

Technology Innovation and its Impact on Financial Intermediation

Matthias K. Hartmann

December 12, 2002



For further information please contact:



Dr. Ralf Herrmann

- ++49 (0) 172-7365545
- Ralf.Herrmann@de.ibm.com



Dr. Claus Lucke

- ++49 (0) 160-8808994
- Claus.Lucke@de.ibm.com

Contents

❖ Financial Intermediation and its Dependency on Technology

Current Market Environment
of Financial Intermediaries

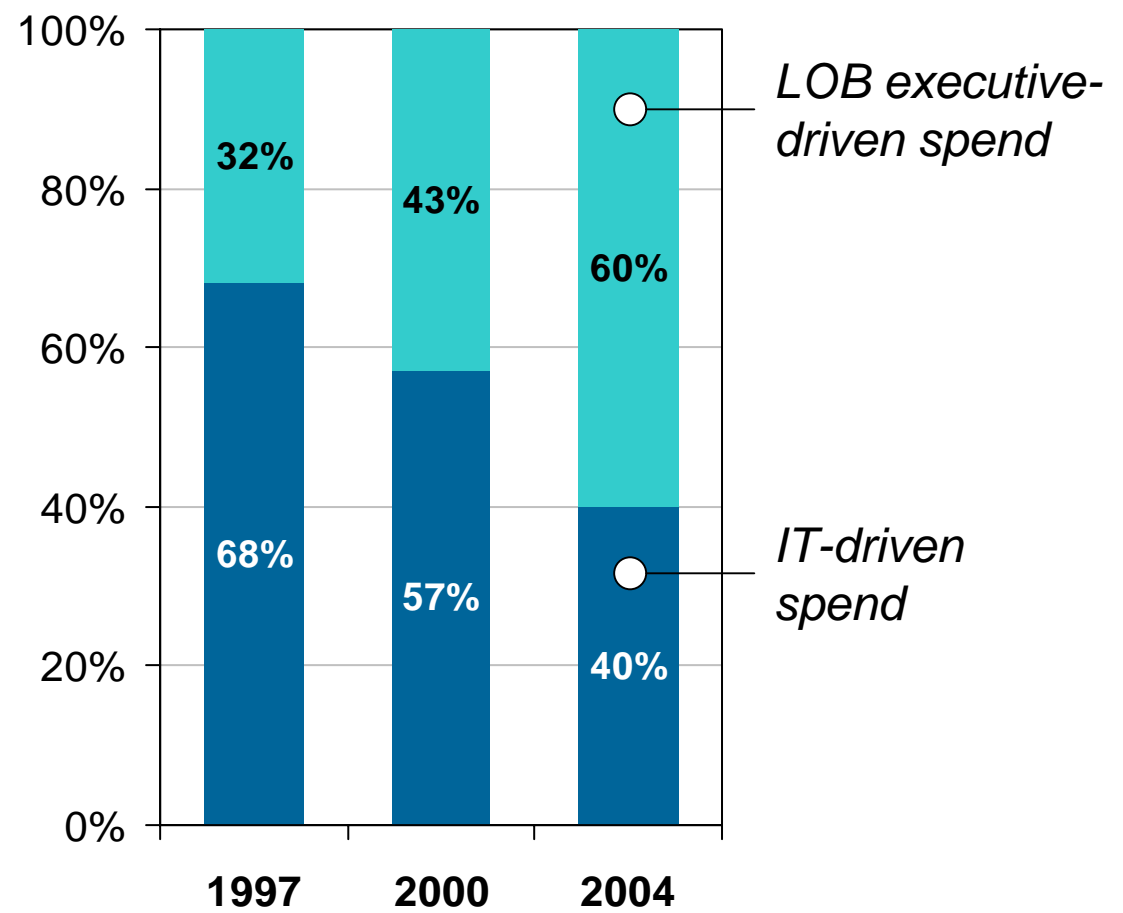
Technology Innovations
and Financial Intermediation

Conclusion

Technology has become a key element of corporate strategy

Enabling technologies such as the internet are changing strategies, capabilities and operating models in almost every business area

Consequently, decision making competency for IT spending is shifting from pure IT-driven to executive-driven spending



