JackNet

A JXTA based Internet overlay technology that allows devices to be dynamically 'Jacked' into the net anywhere they are needed for any purpose.

Speaker

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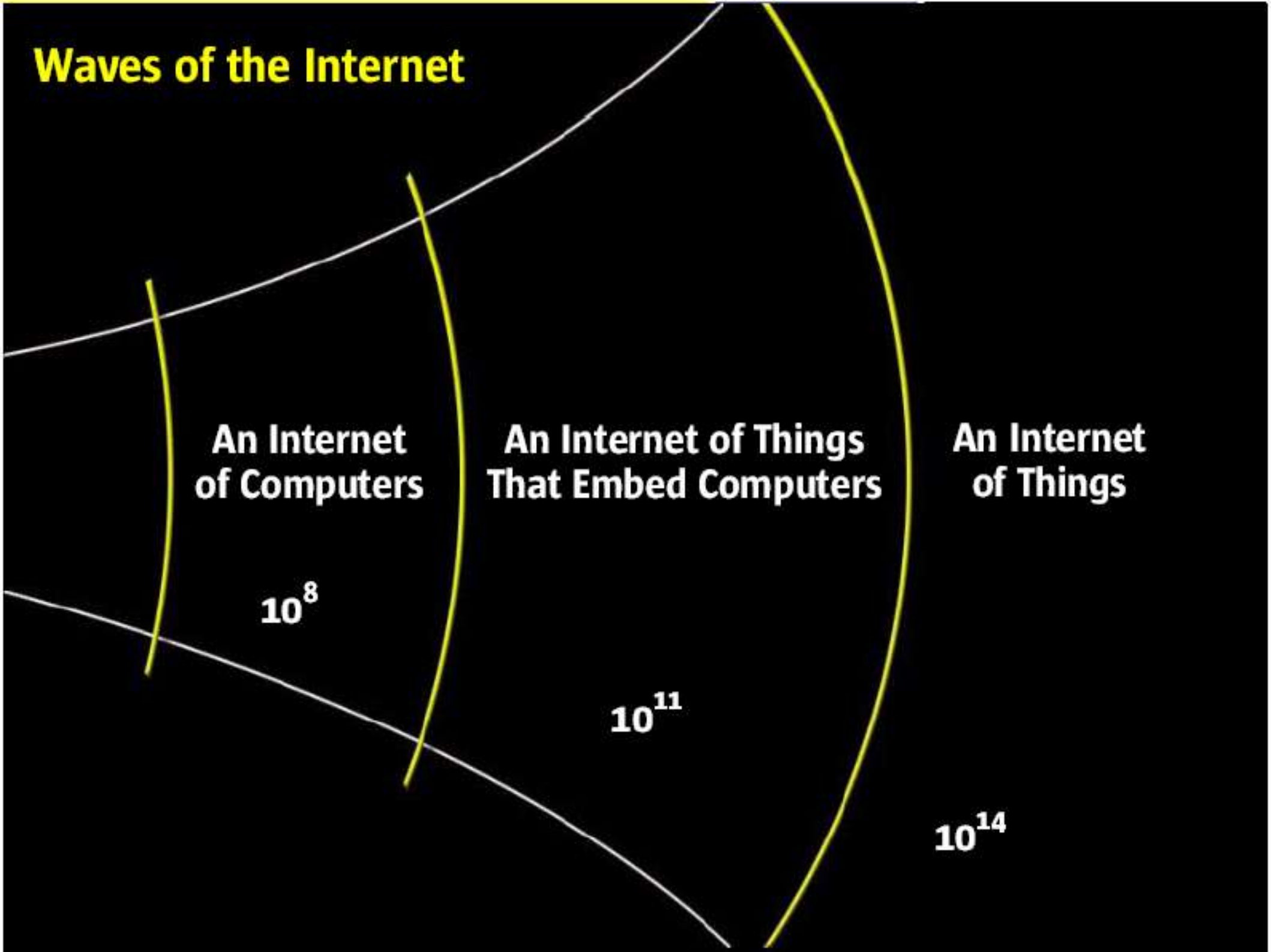
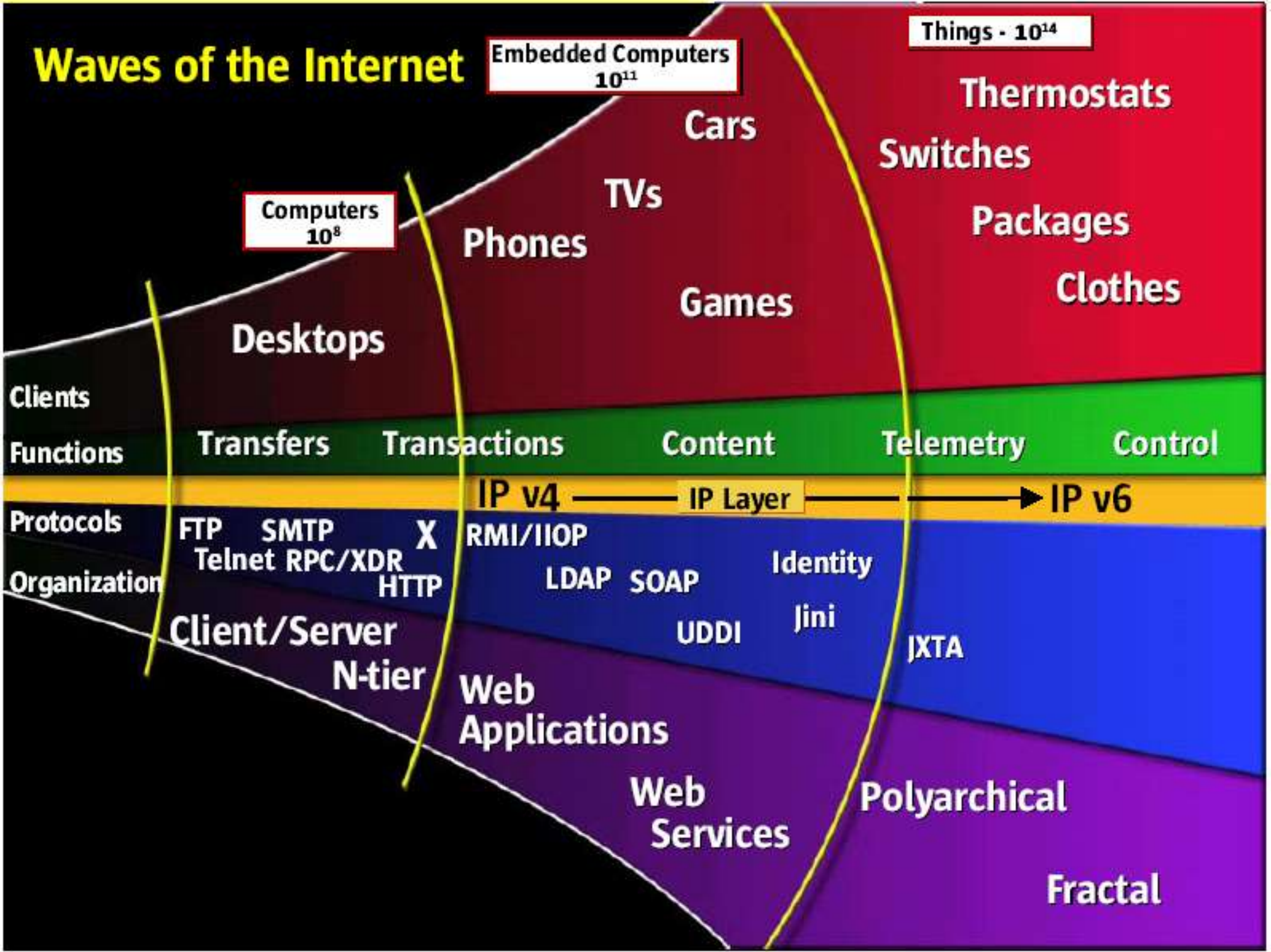
- Computer Hardware and Software Background.
- Embedded Java Open Source Developer.
- javadevices.org
- embedlets.org
- jacknet.jxta.org

