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Recommendations and Roadmap for Open Source EDA in Europe

European Chips Act

Motivated by chip shortages and geopolitics

Europe has set the goal to gain 20% of global share in chip production

Chips Act defines framework on how to get there

Important to understand

- Europe does not necessarily need to build all chips it needs
- But needs to be in control of strategic supply chains
- Strengthen European focus areas (not 2nm CPU/GPU designs)

Open Source Chip Design..

.. enables innovation

Benefit from open source projects as common good, build on shared efforts, be creative, experiment and think of novel chip designs

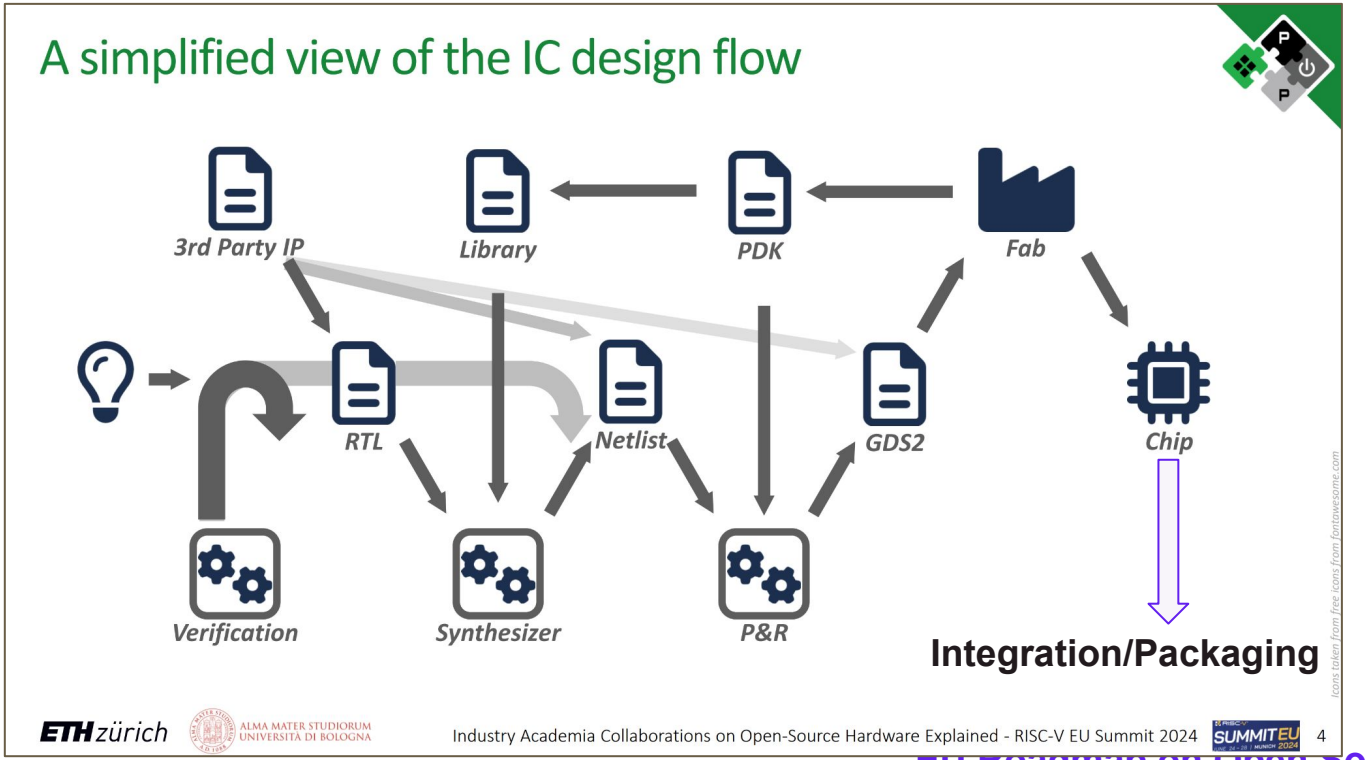
.. democratizes technology

Lower entry barriers for startups and SMEs, incentivize developers from other disciplines, enable academia in education and research