Source: Gartner

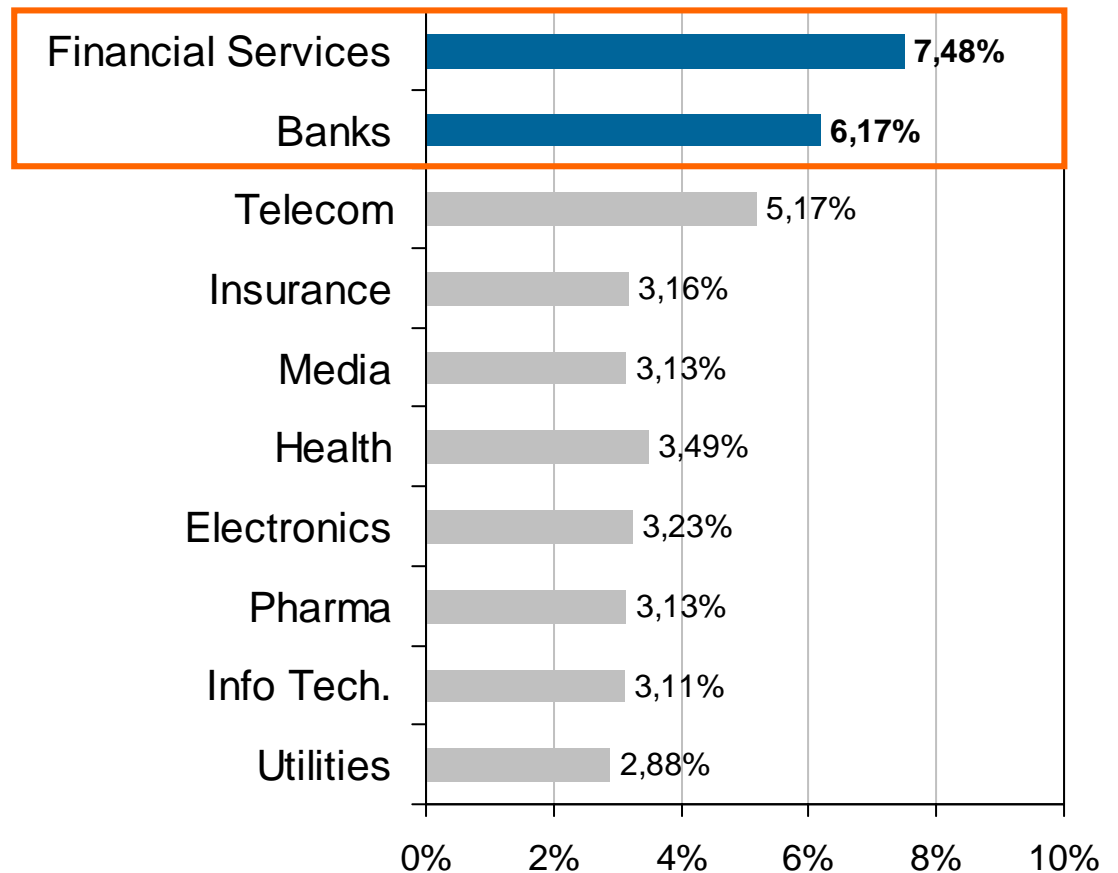
Especially for financial intermediaries, technology has become an integral part of their entire business

Technology has become an integral part of the business of financial intermediaries:

- Online Banking and Brokerage
- Computerized Exchanges
- Transaction Banking
- Risk Management
- etc.

IT spending in financial services and the banking industry is the highest of all industry sectors in the US.

**US IT spending
as % of total revenues, 1999**



Source: IBM Institute for Business Value analysis; *eBanking Report*, Jun 2000, eMarketer

Contents


Financial Intermediation and its
Dependency on Technology


❖ Current Market Environment of Financial Intermediaries


Technology Innovations
and Financial Intermediation

Conclusion

Financial Intermediaries are exposed to a highly volatile market environment that requires dynamic and flexible business decisions

-  Banks have been hurt by the recession due to their vulnerability to interest rate changes and credit quality deterioration
 - Stock prices have dipped dramatically in the past two years
 - Loan write-offs have increased dramatically

-  Increased market volatility has penalized financial intermediaries with brokerage arms and sizable equity portfolios
 - Despite a bull market, volatility has increased over the past decade
 - Market volatility strains customer portfolios, and pressurizes banks to add advice services to their offerings

-  9/11 has placed added pressure on banks to establish business continuity plans and mitigate operational risk
 - Heightened awareness of money laundering has increased the emphasis on knowing your customer
 - Post 9/11 disaster recovery policy has increased the focus on operational risk/business continuity and operational resiliency
 - Increased vigilance against suspicious financial activity has required banks to provide real-time information to government organisations

