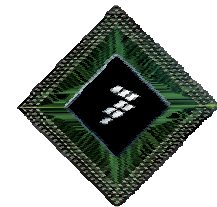


Nearly fully automated extraction of VBIC models by optimization of special rf-goals

Ralf Reuter

**Freescle Halbleiter GmbH –
TSO Technology Solutions Organization
RF/IF Innovation Center Munich
Schatzbogen 7, 81829 Munich, Germany**

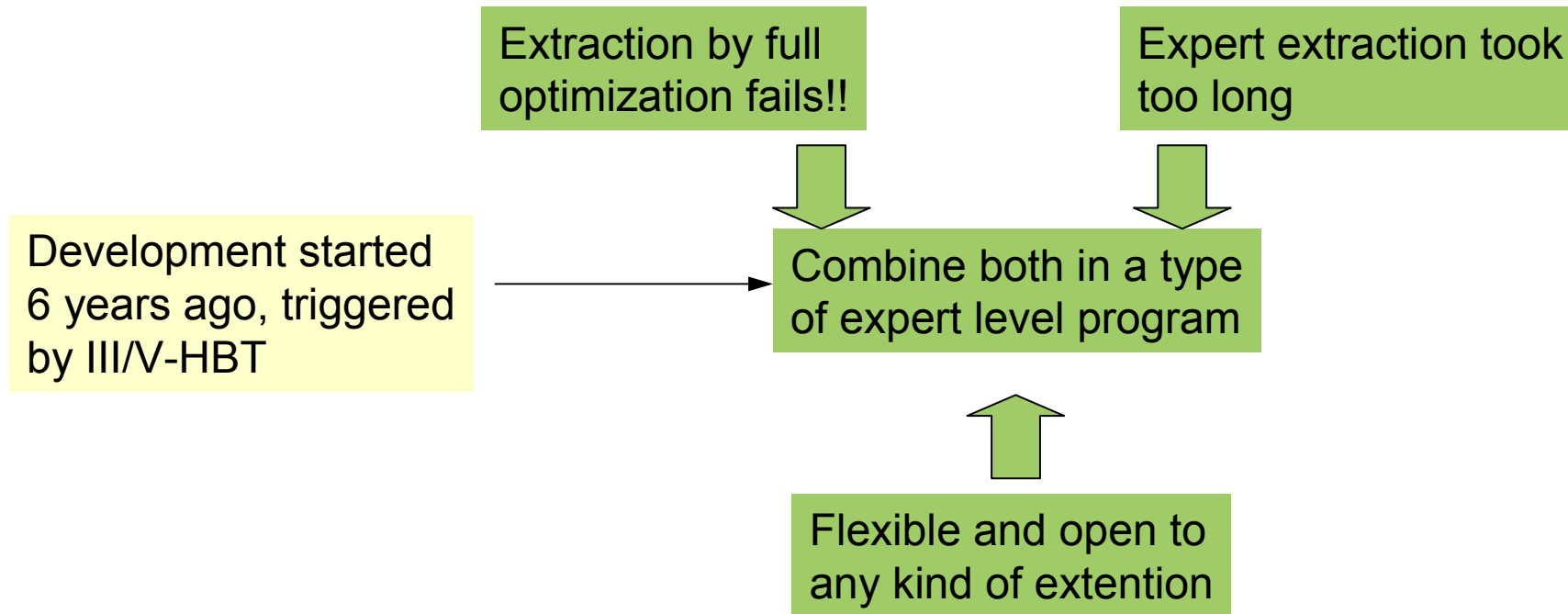


Bipolar User Meeting, 27 October 2006

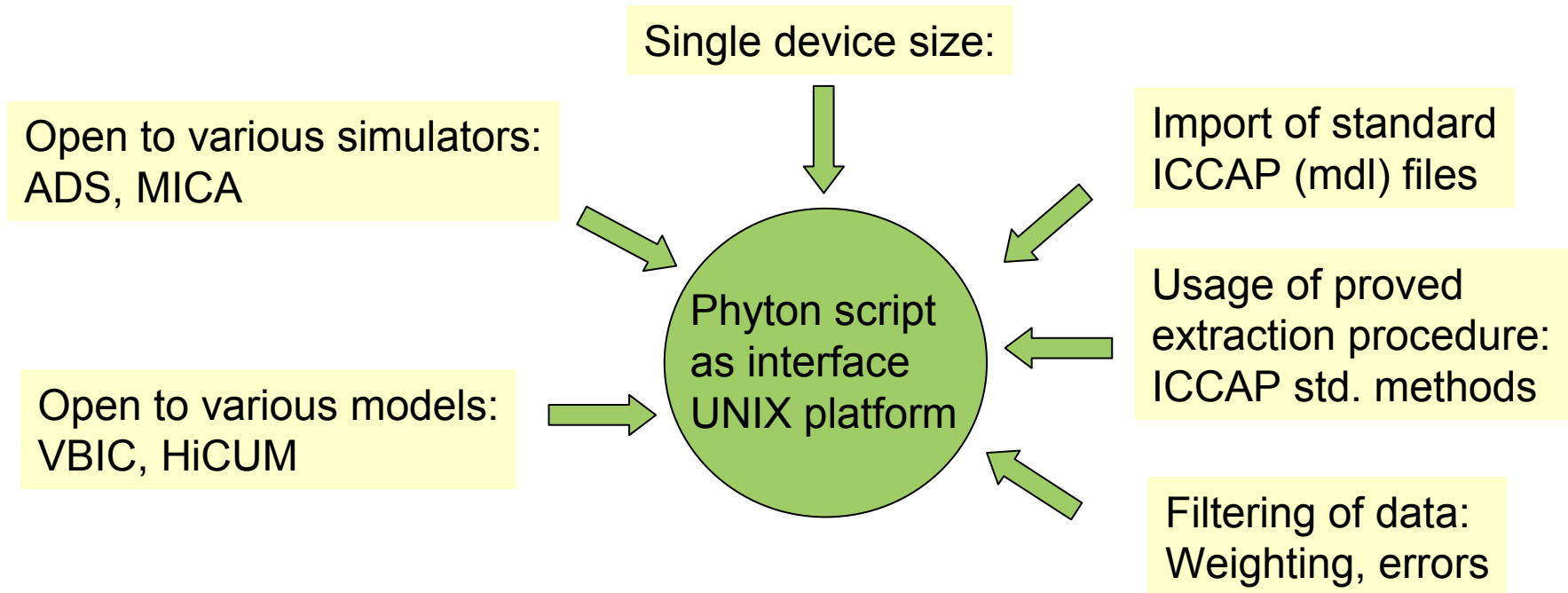
Discussion

- ❑ Standard procedure needs a lot of measurements and modeling experts
 - ❑ Sometimes special structures are needed
 - ❑ Statistic needs intensive PCM data from various lots/fabs
-
- ❑ Customer immediately like to have models
 - ❑ Maybe only 1-2 workings days available
 - ❑ Stronger focus on rf-data (noise, power)

