



## Case Study

### Why Finanz Informatik Keeps Adding More and More Mainframes to Its New Enterprise Data Centers

#### *Introduction*

As the result of a recent merger between Finanz IT and Sparkassen Informatik, *Finanz Informatik* (FI) has become the market leader in Germany's retail banking information technology (IT) services market. The company now serves close to 200,000 bank employees and provides IT services to 443 savings banks, ten state banks, ten building associations, as well as to other financial services users.

Shortly after this merger took place, Finanz Informatik announced that it had signed a five-year extension of its strategic technology/services contract with IBM — a contract that provides steep discounts in products and services as part of a comprehensive major volume purchase agreement (VPA). This contract is valued in the “triple digit millions of Euros” range. As part of this contract, FI intends to add even more IBM mainframes to its IT equipment mix (the company now operates a total of thirty-one mainframes).

*FI is a big believer in mainframe technology, citing the key benefits that it sees from using mainframes as high reliability, ease of management, energy efficiency, system efficiency (high utilization rates), and footprint (mainframes pack a lot of computing power into a condensed enclosure). But a closer look at how FI uses its mainframes shows that mainframes are core to FI's operational efficiency. And money saved through efficient operations of its IT environment contributes directly to FI's overall profitability.*

As an IT service provider, it is of paramount importance that FI's enterprise information systems are tuned to deliver maximum computing power without wasting computing cycles or energy. And FI's mainframes operate with maximum efficiency — running at greater than 85% of capacity on a constant basis. Further, FI needs fewer people to manage its mainframe environments than are needed to manage its distributed system and blade environments — so mainframe management costs are comparatively lower (helping to reduce operating costs even more).

Shortly before the Sparkassen Informatik/Finanz IT merger, *Clabby Analytics* ventured to Koln (Cologne) Germany to meet with Uwe Katzenburg, stellv. Vorsitzender der Geschäftsführung (who is now FI's senior executive in charge of production data centers and network environments). Over the course of my visit, Mr. Katzenburg detailed his company's business strategy, its business challenges, and provided insights into the reasons why his company has chosen IBM as its premier information systems and services supplier. In a recent phone conversation, Mr. Katzenburg updated *Clabby Analytics* on what had changed at his company since the merger — and reaffirmed that his company is still strategic committed to mainframe technology — and will be for the long term.

***Lowering Operational Costs Is Key to FI's Profitability***

FI has learned from experience that IT acquisition and operational costs have a huge impact on profitability in the highly competitive IT services industry. So, to reduce its acquisition costs, FI uses volume purchase agreements to obtain volume discounts on the computer systems that it purchases. And, to reduce operational costs, FI:

- Buys dense systems architectures (primarily large, scale-up systems and blades) that house dozens or hundreds of servers in compact systems enclosures or chassis. (By consolidating computing power into dense packages, the management of thousands of servers is greatly simplified; software licensing costs are reduced; and the need to install thousands of redundant failover servers on a 1:1 ratio is scaled back);
- Virtualizes (logically pools physical computing resources) its enterprise-class servers to increase utilization rates and reduce acquisition costs (note: very little virtualization of x86 resources has taken place to date); and,
- Deploys advanced systems management software to automate systems/storage/network management, helping to reduce management labor costs.

Each of these practices (the use of VPAs and FI's system buying/deployment patterns) bears closer scrutiny.

***Purchasing Efficiency and the Strategic Use of the VPA***

Purchasing efficiency plays an extremely important role in FI's operational cost structure. VPAs provide FI with tremendous product/services discounts — and the money FI saves creates a distinct competitive advantage for the company by reducing system/services acquisition costs.

FI, however, implements its VPA differently than many competitors and large customers (such as internal bank IT departments). Instead of buying and then deploying servers and storage in a cookie cutter fashion, FI *partners* with its suppliers (including IBM, Sun, and Hewlett-Packard) to develop its future architectures and to influence product development to better serve FI's needs.

