

Computing Research Association

Conference at Snowbird 2000



Slides from a workshop
on the topic of
“Distance Education/Learning”

presented by

Anoop Gupta,
Microsoft Corporation

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1:30 pm

<http://www.cra.org/Activities/snowbird/00/wk4-5.html>

Distance Education / Learning

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Outline

- **Organizational Characteristics**
- **Microsoft Technical Education (MSTE)**
- **Sampling of MSR Projects**
- **Concluding Remarks**

Microsoft Corporation

- **35,000+ employees**
 - ◆ ~25,000 in Seattle area (multiple campuses)
 - ◆ Numerous small offices worldwide
- **Around 50% are in product development**
- **Employees work in:**
 - ◆ Rapidly changing technological environment
 - ◆ Rapidly changing business environment
- **Ongoing learning is absolutely essential**
 - ◆ Self learning and on-the-job learning
 - ◆ More formal course-based learning

Major Differences from Academia

■ **Learner is in-charge**

- ◆ How, when, what they learn
- ◆ They are the “customers” of training organization, and customer is King

■ **Modular content is key**

- ◆ Learners have diverse backgrounds and needs
- ◆ Content with multiple entry points, rich indices, and explicit pre-requisites and learning outcomes

■ **“Just-in-time”, anytime, anywhere access is key**

- ◆ Need arises middle of project; worldwide audience
- ◆ Online “live” and “on-demand” access

■ Market-driven content production and delivery

- ◆ E.g., Brand new technology → Capture talk by expert
- ◆ E.g., Substantial demand → Formal lecture-based course available live and on-demand
- ◆ E.g., Stable content and large external demand → Microsoft Press book and high production-value modular course

■ Push to adopt leading-edge technologies/pedagogies

- ◆ Well-trained employees are the “key” asset
- ◆ Efficiency and effectiveness of training organized is measured and rewarded every year

Learning Resources

- Talks / Seminars
- Professional Developer's Conference
- Microsoft Technical Education (MSTE)
- Specialized training workshops
- Microsoft Developer Network (MSDN)
- Books: Microsoft Press
- University of Washington (Master's program, ...)
- ...

Microsoft Technical Education (MSTE)

- **“Live” classroom courses**

- **“Live” distance courses**
 - ◆ Using video teleconferencing
 - ◆ Future: Centra, Netpodium, ...

- **Online on-demand courses**
 - ◆ CBT style text-based
 - ◆ Audio-Video lecture based

- **Talks and Seminars**

Internal Technical Education

[Home](#) [Redmond](#)

Search all of MSTE

Advanced search...

What do you need to build a better product?

- ▶ **Job information**
- ▶ **Training**
- ▶ **InfoCenters**
- ▶ **Interface webzine**

- ▶ **Training calendar**
- ▶ **About MSTE**
- ▶ **Contact us**
- ▶ **Related sites**

Management Development

- Development
- Localization
- Product design
- Product management
- Program management
- Testing
- User assistance
- Web development
- Administrative personnel
- Interns
- Management

Redmond

Resources, information, and training to help you be more productive and build better products.

Highlights this week

- Writing Team Code
- Beta Programs: Planning and Logistics
- Designing Accessible Software
- Intro to HTML Help
- ADO and the Web

Training

- Sign up for a live course
- Take an online course
- Sign up for a live talk
- Sign up for a live event
- View a past talk or event
- Get product, management, and other training

Interface & InfoCenters

- Interface* webzine provides tips, technical information, and best practices.
- Current issue: E-commerce technologies
- Visit an InfoCenter for information and resources for a technology, tool, or job-related task.
- See all InfoCenters

My job

Information and resources to be more productive

- Development
- Localization
- Product design
- Product management
- Program management
- Testing
- User assistance
- Web development
- Administrative personnel
- Interns
- Management



Internal Technical Education

Courses: Redmond

Home > Redmond

Search all of MSTE

go

Advanced search...

What do you need to build a better product?

