An Exploration of the Personal Server Model for Mobility using Stargate

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Stargate Developers' Forum

Intel Research

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What is the Real Motivation?

SELL MORE INTEL SILICON

Stargate Origins

Intel Research needed a low-power Intel ® XScale™ based Embedded System for…

- Robotics
- Wireless Sensor Networks
- Personal Server
  - Motivation
  - Trends
  - Architecture
  - Applications

Motivation: expand mobile platforms to support ubiquitous computing

?

LAPTOP

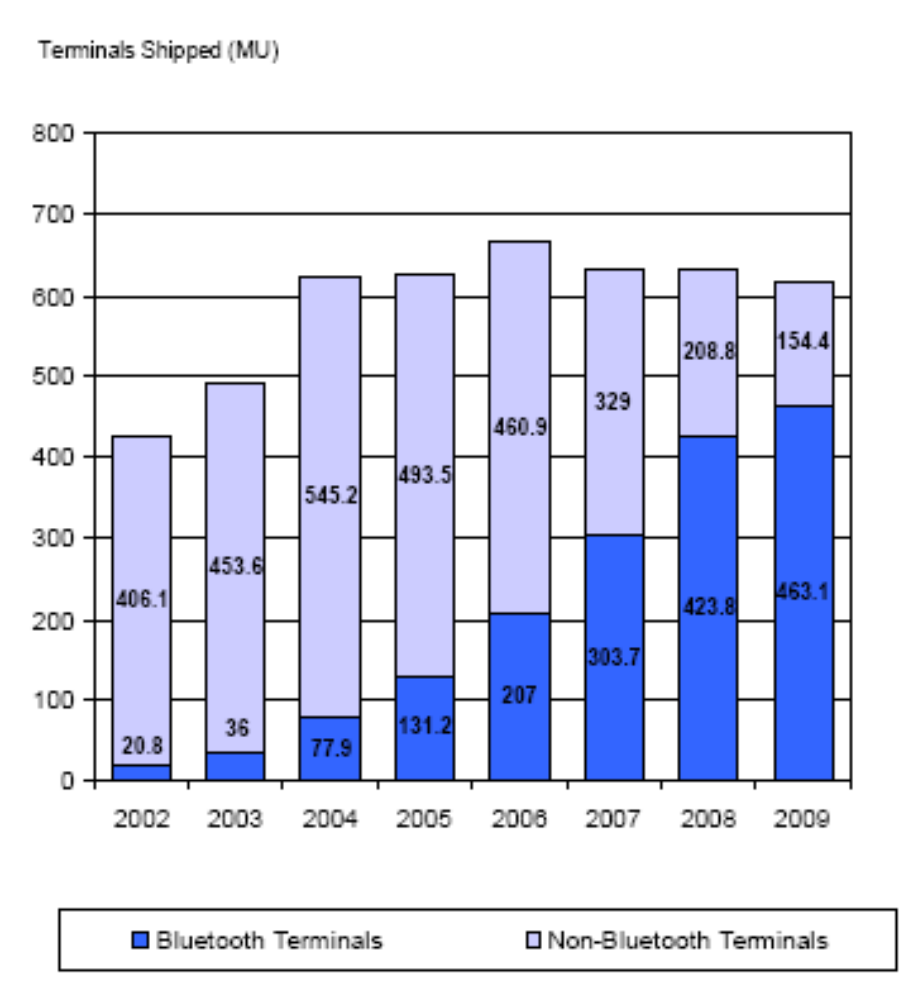
Too large and heavy for anywhere use

PDA
Too small

Trends-1: Short Range Wireless

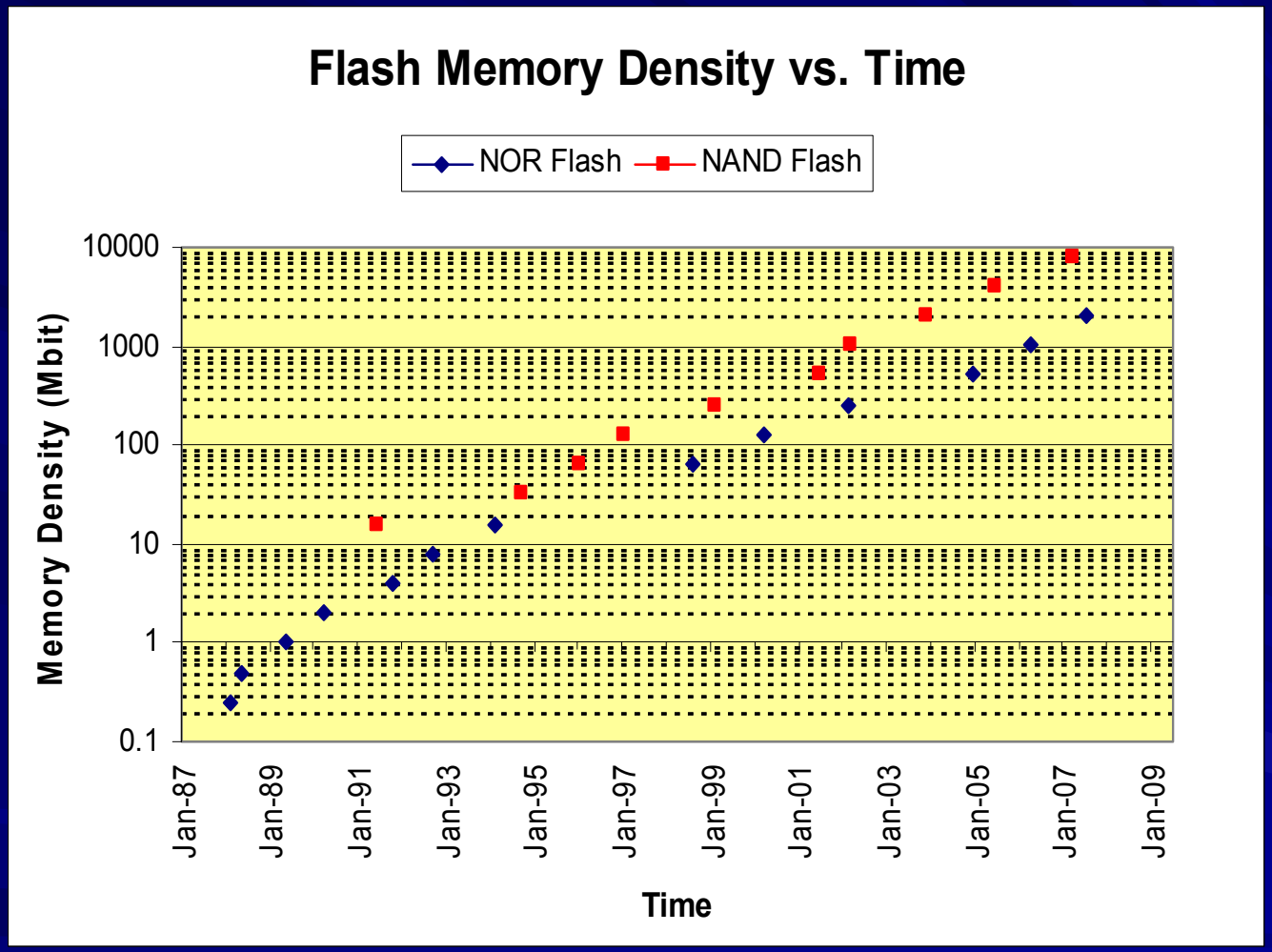
Cellular Handsets (terminals) Shipped

Millions of Units



Source IMS: 2005

