The invention of the network camera and the VLSI technology behind

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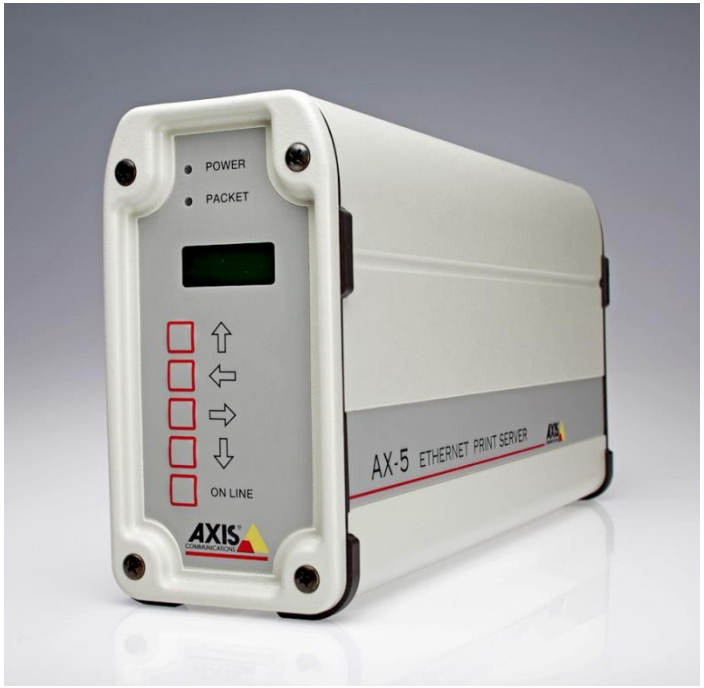
Axis

> Founded in 1984
> IT company focused on Network Video Solutions

> 1521 employees (June 30, 2013)
> Sales 2012, 4184 MSEK
> Listed on NASDAQ OMX
> Head office in Lund, close to LTH
> Own offices in 40 countries
> 55000 partners in 179 countries

Original products



Global distribution & sales

Axis presence worldwide

28 years of network intelligence

Four phases in our development

- Network video
- Storage
- Printers
- Protocol converters

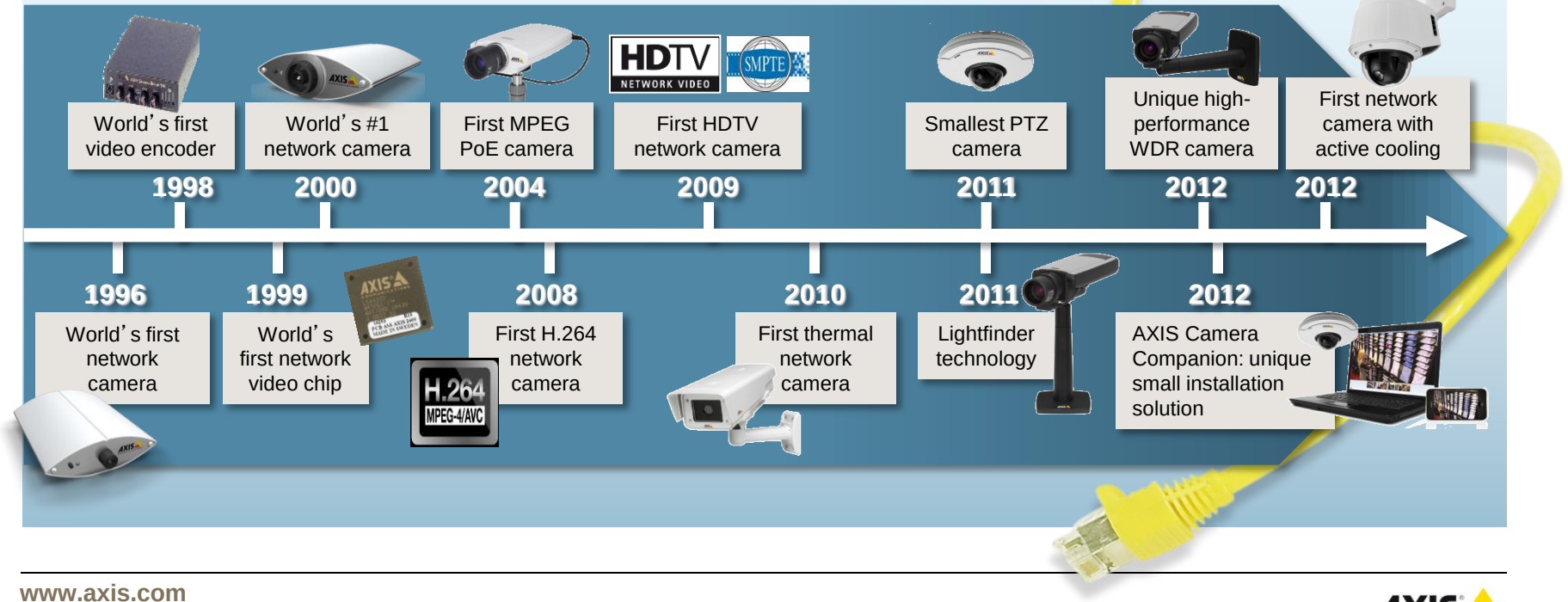
1984 | 1992 | 1996 | 1998 | 2001 | 2011 | 2012

