

e2v,
The business roadmaps, the trends for future

Thierry Gouvernel, Head of Strategic Business Development
e2v Grenoble
ESCCON 2011, Noordwijk



e2v is a leading global provider of **technology solutions** for high performance systems;

delivering **solutions, sub-systems and components**, to advanced systems companies, for specialist applications

within medical & science, **aerospace & defence**, and commercial & industrial markets.

- 
- A faint, light blue world map is visible in the background of the slide, centered behind the text.
- Founded: 1947
 - Annual sales: **\$320 million**
 - Corporate HQ: Chelmsford, England
 - Listed on the London Stock Exchange and FTSE4Good index
 - Employees: approx 1500, of whom approximately a third are engineers and scientists
 - 6 production facilities: 3 in England, 1 in the US, 1 in France and 1 in Switzerland
 - Sales made to over 50 countries

Sales by Division

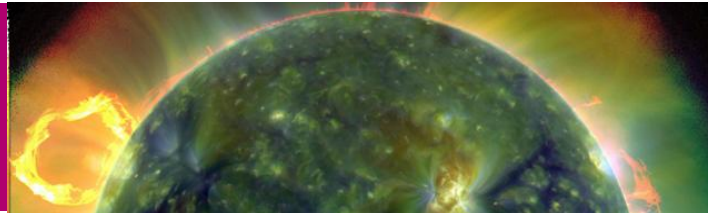
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RF power solutions (tubes)



\$105m

High performance Imaging solutions



\$86m

Hi-rel semiconductor solutions



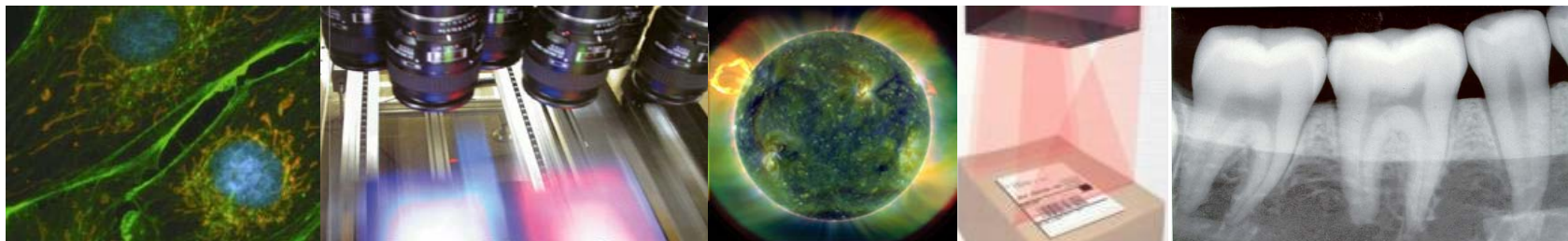
\$81m

technology solutions for high performance systems



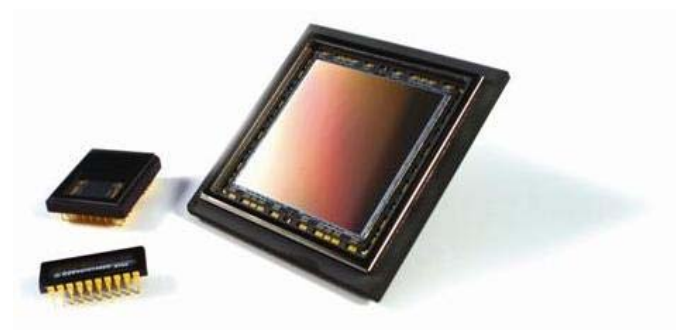
e2v's operational centres are certified to:

- ISO9001:2008
- ISO/TS 16949:2002 (Lincoln and Corcelles automotive products)
- **AS/EN9100** (Grenoble and Santa Clara aerospace semiconductor products)
- **MIL-PRF-38535** custom microcircuit certification (Santa Clara, Grenoble)
- **ESCC** (European Space Components Coordination)
- Environmental Management System (EMS): ISO14001
- BITC environmental index: Gold rating



High performance imaging solutions for programmes requiring CCD & CMOS sensors and cameras for:

- Space and earth observation imaging
- Science and life science imaging
- Machine vision
- Ophthalmology
- Dental x-ray systems



