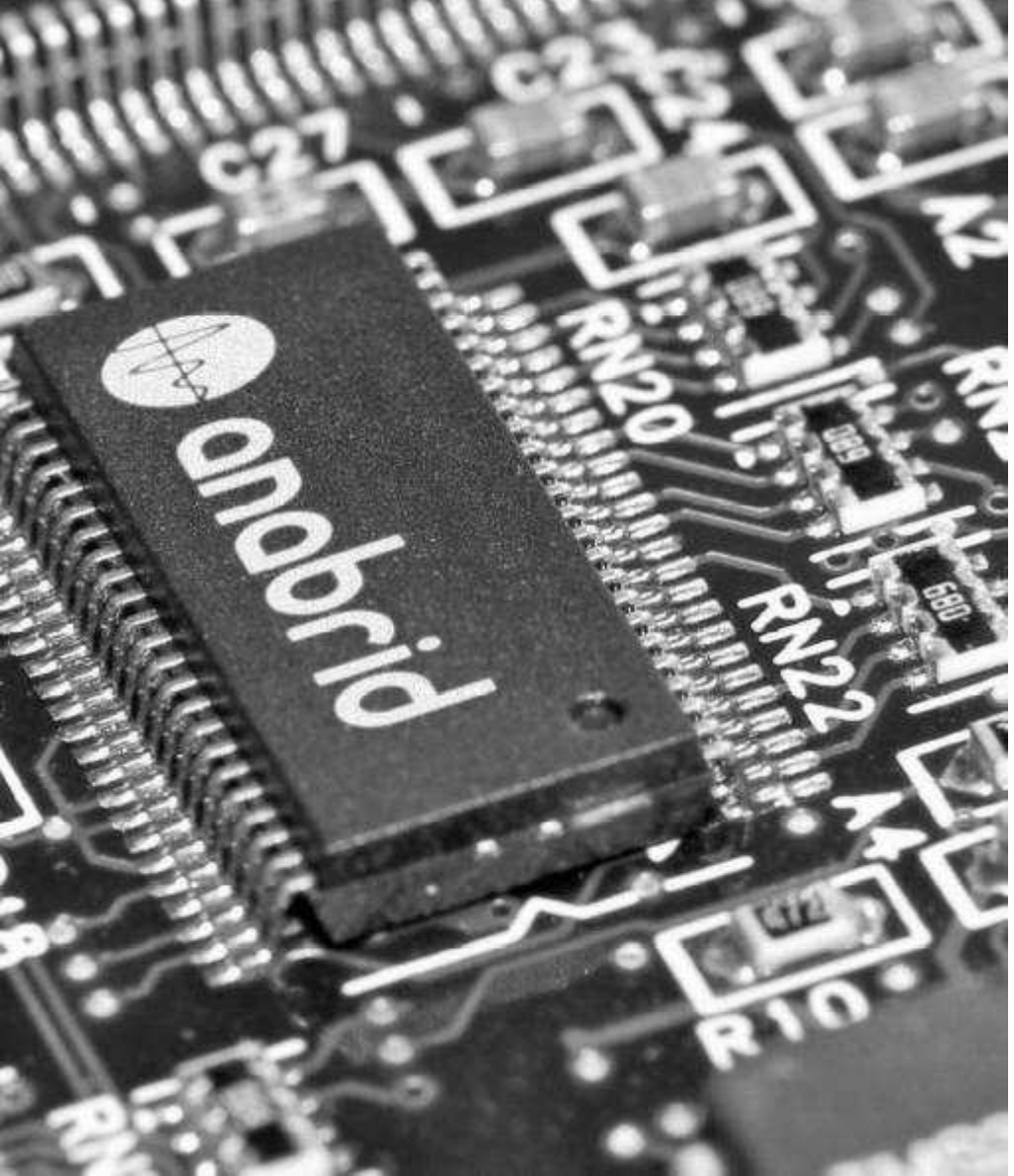


Platforms and Architectures for Analog Computing

Dr. Sven Köppel
koeppel@anabrid.com

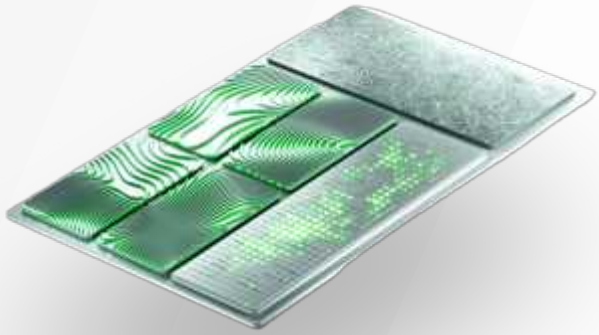
2026-05-10
International Supercomputing Conference 2025, Hamburg
Birds of a Feather Session on Analog Computing

