

Jini and Procoma

Sun Success Story.



Procoma Creates an Innovative Solution for Commerzbank AG with Jini™ Network Technology

In May 2000, Commerzbank AG, a leading German Bank and international financial institution, approached Procoma GmbH with a concept for a new type of publishing system. The system would provide banking applications and their development infrastructure with a flexible method of creating high-quality publications without the need for “man in the loop” DTP software. Applications would simply deliver XML data to the publishing system, and it would take over the job of rendering the data into a publishable document.

Given that the Commerzbank AG serves about 850 branches and more than 40,000 employees, designing a solution implied strategic architectural considerations, reliability, performance, and ease of use. What was needed was an enterprise computing solution that could take over the job of document creation and publishing from the other programs. The solution should be scalable, capable of generating hundreds of thousands of documents in a working day. It must be easy for an application programmer to work with, while exhibiting all the properties of fault resistance and load management expected of an enterprise computing solution.

Working together with Commerzbank, Procoma refined the design into a distributed Jini™ technology based system, christened Chameleon/XML.

An Enterprise Computing Solution for Creating Professional-Quality Documents from XML Sources

A software company based in Frankfurt, Germany, Procoma GmbH was founded in 1999 and currently has 12 employees, including a development team that focuses on Java™ and Jini technology. The company’s flagship product, Chameleon/XML, is an enterprise computing solution that creates and publishes professional documents from XML sources.

Company:

Procoma, GmbH

Industry/Market

Commerzbank

Applications/Solutions

- Chameleon/XML Enterprise Computing Solution
- Jini™ Technology
- Java™ Technology

Key Business Challenges

- Enable outreach and permission-based marketing for an existing customer base of millions
- Maintain high-quality standards for personalized, visually appealing communications
- Avoid integration and maintenance problems of ad hoc solutions

Key Business Solutions

- Creates up to hundreds of thousands of documents per day
- Capable of supporting enterprise-wide fault resistance and load management
- Can survive node failure and accept new nodes into the cluster—without a restart

Comments

Global companies need to enhance and reinforce customer relationships with timely, relevant communication. By utilizing Jini and Java technology, Procoma’s Chameleon/XML solution enables applications to forward XML content to a server that manages the job of rendering that data into high-quality output media such as PDF, HTML, or even voice.

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“Wherever the coming broadband Internet wave leads, Jini technology’s dynamic community model will let us surf there with it.”

Aidan Mark Humphreys,
consultant system architect, Procoma, GmbH

Chameleon/XML is designed for organizations such as banks, publishers, and insurance companies that need to communicate with large numbers of clients on a regular basis, in a way that recognizes that every client is an individual.

As Procoma had seen in prior projects, many applications had tried to address the problem of generating customer presentable documents. Ad hoc solutions, linking office applications such as spreadsheets and word processors with macros with glue code, simplify many of the complexities involved in publishing—font management, page layout, text flow, hyphenation, business graphics, chart generation, and so on. However, they observed that the ad hoc approach meant maintenance was a constant concern, and the results were not scalable, reliable, or cost-effective enough to be viable as strategic solutions. Worse, the cost and effort of gluing these stacks of desktop products together is replicated for each and every application that needs to generate presentable documents.

Clearly, desktop solutions are not applicable to a customer base of this size. No modern company can afford to have an army of specialists generating handwritten documents to thousands of customers on a daily basis. Application programs could take over the work of mining relevant information, but serving up the results in a form that meets the high standards of the marketing department is a problem. Traditional forms of application output, such as fan-fold hardcopy or ASCII e-mail, are not acceptable. Sophisticated customers want to receive high-quality documents that are both visually appealing and communicate facts and figures using graphics and charts.

A Creative Combination of XML, Java™, and Jini Technologies

A platform for generating presentation documents, Chameleon/XML easily handles such formats as PDF, HTML, Microsoft Word RTF, Latex, and the wireless markup language. The industry leader for high-volume, XML/XSL-T processing, it provides an efficient, scalable, and robust environment for transforming, rendering, and distributing XML documents. “As part of our activities in the field of content management,” said Aidan Mark Humphreys,

consultant system architect for Procoma, “we had started working with PDF rendering from XML data sources. We were tracking the evolving XSLT Formatting Objects specification and using XML-to-PDF tools, like PDFLib and the Apache project’s FOP tool. We immediately began thinking about a system that would let applications forward XML content to a server that would manage the job of rendering that data into output media such as PDF, HTML, or even voice.”

Humphreys continued, “Using Java technology engineering, we could see how to embed a variety of rendering tools into our server architectures, but what was missing was the enterprise scaling and load management infrastructure that the bank required. We began looking at the range of enterprise computing products on the market: transaction managers, database add-ins, and application servers. For us, the philosophy behind many of the enterprise products seemed to be outdated—a rewrite of CICS for the 1990s. Sure, these products could deliver—but at a high cost due to expensive product license fees and a steep learning curve.”