Imaging / Market segments

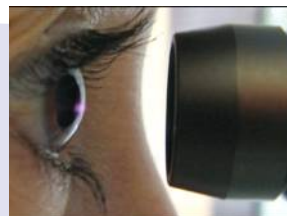
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Automatic
data collection



Dental radiography



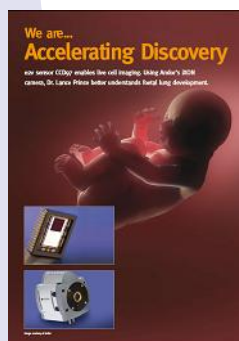
Ophthalmology



Machine vision



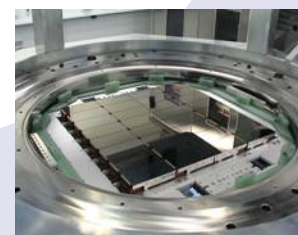
Living planet
observation



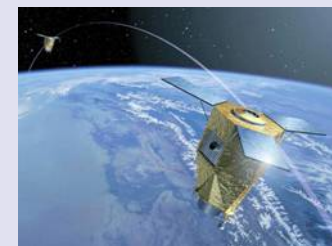
Science



Defence



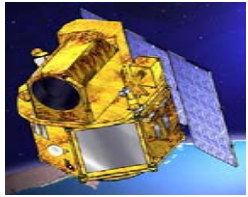
Astronomy & space
science



Land
Earth
observation

e2v Imaging devices, Enabling Earth Observation Satellites

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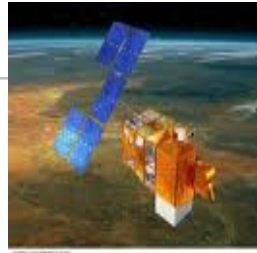
THEOS - Thaïlande