Anabrid resets Moore's law

Rediscovering classical Analog Computing

The Analog Thing
»Hacker's toolkit«

REDAC Analog Supercomputer



G-PAC: 65nm CMOS

SPRIN-D

DLR Deutsches Zentrum für Luft- und Raumfahrt German Aerospace Center

QCi DLR Quantencomputing Initiative

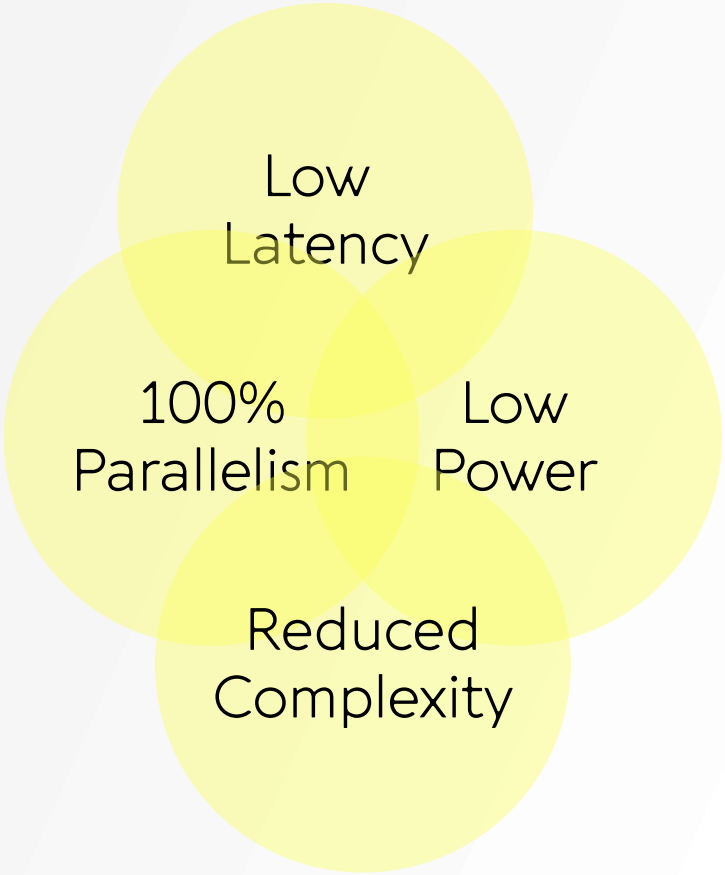
Reasons why to go analog

From...

* GPUs
* Programmable I/O
* FPGAs (Field Programmable Gate Arrays)
* DSPs (Digital Signal Processors)

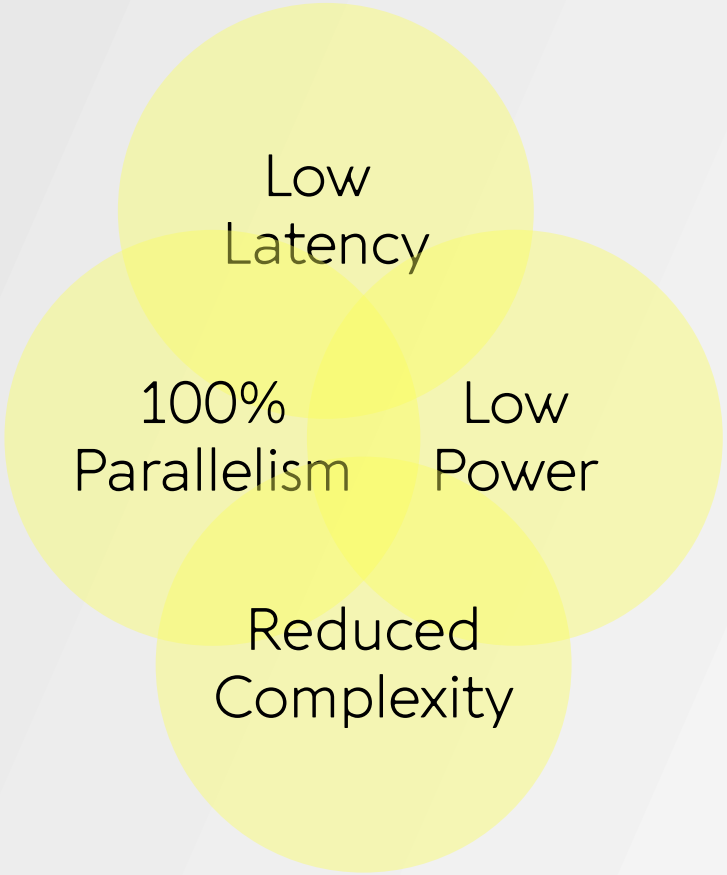
Towards ...