Job information

Training

Live courses

[Online courses](#)

Live talks

Live events

Online talks & events

Other training

InfoCenters

Interface webzine

Training calendar

[About MSTE](#)

[Contact us](#)

[Related sites](#)

Management Development

Location: Job category: Title, speaker, or series:

go

Online courses

▶ [Access 2000 Step By Step Interactive - MS Press](#)

▶ [Beta Programs - Planning and Logistics](#)

▶ [Building Applications for Microsoft Windows CE with Visual Basic 6 - MSDN](#)

▼ [Building Solutions for Microsoft Windows 2000 with Visual Basic - MSDN](#)

This course is intended for developers with intermediate-level knowledge of Windows operating systems, Microsoft Visual Basic, and COM.

[Launch this online course](#)

▶ [C Programming I](#)

▶ [Excel 2000 Step by Step Interactive - MS Press](#)

▶ [Flash 4.0](#)

▶ [Helium 1.3](#)

▶ [HULK 3.0](#)

▶ [Intro to HTML Help](#)

▶ [Issues in Designing Accessible Software](#)

▶ [Localization Studio 4.5](#)

▶ [Mastering Database Fundamentals Using Microsoft Access 2000 - MSDN](#)

▶ [Mastering Distributed Application Design and Development Using Microsoft Visual Studio 6 - MSDN](#)

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Building Solutions for Microsoft® Windows® 2000 with Visual Basic®



Contents

Index

Content type

All

- Overview
- Chapter 1: Overview of Windows 2000
- Chapter 2: Getting Started with Certification
- Chapter 3: Using the Windows Installer Service
- Overview of the Windows Installer Service
- Following Installation Guidelines
- Using InstallShield for Windows Installation
- Features of InstallShield for Windows Installation
- The InstallShield IDE
- Using Wise for Windows Installer
- Lab 3.1: Using InstallShield for Windows Installation
- Lab 3.2: Using Wise for Windows Installation
- Chapter 4: Sharing Side-by-Side Components
- Chapter 5: Managing User and Computer Settings
- Chapter 6: Responding to Power Events
- Chapter 7: Integrating with Active Directory
- Chapter 8: Programming the COM+ Service



Chapter 3: Using the Windows Installer Service

The Windows Installer is a new service of the Windows 2000 operating system that is changing the way software installation is performed under Windows. This service provides consistent deployment and enables administrators and users to manage shared resources, customize installation processes, make decisions on application usage, and resolve configuration problems. The Windows Installer service achieves this by reading a Windows Installer package, which is provided by a software vendor or administrator.

This chapter provides an overview of the "Certified for Windows" requirements for Windows Installer packages and explains how to implement these guidelines in your applications. You will learn about the Windows Installer service and various tools used for creating Installer packages. You will also learn how to avoid DLL conflicts. Finally, you will learn how to create an installation package by following the installation guidelines.

Objectives

After completing this chapter, you will be able to:

- Describe the features and benefits of the Windows Installer service.
- Use the Wise for Windows Installer to create an Installer package.
- Use InstallShield for Windows Installer to create an Installer package.
- Create applications that behave appropriately during install/uninstall.



01:06:27 / 1:08:27

Built-in data types

- [-] Course Overview
- [-] Mod 1: Anatomy of a C source file
- [-] Mod 2: C data types
 - [-] C data types, console input & output
 - [-] Overview: Module 2
 - [-] Review: Module 1
 - [-] **Built-in data types**
 - [-] The integer family
 - [-] Character data types
 - [-] The 32-bit integer
 - [-] Long and short integers
 - [-] Floating-point data type
 - [-] Double & long double
 - [-] Declaring variables
 - [-] Using the char data type
 - [-] Escape sequences
 - [-] Using escape sequences
 - [-] printf function
 - [-] Demo: printf
 - [-] printf function, continued

Built-in data types

- Two categories of built-in data types:
 - Integer
 - Floating-point
- Specific data types reserve various-sized storage
- A variable is defined according to:
 - Usage of the data
 - Amount of memory needed to store it