Trends-2: Portable Storage



Trends-3: Low Power Processors

ASUS My Pal A620
Windows Mobile 2003

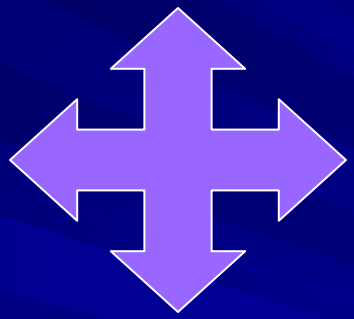
Operating System: Windows Mobile 2003
Manufacturer: ASUS
Processor Type: Intel XScale PXA 255 processor
Processor Speed: 400 MHz (200 MHz FSB)
Memory: 64 MB SDRAM (55 MB user accessible) 32 MB Flash ROM
Display: 3.5" transflective TFT display
Number of Colors: 64,000 colors
Display Resolution: 320 x 240
Dimensions: 125mm x 76.8mm x 13.3mm (L x W x H)
Weight: 4.9 oz (141 g)
Battery:
Up to 19 hrs with ASUS Smart Power Saving. Actual life depends on use.
Type: 1300mAH Lithium Rechargeable Battery
Expansion: Built-In Compact Flash Type II
Add-On Expansions: N/A
Synchronization Options (in the box): Fast IR (up to 4mbps)/ SIR ASUS My Pal A620 Cradle, AC Adapter

