

GigE Vision over 10 GigE: *Full Speed Ahead*

Industrial Vision Days Presentation at VISION 2010

November 9, 2010 at 12:00
Hall 4, Stand E72



Today's Presenter

Vincent Rowley

- Senior System Designer, Pleora Technologies
- Vice-Chair, GigE Vision Technical Committee



Visit Pleora at VISION 2010:

Live GigE Vision over 10 GigE demos
Hall 4, Stand E 72 (Framos booth)

Pleora Technologies

- Pioneered the use of GigE for real-time video connectivity and co-founded GigE Vision® in 2003
- Celebrating a decade of continuous R&D investment and innovation
- 100s of customers, 1000s of installations, diverse global markets



Visit Pleora at VISION 2010:

Live GigE Vision over 10 GigE demos
Hall 4, Stand E 72 (Framos booth)

The 10 GigE Tipping Point

“The tipping point is that magic moment when an idea crosses a threshold, tips, and spreads like wildfire.”

– The Tipping Point, by Malcolm Gladwell

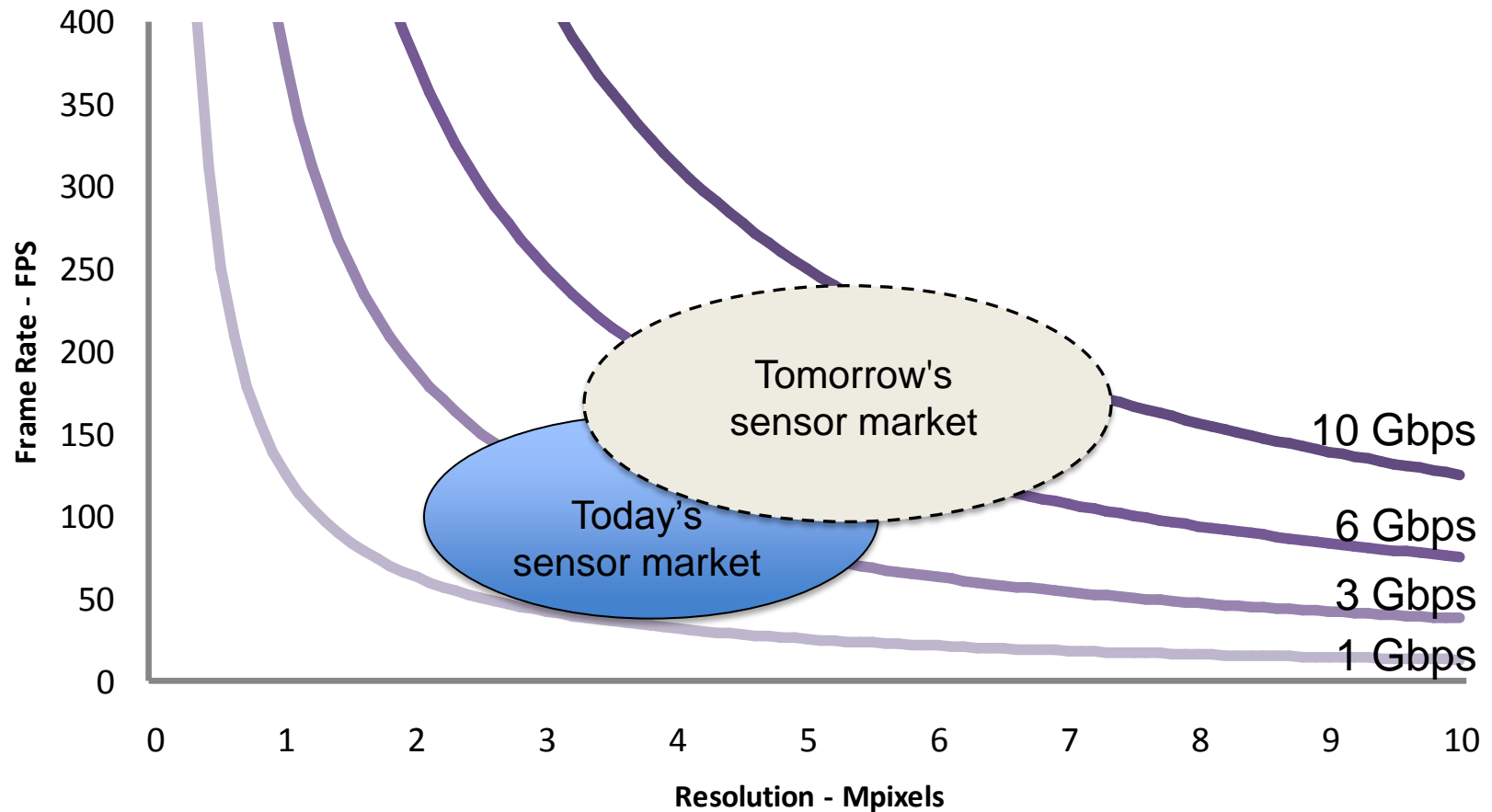


All indicators suggest that the tipping point for GigE Vision over 10 GigE is right now.