The Procoma team felt that the enterprise products are tailored toward traditional transaction processing environments, where both the type of work and the workload are easily predictable, making preplanned, policy-based deployment a viable solution. “Instead, we were thinking of a solution that would give us all the reliability pluses of enterprise computing, yet could also dynamically configure itself to cope with unpredictable demands, both in the type of work that needed to be performed and the resources require to perform it,” Humphreys stated. “The system should obtain throughput by working in parallel, distributed across many hardware nodes. And the system should be able to survive the failure of a node and accept new nodes into the cluster, without ever needing a restart.”

A Powerful Computing Platform: A Self-Managing, Self-Repairing, Mission-Critical Solution

As Humphreys explained, “Jini technology appealed to us from the start. It gave us the infrastructure to create a self-managing, self-repairing environment that retained all the mission-critical support advantages of enterprise computing systems. We named our infrastructure layer ‘hyper architecture.’ It used Jini technology’s dynamic discovery mechanisms to monitor each process in the system, and the distributed event service to marshal and direct those processes.”

Humphreys continued, “Using Java technology-based introspection wrappers, we were easily able to integrate any Java XSLT processors into the Jini technology environment, without having to adapt the third-party code. Jini technology’s transactional services allowed us to pipeline jobs through the system in parallel—so if a process or hardware node failed, the job need only be rolled back to the last successful step. Jobs didn’t need to be restarted. And because jobs never got lost, both the server and client were simpler, since we didn’t need to code the complex resubmission negotiation.”

Get the details.

Jini network technology is an open architecture for building adaptive networks.

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In the end, Jini technology delivered as predicted. Procoma created a working prototype within three man-months of effort, and had a candidate working system with the client by December 2000. Chameleon/XML is 100% Pure Java™ code and will run on all platforms that support the Java 2 Platform, version 1.3. Although initially deployed on a PC-based architecture, Chameleon/XML is scheduled to move to the Commerzbank’s Sun Enterprise™ servers as the rollout progresses.

Procoma Looks Forward to Additional Sales and Expanded Market Coverage

Both the Commerzbank and Procoma are delighted with the results the system is generating. Ulrich Schmitt, project manager in Commerzbank’s central services IT development said, “Chameleon/XML is performing just as we hoped.” By midyear, Procoma was converting simple numbers marked up in XML into embedded SVG business charts and graphics. Humphreys reported, “An application program should create documents containing spreadsheet-like numeric visualizations, without ever caring about how those visualizations were achieved. Chameleon/XML is rendering printable documents in partnership with the bank’s financial contract generation software, and creating high quality customer reports, including charts, graphics, lists, and freetext.”

So far, experiences have been positive. Rollout at the initial customer will be a gradual process, but Procoma expects Chameleon/XML to be serving very high-throughput applications by the middle of 2002.

Stated Jens Kleemann, Procoma CEO, “Other financial organizations with similar needs are in touch with our marketing department. We are looking forward to further sales within the banking industry and to expand our market coverage into insurance, publishing, and manufacturing. As a software development company, our approach is not to go it alone, but to seek out partners’ organizations and third-party consultants with solid industry sector knowledge. We then work with them to offer their clients new communication possibilities using Chameleon/XML.”

One of the most interesting aspects of the Jini technology is that it allows Procoma to deploy any type of rendering process on a dynamic basis for adaptive networks. Humphreys said, “Our system architects are examining how we can use Chameleon/XML to go beyond document preparation and into supporting a full range of communication media—voice handling, vector graphic animation, and video rendering are all within the scope of the system.”

Procoma has considerable experience in developing content management solutions for large enterprises. The company recognizes that a new generation of XML processing systems is needed to bridge the gulf between technological promise and business solutions. Chameleon/XML is the first XML/XSL-T processor designed for mission-critical production environments.

XML and Jini Technology: A Fast, Reliable Way to Access Vital Information

XML promises to revolutionize the way businesses exchange information, making the long-promised possibilities of universal, B2B e-commerce a reality. This is because XML provides a standard that lets applications describe the structure and meaning of the information they exchange. A single XML fragment can adapt to different environments and adopt many different appearances. The same data can be transformed into a printable PDF document, displayed on the Web, or accessed over wireless services or via media streaming.

With the advent of Web services, networks need a secure, reliable way to communicate without interruption. Jini technology is an open architecture for building adaptive networks to handle change in highly dynamic computing environments. It allows developers the ability to build solutions for organizations where information is vital to the business process, because it provides a fast, reliable way to access information for everyday decision-making. It delivers the resiliency needed for mission-critical applications, forming the core of Procoma's platform-independent, robust, scalable solution.

Using Jini technology, services can be added or removed from the network, and new clients can spontaneously find existing services—all without administration. Innovators like Procoma are using Jini technology to gain a competitive business advantage by rapidly and cost-effectively developing and deploying compelling new applications and services for their customers worldwide.

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