Example: Intel® XScale™ based product:
Process & Memory subsystem consumes ~600mW

Trends-4: Ubiquitous Displays

Watch your own in-flight movie

Home



Work

A hotel room
(TV + Keyboard)
Internet Access

Approach

- **Improve the Mobile Computing Experience**
  - **very small & light-weight computer**
  - **high-density data store**
  - **provide wireless access to large high quality displays and keyboards for carrying out real work**
- **Prototype a solution using a flexible embedded platform (Stargate)**
- **Integrate with an existing & successful mobile platform to demonstrate value**

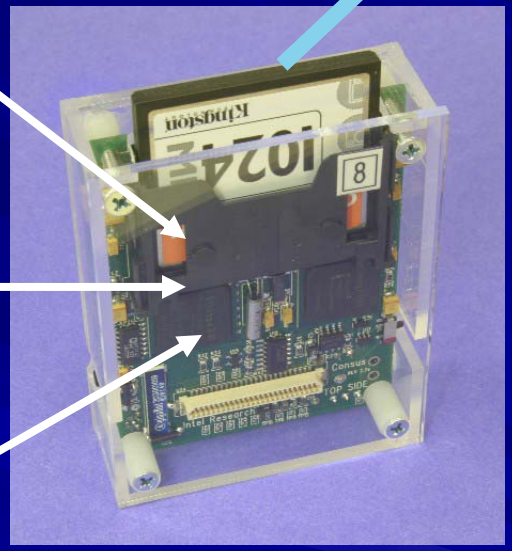
The Personal Server Prototype

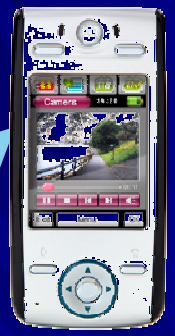
STORE ALL YOUR:
Files
Documents
Photos
MP3s
Videos

High Density Storage

High Performance Processor

Low power Short Range Radio



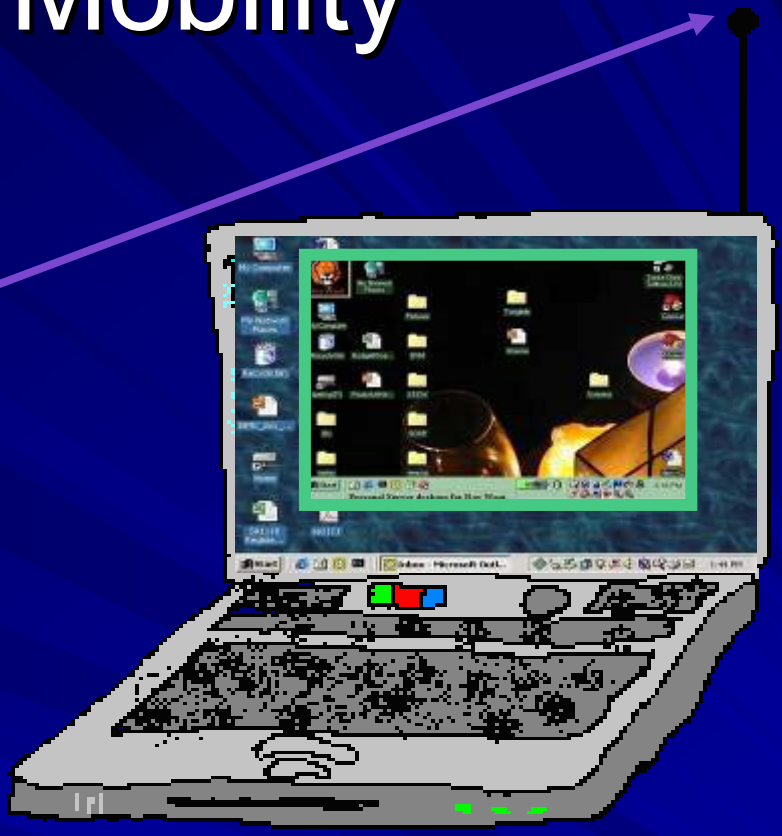


- No real display or keyboard
- The interface is *only* accessible via a wireless link
- Small enough to fit in your pocket or purse

