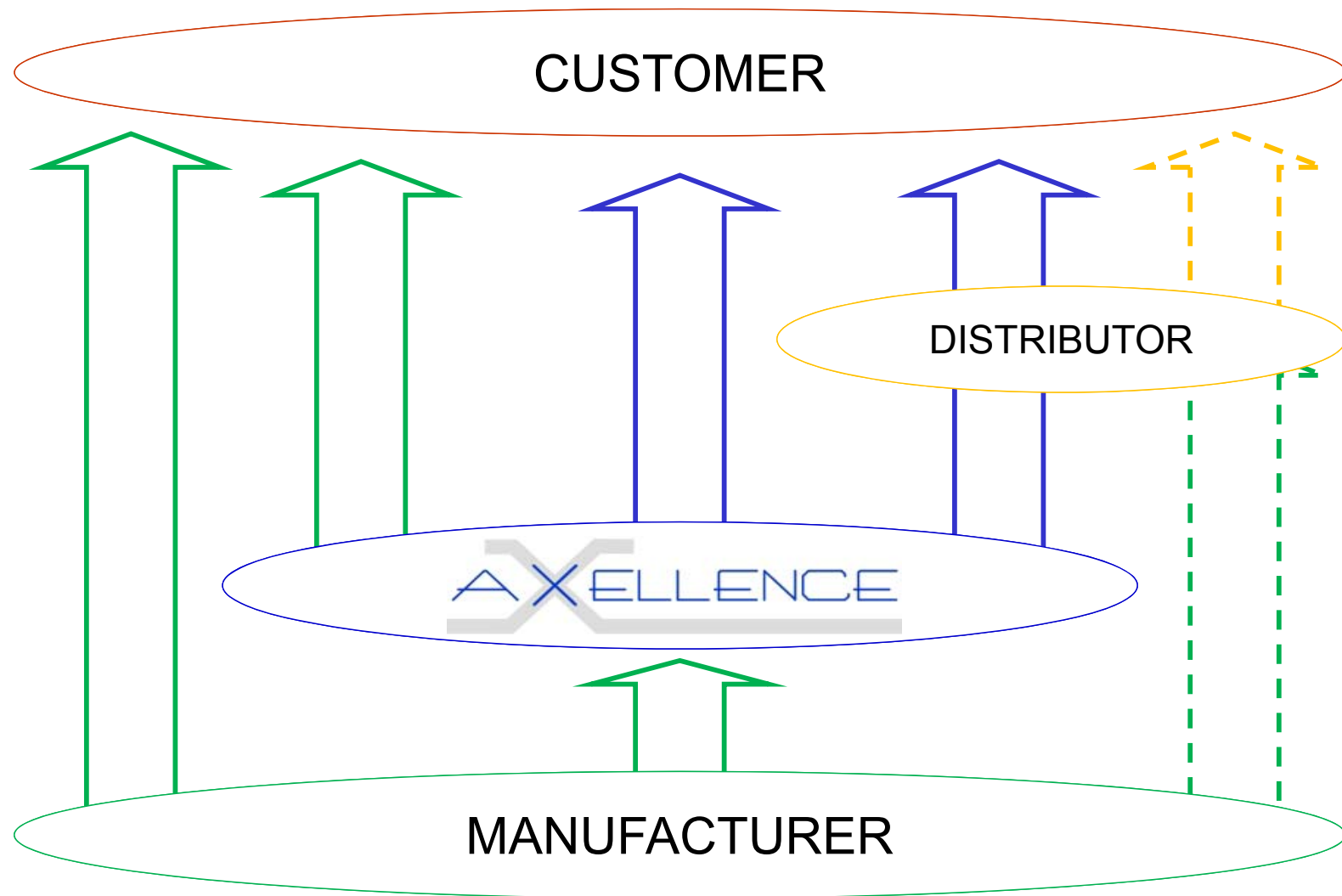




***Dynamic Manufacturer's Rep
for
Demanding Customers
in
Challenging Markets***

- founded in March 2000 -

The „Rep-Model“ – Designed to provide Customers with optimal Support



A Manufacturer's Representative ...

- ... is an extended sales force (ESF) of manufacturers
- ... receives commission only for successfully created business
- ... sells solutions to customers and its service to suppliers
- ... steers distributor organisations if required

A manufacturer representative is typically used in the following situations:

- *When there is lack of a sales force for the manufacturer. The manufacturer's rep will then do all of the selling.*
- *When introducing a new product into the market.*
- *When there is a new market the company wants to enter, but the market is not fully developed for their own sales force to be used.*
- *When it is more cost-effective than using the company's sales reps. The sales potential may not justify the cost of using the company's sales force.*

Source: Wikipedia

Professionals for Pan-European Activities

Stockholm

- Denmark
- Estonia
- Finland
- Latvia
- Norway
- Sweden

Milan

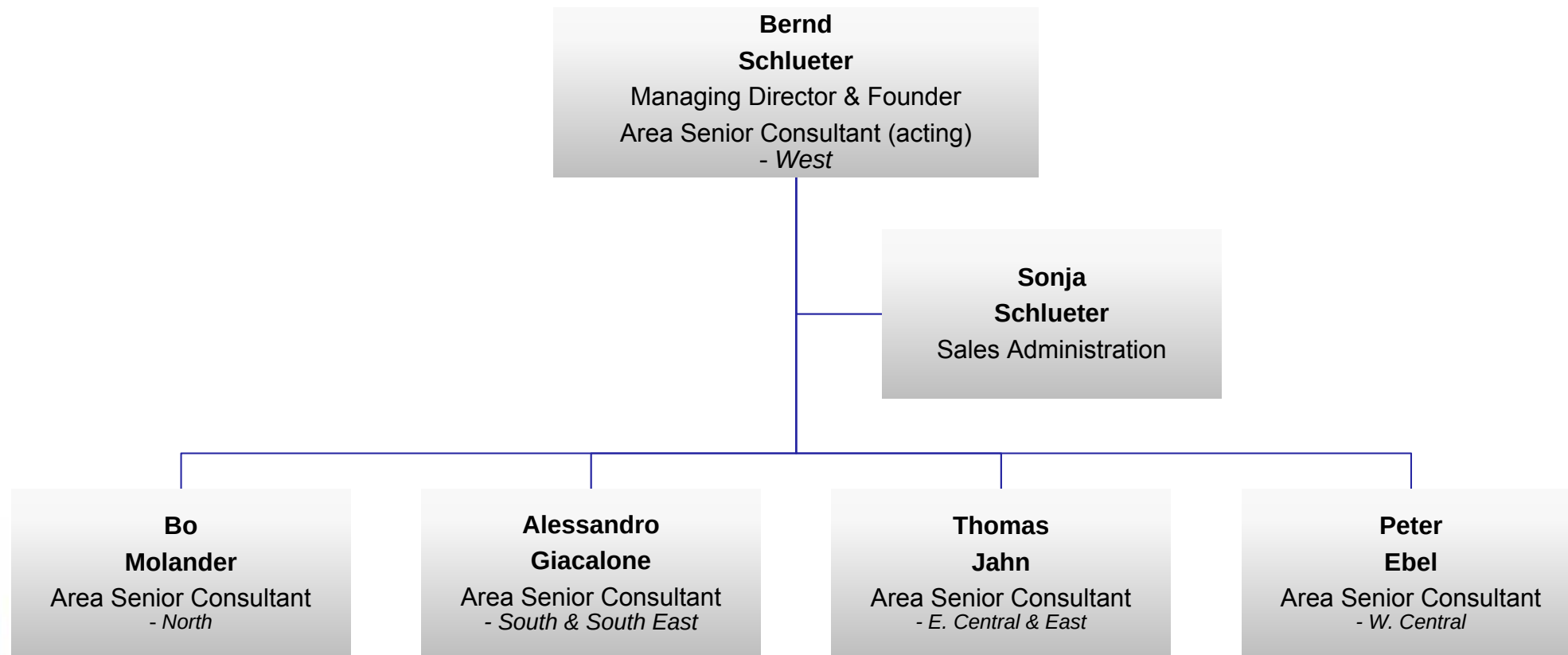
- Italy
- Greece
- Switzerland (South)
- Turkey



