Windows Embedded XP Technical Overview
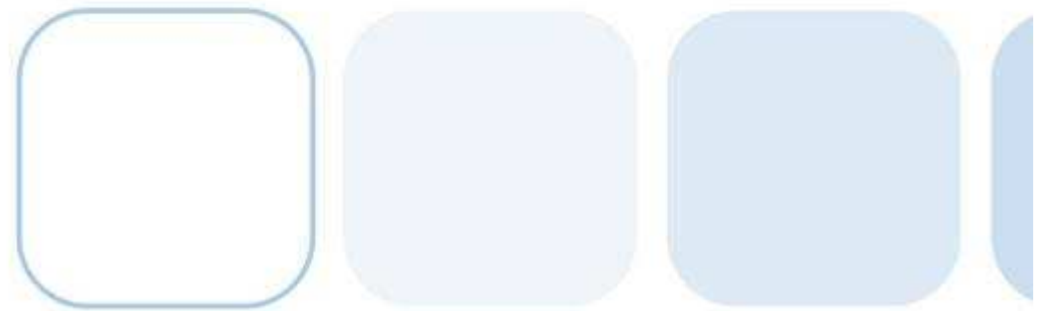
Windows Embedded

Security

Manageability

Innovation

Windows Embedded

Powerful Network Protection

Security

Manageability

Innovation

- **Windows Firewall**
  - Ships automatically enabled
  - Prevents incoming connections by default
  - Provides for start-time security
  - Verify application compatibility–visit http://msdn.microsoft.com/security/productinfo/xpsp2/default.aspx

- **Windows Security Center**

- **Built on Internet Connection Firewall (ICF) enhancements in Windows XP Embedded with SP1**

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Security

Manageability

Innovation

Safer Browsing Experiences

- Provides stronger Microsoft Internet Explorer security profiles
- Warns about potentially harmful downloads
- Blocks unknown or unsigned ActiveX® controls
- Closes attack vectors
- Reduce surface area with changes to Remote Procedure Call (RPC) & Distributed Component Object Model (DCOM)

Windows Embedded

Security

Manageability

Innovation

Memory Protection

- Reduced risk of buffer overruns
- Incremental code compiled with new Microsoft Visual Studio® .NET compiler
- No Execute (NX) support

Safer Attachments

- Microsoft Outlook® Express and Windows Messenger enhancements

Windows Embedded

Security

Manageability

Innovation

Partner Investments

- **Sygate**
  - Componentized version of desktop network protection suite (Security Agent)

- **Computer Associates**
  - Componentized version of desktop anti-virus software (eTrust)

- **More partner announcements forthcoming**

Windows Embedded

Security

Manageability

Innovation

Integrated Management Schema

- Systems Management Server 2003 Advanced Client
  - Benefits
    - Service devices with security updates
    - Monitor security update installations
    - Get a single update status report for all devices
  - In-Progress:
    - Auto-scan for security update status
    - Microsoft Baseline Security Analyzer (MBSA) required–not present today in XP Embedded
    - XP Embedded-based devices may show up in MBSA scan as unpatched
    - This will work in CY05 with SMS update
  - Release:
    - Not part of Windows XP Embedded with SP2–available as stand-alone download off the Web

Integrated Management Schema

- **Software Update Services 2.0 Client**
  - Benefit: Auto-update devices with security updates
  - How this differs from Windows Update:
    - SUS optimizes network bandwidth
    - SUS provides update distribution control
    - SUS works automatically, WU does not
    - SUS provides installation reports
    - SUS only works for security updates

Security

Manageability

Innovation

Windows Embedded

Security

Manageability

Innovation

Latest Multimedia and Graphics

- **Microsoft Windows Media® Player 9 Series**
- **Microsoft DirectX® 9 Subsystem APIs**

Advanced Networking

- **Bluetooth Stack and Profile**
- **Remote Desktop Protocol 5.2**

Windows Embedded

Security

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Leading-Edge Managed Code

- **Microsoft .NET Framework 1.1**

Faster Start

- Hibernate Once, Resume Many
- Ardence's ReadyON is a more elegant and higher-performance solution