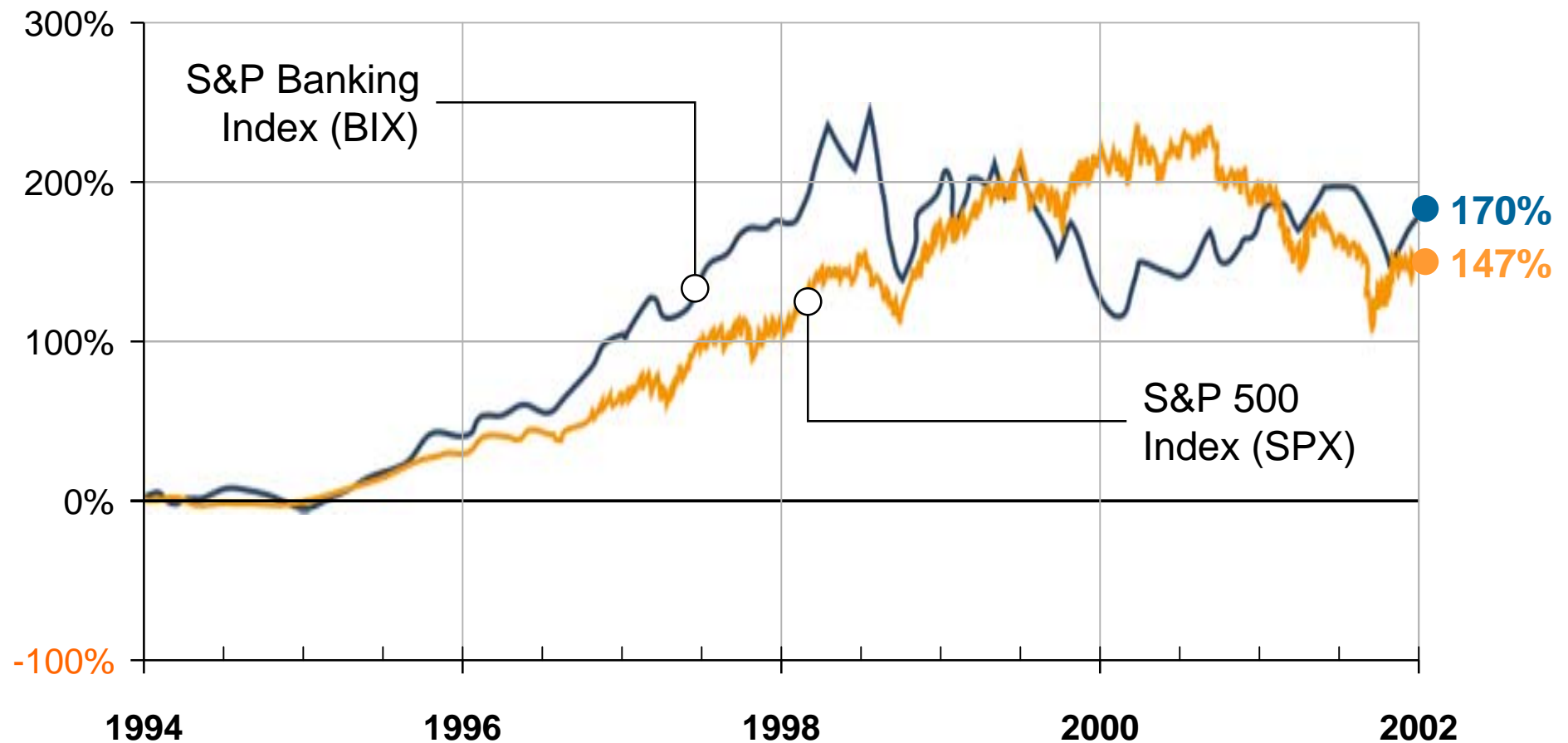
Source: IBM Institute for Business Value Analysis

While the value of the banking industry as a whole has grown slightly faster than the S&P 500 as a whole over the past decade ...

.....