GigE Vision over 10 GigE

1. The need for speed
2. Assessing the options
3. Hitting the tipping point
 - 10 GigE cost advantages
 - 10 GigE design advantages
4. Full speed ahead

New Sensors Require More Bandwidth



GigE Vision over 10 GigE

1. The need for speed
2. Assessing the options
3. Hitting the tipping point
 - 10 GigE cost advantages
 - 10 GigE design advantages
4. Full speed ahead

“Managers need to be careful about making commitments to exotic technologies that won’t be around as long as 10Gig Ethernet.”

– Bob Nunn, CEO, Fulcrum Microsystems

Selecting an Interface

Selection criteria...

1. Mature standard



Strategic importance...

Interoperability increases speed-to-market

2. Practical cabling



Flexible system design and deployment broadens market potential

3. Cross-industry adoption



Take advantage of technology investment driven by economies of scale

10 GigE is the Logical Choice

Video Interface	Mature Standard	Practical Cabling	Cross-industry Adoption
FireWire	●	●	●
USB 3.0	●	●	●
Multi-port GigE	●	●	●
Camera Link HS	●	●	●
CoaXPress	●	●	●
GigE Vision over 10 GigE	●	●	●

For detailed discussion, see: "Connecting Cameras" at www.VisionSensorsMag.com

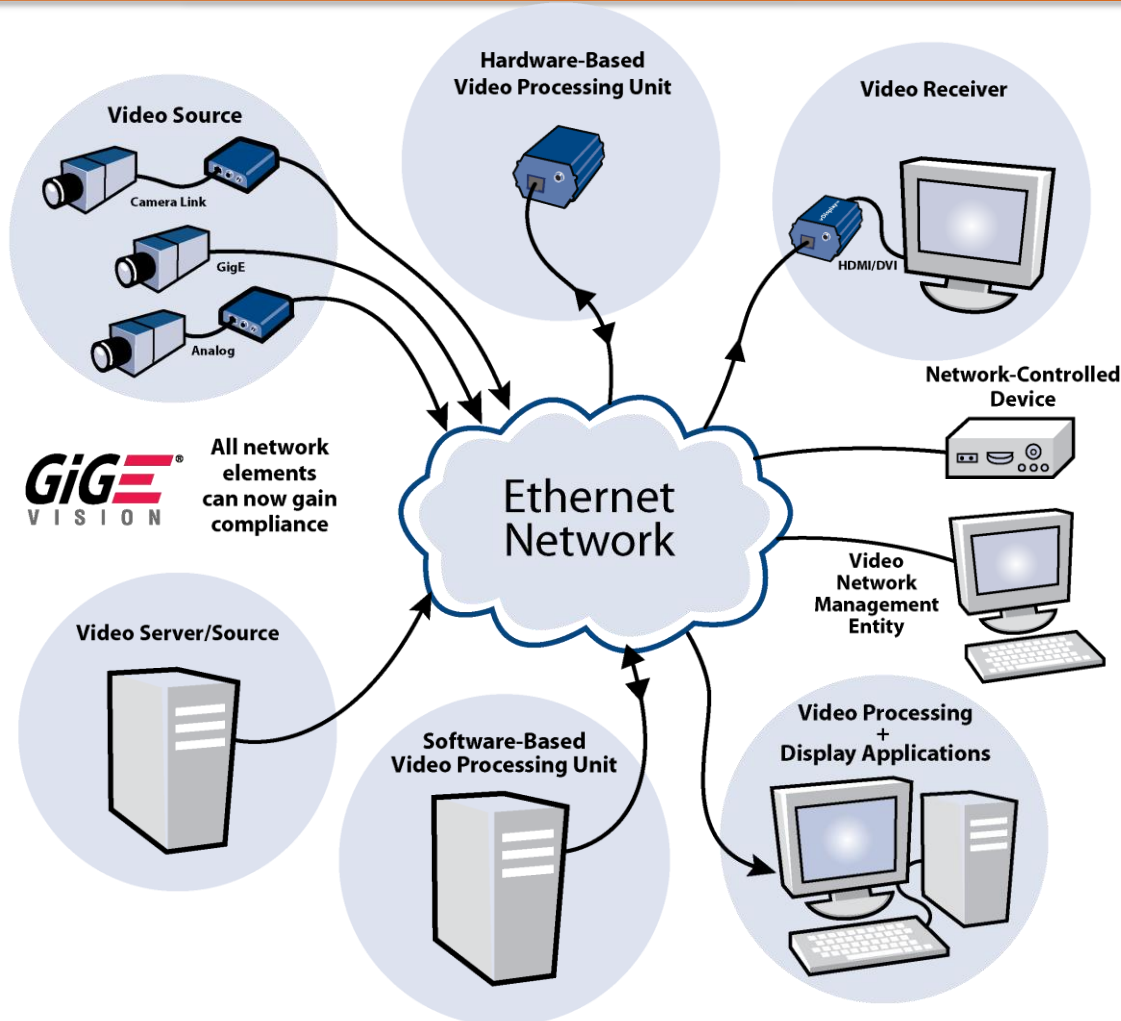
Video Networks

- GigE Vision is the only practical option for creating video networks
- Growing demand for advanced network architectures because they:
 - Decrease system complexity and cost
 - Broaden design and implementation options: point-to-multipoint, multipoint-to-multipoint