Four steps in our market coverage

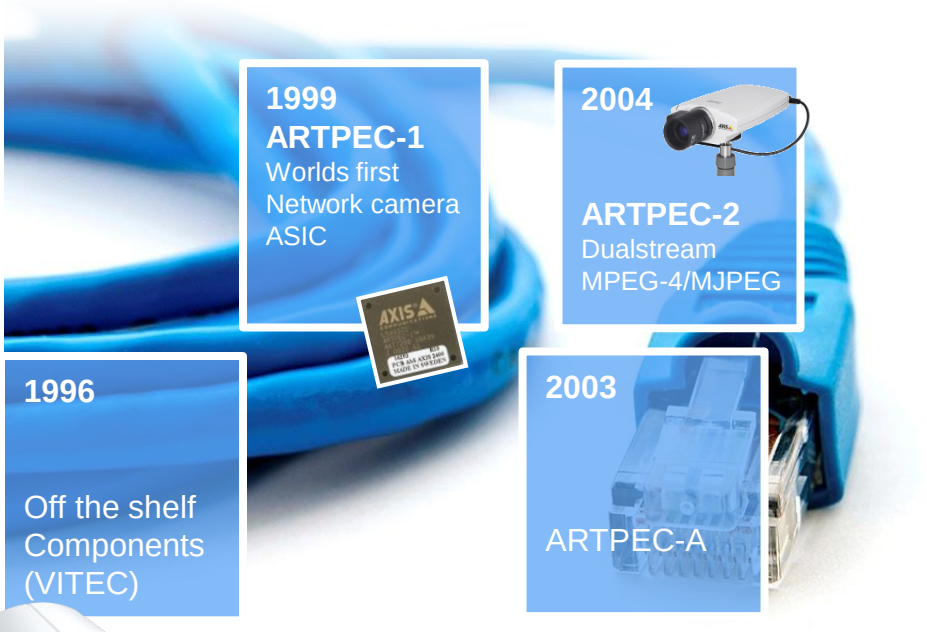
- Europe
- Asia
- USA
- Global

Axis – continuously driving innovation

Since 1996, Axis has been driving Network Video evolution



Axis – continuously driving innovation in network video



1996

Off the shelf Components (VITEC)

