Confronting Innovation

The Advanced Technology Group

Lutz Kolbe, Erik Oldekop

This article takes a fresh look at the challenges all large corporations are facing: How to successfully implement innovations in the business units. Confronting IT innovation is the main task of Advanced Technologies Groups. Within Deutsche Bank, Technology Research and Strategy provides this kind of top management support, IT consulting, while also serving as a think tank for all matters concerning advanced technologies.

"Knowledge is not enough; we must apply it. To be willing is not enough; we must do it."
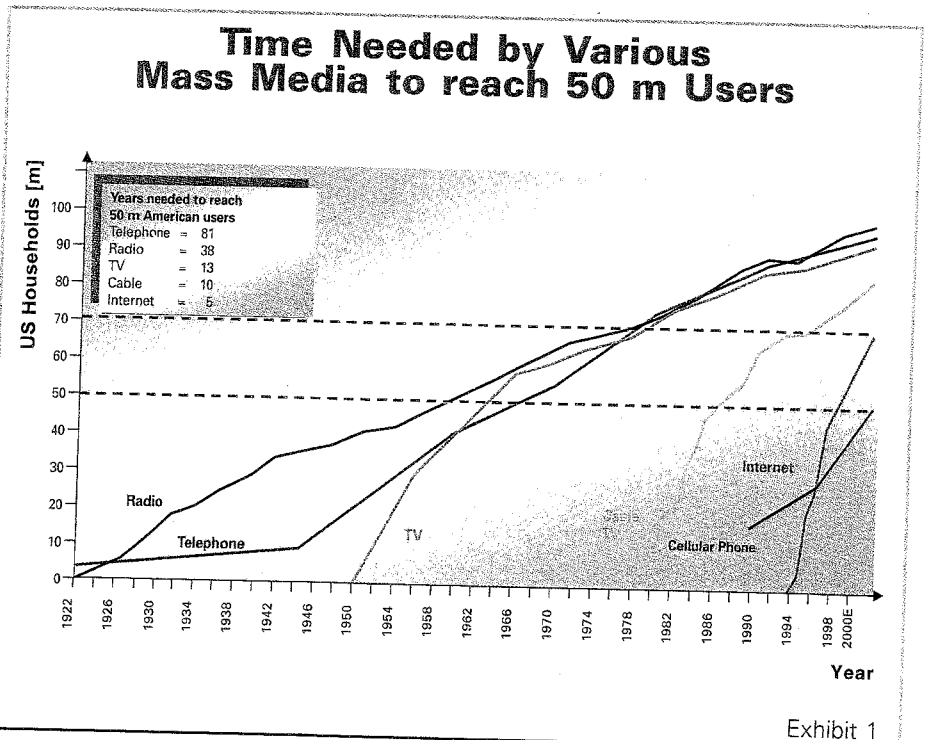
Goethe

1. The Advanced Technologies Challenge

Today, the innovation process is almost moving at the speed of light. Most certainly this statement holds true for innovations developed in the Information Technology (IT) industry, where time-to-market has become the crucial factor for a company's success. Just as an example, Exhibit 1 depicts the growth of American radio, TV, telephone,

cable, cell phone and Internet users: No means of communication techno-logy has ever experienced the adaptation rate of the Internet.

The continuous acceleration of the IT time-to-market time frame has made it difficult for companies to keep track of ongoing developments. If one considers, for example, alando.de, a company born, raised and sold for millions within the time span of three months, it becomes obvious that the time frame for analysis, evaluation, decision-making, prototyping and implementation has been squeezed into a fraction of what it used to be. Does

Previously a senior IT analyst on chipcards, Internet payments, eCommerce and new consumer devices, Lutz Kolbe, Ph.D., heads the Technology Research and Strategy (TEC) department, based in Frankfurt and New York, which screens, analyzes and pilots emerging technologies for Deutsche Bank.

Erik Oldekop, Ph.D., is a senior IT analyst with TEC who focuses on new consumer devices, Internet-enabled business-to-consumer interaction and eCommerce. He currently heads the Relationship Technology Group.