PLEIADES - France



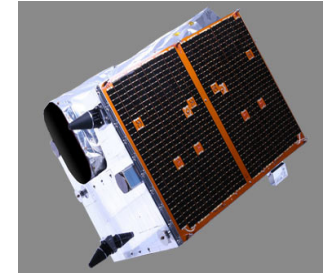
SPOT – France



Helios - CNES - DGA



CSO MUSIS - France



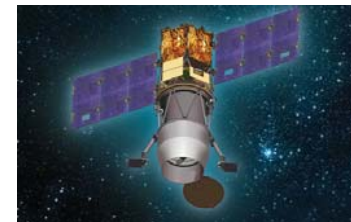
RapidEye - Canada



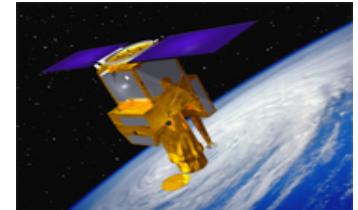
FORMOSAT1 - Taiwan



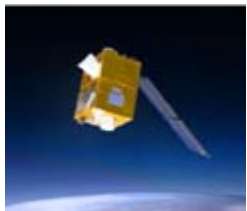
VnredSat1 - Vietnam



OFEK – ISRAEL



Göktürk- Turkey



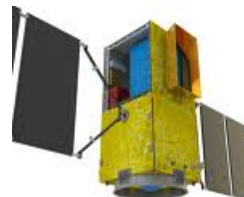
ALSAT-2A -Algeria



MAPING – China



LASP - USA



AMAZONIA - Brazil



GCOM - Japan



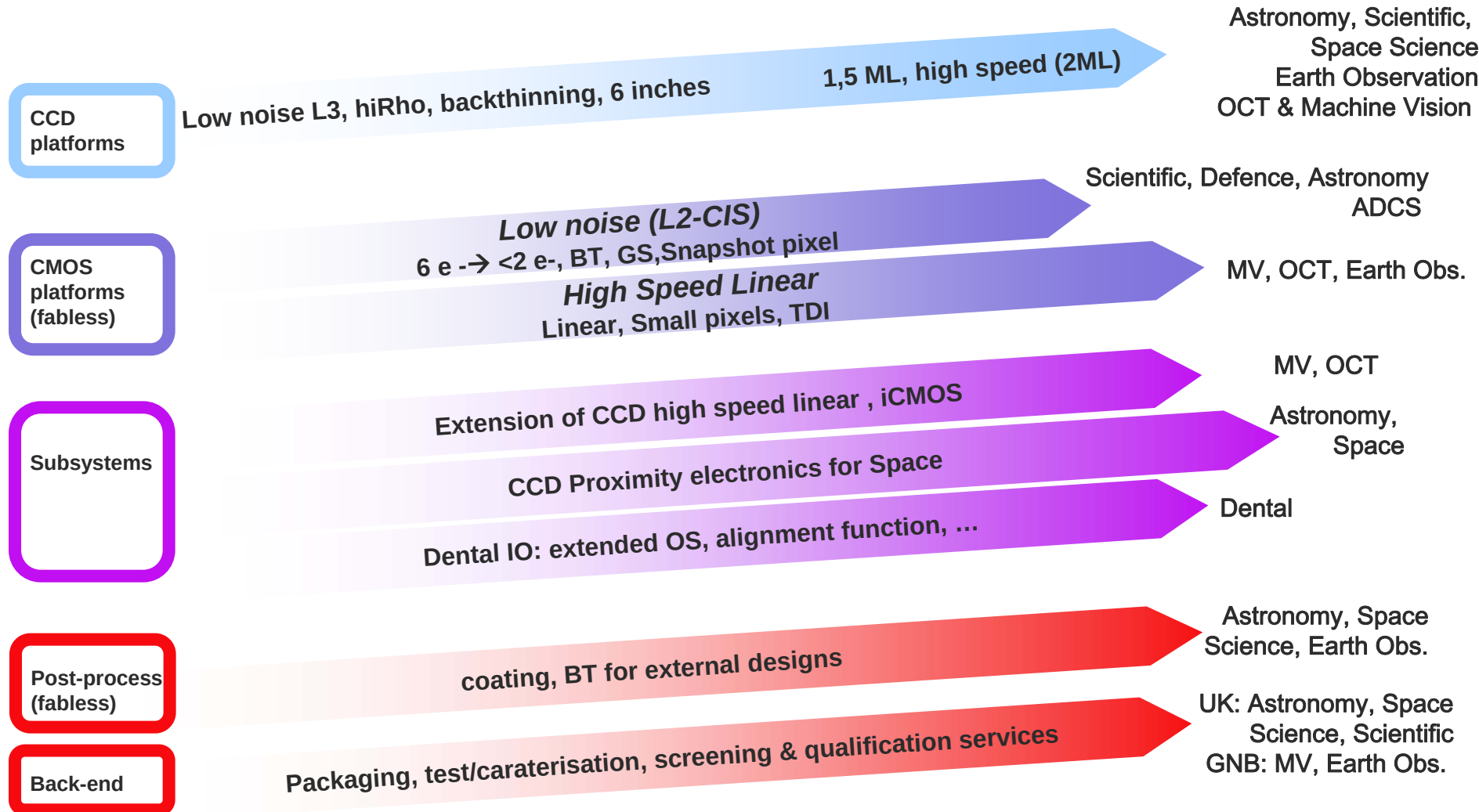
SEOSAT - Spain

Imaging Core technology roadmap

Platform approach to support several markets

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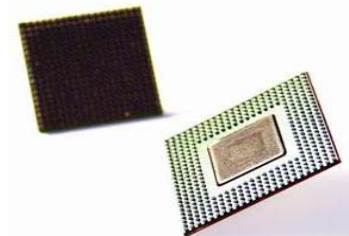
Markets





Hi-rel semiconductor solutions for aerospace & defence programmes requiring:

- Lifecycle management
- Hi-rel microprocessors
- High speed data converters
- High reliability ICs with lifetime continuity of supply
- Assembly & test services
- MRAMs



High-Rel Semiconductors Applications

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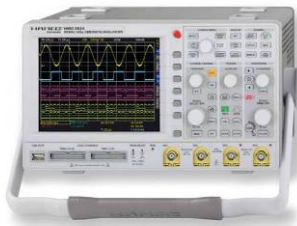
Defense & Aerospace

- Radars
- Electronic warfare
- Counter measures
- Telecom Satellites



Avionics

- Flight computers
- Flight control systems
- Voice data recorders
- Displays
- Engine control



Industrial and Instrumentation

- Down-hole drilling
- Instrumentation : DSO, Data Acquisition
- Scientific : HEP, Radioastronomy