1999
ARTPEC-1
Worlds first Network camera ASIC

2003

ARTPEC-A

2004

ARTPEC-2
Dualstream MPEG-4/MJPEG

2008

ARTPEC-3
HDTV/H.264

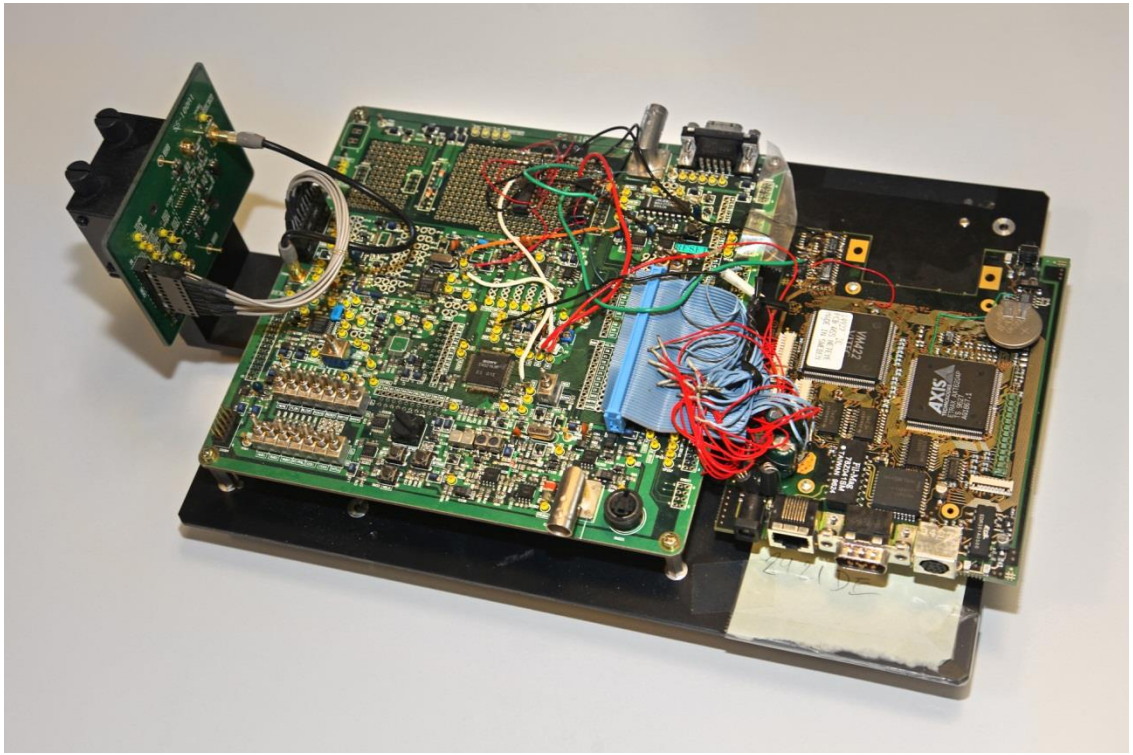
2009

ARTPEC-B

2011

ARTPEC-4
Lightfinder technology

The fourth phase - the invention of the network camera



1996 - AXIS NetEye 200

> The world's first network camera

> Launched at Interop Atlanta, September 18th, 1996

> Performance
  - 1 image/second in 352*288 pixels
  - 3 frames/minute in 0.4 Mpixel

More than 10,000 sold!

One of our first camera customers…

> Steve Wozniak, co-founder of Apple

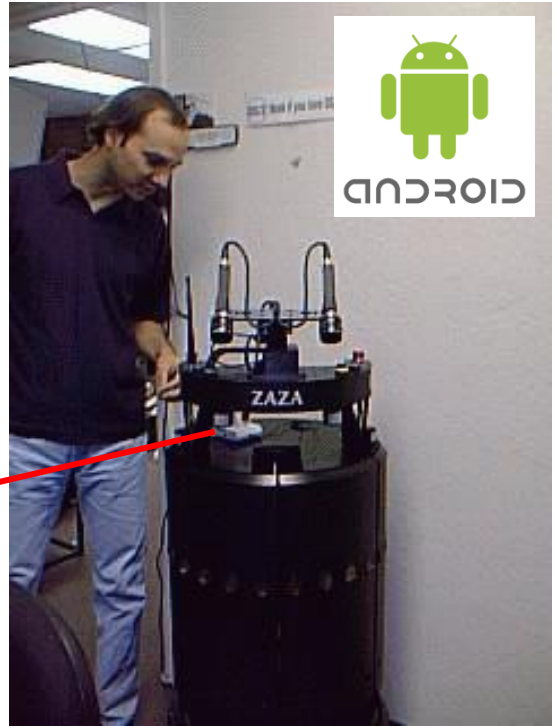
> Was in a car accident during a tech support call