S&P Banking Index versus S&P 500 Index, Jan. 1994 – Dec. 2001

Historical Stock Performance



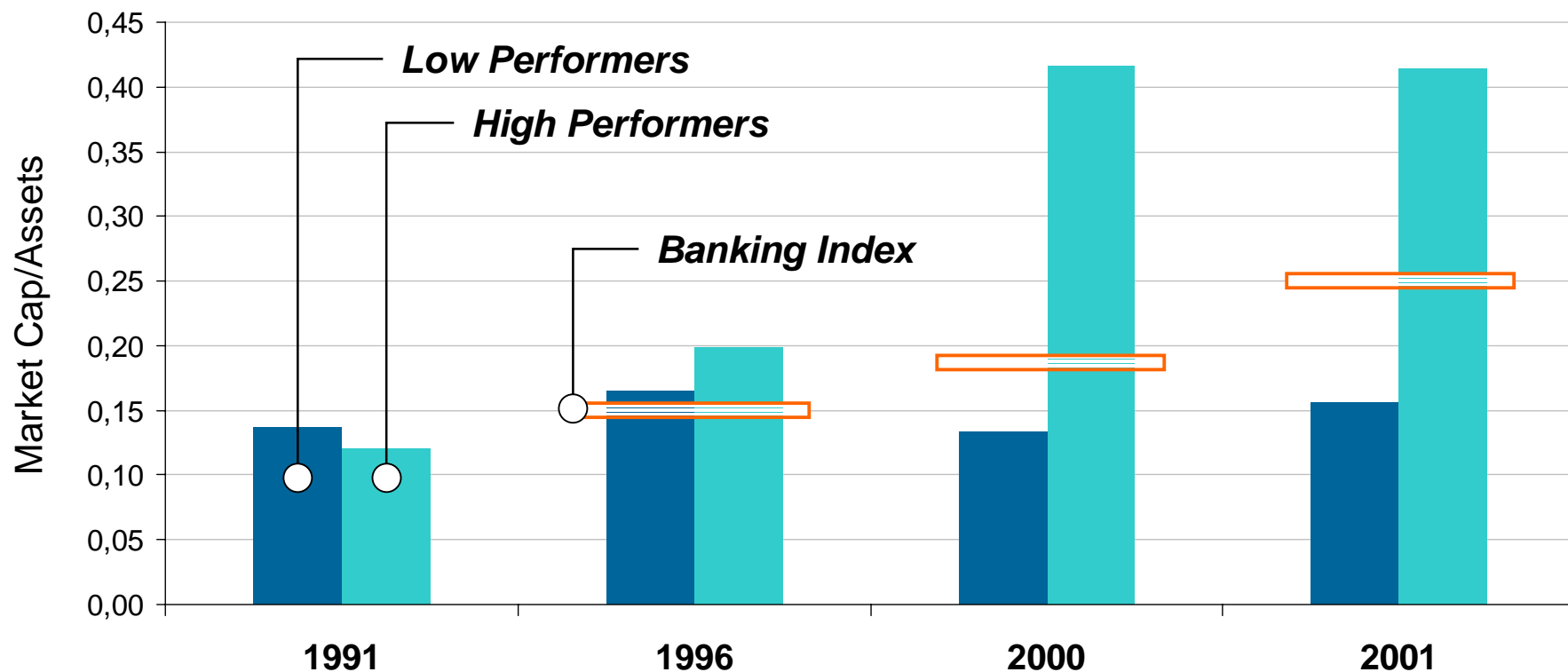
Source: IBM Institute for Business Value Analysis; yahoo.com, Jan 15, 2002

... there are significant differences between banks in their ability to generate sustainable shareholder value

.....

Market Cap/Asset Ratio¹, 1991 - 2001

High Performers vs. Low Performers² vs. S&P Banking Index³



Note: (1) Banks were examined on a market cap/asset basis to compare performance regardless of size; (2) High and low performers were determined by looking at all public banks over a 2 year, 5 year and 10 year period to see which banks had performed well and poorly across all 3 time periods; (3) S&P Banking Index did not exist until May 1993
Source: IBM Institute for Business Value analysis

A significant part of these differences can be explained by the differing abilities of banks to capitalize early on important technology trends

- ▶ Financial intermediaries invest in new technologies to
 - capture growth opportunities and
 - lower the cost of customer-facing and back-office processes.

- ▶ Investment in technology innovations can create significant shareholder value by serving as
 - Differentiator
 - Business Driver
 - Enabler
 - Competitive Advantage



Financial intermediaries who recognize and invest in important technology innovations early can capitalize on first-mover advantages and thereby outperform their competitors.

Source: IBM Institute for Business Value analysis

Contents

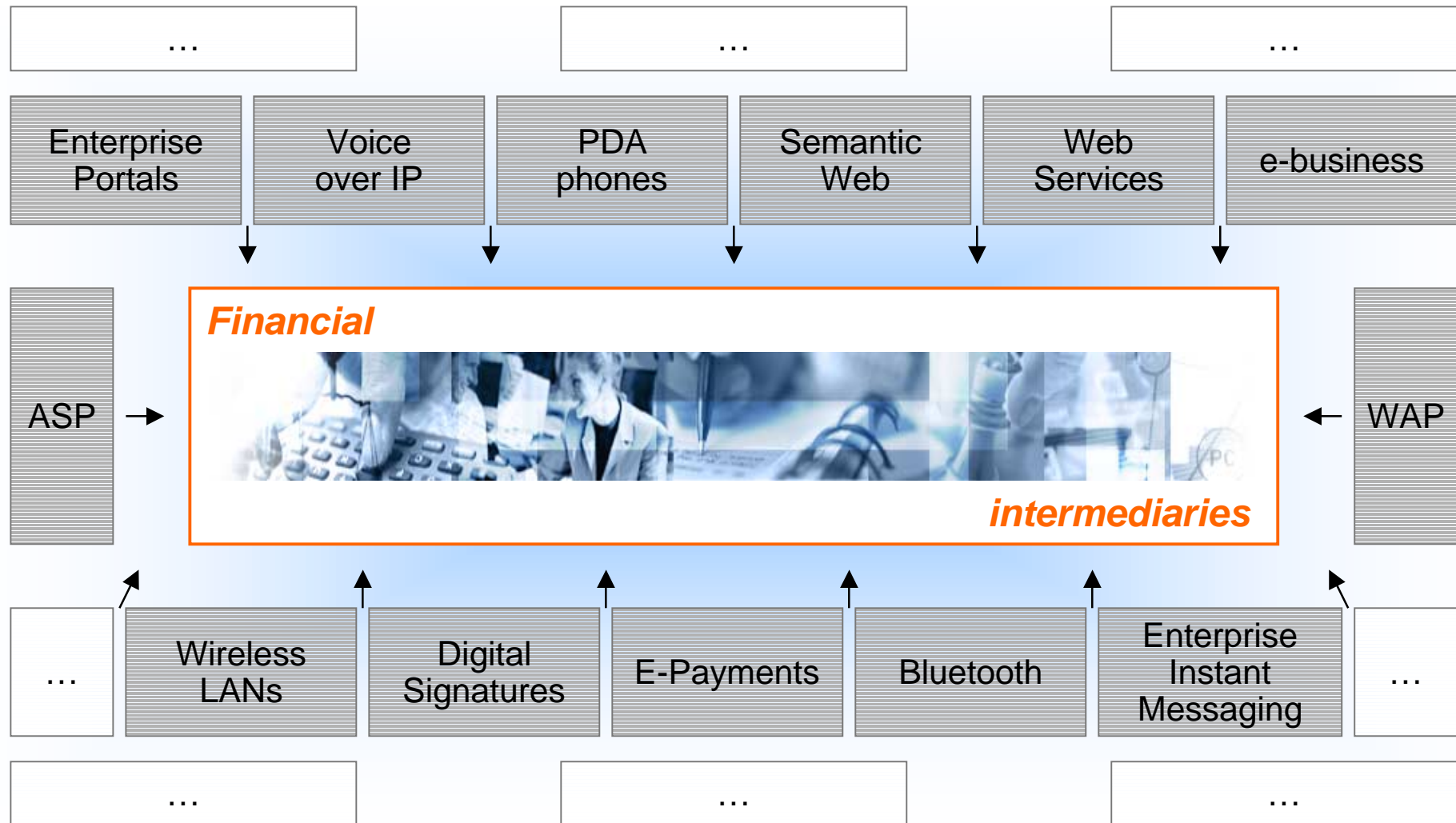
Financial Intermediation and its
Dependency on Technology