Munich (HQ) & Karlsruhe

- Austria
- Eastern Europe
- Germany
- Ireland
- Russia
- Switzerland
- UK
- Belgium
- France
- Netherlands
- Portugal
- Spain

Organization



Actively supported Markets / Application Examples

COMMUNICATIONS

- DSLAMs
- Encryption
- Ethernet Switches
- Gateways
- GPON OLTs/ONUs
- M2M Modules
- Mobile Basestations
- Optical Transport
- Radio Transmitters
- Routers
- Server Blades
- etc.

AUTOMATION

- Drive Controls
- Embedded Computing
- Human-Machine Interfaces
- Ind. Robots
- Smart Home Controls
- Smart Metering
- Surveillance Cameras
- etc.

MEDICAL

- Data Logging
- Displays
- Sensor Instruments
- Ultrasound Systems
- X-Ray Systems
- etc.

CONSUMER

- Coffee Machines
- Gaming Machines
- Lighting Systems
- Set-Top-Boxes
- TV Sets
- Vacuum Cleaners
- White Goods
- etc.

AUTOMOTIVE

- Adv. Driver Assistance
- Audio Amplifiers
- Dashboards
- Infotainment Systems
- Keyless Entry
- Lighting Controls
- Navigation Systems
- etc.

AVIONICS

- Network Control
- In-Flight Comms
- Missile Control
- etc.

Actively supported Customers in our Focus



Differentiation – The Key to Success



Mission & Vision

Mission:

To comprehensively support companies developing and producing innovative, cost effective and energy efficient electronic systems faster and easier.

Vision:

To become Europe's leading, most productive and appreciated manufacturer's representative for electronic components and solutions in automation, automotive, avionics, communications, consumer and medical.

Represented Manufacturers



➤ since Jun-2013
Carrier-Grade Ethernet Switches



➤ since May-2014
10/40/100GE iWARP, iSCSI, TOE, FCoE



➤ since Jul-2014
SW Tools for FPGA/ASIC Designs



➤ since Mar-2017
Verification IP Solutions



➤ since Nov-2009
Optical Transceiver Modules



➤ since Sep-2008
ASIC Technology



➤ since Apr-2017
Perceptual Display Platform (PDP) SW



➤ since May-2016
**CMOS Image Sensors
Capacitive Touch Controllers**



➤ since Oct-2011
FLASH Memories



➤ since Mar-2015
Configurable Mixed-Signal ICs

Backup Slides: Manufacturers at a Glance



Axcen Photonics: Reliable Optical Transceivers



BIDI
SFP(LC)



BIDI
SFP(SC)



