
System z Mainframe Education Activities at Bochum University of Applied Sciences

Prof. Dr.-Ing. Carsten Köhn

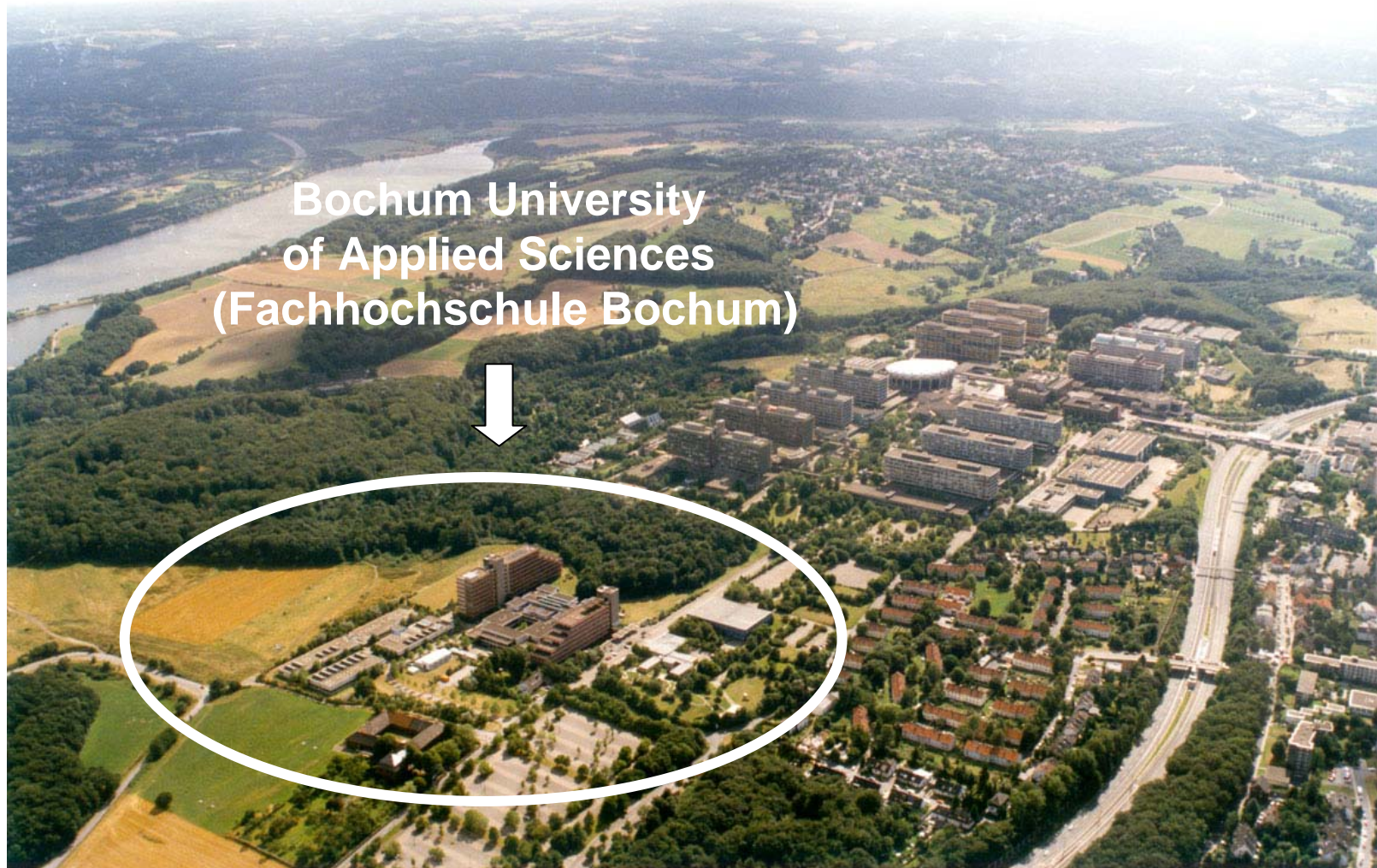
(Dean Dept. Electrical Engineering & Computer Sciences)

