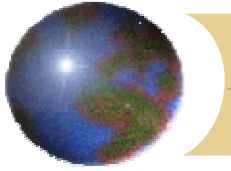


*Using Message-Oriented Middleware
to Develop Resilient Web-based
Applications (HWC-01)*

Student: Yuen, Chi-Yuen, Jeffrey IT-3

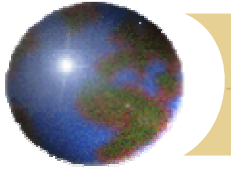
Supervisor: Dr Chun, Andy

Assessor: Dr WU, ANGUS



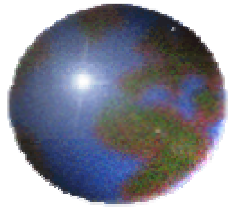
Project Aims

- ❖ To investigate the architecture combining Internet and Middleware Technologies
- ❖ To develop a web enable stock trading and stock price quote system
- ❖ By MSMQ ,Java RMI and ASP, Take advantage of those service in e-commerce

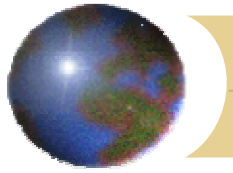


Schedule

- ✦ Part 1 The Stock Trading and Quotation System
- ✦ Part 2 Middleware Technology
- ✦ Part 3 Q&A



Background Information



Existing Stock Trading Services

Stock Trading service In HK

- ☛ Cash online
- ☛ Boom.com
- ☛ SHK Online

Free-Quote Service In HK

- ☛ e-finet.com
- ☛ Quamnet.com

The collage displays several financial websites:

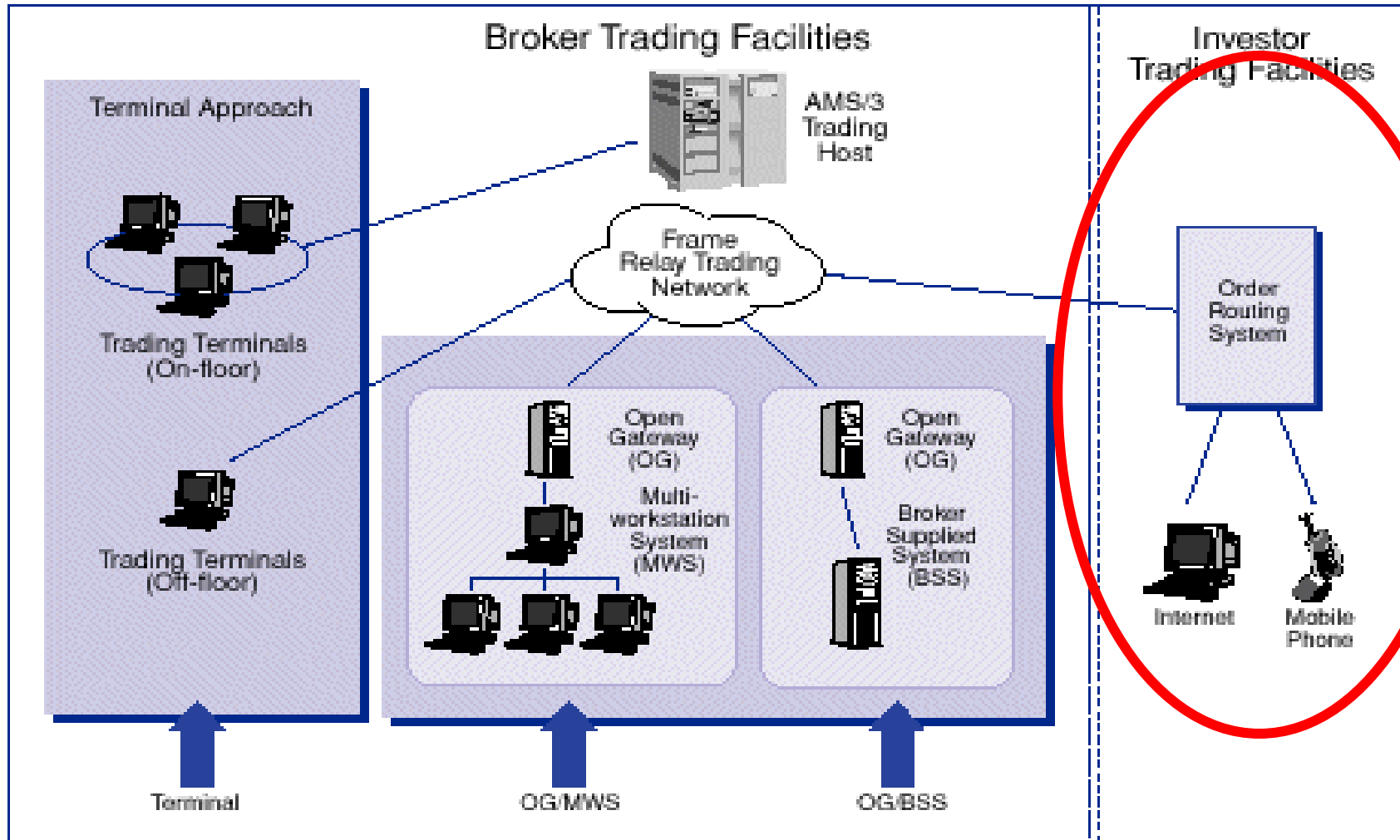
- BOOM.COM**: Asia's Financial Hub, featuring market indices like the Asia Composite Index (123.36, -0.73%), Hong Kong Hang Seng (15,367.14, -0.39%), and US markets (NASDAQ 3,642.90, -1.71%).
- SHK Online**: SHK Financial Group, with a banner for 'SHK online.com' and a mobile phone image.
- CASH**: Central Asia Securities Holdings Limited, advertising 'The Pre-eminent provider of Internet Advertising in Asia'.
- Quamnet**: HK equities, showing a 'Logitech WebCam' advertisement and a 'Visit Quamswers' button.
- finet online**: A financial news and quote service with a table of stock data.

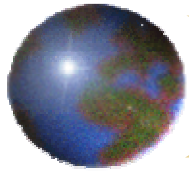
Symbol	% Change	P/E Ratio	Remarks
00016:07 (Thu)	-0.290	17.846	
High	Low	Volume	Turnover
17.2	16.9	13,400,578	228,984,298