Billions Of Embedded Devices to be Connected To The Internet

- Has been anticipated for a while now.
- Most of the large microcontroller companies have already added ethernet capabilities to their products.
- Waves of the internet... (taken from Greg Papadopoulous's excellent 'The Next Big Thing' talk http://www.sun.com/events/analyst2002)


Waves of the Internet
An Internet of Computers
An Internet of Things That Embed Computers
An Internet of Things
10^8
10^{11}
10^{14}


Waves of the Internet
Computers 10^8
Embedded Computers 10^{11}
Things - 10^{14}
Desktops
Phones
Cars
TVs
Games
Thermostats
Switches
Packages
Clothes
Clients
Functions
Transfers
Transactions
Content
Telemetry
Control
IP v4
IP Layer
IP v6
Protocols
Organization
FTP
SMTP
Telnet
RPC/XDR
X
HTTP
RMI/IIOP
LDAP
SOAP
Identity
Jini
UDDI
JXTA
Client/Server
N-tier
Web Applications
Web Services
Polyarchical
Fractal

JackNet Appliance Controller

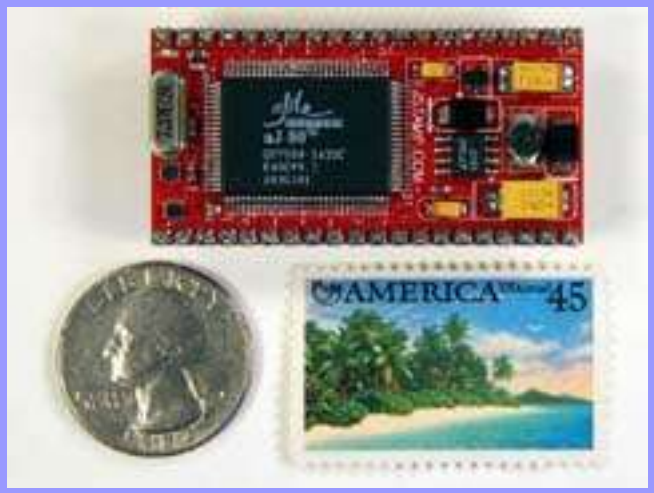
- Prototype Appliance Controllers demonstrated at JXTA Town Hall meeting Nov. 6 2003.
- Purpose is to allow non-hardware oriented people to experiment with remotely controlling devices through the Internet.

Now Updated to Use Standard X10 Modules.

- Widely available.
- Communicates through in-wall power wiring.
- FCC and UL approved.
- (Short demonstration)

What About JXTA in Internet Connected Embedded Systems?