Windows Embedded

Security

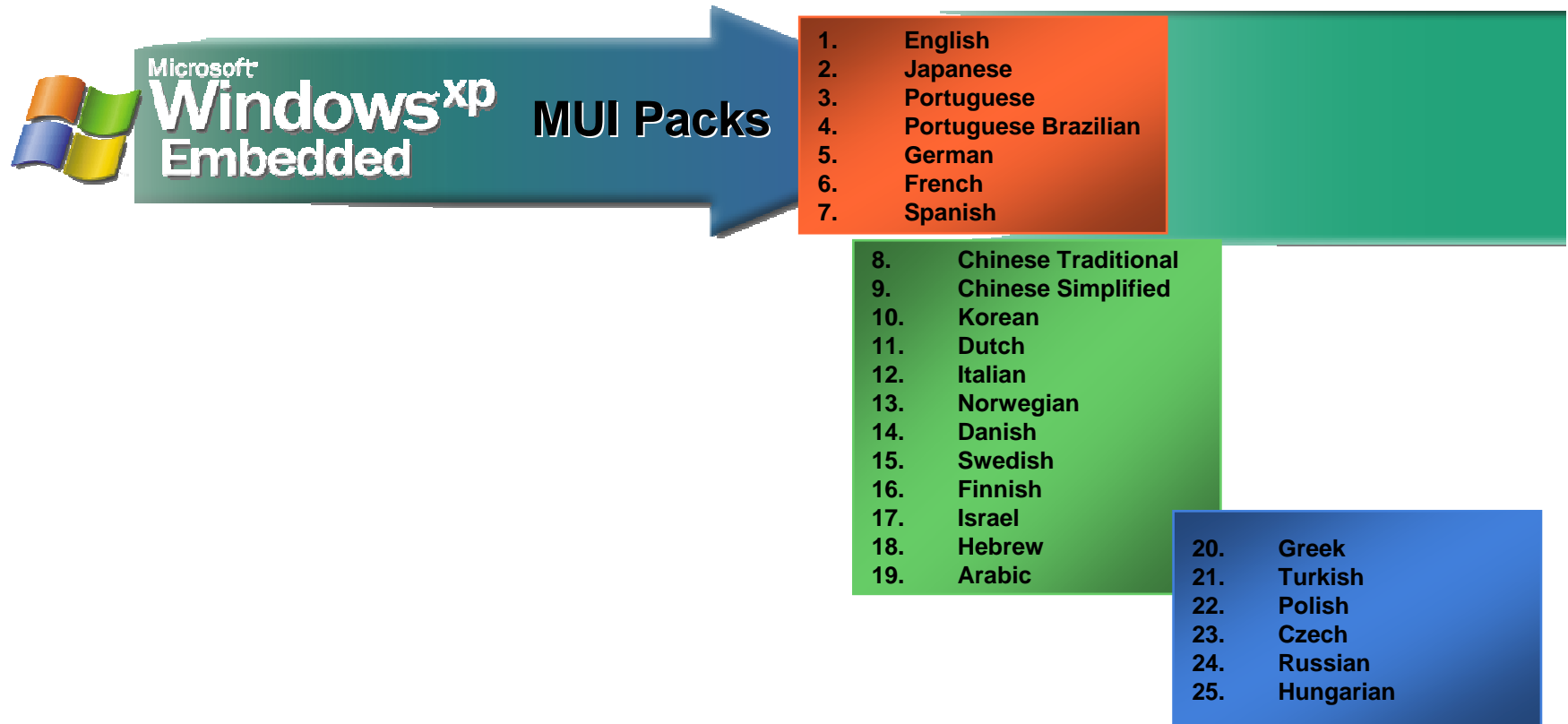**Manageability**

Innovation

Accelerate Time-to-Market

- **Application compatibility macros**
- **Component help and documentation updates**

Updates

- 400 updates unrelated to security
- All updates since Windows XP Embedded with SP1 released