GSE Management Summit

Fasttrack to the IT Future through the Clouds

Berlin, 18-19 October 2010

The University



University City Bochum



- Ruhr-Universität
- Hochschule Bochum
- Evangelische Fachhochschule R-W-L
- Technische Fachhochschule Georg Agricola



Inhabitants: 376.319 (31. Dez. 2009)

Students: 38.200

Stand: WS 2004/05

- Hochschule Bochum was founded 1971
- Located in the Ruhr Area
- Currently 4,500 Students
- 750 Graduates per year
- Bachelor & Master courses in engineering sciences and economics
 - Department of Electrical Engineering and Computer Sciences
 - 500 students and 160 new students a year



The Death of the Mainframe

A fairly well accepted notion in computing is that the mainframe is going the way of the dinosaur.

Forbes, March 20, 1989

The mainframe computer is rapidly being turned into a technological Dinosaur...

New York Times, April 4, 1989

On March 15, 1996, an InfoWorld Reader will unplug the last mainframe.

Stewart Alsop, InfoWorld 1991

...the mainframe seems to be hurtling toward extinction.

New York Times, Feb. 9, 1993

Its the end of the end for the mainframes

George Colony, Forrester Research,
Business Week, Jan. 10, 1994

The Case of Need for Mainframe Training

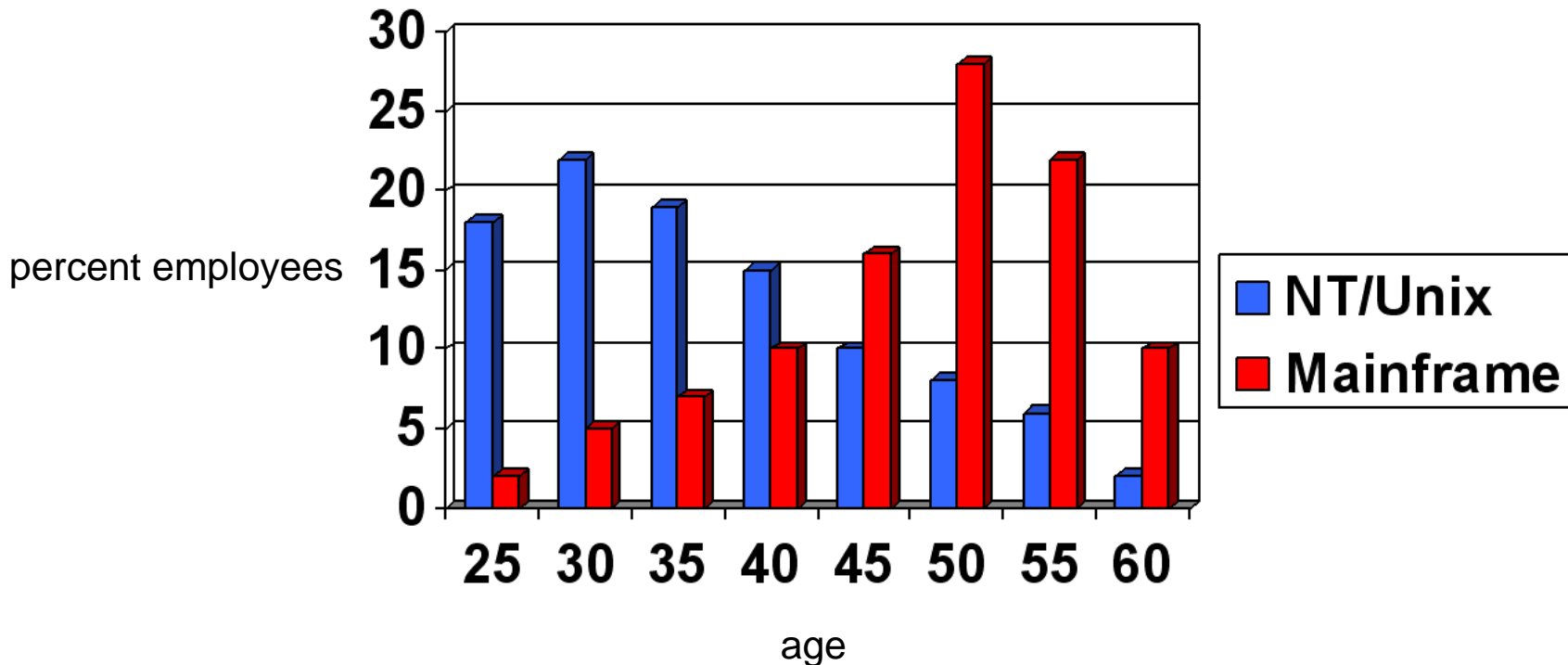


Sun Fire 15K Server: Der schnellste kommerzielle Computer CEBIT, Hannover, 13. – 20.3. 2002

The Case of Need for Mainframe Training



Age distribution of company employees
(Meta Group's Survey, 2000)



The Case of Need for Mainframe Training



Table 1
Worldwide: Server Vendor Revenue Estimates, 4Q09 (U.S. Dollars)

Company	4Q09 Revenue	4Q09 Market Share (%)	4Q08 Revenue	4Q08 Market Share (%)	4Q08-4Q09 Growth (%)
IBM	4,125,145,125	32.7	4,384,617,846	33.7	-5.9
HP	3,951,339,524	31.3	3,935,135,353	30.2	0.4
Dell	1,519,699,047	12.1	1,403,027,996	10.8	8.3
Sun Microsystems	960,830,493	7.6	1,256,435,607	9.7	-23.5
Fujitsu	563,384,642	4.5	560,392,872	4.3	0.5
Other Vendors	1,486,168,259	11.8	1,477,943,169	11.4	0.6
Total	12,606,567,089	100.0	13,017,552,843	100.0	-3.2

