

# VersaPHY™

# Technology Overview

Shenzhen, China

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# Introduction

- VersaPHY™\* technology, as documented by the approved 1394 Trade Association document 2006015 “VersaPHY Additions to IEEE-1394”, is a 100% compatible extension to IEEE-1394. VersaPHY enables lower cost implementations by allowing simple devices to connect to IEEE-1394 simply.

\*VersaPHY is a trademark of Quantum Parametrics LLC

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# Agenda

- What is VersaPHY
- Why VersaPHY
- VersaPHY Status
- Markets
- Profiles
- Quantum Parametrics and VersaPHY

# What is VersaPHY?

- VersaPHY enables applications to connect as directly as possible to the 1394 PHY layer, thus creating a **Versatile PHY** layer while maintaining plug-n-play attributes through VersaPHY defined registers.
  - 100% compatible with IEEE-1394!
- In addition, VersaPHY adds permanent or semi-permanent addressable labels (VP-Labels) that may be used to address a device or individual functions within a single device.
  - Communication with existing VersaPHY devices can resume immediately after bus reset (For existing devices, NO device discovery needed after bus reset)
- VersaPHY capitalizes on 1394's inherent peer-to-peer architecture by allowing VersaPHY devices to send unsolicited responses.
  - In effect, this allows the VersaPHY device to send a packet any time an event occurs and allows other devices to collect the information, thus reducing system overhead.
  - Controllers may also poll VersaPHY devices.

# Why VersaPHY

- There is a need to
  - connect simple devices to a high speed network (backbone) that has deterministic latency
    - Localize with 1394 and distribute \*\*\*
    - NO 1394 specific software is required in the VersaPHY device
  - connect digital streaming devices (ex: security cameras) simply (like their analog counterpart)
    - Use 1394 like a data pipe
  - connect to a high speed backbone that allows flexible wiring (daisy chain, tree, redundant loops)
    - IEEE-1394b (Beta) PHY provides all of these benefits
  - connect to a high speed serial network to reduce the number of conductors
    - Automotive, machine automation, test, robotics, military, aerospace, etc...
- NO new silicon required – VersaPHY may be implemented today!
  - Maybe integrated in with PHY layer or on top of existing PHY implementations
    - Very low risk development path to high volume production!
- VersaPHY devices coexist with traditional 1394 devices on the same network!
  - There is a need for high level protocols on 1394, this continues uninterrupted

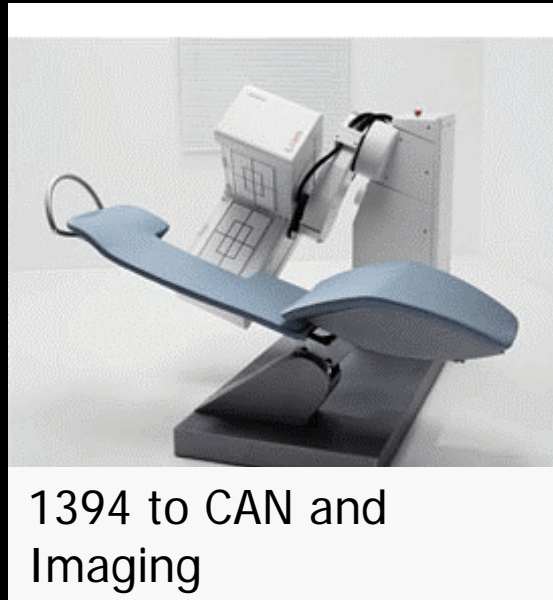
# VersaPHY Status

- Core VersaPHY specification approved
  - “VersaPHY Additions to 1394” approved by the 1394 Trade Association in January 2008
- “General Purpose Input/Output Profile” completed first general 1394TA vote in March
  - Ballot Review Committee addressing 4 technical comments
- “I<sup>2</sup>C Master Profile” specification in Industrial and Instrumentation Working Group voting process
- “VersaPHY Mil-Std-1553 Profile” specification under development by SAE

# Markets

- VersaPHY expands the traditional 1394 market to include simpler devices typically serviced by other interfaces
  - This list includes but is not limited to:
    - Sensors, actuators, A/Ds, switches, relays, displays, key pads, cameras, motor controllers, etc...
- Connect devices with legacy interfaces (RS232, 422, 485, I2C, CAN, 1553, etc...) to 1394's high speed guaranteed latency bus
- VersaPHY's target market is simple applications that benefit from connecting to a high speed, low latency network (1394)
  - Automotive, security, industrial, test, automation, robotics, machine vision, medical, aerospace, military, etc...