Windows Embedded

Windows XP Embedded SP2
MUI Packs

MUI Packs

1. English
2. Japanese
3. Portuguese
4. Portuguese Brazilian
5. German
6. French
7. Spanish

8. Chinese Traditional
9. Chinese Simplified
10. Korean
11. Dutch
12. Italian
13. Norwegian
14. Danish
15. Swedish
16. Finnish
17. Israel
18. Hebrew
19. Arabic
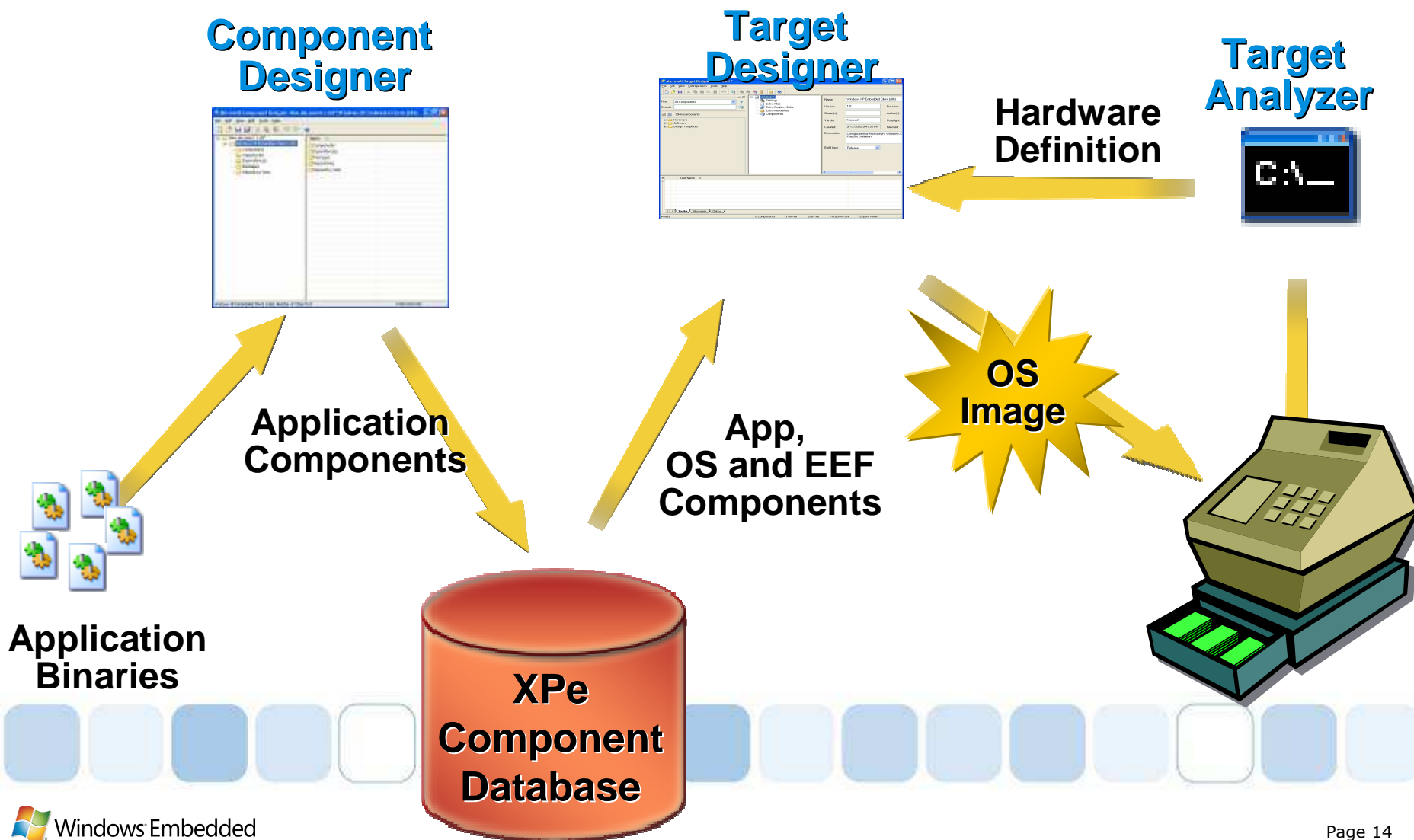
20. Greek
21. Turkish
22. Polish
23. Czech
24. Russian
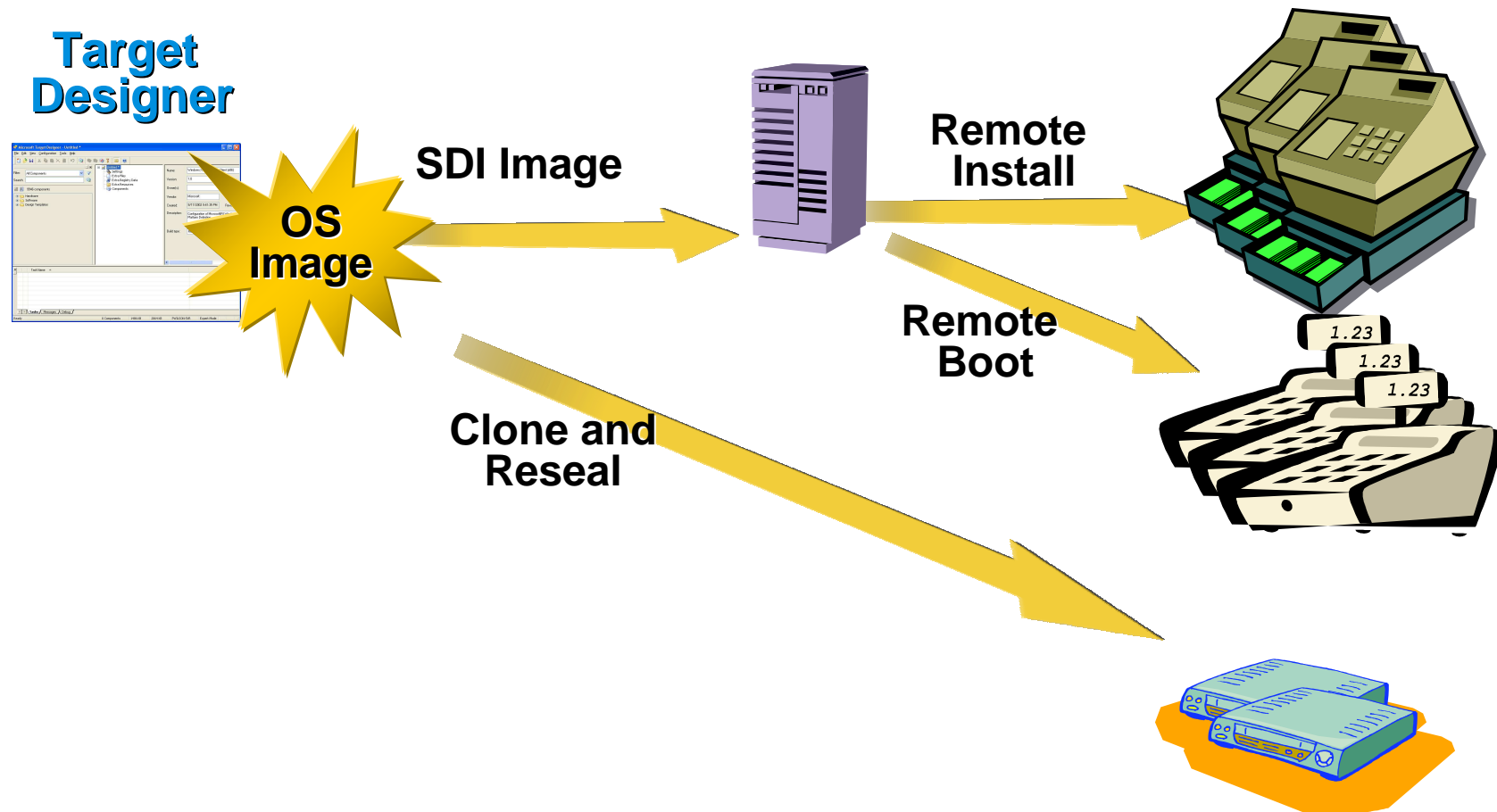25. Hungarian