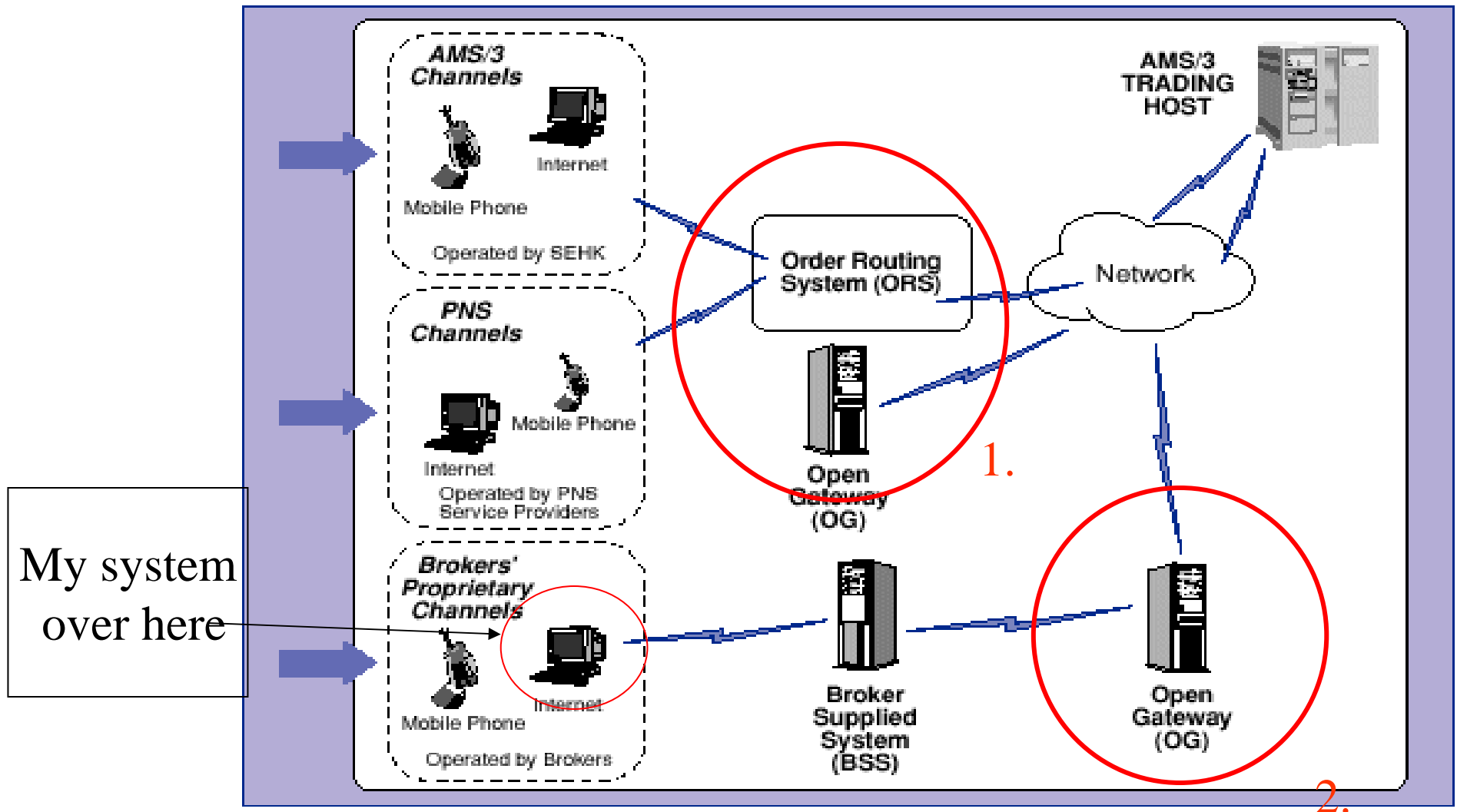
AMS/3 AutoMatching System

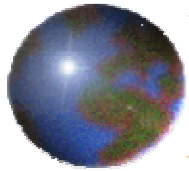
Release at the mid of 2000!



