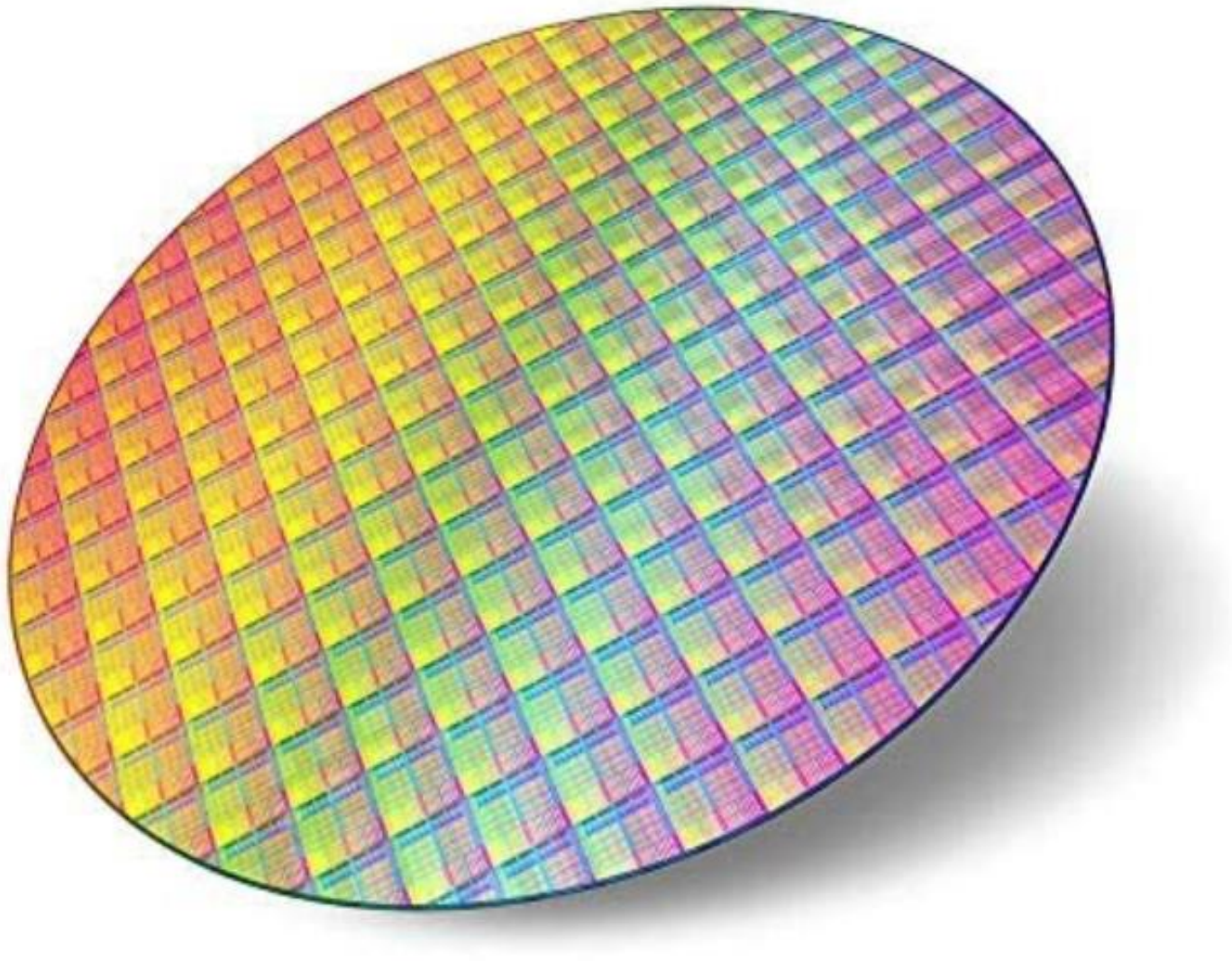
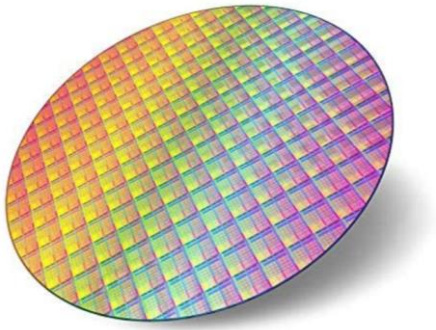
The many opportunities in the Danish Chip industry



Ketil Julsgaard
Global Head of IC Development
WSAudiology

Welcome to Chip Day !



