the future of making

The Open Toolchain Foundation

Pieter Hijma and team

#tfom23

INTERFACER.EU

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HELMUT SCHMIDT UNIVERSITÄT

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dyne.org

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EUROPÄISCHE UNION
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Hamburg
Behörde für Wirtschaft und Innovation

The Open Toolchain Foundation

Open Toolchain
FOUNDATION

open source software ecosystems
for better engineering

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FAB CITY

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OPEN SOURCE ECOLOGY GERMANY

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OPEN SOURCE ECOLOGY
GERMANY

Problem

Engineering in general and
Open Source Hardware in particular
lack an Open Ecosystem of Software Tools.

The Open Toolchain Foundation

Inspiration

What does it take to create an all-inclusive open source ecosystem for engineering and design as we know it from open source software?

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What does it take to create an all-inclusive open source ecosystem for engineering and design as we know it from open source software?

Goal

Support a **robust open source ecosystem** that produces **interoperable software toolchains** to enable **collaborative and resilient engineering**.

simply BETTER engineering!

Example


Concept
e.g. FreeCAD, CadQuery
e.g. PyCAM, BlenderCAM
e.g. LinuxCNC, PyCNC
Product
Recycle

Areas

supporting the development
of open source software

promoting the adoption
of open source software

Means to achieve our goals

scholarships
fund development

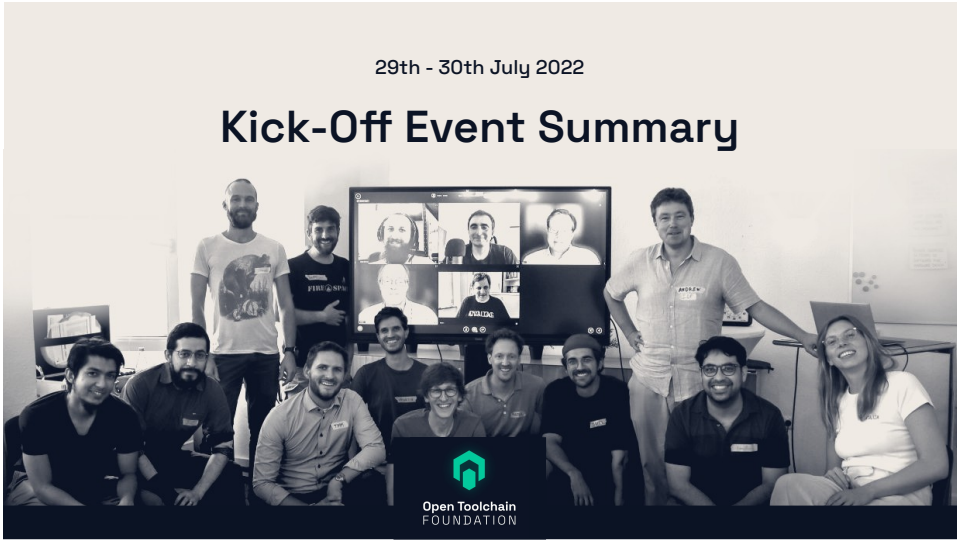
community events
bring people together

academia
promote open toolchains in research and education

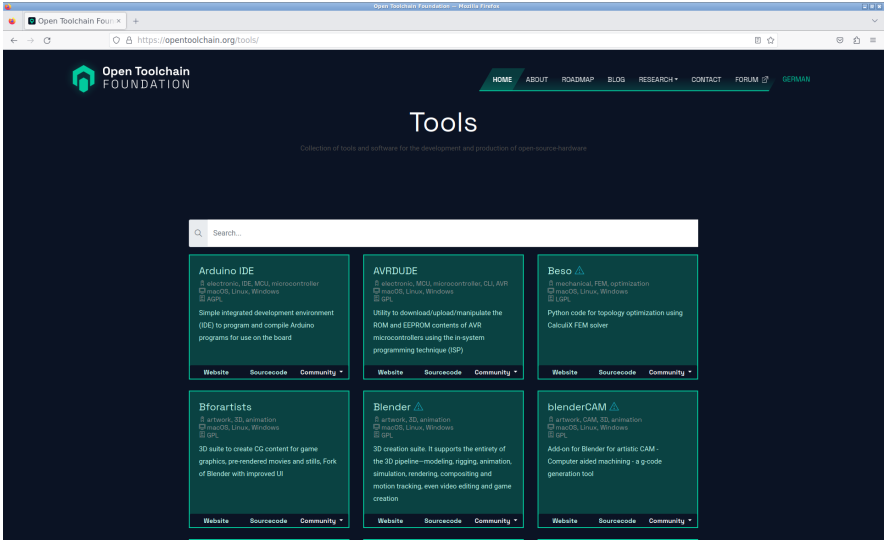
Accomplishments

- Specification for a legal entity
- Mission / Vision / Corporate Identity
- Consultancy for legal entity
- Virtual Organization under wings of Center for the Cultivation of Technology