Windows Embedded

Using Microsoft's Windows XP Embedded toolset with your hardware

- WinPE

- Target Analyzer Probe (TAP)

- Component Designer

- Component Database

- Target Designer

Windows Embedded

XPe Development Overview

Component Designer

Target Designer

Target Analyzer

Hardware Definition

Application Components

App, OS and EEF Components

OS Image

Application Binaries

XPe Component Database

XPe Deployment Overview

Target Designer

SDI Image

OS Image

Remote Install

Remote Boot

Clone and Reseal

1.23
1.23
1.23

WinPE

- WinPE is XP Pre-install Environment
  - Lightweight servicing OS
  - XPe SP1 CD1 is bootable WinPE disk

- Development time on target hardware
  - Boot WinPE and running TAP
  - Boot WinPE and copy image

- Deployment time
  - Remote boot/Remote Install WinPE
  - Bootstrap SDI Manager
  - Install and boot remote image to disk/RAMDisk

Windows Embedded

Target Analyzer Probe (TAP)
Create an OS image for your selected hardware

- Boot using WinPE and run TAP.exe

- The TAP output is an XML file containing device information (*.pmq file)

- Import into Target Designer directly or via Component Designer

Windows Embedded

Component Designer
Import/Creating a Component

- Import .pmq file to create a component for your hardware platform

- Edit version & description information

- Import into Component Database

Windows Embedded

Component Database Manager
Component Repository

- Import Component SLD files

- Supports multiple developers

- Modes of operation: Exclusive or Read Import

Target Designer
Pull everything together

- Create XP Embedded build by selecting components

- Use existing Design Template

- Include your newly created hardware component

- Make changes to various components

- Run Dependency Checker to ensure all component dependencies are resolved
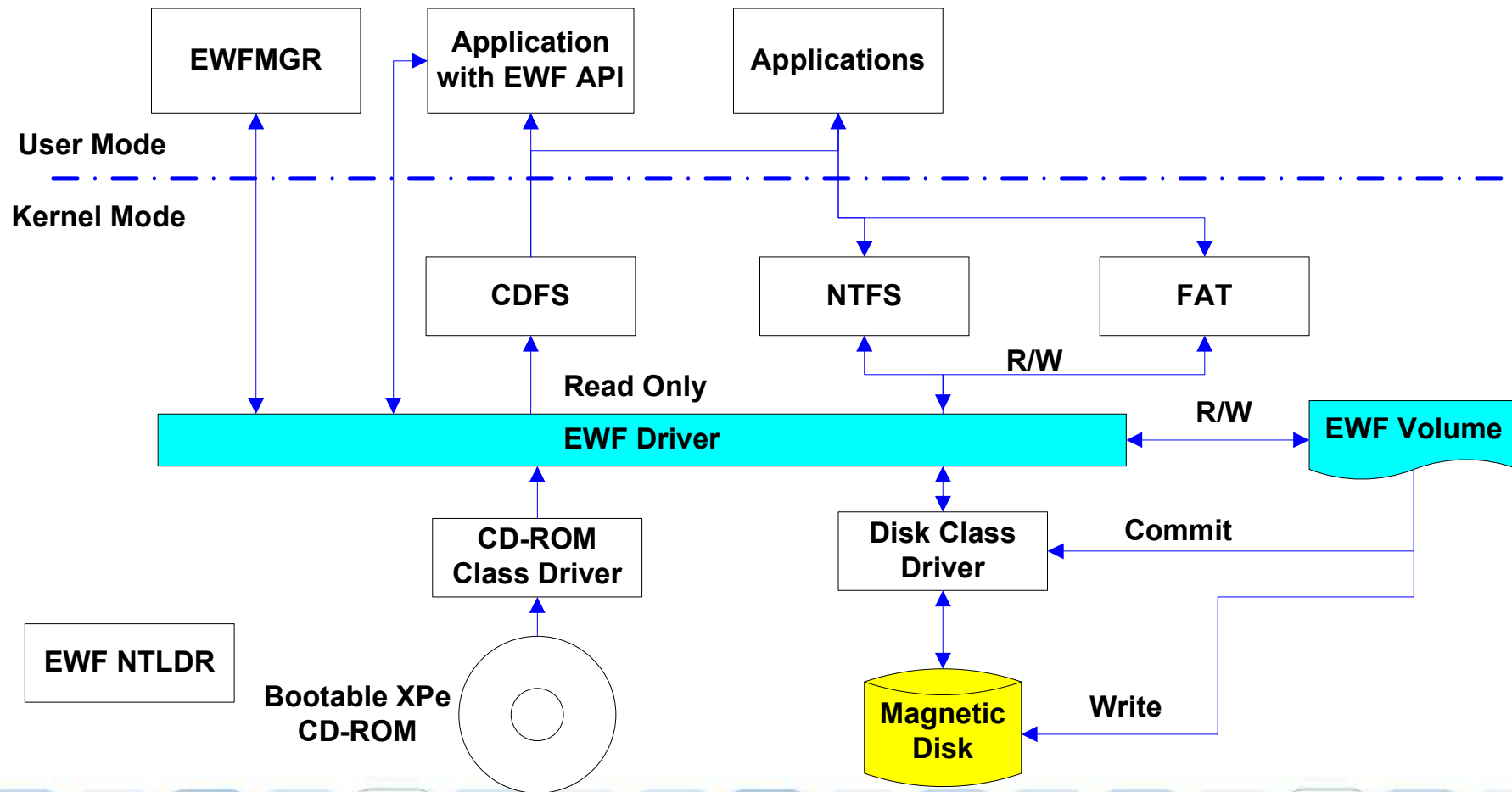
- Build image