***By structuring these large VPAs, FI is able to greatly lower its systems acquisition, deployment, and integration costs. Further, by focusing on what it does best (building retail banking applications and providing computing services), FI is able to provide excellent customer service while expanding market share. FI's system makers/systems integrator partners, on the other hand, are able to focus on what they do best (design and deploy efficient systems environments — the fort  of these suppliers). This strategic use of the VPA provides FI with distinct cost advantages over its service provider competitors, and these cost advantages clearly show up in the company's financial bottom line as increased profitability due to reduced acquisition and reduced operations costs.***

***Lowering Operational Costs***

After several years of trial and error — and as a result of having to integrate the information systems resources of companies that FI had merged with or acquired — the lessons that FI has learned with respect to improving the operational efficiency of information systems environments include:

- 1) Centralize information systems management to reduce complexity;

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- 2) Automate management functions whenever possible to reduce labor costs;
- 3) Consolidate and virtualize distributed systems to improve utilization rates, system availability, license management, et al; and,
- 4) Opt for denser architectures in order to ensure that data center real estate expansion is kept under control (FI has been able to *eliminate* several data centers by deploying denser systems in its existing data centers — and then by modernizing those data centers to handle increased demands for energy use and cooling).

Reducing management costs is extremely important to FI. Systems, storage, and network management can be labor intensive and expensive — especially in North American and European markets. And, if an enterprise has a distributed computing environment, the management of distributed systems adds complexity (finding and exploiting unused resources in a distributed environment can be a real challenge; as can the securing of all of the access points that proliferate in distributed systems architectures — each presenting an opportunity for potential security breaches). So, one obvious solution to the problem of controlling management costs is to automate the management of systems resources whenever possible. FI is a strong believer in using automation tools to reduce human labor costs in systems management.

Other opportunities to improve enterprise computing efficiency were, however, less obvious. For instance, is it more energy efficient to deploy hundreds of smaller servers, or dozens of very large servers? By consolidating many servers into fewer servers, FI has come to the conclusion that large servers, running at higher utilization rates actually burn far less energy than smaller servers that run at 10% or so of capacity. So FI consolidates servers whenever possible.

FI also focuses on data center design and efficiency to reduce costs. By consolidating its server environments — and by improving the efficiency of its data centers by upgrading power and cooling systems within its now tightly-packed data centers, FI has actually been able to grow its computing capacity without having to build new data centers (in fact, FI has reduced the number of data centers that it operates from nineteen in the 1990s to only six today). This topic is explored in greater depth in the “Other Savings: Data Center Redesign” section later in this report.

### ***Why Do IBM's System z Mainframes Figure So Prominently in FI's IT Infrastructure?***

To achieve operational advantages, FI makes use of several different classes of dense servers including System z mainframes, high-end and midrange IBM Power systems and Sun UltraSPARC-based servers — and occasionally scale-up x86 servers (such as IBM's X4 System x servers). FI also deploys HP and Fujitsu blade servers to handle Windows serving.

Each type of dense server runs different types of workloads:

- IBM System z, for instance, is charged with running highly secure, transaction-intensive COBOL-based workloads. CICS transaction environments remain lightning fast — and is still more efficient to process transactions in a tightly-

coupled, dense mainframe environment than across a myriad of distributed servers and databases).

- IBM Power and Sun UltraSPARC servers run Unix application workloads — most importantly FI’s OS Plus Portal application environment. FI could standardize on one systems platform in the Unix space — but has chosen to split its Unix business in order to create a “healthy competitive environment” between Sun and IBM — as well as to create a means to leverage acquisition costs between the two vendors.
- And Windows x86 servers run select branch custom applications, a full suite of client applications, and also provide terminal services.

A core tenet of FI’s business is *reliable* delivery of computing *capacity*. And mainframes still provide the highest meantime-between-failure (MTBF) in the industry — while offering almost limitless expansion capacity. From a system design perspective, System z mainframes are ideal for meeting FI’s reliability requirements and capacity needs. (Note that FI’s System z mainframes regularly operate at close to 100% capacity while handling huge transaction volumes in a consistent, reliable, and secure manner. In addition, some of FI’s Unix servers are operating at 85% utilization rates — while most of FI’s x86 based servers are operating in a “substantially less” [not quantified] utilization range).

