IT and Healthcare – Partnerships for Life

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NBU, Sofia

Who am I?

Me and my wife Leyla at Hilton Sofia

- Started working at 15 years as an employee in export/import;
- Official Graduate in system analysis through night school;
- Followed IT management course at Vlerick Business university Ghent;
- I have been working in IT for 20+ years as **DBA expert**;
- Since 1998 with my own company ACATS BVBA purely IT related;
- Several economic missions:
    - Principal economic mission to Russia in 2011.
    - To Ireland and Russia (healthcare) in 2013.
- In 2013 teamed up with Medex spot (shareholder) and Medvision as a partner;
- In 2014 founded Sofia and Moscow offices;
- The **motto** of our business alliance is - finding partners and make a chain of SMB's working together across the continents.

The companies in our business alliance:

- **ACATS BVBA** was founded 1998 in Antwerp, Belgium.

- The company is specialized in Oracle database solutions and Microsoft development.

- We have not only managed static database environments, but also very large databases in complex environments.

- Development has been done in Oracle Forms, Apex, Microsoft .Net and others.

- We also offer technical support for small and big projects.

- We have done several projects and delivered consultancy for large Belgian and European companies.

- This year we became Golden Partner of the Korean-American company Altibase (hybrid database - HDB).

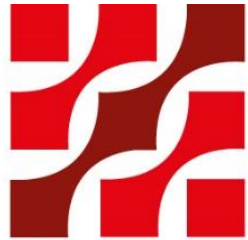# The companies in our business alliance:

- B.A.A.E.R. Bulgaria is founded 2014 and its office was established in Sofia.

- Our core business is Oracle DBA consultancy.

- Through our partnership's network we provide full house IT services: Data center, Middleware and Third party applications, where we act as Single Point Of Contact (SPOC) for all of them.

- For our EU clients we also deliver near shore development services and onsite consultancy .

- In July this year we became Golden Partner of Oracle Corporation and received the support of Oracle Bulgaria.

- We also provide innovative eHealth Solutions – like state-of-the-art TeleHealth (telemedicine), remote diagnostics, digital pathology and others.

B.A.A.E.R.

The companies in our business alliance:

