

THALES

Building a future we can all trust



Consultation workshop on open-source hardware and RISC-V

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Digital trend in data processing for embedded systems

Data processing is moving to the Edge

“By **2022**, about **75%** of **all data** will need to be analyzed and processed **at the periphery**” **Gartner**

“By 2025, the **EDGE AI chip market** will **outstrip** Cloud AI Chip”, **ABI Research**

Software Defined Everywhere

IT/OT/embedded convergence and edge computing increase the need for **Software Defined Hardware**

Safety & Security

The **use and the certification of COTS components is more and more difficult** or even made impossible by their level of complexity

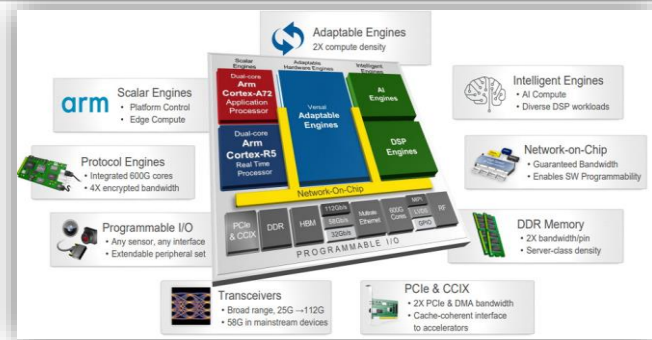
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Genericity through specialization



Credit: Apple

**Dennard and Moore
Laws are almost over**



Credit: Xilinx

General purpose SoCs embed more and more specialized hardware accelerators (engines).

Data processing, moving out of data center, mandates very efficient hardware to do the same job

Leading to a Specialization Paradox

The more a SoC is generic, the more it provides specific engines

OpenHW vs legacy developments on niche markets

1

The use of generic SoC implies to use only a (small) part of the silicon, wasting the rest

2

Niche markets (specially with safety and security constraints) can **less and less rely on mass market offers**

3

However, the traditional development of specialized hardware is slow and expensive

- *Setting up **legal agreements** is a lengthy process*
- ***Export control risks** must be tackled and mitigated*
- *All stages of the **development** strongly rely on **manual processes***
- ***Validation** of a design (especially on high technology nodes) **is very complex***

Why not embedding only what you need for your applications through more automated processes ?
Software Driven Hardware

4

OpenHW vs legacy developments on niche markets

*Open Source Hardware is not only about solving problem in another way,
it's also an opportunity to tackle a class of unsolved problems*

EC to foster a coordinated Open Hardware approach

**Building common
state-of-the-art
foundations**

Support the development of **common trustable & reliable foundations** (E.g. RISC-V cores and IPs for SoC).

Support SMEs to use these foundations

**Software Driven
Hardware**

Moving from Software Defined Hardware to **Software Driven Hardware**, by the development of new approaches

Shorter development cycles to allow domain specific components

**Leverage de-facto
standard**

Open Source may be a strategy to impose solutions

Being an actor of the Open Source Hardware **is not an option**

Always consider existing solutions before creating a new one

**Leverage EU Electronic
production industry**

Software Driven Hardware will allow less dense components,
eligibles to be **manufactured directly inside the EU**

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Make it happen

Support a multi-industrial development model of **reliable and trustable European Open HW assets**



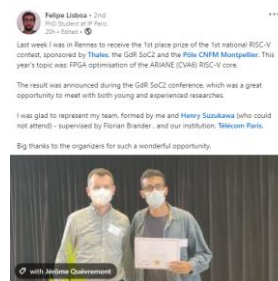
chipignite provides you with a pre-designed carrier-chip along with automated open-source design flow making your own chip easy and affordable

- Rapid design implementation leveraging an automated digital design flow and full chip templates
- Prototype and early volume fabrication for the SKI330 open PDK



Make **simpler tools** and conditions to access **the MPW-like programs**

Leverage **academics** and OpenHW communities to build **new ways of developing Software Driven Hardware**, engage students into OpenHW



Build hardware **AND** software tooling. The best hardware without efficient software is useless

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