# Industrial and Medical

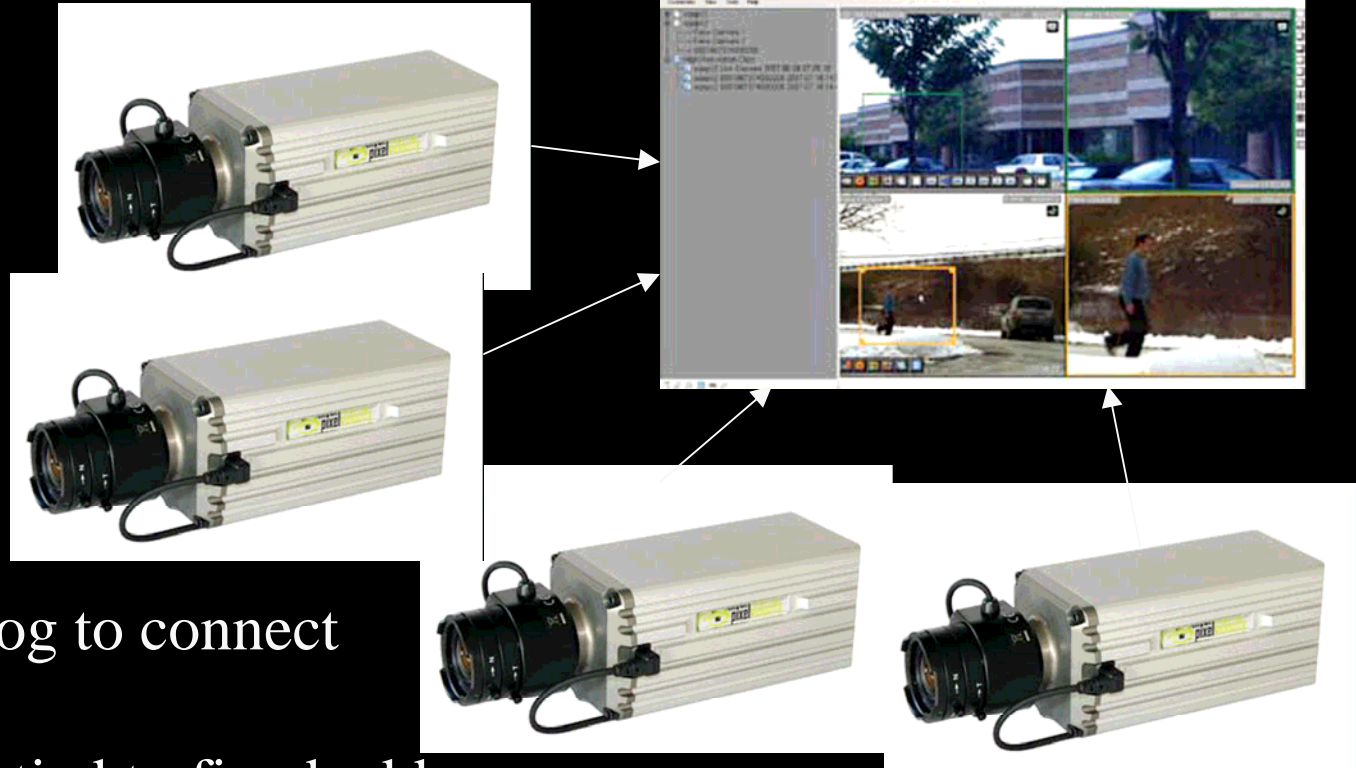


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# Mix of High and Low Speed



# Security and Surveillance



Simple as analog to connect

- Fixed address
- Isoch channel tied to fixed address
- Few controls handled simply

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# QP VersaPHY Technology

- Quantum Parametrics (QP) is the inventor of VersaPHY Technology
  - The idea came from our interaction with customers
  - VersaPHY directly reflects the needs expressed by a diverse set of customers with similar problems
- In May '08 QP will be offering VersaPHY Development Kits
  - Designed to enable VersaPHY product development
  - First kits target simple I/O and legacy I/O bridging
  - Second generation to support audio/video streaming