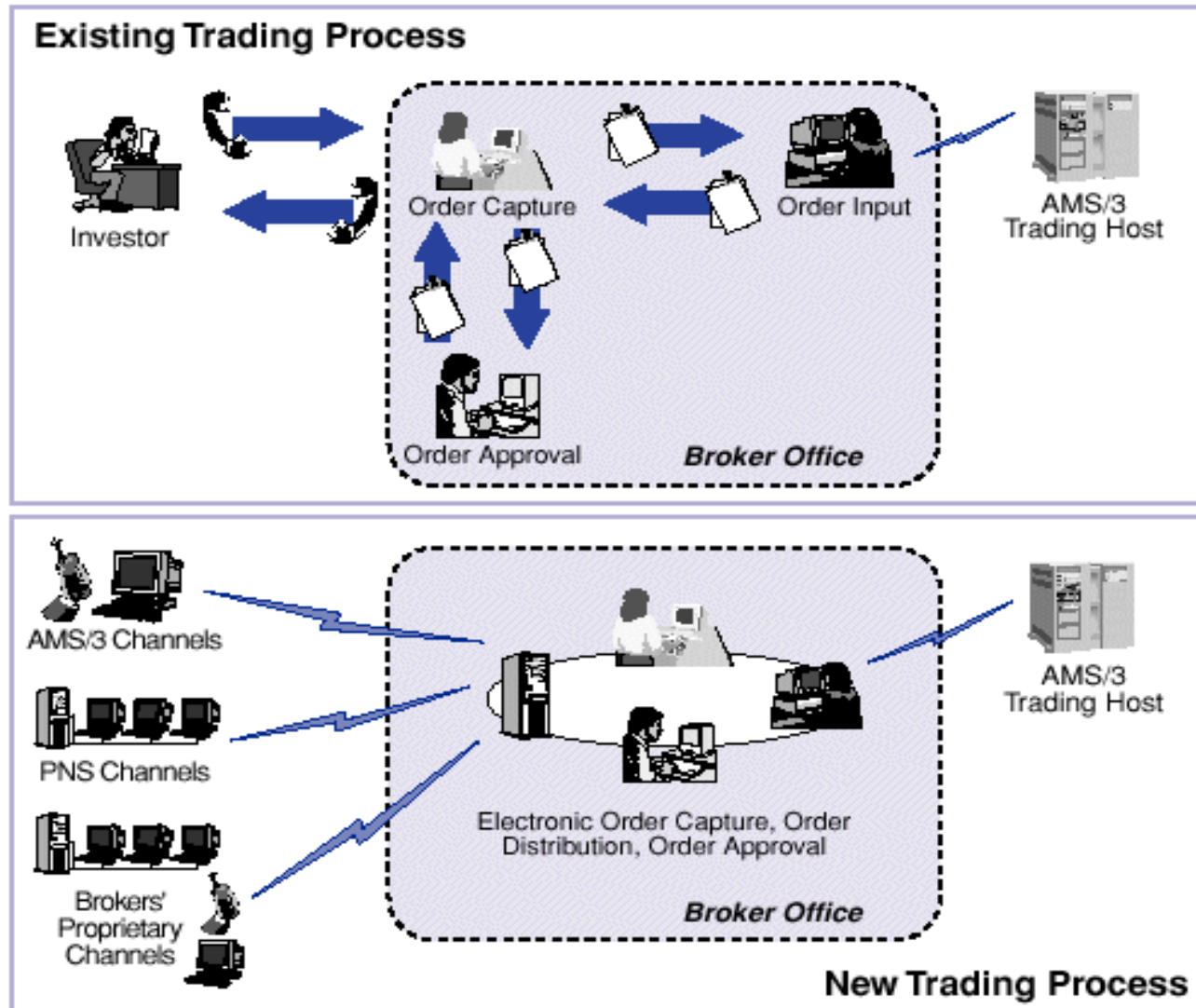


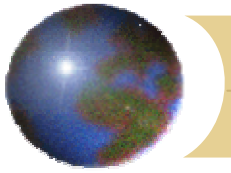
AMS/3 Open Gateway





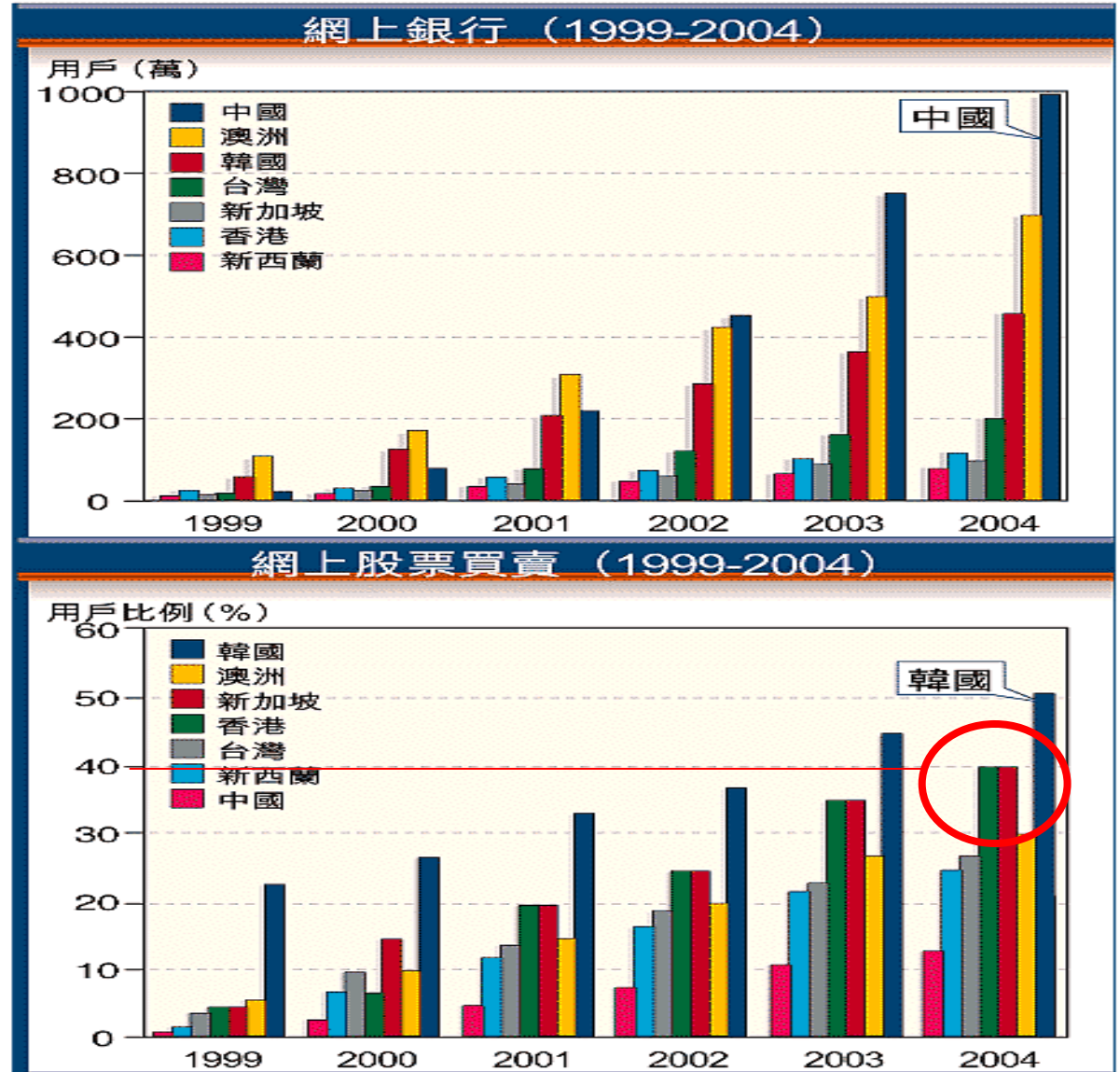
Trading Process

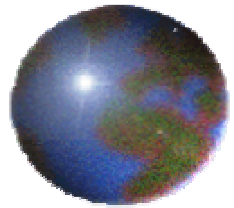




In the future

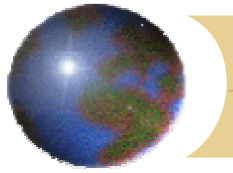
From Apple Daily 18-4-2000
IDG Research Result



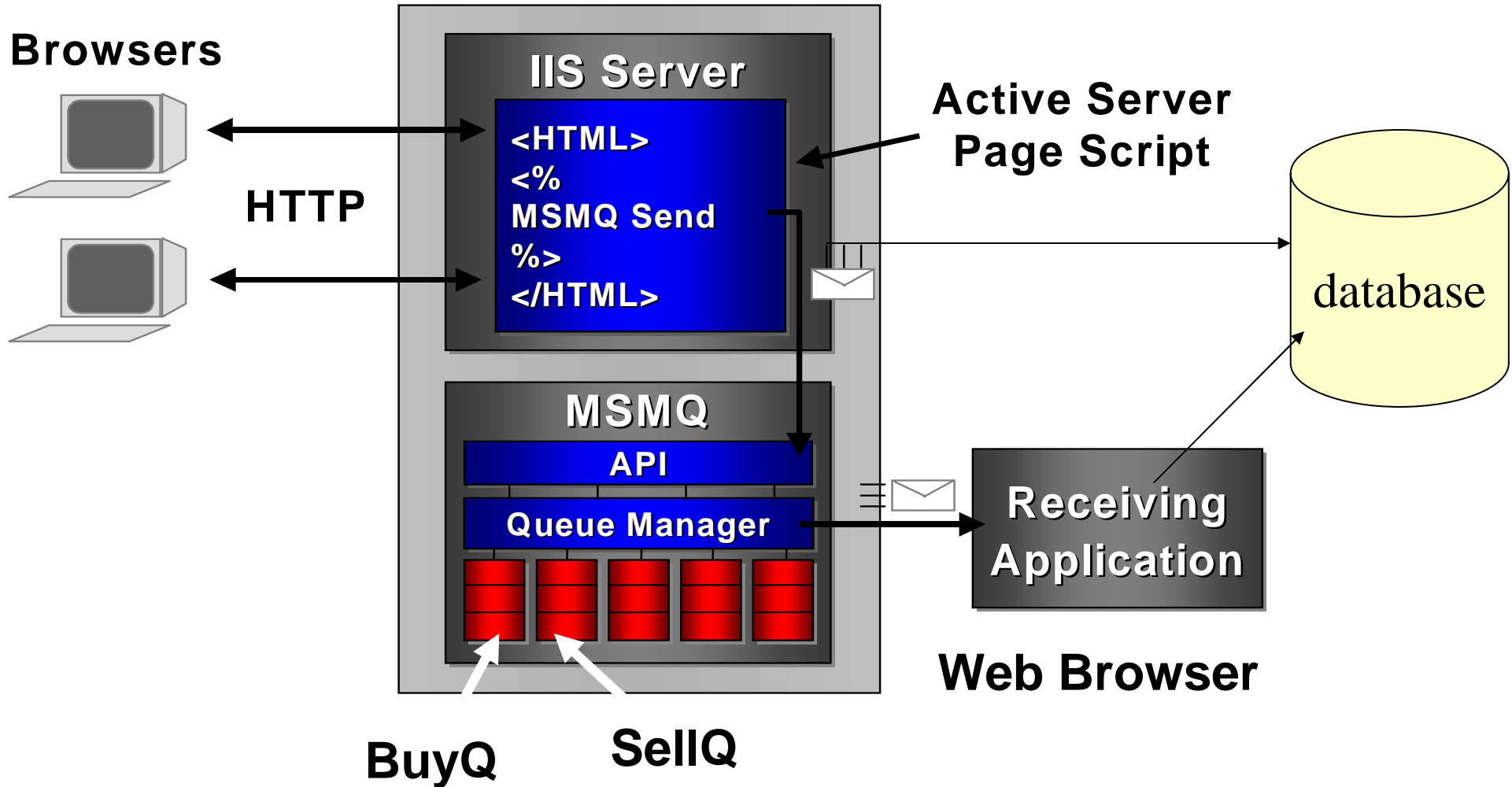


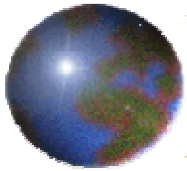
Part 1

Stock Trading & Quote System



The Stock Trading System





Login Screen

Welcome to Stock Trading OnLine - Microsoft Internet Explorer

File Edit View Favorites Tools Help

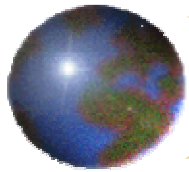
Address <http://localhost/fyp/login.asp> Go

ON-LINE Stock Trading System

Login Name:

Password:

Done Local intranet




Main Screen

Stock Trading Online - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/user_index.asp Go

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Logout](#)

 *Stock Quote*

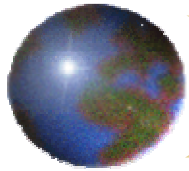
Welcome Yuen Chi-yuen!

Please Quote !