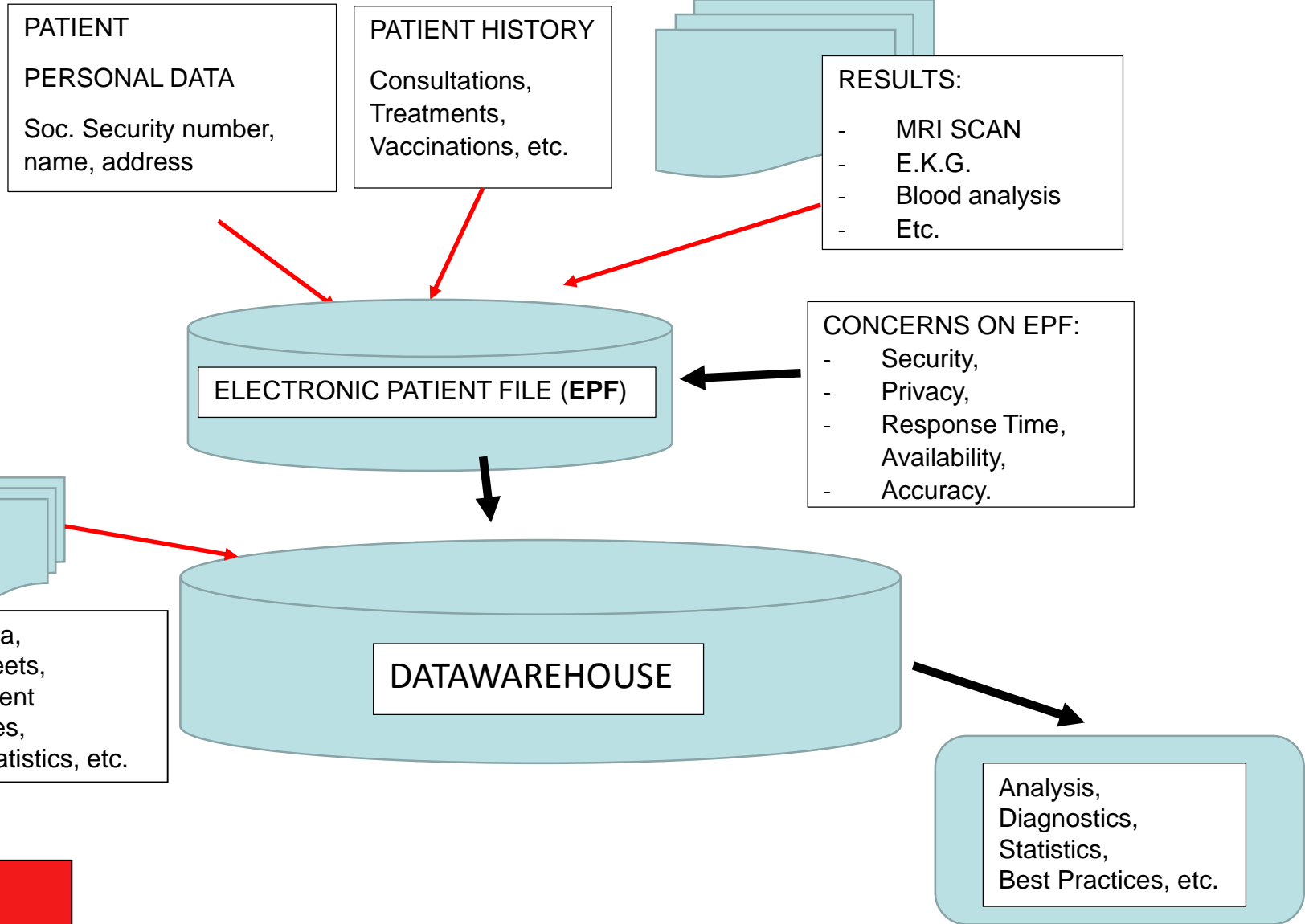Business Alliance
B.A.A.E.R. ACATS BVBA BAAER

BAAER

- BAAER Russia's office was established in 2014 in Moscow.

- To EU companies we provide consultancy on all the necessary procedures to place consultants in Russian Federation - EU ones with work permit or local.

- We also provide innovative eHealth Solutions for the Russian market: TeleHealth (telemedicine), remote diagnostics, digital pathology and others.

Examples of database usage in Healthcare:

PATIENT

PERSONAL DATA

Soc. Security number, name, address

PATIENT HISTORY

Consultations, Treatments, Vaccinations, etc.

RESULTS:
- MRI SCAN
- E.K.G.
- Blood analysis
- Etc.

ELECTRONIC PATIENT FILE (**EPF**)

CONCERNS ON EPF:
- Security,
- Privacy,
- Response Time, Availability,
- Accuracy.

Other data,
Excel sheets,
Government ordinances,
Health statistics, etc.

DATAWAREHOUSE

Analysis,
Diagnostics,
Statistics,
Best Practices, etc.

Examples of database usage in Healthcare:

- In Belgium several hospitals originating from Catholic hospitals have gathered all their data in one system.

- Belgian social security refunds patients based on data entered by doctors, hospitals and others in their social security portal (work in progress).

- Other countries and organizations are working on having a country wide patient database so diagnoses and consultations are all gathered in one national system (National Health Service – UK).

Security risks:

Collecting such big amount of private data raises concerns about its vulnerability.

Security risks:
- Internal and external risks;

- DDOS attacks;

- TCP/IP and password hijacking (rerouting data);

- Security level breaching;

- New risks come with new technologies like for example "bring your own device", etc.

Security risks:

SQL Injection

SQL is the data manipulation language. This kind of threat is the most serious:

- SQL injection is a technique where malicious users can inject SQL commands into an SQL statement, via web page input.

- Injected SQL commands can alter SQL statement and compromise the security of a web application.

- SQL injection is mostly known as an attack vector for websites, but can be used to attack any type of SQL database.