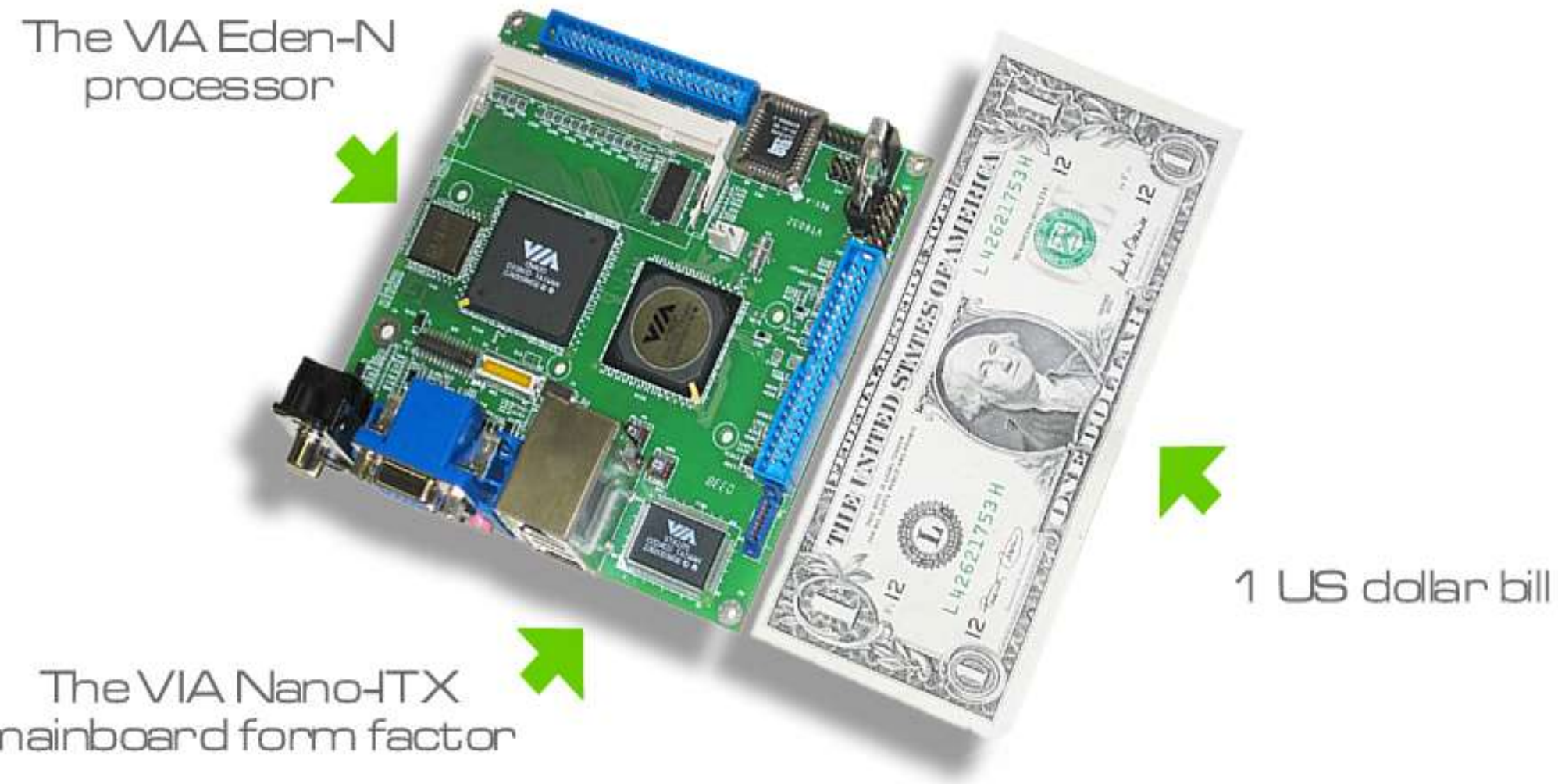
- TINI
- TStik
- JStamp
- JStik
- uVM



What About JXTA in Internet Connected Embedded Systems?

- Challenging to fit JXTA protocols into small 8-bit embedded systems.
- Embedded systems based upon cell-phone hardware are not widely available yet.
- Perhaps lightweight protocols like RTPS (Real Time Publish Subscribe) can be used to allow small devices to inter-operate with JXTA.
- This is bad news, but...

Moore's Law is About To Give Us a Big (umm, little!) Present



Specs for VIA's Soon to be Released NANO-ITX Motherboards

- Size: 12x12cm !!!
- 1GHz VIA C3 fanless CPU.
- Mini-PCI.
- VGA.
- TV-Out.
- 6-ch audio.
- Ethernet.
- Runs PC software.
- 3D Graphics Engine
- 2 x IDE
- SATA (1 channel)
- 1 Gig SODIMM
- DDR400
- FSB 200mhz
- USB2.0
- viaembedded.com

Announcing JDOS (Java Device Open System)

- New approach to Embedded Java.
- Based on J2SE 1.5!!!
- Will use a special Gentoo based 2.6 kernel Linux distribution which is optimized for supporting J2SE 1.5 in embedded devices.
- java.net JDOS project is in the process of being formed under the JDDAC (Java Distributed Device Acquisition and Control) project.

JXTA Running Now on MINI-ITX

- Mini-ITX -> 17cm x 17cm motherboard.
- Has been available for over 18 months.
- Same CPU core as Nano-ITX.
- Many versions of the Mini-ITX motherboards available.

Future Development

- Finish JDOS Linux distribution using Mini-ITX hardware.
- Move JDOS to Nano-ITX hardware as soon as it becomes available (projection->mid-summer 04).
- Make Embedded JXTA units based on Nano-ITX form factor available soon after this.

Conclusion

- javadevices.org
- embedlets.org
- jacknet.jxta.org
- jdos.org (coming soon)
- tkosan@shawnee.edu
- Questions?