Advanced Modeling Scheme

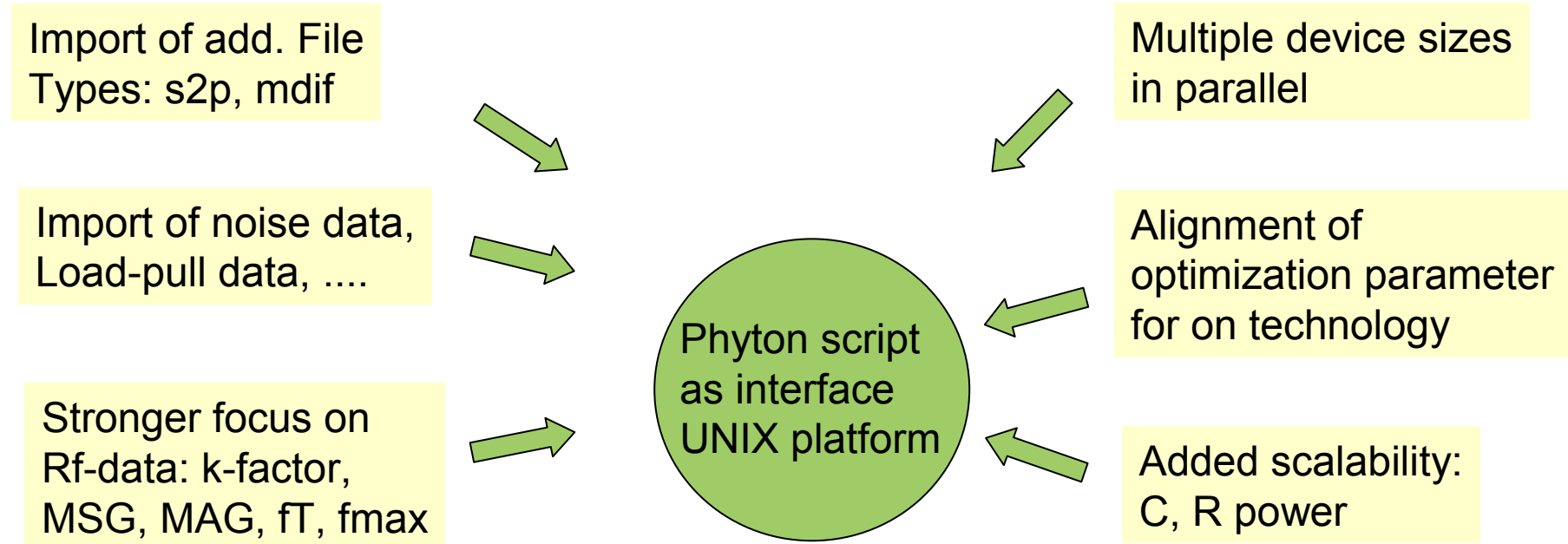


Standard features



➔ Methods often fail for high-GHz SiGe-HBTs

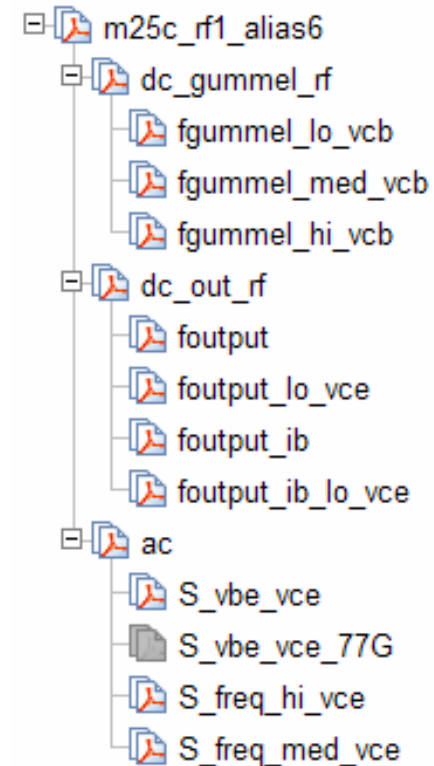
Enhanced features



- ➔ Combination of mathematics and expert knowledge works fine
- ➔ Over weekend extraction of models

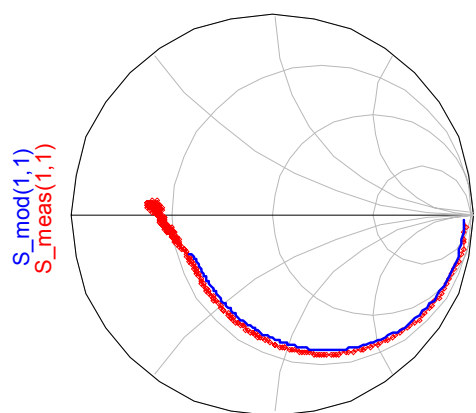
Customer Data

- ❑ pdf-file with comparison of measured and modeled data to our (internal) customer