> No injuries and problem was solved

World's first video encoder in 1998

> AXIS 240 – the world's first video encoder

> Andy Rubin, CTO & founder of Android at Google, in 1997 when he was testing AXIS 240 prototypes



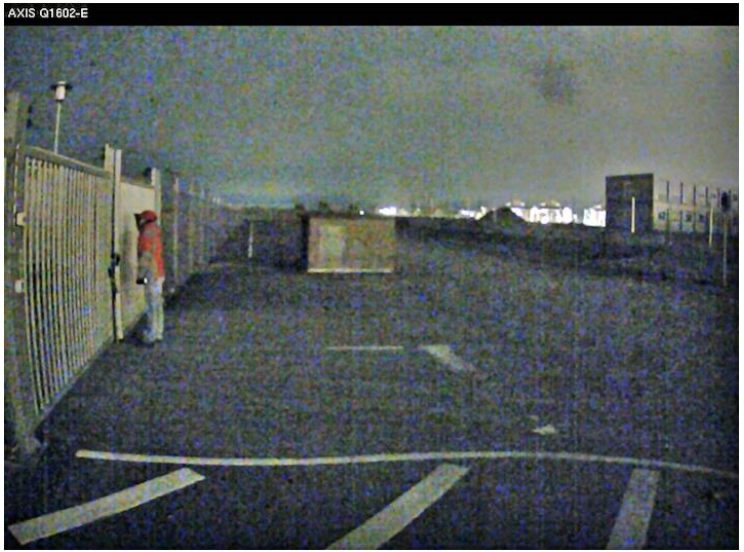
Market shares for surveillance cameras

Rank	Supplier surveillance cameras 2011
1	Axis Communications
2	Panasonic System Networks (PSN)
3	Samsung Techwin
4	Hikvision
5	Pelco

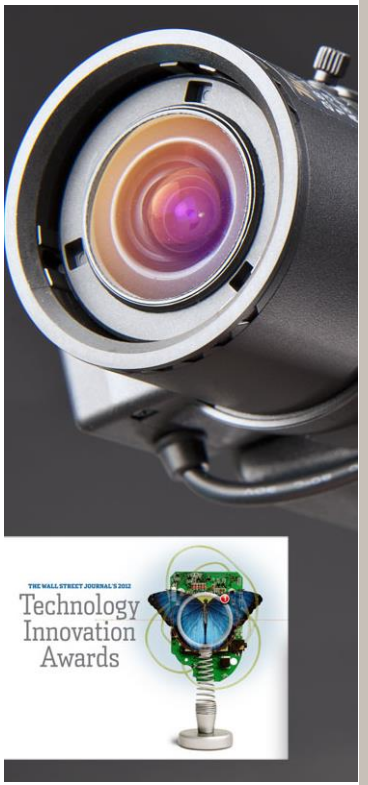
Source: IMS Research 2012

Lightfinder technology, Wall Street Journal Technology Innovation Award

AXIS 221



AXIS Q1602



Perimeter surveillance with no street illumination during night time and approximately 0.1 lux.