Time Needed by Various Mass Media to reach 50 m Users

Years needed to reach 50 m American users
Telephone = 81
Radio = 38
TV = 13
Cable = 10
Internet = 5

Exhibit 1

[1] Stanley, M., The European Internet Report, June 1999

Table of Advanced Technologies in 1999

Relationship Technologies

- Always Online — Constant 24/7 internet access: The internet becomes a commodity such as electricity
- Speech Recognition — Ease-of-use human-machine interaction
- Avatars — Synthetic characters that can be used on the web
- Virtual Reality / VRML — Virtual Reality Markup Language, for the description of virtual scenarios and animations on the web

eCommerce

- Knowledge Management — Building a knowledgeable enterprise
- Data Mining — Generate user patterns from business data
- Mobile Agents — Programs moving from server to server, carrying out pre-specified tasks such as comparison or information gathering
- Portals — User entry points to the Internet

IT-Architecture

- Jini — Enables all types of devices to simply connect into impromptu networks
- Linux — Open software operating system
- XML — Extensible Markup Language (a simplified form of the Standard Generalized Markup Language)

Security

- Digital Watermarks — Novel concept for copyrighting

Telecommunications

- Mobile Computing — Ubiquitous computing
- Mobile Banking — Banking & Brokerage anytime and anywhere

Source: Deutsche Bank, GTS-TEC

Exhibit 2

---

this mean that a proper evaluation process is not possible, or even that the First-Mover advantage goes exclusively to the unbriefed and yet bold?

Some companies and businesses tend to be more flexible in adapting to these rapid changes - look at Oracle, Sun and, lately, IBM. Some leaders even set new trends, one might think of AOL's ICQ, eBay's peer-to-peer auctions and e*Trade's Internet-empowering of retail customers.

But the unpleasant truth is that many others, especially those without any research and development effort of their own, find themselves dealing with a new set of questions:

- Can our organization actually afford the time to evaluate new technologies and technological concepts?

- Can any entity of our organization decide which concepts or technologies might be worthy of closer examination?

- Can our organization eventually deliver innovations to our customers or might we be better off with a Hit & Miss strategy?

Surprisingly enough, when asked by Andersen Consulting to name the best long-term strategy, top managers of the world's most successful electronics companies replied: 'Don't have one!'[2] Again: Is it advisable to be unbriefed and yet bold?

Another vital aspect to be considered in this discussion is the safety of IT investment. How can the management of a company decide on new IT platforms and hardware when it is obvious that the hardware will already be outdated by the time the buying decision is made? How reliable are estimates and predictions that provide the basis for today's decisions on investments in high technologies? Further insight might be found in an example from the German Financial Services Industry: Around 1993, most large German banks committed themselves to the OS/2 Client Server platform. Today, all of these banks are forced to deal with strategies to migrate to Microsoft's Windows NT. Obviously, this time being unbriefed has not paid off. Strategic guidance with an expanded time horizon is needed.
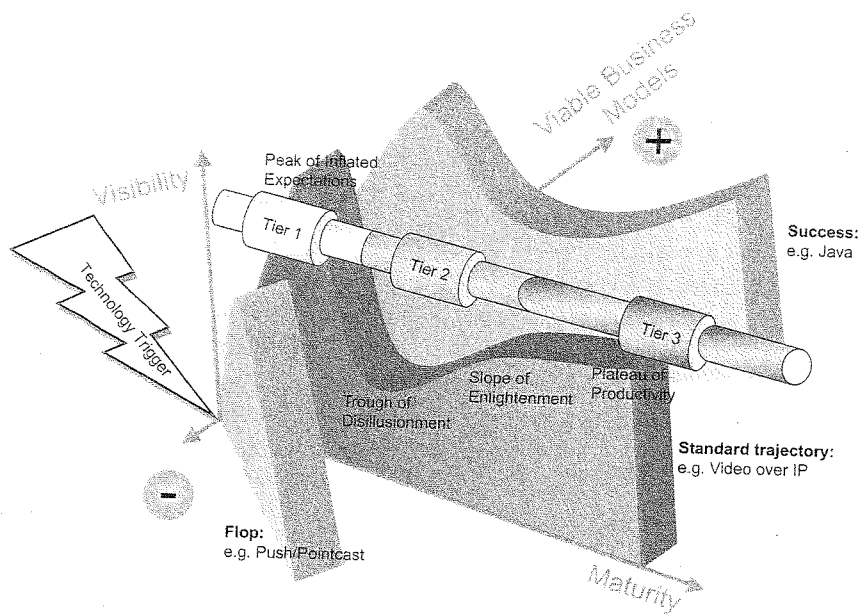
The variety of advanced Technologies and different Ways to understand technological Impact

The dilemma of investment safety is intensified by the variety of advanced technologies. In preparing Exhibit 2, we had to reduce the number of relevant advanced technology concepts. The exhibit shows examples of technologies classiefied according to different areas.