Windows Embedded

XPe Image Deployment

- Copy 'raw' file structure to freshly formatted IDE device (FAT, FAT32 or NTFS)

- Set MBR on partition

- Boot system and allow First Boot Agent to complete

- After Reseal, shut down system and copy file structure for 'Golden' OS image

- Deploy to the target device

Windows Embedded

EEFs: Embedded Enabling Features

- DUA: Device Update Agent

- EWF: Enhanced Write Filter

- Remote Boot

- Headless support

- SDI Manager

- among others...

Windows Embedded

Enhanced Write Filter – Overview

EWFMGR	Application with EWF API	Applications

User Mode

- -

Kernel Mode

CDFS	NTFS	FAT

R/W

Read Only

R/W

EWF Driver	EWF Volume

CD-ROM Class Driver	Disk Class Driver

Commit

EWF NTLDR

Bootable XPe CD-ROM

Magnetic Disk

Write

XP Embedded Licensing Features

- Long time availability
  - **15+ year support** for Windows XP Embedded
- Multi Language Support
- Language-independent licensing
- **No** activation for Windows XP Embedded

Windows Embedded

Windows XP Embedded SP2 Roadmap

2004	2005	2006	2007

"Componentized" version based on Windows XP Service Pack 2 with added Embedded Enabling Features

Adding new tool functionality and more Embedded Enabling Features to XPe

Adding new Windows Vista Enabling components To XPe

Windows XPe Service Pack 2 → Windows XPe Feature Pack 1 → Windows XPe Feature Pack 2

Windows Embedded

Confidential

XP Embedded Feature Pack 1
RTM Q4'CY2006

Customer Requirements

Reduction in footprint size and dependencies

Improved performance and features specific to embedded

Better developer productivity through dev tools

Embedded-Appropriate Desktop Technologies

Planned Features

Increased componentization and reduction in size of larger components. Continue to reduce interdependencies between components

Optimizing and extending the functionality of the Embedded Enabling Features, More flexible boot options, branding & shell capabilities; FBWF; USB Boot

Availability of .Net Framework V2.0 & MSDE, SQL Express. Enhanced and New Tool Functionality - Component filtering, Better & More Granular Documentation

Image Deployment, Servicing, and Management. Availability of Windows rich features, Standard Protocols, Formats, Codecs, and Clients