→ Novel architectures on conventional CMOS nodes



Anabrid resets Moore's law

Reasons why to go analog



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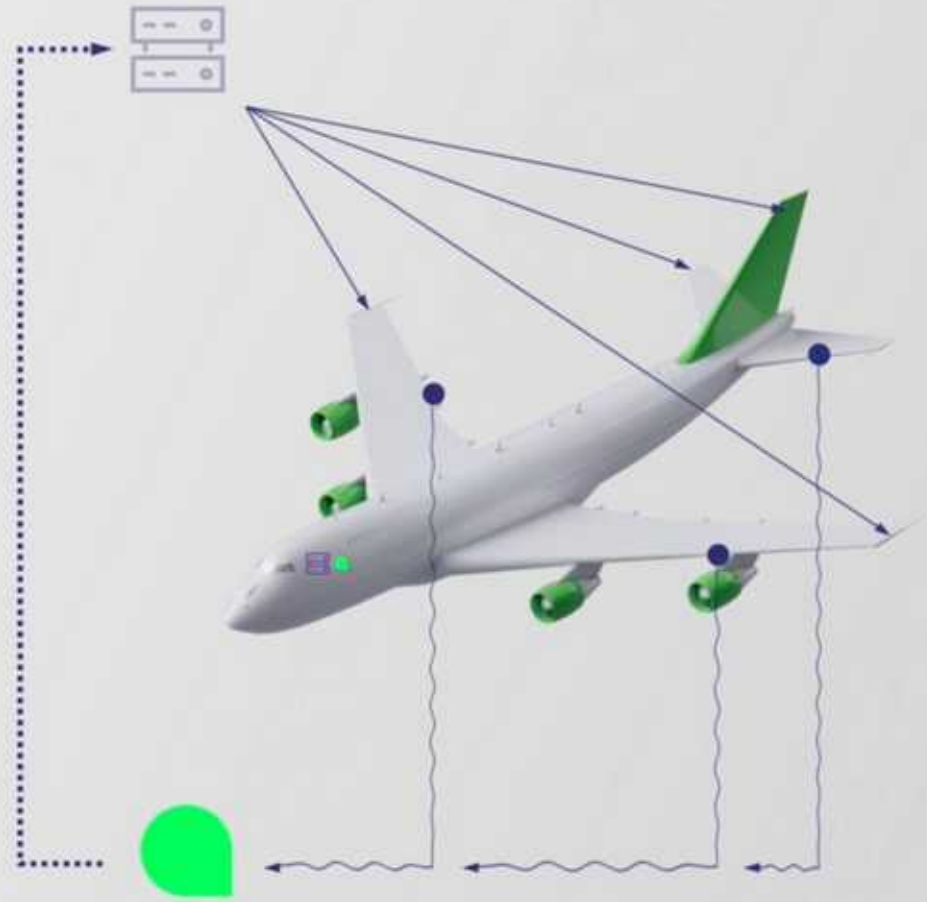