A mere mentioning of these technologies does not offer any valuable insight. Their Time-to-Maturity, i.e. the time frame within which the technologies will evolve beyond the prototype stage, must be

---

[2] Andersen Consulting, Auf innovativen Wegen zum Erfolg, in: Outlook Magazin, 09/1998

The Principle of the Hype-Cycle

Exhibit 3

expectations of the concepts' features (tier 1). Sooner or later it will generally be understood whether or not the technology concept is able to fulfill expectations. However, in most cases the concept will fail to meet inflated expectations and will be stamped as over-hyped or, even worse, as a No-Goer. Additionally, if the concept cannot be implemented, did not make it into a product or is not perceived to add value for the customer, it will flop, and its visibility will fade quickly (tier 2). If the concept offers convincing attributes its visibility will rise again (tier 3). Eventually, it will reach the plateau of productivity where a return on investment is generated.

To better visualize the Hype-Cycle concept, Exhibit 4 depicts the current Hype-Cycle as presented by Gartner. As an example, look at the Internet portals. They have captured tremendous attention, while Virtual Reality Markup Language (VRML) has just about reached the low point of its visibility, mainly because of slow performance. Studying the exhibit,

estimated. For example, Always Online is not expected to be available before 2002. For XML the Time-to-Maturity remains rather unspecific and can be seen anytime between one to ten years. Here, XML is not only understood as the markup language but is seen in conjunction with an automatic platform adjustment. This platform adjustment is seen as the prerequisite for all successful concepts of multi-channel customer relationship management.

Generally speaking, it holds true that some of the technologies discussed will appear on the market within the next year. Others will need more time to be worked into a valuable customer offering. However, the vast majority of these advanced technology concepts will fail to meet market demands, no matter how interesting the underlying technological concept might be. This rationale is best explained by the technology Hype-Cycle sketch, featured in Exhibit 3.

When advanced technologies are launched or novel technology concepts published, their mere novelty attracts self-propelled attention. Consequently, the interest of the IT community rises, resulting in a higher visibility of the advanced technologies. This, in turn, gives rise to even more inflated

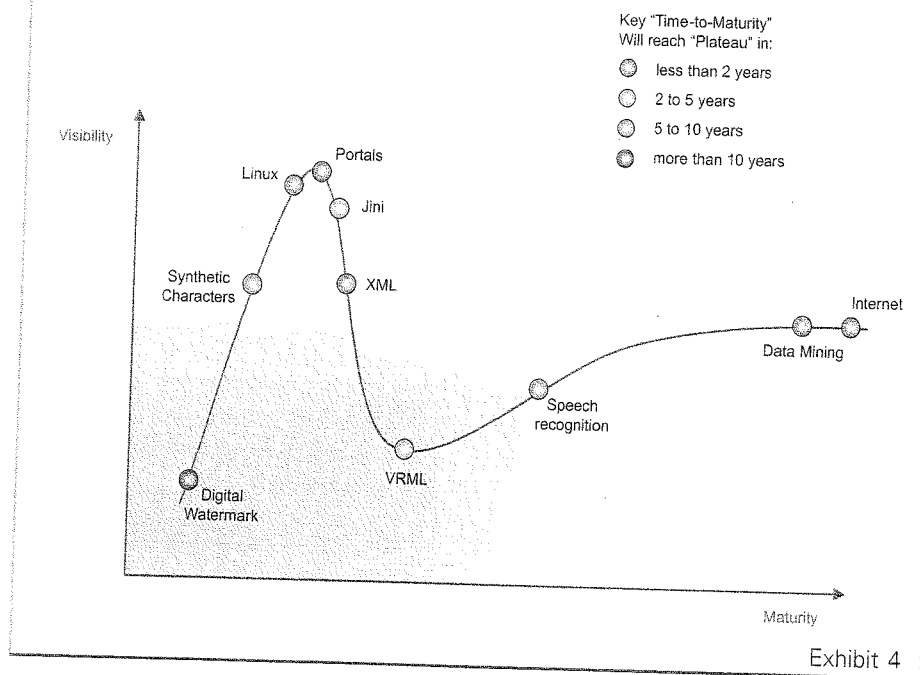## New Technologies on the Extended Hype-Cycle 1999[3]

Exhibit 4

[3] GartnerGroup, Inc., Advanced Technologies and Applications 1999, The next decade, 1999

one has to keep in mind that technology should not be rated soley by its visibility, but also by its business impact, which is more difficult to visualize.