[Buy/Sell](#) [Limit Order](#) [Change Qty.](#) [Cancel Order](#) [Transaction Status](#)

	Buy / Sell	Stock Code	Price	Quantity	Confirm	Trading Password
1	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
2	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="button" value="Execute"/>
3	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="button" value="Clear"/>

Local intranet



Statement

Quote Frame with no order - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/quote_frame_no_order.htm Go

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Make Order](#) [Logout](#)

Transactions Statement

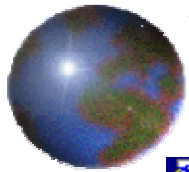
USER Name : Chi-yuen Yuen

USER ID: 1

Date: 4/24/2000 11:51:43 AM

Stock Transactions							
Trans ID	Date	Code	Stock Name	Buy OR Sell	Price	Qty	Total
11	4/24/2000 5:21:12 AM	1	Cheung Kong (Holdings) Ltd.	buy	\$27.00	15000	\$405,000.00
12	4/24/2000 5:21:12 AM	5	HSBC Holdings	buy	\$29.00	20000	\$580,000.00
14	4/24/2000 11:47:53 AM	8	Hong Kong Telecom. Ltd.	buy	\$10.00	16000	\$160,000.00
16	4/24/2000 11:47:54 AM	2	China Light & Power Co., Ltd.	buy	\$6.50	20000	\$130,000.00
15	4/24/2000 11:47:54 AM	9	Hang Seng Bank Ltd.	sell	\$3.00	10000	\$30,000.00
Total:							\$1,305,000.00

Done Local intranet



Account Summary

http://localhost/fyp/quote_frame_no_order.htm - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/quote_frame_no_order.htm Go

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Make Order](#) [Logout](#)

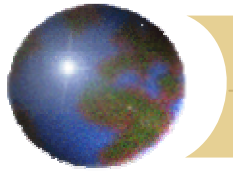
Account Summary

Date: 4/24/2000 11:54:12 AM
 Name: Yuen Chi-yuen
 Customer ID: 1

Available: \$1,556,000.00
 Cash: Held: (\$261,000.00)

Stock Balance:	Stock Code	Stock Name	Share	Buy Price	Buy at	Market Price	Change	Change%	Total
	1	Cheung Kong (Holdings) Ltd.	15,000	\$27.00	4/24/2000	\$27.53	\$0.53	1.96%	\$412,945.50
	8	Hong Kong Telecom. Ltd.	16,000	\$9.00	4/24/2000	\$10.86	\$1.86	20.63%	\$173,702.40
	2	China Light & Power Co., Ltd.	20,000	\$8.00	4/24/2000	\$7.03	-\$0.97	-12.11%	\$140,626.00
	9	Hang Seng Bank Ltd.	10,000	\$3.00	4/24/2000	\$2.75	-\$0.25	-8.20%	\$27,539.00
Total:				\$0.00		\$754,812.90	\$15,812.90	2.14%	

Done Local intranet



Personal Info

The screenshot shows two overlapping browser windows from Microsoft Internet Explorer. The top window displays the 'Customer Information' page, which includes a navigation menu (Quote, Watch List, Charts, Statement) and a form with the following details:

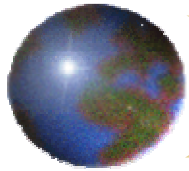
Name:	Yuen Chi-yuen
Mailing Address:	2C Tower 5 The Regalia, 333 King's Park Road, Kowloon, Hong Kong
Phone No:	85223949701
Email Address:	chiyuen@hotmail.com

Below the form is a 'Change' button. The bottom window displays the 'Change Information' page, which has a similar navigation menu (Quote, Watch List, Charts, Statement, Customer Info, Acct Summary, Logout) and a form with the following details:

Name:	YuenChi-yuen
Address:	2C Tower 5 The Regalia, 333 King's Park Road, Kowloon, Hong Kong
Phone No:	85223949701
Email Address:	chiyuen@hotmail.com

Below the form is a 'Submit' button. At the bottom of the page, there is a trading interface with a table for entering orders:

Buy / Sell	Stock Code	Price	Quantity	Confirm	Trading Password
1 <input checked="" type="radio"/> / <input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>



Stock Trading & WatchList

http://localhost/fyp/user_index.asp - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/user_index.asp Go

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Logout](#)

Update Time: 4/24/2000 11:57:16 AM Refresh

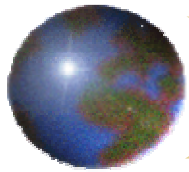
Code	Name	Nominal	High	Low	Change	Change%	Vol	
9	Hang Seng Bank Ltd.	2.75	2.75	2.70	-0	-8.2	38712	<input type="button" value="Remove"/>
8	Hong Kong Telecom. Ltd.	10.86	10.86	10.61	-1	-9.5	1560111	<input type="button" value="Remove"/>
7	Hang Lung Development Co. Ltd.	11.02	11.02	10.67	1	10.2	1237872	<input type="button" value="Remove"/>
5	HSBC Holdings	29.11	29.11	28.81	4	16.4	4898542	<input type="button" value="Remove"/>
1	Cheung Kong (Holdings) Ltd.	27.53	27.53	27.23	-0	-1.7	4657189	<input type="button" value="Remove"/>
2	China Light & Power Co., Ltd.	7.03	7.03	6.63	-3	-33.0	1155885	<input type="button" value="Remove"/>

Stock Code

[Buy/Sell](#) [Limit Order](#) [Change Qty.](#) [Cancel Order](#) [Transaction Status](#)

	Buy / Sell	Stock Code	Price	Quantity	Confirm	Trading Password
1	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text" value="5"/>	<input type="text" value="29"/>	<input type="text" value="15000"/>	<input checked="" type="checkbox"/>	<input type="text" value="*****"/>
2	<input type="radio"/> / <input checked="" type="radio"/>	<input type="text" value="2"/>	<input type="text" value="7.5"/>	<input type="text" value="20000"/>	<input checked="" type="checkbox"/>	<input type="button" value="Execute"/>
3	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text" value="7"/>	<input type="text" value="11"/>	<input type="text" value="25000"/>	<input checked="" type="checkbox"/>	<input type="button" value="Clear"/>

Local intranet



Order Success

http://localhost/fyp/user_index.asp - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/user_index.asp

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Logout](#)

Update Time: 4/24/2000 11:57:16 AM [Refresh](#)

Code	Name	Nominal	High	Low	Change	Change %	Vol
------	------	---------	------	-----	--------	----------	-----

[Buy/Sell](#) [Limit Order](#) [Change Qty.](#) [Cancel Order](#) [Transaction Status](#)

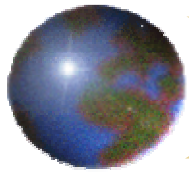
Place Order Successful!
You will notify when the order was completed.

