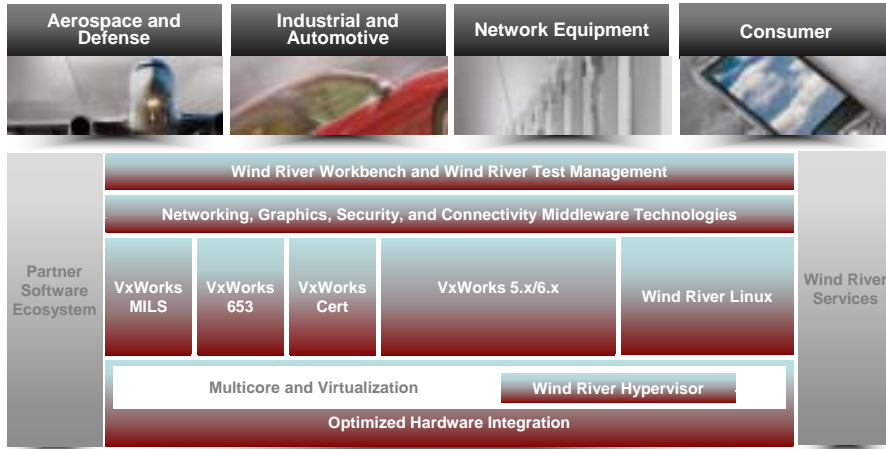# Multicore and Multi-OS

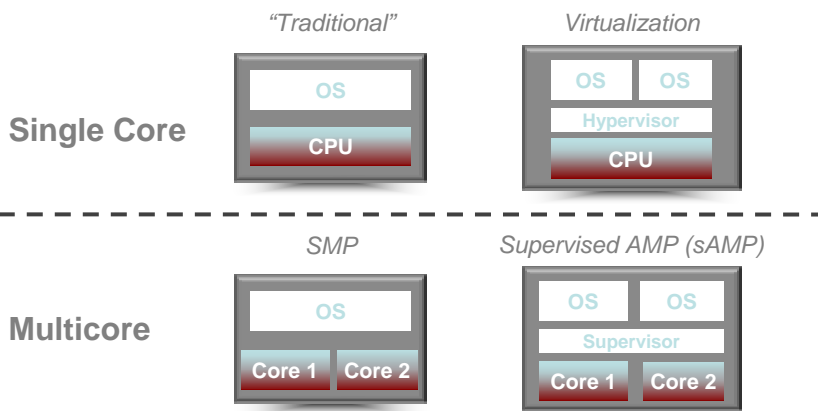**Han Qing**
June 20, 2009

Multicore Is Reality

- **Multicore adoption fast than imagination**
- **Heterogeneous architecture does not affect programming significantly**
- **But, homogeneous architecture does**
- **Multicore and Multi-OS are connected**
- **Multi-OS and Vistulization are connected**

Wind River Product Portfolio

Aerospace and Defense	Industrial and Automotive	Network Equipment	Consumer

Partner Software Ecosystem	Wind River Workbench and Wind River Test Management					Wind River Services
	Networking, Graphics, Security, and Connectivity Middleware Technologies					
	VxWorks MILS	VxWorks 653	VxWorks Cert	VxWorks 5.x/6.x	Wind River Linux	
	Multicore and Virtualization			Wind River Hypervisor		
	Optimized Hardware Integration					

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Primary Multicore Software Configurations

	"Traditional"	*Virtualization*
Single Core	OS / CPU	OS OS / Hypervisor / CPU

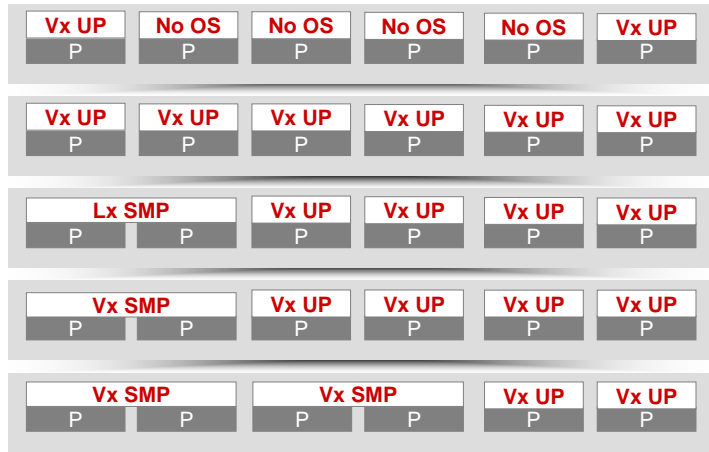|	*SMP*	*Supervised AMP (sAMP)*
Multicore	OS / Core 1 Core 2	OS OS / Supervisor / Core 1 Core 2

Arbitrary combinations of these primary configurations can be used to create more advanced configurations.

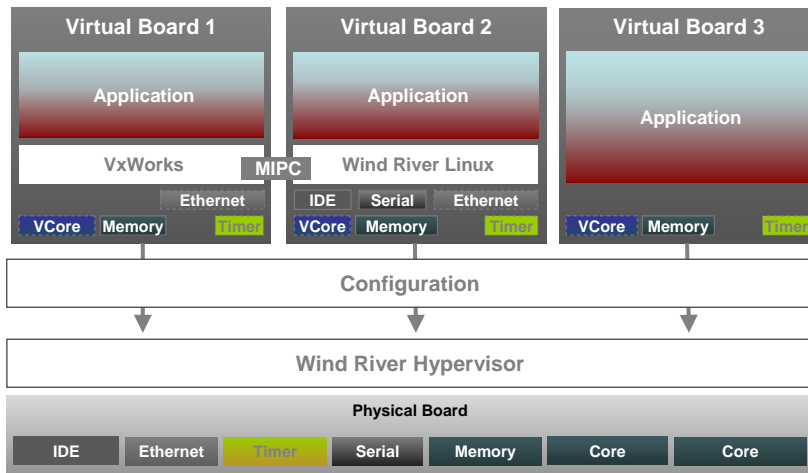OS: Could be VxWorks, Wind River Linux, or other executive or OS

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Limitless AMP Configurations

Vx UP	**No OS**	**No OS**	**No OS**	**No OS**	**Vx UP**
P	P	P	P	P	P

Vx UP	**Vx UP**	**Vx UP**	**Vx UP**	**Vx UP**	**Vx UP**
P	P	P	P	P	P

Lx SMP		**Vx UP**	**Vx UP**	**Vx UP**	**Vx UP**
P	P	P	P	P	P

Vx SMP		**Vx UP**	**Vx UP**	**Vx UP**	**Vx UP**
P	P	P	P	P	P

Vx SMP		**Vx SMP**		**Vx UP**	**Vx UP**
P	P	P	P	P	P

AMP configurations can be created in endless combinations of cores, boards, and operating systems.

Virtual vs. Real -- Manageable

Virtual Board 1	Virtual Board 2	Virtual Board 3
Application	**Application**	**Application**
VxWorks	**MIPC** **Wind River Linux**	
Ethernet	**IDE** **Serial** **Ethernet**	
VCore **Memory** **Timer**	**VCore** **Memory** **Timer**	**VCore** **Memory** **Timer**

Configuration

Wind River Hypervisor

Physical Board

IDE	Ethernet	Timer	Serial	Memory	Core	Core

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