The main challenges of this section identified thus far are:

- Is it wise to be unbriefed and yet bold?

- Investment safety: Strategic guidance with an expanded time horizon is needed.

- A corporation has to understand the variety of advanced technologies.

- It is essential to bear in mind that technology should not be rated solely by its visibility, but also by its business impact.

If everything is put together and the fast-changing trends in this 'wild world' of IT are followed properly, it is necessary to maintain a group of people who focus exclusively on these advanced technologies: The Advanced Technology Group (ATG).[3]

"The very essence of leadership is that you have to have a vision." Theodore Hesburgh

2. A Successful Organization is the Key

Key tasks of an Advanced Technology Group

The previous chapter discussed the shrinking time frame for advanced technologies and noted that these time frames can differ quite drastically. As a prerequisite for any successful ATG, the time horizon for action has to be well defined. It has to be clarified whether the scope is limited to the next two to three years or can be expanded to a ten-year horizon. Taken a limited 2-3 year time frame into account, and considering the time span needed for the required prototyping and implementation

process of advanced technologies, ATGs have only very limited time for action. Firstly, the business units have to be convinced of the viability and business sense of applying an advanced technology to the existing host of technologies. Then, a limited prototyping scheme has to be laid out, implemented and afterwards thoroughly examined. This overall process must not take more than three to six months, thus resulting in a severe lack of time. In order to proceed smoothly, a very lean project management structure is required. The project team must be extremely flexible, proactive, and unhampered by traditional internal structures involving long approval cycles. Nevertheless, the overall risk of each project has to be made transparent and communicated to the business units. 'Risk' in this respect not only refers to a possible failure of the prototyping but also to a missed opportunity. Interestingly enough, a recent study found that the same spirit is also needed for the development of

new businesses in large corporations: "[...] success in new ventures often requires an approach radically different from the more traditional one used to expand existing business incrementally"[4]. Exhibit 5 provides an overview of the key tasks of an ATG.

Advanced Technology Group: Guide or Lead?

ATGs offer guidance in the world of IT but they should not provide leadership. As mentioned above, it is desirable that ATGs constantly evaluate and prototype new technologies. However, the ATG's independence of the company's organization, products and IT infrastructure & services is necessary to enable the ATG to conduct proper research without being hampered by the sentiment always heard in large corporations: "We do not do things this way in our company". From this point of view, it is not desirable for an ATG to aspire to any kind of leadership. Another challenge for an ATG lies in its evolution from a passive group that
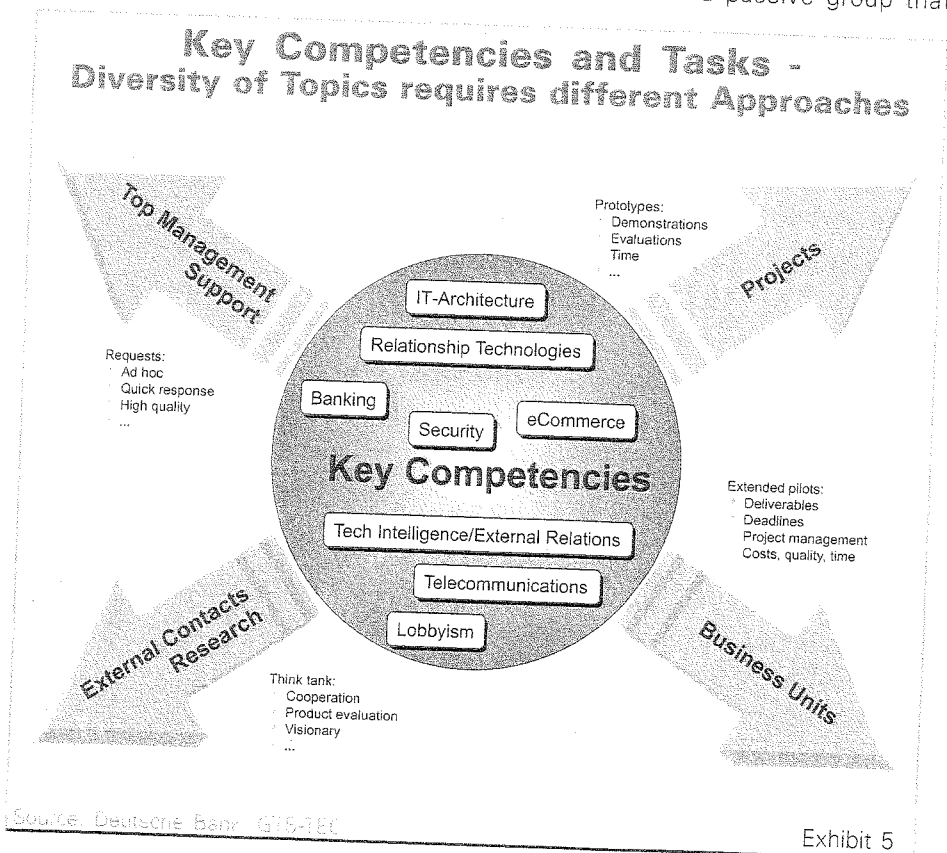