Architecture

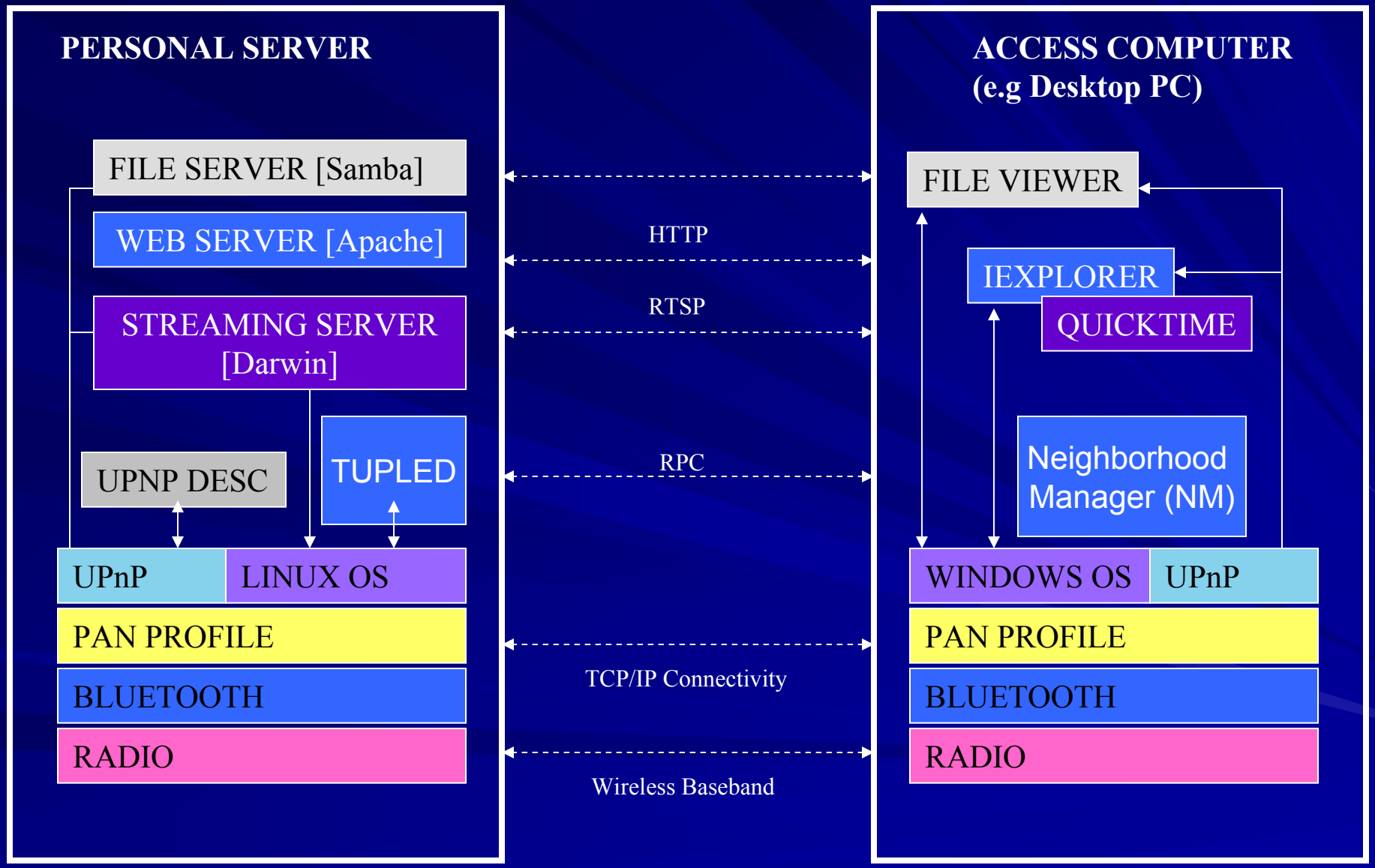
An Approach to Mobility

My *mobile* web page



Any computer becomes your computer

Base Architecture: Using System Standards and Interoperation with Existing Infrastructure