Copper
SFP



SFP



GEPON
SFP/SFF



CSFP



CWDM
SFP



SFP+



XFP



BIDI 2X5
SFF



BIDI 1X9



1X9

(1) CSFP

- CSFP BiDi
- 10 / 20km
- Option 2



(2) BOSA on board

- GEPON / GPON
- ONU / OLT
- Pigtail / Receptacle



(3) SmartGrid

- 2x10 BiDi w/ DD
- SFP BiDi w/ DD
- SC / LC



(4) 10G SFP+/XFP

- SR / LR / ER / ZR
- BiDi



(5) GEPON w/ DDM

- 2x10-1000PX w/ DDM
- 10 / 20km



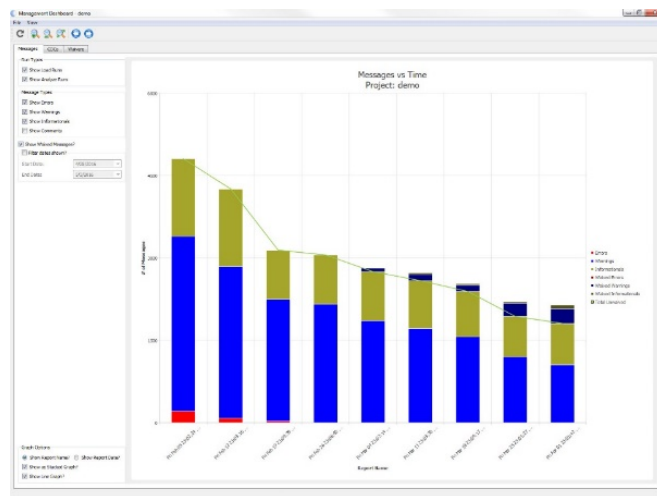
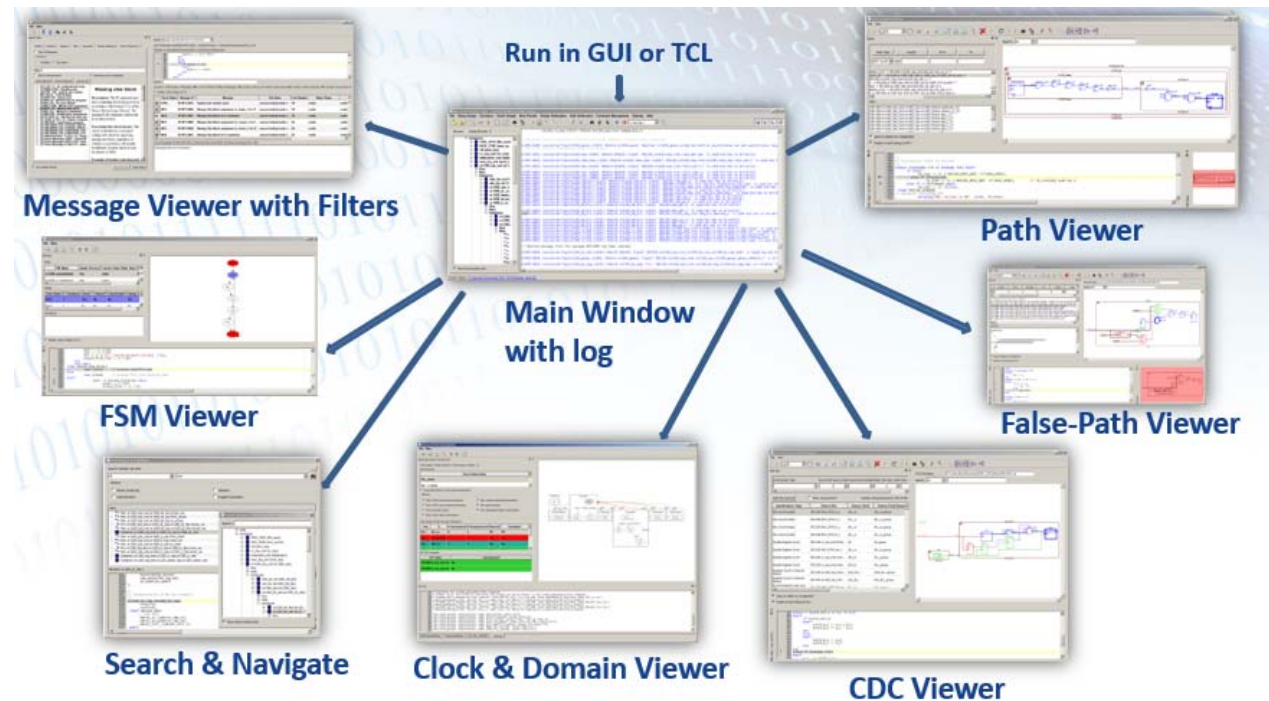
(6) Tridi

- GPON Tridi
- SC-APC
- Tx 2.5G/Rx 25Mhz/Rx 1.25G



Blue Pearl Software: Improving Efficiency of IP and FPGA/ASIC Designs

- Analyze RTL™ Linting & Debug
- Clock Domain Crossing with ACE
- Automated SDC Generation

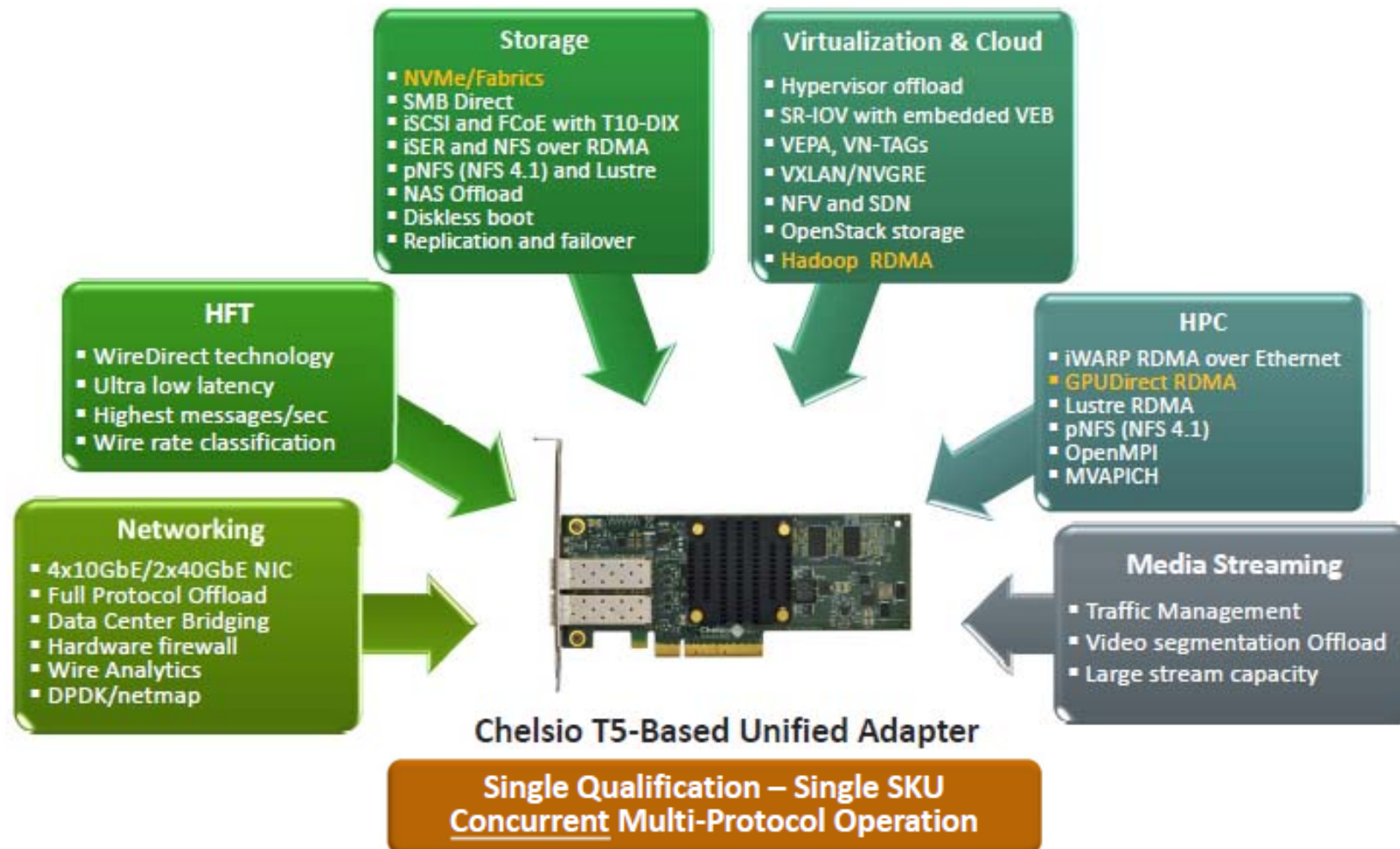


➤ Management Dashboard

- View daily or weekly progress
- Ideal for operation and design reviews

CDC, SDC and MDB are options to Analyze!

