KPT Insurance: Integrating the Mainframe in an eHealth Cloud Using HostBridge

A HostBridge® Case-Study White Paper

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KPT, a Swiss health insurance provider and founding member of Online Easy AG, a Swiss eHealth service provider, uses HostBridge web services to integrate mainframe data and applications into a new eHealth Community Cloud that includes Platform-, Software-, and Data as a Service components. After an initial private rollout, the cloud solution will be made available nationwide, delivering access to health and policy information anywhere and anytime, and serving as an interactive platform for care providers, insurers, and potentially 7.7 million Swiss residents.

This white paper explores Online Easy AG’s cloud strategy, KPT’s mainframe-to-cloud integration, and their benefits to insurance companies, care providers, and residents.

Background: Healthcare and Insurance in Switzerland

All Swiss residents are required to carry basic health insurance. Residents may choose any health insurer, and health insurers must provide coverage irrespective of age or health condition, and without reservation or a qualifying wait period. This compulsory basic insurance covers illness, maternity, certain preventive measures, and accidents (though accidents are covered only when other insurance is not in force).

Residents’ premiums can amount to 8% of their annual income. In addition, insured persons must pay a portion of their healthcare costs, including an ordinary flat rate (“franchise”) of CHF 300 per year (children under 18 are not subject to this fee) and 10% of costs above the “franchise” up to a maximum of CHF 700 per year (CHF 350 for children under 18).

To supplement basic coverage, many residents purchase additional insurance to cover higher levels of care such as private treatment in private or semi-private wards, medications not covered by basic insurance, dental care, and more.

In Switzerland, as in most developed countries, healthcare and health insurance costs are soaring. Consequently, there is tremendous pressure to reduce costs. For health insurers, statutory requirements combine with tough market conditions to increase this pressure. On the one hand, by law, basic insurance is a non-profit business; companies may only profit from supplemental insurance. On the other, the health insurance market is glutted, so competition is fierce and eliminatory; any customer won by one company must be lost by another. In this harsh environment, the number of providers has dropped in recent years from more than 200 to 83.

Cost control was the motivation behind two laws enacted in 2007. Seeking to reduce or eliminate paper records and related processes, the laws require (a) that all residents have a health insurance card carrying basic digital healthcare information and (b) that residents’ health records be in digital form by 2015.
While these measures are intended to reduce costs, they also pose new challenges. Healthcare providers and health insurers must now find economical, practical ways to take health information into the digital age.

Online Easy AG (OLEAG) and founding member KPT have done exactly that, with a solution that is available now and adaptable to meet evolving needs.

**Strategic Challenge: Smarter eHealth Records**

OLEAG understood that a health insurance card with embedded data chip would not be the smartest way to store personal health records. Reading and updating such cards would require specialized equipment. Only care providers, who would have no choice but to purchase the equipment, could access and change the card chip. Card holders could neither read nor write to the chip.

Given the near-total ubiquity of personal computers and the Internet in homes and offices, and the availability of flexible, standards-based methods of exchanging information via the web, OLEAG seized the opportunity to introduce a more effective system for recording and sharing eHealth data.

OLEAG conceived, designed, and developed a technology platform based on an open, extensible architecture with the following objectives in mind:

- Meet digital health records requirements – integrity, portability, privacy, and security
- Create an interactive, collaborative community for everyone involved in healthcare
- Build a common platform that can access and interact with data housed in many systems
- Allow providers to keep and leverage the systems and data they currently use
- Reduce costs.

**Strategic Solution: eHealth Cloud**

OLEAG introduced its solution in 2009 – a private eHealth cloud. After initial rollout to founding members, the cloud will be made available to care providers, insurers, and residents across Switzerland. Ultimately, it may connect thousands of physicians and other health professionals, hospitals and other medical facilities, product and service providers, the nation’s 83 health insurance companies with their tens of thousands of employees, and millions of Swiss residents.

OLEAG’s eHealth cloud, including Platform-, Software- and Data as a Service components, is a nationwide solution for users ranging from the individual citizen to global enterprises.

*Platform as a Service.* The eHealth platform is designed to achieve the government’s goal of providing on-demand access to health records – and to do
much more. The cloud platform serves very large populations of users with health-related informational resources and interfaces to data and business logic resident in multiple backend systems. It also provides interactive capabilities to connect users in real time. For residents, the cloud portal is a convenient one-stop location to perform many tasks that used to require numerous visits to doctors’ offices and pharmacies or phone calls to busy customer service departments. Now, from anywhere, at any time, residents can interact with providers, access medical and insurance records, and find a wealth of health information – using a single friendly, secure web portal. For providers, the cloud offers a means to communicate more effectively with customers and partners, automate cross-enterprise information exchange, and streamline information-dependent processes.