Current Market Environment
of Financial Intermediaries

•❖ Technology Innovations
and Financial Intermediation

Conclusion

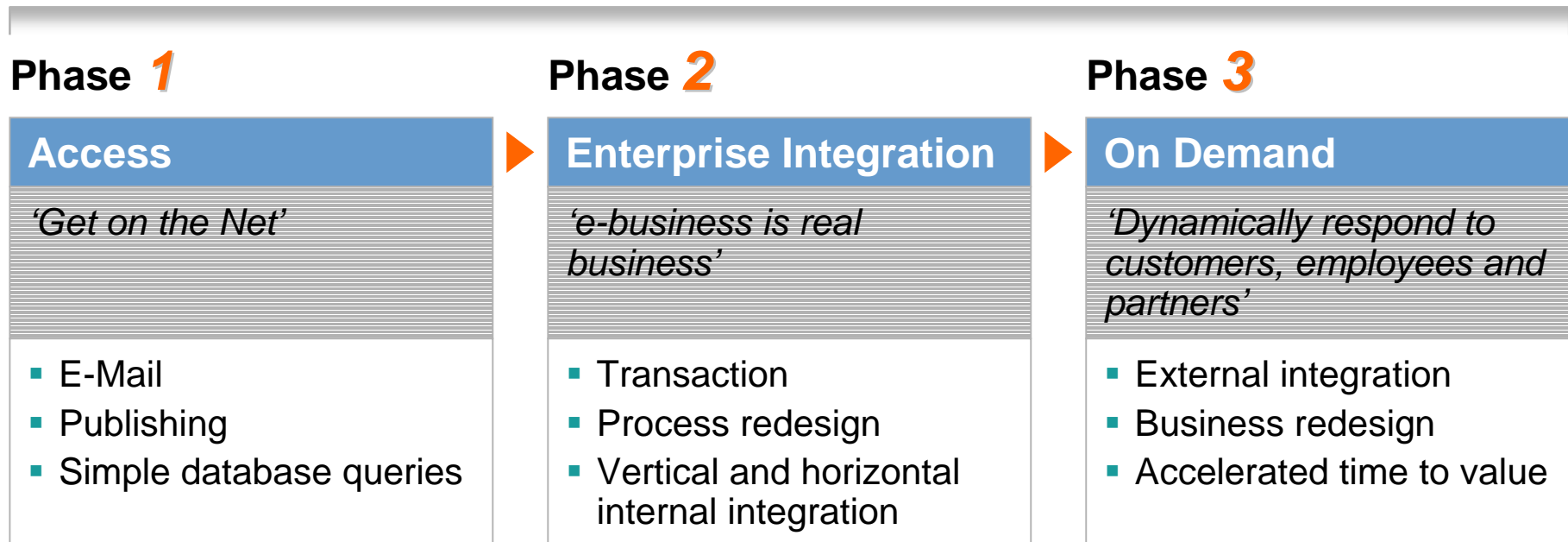
Financial intermediaries are affected by many technology trends