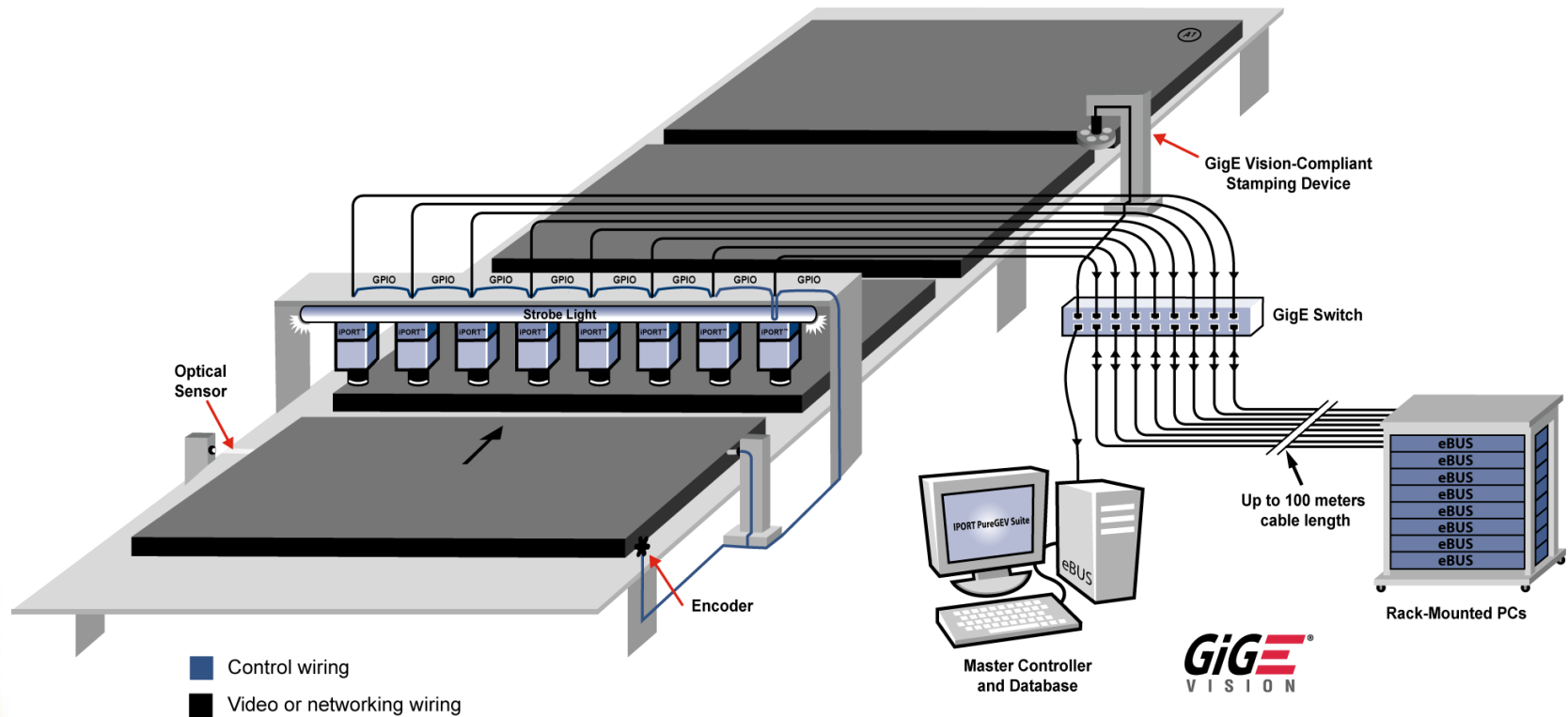
“10Gig opens up possibilities and does it with a technology that is well understood and proven.”