Chelsio Communications: High Speed Converged 40G Ethernet Solutions



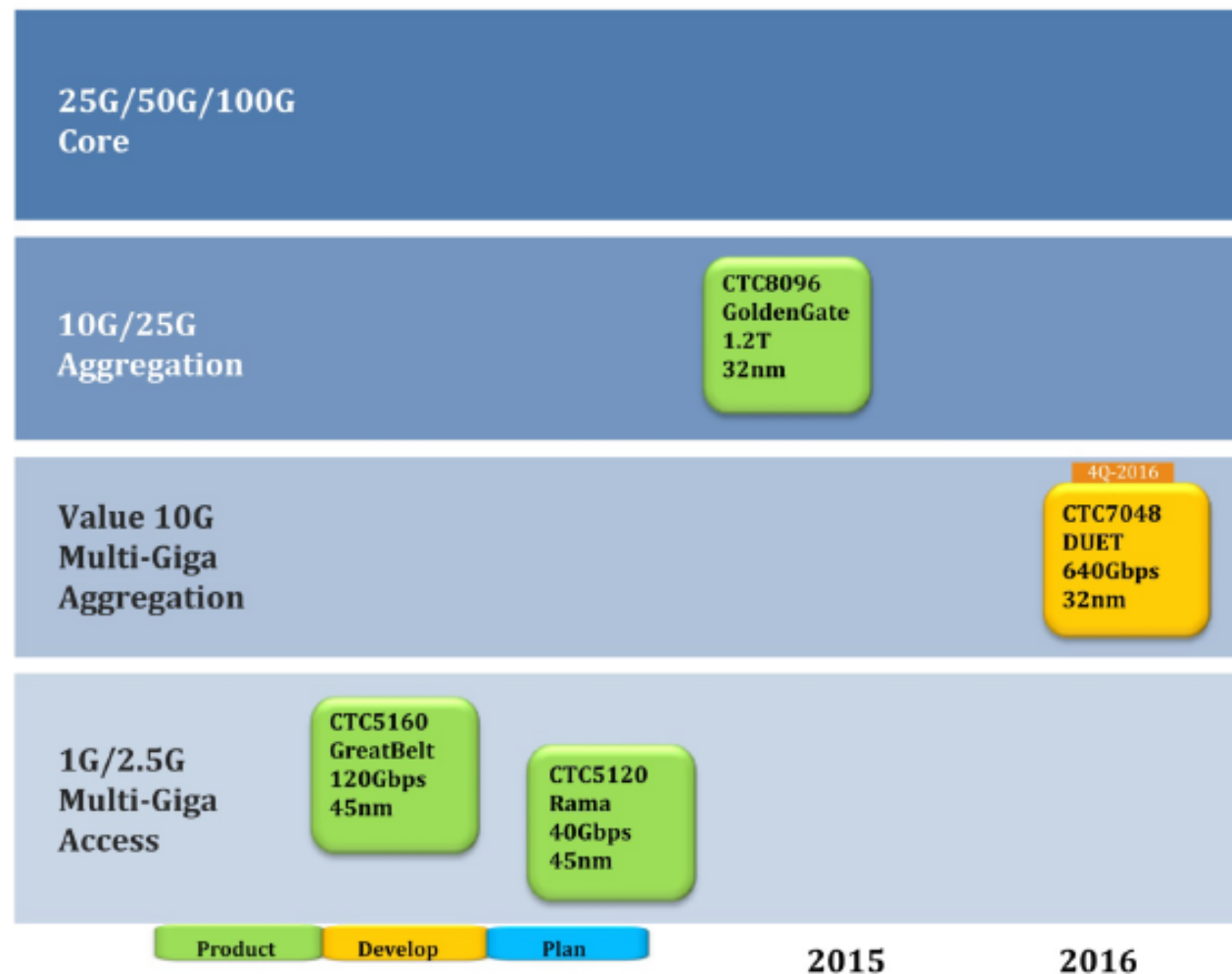
- Single processor data-flow pipelined architecture
- Up to 1M connections
- Includes MACs for 100M, 1G, 10G and 40G

Centec Networks (1): Ethernet Switching – Silicon Solutions



- **Advanced Features**
 - e.g. OAM
- **High Performance**
- **Cost Efficiency**
- **Low Power**

FULL Lineup from Access to Core



Centec Networks (2): Ethernet Switching – Board Level Products

2010 - 2011

CTC6048

- 48x1G + 4x10G
- 32K MAC / 16K IP
- MPLS / Metro
- 16Kx80 TCAM
- External TCAM Support



E330

- 48x1G + 4x10G
- Product quality switch software

2012

1G + 10G

G330

- 48x1G + 4x10G
- Product quality switch software



V330

- 48x1G + 4x 10G
- OVS 1.5 / OF 1.0
- 2.5K 12-tuple flow
- NvGRE / MPLS tunnel
- Multi-destination
- More editing actions

2013

CTC5160

- 48x1G + 8x10G
- 128K MAC / 64K IP
- MPLS / Metro
- < \$100 in cost



E350

- 48x1G + 4x10G
- 8x1G + 12x10G
- Product quality switch software



V350

- 48x1G + 4x10G
- 8x1G + 12x10G
- Large hash based flow

2014

E350

- 48x1G + 4x10G
- 8x1G + 12x10G
- 24x1G + 8x10G
- Product quality switch software



Avalon-V

- 4x1G + 2x1G/10G
- Python enabled

2015

GoldenGate

- 96 x 10G / 24 x 24G
- 48 x 10G + 4 x 100G
- 256K MAC / 128K IP
- MPLS / Metro
- SDN Innovations



E580

- 48x10G + 6x40G
- 48x10G + 4x100G
- Product quality switch software



V580

- 48x10G + 6x40G
- 24x40G
- 48x10G + 4x100G
- OpenFlow software with SDN highlights

10G

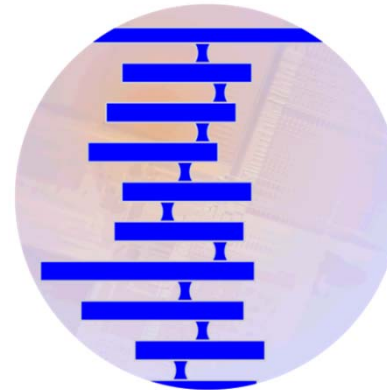
eASIC (1): Custom Logic Innovation

ASIC



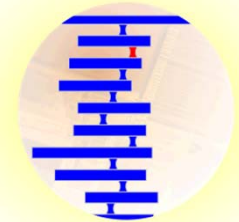
High NRE / Tool Cost (\$M's)
Long time in design (18 months)
Long TAT (18 weeks for 40nm)

FPGA



High power
High unit cost

eASIC[®]