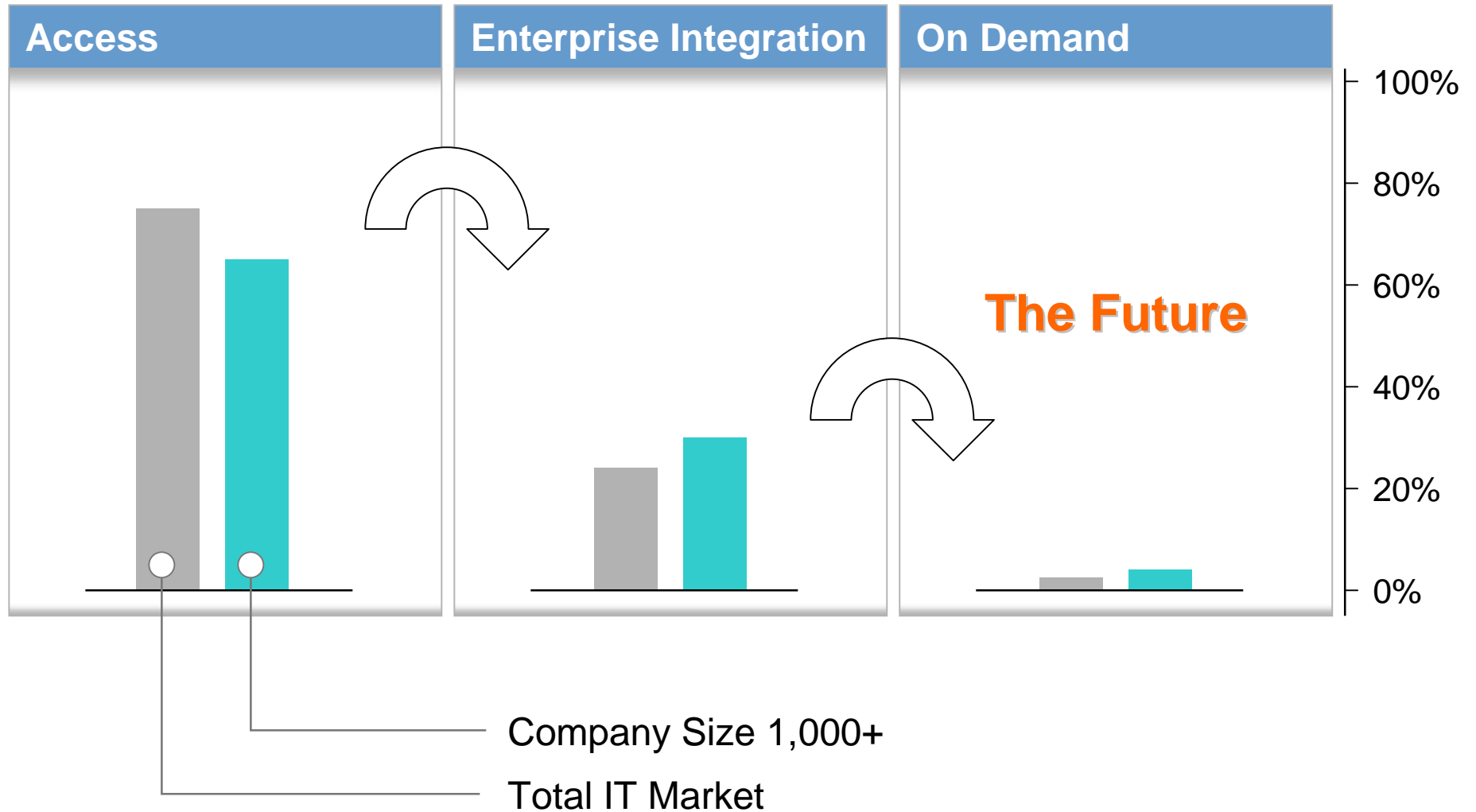
A key technology trend is e-business, the adoption of which takes place in three phases: *access, enterprise integration and on demand*

.....

Phases of e-business adoption



While most corporations are in the *access* phase, some have shifted over to *enterprise integration*. The future lies in the *on demand* phase



Source: e-business Adoption Tracking Study, 1Q02

The access phase of e-business adoption has increased competition and market efficiency in the financial intermediation business



- ▶ The access phase of e-business adoption provided customers of financial intermediaries with unprecedented
 - transparency
 - timeliness of information
 - speed of access to information.
- ▶ Increased transparency with respect to, e.g., quotes in OTC markets published online has increased market efficiency and competition in the financial intermediation business.



e-business

The *enterprise integration* phase has revolutionized the personal banking business of financial institutions



- ▶ Traditionally, in retail banking,
 - customer data is administrated at local branches.
 - customer transactions take place at the local branches.
- ▶ The availability of the internet has revolutionized the expectations of customers,
 - many of whom prefer to be able to make transactions 7days, 24 hours per day from anywhere rather than by personal interaction in local branches during working hours.
- ▶ Changes in customer expectations have forced banks to redesign their personal banking businesses by
 - centralizing access to customer data
 - establishing call centers, online banking and brokerage services to interact with their customers