– Vikram Karvat, NetXen, Sr Director of Marketing

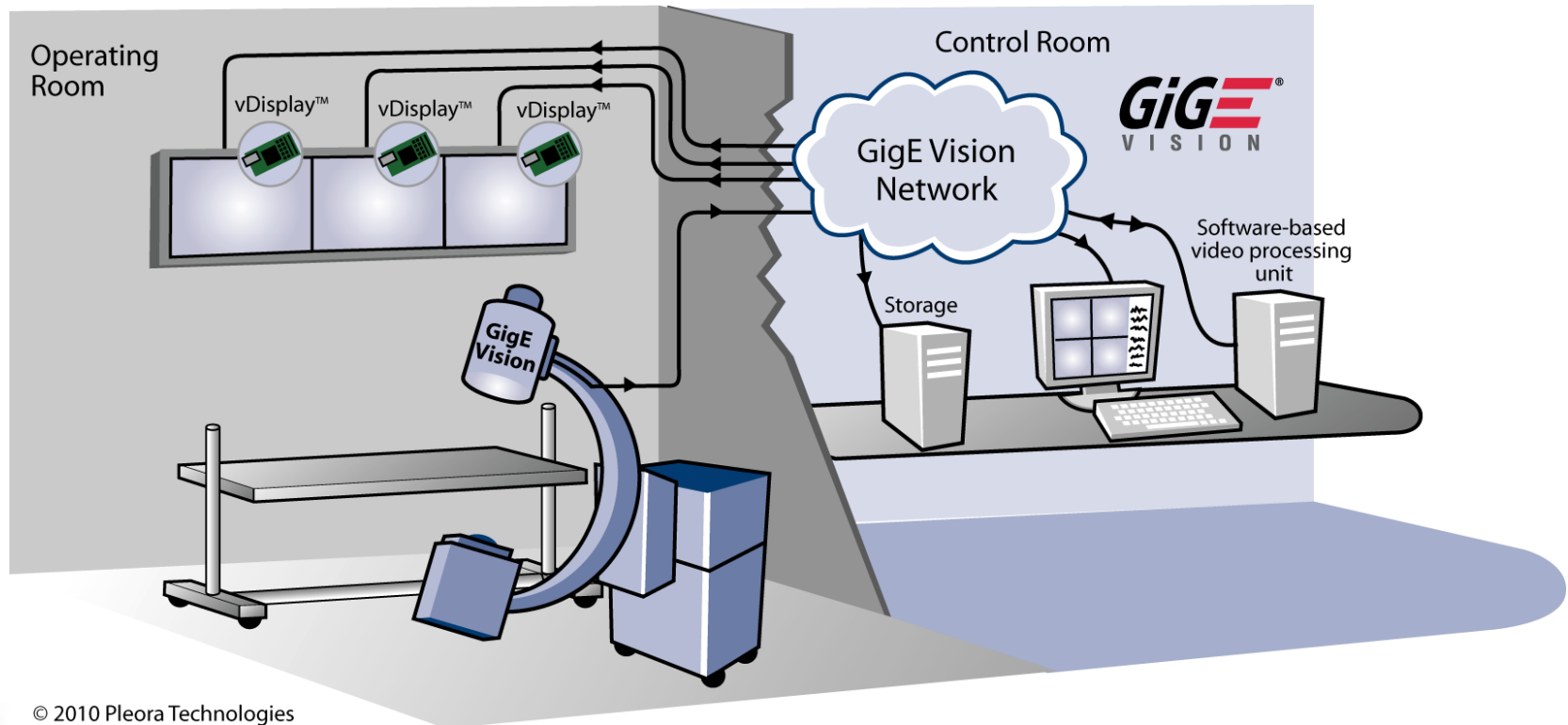
Networked Video Connectivity



Web Inspection



Medical Imaging



GigE Vision over 10 GigE

1. The need for speed
2. Assessing the options
3. Hitting the tipping point
 - 10 GigE cost advantages
 - 10 GigE design advantages
4. Full speed ahead

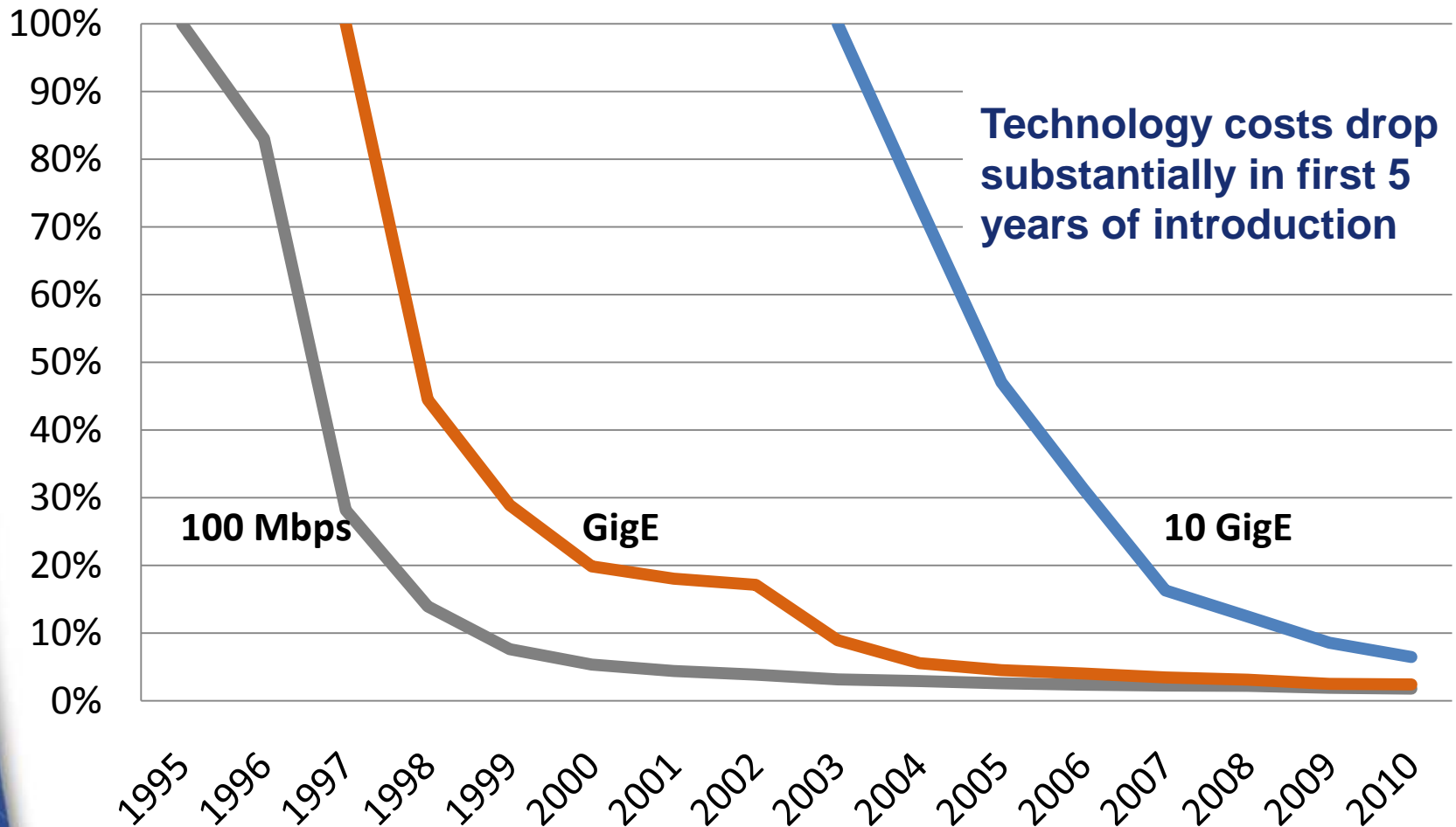
“Application and system services connect to 10Gig the same way as they do with Gigabit Ethernet. That compatibility and the fact that so many IT people know Ethernet is part of the reason why Ethernet and not specialty networks will continue to dominate.”