In a 2012 study, by international security company observed that the average web application received 4 attack campaigns per month, and big portals like Amazon, Ebay, etc. received twice as many attacks as other industries.

 - SQLI is considered one of the top 10 web application vulnerabilities of 2007 and 2010 by the Open Web Application Security Project. In 2013, SQLI was rated the number one attack on the OWASP top 10.
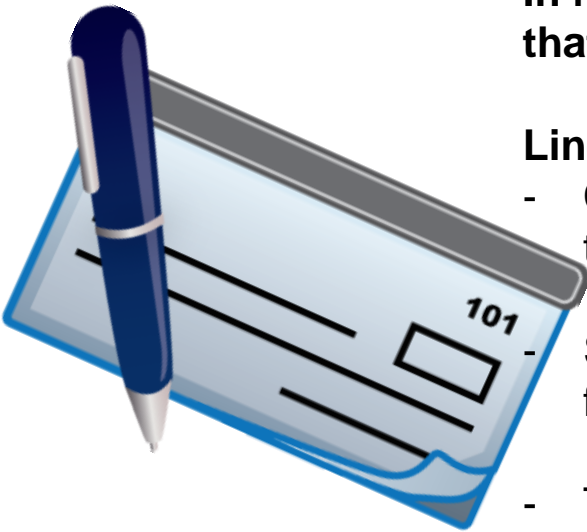
Example of Healthcare solutions:

ORACLE solutions

Healthcare providers and payers are confronting the hard reality that the current pace of cost escalation is not sustainable.

In response to this challenge, Oracle delivers powerful solutions that address critical areas in the healthcare industry as:

Line up Care Delivery from Reactive to Proactive

- Care provided in response to an acute patient health event is often the most expensive component of healthcare delivery.

- So to best control costs, providers should seek to reduce the need for acute care.

- The focus is to shift from reactive medical management to a more active disease-management approach.

- The **GOAL** - to proactively maintain population wellness and support the self-care of patients with chronic conditions.

Example of Healthcare solutions:

ORACLE solutions

Current records-based systems are not designed to proactively manage long-term patient relationships or help patients navigate complex healthcare environments.

Oracle Health Management Platform Solution supports care delivery within and beyond hospital walls.

It is highly scalable and based on commercial-off-the-shelf products that help you deliver patient-centric services.

The solution consists of **three** core components:

Example of Healthcare solutions:

ORACLE solutions

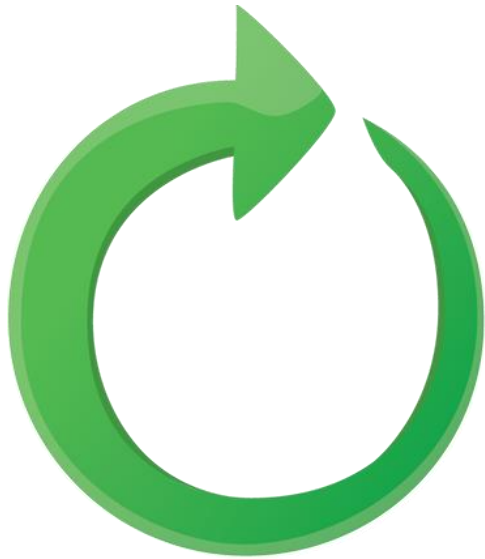**Oracle's Siebel Healthcare solutions**
Multichannel patient relationship management solutions that provide a 360-degree view of patient activities to help you deliver services, from health promotion through case management of long-term conditions.

Oracle Policy automation
A protocol generator for healthcare professionals that uses natural-language-based rules to ensure patients are accurately and consistently treated at every stage of care. It also facilitates easy treatment documentation.

Oracle WebCenter Portal
A comprehensive and contextually relevant content management system that gives healthcare consumers easy, multichannel access to personalized information. Oracle WebCenter Portal enables telehealth monitoring and device-to-device communications between patients and providers.