❖ ***By revolutionizing customer expectations, technology innovations have revolutionized the business of financial intermediaries.***



Internal integration has allowed financial intermediaries to increase the efficiency of their back office processes significantly

Example: Credit Approval Process

Speed of process

Well engineered process and extensive data network

- Efficient process allows customers to receive funds 30-40 minutes after the application process has been initiated

Cost of application

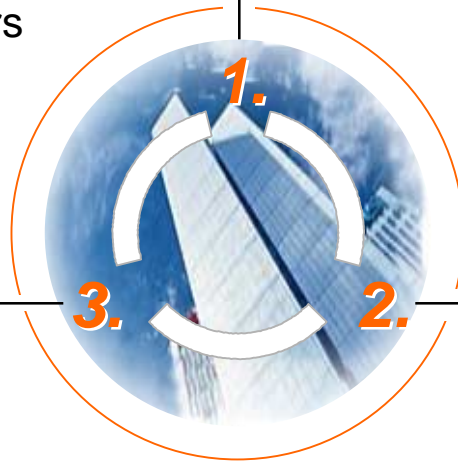
Automated loan application and approval machines

- Wide distribution of unmanned machines reduces the cost of processing without sacrificing speed or accuracy in the application process

Accuracy of credit assessment

Proprietary credit models and broad data collection

- Two-stage application process that combines credit bureau data with data collected through application and face-to-face interview
- Enables financial intermediaries quickly and accurately to assess client risk and offer appropriate borrowing rates to qualified applicants



The *e-business on demand* phase will integrate end-to-end the business processes of financial intermediaries and their business partners



- ▶ **Internal** integration allows financial intermediaries to capture only part of the benefits associated with business process integration.
- ▶ Interacting with many different business partners in an efficient way requires the business processes of all partners involved to be integrated seamlessly together → the external integration of business processes is required.
- ▶ An enterprise whose business processes are integrated end-to-end through the company and with
 - key partners,
 - suppliers and
 - customerscan respond with speed to any
 - customer demand
 - market opportunity or
 - external threat.

❖ *By integrating the business processes of financial intermediaries with their partners, e-business on demand will make the financial intermediation business more responsive to changing market conditions.*

Financial intermediaries will benefit from external business process integration by further increasing their operational flexibility and efficiency



By integrating business processes with business partners, financial intermediaries can:

- increase the degree of automation and efficiency of their business processes beyond the borders of their enterprise
- flexibly make use of the services of their business partners 'on demand', i.e.
 - when
 - where and
 - in the quantity they choose.
- offer their own service portfolio 'on demand'
- pay/bill only for those services that are actually used



e-business

This will allow financial intermediaries to lower their operating costs, mitigate operational risks and capture significant real-option value

Operating Costs:

- Increase operating efficiency and lower operating costs
- Transform fixed costs into variable costs, reducing operating leverage
- Increase cost transparency

Operational Risks:

- Focus on core competency and core activities
- Mitigate operational risks of processes related to non-core business activities to specialized business partners
- Improve service levels and service quality

Real Option Value:

- Capture the real-option value associated with increased flexibility, e.g.
 - options to expand and reduce capacity without incurring investment costs
 - options to switch between alternative service providers
 - etc.



In summary, e-business on demand will make the business of financial intermediaries more responsive, variable, focused and resilient



Key benefits of e-business on demand:

- Responsiveness to unpredictable events
e-business on demand enables financial intermediaries to respond flexibly to unpredicted changes in the business environment in a dynamic and efficient way.
- Variability:
e-business on demand allows financial intermediaries to adapt variable cost structures and process flexibility, thus reducing business risk.
- Focus on core competencies:
e-business on demand permits financial intermediaries to focus on their core business by delegating non-core competencies to a tightly integrated business partner.
- Resiliency:
e-business on demand enables financial intermediaries to manage changes better – from earthquakes to spikes in transactions – with consistent availability and security.



e-business on demand will offer financial intermediaries the required flexibility to compete successfully in their increasingly dynamic and volatile market environment.

e-businessTM

An example is that of Risk Application Service Providers offering risk management services to their customers 'on demand'



Risk Application Service Provisioning:

- Risk Application Service Providers (“Risk ASPs”) offer risk management applications and related services to their customers as remotely managed applications.
- Customers of Risk ASPs are banks, insurers and large corporations
- A Customer transfers portfolio data and risk exposures to the Risk ASP ‘on demand’, i.e. whenever he requires a risk report
- The Risk ASP calculates the risk profile of the portfolio and automatically returns a report about the key risk exposures of the customer

Customers of Risk Application Service Providers realize costs savings and are able to react dynamically to changing market conditions