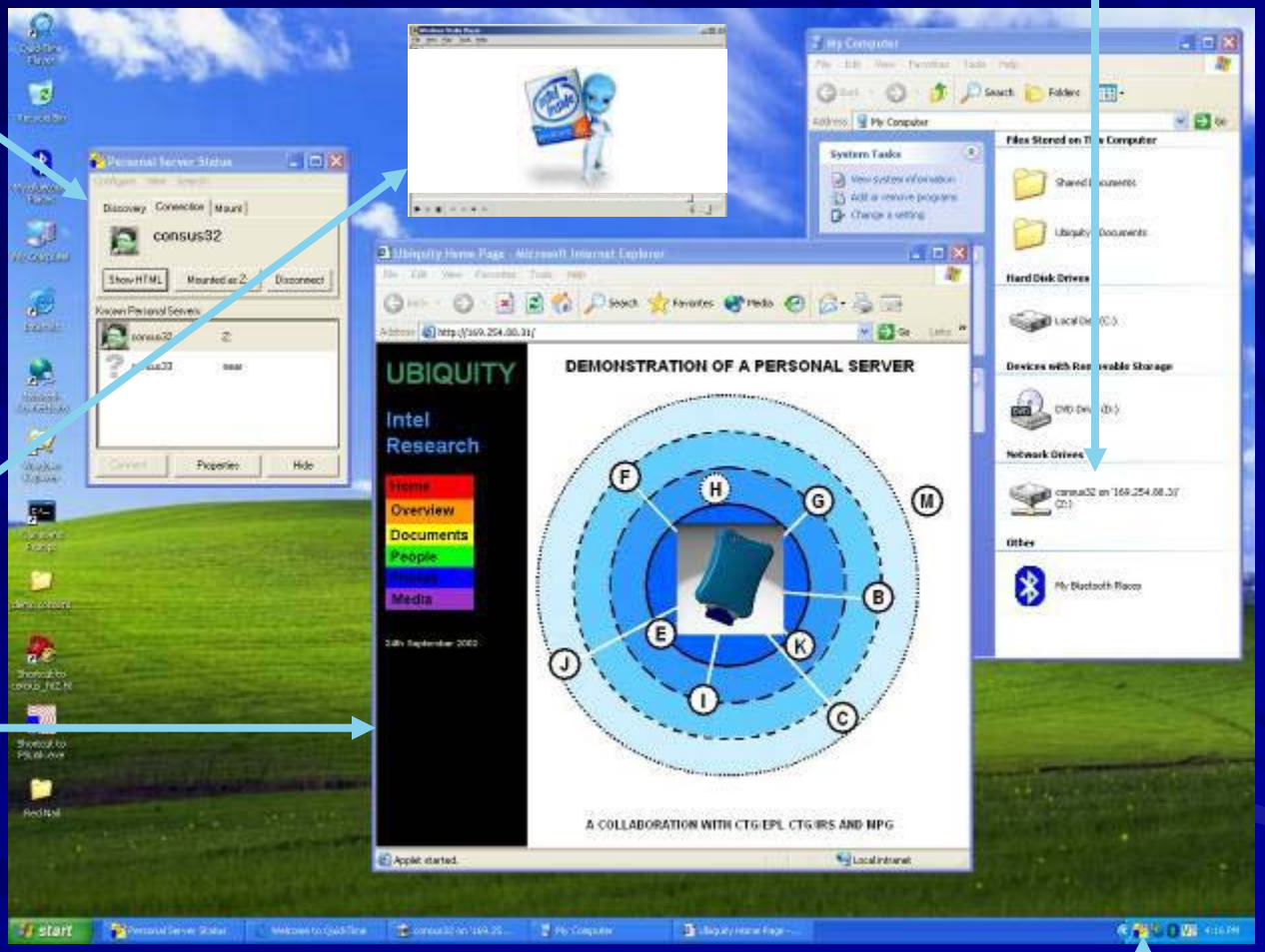
Personal Server UI

Wireless Drive Letter

Neighborhood Manager List Personal Servers in the locality

Streaming Media

Mobile Web Page



Personal Server Indication