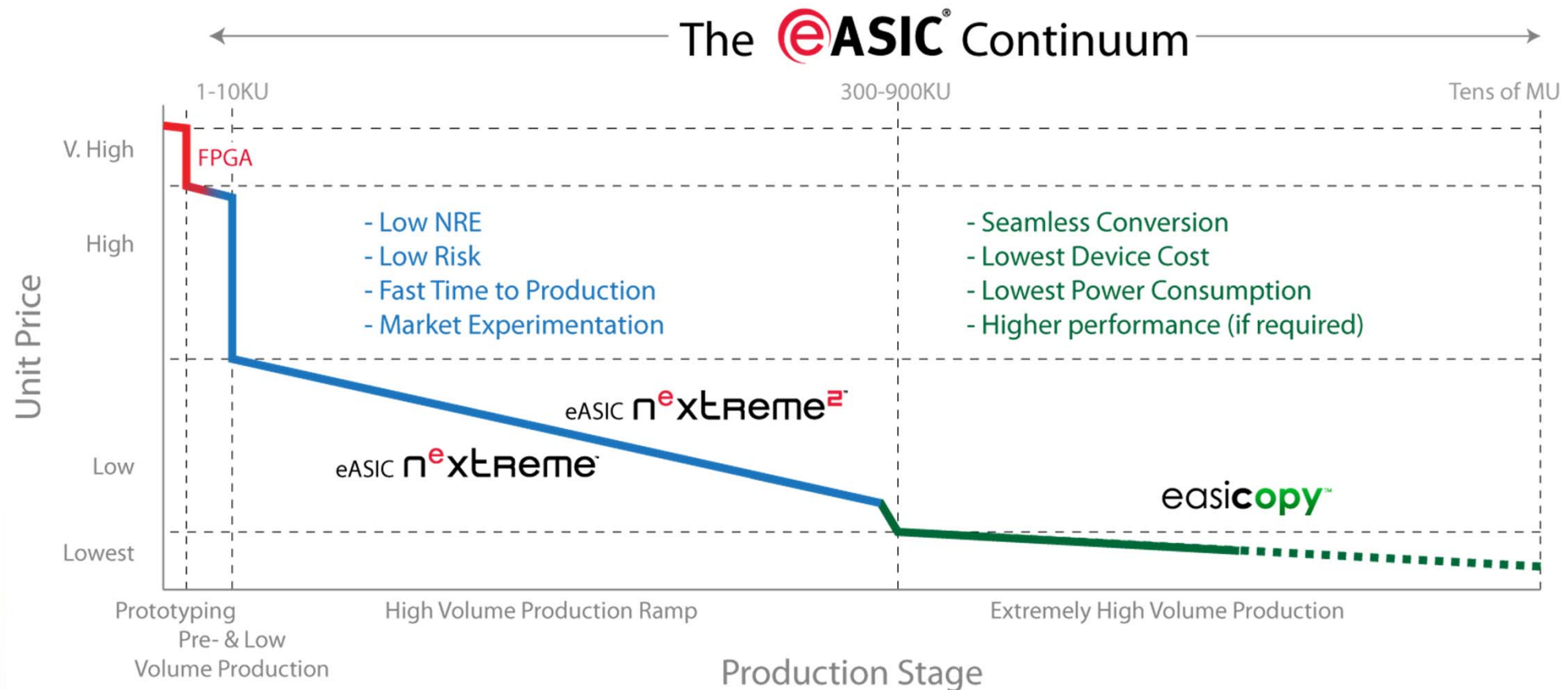
One unique layer

eASIC Value Proposition

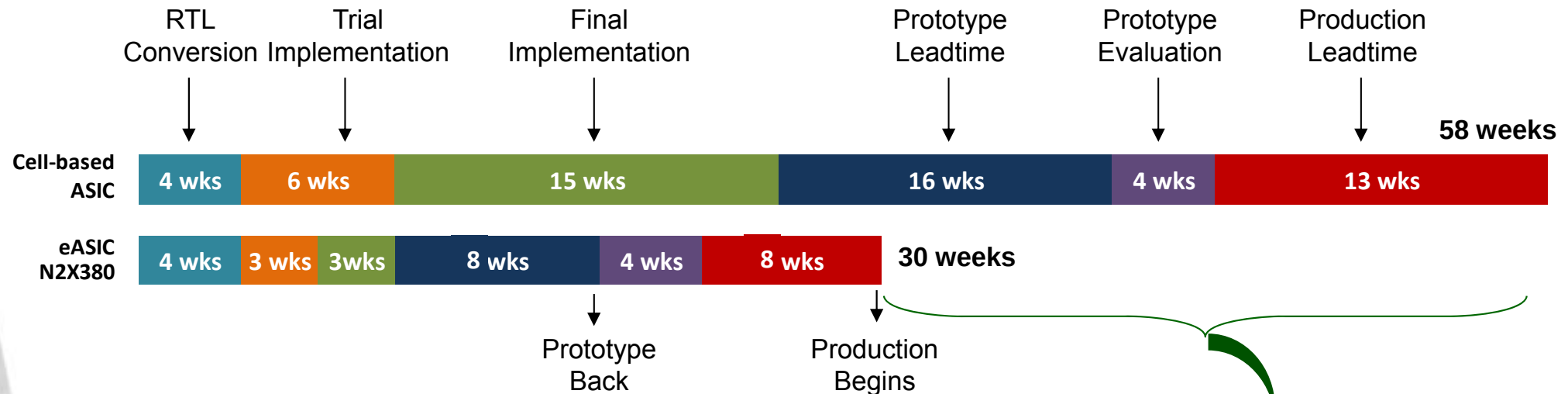
Low NRE/tool cost
Short time in design
Short TAT (8 weeks for 45nm)

70% Lower Power than FPGA
Lower Cost vs FPGA

eASIC (2): Power reduced and less expensive Solutions faster



eASIC (3): Fast Cost Reduction



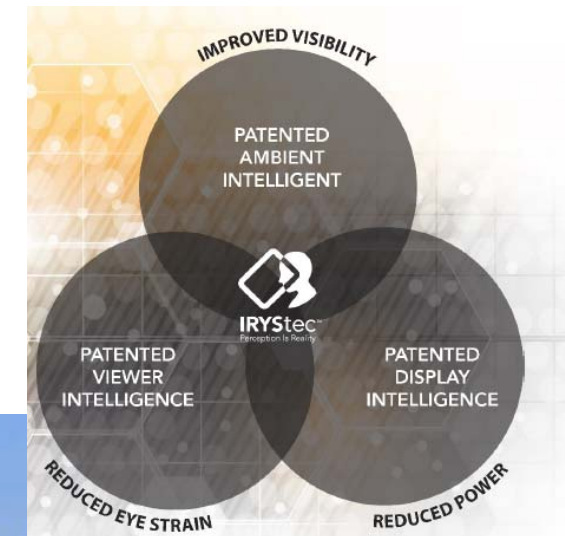
- Prototype Chips back in 18 Weeks
- eASIC allows wafers to be staged at contact or Via4
- Production ~7 months earlier than cell-based ASIC