Customers of Risk ASPs

- Obtain *immediate* access to cutting-edge risk management methods
- Realize cost saving in developing and maintaining appropriate risk management methods
 - IT costs
 - market data costs
 - personnel costs
- Can focus on their core business activities
- Can make flexible use of the additional risk management methods of the Risk ASP when their business shifts towards new financial products
- Can dynamically react to changing market conditions (such as 9/11) by letting their risk profile be recalculated by the Risk ASP 'on demand'

Risk Application Service Providers realize scale effects by offering risk management services to multiple customers



Scale effects

- Increased utilization of IT systems
- Centralized maintenance of IT systems
- Centralized execution of the business processes related to risk management, e.g.
 - market data quality management
 - calculation of statistical parameters and derived data
- Centralized development of new risk management methods by dedicated experts
- etc.



Risk Application Service Providers have to address many challenges such as confidentiality, as well as organizational and legal issues

Technological Challenges

- Confidentiality
Customers have to disclose their portfolio compositions to the Risk ASP.
→ Cutting-edge privacy and security features are a must.
- High Availability
Customers have to be able to assess their risks at any time.
→ Highest availability of the IT-systems of the Risk ASP is a must.
- etc.

Business Challenges

- Organizational and Legal Issues
 - integration of the Risk ASP services into the business processes
 - legal issues with regard to outsourcing (e.g. §25a KWG)
 - etc.
- Low Default Risk Outsourcing of a critical business area like risk management to a third party is only conceivable if the Risk ASP has an extremely low default risk.
- etc.

Technically, e-business on demand has to be based on a flexible operating IT environment which must be virtualized and autonomic

- ▶ A flexible business such as an e-business on demand has to be supported by an 'On Demand Operating IT Environment' that is:
 - flexible
 - variableand offers economically attractive choices for managing computing.

- ▶ In technical terms, an On Demand Operating Environment thus needs to be:



TM

e-business

The virtualized character will make accessible the enormous unused computing capacity available in any financial institution

Virtualized



The autonomic character will strongly reduce maintenance and management efforts ...

- ▶ IT environments are rapidly becoming too complex for humans to manage them efficiently:
 - Configuration, maintenance, security
 - Networks, operating systems, applications
 - ...

- ▶ The solution to this problem is 'Autonomic Computing':
 - Technology that manages itself, just like the autonomic nervous system manages the elementary functions of the human body.



e-business

... by making the IT environment self-protecting, self-healing, self-optimizing and self-configuring

.....

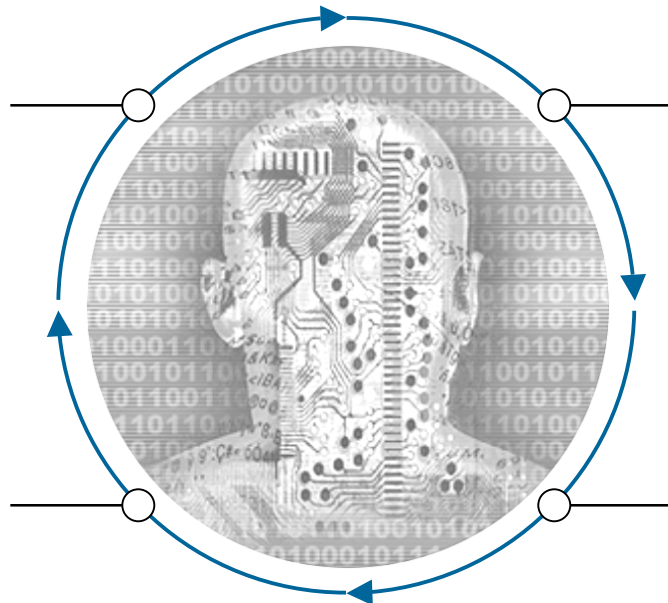
On Demand Operating Environment Requirement: Autonomic

Self-protecting

- E.g. automatic protection against future threats like viruses or hardware breakdowns

Self-healing

- E.g. automatic diagnosis and fix of problems



Self-optimizing

- E.g. automatic load and network balancing.

Self-configuring

- E.g. automatic determination of optimal configurations for software is run on different hardware platforms

e-business™

Contents

Financial Intermediation and its
Dependency on Technology

Current Market Environment
of Financial Intermediaries

Technology Innovations
and Financial Intermediation

❖ Conclusion

Conclusion

- ▶ Technology is central to the business strategy of financial intermediaries.
- ▶ Technology Innovations have revolutionized the financial intermediation business in the past and will continue to revolutionize the business in the future.
Technology can serve as an important:
 - Differentiator
 - Business Driver
 - Enabler
 - Deliverer of Competitive Advantage
 - Optimizer
- ▶ By recognizing key technology trends early and incorporating them into their business strategies, financial intermediaries can generate significant and sustainable shareholder value.
- ▶ e-business on demand technology will offer financial intermediaries the necessary flexibility to compete successfully in an increasingly dynamic and volatile market environment.