



Samenwerking met een kennisinstelling ten behoeve van het testen van instrumenten

Symposium Big Science with Small Companies

July 5th 2017

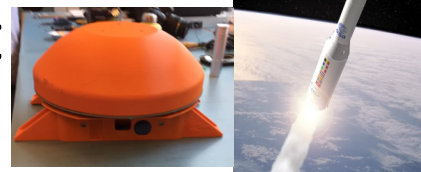
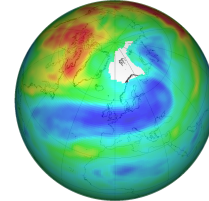
André Bos S[&]T

Outline

- Introduction of S[&]T
- Testing of complex systems: EGSE
- SW-defined systems
- SW-defined EGSE
- How this fits into “Technology Transfer & Valorisation”

Intro

- S[&]T
 - Technology company: sensor system development
 - Approx 100 people
 - (Embedded) Software as a base for our activities
 - Data processing Earth Observation data
 - Satellite Navigation
 - Space system development



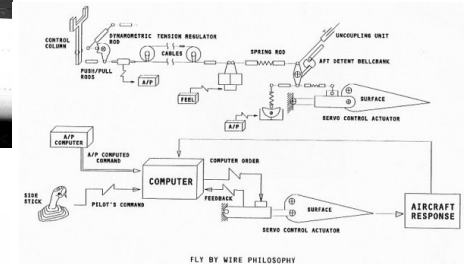
Testing of complex systems

- Big science “needs” ever and ever more complex sensor systems
- Before put into practice, they need to be thoroughly tested
 - Mechanical / Optical / Electrical Ground Support Equipment (MGSE, OGSE, EGSE)
 - GSE equipment costly
- SRON and S[&]T’s common goal is to make EGSE cheaper:
 - **SW-defined** EGSE



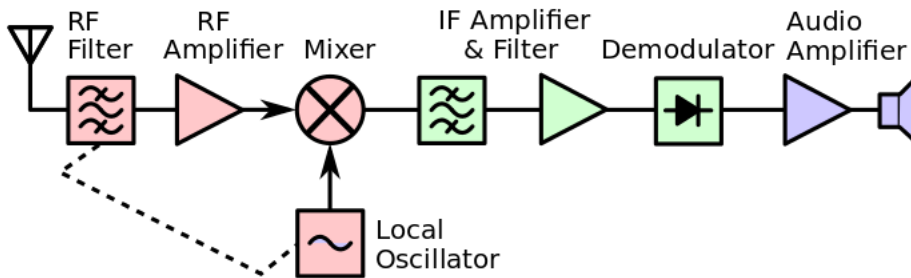
SW-Defined “X”

- Hardware replaced by software
 - Fly By Wire
 - Car suspension
- Trend: SW defines the system’s functionality
- Aircraft:
 - now interceptor, next reconnaissance, next close air support, ...
 - Just by switching the SW-configuration
- Cheaper / better Performance / Flexible / More Functionality



SW-Defined Radio

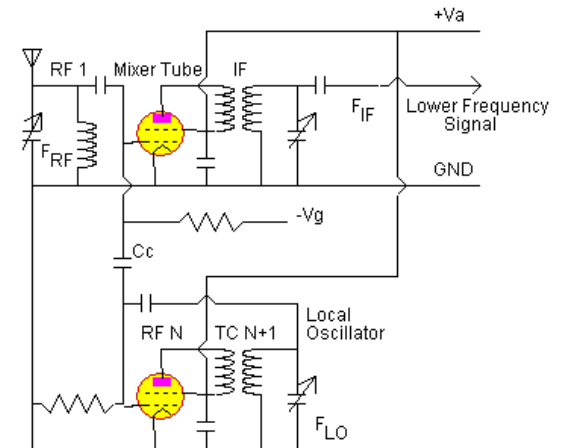
Traditional Radio Design



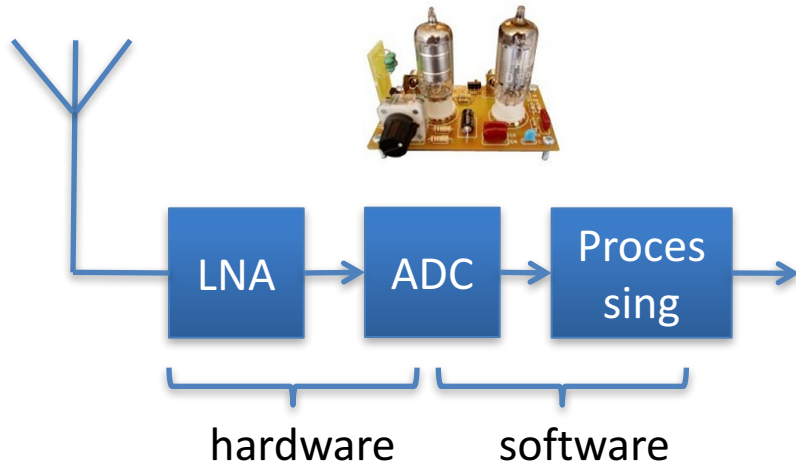
Super heterodyne radio



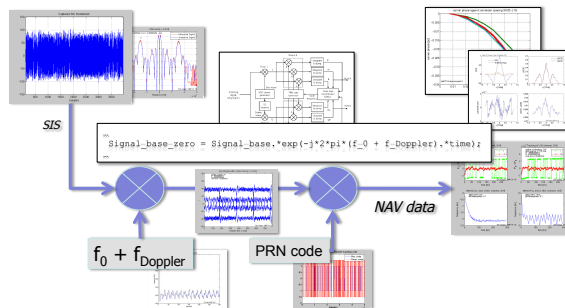
Armstrong's Super Hetrodyne Discovery



SW-Defined Radio Implementation in SW



- Easy to make advanced receiver concepts
- Easy to reconfigure the radio
- Easy to combine information
 - GPS receiver + INS
- Easy to make the impossible possible
 - LOFAR



