

ESCCON 2011

European Components Initiative Part 1: ESA M. Nikulainen, L. Marchand 16th of March 2011

European Space Agency

European Components Initiative Introduction



ECI started in 2004

- Combined effort of the Agency supported and complemented by National Initiatives by the Member states, most notably CNES (F) and DLR (D).
- ECI Phase 1 (2004-2010)
 - Reduce the dependence on the supply of EEE components from sources subject to export restrictions
 - Target was "Pin to Pin" compatible replacements for US ITAR devices.
 - Key developments: Power Mosfets, Fuses, Relays, MMICs, Mixers, PLL, 1553.
- ECI Phase 2 (2009-2011)
 - Competitive alternatives (cost and time to market) in Europe.
 - Key developments: MMICs, PLL(s), Capacitors, Fuses, Optical connectors. FPGA(s).
- ECI Phase 3 (2011-2014) (To be approved)
 - Access to strategic components and technologies
 - Key developments: DSM, large FPGA, High Pin Count assembly Technologies.

For full listing of components developed or in development through the European Components Initiative see:

.....https://spacecomponents.org/public/eci/

Typical Strategic New Component Technology Timeline from R&D to Commercialization



Investment must be timed carefully in order to meet the time-to-market requirements of the customers.







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Between 2000 and 2006 the number of European components used in European satellites had steadily declined

Today the Trend is turning: e.g. European (47%) to non-European (53%) EEE parts used on the ESA SWARM project.



Challenge to commit end-users for ECI Parts !

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ECI: Market Success Stories



- ATMEL (F) : AT697(E&F) microprocessor
 - Rapidly increasing world-wide sales
- Schurter (CH): MGA-S Fuses (PCB, SMT Mount)
 - 27000+ Fuses (Spain, GB, Germany, France, Italy, USA, India, Israel, Russia).
- **Peregrine (F):** ITAR free PLL (3.5 Ghz factional N):
 - TAS-F, NT space, TESAT, TOPREL, Spur, Astrium.
- UMS (F) : European Schottky diode BES Process
 - 100+ wafers manufactured
- **CTM (F):** Hybrid Mixers (MXF-01, MXF-02, MXF-03)
 - TAS, TESAT, Mier, CNRS, Sentinel 3, Galileo, Exomars
- **OMMIC(F)** : MMIC Mixers (CGY2180, CGY2182, CGY2183)

- "Pin to Pin" replacements difficult to sell to existing designs.
- The pace of terrestrial component developments is accelerating and consequently product life cycles are getting shorter, leading to obsolescence issues. Need to intensify dialogue with technology providers for terrestrial applications.
- Need to streamline the governance to get ECI activities kicked off earlier and have products available when required by the market, active dialogue with member states.
- Need to continue working together with other Agencies, Industry and Global partners, to maximise our resources and budget available.
- Need to invest time and money into investigating the potential and testing commercial technologies.
- Need for balanced investment across the entire EEE Component supply capabilities.

Balanced Investment - Required Capabilities/ Competencies



e.g. ATMEL (F), STm (I), TESAT (D), Alter (ES)



Plus start cooperation with foundries in Far East



- ECI 3 work-plan
 - created by ESA, CNES, DLR, Component manufacturers and end users
 - Work-plan prioritised and endorsed by SCSB.
 - ESA TECNET has confirmed the importance of the highest priority items to ESA future programmes.
- Approval Process
 - 2010 : IPC Information note / Informal meeting with IPC delegates, ESA, Eurospace, System Integrators and Equipment suppliers.
 - The importance of the strategic EEE Components and the need for long term stable and sustainable funding for EEE-Components has been unanimously agreed !!.
 - 2011: Mechanism for providing short term funding (2011-2012) has been agreed at the Administration and Finance Committee (AFC), and "Decision paper" submitted to ESA Council for the short term funding **and** inviting ESA to build up a proposal for long term stable and sustainable funding for Ministerial Council in 2012.
 - Council meeting is TODAY !!