GoIT: European initiative for free and open silicon

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In 1979 Carver Mead and Lynn Conway published a textbook: “Introduction to VLSI Systems”, transforming education as it became the cornerstone for teaching VLSI systems worldwide.

With the increasing complexity of ICs, electronic computer-aided design has become an integral part of the design, validation and verification, leading to ever-increasing productivity.

In 1986 Morris Chang piloted the first semiconductor wafer fabrication plant, currently known as TSMC, which shaped the modern fabless semiconductor design business model.

The nineties establishment of open-standard, on-chip interconnect specification boosted the reusability and modularity of IC designs, leading to the modern System-on-Chip.

- Facilitating open-source silicon chips community
- Educating policymakers
- Releasing open PDKs
- Opening design toolchains
- Improving IP quality and reusability
- Establishing trustworthiness
Consortium

- G.A. 101070660
- **01.09.2022. - 31.08.2025**
- **1.9M EUR** (Horizon Europe)
- **6 partners** (Latvia, France, Italy, Spain, Belgium)
- **SME** (FibraServi)
- Coordinator: EDI
- **https://wiki.goit-project.eu/**
Contribution summary

- Hardware license
- Certification and standardization
- Open-source Process Design Kit
- Root-of-Trust
- FSiC conferences
- Hub of open-source EDA software and hardware libraries
- Roadmapping and feedback to policy makers
Quick Survey
Who has heard about the European Chips Act?
Who has read the European Chips Act?
Who (generally) agrees with the European Chips Act?
EU Chips Act

“The proposal aims at reaching the strategic objective of increasing the resilience of Europe’s semiconductor ecosystem and increasing its global market share.”
EU Chips Act

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Could free and open-source principles help to solve this objective?
EU Chips Act

“The proposal aims at reaching the strategic objective of increasing the resilience of Europe’s semiconductor ecosystem and increasing its global market share.”

Could free and open-source principles help to solve this objective?

Not even mentioned in the document
Future of EDA availability?

“Recommendations and roadmap for a Design Platform in the context of the European Chips Act”, Design Platform Working Group, June, 2023
Working Group Members

**Ansys** - Babis Bakolas, Christophe Bianchi, Alan Deeter
**Arm** - Neil Parris, Eric Lalardie
**Cadence** - Anton Klotz
**Codasip** - Karel Masarik, Jamie Broome, Mike Eftimakis
**Dassault Systèmes** - Manuel Rei, Sophie Batas, Smriti Joshi
**Dolphin** - Philippe Berger
**Fraunhofer-Gesellschaft** - Christoph Kutter, Andreas Brüning, Thorsten Edelhäußer
**imec** - Romano Hoofman, Maarten Burssens
**Infineon** - Holger Schmidt
**Racyics** - Holger Eisenreich, Jens-Uwe Schlüssler
**Siemens** - Jean-Marc Talbot, Thomas Heurung
**SiPearl** - Philippe Notton, Yang Yngchih, Vincent Casillas
**STMicroelectronics** - Roberto Zafalon
**Synopsys** - Steve McDonald, Alec Vogt
It is possible

Open-Source IC design tools used for the design of the SAR-ADC circuit. Harald Pretl, FSiC2023
Silicon IP Reusability
Key challenges for the reusability of free and open-source IP

- Interfacing as the most persistent challenge
- Diversity of high and low-level design approaches and languages
- Reusability of non-RTL designs
- Design quality, including documentation
- Top-down vs bottom-up
Hub of free and open-source IP

**GoIT Repository**
- Setupfile
- libraries
  - goit_common
    - <routines>
    - <components>
  - goit_interface
    - <routines>
    - <components>

**Reference Repository**
- Setupfile
- libraries
  - hdl_library
    - <routines>
    - <components>
  - hcl_library
    - <routines>
    - <components>

**Strongly Compliant Repository**
- Setupfile
- libraries
  - lib0
    - <routines>
    - <components>

**Partially Compliant Repository**
- Setupfile
- libraries
  - lib0
    - <routines>
    - <components>

**Loosely Compliant Repository**
- Setupfile
- components
  - <routines>
  - <components>

(Optional) Assistant Tool
- Setupfile generation, automation and support
- Integration Tool - 0
- Integration Tool - 1
- Integration Tool - 2
Go IT!
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