Your order as follow

OrderID	Stock Code	Stock Name	Price	Quantity	Order Time
B42723	5	HSBC Holdings	\$29	15000	4/24/2000 11:58:19 AM
S36839	2	China Light & Power Co., Ltd.	\$7.5	20000	4/24/2000 11:58:20 AM
B7464	7	Hang Lung Development Co. Ltd.	\$11	25000	4/24/2000 11:58:20 AM
Total :			\$710,000.00		

[Place More Orer](#)

Done Local intranet



Limit Order

Stock Trading Online - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/user_index.asp Go

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Logout](#)

Update Time: 4/19/2000 3:15:49 AM Refresh

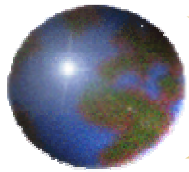
Code	Name	Nominal	High	Low	Change	Change %	Vol	
3	Hong Kong and China Gas Co. Ltd., The	19.74	19.74	19.59	1	3.9	421399	Remove
8	Hong Kong Telecom Ltd.	10.51	10.51	10.41	-1	-12.5	161625	Remove
9	Hang Seng Bank Ltd.	2.75	2.75	2.70	-0	-8.2	38712	Remove
6	Hongkong Electric Holdings Ltd.	34.34	34.34	34.29	2	7.3	190186	Remove
1	Cheung Kong (Holdings) Ltd.	27.17	27.17	27.17	-1	-3.0	485651	Remove

[Add To Watch List](#) Stock Code

[Buy/Sell](#) [Limit Order](#) [Change Qty.](#) [Cancel Order](#) [Transaction Status](#)

Buy / Sell	Stock Code	Target Price	Quantity	Expire Time (dd/mm/yyyy hh:mm)	Confirm	Trading Password
1 <input type="radio"/> / <input type="radio"/>	<input type="text" value="8"/>	<input type="text" value="10"/>	<input type="text" value="10000"/>	<input type="text" value="24"/> / <input type="text" value="04"/> / <input type="text" value="2000"/> <input type="text" value="15"/> : <input type="text" value="00"/>	<input checked="" type="checkbox"/>	<input type="text" value="*****"/>
						<input type="button" value="Execute"/>
						<input type="button" value="Clear"/>

Done Local intranet



Limit Order Success

Stock Trading Online - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/user_index.asp

Quote Watch List Charts Statement Customer Info Acct Summary Logout

Update Time: 4/19/2000 3:15:49 AM Refresh

Code	Name	Nominal	High	Low	Change	Change%	Vol	
3	Hong Kong and China Gas Co. Ltd., The	19.74	19.74	19.59	1	3.9	421399	Remove
8	Hong Kong Telecom. Ltd.	10.51	10.51	10.41	-1	-12.5	161625	Remove
9	Hang Seng Bank Ltd.	2.75	2.75	2.70	-0	-8.2	38712	Remove
6	Hongkong Electric Holdings Ltd.	34.34	34.34	34.29	2	7.3	190186	Remove
1	Cheung Kong (Holdings) Ltd.	27.17	27.17	27.17	-1	-3.0	485651	Remove

Add To Watch List Stock Code Add

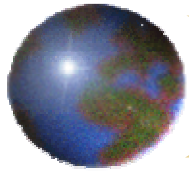
Buy/Sell Limit Order Change Qty. Cancel Order Transaction Status

Your order as follow

Order ID	Stock Code	Stock Name	Price	Quantity	Expire Time	Order Time
S755	8	Hong Kong Telecom. Ltd.	\$10	10000	2000/04/24 15:00	4/19/2000 3:16:33 AM
Total :			HK\$100000			

[Place More Order](#)

Done Local intranet



Order Fail

Stock Trading Online - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/user_index.asp Go

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Logout](#)

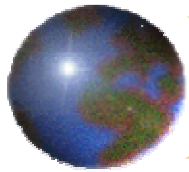
9

Hang Seng Bank Ltd. 191

[Buy/Sell](#) [Limit Order](#) [Change Qty.](#) [Cancel Order](#) [Transaction Status](#)

CASH NOT ENOUGH TO FOR THIS TRADING!! PLEASE DEBIT MORE MONEY INTO YOUR CASH ACCOUNT.

Done Local intranet



Order Status

http://localhost/fyp/user_index.asp - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/user_index.asp

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Logout](#)

Update Time: 4/24/2000 11:57:16 AM Refresh

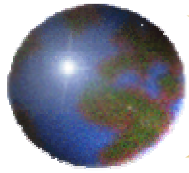
Code	Name	Nominal	High	Low	Change	Change%	Vol	
9	Hang Seng Bank Ltd.	2.75	2.75	2.70	-0	-8.2	38712	Remove
8	Hong Kong Telecom Ltd.	10.86	10.86	10.61	-1	-9.5	1560111	Remove
7	Hang Lung Development Co. Ltd.	11.02	11.02	10.67	1	10.2	1237872	Remove
5	HSBC Holdings	29.11	29.11	28.81	4	16.4	4898542	Remove
1	Cheung Kong (Holdings) Ltd.	27.53	27.53	27.23	-0	-1.7	4657189	Remove
2	China Light & Power Co., Ltd.	7.03	7.03	6.63	-3	-33.0	1155885	Remove

[Buy/Sell](#) [Limit Order](#) [Change Qty.](#) [Cancel Order](#) [Transaction Status](#)

Transaction Status

Order ID	Order Date	Stock Code	Price	Quantity	Expire Date	Order Status
B42723	4/24/2000 11:58:19 AM	5	29	15000		Waiting Approval
S36839	4/24/2000 11:58:20 AM	2	7.5	20000		Waiting Approval
B7464	4/24/2000 11:58:20 AM	7	11	25000		Waiting Approval

Done Local intranet



Order Cancel and Change

[Buy/Sell](#) [Limit Order](#) [Change Qty.](#) [Cancel Order](#) [Transaction Status](#) X

[Cancel Order](#)

Order ID	Order Date	Stock Code	Price	Quantity	Expire Date	Order Status	Change
B42723	4/24/2000 11:58:19 AM	5	29	15000		Waiting Approval	Cancel
S36839	4/24/2000 11:58:20 AM	2	7.5	20000		Waiting Approval	Cancel
B7464	4/24/2000 11:58:20 AM	7	11	25000		Waiting Approval	Cancel

Local intranet

[Buy/Sell](#) [Limit Order](#) [Change Qty.](#) [Cancel Order](#) [Transaction Status](#) X

[Change Order](#)

Order ID	Order Date	Stock Code	Price	Quantity	Expire Date	Order Status	Change
B42723	4/24/2000 11:58:19 AM	5	29	15000		Waiting Approval	Modify
S36839	4/24/2000 11:58:20 AM	2	7.5	20000		Waiting Approval	Modify
B7464	4/24/2000 11:58:20 AM	7	11	25000		Waiting Approval	Modify



MQ Server

Enterprise - Microsoft Message Queue Explorer

File View Tools Help

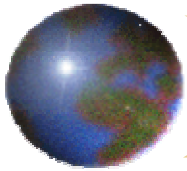
YUEN

- Sites
- Connected Networks
- Enterprise Server
 - winnt
 - administrator
 - buy
 - Journal
 - cancel
 - change
 - Dead Letter
 - Journal
 - limit_buy
 - Journal
 - limit_sell
 - sell
 - testq
 - Xact Dead Letter

Label	Priority	Message ID	Position In Queue	Size
Journal				
{E588F783-8AF8-11D3-8147-00A0243E0198}\38944				
Body size is 180 bytes				
55 00 73 00 65 00 72 00 49 U.s.e.r.I				
00 44 00 3D 00 31 00 26 00 .D.=.1.&				
4F 00 72 00 64 00 65 00 72 O.r.d.e.e.r				
00 49 00 44 00 3D 00 53 00 .I.D.=.S.				
36 00 39 00 33 00 37 00 37 6.9.3.7.7				
00 26 00 73 00 74 00 6F 00 .&.s.t.o.				
63 00 6B 00 5F 00 69 00 64 c.k._i.d				
00 3D 00 35 00 26 00 70 00 .=.5.&.p.				
72 00 69 00 63 00 65 00 3D r.i.c.e.=				

OK Cancel

Ready 1 object(s) selected NUM



Broker

Online Stock Trading [Broker Window] - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://localhost/fyp/broker/broker.asp?q=buy> Go