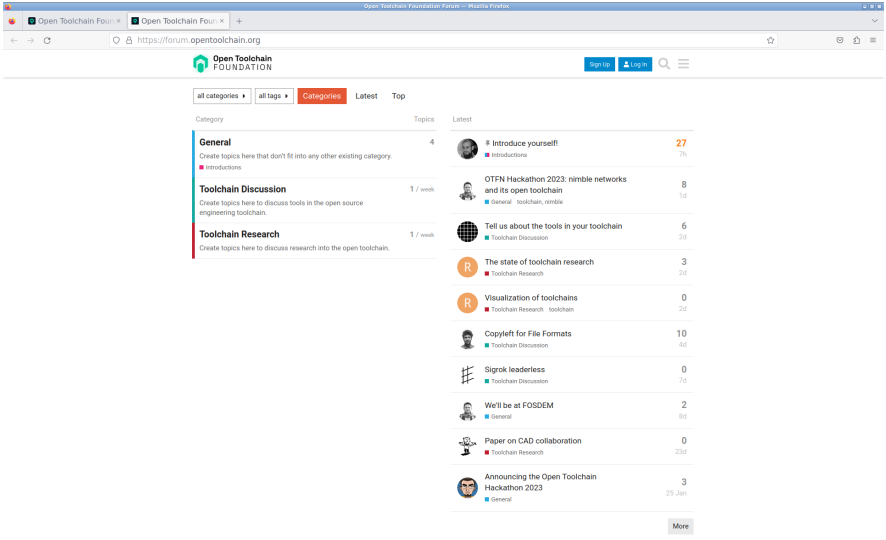
Kick-Off Event



Curated Database of Software Tools



Forum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Sign Up
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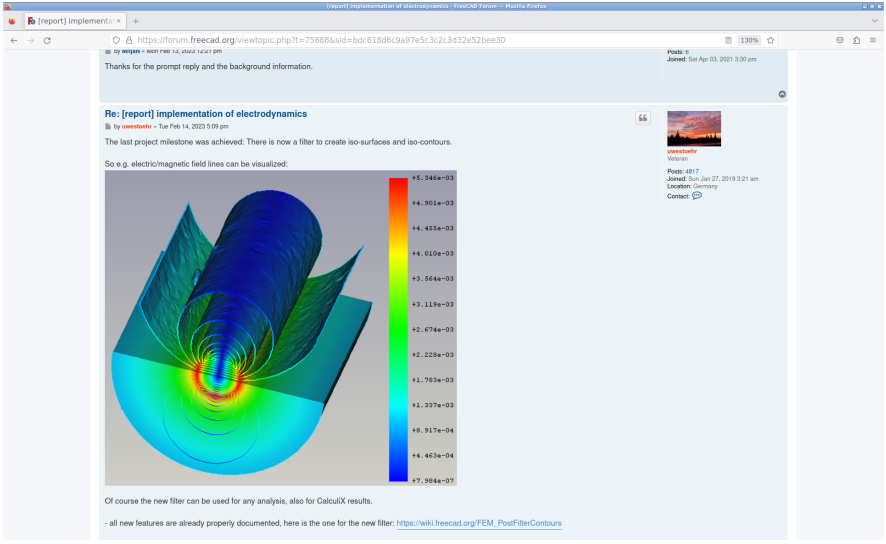
all categories
all tags
Categories
Latest
Top
Category
Topics
Latest
General
4
Create topics here that don't fit into any other existing category.
Introductions
Toolchain Discussion
1 / week
Create topics here to discuss tools in the open source engineering toolchain.
Toolchain Research
1 / week
Create topics here to discuss research into the open toolchain.
Introduce yourself!
27
7h
Introductions
OTFN Hackathon 2023: nimble networks and its open toolchain
8
1d
General toolchain, nimble
Tell us about the tools in your toolchain
6
2d
Toolchain Discussion
The state of toolchain research
3
2d
Toolchain Research
Visualization of toolchains
0
2d
Toolchain Research toolchain
Copyleft for File Formats
10
4d
Toolchain Discussion
Sigrok leaderless
0
7d
Toolchain Discussion
We'll be at FOSDEM
2
8d
General
Paper on CAD collaboration
0
23d
Toolchain Research
Announcing the Open Toolchain Hackathon 2023
3
25 Jan
General
More

