Chips4Makers, NGI0 and European Semiconductor Industry

Staf Verhaegen
18/5/2021
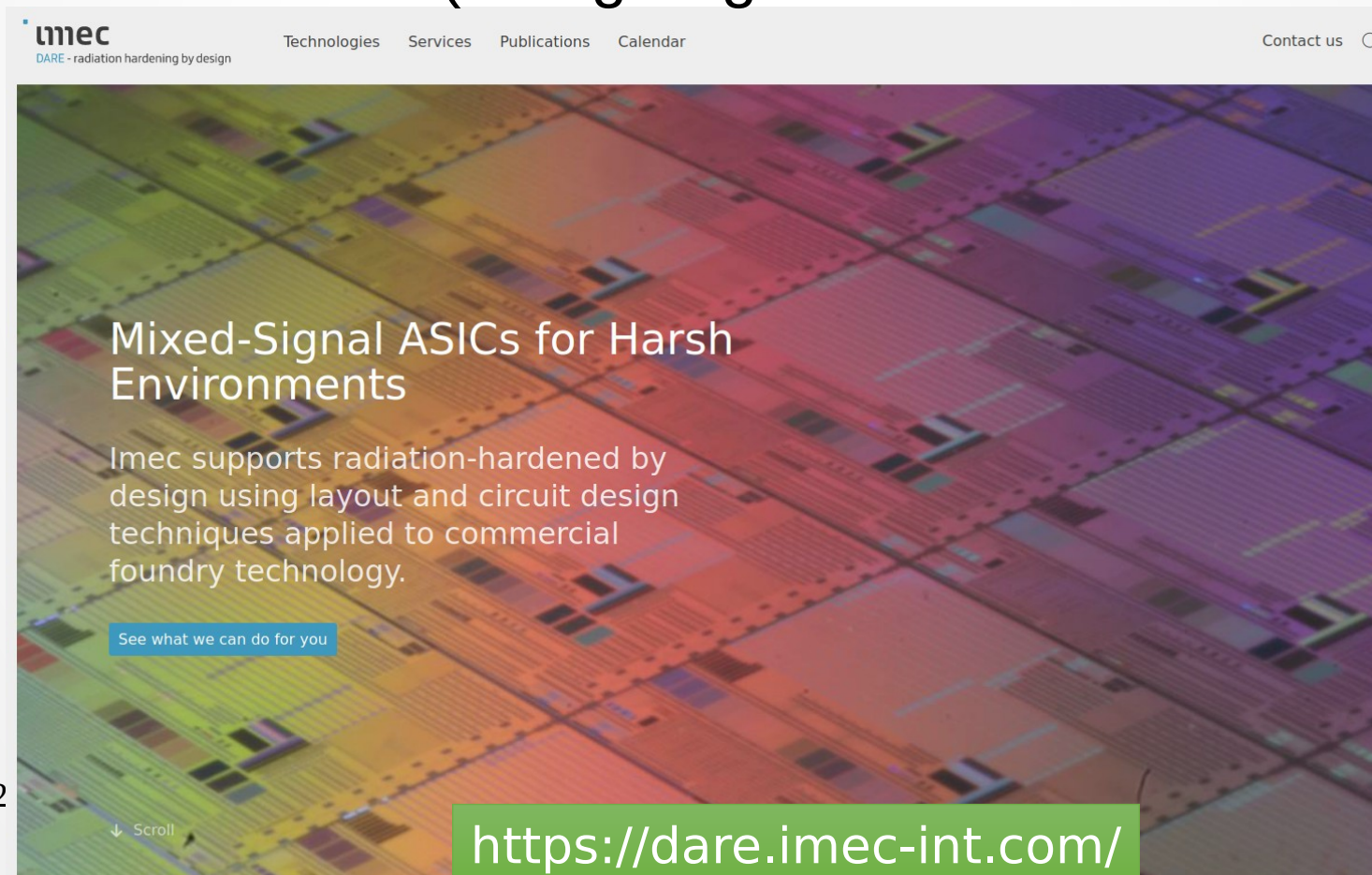staf@fibraservi.eu

Overview

- Who is Staf Verhaegen

- Chips4Makers: What, Why ?

- Chips4Makers, NGI0 and libre-SOC

- Chips4Makers & European Semi-conductor Industry

Who is Staf Verhaegen ?

- Employed 1995-2019 @ imec: World's biggest semi-conductor research institute located in Belgium