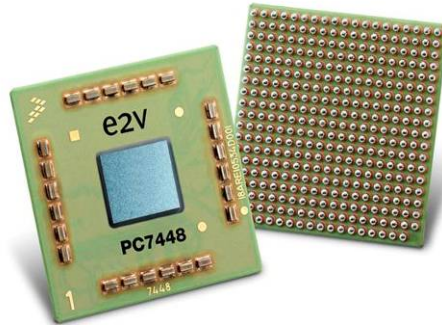


Semiconductor Partner Program

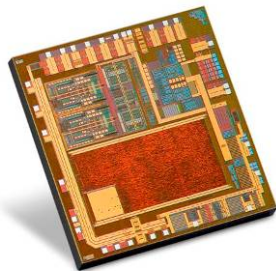
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**Broadband
data converters**



**Hi-rel
Microprocessors**



ASICs



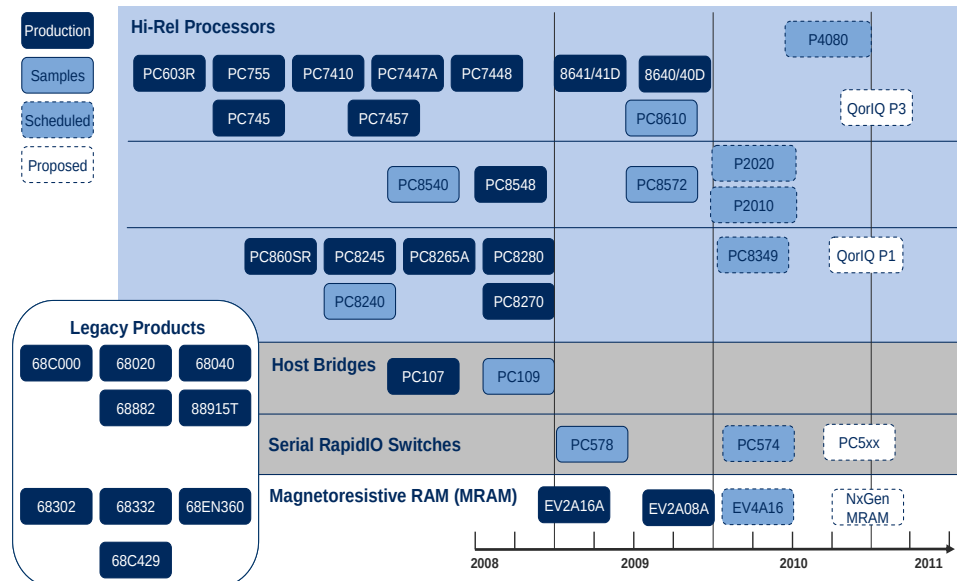
MRAMs



**High power
ISM transceivers**



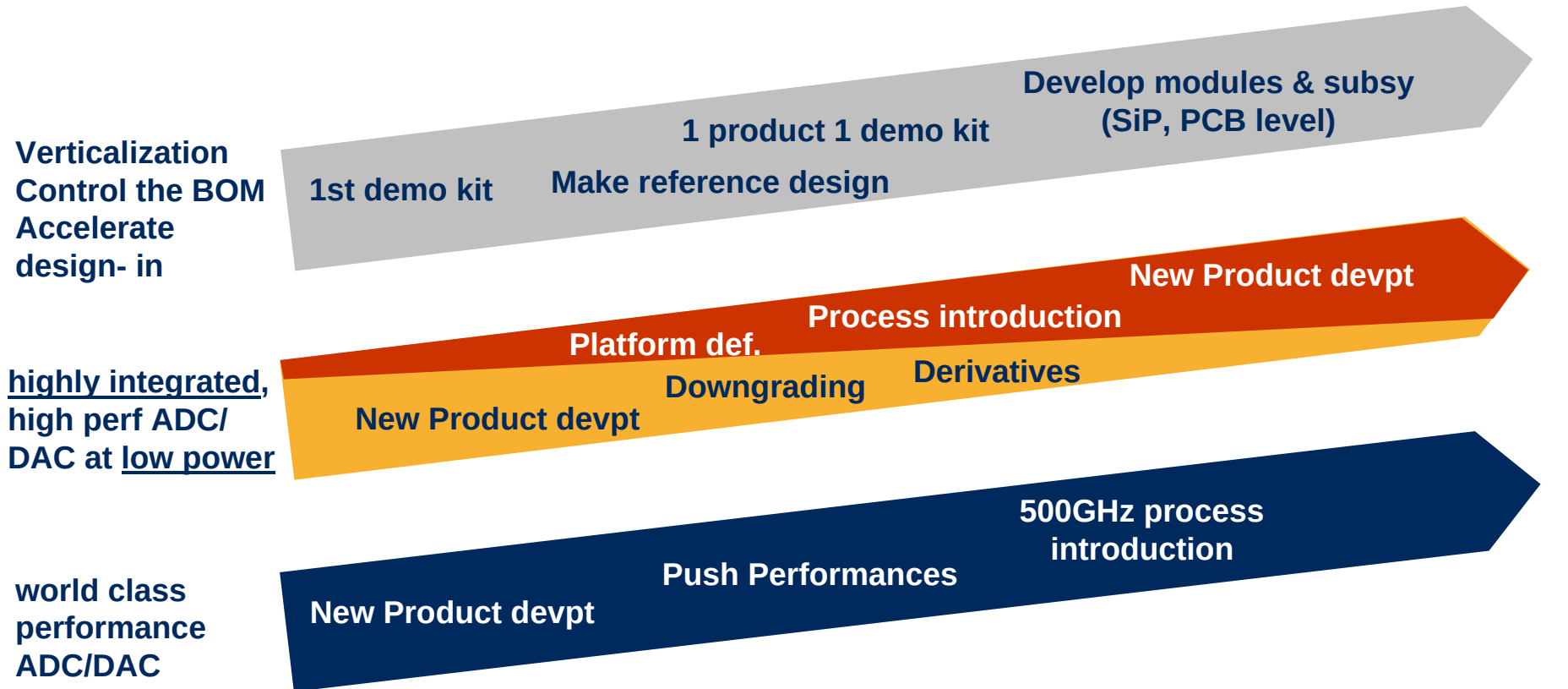
- three decades of hi-rel assembly and test and strategic partnerships
- products sold under e2v brand with full warranty - hi-rel performance guaranteed
- continuity of supply (20 to 30 years) for aerospace and defence OEM's
- market leaders in data converter (ADC / DAC) solutions