Key Competencies and Tasks – Diversity of Topics requires different Approaches

Top Management Support

Requests:
- Ad hoc
- Quick response
- High quality
...

Prototypes:
- Demonstrations
- Evaluations
- Time
...

Projects

IT-Architecture
Relationship Technologies
Banking
Security
eCommerce
Key Competencies
Tech Intelligence/External Relations
Telecommunications
Lobbyism

Extended pilots:
- Deliverables
- Deadlines
- Project management
- Costs, quality, time

External Contacts Research

Think tank:
- Cooperation
- Product evaluation
- Visionary
...

Business Units

Source: Deutsche Bank GTS-TEC

Exhibit 5

---

[3] GartnerGroup, Inc., Advanced Technologies and Applications 1999, The next decade, 1999

[4] Clayton, J., Gambill, B., Harned, D., The curse of too much capital: Building new business in large corporations, in: Kinsey Quartely, 03/1999

A Checklist to Measure the Success of an ATG

	Research and external relations	Top management support	Projects
Quantitative	▪ # of new technologies covered ▪ # of written papers, organized congresses ▪ # of external contacts	▪ Level of Support (MAK) ▪ # of briefings produced ▪ Reaction time (h) ▪ # of presentations to Top Management	▪ Support for business units implementing new products ▪ Time and resources needed for the projects (within plan) ▪ Rate of projects reaching a further level (pilot → test → production level)
Qualitative	▪ Is there any strategy in picking the technologies to be evaluated? ▪ Are the research institutions satisfied with the ATG's competency? ▪ Quality of external contacts	▪ Are the appropriate technologies being evaluated? ▪ Are the clients satisfied with the ATG's competency? ▪ Are the clients satisfied with the ATG's knowledge of the company's needs?	▪ Are the appropriate technologies being evaluated ▪ Are the clients satisfied with the ATG's competency? ▪ Are the clients satisfied with the ATG's knowledge of the business units' needs? ▪ Fulfillment of business plan

Source: Deutsche Bank, GTS-TEC

Exhibit 6

monitors trends towards an active role where it funnels new technologies into the business units. This active role can best be characterized by:

▪ Awareness of current problems in the business units / processes.

▪ Regular demonstration of new technologies and their implications to the business units.

▪ Involvement of potentially affected groups at an early stage.

▪ Acting as an internal consultant when new technologies and product concepts are introduced.

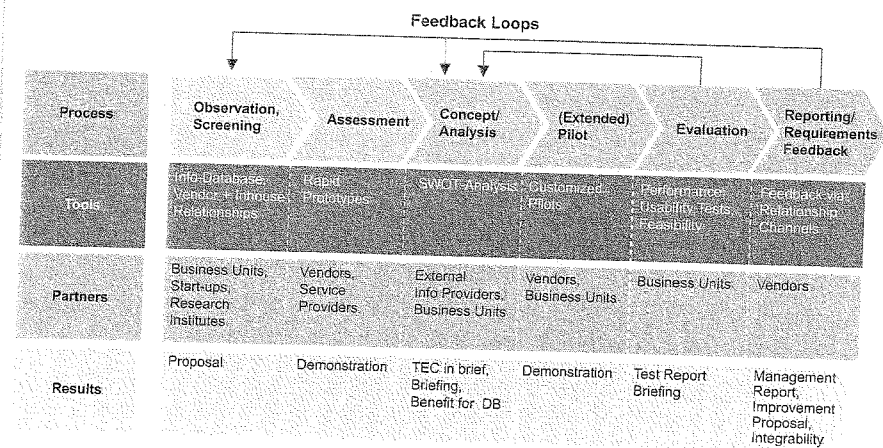## Chief Information Officer must provide Air Cover