You spend less time shipping product with expensive FPGAs

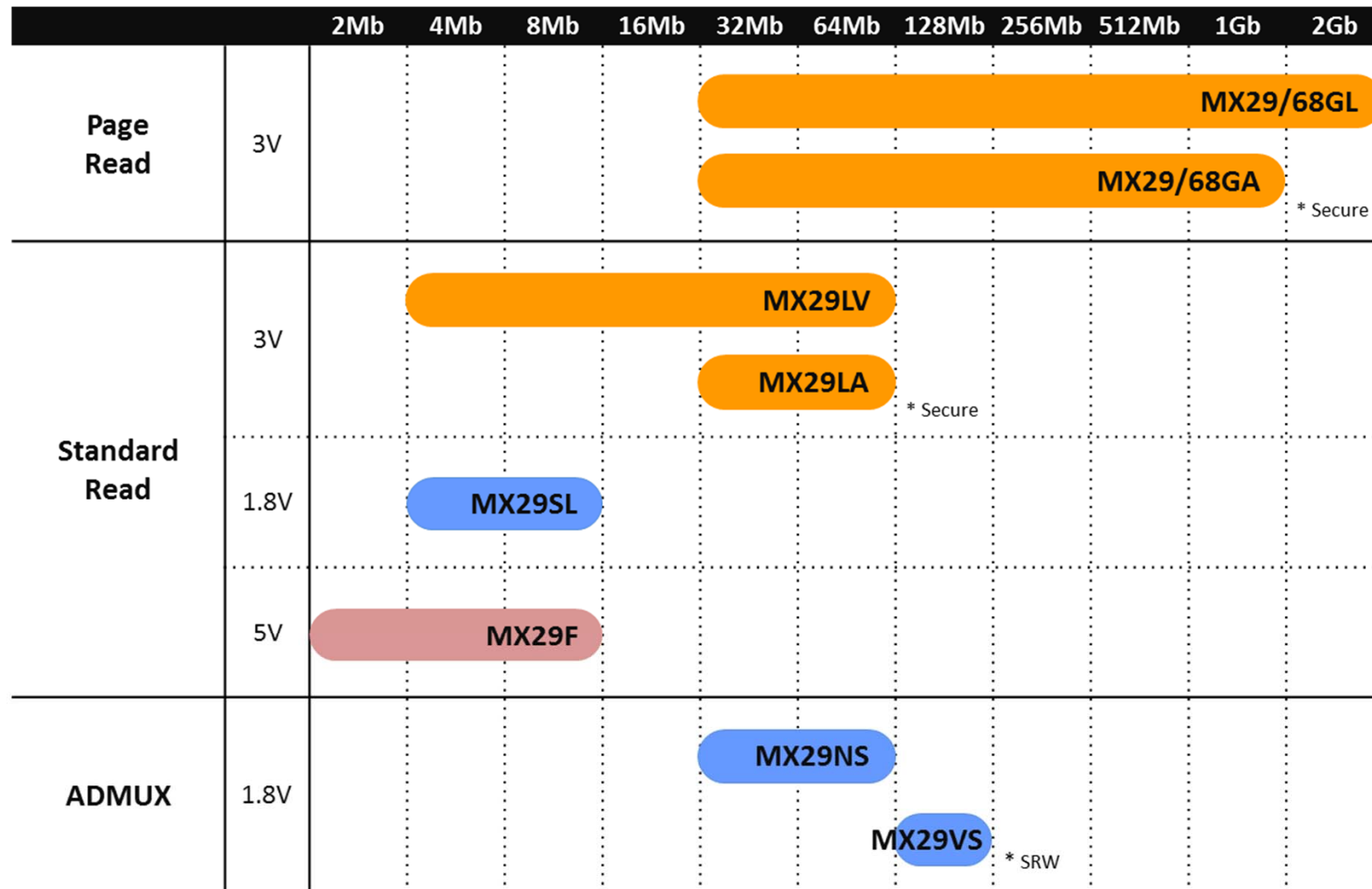
Notes: Times are in weeks. System qual time not included, assumed to be the same for both

IRYStec: PDP SW to create an Exceptional Viewing Experience

- Saves display power by more than ~75%+ ,which
- Reduces average device power dissipation by ~20%
- Increases video viewing time by 2x-4x in dark viewing environment
- Better able to view long movies and sports events at extreme light conditions
- Substantial reduction of eye strain, fatigue and headaches on mobile or any bright display based devices
- More vivid content experience compared to existing display technology