- product roadmap with strategic partners



Focus on Data Converters:

Technology platform overview with upcoming steps

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Data Converters Product Offering by application's frequencies of operation

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S-Band RF Applications

EV10AS150

10bit
2.5GSPS
ADC

EV12DS130

12bit
3GSPS
DAC

L-Band RF Applications

EV10AS180

10bit
1.5GSPS

EV10AQ190

Quad 10bit
5GSPS

Time Domain Applications

EV8AQ160

Quad 8bit 5GSPS

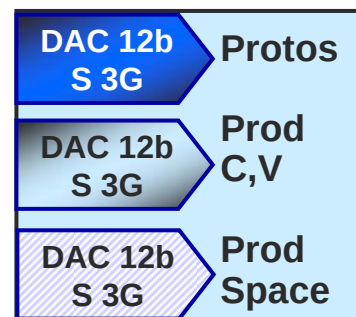
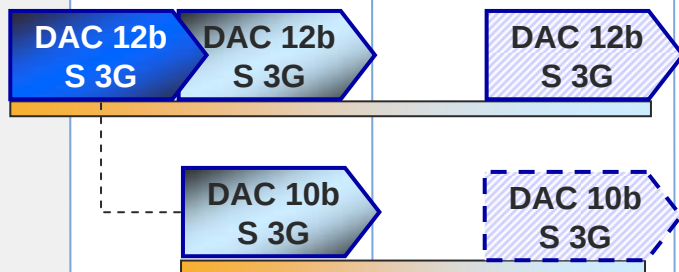
AT84AD001C