According to Gartner only IBM Mainframes (Z-server) showed increased sales figures, amongst an overall decline in total sales figures.

(Computerwoche 2010)

Source: Gartner (February 2010)

Beginning of The IBM Summer Seminar



Signing the contract on
27 June 2001

Prime minister of NRW:
Wolfgang Clement

Managing director of
IBM Germany:
Erwin Staudt

Prof. Dr. Holzhausen
Computer Competence Center

Seminar Course Content Poster



The poster features a central image of two IBM zSeries server racks. The background is a collage of technical terms in various fonts and colors, including: WebSphere, CICS, JAV4, Nutzung z/OS, ISPF, zSeries Architektur, Server, zSeries, Transaction Management, Subsysteme, DFP, DASD Subsysteme, RACE, VSAM, TSO, z/OS Architektur, and AIX. The main text is in blue and black, with a small IBM logo to the right of the word 'Technologie'.

**IBM Enterprise Server
Technologie**

**Sommer Seminar
2003**

Einführung in die Welt
des z/OS Betriebssystems
für IBM zSeries Großrechner

Fachhochschule Bochum
16.07. bis 20.08.2003

www.fh-bochum.de/ibm-seminar

FH BOCHUM **MIRO LAB** **IBM** **compartner Systems** **SSO GmbH Software** **becom**

5 weeks course on IBM Enterprise Server Technology (academic summer term holidays)

Introduction into z/OS for IBM zSeries

Teachers from IBM, cooperating companies and Professor Spruth (University Leipzig)

Attracting to the Course

- Make this IBM-Summer-Seminar to one of the most popular event for the region
- Attract students from ten universities in the Rhein-Ruhr Area
- Only advanced students can apply for seminar places
- There are teaching facilities for 25 students (could be more)
- Course runs over 5 weeks (8 hours teaching per day)
- Advertisement in Universities
- Radio interviews
- Press announcements
- Incentives for students

Cooperation Aspects



- Industry partners instrumental for hosting the seminar
- Cooperations with different companies
 - IBM (what else)
 - Atos Origin
 - UBS-Bank (Switzerland)
 - Signal Iduna
 - RWE
 - Compartner Systems
 - Becom
 - SysEins
- Graduates found employment with the above sponsors