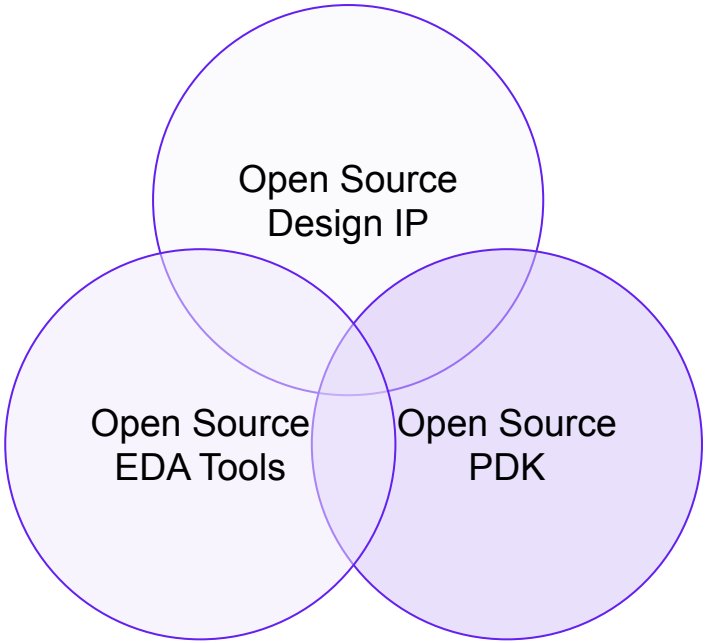
.. contributes to European sovereignty

Europe has to catch up, focus on innovation and technology in strategic fields, build up expertise and ecosystem of chip design

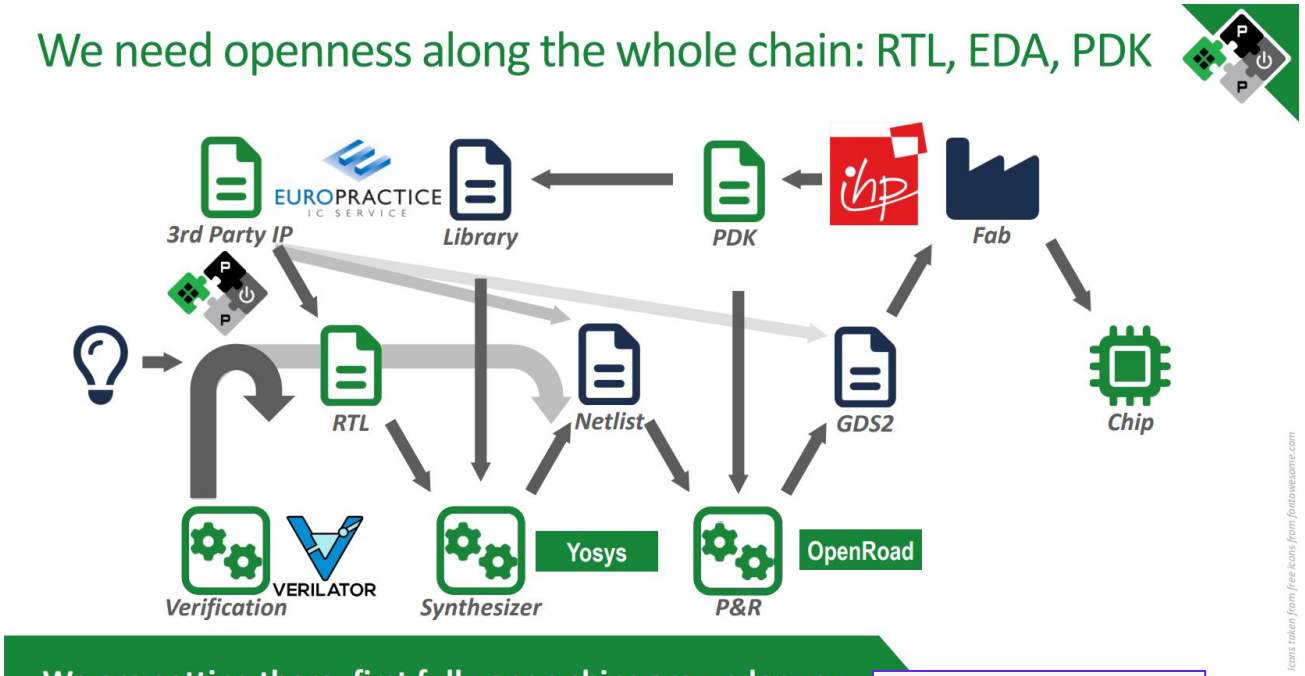
Simplified View of Design Process



Principle: Each part can be used separately



From Frank's presentation:



Where are the gaps?

Open Letter

> 500 signatories

Main arguments:

- Open-source EDA tools lower the barrier of entry significantly for students and researchers
- Open-source EDA tools allow researchers and designers to collaborate easily
- Open-source EDA tools are, for themselves, interesting for innovations, research, and development

https://open-source-eda-letter.eu/

Importance of Open-Source EDA Tools for Academia

Open Letter on European Strategic and Funding Directions

To Whom It May Concern

March 8, 2024

The recent semiconductor shortage and shifts in global political relations have changed the European roadmap on semiconductors and chip design significantly. A mix of incentives for new fabrication facilities for advanced technologies and the ambitious goals to (re)-build leading-edge chip design capabilities in Europe are key cornerstones of the European Chips Act. Under this impulse, various funding actions have been successfully launched, for instance in the area of the creation of IP based on the RISC-V instruction set.