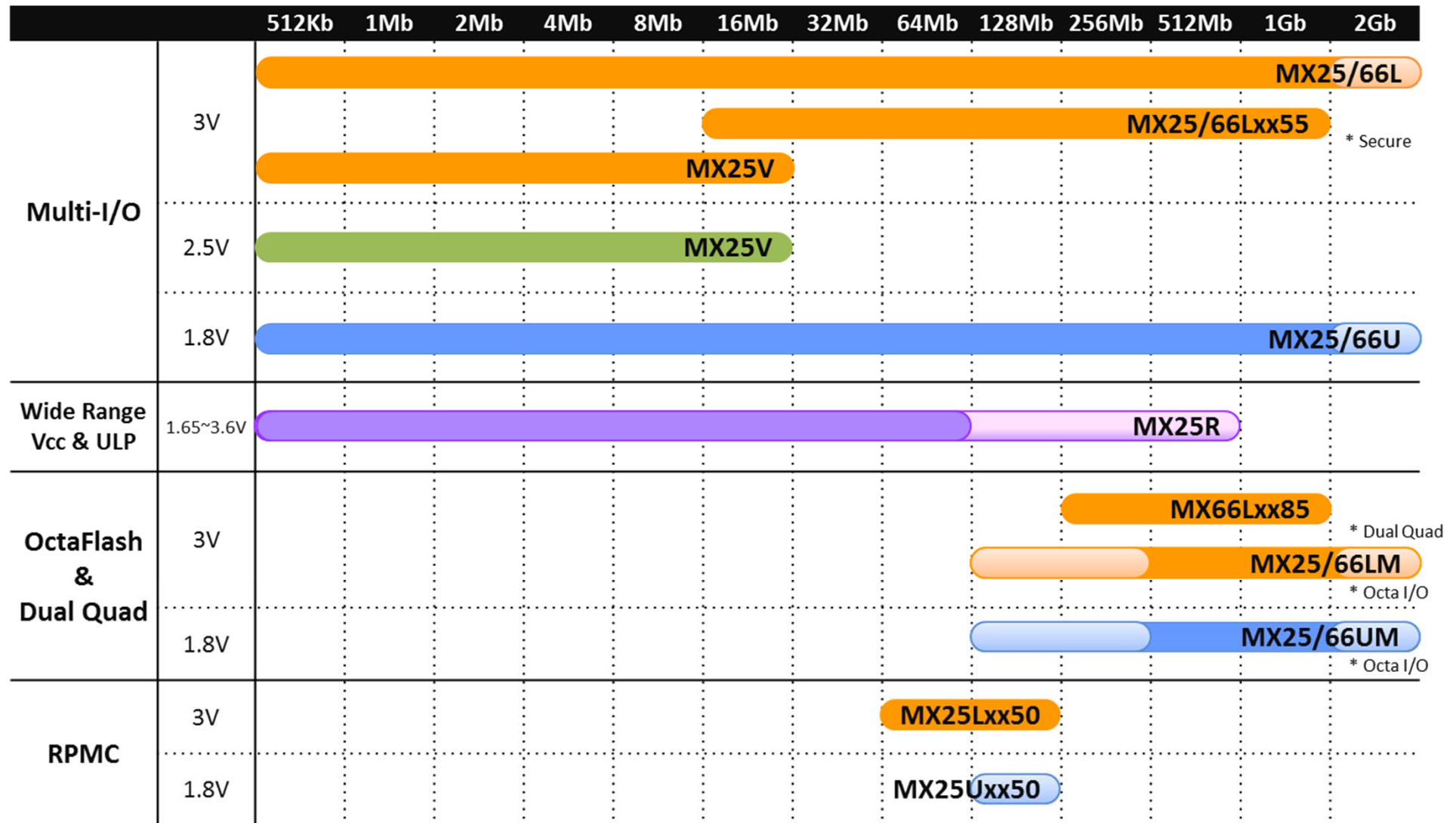


Macronix (1): Leading in Non-Volatile Memories – Parallel NOR Flash



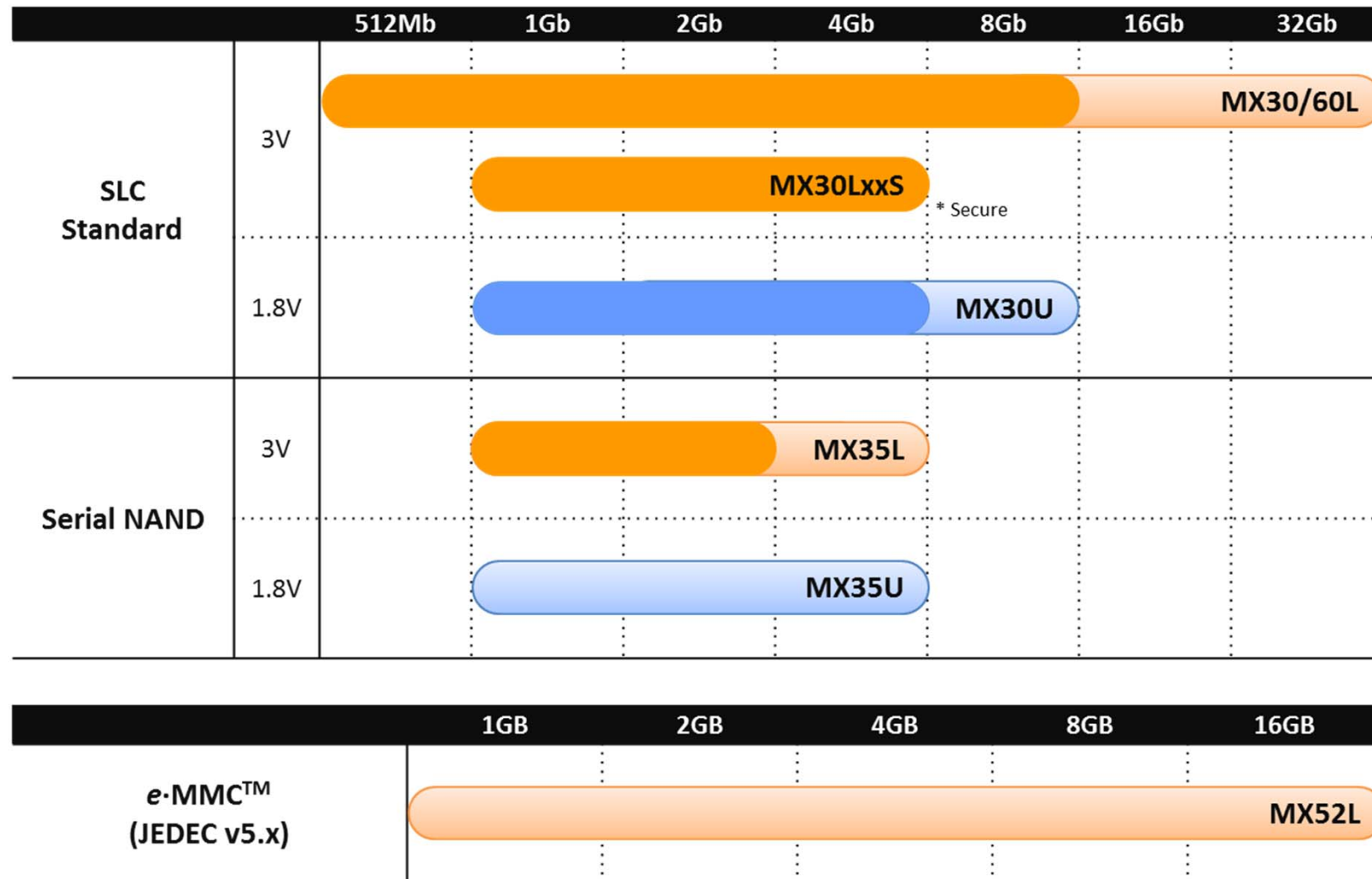
Note: (1) Roadmap information is subject to change without notice. (2) Light shaded means new products in development

Macronix (2): Leading in Non-Volatile Memories – Serial NOR Flash



Note: (1) Roadmap information is subject to change without notice. (2) Light shaded means new products in development

Macronix (3): Leading in Non-Volatile Memories – SLC NAND Flash



Note: (1) Roadmap information is subject to change without notice. (2) Light shaded means new products in development

Macronix (4): Leading in Non-Volatile Memories – Additional Highlights

➤ MCP (Multi-Chip-Product) Solutions

- 1.8V NOR: 64Mb NOR + 32Mb pSRAM
- 1.8V NOR: 128Mb NOR + 64Mb pSRAM
- 3.0V NOR: 64Mb NOR + 32Mb pSRAM
- 3.0V NOR; 128Mb NOR + 32Mb pSRAM
- 1.8V SLC NAND: 1Gb NAND + 512Mb LPDDR1 / 1Gb LPDDR2
- 1.8V SLC NAND: 2Gb NAND + 1Gb LPDDR1 / 1Gb LPDDR2 / 2Gb LPDDR2
- 1.8V SLC NAND: 4Gb NAND + 2Gb LPDDR2

➤ Macronix Product Longevity Program (MPLP) ...