SW-Defined EGSE

- As in SW-Defined Radio
 - Must be simple to switch from one System Under Test to another
 - Must be easy to reconfigure during testing campaigns
 - Must reduce development costs

SW-Defined EGSE



From

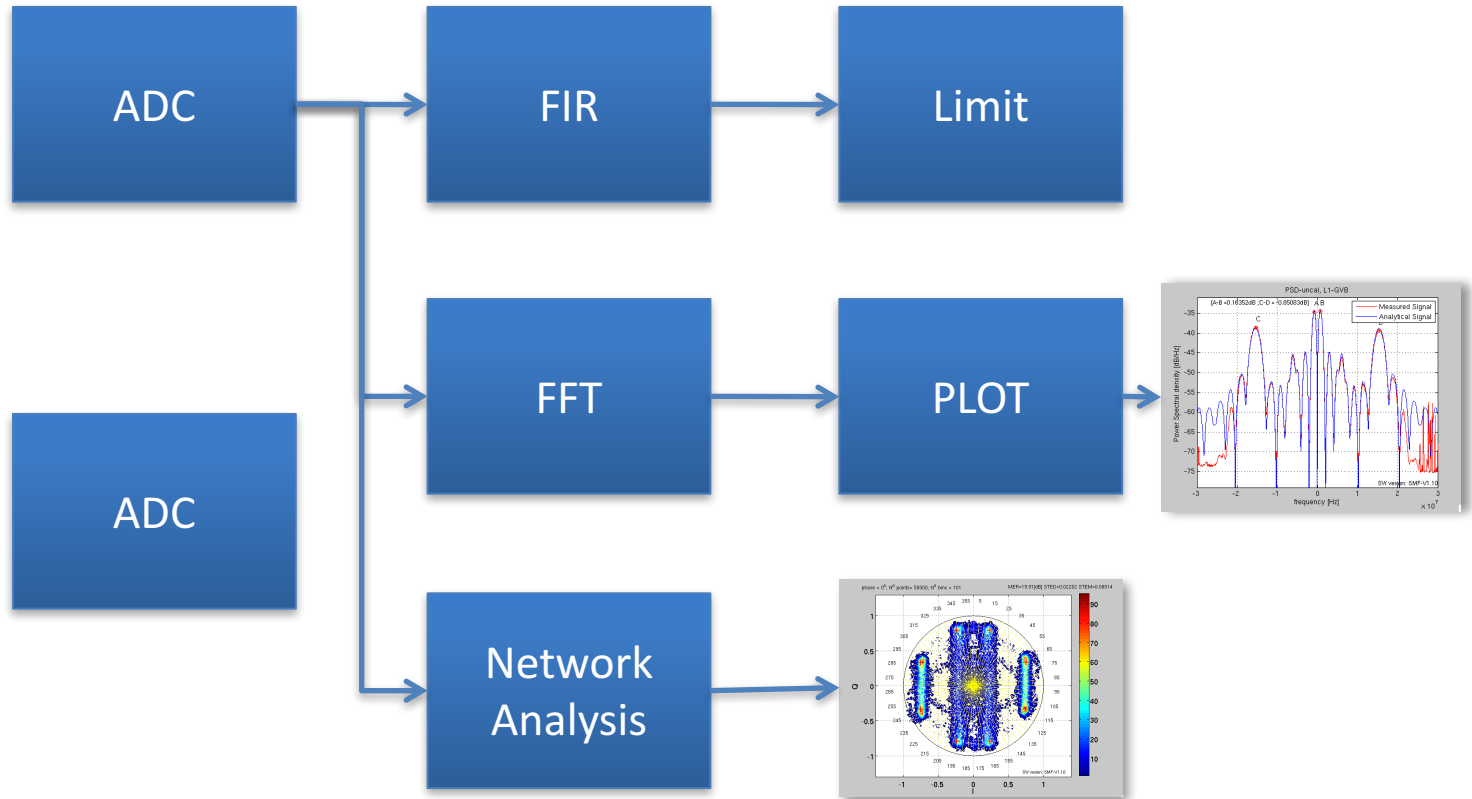


To

Ideally



SW-Defined EGSE



Technology Transfer & Valorisation

- SRON and S[&]T need flexible EGSE
 - SRON to test their highly complex detectors, systems
 - S[&]T to test their (space) systems and provide support to big-science missions
- As soon as you can put functionality in SW a system can be easily transformed for one purpose to another
- Co-development of SW-EGSE (Martin Grim)
 - Thanks to the *Technology Transfer & Valorisation Programme*

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