Example of Healthcare solutions:

ORACLE solutions

Managing Patients For Life

The Oracle Health Management Platform Solution helps you effectively engage with your patients throughout the entire healthcare process, so you can:

• Delay or prevent chronic diseases by encouraging healthier lifestyles;

• Identify the onset of conditions earlier, leading to timelier intervention and better outcomes;

• Ensure that patients receive appropriate treatment inside and outside clinical settings;

• Empower individuals to take greater control of their health needs through self-care;

• Improve adherence to medications and therapies to prevent recurrent acute episodes;

• Boost patient satisfaction and loyalty by actively improving quality of life;

• Significantly reduce the costs of delivering medical care and processing claims;

Accelerating Value-Based Healthcare

Technology is opening the door to a world of possibilities in **healthcare.**

Organizations are finding new ways to:
- **Enhance patient care and engagement**
- **Enable important progress in treatment plans**
- **Analyze big data to prescribe highly targeted therapies**

CURRENT TRENDS

- People are **living longer**
- The cost of care is **rising**
- **Chronic disease** is more prevalent

INSIGHT AND INNOVATION

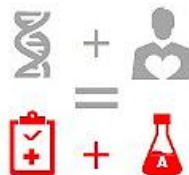Gathering actionable data to provide patient-centric care

Sophisticated tools are used to **gather** and **analyze** big data to **drive medical advancements**, uncover new opportunities for **disease prevention**, provide patient-centric **care**, and drive better outcomes at **lower costs**.

"The global size of big data in healthcare is increasing at between **1.2** and **2.4** exabytes a year"[1]
(1 exabyte = 250 million DVDs of data)

Oracle Enterprise Healthcare Analytics integrates data from electronic medical records, clinical departmental systems, patient accounting, ERP, research, and other source systems to help providers rapidly and cost effectively unlock value from their clinical and operational data.

PERSONALIZED MEDICINE

Leveraging the power of genomics in care delivery

"Between **2005** and **2010** industry investment in personalized medicine rose by **75%**"[2]

Modern **omics analysis** enables disease to be **demystified** and wellness to be **quantified** at the molecular level, yielding **care delivery** and health **maintenance protocols** that are tuned to each individual's **unique molecular profile**.

Oracle Health Sciences Translational Research Center enables researchers and clinicians to store, integrate, control, and analyze all the data from numerous internal and external sources for the complete biomarker lifecycle—from discovery through validation, and ultimately through to clinical care.

COLLABORATION
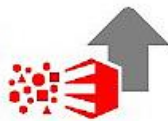
Enabling faster, safer therapies for patients

Collaboration between **providers, patients,** and **life sciences organizations** helps bridge the gap between **research** and **delivery of care** by more quickly **matching patients to clinical trials**—producing more **targeted therapies** and huge cost **savings**.

"New medicines generated **40%** of the gain in life expectancy over the past **25 years**"[3]

Oracle Health Sciences Network is a standards-based, secure, real-time network that allows organizations to share important de-identified patient, clinical, and genetic information that can accelerate clinical trial recruitment and the delivery of new therapies to market.

THE ORACLE HEALTH SCIENCES HEALTHCARE PLATFORM

For more information: https://www.oracle.com/industries/health-sciences/index.html
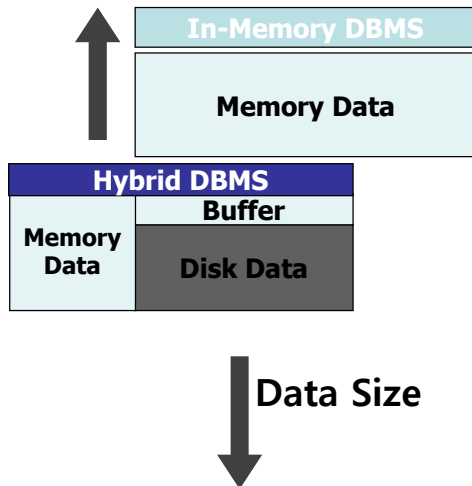
Example of Healthcare solutions:

Who are **ALTIBASE**

Company Description
 - Provider of in-memory data solutions for real-time access, analysis, and distribution of high volumes of data in mission-critical environments.
 - Founded 1999.
 - Privately Owned.
 - 200+ Employees.