– Dr. Chuck Seitz, President and CEO, Myricom

Cost Comparison: Point-to-Point

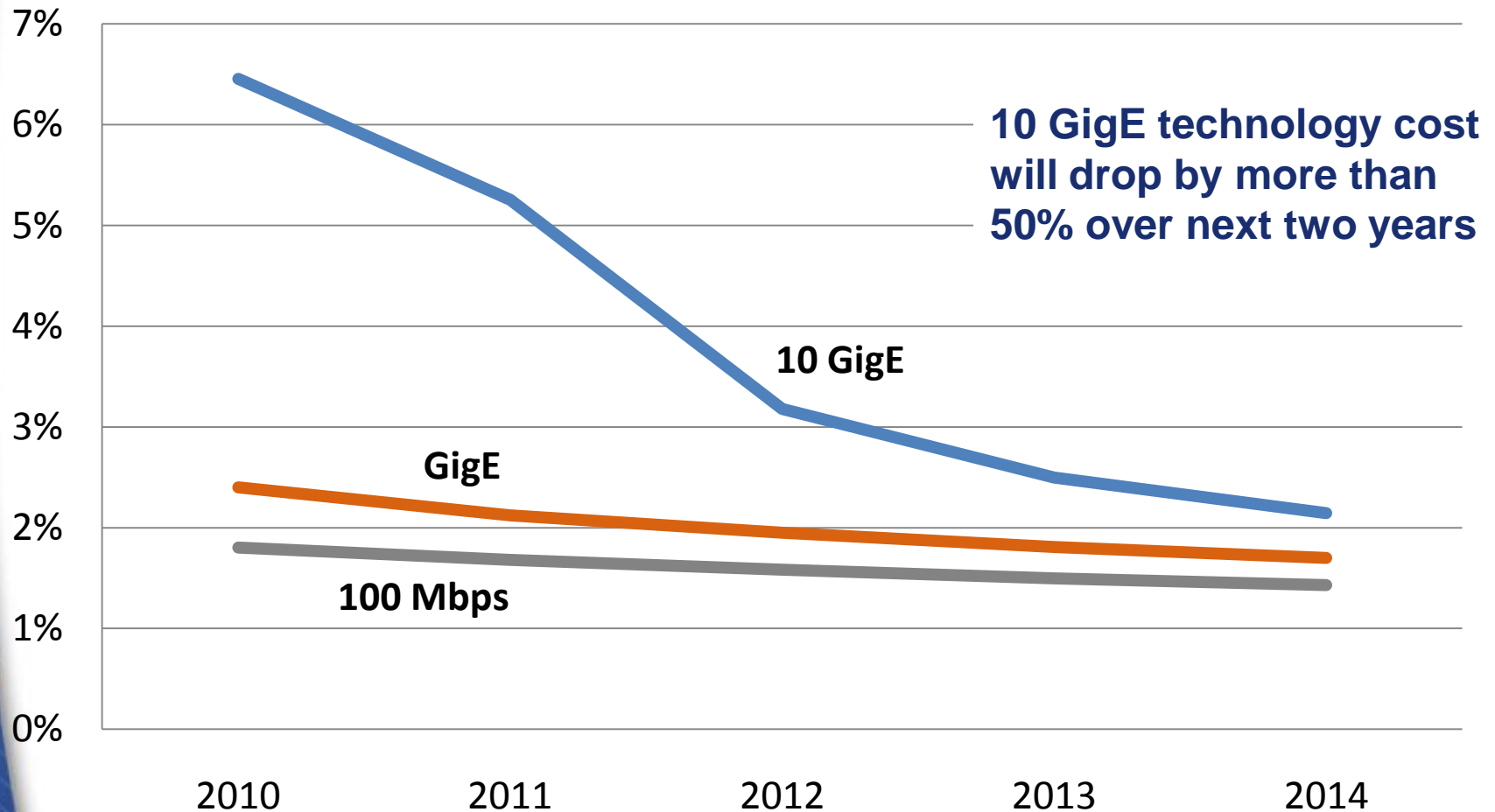
Components	3 Gig CoaXPress System	10 GigE System
Camera	Comparable	
Cabling (30 m)	\$21	\$78
Framegrabber	\$500-\$1,000	N/A
NIC	N/A	\$400-\$500
Total system cost	Comparable	