BOEING

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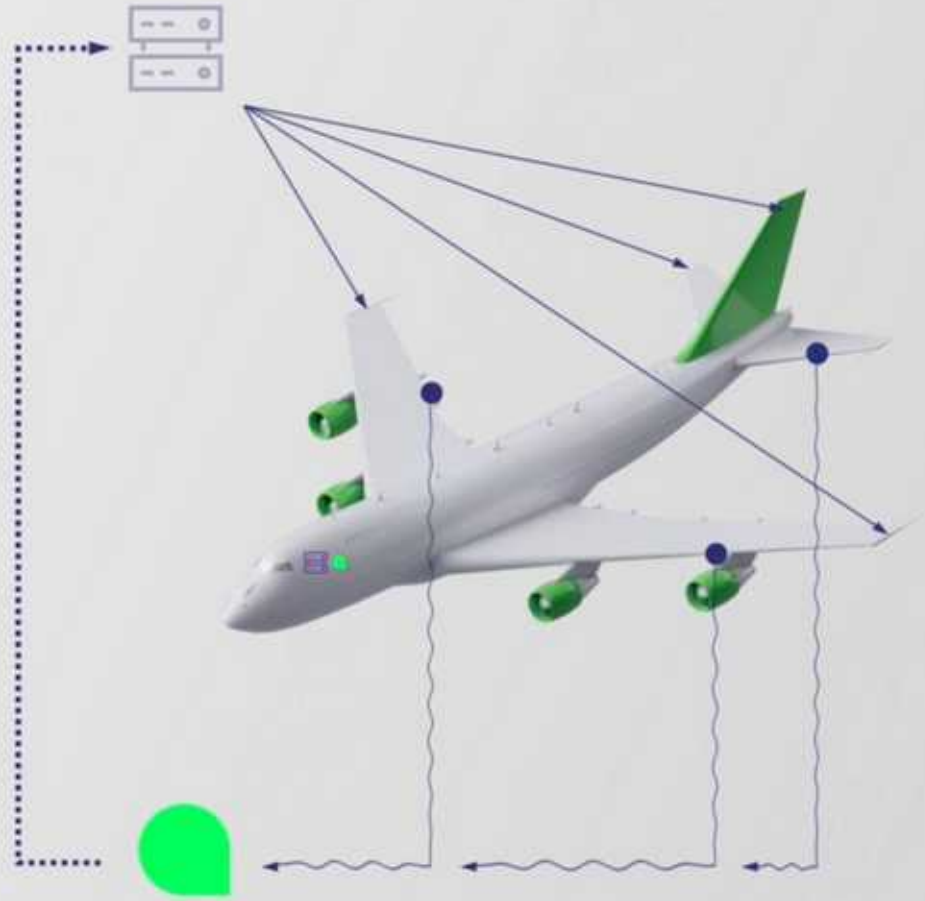
Analog 65nm CMOS

Solving industry problems

Circuit.analog

```
solve_ode( @(t,u)
    diff(rho,t) = div(p),
    diff(p_i, t) = div(p_i*v_j - p*dela_ij),
    diff(e, t) = div(v_i*(e+p)),

    p = rho*eps*(Gamma-1)
)
```



BOEING

[Köppel et al. Advances in Radio Science 2020 / Arxiv:2102.07268]

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Analog 65nm CMOS

Solving indus

Circuit.analog

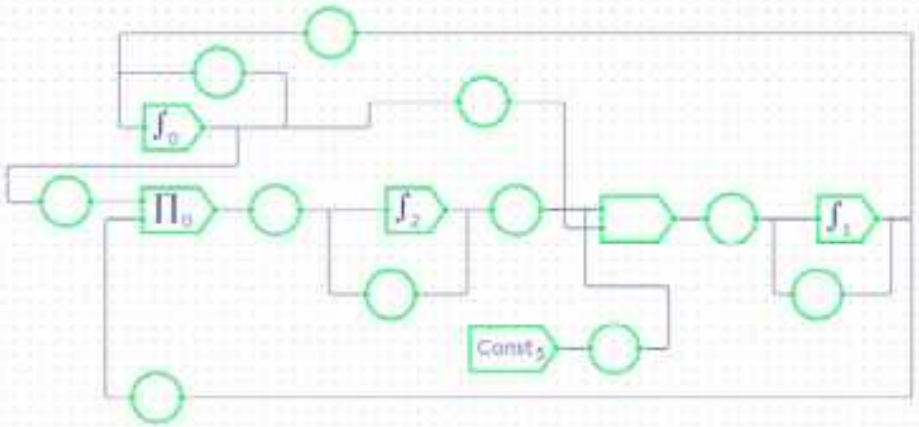
```
solve_ode( @(t,u)
    diff(rho,t) = div(p)
    diff(p_i, t) = div(p
    diff(e, t) = div(v_i

    p = rho*eps*(Gamma-1
)
```

Analog Programming Editor

Clear | Examples | Flow | Matrix | Code | Tree | Debug Graph | Logical | Physical | Cluster | Import | Send to lucidac