- ❑ Creation of ADS (1st-priority) and cadence lib
- ❑ Combination with statistical data

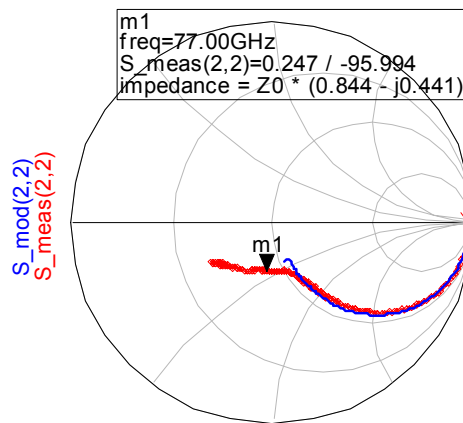


Example

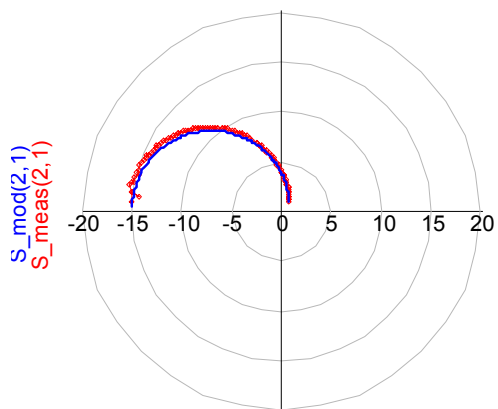
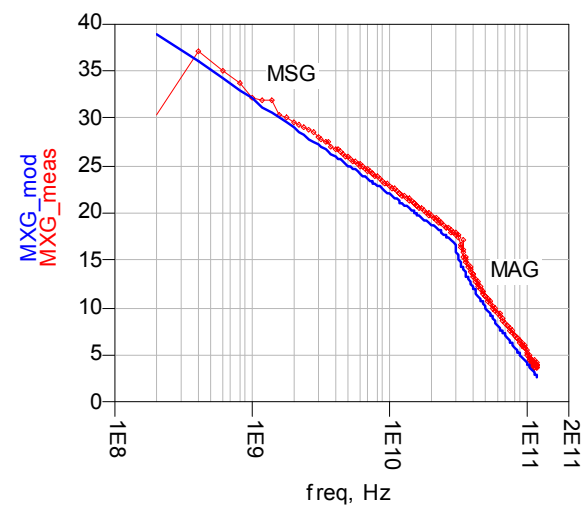
VCE = 1.5 V, VBE = 0.88 V



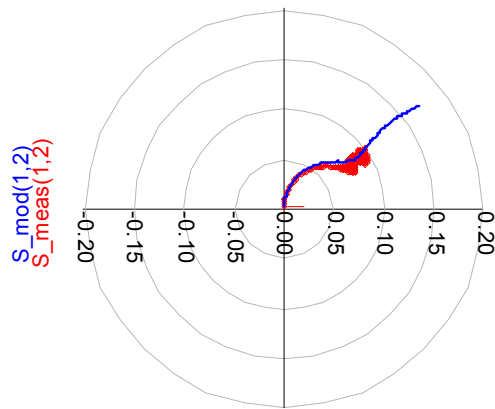
freq (200.0MHz to 120.0GHz)



freq (200.0MHz to 120.0GHz)



freq (200.0MHz to 120.0GHz)



freq (200.0MHz to 120.0GHz)