Academic Links



- Academic links with Dortmund and Leipzig University
- Since 2004 three cooperative projects based on academic institutions completed
 - University Böblingen
 - University of Applied Sciences Dortmund
 - University Leipzig
- Integration of z-System Technology into online seminars and lectures syllabus

The Students



- Students will have completed their basic course modules in information technology and in addition have to demonstrate proficiency of the English language.
- Applicants who meet these criteria will be invited to attend a pre-course selection interview.
- Student comments are positive
- Demanding course content and exam

Learning Outcomes



Course	Content
z/OS Basics	<ul style="list-style-type: none">• Overview Mainframe Hardware IBM System z• Introduction z/OS and zArchitecture (ES15 - z/OS Facilities)• Working with z/OS TSO/E, ISPF, JCL, SDSF (IBM Seminar ES10)
Application Programming	<ul style="list-style-type: none">• Compiling, Link-Editing a programm on z/OS• JavaBatch on z/OS
Online Transaction Systems	<ul style="list-style-type: none">• Introduction Transaction System by the example of CICS
Linux on IBM System z	<ul style="list-style-type: none">• Overview Linux on IBM System z (IBM Seminar ZL10)
System Programming	<ul style="list-style-type: none">• z/OS Systemprogramming Basic-Training (IBM Seminar ES40)• Introduction Security and Networking

Based on IBM course documents and the IBM ITSO Redbook „Introduction to the New Mainframe: z/OS“

Herr Lukas B.

hat vom 02. August 2010 bis zum 02. September 2010
am Sommerseminar der **Hochschule Bochum** zum Thema

IBM z/OS Enterprise Server Technologie

in Zusammenarbeit mit der IBM Deutschland GmbH
mit Erfolg teilgenommen.

Die Abschlussprüfung konnte mit einer
1,0
bewertet werden.

Angelehnt an die IBM Seminarunterlagen und dem IBM ITSD Redbook
"Introduction to the New Mainframe: z/OS Basics" wurden folgende Ausbildungsschwerpunkte vermittelt:

Kurs	Inhalt	Kurs	Inhalt
z/OS Basics	<ul style="list-style-type: none">• Überblick Mainframe Hardware IBM System z• Einführung z/OS und zArchitecture (IBM Seminar ES15 - z/OS Facilities)• Arbeiten mit z/OS TSO/E, ISPF, JCL, SDSF	Online Transaktions Systeme	<ul style="list-style-type: none">• Einführung Transaction Systeme am Beispiel CICS
Application Programming	<ul style="list-style-type: none">• Compiling, Link-Editing - programm on z/OS• JavaBatch on z/OS	Linux on IBM System z	<ul style="list-style-type: none">• Überblick Linux on IBM System z
		System Programming	<ul style="list-style-type: none">• Grundlagen Systemprogrammierung (IBM Seminar ES40 - z/OS Systemprogrammierung Basisausbildung)• Einführung Security und Networking

Das Seminar wurde in Kooperation mit dem Sponsor



umgesetzt und durch erfahrene Dozenten und Anwendungsspezialisten durchgeführt.



Teilnehmerzertifikat

Lukas Barkowski

hat am 10. Sommer Seminar „**IBM Enterprise Server Technologie**“ an der Hochschule Bochum teilgenommen.

Zeitraum: 02.08.2010 – 02.09.2010

Inhalte: Basierend auf IBM Seminarunterlagen und dem IBM ITSO Redbook „*Introduction to the New Mainframe: z/OS Basics*“ wurden folgende Ausbildungsschwerpunkte vermittelt:

z/OS Basics

- Überblick Mainframe Hardware IBM System z
- Einführung z/OS und zArchitecture (IBM Seminar ES15)
- Arbeiten mit z/OS TSO/E, ISPF, JCL, SDSF (IBM Seminar ES10)