Order Queues Limited Order Queues Cancel Order Queues Change Order Queues

Buy Queue
Sell Queue

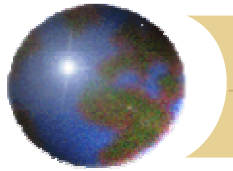
Stock Trading Order List

buy

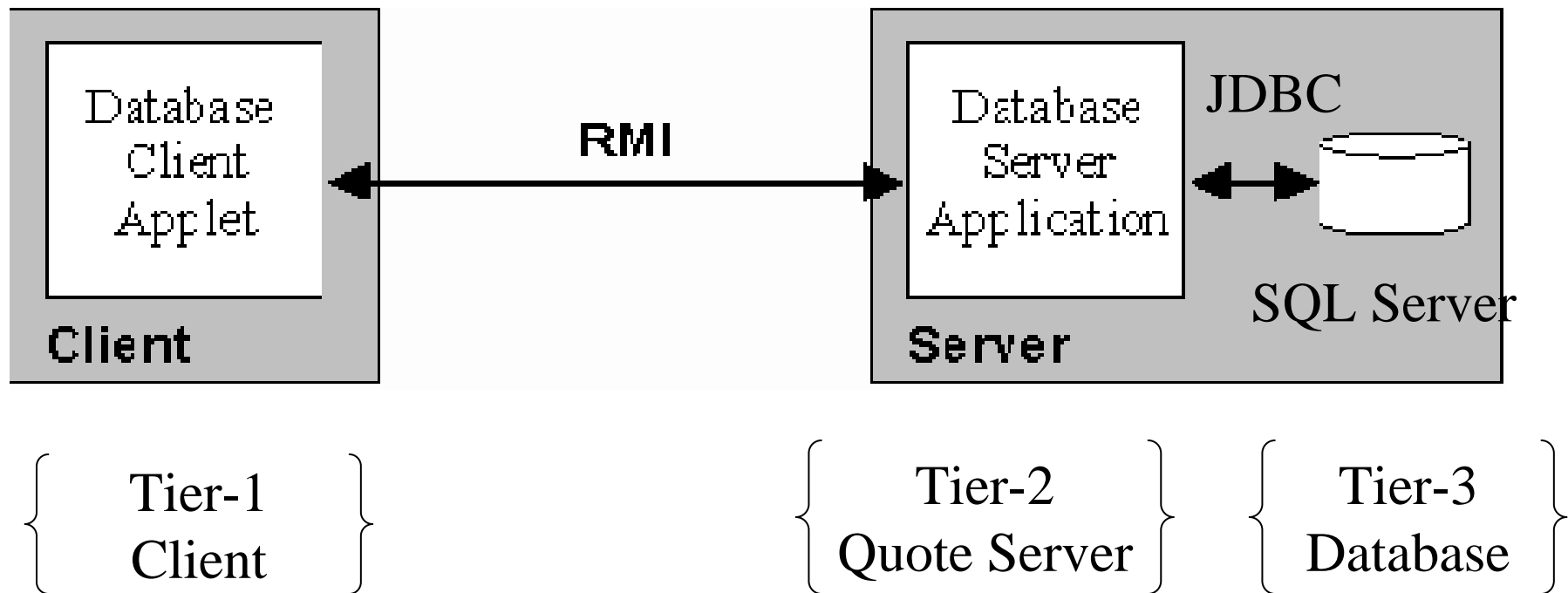
CustomerID	OrderID	StockCode	Price	Quantity	Time	Authorize
1	B42723	5	29	15000	4/24/2000 11:58:19 AM	YES / NO
1	B7464	7	11	25000	4/24/2000 11:58:20 AM	

Total have 2 Order at 4/24/2000 12:00:32 PM

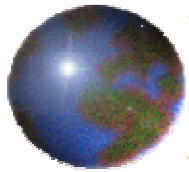
<http://localhost/fyp/broker/> Local intranet



Stock Quote System



3-Tier Architecture of Stock Quote System (Chart)



Stock Quote by Applet Bar chart

Stock Trading Online - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/user_index.asp Go

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Logout](#)

UPDATE Bar Graph

26

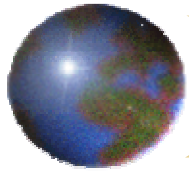
Date: 4/19/100
High: \$4 1/8
Low: \$3 1/8
Last Price: \$3 3/4
Change: \$0
Volume: 582,000

21 28 6 13 20 27 3 10 17
Mar Apr

[Buy/Sell](#) [Limit Order](#) [Change Qty.](#) [Cancel Order](#) [Transaction Status](#)

	Buy / Sell	Stock Code	Price	Quantity	Confirm	Trading Password
1	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
2	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="button" value="Execute"/>
3	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="button" value="Clear"/>

Applet started Local intranet



Stock Quote By Applet Line Chart

Stock Trading Online - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/user_index.asp Go

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Logout](#)

UPDATE

36

Date: 4/19/100
High: \$4 1/8
Low: \$3 1/8
Last Price: \$3 3/4
Change: \$0
Volume: 582,000

Line Graph

1 2 3

21 28 6 13 20 27 3 10 17

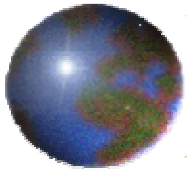
Mar Apr

\$0 \$1/2 \$1 \$1 1/2 \$2 \$2 1/2 \$3 \$3 1/2 \$4 \$4 1/2

[Buy/Sell](#) [Limit Order](#) [Change Qty.](#) [Cancel Order](#) [Transaction Status](#) X

	Buy / Sell	Stock Code	Price	Quantity	Confirm	Trading Password
1	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
2	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="button" value="Execute"/>
3	<input checked="" type="radio"/> / <input type="radio"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="button" value="Clear"/>

Done Local intranet



Stock Quote by ASP

http://localhost/fyp/quote_frame_no_order.htm - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost/fyp/quote_frame_no_order.htm Go

[Quote](#) [Watch List](#) [Charts](#) [Statement](#) [Customer Info](#) [Acct Summary](#) [Make Order](#) [Logout](#)

8 Quote

Hong Kong Telecom. Ltd. [8]

HSI 16010 [10]

Quot time: 4/23/2000 10:17:08 PM

Nominal	Change	Change%	P/E Ratio
\$10.86	\$-1.14	-9.53%	48

Bid	Ask	High	Low
\$10.81	\$10.91	\$10.86	\$10.61

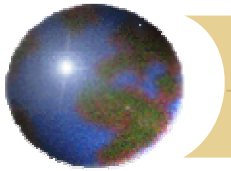
Share Traded	Turnover	Remarks
143311	1560111	

Hong Kong Telecom. Ltd.

Price

Date

Local intranet



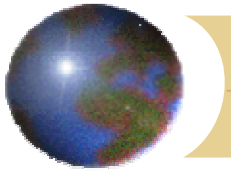
Servers (Java)

```
D:\WINNT\System32\cmd.exe - java QuoteSvr
D:\FYP\Code\mktview\server>java QuoteSvr
Registry created on host computer 10.0.0.1 on
Quote Server Created
Binding the server
Binding Success!!
Waiting for call
Query executed
send data successfulwait another callQuery ex
send data successfulwait another callQuery ex
send data successfulwait another callQuery ex
send data successfulwait another call_
```

