subsystem and system level tests of nanosatellites (including TVac, thermal, vibration tests and launch campaign)



My background

- 2011-2014: BRITE-PL (continued): satellite operating and training of satellite operators



My background

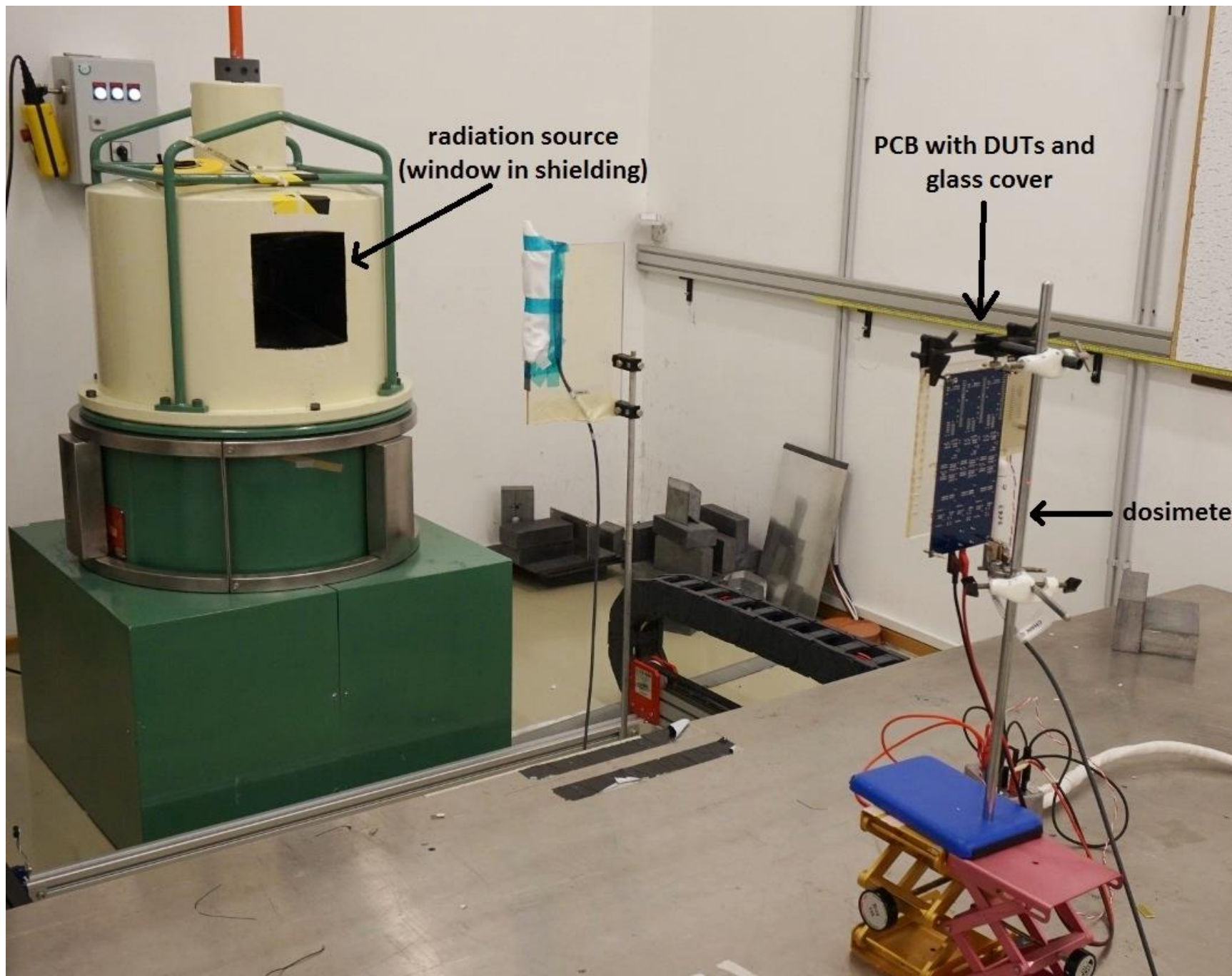
- 2012-2014: Astri Polska (subsidiary of SRC PAS and Airbus D&S): PICARD project: on board computer for CubeSats (technical management)
- 2014: Warsaw University of Technology - Master Degree: JTAG-based fault-injection tool for MicroBlaze microcontroller

