

Parallel SSDP / DSP related ESA activities

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Consolidation of requirements and independent evaluation of the MPPB / SSDP prototype IP is considered essential for achieving a product that meets the needs of future users:

Massively Parallel Processor Breadboard - MPBB (completed)

- Development was performed by RECORE Systems b.v.
- **Independent evaluation performed by Astrium** (now Airbus D&S) UK
- Evaluation report provided to ESA, then RECORE, TAS, RSA / Univie
- RECORE has already addressed some of the identified weaknesses in a firmware update, used in MPPB box provided to RSA/Univie for NGAPP

Next Generation Astronomy Processing Platform - NGAPP (completed)

- **RSA and Univie have tested MPPB**, provided feedback to ESA and RECORE Systems b.v. / TASE
- Taken into account in SSDP development

Scalable Sensor Data Processor - SSDP (development ongoing)

- **TASE (= SSDP prime contractor) performs assessment** of MPPB in SSDP req. consolidation phase
- Outcome will feed into SSDP development

Evaluation of updated MPPB / SSDP IP by Airbus D&S UK (soon / 2014)

- Small contract to be implemented in late 2014 (proposal received, nego ~October 3rd)
- **SSDP IP with most (ideally all) improved features will be evaluated**
- Outcome will feed into SSDP

After successful developments of MPPB, DARE+ Application ASIC, and development of SSDP prototypes / SSDP FM RFQ ongoing, additional elements of an SSDP eco-system need to be developed:

Software Development Environment (SDE)

- So far developed by RECORE Systems b.v. – status as presented
- Provisions in SSDP contract and FM CCN for added SDE capabilities
- Efforts to support future evolution are made (GSTP ?)

Software & DSP libraries

- SSDP API developed in SSDP contract, partially re-usable from MPPB, quality to be improved
- Basic library of DSP kernels exist, but needs to be expanded
- **Concept of lean OS** has been prototyped => see NGAPP presentation
- **Significant effort needed for S/W development, maturation, qualification (TRP? GSTP?)**
- **For DSP kernels: ESA led effort to pool resources by establishing OSS DSP kernel library (ESA OSS license). First activity: NGAPP**

Evaluation hardware and SSDP DSP boards

- **2 versions of evaluation board developed in SSDP contract:** simplified (partially populated) and full-fledged (fully populated), will be commercially available with defined ceiling price
- Study for future SSDP based DPU board: => see NGAPP presentation

In parallel to SSDP prototype development, independent test / evaluation of the MPPB / SSDP functionality is possible for industry via temporary loan of an MPPB box from ESA:

3 MPPB boxes have been built in total

- #1 is used at RECORE for supporting SSDP development
- #2 is used at TASE for evaluation and also for supporting SSDP development
- #3 will be used by Airbus D&S for independent evaluation ca. 10-2015 to 12-2014
- **From Q1 2015 MPPB box #3 will be available on loan to interested future SSDP users**
- MPPB boxes may be provided as ESA CFI to future activities



How to get an MPPB box from ESA

- **Contact R. Trautner / TEC-EDP**
- Typically temporary loan for **few months at no cost**
- **Lean evaluation report** on functionality, strengths / weaknesses **expected**
- **SDE & software to be licensed from RECORE Systems b.v.**