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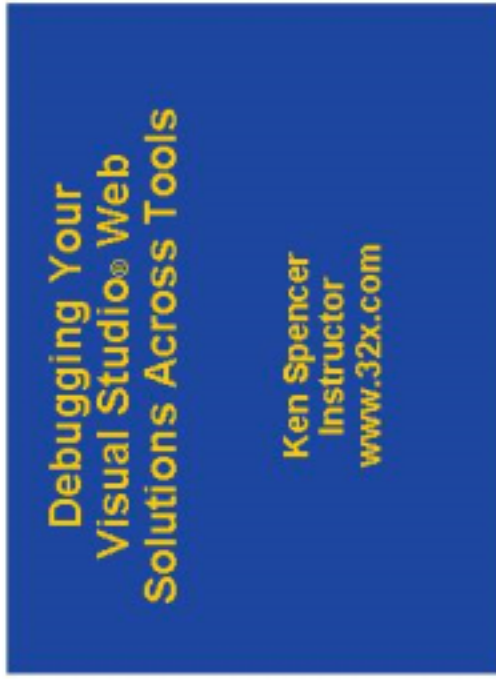


Slides:

- 01 02 03 04 05
- 06 07 08 09 10
- 11 12 13 14 15
- 16 17 18 19

Ken Spencer,
Instructor,
www.32x.com

Debugging Your Visual Studio Web Solutions Across Tools



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1 2 3 4 5

Sampling of MSR Projects

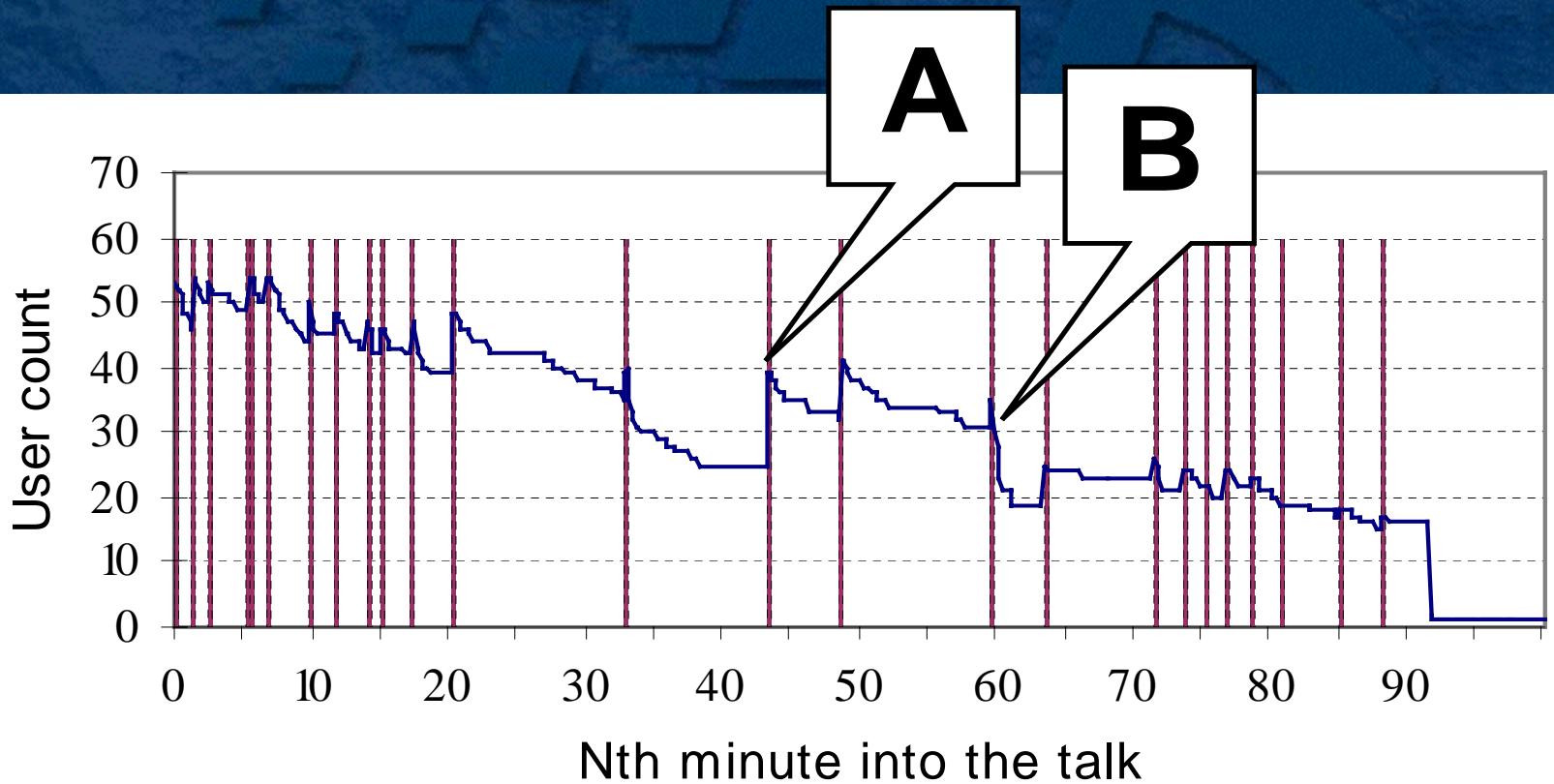
- **Low-cost Capture of Video**
- **Browsing Audio-Video**
- **Multimedia Annotations**
- **Remote Synchronous Collaboration**
- **Enhanced Online Communities**