Dual 8bit 1GSPS

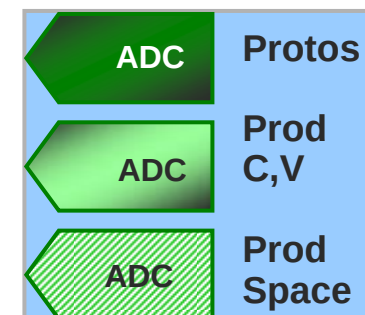
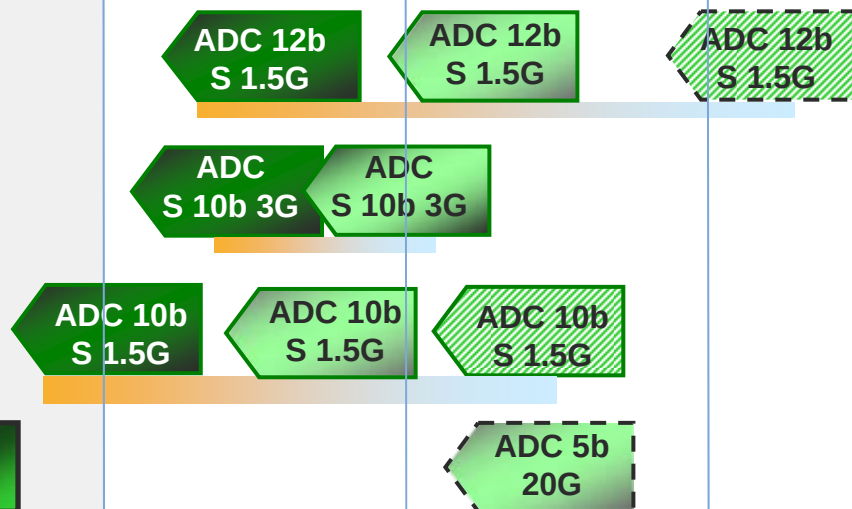
Data Converters Roadmap

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DACS



ADCs



2011

2012

2013

**Premier Assembly and Test Services
for high reliability semiconductor products**

Largest independent ATH in Europe

Class 100 assembly clean rooms

First in class test equipment



Assembly & Test Services

Grenoble Industrial facilities - Packaging Line

e2v

- Hermetic ceramic packages

DIL



CPGA



CQFP

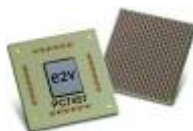


CLCC

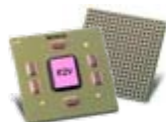


- Flip-Chip packages

CBGA



Hi-TCE CBGA



- High-Rel ICs

Industrial, aerospace and military applications

- Image sensors

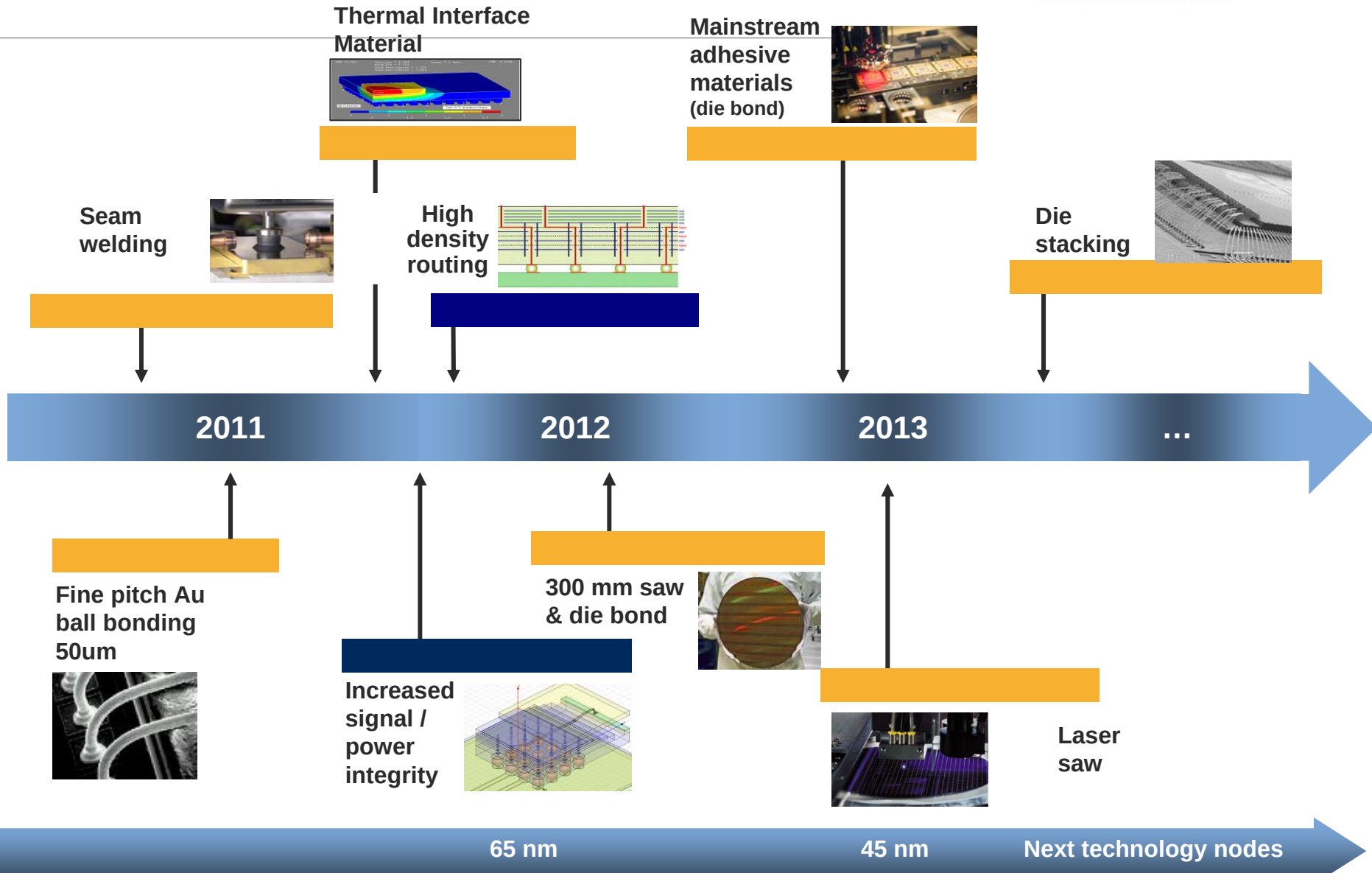
Industrial, space and medical applications