My background

- 2014-2017: SRC PAS – OPS-SAT
- HW engineering and project management in development of subsystem for ESA CubeSat
- opportunity to perform radiation tests of electronics for my design:
 - Co-60 TID tests of RS422 transceivers (ESTEC facility)
 - LINAC gamma rays tests of whole PCB design (my first system-level radiation test 😊)



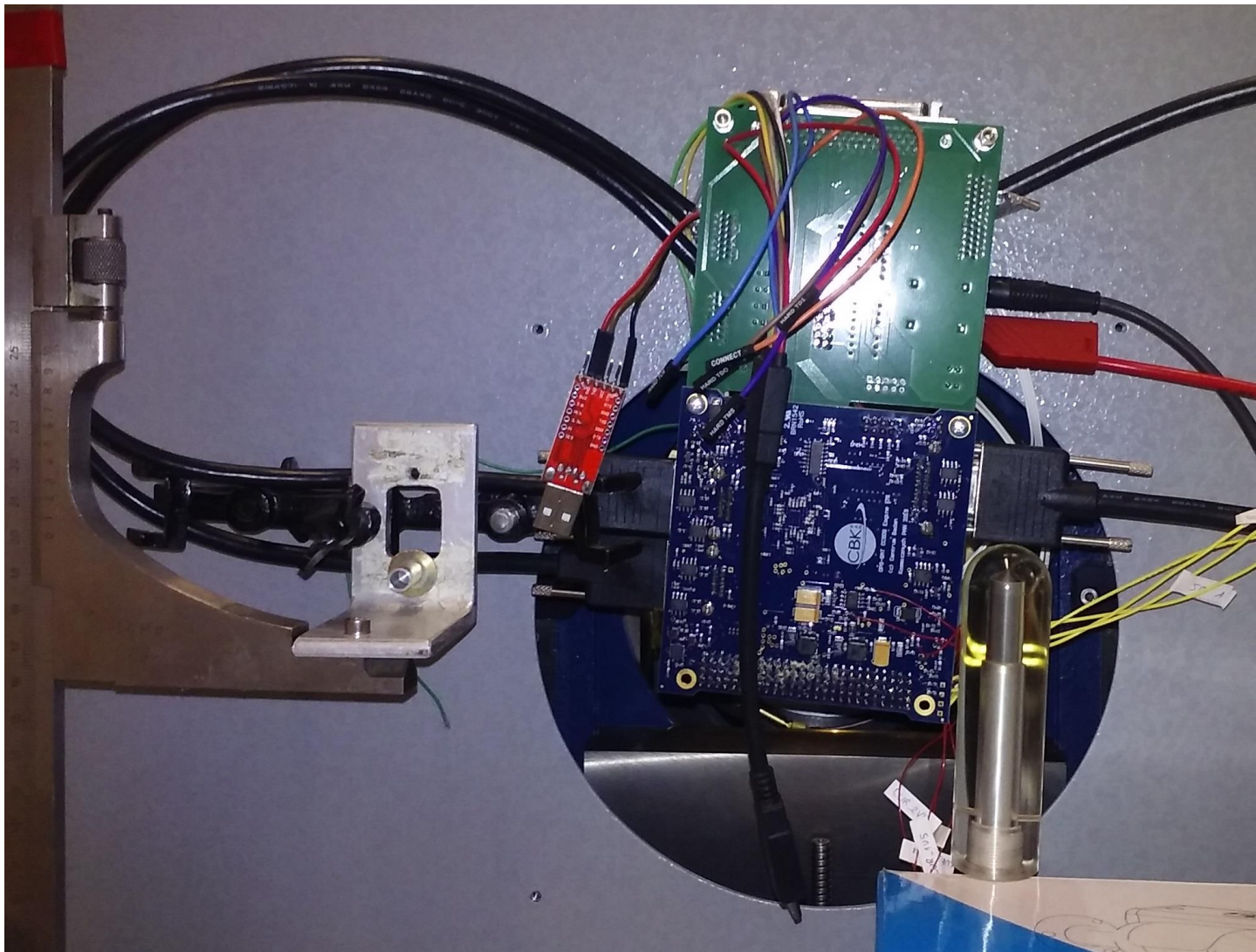
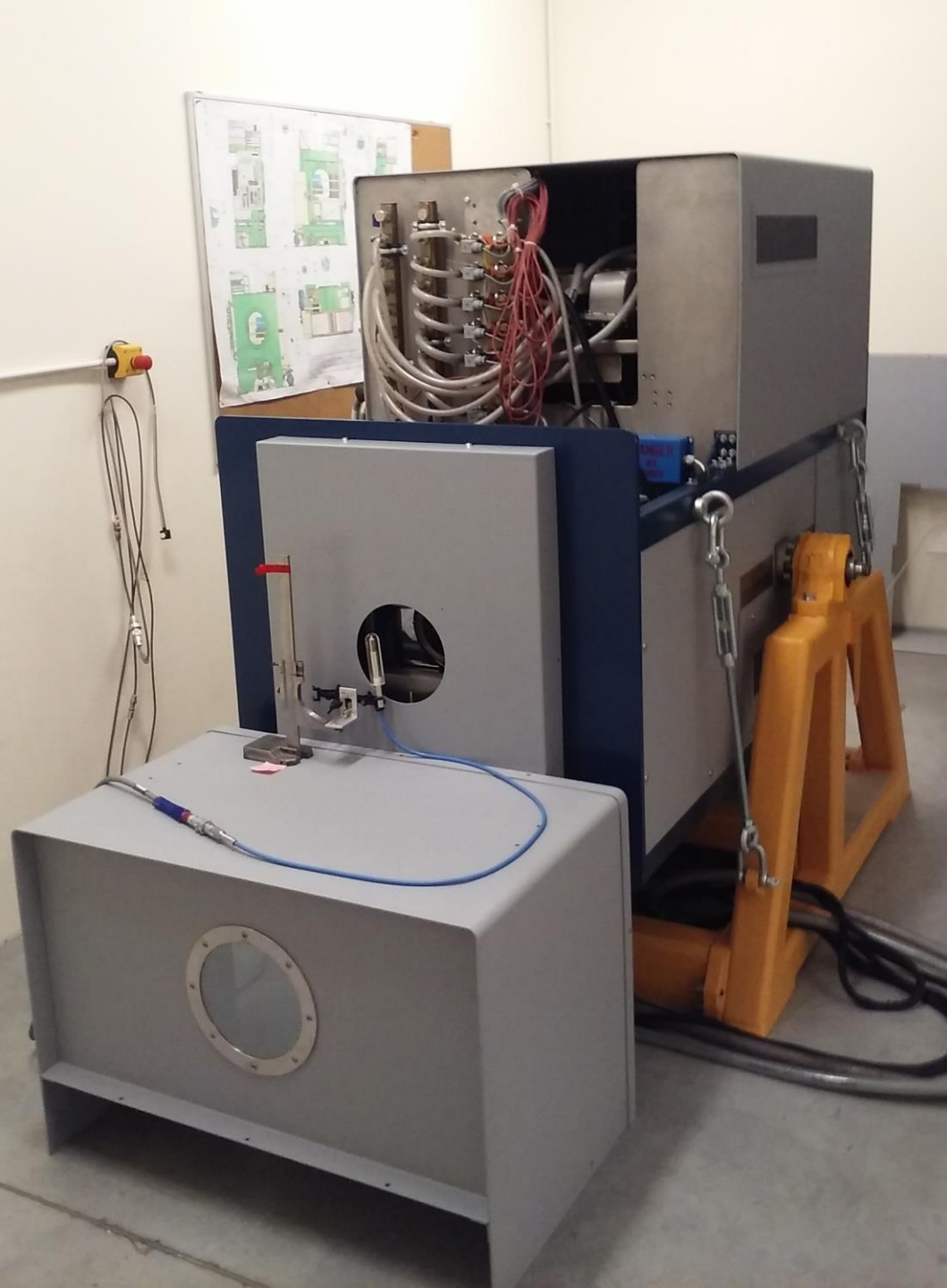
RADSAGA



radiation source
(window in shielding)

PCB with DUTs and
glass cover

dosimeter



My background – to sum up

- test engineer, HW designer and system designer in satellite missions
 - also project manager in ESA project (but didn't like it much)
 - familiar to radiation effects - mostly from the point of view of designer of satellite subsystems
 - some experience in preparing radiation tests
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- ... and I will be happy if some of this would be helpful!