How Do People Watch Online Talks?

- **Logs of ~30,000 sessions by over 5000 users**
- **Some results:**
 - ◆ On-demand audience larger than live audience
 - ◆ 60% of sessions are under 5 minutes
 - ◆ Viewers jump around video
 - ◆ Initial portions much more likely to be watched
- **Presentations will be designed differently in future**
 - ◆ Present key messages early in talk and in each slide
 - ◆ Use meaningful slide titles
 - ◆ Reveal talk structure in slide titles
 - ◆ Consider post-processing talk for on-line viewers

Viewers Over Time for One Talk

- Viewers decrease overall and within each slide



Multimedia Annotations

- **Ability to mark-up, take notes, collaborate around multimedia content can add significant value**
 - ◆ E.g. Q&A around corporate training presentations
 - ◆ E.g. personal notes around marketing presentation
- **Various indices, highlights, ... are also annotations**
 - ◆ E.g. table of contents, slide-flips, speech-to-text, ...
- **Multimedia annotations:**
 - ◆ Annotations are linked to the media time-line
 - ◆ Annotations stored separately from the media files

On-Demand Education Scenario

MRAS Demo - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print

Address <http://naafi/public/mrasdemo/> Go

Introduction
Goals *MTS*

- Scalable, robust, distributed, and high-performance servers
 - ◆ Multiple servers called by many clients
- Business logic
 - ◆ Mission-critical "run the business"
- Shared data
 - ◆ Across clients
- High availability
 - ◆ Basic trick: reduce MTTR
→ Mean Time To Repair
- "Middle-tier"

User Interface → Business Logic (Middle Tier) → Shared Data

MTS Programming Model Philosophy Mar 23, 1998 Slide 3 Pat Holland

Questions and Answers (Public Discussion)

It's interesting that he highlights that these systems must be scalable. This shows foresight, I don't think there's anything that absolutely requires that a transaction server be scalable, but it certainly is a nice touch.