Declining Costs of Ethernet Technology



* From Dell'Oro Group Ethernet Switch July 2010 5-year Forecast


Continued Improvement in Forecast



** From Dell'Oro Group Ethernet Switch July 2010 5-year Forecast*

Riding the Ethernet Adoption Wave

A 10 GigE-based system is already cost-comparable.



As cross-industry adoption grows, costs will continue to decline.



As prices drop, demand will accelerate, fueling further refinement of technology



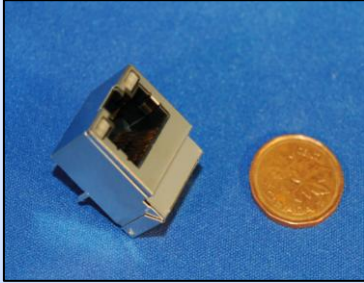
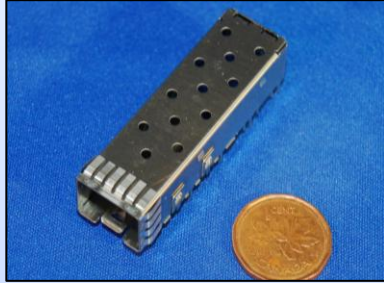

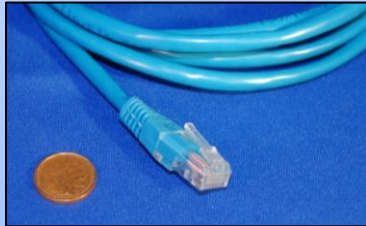
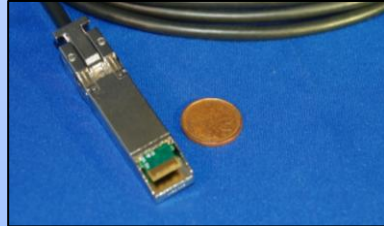
System designers with foresight will be able to take advantage of this.

GigE Vision over 10 GigE

1. The need for speed
2. Assessing the options
3. Hitting the tipping point
 - 10 GigE cost advantages
 - 10 GigE design advantages
4. Full speed ahead

“Never bet against Ethernet!”
– Dan Warmenhoven, NetApp Chairman

Versatile Cabling

	<p>RJ45 connector</p> 	<p>SFP+ cage</p> 
Fiber optic cable	N/A	<p>Fiber optic</p> 
Copper cable	<p>CAT 6A</p> 	<p>Direct attach</p> 

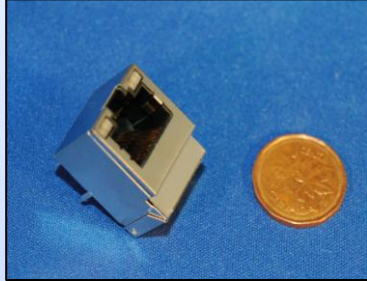
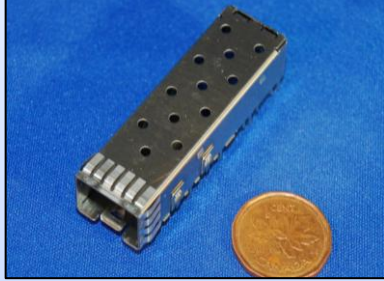
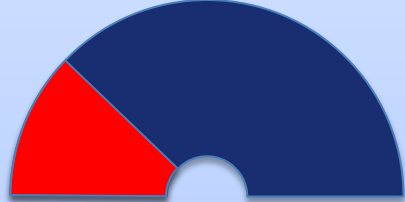
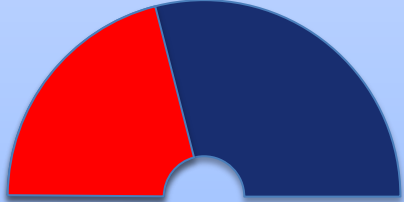
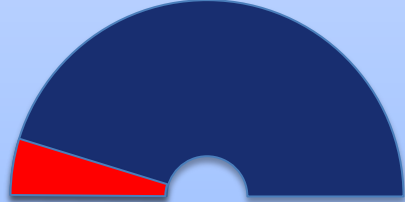
Reasonable Power Consumption

- Equivalent to other high-speed technologies
 - Same FPGA types and frame buffers
 - Operating at the same data rates
- 10 GigE power consumption is physical-medium dependent

“The current emphasis on green power is another contributor. 10Gig solutions consume much less power than multiple Gigabit Ethernet solutions.”