Obviously, it is the top management and Chief Information Officer (CIO) who are in charge of leadership. This leadership has to be applied to the innovation processes as well. Generally speaking, leadership is best qualified in its three dimensions: Money, spirit, and politics. To quote Giga Information Group, one of the CIO's responsibilities is to "create the environment for innovation"[5]: A budget (money) has to be allocated to the ATG, and a short communication line between top manage-ment and the ATG has to be set up (politics). Successful incorporation of advanced technologies then remains a question of good team-work (spirit) between top management and the ATG. However, the CIO's risk of spending money on technology projects with uncertain results should be met by an open-minded ATG, which must not be afraid of admitting to failure: To realize and stop doomed projects early on is at least as important as to successfully implement prototypes. And, as a final comment, it has to be pointed out that only about 10% to 30% of all ATG's prototypes will ever turn into a productive system in daily use at the business units. This fact has to be communicated openly to the CIO.

How to measure success in an Advanced Technology Group mentioned above, most ATG prototypes will never be turned into productive systems. Obviously, the sheer number of advanced technologies, implemented in the company's IT environment is not an adequate means of measuring the success of an ATG. The set of questions that needs to be addressed then is the following: What kind of metrics can be applied to an ATG in order to rate its effectiveness? How can an ATG account for its work? ATGs seem to be a quite different place for the usual Profit-and-Loss philosophy. Rather than trying to give a quantitative analysis for calculating an ATG's profitability, we have provided quantitative and qualitative criteria in a checklist (see Exhibit 6).

Value Chain of an ATG

Feedback Loops

Process	Observation, Screening	Assessment	Concept/ Analysis	(Extended) Pilot	Evaluation	Reporting/ Requirements Feedback
Tools	Info-Database, Vendor / Inhouse Relationships	Rapid Prototypes	SWOT-Analysis	Customized Pilot	Performance, Usability Tests, Feasibility	Feedback via Relationship Channels
Partners	Business Units, Start-ups, Research Institutes	Vendors, Service Providers	External Info Providers, Business Units	Vendors, Business Units	Business Units	Vendors
Results	Proposal	Demonstration	TEC in brief, Briefing, Benefit for DB	Demonstration	Test Report Briefing	Management Report, Improvement Proposal, Integrability

Source: Deutsche Bank, GTS-TEC

Exhibit 7

---

[5] Cecere, M., Innovation can be institutionalized, in: Giga Information Group, IS, 1998

To complement the checklist, a methodology was developed internally to turn the process of detecting, testing, and evaluating advanced technologies transparent to the business units and top management. Exhibit 7 depicts the value chain of an ATG.

TEC – The Advanced Technology Group of Deutsche Bank

Technology Research and Strategy (TEC) is the Advanced Technology Group within Deutsche Bank's Global Technology and Services unit. The team consists of approximately twenty analysts with different professional and academic backgrounds (Business Administration, Computer Science, Economics, Engineering, Law, Mathematics, and Physics) and educational levels (PhDs, Graduates, Graduate Students).

These lateral thinkers of outstanding profile have the capability to enthuse and engage non-technical audiences as well.

TEC's mission is to provide top management support and IT consulting for projects involving advanced technologies. Beyond this, it serves as Deutsche Bank's inhouse think tank for all matters concerning advanced technologies.

TEC's research is classified into six centers of competence:

- eCommerce
- Internet Taxation, Lobbyism and External Relations
- IT-Architecture
- Relationship Technologies
- Security
- Telecommunications.

The Group's activities include IT projects, consultancy, technology prototypes, publications and other events: TEC issues several printed and online newsletters, showcases an exhibition room and maintains various external relations, e.g. seminars given by distinguished speakers.

A Look ahead

Encouraged by its successes of the past, TEC will continue to survey the latest trends in new technologies and make its contribution to the successful outcome of their implementation at Deutsche Bank. TEC will stay abreast of the globalization process by establishing international TEC bases, starting with the USA. The office in New York City started working on August 1st and will expand to a total of 4 members of staff. Not far from Silicon Valley, San Francisco is currently being examined as another candidate for a new TEC branch, as well as Singapore as a location in Asia.

> "A Virtual Touch Screen Tested as a Service Terminal at Deutsche Bank[6]"

Exhibit 8

> "For a successful technology, reality must take precedence over public relations."
>
> Richard Feynman

3. Success Stories: Two Examples of Technology Research and Strategy, Prototypes

SIVIT-Terminal - Gesture Computing

At CeBIT 98, a new generation of customer terminals was unveiled. These terminals contain a "virtual touchscreen", a projection of the user interface onto a surface. The customer interacts with the projection without the actual need to touch any material, i.e., there is no need to press a button or touch a surface. As a result, the finger is used exactly the same way as a computer mouse normally is.