Done Local intranet

On-Demand Education Scenario

The screenshot shows a Microsoft Internet Explorer browser window titled "MRAS Demo - Microsoft Internet Explorer". The address bar shows "http://naafi/public/mrasdemo/". The main content area is split into three sections:

- Video Player:** On the left, a video player shows a man in a white shirt and tie speaking. Below the video is a control bar with "Playing" and a progress indicator at "01:58 / 01:19:00".
- Questions List:** Below the video player is a list of questions. The selected question is "Scalable servers" by user "johanw". Other questions include "Hot spots?", "Branch Records", "Fungible Resc", "Taxonmizing Pieces", "Shared data makes", "Business logic?", "Nice real world exam", "High availability", "MTTR", "Middle tier?", "MTTR redux", and "lossless crashes".
- Questions Dialog:** A "Questions" dialog box is open in the center. It has fields for "Subject" (MTS Goals) and "Email To" (anoop; davenb). The "Type" is set to "Text". The text area contains "I think we should add ..." and "- Anoop.". At the bottom, there are "From" and "To" time fields, and "Advanced", "Cancel", and "OK" buttons.
- Slide:** On the right, a slide titled "Introduction" is visible. It features the "MTS" logo in red and yellow. The slide content includes "Business logic", "Mission-critical 'run the business'", "High availability", and "Trick: reduce MTTR (Mean Time To Repair) in 'Tier 1'". A diagram shows a cylinder labeled "Shared Data". The slide footer says "Slide 3 Pat Holland".

At the bottom of the browser window, the status bar shows "Done" and "Local intranet".

Some Unique Aspects

- **Annotation sets and sharing**
- **Displaying Annotations**
 - ◆ Timeline-centric view
 - ◆ Annotation-centric views
- **Integration with email**
- **Multiple annotation types**
- **Collection of flexible and embeddable objects**

Study Results

■ Initial System Design and Use (WWW'99)

- ◆ Personal note-taking study
- ◆ Shared note-taking study
 - Text preferred over audio
 - Exact positioning not critical
 - Auto-tracking particularly useful

■ MRAS-MSTE Study (Tech Report)

- ◆ 58 students involved in two instances of “C” course
 - ~ 20% lower attrition rates (although self selected)
 - Class participation levels were same or better
 - Overall, students were pleased with experience
- ◆ Students took advantage of on-demand format
 - Saved 28-35% time by skipping unimportant parts
 - Log-ins were well-spread over duration of course
- ◆ Instructors saved 50% on time but felt under utilized

Synchronous “Real-Time” Collaboration

- Core activity for people
- Source of on-demand content
 - ◆ Captured presentations and meetings
- Our work in this area:
 - ◆ **Flatland**: Desktop-to-desktop tele-presentations
 - ◆ **TELEP**: Mixed Live+Remote tele-presentations
 - ◆ **CVV** (NetShow + NetMeeting): Collaborative Video Viewing
 - ◆ **Connected spaces, People/Information awareness, ...**
 - ◆ **Online communities**

Prototype Flatland Interface

V-Worlds Flatland - Microsoft Internet Explorer provided by ITG

Presenter Slides Q&A


..... (5 of 5) Edit Delete Insert History

Too Slow Too Fast

Clear Confusing

Presenting

SET UP ON AIR SYNC



07:51

Flatland System Organization



Client Architecture
Latency Issues

Question queue

#	Author	Question	✓	Votes
1	anoop	What are the key latency issues?	<input checked="" type="checkbox"/>	2
2	anoop	How does the down-level client work?	<input type="checkbox"/>	1
3	stevewh	Do you have whiteboard support?	<input checked="" type="checkbox"/>	1

Pose Question/See All Questions

Chat

Show Presenter Only

History:

anoop *leaves the room.*
anoop *enters the room.*
stevewh: So why do we need the NetShow Encoder?
Tom *enters the room.*
anoop: Hey guys, what do you think of Steve's lecture? Too boring I would say.

Enter

Local intranet zone



The screenshot shows a video conference interface with a grid of participants. A question window is open over the grid, displaying a question from Martha Stewart and a response from Richard J. Markham.