Software Development Grants

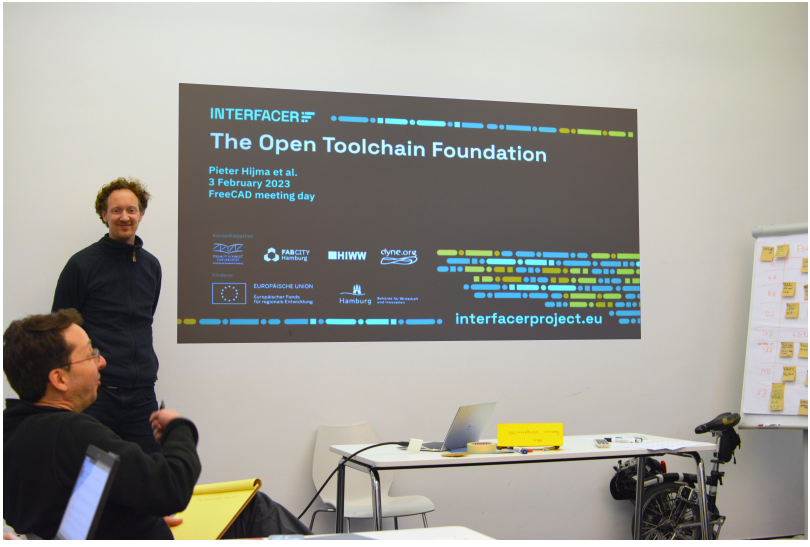
We are currently funding five 6000 Euro projects around FreeCAD:

- Snapping in the Sketcher Workbench (paddle)
- Architectural Modeling (yorik)
- B-Splines in the Sketcher Workbench (jnxd/ONSDEL)
- Coded CAD / OCCI Database, (jmwright, Dave Cowden, Mark van der Net)
- Electromagnetic Simulations, (uwestoehr)

Electromagnetic Simulations



FreeCAD Day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The Open Toolchain Foundation
Pieter Hijma et al.
3 February 2023
FreeCAD meeting day
FABCITY Hamburg
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dyne.org
EUROPÄISCHE UNION
Hamburg
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Stand at FOSDEM

Organizing Hackathon

Gratitude

Funding Agencies

- EU ERDF
- Behörde für Wirtschaft und Innovation Hamburg

Political support and interest in Hamburg

Gratitude

Support from INTERFACER

- Prof. Wulfsberg
- Tobias Redlich
- Manuel Moritz
- Anna Moritz

Gratitude

Colleagues from the INTERFACER

- all my colleagues, but in particular:
  - Michel Langhammer
  - Axel Sylvester
  - Wolf Kühr
  - Lasse Burmeister
  - Jacqueline Bertlich
  - JC Mariscal-Melgar
  - Robin Vobruba
  - Mohammed Ohmer

Gratitude

The team!

- Timm
- Martin
- Julian
- Robert
- Basti
- Moritz
- Natalia
- Isa
- Mark
- Michel

Gratitude

- OSEG (Martin Häuer and others)
- IOPA (Andrew Lamb)
- FreeCAD Community (Yorik van Havre, Brad Collette, the developers)
- CadQuery (Dave Cowden)
- Archiyou (Mark van der Net)
- KiCAD Community (Seth Hillbrand)
- Maximilian Voigt (Verbund Offener Werkstätten, Prototype Fund Hardware)
- Appropedia.org (Emilio Velis)
- LibreSolar (Martin Jäger)

Outlook for the Future

- High-quality Open Source CAD/CAM/CAE software?
- Open firmwares for machine control?
- Proper file formats for design/manufacturing exchange?
- A vibrant community behind this ecosystem?
- Manufacturing/Engineering accessible to anyone?

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The Future of Making
requires
Open Software Toolchains

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Julian Stirling

- Expert on Open Toolchains
- Open Flexure Microscope
- GitBuilding