Due to the projection, the SIVIT terminal can be reconfigured straightforwardly. Unlike traditional touchscreen terminals where the functionality is mostly bundled with prespecified hardware, the entire SIVIT setup is quickly exchangeable without any hardware reconfiguration. Another benefit is the easy integration (HTML-based user interface) of web pages into the SIVIT terminal.

In the case of Deutsche Bank, the Siemens SIVIT terminal reflects the changes in the way customers nowadays do their banking: Automatic Teller Machines, account statement printers, and customer terminals form the biggest distribution channel for Deutsche Bank's retail business. However, as they lack personal interaction, the bank has to find new ways of communicating with its customers. The SIVIT terminal can hand-

---

[6] TEC in brief, February 1999

Ultra Thin Client Technology[7]

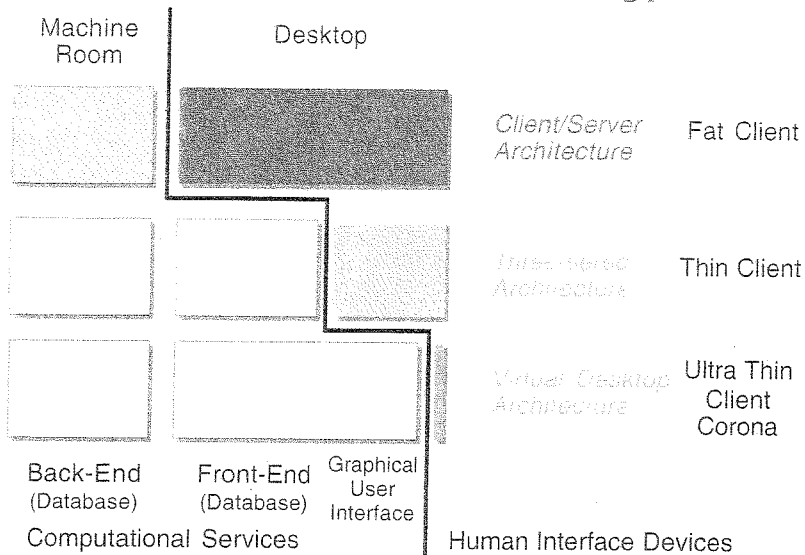| Machine Room	Desktop		
		Client/Server Architecture	Fat Client
		Thin Client Architecture	Thin Client
		Virtual Desktop Architecture	Ultra Thin Client Corona
Back-End (Database)	Front-End (Database)	Graphical User Interface	
Computational Services		Human Interface Devices	

Exhibit 9

ιc all of the above functions and includes the possibility of a link-up to a financial advisor at a video-call center. Thus the SIVIT terminal is a truly business-related technology.

Corona - Ultra thin Client

Corona is the code name for the ultra thin client technology developed by SUN Microsystems. This equipment can be installed and operated with no administration workload on the client side. The Corona terminal (client) requires no separate operating system as no programs are run on it. All calculations, including setting up the screen contents, take place on the Corona Server (Solaris). As Corona terminals have no separate operating system, they only need a small CPU and only 8 MByte RAM.

TEC initiated and performed the only Beta test of Corona in Europe. During a test period of several weeks, TEC staff members used this technology exclusively to perform all their daily tasks. The outcome of this Beta test phase has been very encouraging. Therefore, Corona as a cross-divisional technology might be suitable for use as a workplace at branches, in trading rooms and at call centers. Administration and hardware costs can be substantially cut in comparison with fat client architecture.

Further reading

Christensen, C. M.,
The Innovator's Dilemma, in: Harvard Business School Press, 1997