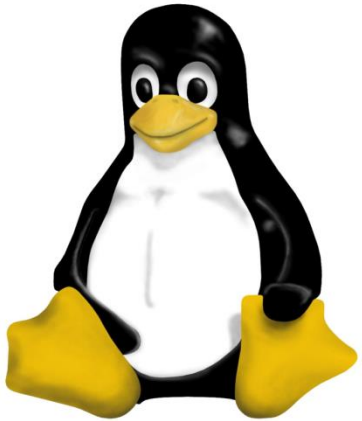
In-house R&D – where the coming successes are made

- Substantial R&D investment
  - 15% of revenue
  - 580 MSEK in 2012
- Patent portfolio contains 143 patent & design patent families
- 3 corner stones
  - Innovation
  - Openness
  - Quality

Approx. 600 engineers work in Lund

Mechanics

Software

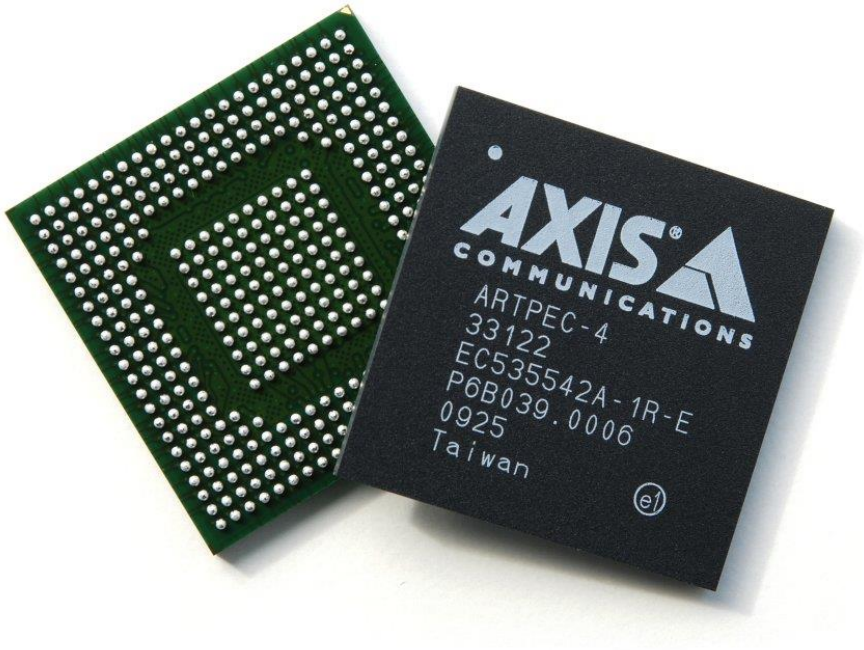


Electronics

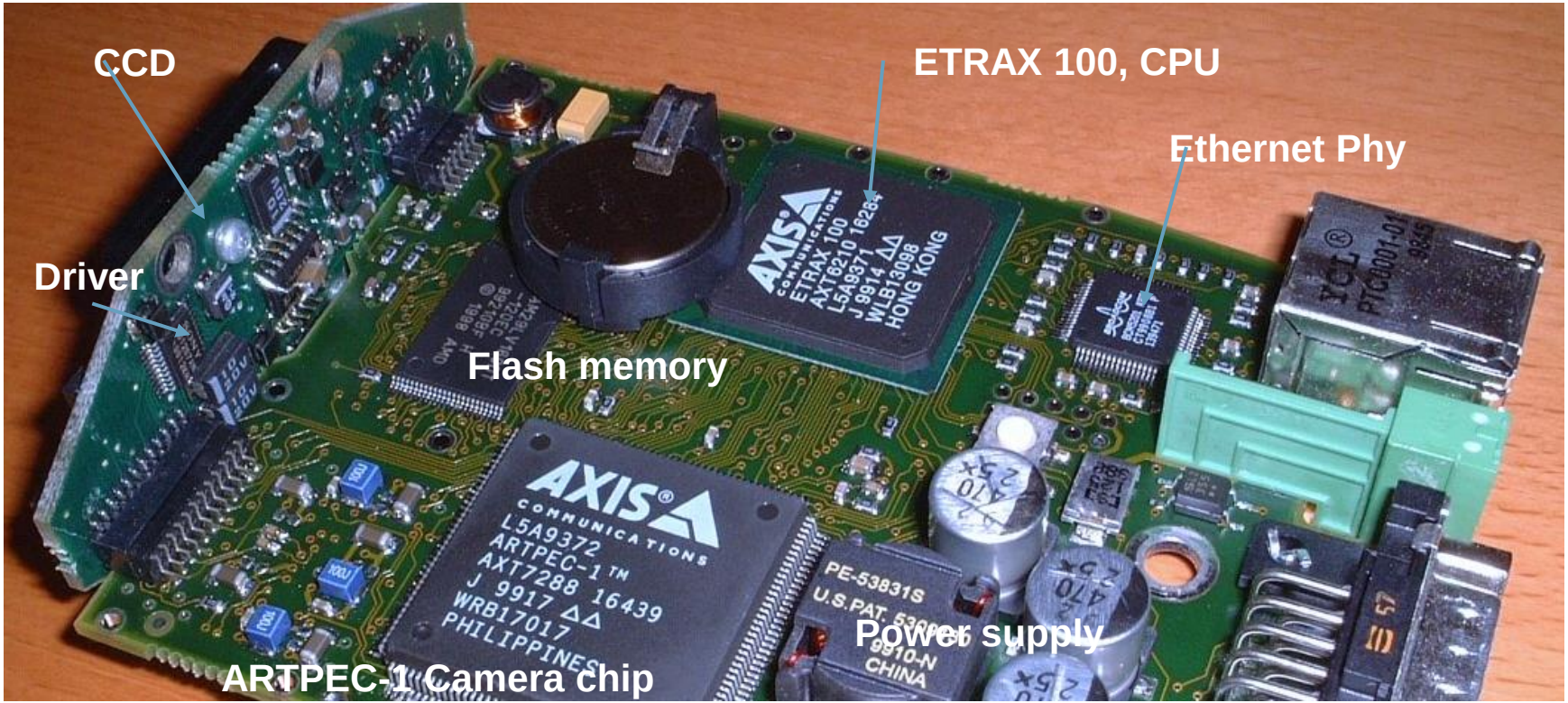
ASIC´s

SoC content

- Embedded CPU running Linux
- Image processing pipeline
- Image scaler with dewarping
- Image compression subsystem
- Crypto accelerator
- Ethernet controller
- I/O controller
- Interfaces etc