Drag & Drop: Mul, Int, Daq, Extout, Extin, Const

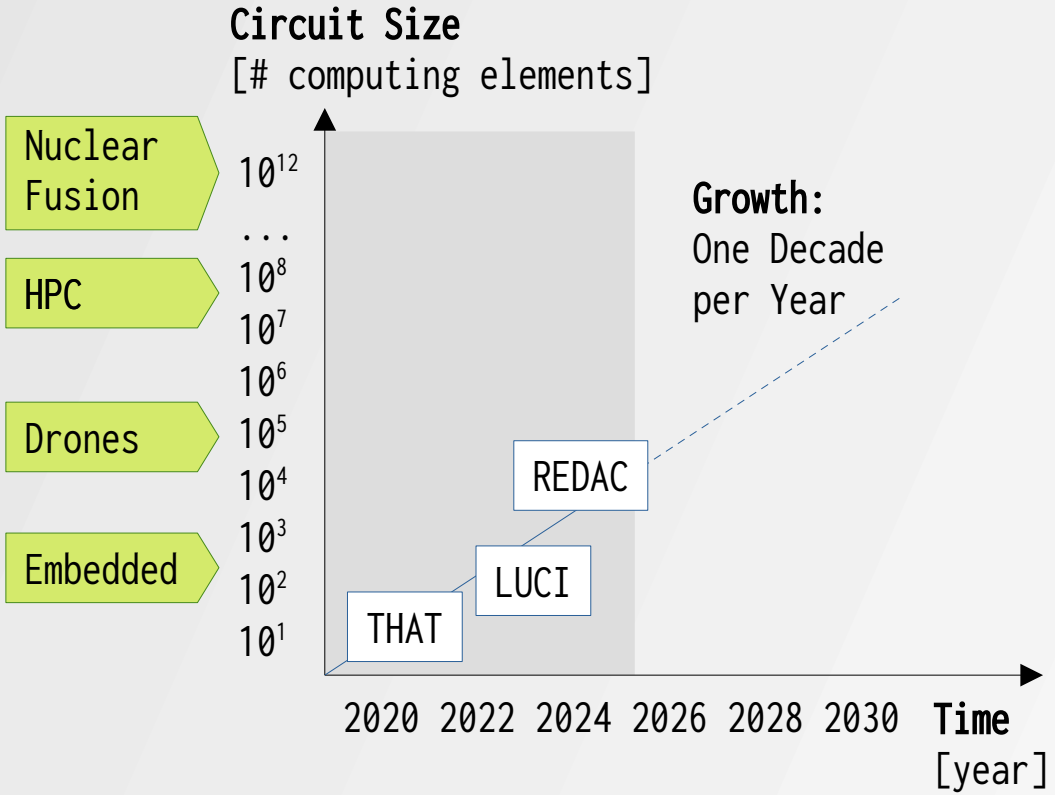


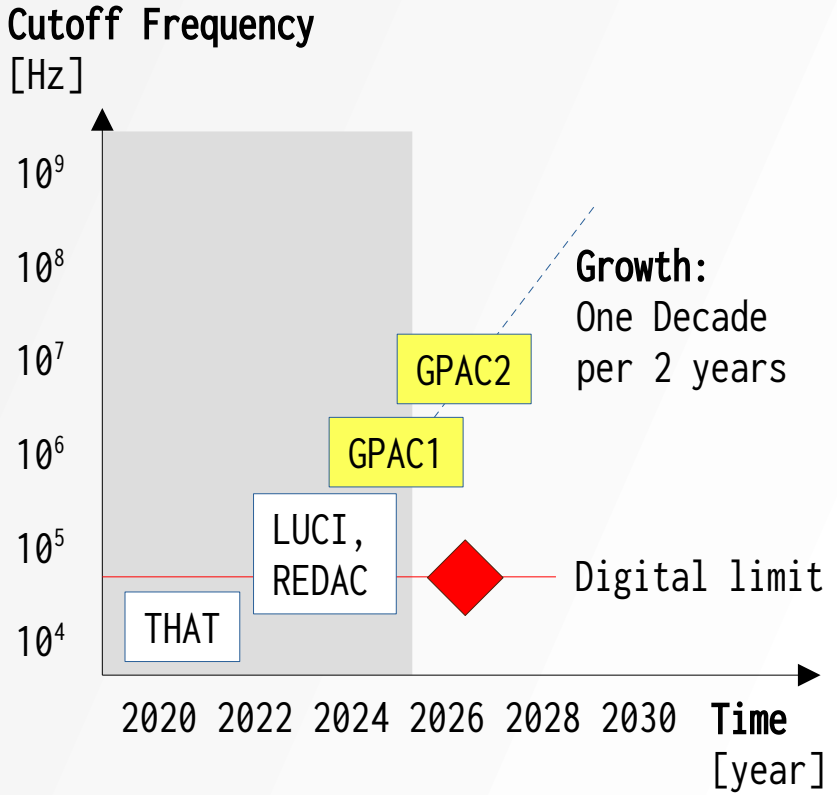
Logical Routes


```
[
  {
    "source": {
      "typeName": "Int",
      "id": 0,
      "state": {
        "rtl": false
      },
      "port": "out"
    },
    "target": {
      "typeName": "Pot",
      "id": 0,
      "state": {
        "rtl": true
      },
      "port": "in"
    }
  },
  {
    "source": {
      "typeName": "Pot",
      "id": 0,
      "state": {
```

Anabrid resets Moore's law

Scaling analog CMOS for HPC





Scaling Analog in the width

Engaging the HPC community

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Open Source

APIs matter

Access