Barr, A.,
Smart Cards, Irwin, 1997

Furche, A., Wrightson, G.,
Computer Money, dpunkt, 1996

Jennings, N., Wooldridge, M.,
Agent Technology, Springer, 1998

Rankl, W., Effing, W.,
Smart Card Handbook, Wiley, 1997

Snider, J., Ziporyn, T.,
Future Shop,
St. Martin's Press, 1992

Gibson, R. (Ed.),
Rethinking the Future,
MI Verlag, 1997

Iansiti, M.,
Technology Integration,
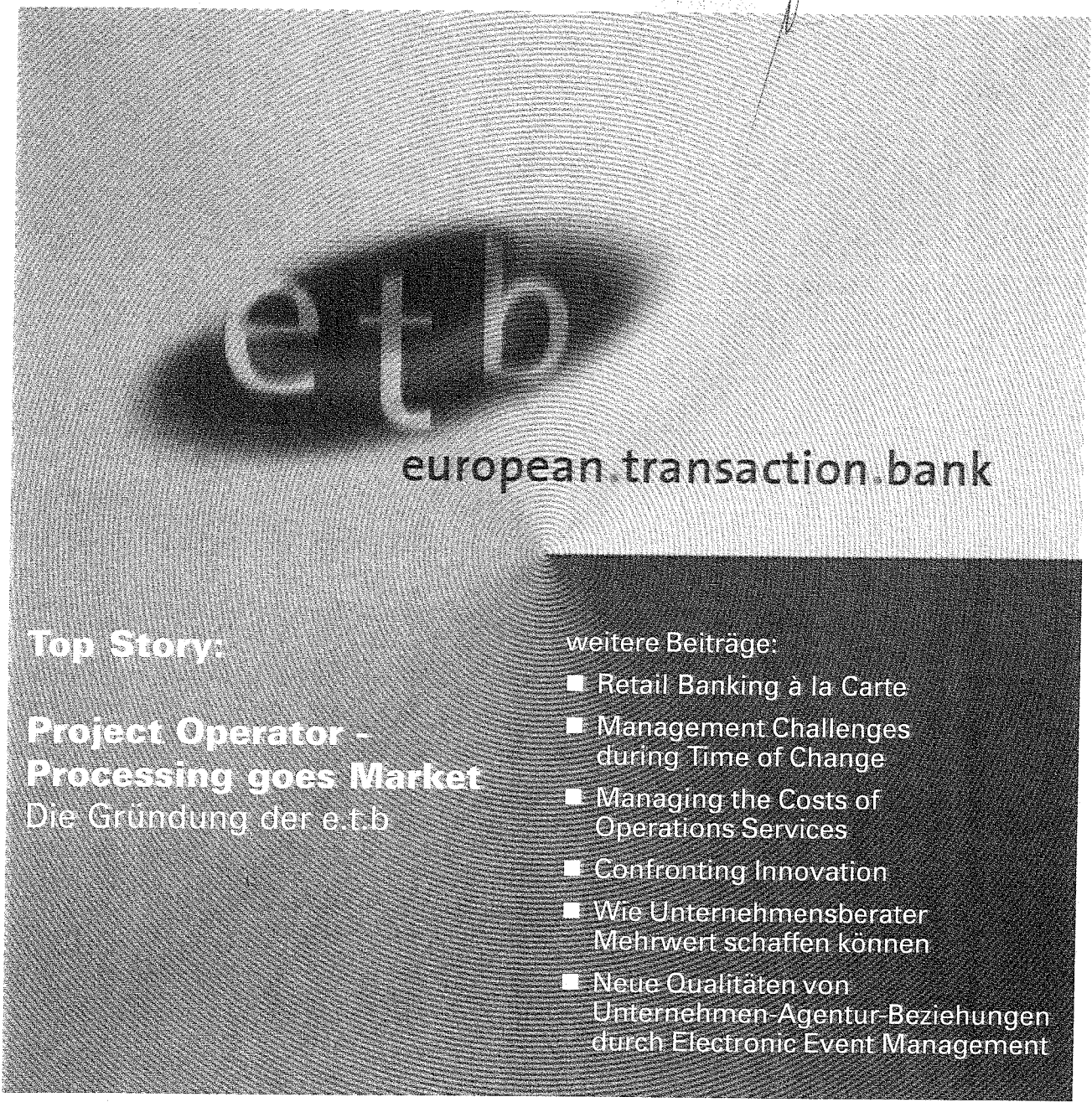in: Harvard Business School Press, 1998

---

[7] TEC in brief, June 1999

Inhouse Manager

Consulting

Oktober 1999

et.b

european.transaction.bank

Top Story:

Project Operator – Processing goes Market
Die Gründung der e.t.b

weitere Beiträge:

- Retail Banking à la Carte
- Management Challenges during Time of Change
- Managing the Costs of Operations Services
- Confronting Innovation
- Wie Unternehmensberater Mehrwert schaffen können
- Neue Qualitäten von Unternehmen-Agentur-Beziehungen durch Electronic Event Management

Maleki Group

Deutsche Bank