**Software as a Service.** The eHealth cloud includes two main applications – **VitaClic**, an eHealth community application ([www.VitaClic.ch](http://www.VitaClic.ch)) primarily for residents and healthcare providers, and **Onsurance**, an eHealth insurance application mainly for insurers and policy holders.

VitaClic provides public or private access (depending on the information requested) to eHealth records, health and medical information, and ePrescriptions. It enables managed care processes, data exchange, and unified communication (chat, IM, audio, video, etc.) allowing users and care givers to communicate on demand.

![Figure 1. Current VitaClic landing page ([www.VitaClic.ch](http://www.VitaClic.ch)) with information/interaction options, e.g., emergency (Notfall), expert forum (Expertenforum), health records (Gesundheitsakte).]
The Onsurance application offers distinct interfaces for insurance personnel and their customers. Insured persons can check and update their personal or family information, submit and check the status of claims, communicate with insurance personnel, retrieve information about policies, and contract for insurance. Insurance personnel have a unique intranet portal where they can access records, process claims, advise clients, and sell products.

Data as a Service. The cloud’s data services are and will be as multi-faceted as the providers connecting to the cloud. The platform has its own repositories for a range of unstructured data and documents – principally eHealth records. In addition, care and insurance providers can use the platform to share structured and unstructured data directly, automatically, and securely with authorized parties. A physician, for example, can transmit an ePrescription to a pharmacist, who can then notify the patient that the prescription is ready. Statements and data records can then be shared automatically with the patient and insurance company.

The cloud platform is scalable and expandable, designed from the outset for multiple tenants – from hospitals, clinics, and medical offices to physicians, pharmacists, emergency personnel, and other service providers – as well as Switzerland’s 83 health insurance companies. Over a longer term, OLEAG intends to introduce its eHealth solution at an international level.
Cloud Benefits

For businesses, the cloud will be a means to improve customer and partner service, enhance communication, collaborate with partners and other organizations, streamline operations, simplify in-house IT, reduce multiple costs, market more effectively, and increase revenues.

OLEAG’s eHealth cloud offers the healthcare and health insurance industries a solution that is as or more efficient, effective, and economical than solutions they might develop individually. The cloud delivers the levels of functionality, scalability, and performance required by large enterprises running very large information systems. And it affords these organizations a compelling opportunity to offload significant system development, maintenance, and support to the cloud.

KPT’s Challenge: Mainframe in the Cloud

To capitalize on its benefits and advantages, enterprises must of course connect to the cloud. As the driving force behind OLEAG, KPT was first to recognize the promise of the cloud; consequently, the company now has first-mover advantage. It is in a position to offer a visionary health insurance solution to its 338,000 customers and any other Swiss resident. At the same time, however, KPT has had to be the first to tackle the critical technology challenge – cloud integration.

While the cloud’s core infrastructure is designed to support many front-end systems used by residents and companies – personal computers and laptops with their range of browsers, mobile phones and handheld devices, and workplace client systems – it is up to participating companies to make their data, applications, and systems cloud-compatible.

For KPT, the challenge was to integrate their mainframe in the cloud. The company’s solution is both a success in its own right and a proof-of-concept for other providers that intend to plug into the cloud.

Technologies: Cloud, Mainframe, HostBridge

OLEAG’s eHealth cloud is an open, flexible service-oriented architecture (SOA) allowing a multitude of tenants to join in the cloud and integrate, extend, and add value to their diverse platforms, systems, applications, and data resources. Early on, OLEAG determined that the services oriented approach would be the most effective and “attractive” means to bring tenants together in a functionally single network.

The cloud’s software infrastructure is an IIS/.NET Framework running Microsoft Office SharePoint Server and Metastorm BPM for workflow/process management. Providers integrate their backend systems with the cloud platform via web services, typically formal SOAP/WSDL services given the private nature of most of the data transmitted through the system.

To run its business processes, KPT relies on an IBM z9 mainframe running CICS® Transaction Server V3.2, and the CA Ideal™ development/runtime environment with
CA Datacom® database. The company’s primary software system is Inter-K, a packaged ERP system that has been updated over the years with custom programs and functions. The Inter-K ERP package is responsible for most of the functionality KPT requires for its business operations, from master data management to policy management, claims, billing, collections, and more.

Four years before the Swiss government called for eHealth records, in 2003, KPT had already implemented a customer-facing portal allowing policy holders to access and update certain personal or family data, review coverage, or check the status of claims.

In embracing the cloud vision, KPT had to rethink their existing technology strategy. During the analysis process, they faced decisions about whether to replace or reuse their primary systems – user portal, mainframe platform, and Inter-K ERP system – and weighed the costs and benefits of each choice.

Decisions regarding the user portal were relatively easy. Since the eHealth platform would offer far more functionality and a much richer user experience at significantly lower cost, KPT was ready and willing to change.