Question from Martha Stewart

Martha Stewart Close Question

Martha Stewart - i have a closet full of new, outmoded and "antique" appliances, cameras, digital cameras, hand held devices, wireless email devices- how do i choose? how do i, as a homemaker, know how to pick and be discriminating so i can actually get something of value without wasting money and time after text & hit send

Richard J. Markham - good question

Participants: Janet, Craig, Dave, Sara, Lisa, Tony, Bill, Chris, John, Don, Devin, Amy, Karth, Martin, Jim, Martha, David R., Steve, Michael, Susan, Richard J., Geraldine, Laybourne, Jergen M., John W., Bachmann, Wachner, Martinez, Bryson, Glasscock, Wong, Russell C., Tajudd, Stephen, Dr. Ziggy, Jeff, Horowitz, Tajuddin, Tindel, Switkowski, Bezos.

Collaborative Video Viewing

■ Example scenarios:

- ◆ Online presentation with demo videos
- ◆ Distributed tutored video instruction (D-TVI)

■ NetMeeting doesn't support these out-of-box

■ Built a simple solution (CVV) on top of NetMeeting

■ Study: Impact of communication channels on interactivity

- ◆ Chat; phone; phone+video; same room
- ◆ Phone conferencing does very well
- ◆ Opportunity for wide deployment

01:34:38:52
Paying
Machine Name: onarab2
Curl

Participants	Time
Anand Babachandran	10:13:34
Anand Babachandran	10:13:37

Microsoft Paint 1.0.0.2 (a) - in use by 3 others (a)
File Edit View Tools Options Help

Chat - chatting with 1 other(s)
File Edit View Help

Anand Babachandran
Hi Anand.
Anand Babachandran
What do you think of the suitability of the gassy video for our demo?

Message:

Send To:
Everyone In Chat
Chat is active

Concluding Remarks

- Major differences from academia
- Distance education: A Disruptive Technology?

Major Differences from Academia

■ Learner is in-charge

- ◆ How, when, what they learn
- ◆ They are the “customers” of training organization, and customer is King

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“Distance” Education: A Disruptive Tech?

■ Sustaining vs. Disruptive technologies

◆ Sustaining technologies improve:

- Performance of established products
- For established customers
- Using established metrics

■ Trajectories of Mkt need vs. Tech. Improvement

◆ Mkt needs growing slower than tech improvements

■ Disruptive technologies vs. Rational investments

◆ Disruptive technology based products initially offer:

- Lower margins,
- In insignificant markets, and are
- Undesired by company’s key customers

Defining the Terms

■ Product:

- ◆ Courses delivered face-to-face, Degrees
- ◆ Students well prepared for industry
- ◆ Research (New knowledge)

■ Customers:

- ◆ 4-year full-time undergrad, and grad students
- ◆ Parents, Alumni, Corporations

■ Value metrics:

- ◆ For customers (students, ...)
 - Quality of education, brand value, ...
- ◆ For institution
 - Prestige, Impact, Endowment, Grant Money

Sustaining or Disruptive?

■ Distance education technologies:

- ◆ Learner-centric pedagogy
- ◆ Modular, personalizable, interactive content
- ◆ Anytime, anywhere, any device access
- ◆ Technology supported interactivity, collaboration, and community

■ The technology is disruptive because:

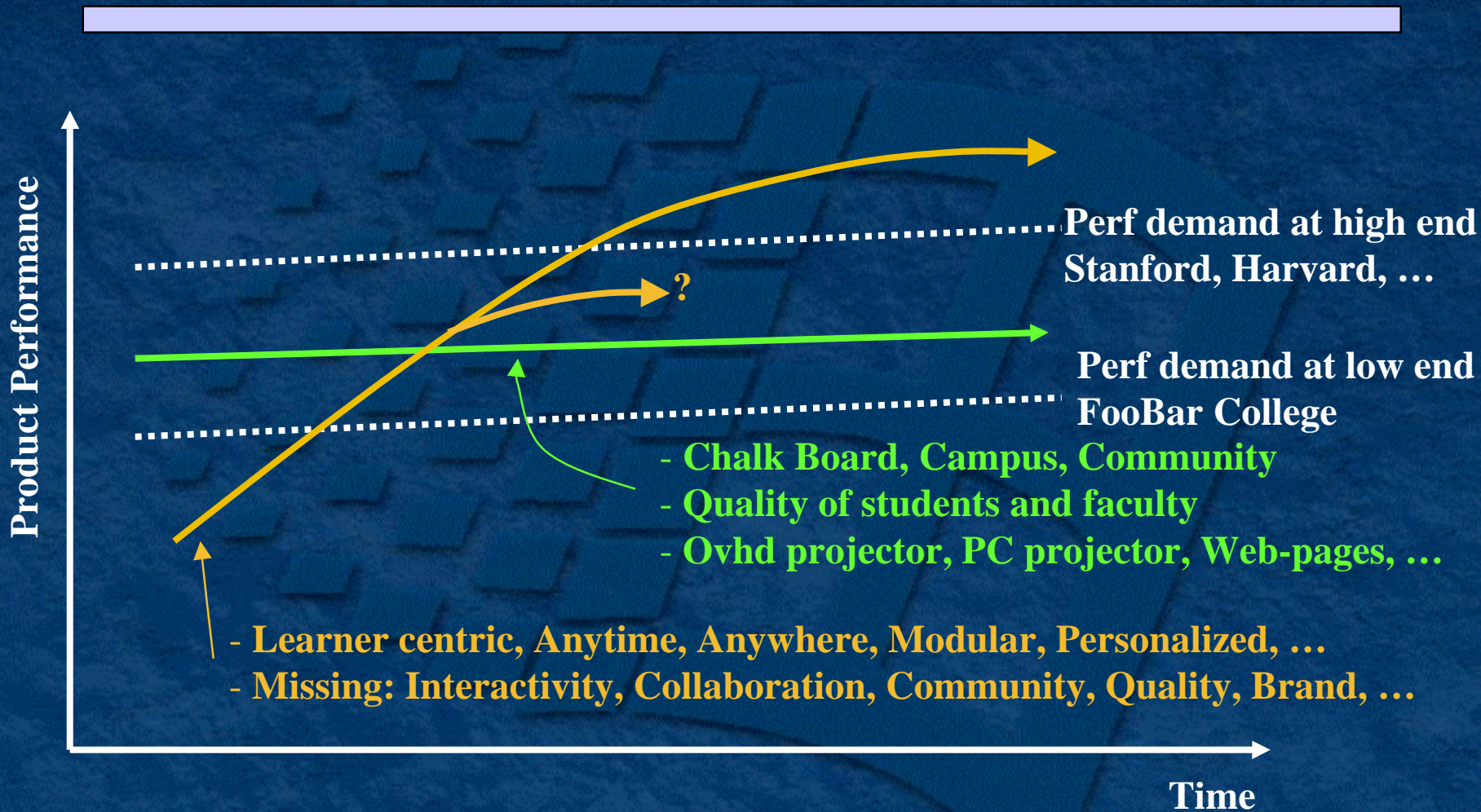
- ◆ Doesn't improve established products (lectures) or particularly help existing customers (students)
 - Anytime, anywhere not key for full-time students
 - Uniform background of students makes modular, learner-centric content not critical

■ Improvement trajectory much faster

- ◆ Significant dollars in new content
- ◆ Significant experimentation with new pedagogies
- ◆ Rapid increase of network bandwidth, CPU => tools for remote interaction, collaboration, community
- ◆ Increasing involvement of high-quality players

■ Rational investments for existing institutions

- ◆ \$50M for new building vs. 10 new course modules
- ◆ Slightly better experience for on-campus students vs. technology for global reach and scale
 - For top tier, benefits to remaining exclusive clubs
- ◆ Focus on research vs. teaching for faculty





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