Roadmap and Recommendations

Task by Chips JU

Define roadmap and make recommendations for funding

Funding calls in 2025

Needed by November

FOSSi Supports GoIT in Drafting Roadmap Towards Open-Source EDA

As reported earlier the CHIPS Joint Undertaking has asked the community for a roadmap for open source EDA tools in Europe. The goal of the roadmap is to describe gaps for open source EDA tools in focus areas that are important for the European chip ecosystem. At ORConf 2024 we will present the first draft and open the community discussion process.

So far, two community events have led to the first discussions and brought everyone together:

- On May 14, a webinar was held to present opportunities of open source EDA and discuss in a broad forum.

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Process so far

Webinar on May 14, 2024

Online meeting with many participants, presentations about opportunities

Workshop on June 18, 2024

Four 2-hour sessions:

1. How to involve Industry in the Open-Source Ecosystem
2. Technical challenges
3. Building self-sustainable ecosystem
4. Financial support

Since early August: FOSSi joined GoIT in creating ambitious roadmap

Invited Core Group

Community

- **Harald Pretl (JKU)** great background on analog and excellent insight into tools
- **Holger Vogt (ngspice)** key tool maintainer
- **Wladek Grabinski (IHP contractor)** community and coordination
- **Rene Scholz (IHP)** great insights into the flow and relevant projects
- **Frank Gürkaynak (ETH)** excellent flow overview and practical experience
- **Thomas Parry (Spherical)** startup founder (space) open source EDA investment
- **Michael Gielda (Antmicro)** SME with a lot of open source EDA work, especially in RTL simulation and verification
- **Claire Wolf or N. Engelhardt (YosysHQ)** established SME with synthesis tool and formal verification tools
- **Tomi Rantakari/Rob Taylor (ChipFlow)** startup on services around open source EDA tools

GoIT

- Rihards Novicks
- Jean-Paul Chaput

FOSSi Foundation

- Matthew Venn
- Stefan Wallentowitz

Goal of Roadmap

- **Create a roadmap that can serve as input for the work program**
- **Deadline: October 31**
- **Length: around 20 pages**
- **Scoping**
  - What are potential focus areas?
  - Where are the gaps in those focus areas? Also knowledge gaps
  - What does it need to fill those gaps? What is the horizon for those? (short term, mid term; long term only for outline)
- **Balance the different political interests (EU-built vs. global etc.)**
- **Non-goal: This is not a project proposal**

Why Focus Areas?

We have chosen focus areas to structure roadmap

Idea: Those are parts where Europe can be strong or are essential

Turns out: Europe needs to catch up in many areas

Focus Areas

1. Productivity, tool interoperability and flow integration
2. Verification
3. Generators and automated layout generation
4. Analog design for mature nodes
5. Digital design for mature and advanced nodes
6. Heterogeneous integration, photonics & advanced packaging

Roadmap Structure

Introduction

EDA Tools

Importance of Open Source EDA for Europe

Motivation for Focus Areas

Focus Areas

Summary

Structure of the Focus Areas

- **Brief introduction of what it is**
- **Industry relevance**
  - Why European industry will benefit from this
  - Ideally bring in well-recognized names
- **Success Stories of Open Source EDA**
  - Where did open source EDA have an impact?
- **Gaps and Necessary Improvements**
  - Which areas are open source tools not a good option now?
  - But also: Which areas can benefit from innovation and new tools?
- **Opportunities**
  - Short term (low hanging fruit and urgency) and mid to long term

State of the Document

Unfortunately, time of year and short duration are an issue

Already have around 30 pages

Many parts are bullet points, most efficient (talking points)

Varying grade of maturity

We currently still try to bring it to the best state for review

Release is planned at latest Sunday morning via FOSSi Website

Call for Action

We need your input!

- We hopefully created a useful structure
- We also made some decisions, maybe with incomplete information
- With the review document, we invite you to give input
- Please try to
  - provide input on a small granularity, multiple submissions (easier tracking)
  - stay brief: make the case briefly and highlight relation to industry relevance
  - not argue against certain opportunities: there are still more steps
- You will find a review form along the document on our website

Next Steps

September 13: First draft release for community discussion

Submit your thoughts and proposals!
Engage early, be ready for questions and discussion.

October 6: Deadline for community input

October 13: Finalize document

Professional editing

October 27: Release of document

Thank you!
Questions?