- A Danish Chip industry representing different sectors
  - Some also fierce competitors
  - Today we are here as a joint industry facing common challenges
    - A lot of exciting work both today and on our roadmaps
    - But difficult to find engineers with expertise related to analog and digital Chip Development

- Todays objective
  - To make our industry and what we do more vissible
  - Connect with students and make it possible for students to connect with us
  - Hopefully to inspire more students to choose Chip Development

Microchips are everywhere and shapes our lives!

Decrease in power consumption opens many possebilities.

1983

mobile phone

1984

portable CD player

1989

portable gaming

1992

smartphone

1997

portable mp3

1999

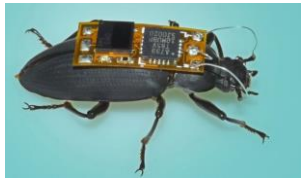
GPS watch

2005

hearing aid w. Bluetooth

2010

4G phone



2017

rescue search bug

2019

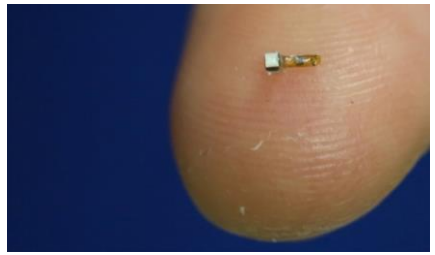
wireless VR

2020

smart golf ball

2026 ?

augmented reality glasses



2030 ?