Windows Embedded

Confidential

XP Embedded Feature Pack 2
RTM Q4'CY2007

Customer Requirements

Embedded-Appropriate Desktop Technologies

Improved performance and features specific to embedded

Reduction in footprint size and dependencies

Better developer productivity through dev tools

Planned Features

Vista Functionality & Components
Windows Communication Framework
Window Presentation Framework
RDP 6.0, IE7, WMP, Wireless & IIS

Continue to build on FP1 Innovation

•**Further footprint reduction**
•**Optimizing and extending the functionality of the Embedded Enabling Features**
•**Development tools productivity**

FP 2007 Setup and Installation

- FP2007 is an optional upgrade to XPe SP2

- Dependency on SP2 tools and database

- Rollback to SP2 is supported
  - Database rollback is manual, customers need to backup and restore database

- You can get the latest builds from:
  - CTP builds from msconnect

- There will be an updated color scheme and logo (post CTP)

Confidential

FP 2007 Tools

- New commandline tool for building and managing images: XPe Console app (xpecon)
  - Can be used to view dependency trees for components

- TD and CD bug fixes and enhancements
  - Errors while saving large files
  - Component browser refresh in TD
  - Saving TD config in xml format
  - Search for components in list view
  - CD and TD crashes
  - Memory leaks

- Importer Framework
  - Better import experience for .reg files by eliminating problems with spaces, formatting, etc

- Vista support
  - Updated TAP.exe (available post beta)
  - Setup support for UAP

- Updated Visual ID and Windows Embedded logo (post beta)

FP 2007 EEFs

- FBWF
  - Config UI
  - Public configuration api
  - fbwfmgr
- EWF Enhancements
  - Automated HORM setup and disable
    - Updated EWF api and new ewfmgr.exe commands
  - New config UI for EWF
- Regfilter
  - Shipped in it current scope with a config UI
  - Will work with both EWF and FBWF
- USB boot
  - Formatufd.exe used for formatting USB DOKs
  - No support for multiple partitions on USB media for beta
  - Manual configuration steps for CTP can be found [here](#)
  - Current issues: h/w test coverage, perf, impact on components
- FBA Enhancements
  - Fbreseal /? provides help
  - Fbreseal option to reseal and shutdown
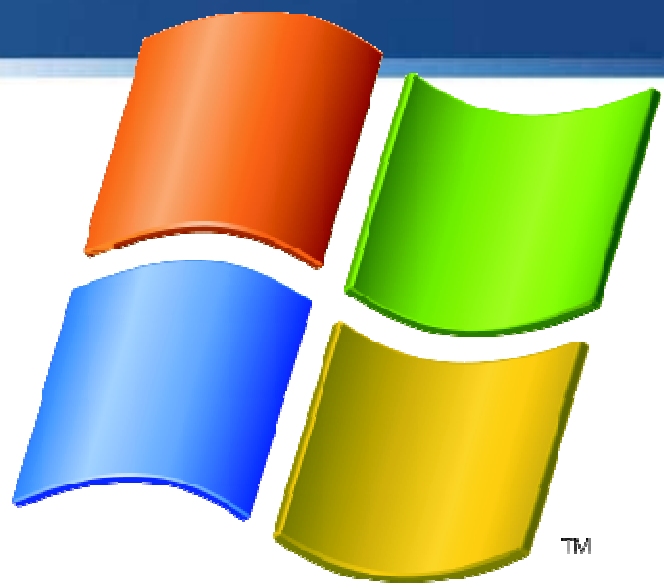 - FBA splash screen

Confidential

FP 2007 Components

- Lots of component bug fixes
  - Doc is in progress, check back periodically
- Footprint reduction
  - IE 6 re-factoring
  - Smaller SMS client
    - Removed dependency on Help and Support Center
    - Saved 30 megs
  - Removal of unnecessary or stale dependencies from components

Resources

- More Windows Embedded Information

  - http://msdn.microsoft.com/embedded

- Windows Embedded Partner Web Site

  - http://www.mswep.com

- Get the Windows Embedded Introductory Kit

  - http://www.windowsembeddedkit.com

- Technical information for
  application development

  - http://msdn.microsoft.com/mobile

- Show off your device with the
  Device Showcase Program

  - E-mail: devices @ microsoft.com

Windows Embedded

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