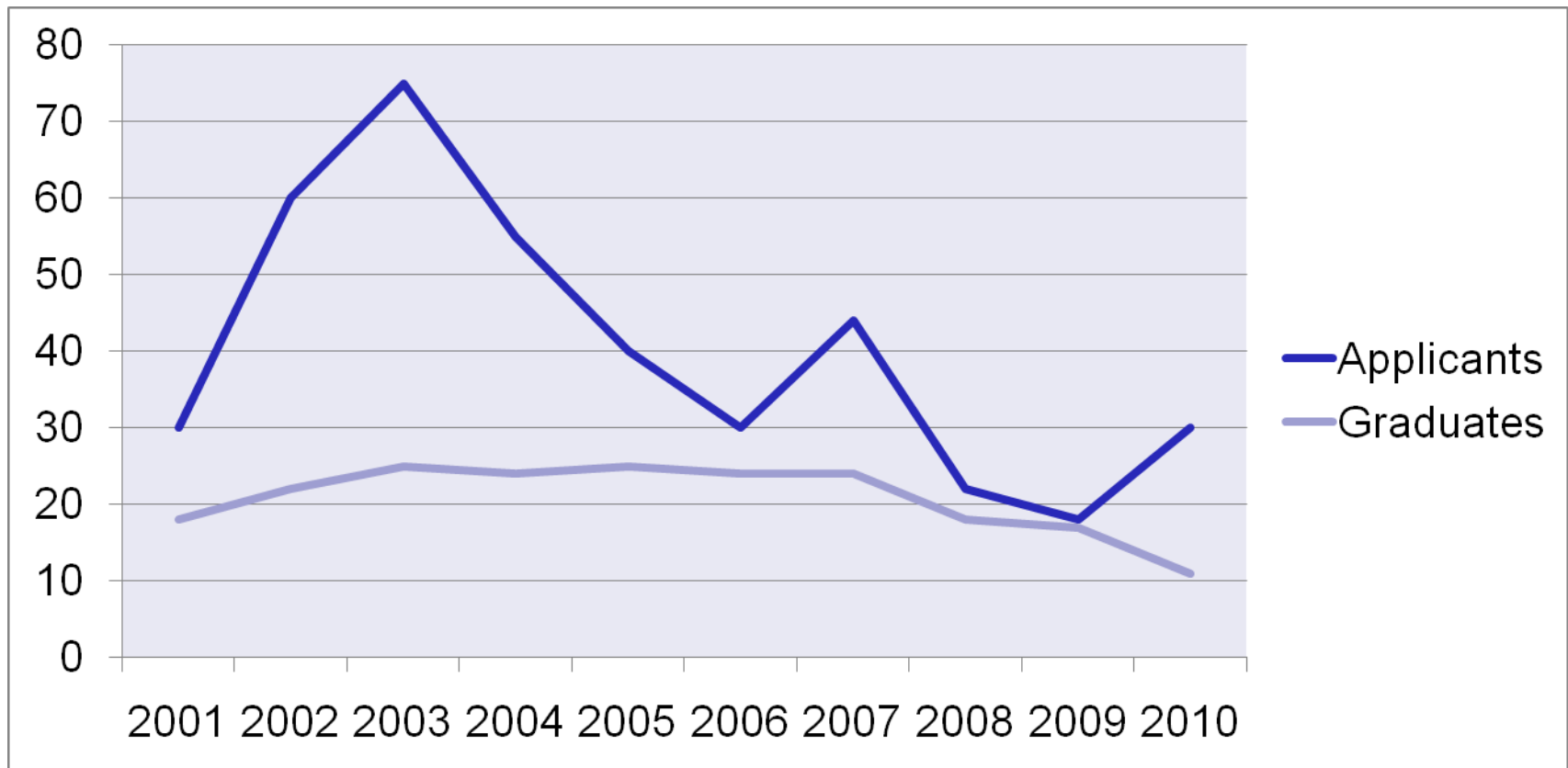
Application Programming / Online Transaction Systeme

- Compiling, Link-Editing a programm on z/OS
- JavaBatch on z/OS

Students in 10 years



80.000€, 200 Students, 25% Working With Mainframe Technology



Conclusion



- The mainframe technology is not covered by most Computer Sciences Curricula
- The „Need“ for mainframe education remains unchanged to date
- There is a higher demand on mainframe training hence more resources have to be invested
- Mainframe education appears to promote IT-Careers

Thank you for your attention...