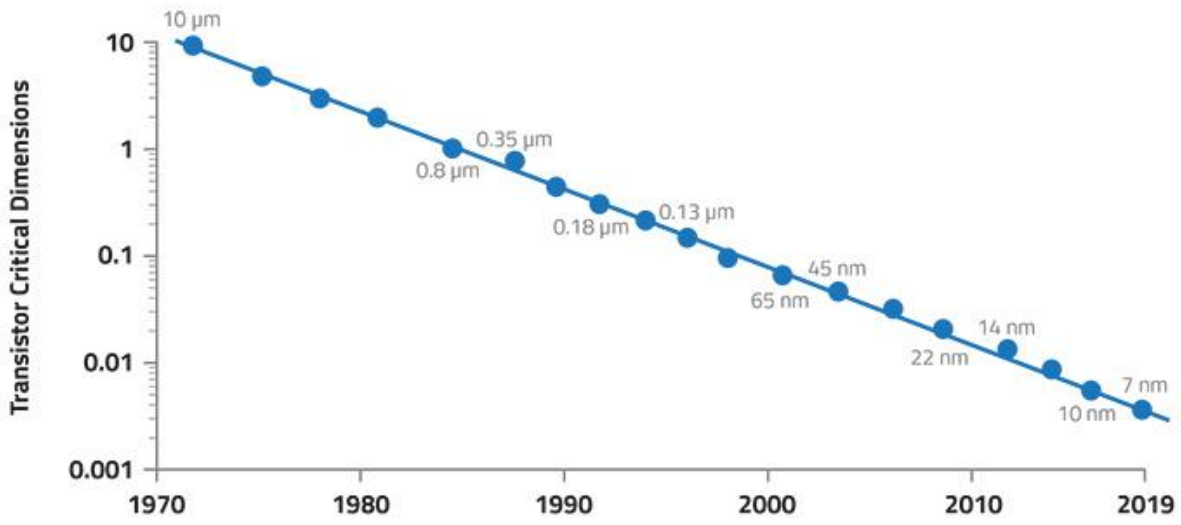
smart dust

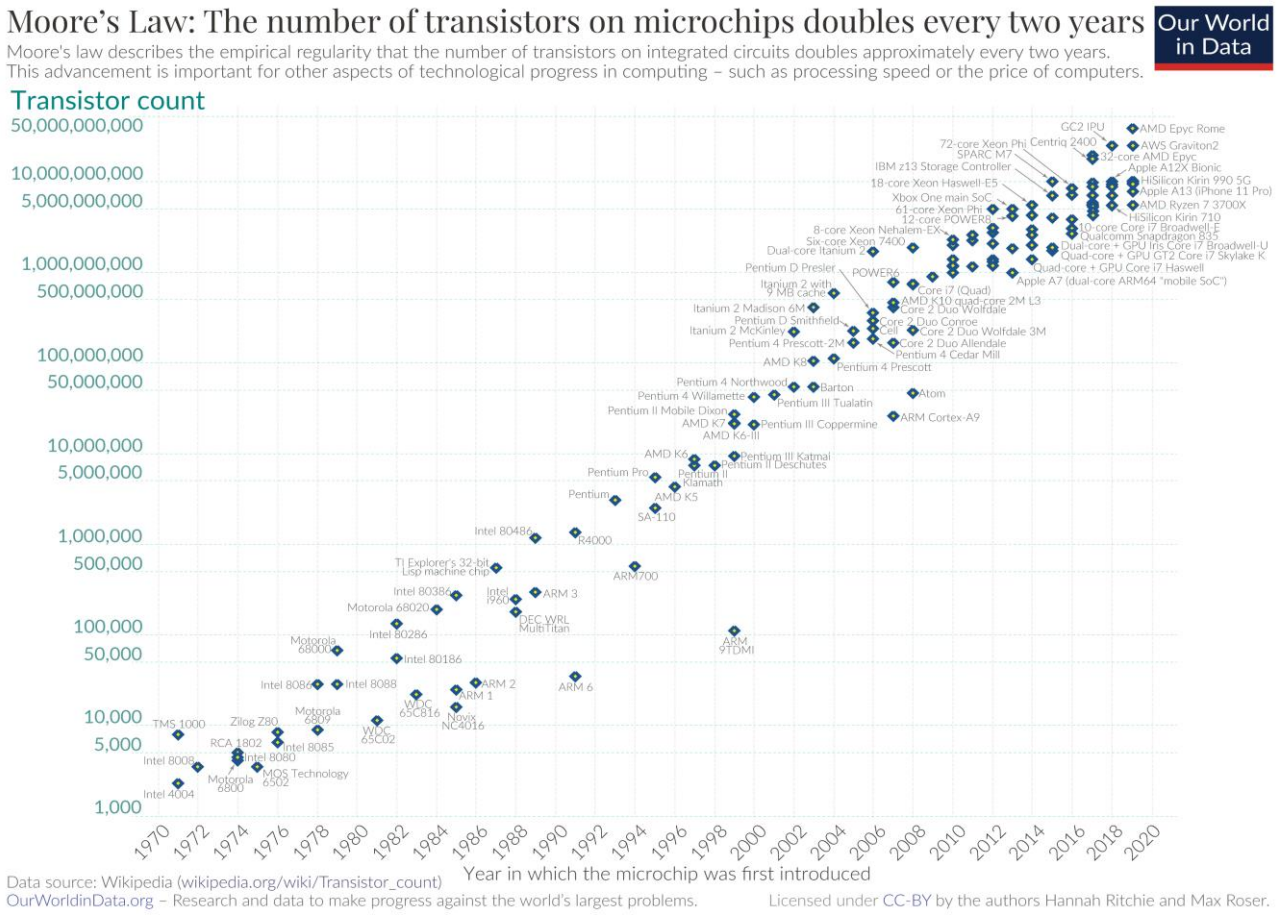
Microchips Run the World!

2021

- 1.15 Trillion chips shipped
- US$ 556 Billion sales – 26% increase

- Moore's Law and the incredible transistor scaling story
- Defines our modern way of life



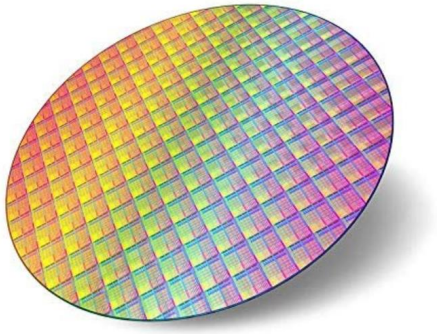


Global Impact

- Global chip shortage
  - Since 2020
- Geopolitical role
  - Taiwan / Chinese relations
  - US / China trade disputes
- EU chip act
  - Digital sovereignty
  - 43+ Billion EUR public and private investments
  - Target to double EU market share to 20% by 2030

Rank	Foundry	IDM	Fabless
1	Taiwan	United States	United States
2	United States	South Korea	Taiwan
3	China	Japan	China
4	Israel	EU	EU
5	South Korea	Taiwan	Japan

Danish Chip Industry



From startups to OMXC25 to global players.