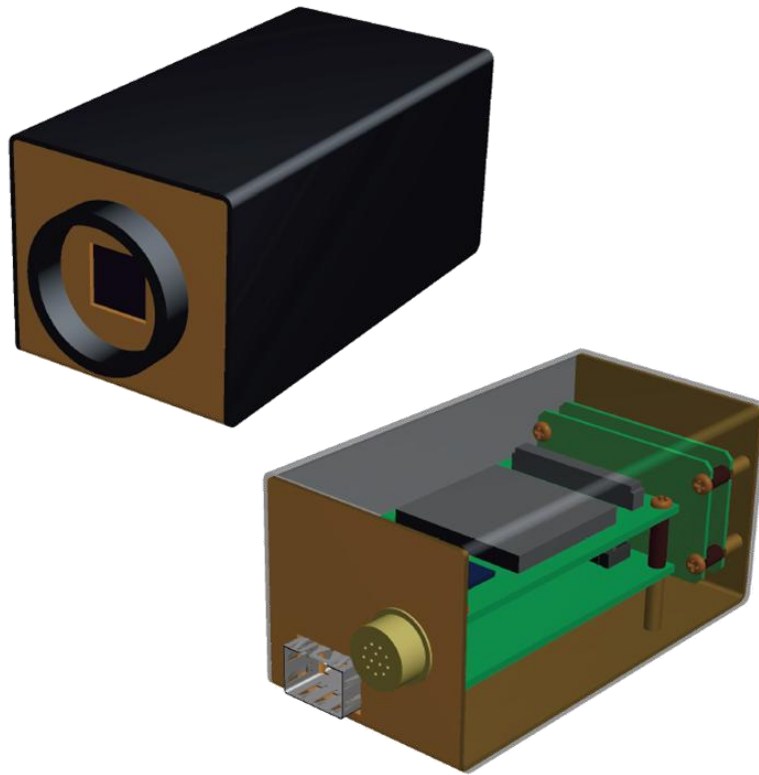
– *Bill Ryan, Senior Product Manager, Foundry Networks*

Power Consumption & Cabling

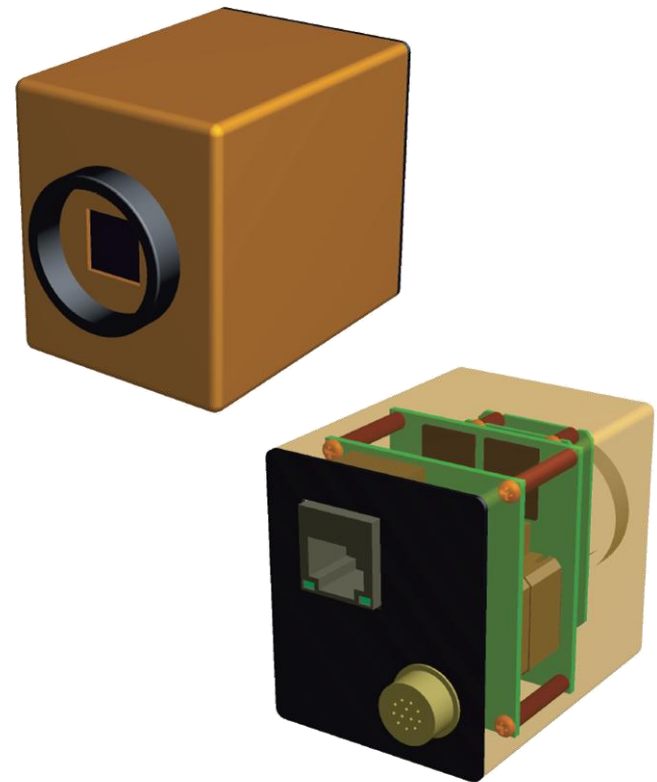
	<p>RJ45 connector</p> 	<p>SFP+ cage</p> 
Fiber optic cable	N/A	<p>Fiber optic</p> 
Copper cable	<p>CAT 6A</p> 	<p>Direct attach</p> 

Versatile Mechanical Design

- SFP+ Cage Option



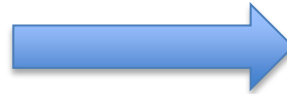
- RJ45 Connector Option



GigE Vision for Real-time Applications

Some say:

“GigE Vision is
not real time”



What they mean to say is:

“GigE Vision doesn’t provision
super-low latency triggering
capabilities over Ethernet”

The Facts:

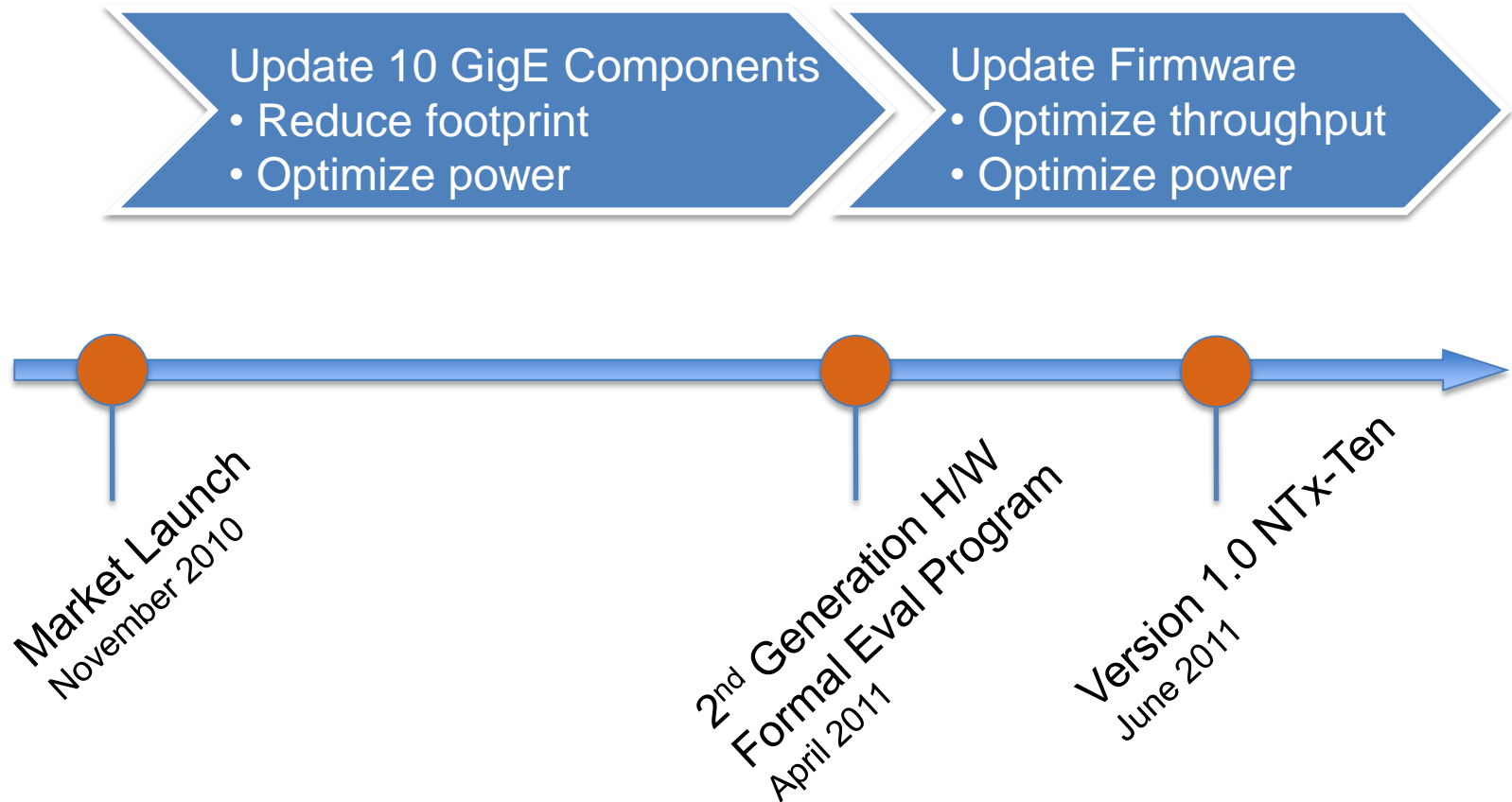
GigE Vision triggering characteristics are suitable for most machine vision applications

- Less than 150 us end-to-end latency can be achieved
- Sub-microsecond jitter can be achieved with on-camera PLCs or by leveraging IEEE 1588 Precision Clock Synchronization Protocol

GigE Vision over 10 GigE

1. The need for speed
2. Assessing the options
3. Hitting the tipping point
 - 10 GigE cost advantages
 - 10 GigE design advantages
4. Full speed ahead

Pleora GigE Vision over 10 GigE Roadmap



How to Respond to the Need for Speed?

10 GigE is the answer:

- ✓ **Affordable** – and cost will continue to drop
- ✓ **Comparable** power & footprint to other high-speed interfaces
- ✓ **Versatile** – cabling broadens design options
- ✓ **Peerless** in decreasing overall system cost and complexity
- ✓ **Available** now for development work

Visit Pleora's booth: Hall 4, Stand E72

Live system demos:

- GigE Vision over 10 GigE
- Networked video connectivity over GigE
- iPORT SB-Pro IP engine for camera blocks from Sony

Learn about Pleora's:

- Tailored end-to-end networked video connectivity solutions for mission-critical systems
- Industry-leading performance and reliability



***Visit us @ Framos
Hall 4: Stand E72
www.pleora.com***