What is Altibase HDB:

In-Memory DBMS

Memory Data

Hybrid DBMS

Buffer

Memory Data

Disk Data

Data Size

Hybrid Architecture

- Combines the benefits of in-memory storage and on-disk storage in a single relational database;

- Flexible Deployment Modes:
1. In-Memory Database Only;
2. On-Disk Database Only;
3. Hybrid Database =
In-Memory + On-Disk.

Support for different workloads

- Real-time access to time critical Hot data;
- Access to historical Cold data for analytics;
- Complex transactions through integrated data;
- Easy bidirectional data migration between Hot and Cold data zones.

Example of Healthcare solutions:

How does **Big Data + ALTIBASE HDB** bring value to **Healthcare**?

Enhanced Living
- Early disease detection with unified access to patient history;
- Data backed Adherence Software Packages.

Precise & Reliable Patient Treatment
- Coordinated efforts across providers to minimize errors;
- Alignment of information throughout treatment process.

Tailored Service
- Patients are appropriately directed to providers based on requirements;
- Reduced emergency room re-admission due to correct treatment.

Big Data in Healthcare brings value to the table.

Overall Value & Innovation
- Effective billing enhancing customer service while reducing errors;
- Improved trial operations with accelerated R&D.

Example of Healthcare solutions:

How does **Big Data + ALTIBASE HDB** bring value to **Healthcare**?

Potential Application Case Study:
Early Disease Detection

Enhanced Living

"Big data can facilitate actions on the modifiable risk factors that contribute to a large fraction of the chronic disease burden, such as physical activity, diet, tobacco use, and exposure to pollution. The number of mobile health application users is growing rapidly and is expected to reach 247 million users by the end of 2012." [1]

Solution

ALTIBASE HDB can be implemented in conjunction with Electronic Health Record (EHR) platforms to capture abnormal data immediately and continuously. Provider personnel with assistance of medical staff could identify and remedy defects at the point and time of occurrence.

Olivier Humblet,[1,2]* Robert A. Hiatt,[3] and Nancy E. Adler[1]
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[3]Department of Epidemiology and Biostatistics, University of California–San Francisco, San Francisco, California.

Example of Healthcare solutions:

How does **Big Data** + **ALTIBASE HDB** bring value to **Healthcare**?

Potential Application Case Study:

Precise & Reliable Patient Treatment with Tailored Service

- A provider needs a solution to collect and analyze its treatment and patient data in real time for quick and accurate decisions.

- The firm wants to establish a system that would retrieve and analyze data from its EHR system.