The mainframe-based Inter-K ERP system represented a more difficult question. Ultimately, the deep alignment between KPT’s business processes and the Inter-K software system as well as the many years invested in development of application logic and data resources were determining factors. In view of Inter-K’s value and the high projected cost of migrating to a new platform and rewriting core applications, the decision was made to modernize/ SOA-enable mainframe resources.

With this decision, the company had to find the right mainframe web services solution to integrate existing application investments without changing those systems. KPT's technical requirements were straightforward:

- Mainframe-resident solution for high performance and reliability
- Support for CA environments
- Support for SOAP/WSDL web services.

For its mainframe-to-cloud integration, KPT chose HostBridge.

**Solution: HostBridge Web Services**

HostBridge is a web services/XML integration solution for CICS applications and System z data. Installed on the mainframe under CICS, HostBridge accesses mainframe data and application logic (metadata) before data streams are generated and auto-converts them to integration-ready XML. Within the HostBridge development environment, the XML is used in the creation of web services. Standards-based HostBridge supports SOAP, REST, XML, HTTP/HTTPS, and all standard services protocols; JavaScript-based programming; and a wide range of mainframe application and data types. HostBridge offers rapid development and deployment, integration flexibility and reliability, scalability, performance, and high-fidelity replication of source applications.
KPT developed HostBridge services to replicate optimized CA Ideal screens that collate data from many pre-existing screens. HostBridge web services make this optimized data available to requestors via clear, easy-to-use web pages. The following diagram illustrates the integration architecture and request/response process.

Access to mainframe data is driven by user requests, which typically either retrieve (GET) or modify (POST) information. Different users are authorized to access different data sets. For example, employees and insured persons might both have access to client data, but insured persons’ are restricted to updating basic information such as address or phone number. Similarly, care providers are permitted to view specific types of insurance information such as the level of insurance coverage for certain procedures.

User requests are passed through the cloud infrastructure to KPT’s web server, which invokes HostBridge SOAP services written to access specific data types. HostBridge then invokes Inter-K to run required processes and either retrieve or input data from/to CA Datacom.
The response to the user is the reverse of the request: Inter-K returns requested data to HostBridge and HostBridge web services initiate the process of sending the response through the KPT web server and OLEAG cloud to the end user’s browser.

HostBridge web services are the engine that “feeds” the Onsurance application. Whether the requestor is an insured person using a personal computer or mobile device or a customer service clerk using a desktop client, the user interacts directly with the Inter-K application and Datacom database. Thanks to HostBridge mainframe integration, KPT customers can now access their insurance information, modify personal data such as addresses, email addresses, and phone numbers, request changes to coverage, and perform other self-service tasks previously unavailable. Employees have full access to their usual business processes.

**Outcome and Vision**

Both KPT and OLEAG are deriving many benefits from their eHealth initiative. Already, they are providing KPT customers and other individuals with government-mandated eHealth records five years ahead of the target date. Reproduced here is the emergency information screen of the VitaClic eHealth record of a fictional resident.
Today, KPT is the online insurer in Switzerland. As the only market player using the eHealth cloud, the company enjoys a distinct advantage as the first health insurer in a true national healthcare community. In a glutted market, this advantage is significant.

Using HostBridge to integrate its mainframe in the eHealth cloud, KPT is achieving notable technology benefits:

- Repurposing high-value CA Ideal applications and CA Datacom data as reusable, standards-based web services ready for future uses
- Extending the lifecycle and adding value by modernizing their high-performance mainframe

Figure 4. A fictional resident’s emergency information in a VitaClic eHealth record.
• Consolidating mainframe and user-facing systems – one database, one interface – for greater process efficiency

• Taking advantage of new technologies of the cloud infrastructure, including MOSS, Metastorm BPM workflow management, and the eHealth records archive

• Reducing TCO for user-facing systems by 75% as of 2017 by offloading portal development, maintenance, and support to OLEAG’s cloud

Business benefits are equally compelling:

• Improving customer service and customer-oriented processes for 350,000 users and many more potential users via client self-service, 24/7 access, and improved communication/interaction

• Simplifying training for customers, partners, and employees

• Achieving cost savings for many insurance operations, including paper-based communication and many employee-customer interactions

• Maintaining its position as a visionary in the insurance industry.

For KPT, first tenancy in the eHealth cloud opens the door to winning new business in Switzerland. By offering more information and better service through the web, KPT has positioned itself to become the insurer of choice for a growing population of residents.

For OLEAG, the Swiss eHealth cloud is a viable business opportunity. As more healthcare and insurance providers perceive its value and its strategic importance for business growth, the cloud will attract more corporate users until it gains the critical mass needed to become a nationwide hub. Based on its success in Switzerland, OLEAG plans to take its initiative to other countries, and lift healthcare and health insurance services to stratospheric new heights.