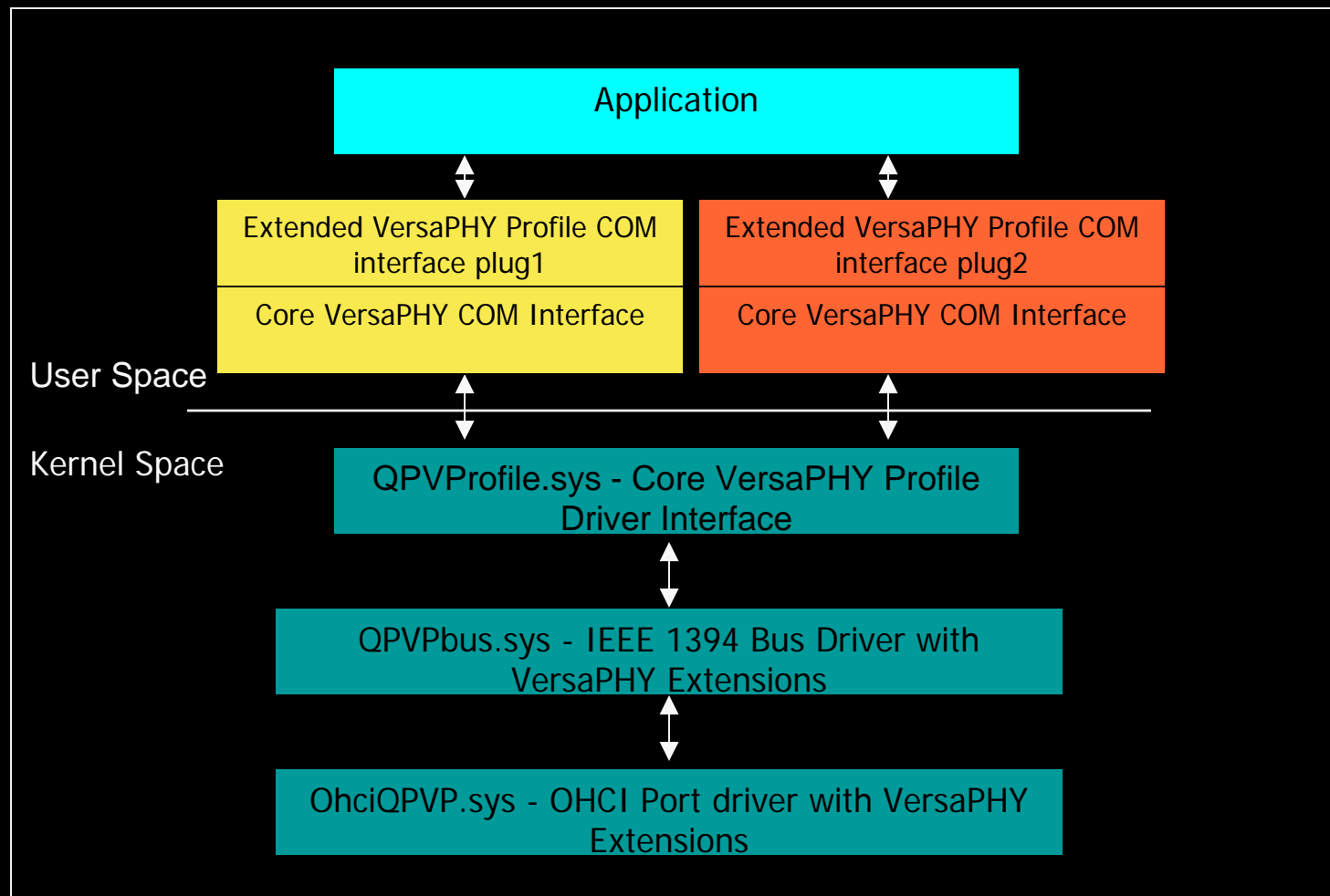
# VersaPHY Developer Kits

- QP plans to release multiple VersaPHY Developer kits over the coming months
  - Each kit will consist of
    - Controller Software Developer Kit (SDK)
    - VersaPHY device hardware platform
    - Application module
    - Example application source

# VersaPHY Controller Software Framework

- VersaPHY Framework Stack
  - Provides an API to core VersaPHY profile interface
  - Abstracts the low level VersaPHY implementation from device profile developers
    - Device profile development is done in User Space through the Core VersaPHY COM interface.
- Windows XP support

# VersaPHY Framework OHCI Stack



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1394 Bus



# Volume Control Register Set

Device  
Identification

GPIO  
Specific

Block	Offset	Bits 0:7	Bits 8:15	Description
0	0	<b>0xC0</b>	<b>00,Phy_ID/VP-L</b>	Always enabled and responds immediately
0	2	0x00	<b>0x07</b>	Power not supported
0	4	<b>0xC3</b>	0x00	Self enabled, Short ID, GUID Available
0	6	<b>0x80</b>	0x00	Profile: GPIO - Revision 0
0	8	0xNN	0xNN	GUID
0	A	0xNN	0xNN	GUID
0	C	0xNN	0xNN	GUID
0	E	0xNN	0xNN	GUID
1	0	0x00	0x00	Model 0
1	2	<b>0x01</b>	<b>0x01</b>	GPO and GPI banks
1	4	0x00	0x00	
1	6	0x00	0x00	
1	8	0x00	0x00	
1	A	0x00	0x00	
1	C	0x00	0x00	
1	E	0x00	0x00	
2	0	<b>LEDs 8-11</b>	<b>LEDs 0-7</b>	Write GPO Value
2	2	<b>0x0F</b>	<b>0xFF</b>	Output mask
2	4	0x00	0x00	
2	6	0x00	0x00	
2	8	0x00	0x00	
2	A	0x00	0x00	
2	C	0x00	0x00	
2	E	0x00	0x00	
3	0	0x00	<b>0x0,en0,en1,sw1,sw2</b>	Read GPI Value
3	2	0x00	0x00	
3	4	0x00	0x00	
3	6	0x00	0x00	
3	8	0x00	0x00	
3	A	0x00	0x00	
3	C	<b>0x01</b>	0x00	Debounce enable
3	E	0x00	<b>0x8F</b>	Debounce count

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# Thank You!

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