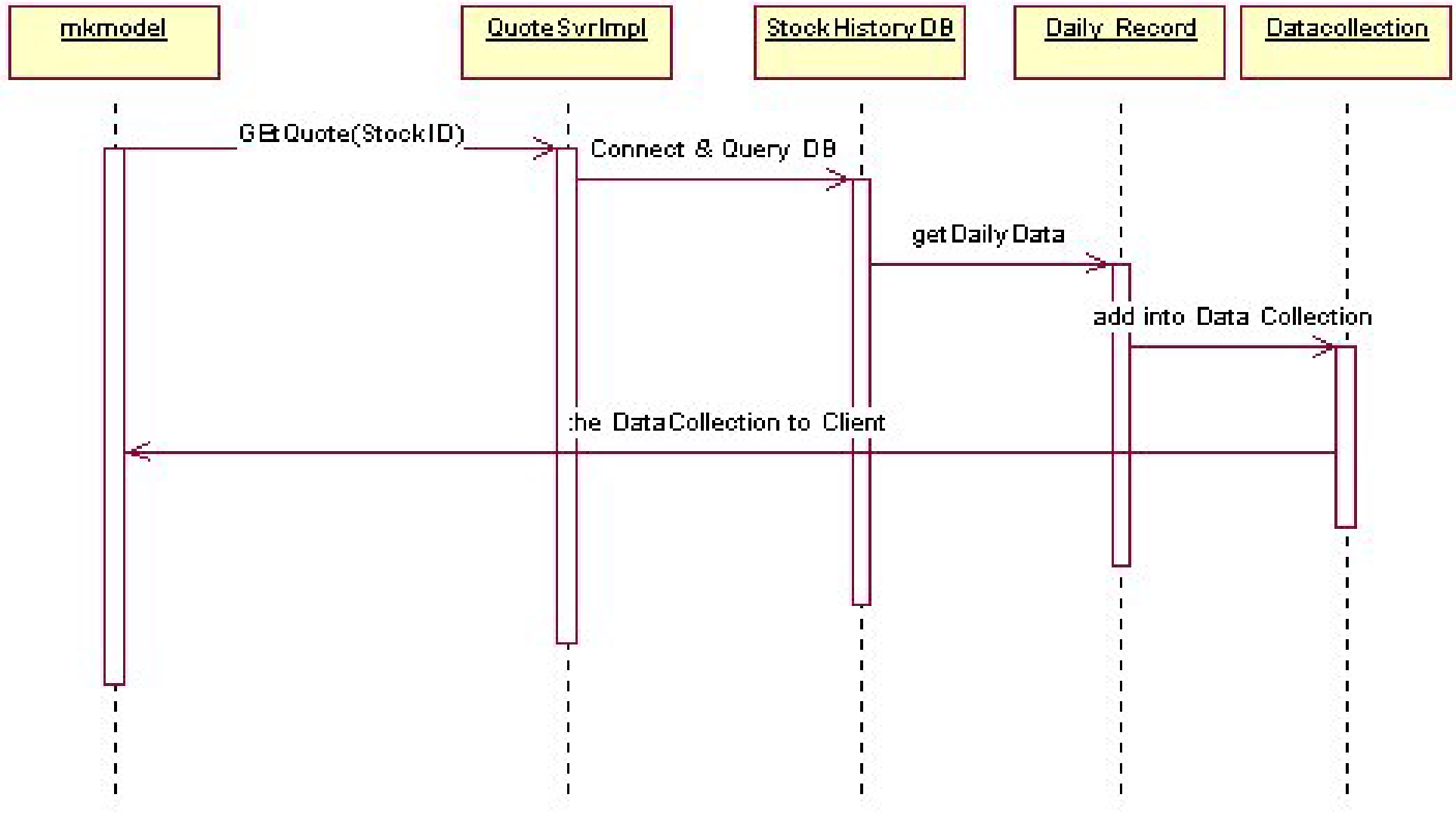
Quote Server

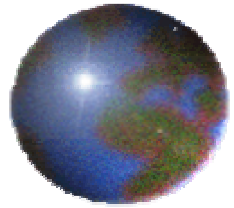
real time random price
generation server

```
D:\WINNT\System32\cmd.exe
No: 5
32.9274
No: 6
10.8874
No: 7
10.7716
No: 8
3.731
No: 9
Stock Objects Created!
Update Thread is running
2
Stock ID: 2
Current Time: Wed Apr 19 03:20:26 GMT+08:00 2000
Price: $7.0312
Ask: $7.0812
Bid: $6.9811997
High: $7.0812
PE: 0
Low: $7.0312
Share: 7954
Volume: 55740
3
Stock ID: 3
Current Time: Wed Apr 19 03:20:29 GMT+08:00 2000
Price: $20.035099
Ask: $20.085098
Bid: $19.9851
High: $19.9851
PE: 34
Low: $19.9851
Share: 14508
Volume: 281862
6
Stock ID: 6
Current Time: Wed Apr 19 03:20:31 GMT+08:00 2000
Price: $32.8774
Ask: $32.9274
Bid: $32.8274
High: $32.9274
PE: 4
Low: $32.8774
Share: 2679
```

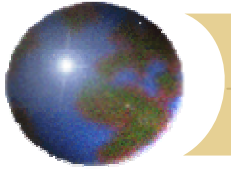


The Quote Applet Interaction Diagram



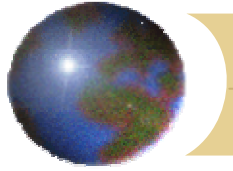


Part 2
Middleware Technologies



What is Middleware?

- ✦ A layer of application between the OS and application program
- ✦ First goal to solve the problem of **software integration**
- ✦ The concept of unique communication bus(middleware)