ARTPEC-1 product



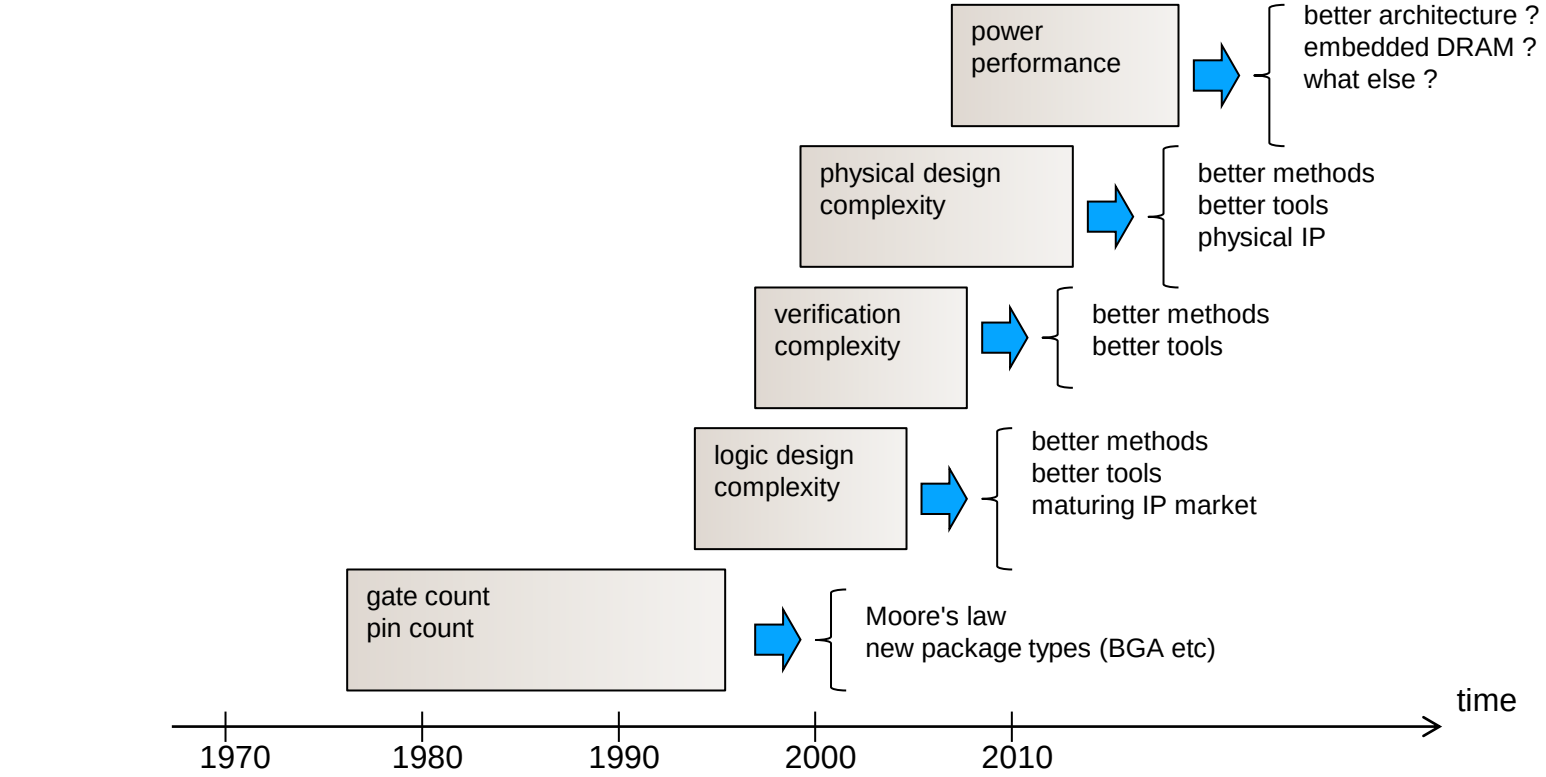
ARTPEC 1 - 4

> Four generations of dedicated network camera ASIC’s

ASIC challenges

> Price/Volume
> Complexity
> Project size
> Project time
> Tools
> Power
> Shrink
> Technology

Electronic design obstacles, history and future



Development challenges

> Distance to production

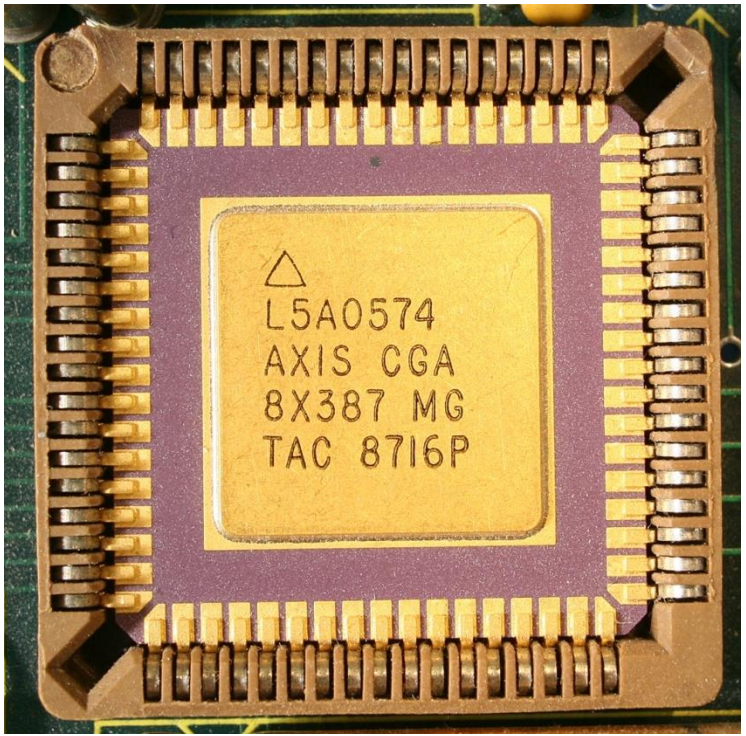
> Open source

> Free information

> Crowd founding (Kickstarter etc)