Total # of Engineers in Copenhagen area:	
Digital	~200
Analog	~100
Embedded SW + others	200+

Industry	Company	Digital	Analog	FPGA/ASIC/ IP
Network / Communication	Comcores	X		IP
	Microchip	X		ASIC
	Napatech	X		FPGA
	Nvidia	X	X	ASIC
	Zeuxion			IP
Audio / Hearing	Demant	X	X	ASIC
	GN	X	X	ASIC
	Infineon	X	X	ASIC
	Knowles	X	X	ASIC
	WSA	X	X	ASIC
EDA / Consultancy	Cadence	X	X	ASIC
	Synopsys	X	X	ASIC/FPGA
	SyoSil	X		ASIC
	Skycore		X	ASIC
	Presto	X	X	ASIC

Analog – What we are working on and key skills

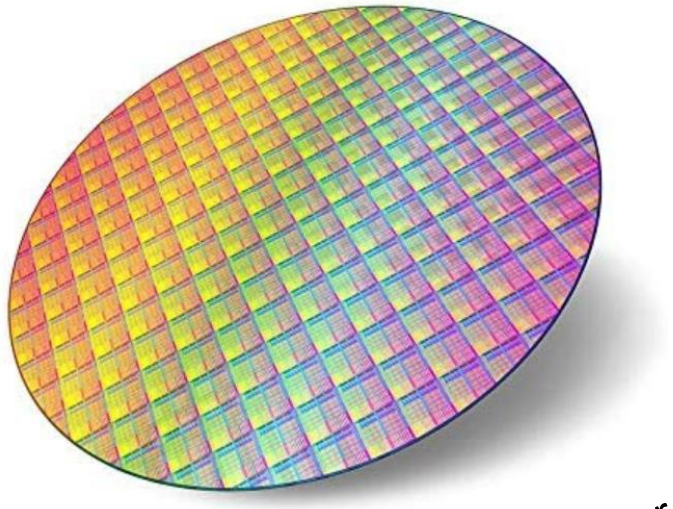
Analog design in digital technologies

High-voltage power converter integrated circuits

Mixed-signal and power IC's for audio

Extremely low power

Digitally-assisted analog design



Mixed-mode simulation verification

Switched capacitor power conversion

MOS process technology

DC-DC power conversion

Transistor level analog design

System-level design

Wireless charging

Design for packaging and MEMS challenges

Self-calibrating designs

Digital – What we are working on and key skills

Machine Learning

Power efficient processor cores

DFT

Neural networks

Digital design

Formal Property Checking

Smarter verification

RTL design

Python

DSP architecture

Automotive requirements

System level design

System Verilog

ARM subsystems

Mixed-mode simulation verification

Embedded SW design

Network-on-chip (NoC)

Universal Power Flow (UPF)

Wireless communication

Audio-signal processing

Extremely low power

Complex IP's (systems) in a very flexible way

Ethernet from 1G to 400G+

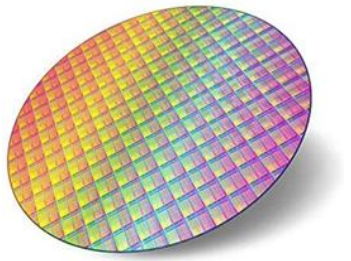
UVM

Power efficiant digital signal processing

HW/SW System partitioning

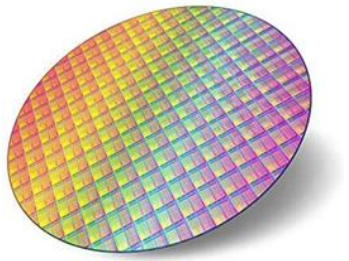
Constrained-Random Verification

Summary



- A Danish Chip industry with a strong local presence.
  - Part of a large dynamic global industry.
- Many job opportunities
- Many different technical challenges
- Chip development is a foundation for a lot of system and product development
  - => Chip development skills enables opportunities move between different disciplines – system design / Embedded SW etc.
- Many options to move between different companies and industries
- **=> Maybe you also want to become a chip designer? ☺**