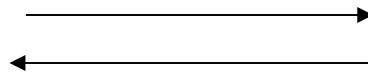


Location of Middleware

Location of middleware in the OSI model

Application

Application-1



Application-2

Middleware

Application

Presentation

Session

Application

Presentation

Session

Data

Transport

Service

Transport

Network

Data

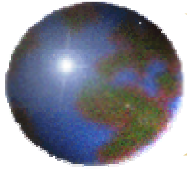
Physical

Transport

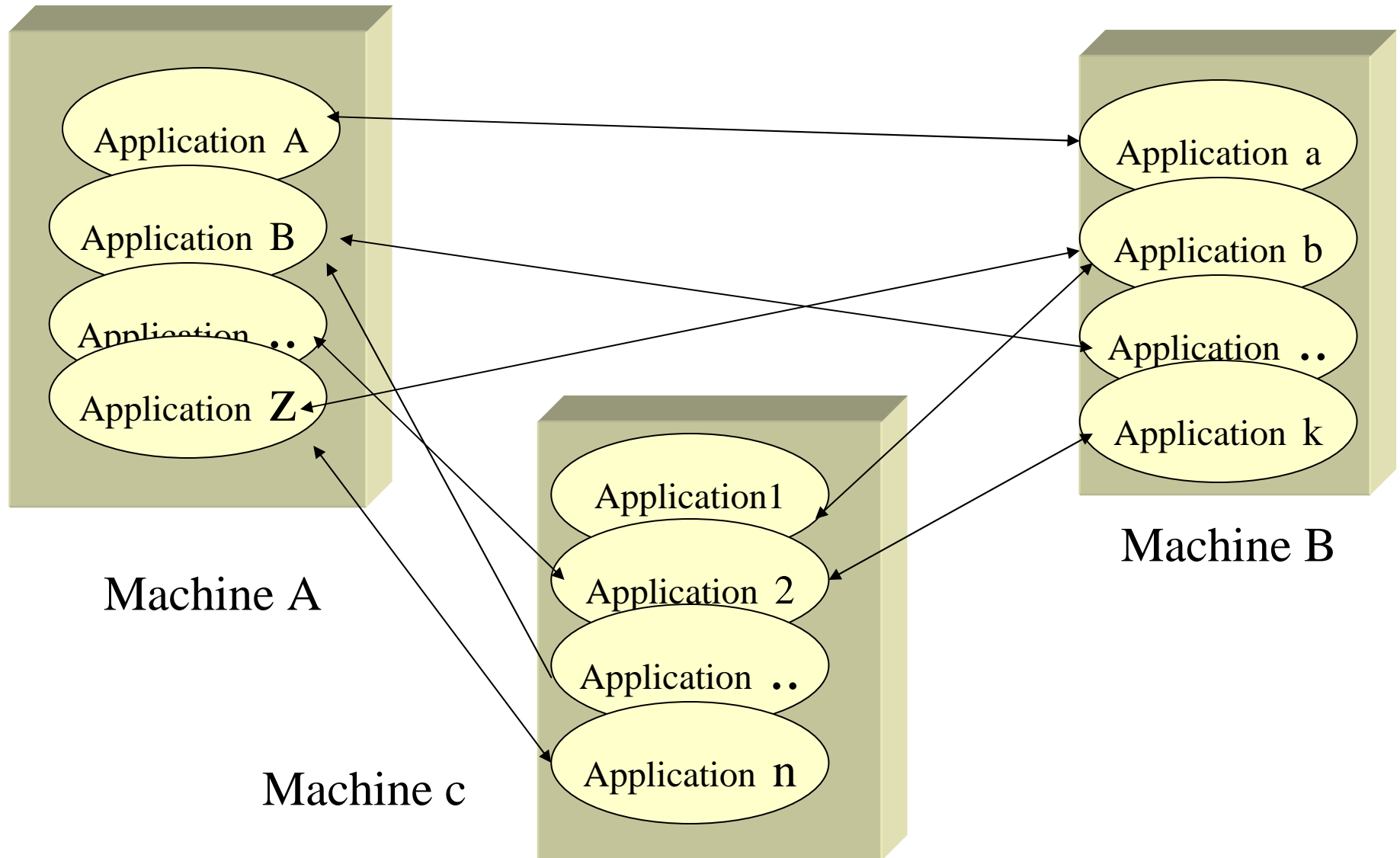
Network

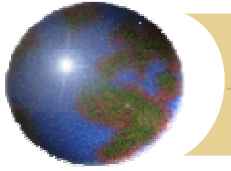
Data

Physical

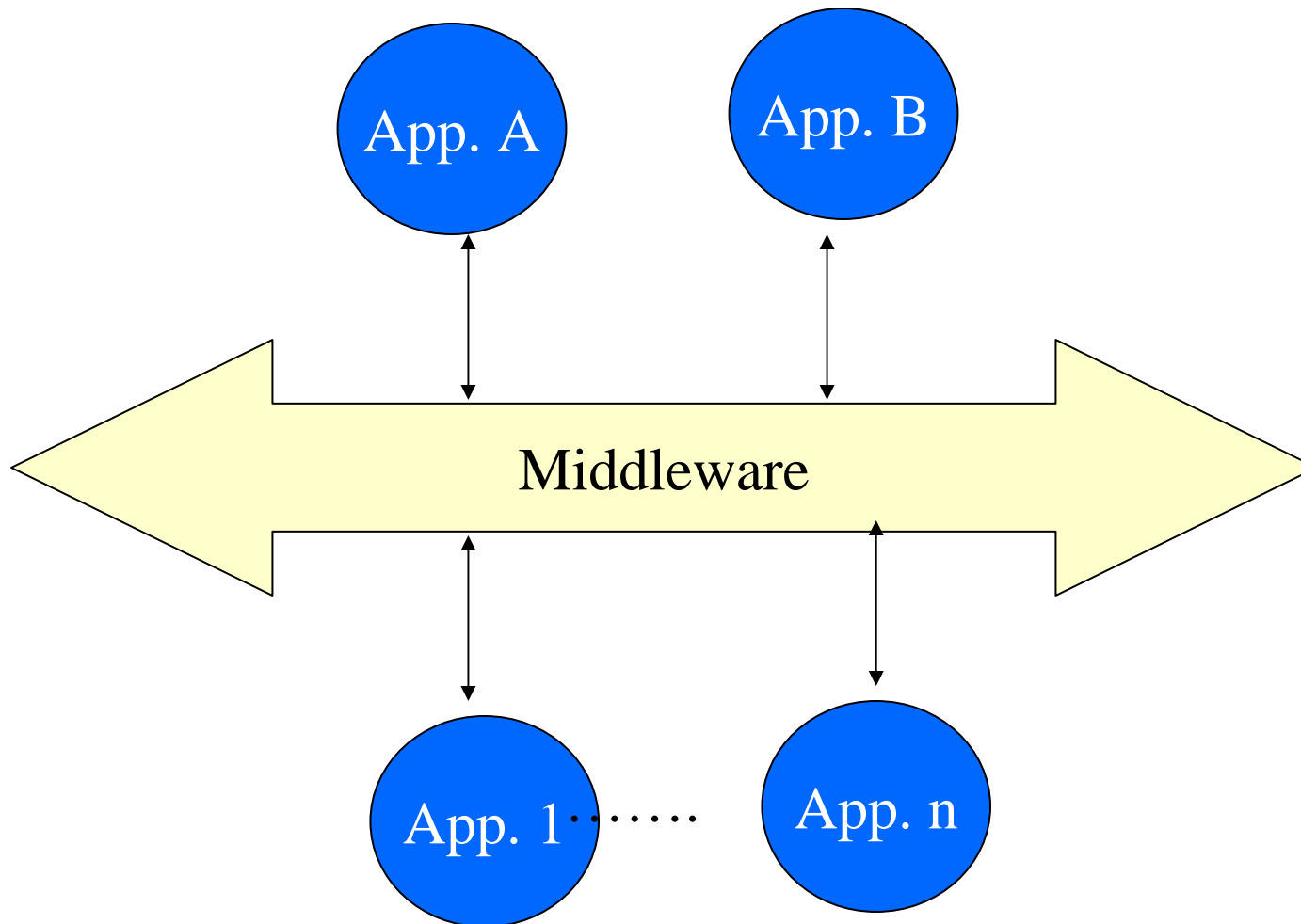


Spaghetti System

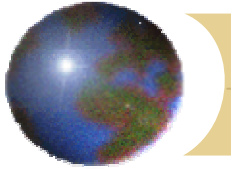




Single Communication Bus



Middleware or communication bus for distributed applications

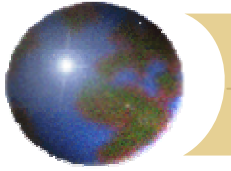


Different kind of Middleware

- ✦ Message Base Middleware
- ✦ RPC - Procedure Base
- ✦ CORBA/RMI - Object Oriented

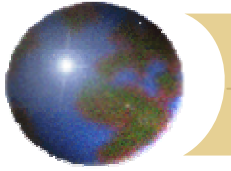
Middleware in this Project

- ✦ Java RMI
- ✦ MS Message Queue Server



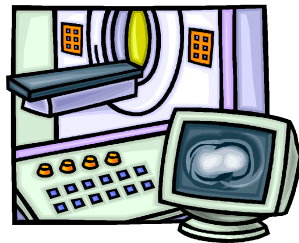
Advantages of MOM

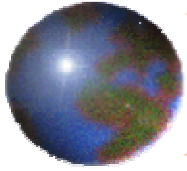
- ✦ Application integration
- ✦ Fault Tolerant (journalized message)
- ✦ load balancing (different Q different order type)
- ✦ Asynchronous Data Communication (Limit Order)
- ✦ Logical communication interface (send, receive)



Example use of MOM

- ✦ Banking workflow programming
- ✦ Health-care DCE
- ✦ Logistic Application Integration
- ✦ Insurance Asynchronous Communication

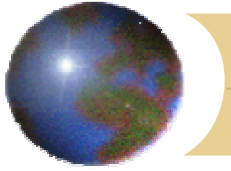




What I Learn!

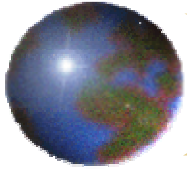


- ✦ Technical Skills
- ✦ Integrated different technology to a project
- ✦ Those technical skill can't learn from lecture
- ✦ Self-learning, learning to learn!
- ✦ Non-technical – Information Research Skill
- ✦ Internet is a most precious resource.



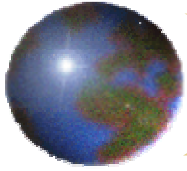
Conclusion

- ❖ Embed the latest Internet Technology and middleware technology to construct a useable web enable system
- ❖ In e-commerce world ,reliable and complete IT Infrastructure is key to success!
 - ❖ Middleware is one!
- ❖ It is just the beginning, better world is coming!



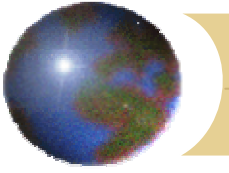
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20. <http://www.shkonline.com>
21. <http://www.microsoft.com>
22. <http://www.messageq.comh>



Q&A