> Time to market

> Quality

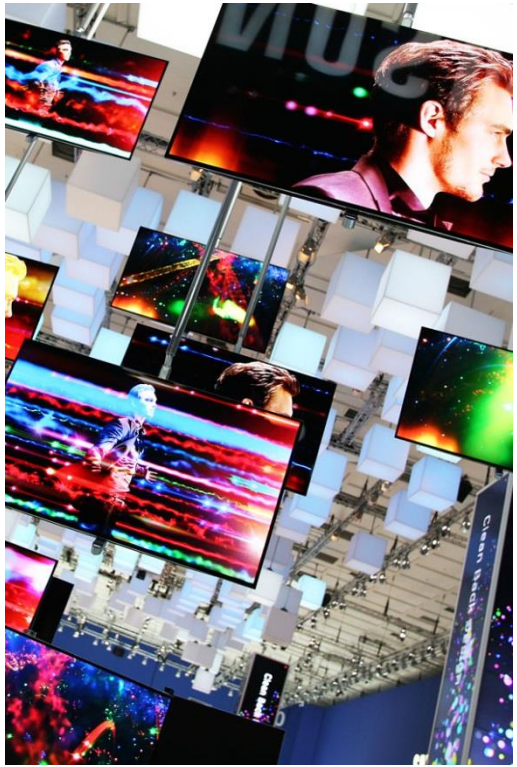


Consumer Electronics Trends

- **Staying Connected**
  - Consumers want to stay connected, at home and while traveling.
  - Portable equipment with the latest features (More important than ever)
- **Media and Data Convergence**
  - Media-centric TV and the data-centric computer will merge.
  - New gadgets has to handle both types of tasks and be synchronized
- **In-Home Entertainment**
  - 1080p will be replaced by 4K
  - Video/Music on demand
  - User interface centric equipment
- **Smart home**
  - Embedded devices for everything
  - Smart/Cost-efficient device integration

More trends

- **IT**
  - Cheaper and better tablets and computers
  - Moving to App-oriented business models
  - Corporate cloud solutions
  - Wider use of P2P/streaming media
- **Mobile communications**
  - User-interface for everything
  - Mobile payments
  - IPv6
  - Wearable devices
  - Real time automatic voice translation
- **Other**
  - 3D printing
  - Autonomous flying robots (Drones)



Industry Trends in Consumer Electronics

- Difficult to earn money on software
  - App-centric world
  - Customer lock-in
- Business critical technology development
  - Vertically oriented business trend
    - Apple, Microsoft…
  - Outsourced development is now moved home
- IPR
  - Patents

Display technology

- Important part of surveillance system
- Industry update (Status, Players, jobs,
- Display market update(Outlook, Problem, Solution)
- 4K (Pixel, Size, Cost, Apple)
- OLED
- Key selling arguments (Demo, 3D, Scaling, Easy, Future)
- Trends (Flexible, Unbreakable, See-through, Touch)
- IFA2013 update

SER-Prize 2013

Gunnar Dahlgren *Per Kannermark* *Martin Gren* *Stefan Lundberg* *Carl-Axel Alm*

AXIS

Axis
competence
worldwide
leader
HDTV
network video
convergence
intelligent
open
camera
megapixel
easy installation
partner network
Thank you!
safe
innovation
outdoor
environment
leader
thermal
global
ease of use
H.264
protect
integration
image usability
focus
video encoder