- ... to provide customers with long-term availability of **selected products**
- ... for a period of **up to 10 years**, ...
- ... including an **extended EOL period of 1 year** for notification, ...
- ... and an **additional year for final shipment**.



PixArt Imaging: Smart Sensor SoCs



Optical Navigation

- Optical Mouse Sensors
- Optical Finger Navigation
- Optical Track Sensors



Touch

- Capacitive Touch
- Capacitive Finger Navigation
- Optical Touch Module



Object Motion Sensing

- Gesture Recognition
- Ambient Light Sensor/Prox. Sensor
- Multi Object Tracking



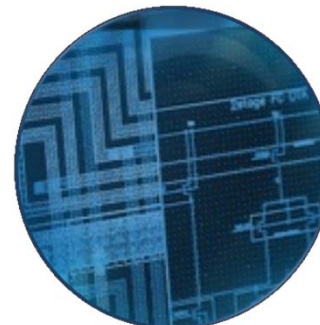
CMOS Image Sensor

- Security Surveillance
- Automotive



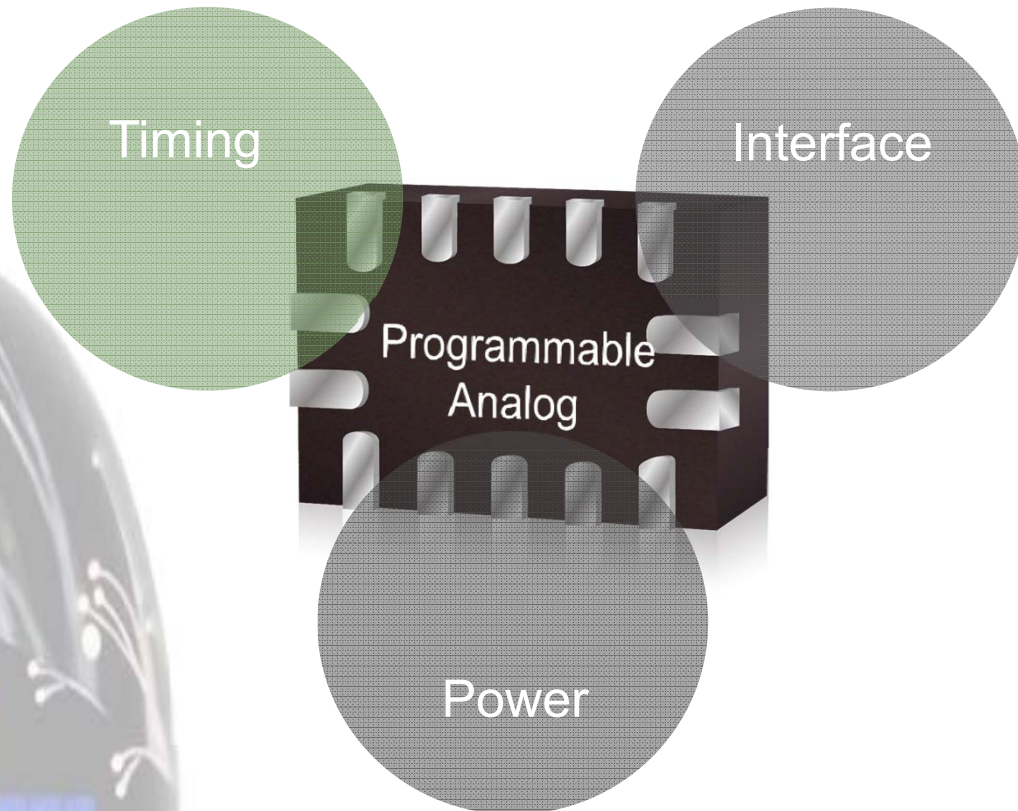
Health Management

- Heart Rate Monitor



Customized ASICs

SILEGO: Configurable Mixed-Signal ICs



GreenCLK

- 32.768kHz crystal replacement IC
- Smallest 32kHz/MHz combination in the industry
- High performance and operates down to 1.8V
- <800nA for 32kHz in hibernation mode

GreenFET

- Family of High Performance Power Products (Load Switches and FET Drivers)
- Improved Power Efficiency and Battery Life (RDSon as low as 7.8mΩ)
- Space Savings in Plastic Packages (As small as 1.0 x 1.0mm)
- Fault Protection Features (Short Circuit, Thermal, Over-current)

GreenPAK

- OTP Matrix with Analog and Digital Building Blocks
- Functional Replacement of Popular Mixed-signal Standard Products
- Complete Design Kit with Easy to Use Tools
- Extremely Low Power in Packages as small as 1.6 x 1.6mm

Truechip: Robust, reliable and proven Verification IP Solutions

Benefits:

- VIP's native code is in SystemVerilog which helps to make the VIP light weight (lesser memory footprint) with objects getting freed in the memory, when not needed.
- Wide variety of Error injection scenarios help to stress test the DUT.
- Callbacks available so that client can modify the behavior of the VIP on the fly.
- Assertions can be used in formal as well as dynamic simulations. They can also be used in emulations
- Products not available with major players but available with Truechip:

- **Interlaken VIP**
- **CPRI VIP**
- **xHCI VIP**

Verification IP	In Production	Verification IP	In Production
ARM® AMBA® 4 ACE	Yes	PCIe Gen 4	Yes
ARM® AMBA® AXI3 and AXI4	Yes	PCIe Gen 3 / Gen 2	Yes
ARM® AMBA® AHB2 and AHB3	Yes	USB Type C & Pow Del.	Yes
ARM® AMBA® APB3 and APB4	Yes	USB 3.1 with xHCI & Retimer	Yes
AMBA ATB	Yes	USB 3.0 with xHCI	Yes
DDR3/ DDR4	Yes	USB2 with xHCI	Yes
HMC2	Yes	USB xHCI	Yes
DPHY	Yes	HDMI 2.0/ HDMI 1.4	Yes
CPHY	Yes	HBM2	Yes
MIPI DSI with DPHY/ CPHY	Yes	CPRI	Yes
MIPI CSI2 with DPHY/ CPHY	Yes	I2C	Yes
MIPI MPHY	Yes	Interlaken	Yes
MIPI Unipro	Yes	LPDDR3/ 4	Yes
SATA 3.3	Yes	Ethernet 10G/ 40G/ 100G	Yes

THANK YOU