Road Map

Package & Assembly Process evolution

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Package Road Map, for high speed, high pin count devices

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Kovar ring
packages
(Seam welding)



Stacked die



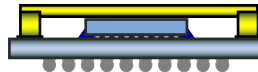
SIP,
WLCSP,..



MCM
flip chip



Hermetic flip-chip
(Seam Welding)



2011

2012

2013

...

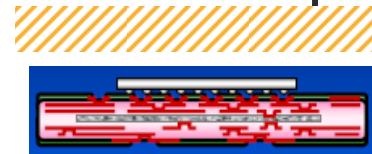
Heatspreader
flip chip



Large Hi Rel
quasi hermetic
flip chip



Hi-rel
organic



speed

3 GHz

6 GHz

...

1200

2000

...

I/O count

Assembly & Test Services

Grenoble Industrial facilities - Test Line

e2v

- **Automatic Test Equipments**

CCD & CMOS image sensor

Teradyne A393, A565IH, IP750
and dedicated test-bench

Mixed & RF IC

Teradyne A567 (x3), A585

Digital IC

Teradyne J971, J973, Tiger, Ultraflex
NextTest PTHF64

Dimensional test:

ICOS CIT120

- **Low/high temperature
handlers and probers**

EG4080/4090/6000 probers

Multitest, Delta design.

- **Reliability and burn-in :**

Secasi- AEHR – ELES oven



Life cycle extension

Examples & References related to wafer banking



- 20+ years : 8-bit microprocessors (68XX)
- 12+ years : 32-bit microprocessors (68XXX), ARINC Controller, ADCs
- 10+ years : Digital/Mixed signal ASICs, 8-bit microcontrollers (HC811E2, HC11)

***All commitments to customers entirely fulfilled,
no product shortage ever !***

In summary, e2v commitment to Space market

The e2v logo is displayed in white text on a dark blue, horizontally-oriented oval background.

- European Semiconductor Industrial partner for supply chain, back-end and long term support of complex products:
 - semiconductors, image sensors, high speed data converters, life cycle extension...
- Space components solutions and roadmaps, in synergy with adjacent markets (Civil and Military Avionics, Defence, Medical, Scientific & Industrial)
- Bridge between commercial semiconductor industry/technologies and the specific needs of Aerospace market.

Thank you!

www.e2v.com