- 2011-2019: DARE (Design Against Radiation Effects)
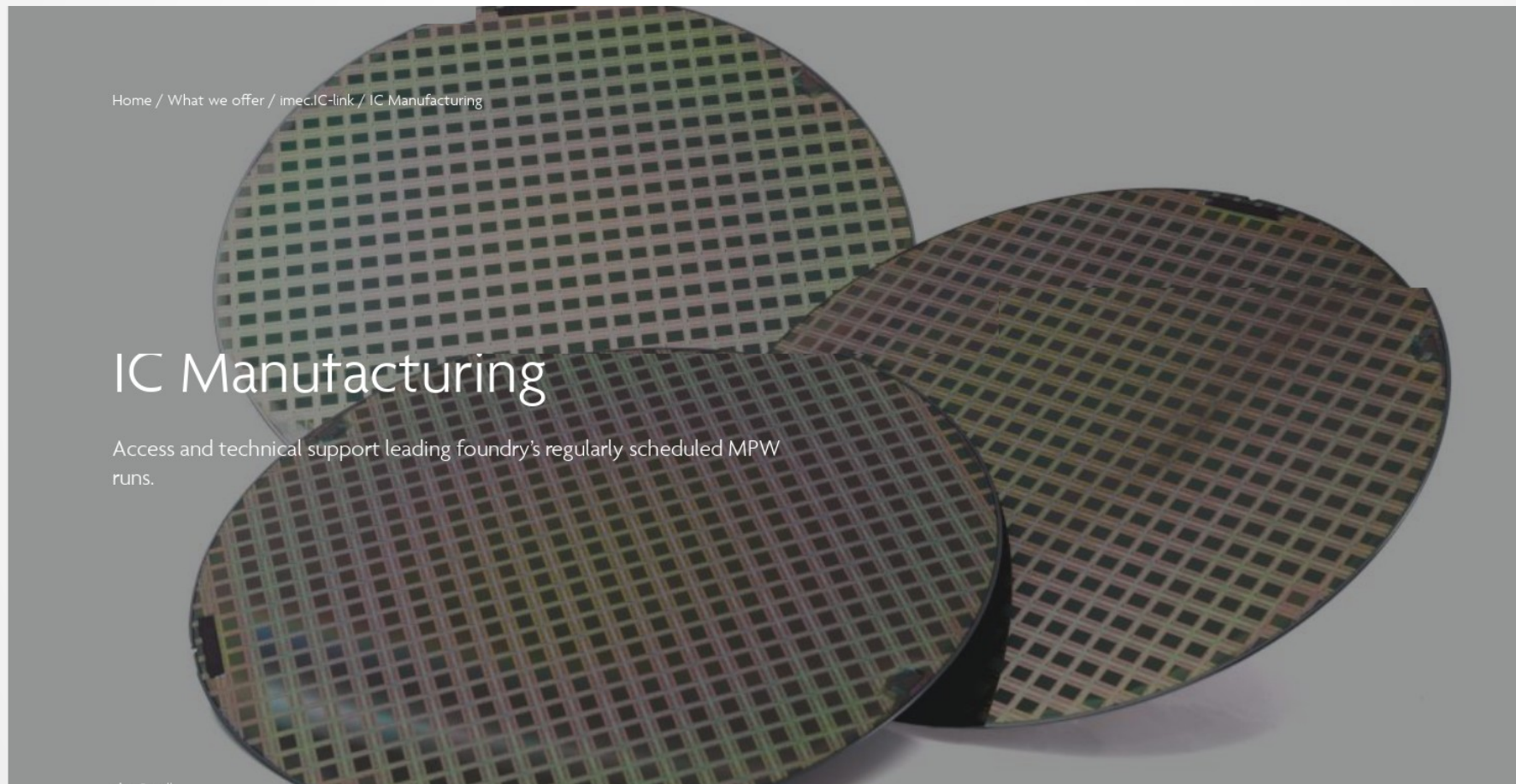
https://dare.imec-int.com/

Who is Staf Verhaegen ?

- Employed 1995-2019 @ imec: World's biggest semi-conductor research institute located in Belgium

- 2011-2019: DARE (Design Against Radiation Effects)

    - Development of radiation hardened standard cell/IO libraries and SRAM compiler

    - Setup/maintain internal mixed-signal rad-hard design flow

    - Customer support for DARE library users amongst others: triage customer issues based on knowledge of full RTL2GDS flow

Who is Staf Verhaegen

- DARE development inside IC-link department
  IC-link does also: Europractice, MPW ASIC service, ...
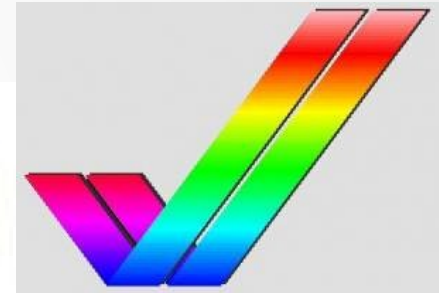
Who is Staf Verhaegen

- Retro-geek

Commodore 64

Amiga

Who is Staf Verhaegen

- Retro-geek

- Open source software developer

  - AROS: Amiga Research Operating System
    Open-source re-implementation of AmigaOS

  - Linux, Python, …

Chips4Makers: Why, What

Chips4Makers: Why, What

- Quote for retro-inspired SoC

    - 0.35μm TSMC multi-project wafer (MPW): < $5000

    - From design to silicon (e.g. RTL2GDS): > €30 000

- EDA cost should be more in line with mature chip production costs
  => open source

Chips4Makers: Why, What

- What:

    – low-cost, low-volume ASIC service (https://chips4makers.io) current target: 0.35µm technology

Chips	Price
50	€1750
51-100	€28/chip
101+	€20/chip

    – Fit for makers/hobbyists:

        - no NDA

        - open source tooling

Chips4Makers, NGI0 and Libre-SOC

Chips4Makers, NGI0 and Libre-SOC

- Common interest with Libre-SOC project:

    – Libre-SOC: need for cost-effective prototype possibility using libre licensed software

    – Chips4Makers: good test case for flow

    => together with LIP6 - Sorbonne University develop flow to allow 0.18μm prototype of Libre-SOC.
    More details in Luke's presentation.

Chips4Makers &
European Semi-conductor Industry

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European Semi-conductor Industry

- Low-volume/low-cost ASICs alone will not be able to drive European Semi-conductor industry
  But:

  - Growing the ecosystem
    Increasing the pool of people with ASIC design expertise
    => also increase demand for high volume ASICs

  - Not only limited to academia and professional design houses.

  - Drive innovation of the tool chain by a lot of people
    'scratching their own itch'.
    Like for example the Linux ecosystem where Motorola M68K linux
    is still developed in parallel to x86, AMD64, ARM, RISC-V, ...