Agenda

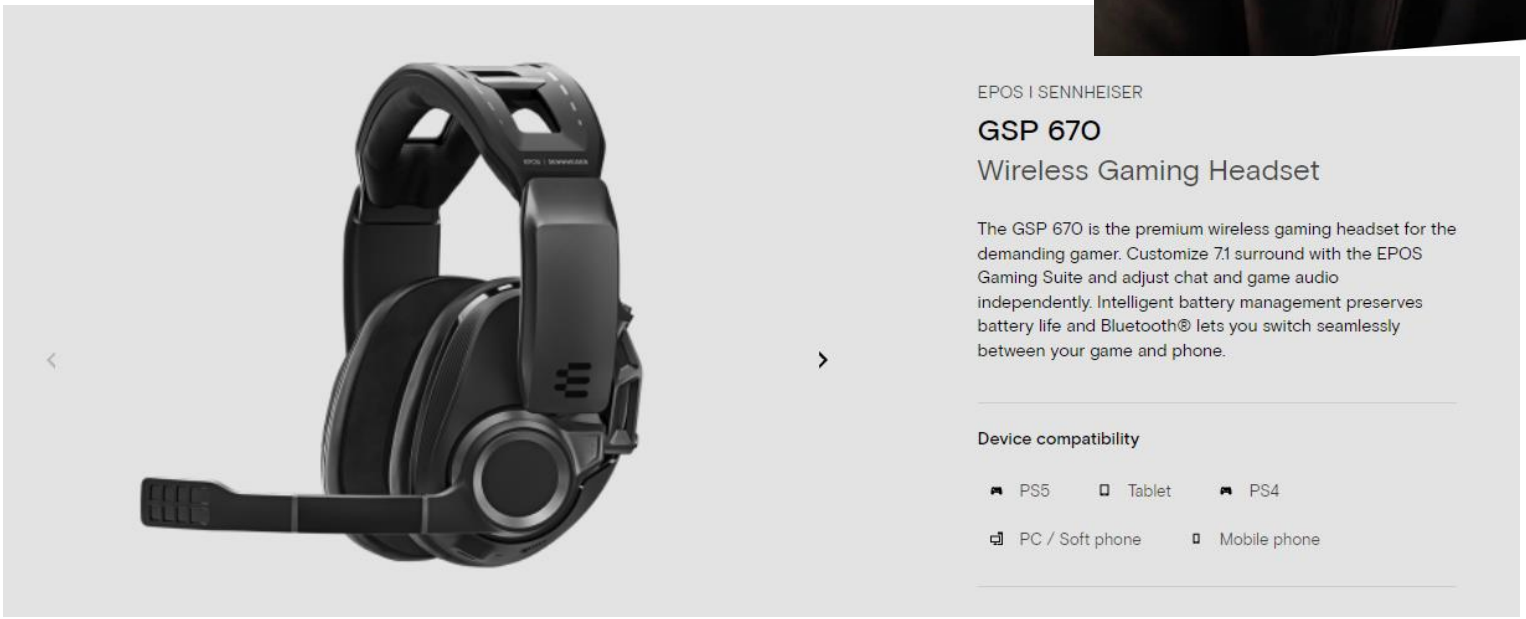


- How to become a chip designer at DTU - Presenter: Martin Schoeberl - DTU
- **Technical Presentations:**
  - Analog IC Design – Presenters: Skycore Semiconductors + Oticon
  - Digital Low-Power: World Domination – Presenters: Oticon + WSA
  - Chip verification is a growing and challenging task – Presenters: Syosil + Synopsys
  - **First Open source Chip from DTU presentation – Presenters: Luca**
  - ASIC prototyping in FPGA – Presenters: WSA + GN Hearing + Microchip
  - Audio Chain in Hearing Instrument – Presenters: GN Hearing + Oticon + WSA
  - High Speed Networking – Presenters: Napatech + Microchip + Zeuxion + Nvidia
- **15.50: Wrap-up**
  - **Quiz (based on presentations) & Prizes**
  - **Drink and Networking => Meet the companies !**

Enjoy !!!

Quiz Prizes

https://ahaslides.com



2 great prizes !!!

Thank You