One of the reasons that mainframes perform at such high utilization rates relates directly to the strength of the mainframe virtualization environment. System z architecture has been virtualized for almost forty years — and features several advanced management capabilities including logical partitioning, advanced memory management, the ability to support thousands of virtual machines per system, and so on. x86-based servers, by contrast, offer comparatively “basic virtualization” capabilities.

*When comparing System z to other systems architectures, it is easy to understand why FI has made such a huge commitment to IBM System z architecture. System z represents an ideal design point for FI. System z’s can operate at 100% of capacity for extended periods of time with little risk of failure — enabling FI to achieve its main operational reliability and efficiency goals. Further, System z’s small footprint (small is relative, but considering the amount of processing that it performs a System z delivers one heck of a lot of computing in a comparatively small computing envelope) is important because data center real estate space is limited. And finally, System z power consumption characteristics offer energy use cost savings (when compared to having to operate large farms of underutilized servers).*

### ***Other Savings: Data Center Redesign***

In November, 2002, IBM formalized its recommendation on how to design the information systems of the future. This recommendation, dubbed “on demand computing”, called for business process flow to drive underlying information systems. To enable this to happen, however, information systems buyers would need to adopt a common infrastructure (known as service-oriented architecture based on Web services and extensible markup language) — and information systems would have to be “optimized” (consolidated and virtualized) to support message-intensive, service-oriented process flows.

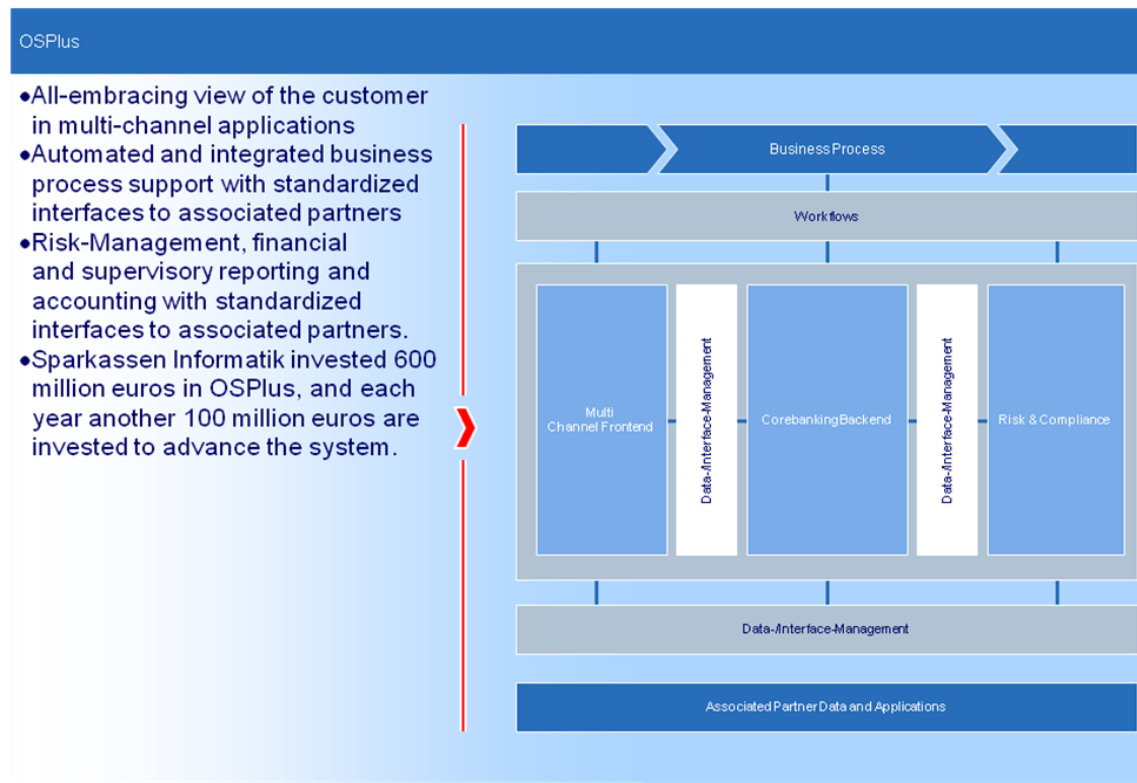
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*More specifically — at the information systems level — the “on demand” vision called for servers, storage, and network devices to be consolidated to reduce management costs and improve systems availability. And it called for information systems and storage arrays to be virtualized to improve utilization rates.*

*Resource consolidation has led to denser packing of computing resources (more servers in a much smaller footprint) — while resource virtualization has upped the utilization rate of those consolidated servers. The combination of both of these activities has had a very positive effect on overall computing efficiency, but has also put some stress on data center designs (because denser systems generate more heat which must be dissipated). To deal with these heat dissipation issues, as well as to provide a framework for efficient data center energy use, IBM has evolved on demand computing to take a more holistic view of enterprise information systems and related data centers. This holistic view is known as “the new enterprise data center”.*

Before the merger, Sparkassen Informatik had made a major commitment to IBM’s on demand vision (and Finanz IT is continuing this commitment). Its key product offering (OS Plus — shown in Figure 1 below) has been designed to efficiently flow business processes over a service-oriented architecture. And to support this environment, FI has consolidated hundreds of underutilized servers into fewer, more powerful servers — and has virtualized some of its unused computing capacity (particularly using System z logical partitions [LPARs] as well as virtualization facilities on its Power systems) as a means to increase the utilization rates of these consolidated servers.

***Figure 1 — Sparkassen Informatik’s (Now Finanz Informatik’s) OS Plus Environment***



Source: Sparkassen Informatik — June 2008

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*As a result of buying into IBM's on demand vision and IBM's new enterprise data center model, FI's IT infrastructure is now one of the most efficient information systems environments that this IT research analyst has ever seen. FI runs a well tuned, performance-optimized, energy efficient systems environment that enables this company to provide its customers with their desired computing capacity at reasonable rates. The efficiency of FI's information systems environment provides the company with distinct operational cost advantages over both in-house banking retail organizations as well as distinct competitive advantages over fellow IT services providers.*

### **Summary Observations**

Simply stated, FI's business strategy involves providing reliable computing services at a price point that substantially undercuts a retail bank's internal computing costs, as well as undercuts computing costs offered by its competitors. To do this, FI uses technologies that enable it to deliver highly reliable services (specifically, powerful, highly scalable RAS [reliability, availability, security] servers); and also relies on technologies that help reduce systems/storage/network management costs (automated management software).

FI recognized early-on the cost advantages that it could realize by consolidating its server environments; and the asset utilization advantages it could realize by virtualizing its servers and storage devices. Further, FI also recognized that the adoption of service-oriented architecture could simplify the integration of hardware and software assets resulting from its many acquisitions. And, finally, FI has also focused on data center consolidation, and has designed its data centers for energy efficiency and effective heat dissipation.

*Finanz Informatik has become a leading pioneer in the implementation of the new enterprise data center model. The company's aggressive adoption of the principles of consolidation and virtualization, its standardization on SOA infrastructure, and its implementation of efficient data center cooling and energy use have helped to improve its competitive position while also enabling the serve its customers in an extremely cost effective manner. FI's competitors have been slower to react to these changes in computer/data center design — and, as a result, FI has consistently gained market share.*

One element that makes FI “unusual” is its hearty embrace of IBM Systems z architecture. With 31 System z footprints in 11 Sysplexes, with a large CICS environment, and a highly-integrated DB2 database environment, FI is driving transaction rates through the roof on high performance, highly utilized, energy efficient System z servers. System z is the perfect consolidation/virtualization/energy efficiency architecture for specific FI workloads — and FI has found a way to exploit System z to the max to deliver secure and reliable IT services.

What FI has done with its information systems can be emulated across multiple industries and across data centers of all sizes. The deployment and optimization of dense systems architectures will necessitate some changes in data center design (especially around cooling) — but FI has proven that running optimized, energy efficient information systems has a clear, profound, positive impact on enterprise competitiveness as well as enterprise profitability.

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### **Clabby Analytics**

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*Clabby Analytics is an independent technology research and analysis organization that specializes in information infrastructure and business process integration/management. Other research and analysis conducted by Clabby Analytics can be found at: [www.clabbyanalytics.com](http://www.clabbyanalytics.com).*