- Currently it takes 8 hours to collect treatment and patient data from the EHR.
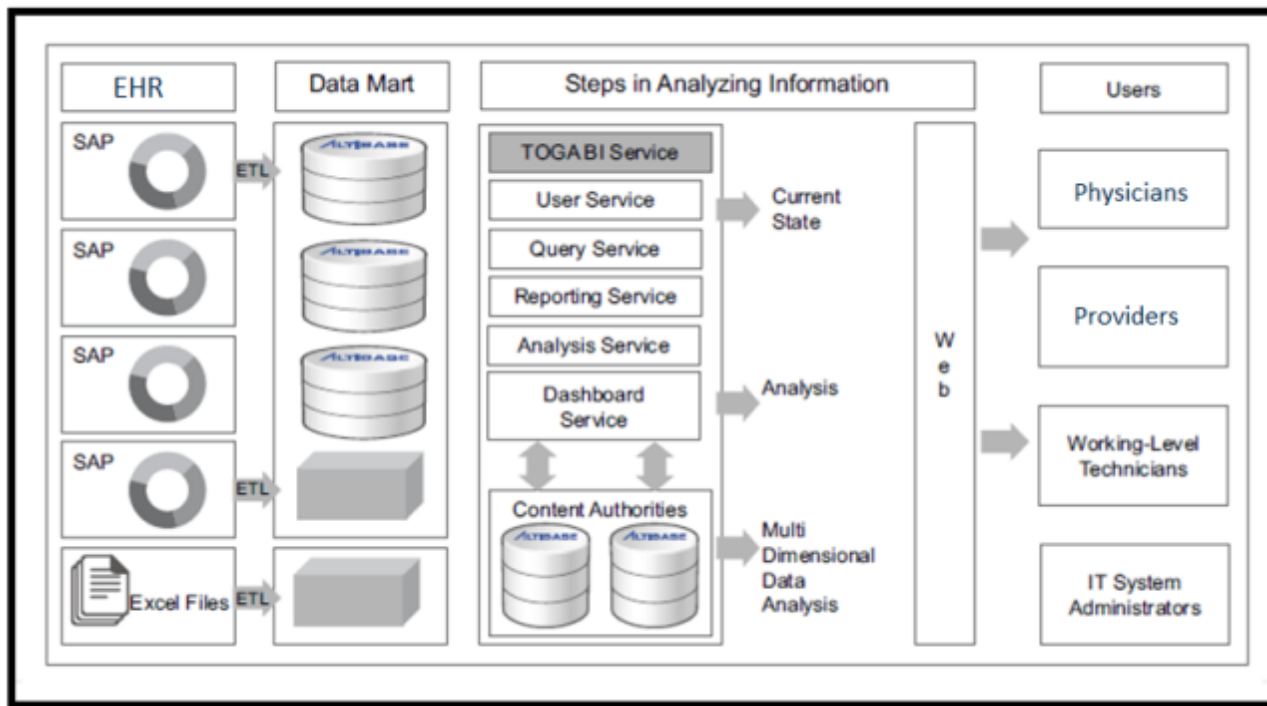
Solution

- The provider could employ ALTIBASE HDB that performs fast and possesses analytic features. ALTIBASE HDB was a perfect fit for the company's requirements.

- ALTIBASE HDB's In-Memory database could collect and analyze data from the E.H.R. system five times faster than Oracle's databases. It now takes only two hours for ALTIBASE HDB to collect and analyze patient history data from the provider's EHR system.

- ALTIBASE HDB does not have any problem interoperating with the current existing infrastructure.

Example of Healthcare solutions:

How does **Big Data** + **ALTIBASE HDB** bring value to **Healthcare**?

Potential Application Case Study:

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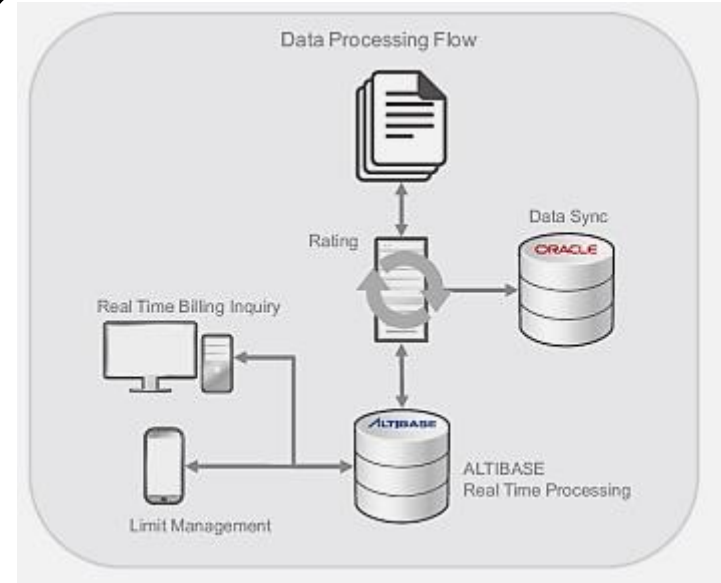
Example of Healthcare solutions:

How does **Big Data** + **ALTIBASE HDB** bring value to **Healthcare**?

Potential Application Case Study: Effective billing

Overall Value & Innovation

A billing system does not perform as designed and is plagued with operational deficiencies. The system suffers from:

- Inability to effectively integrate billing for different services and policies the company is unable to simultaneously execute its essential integrated billing at the customer access level.

- Inability for customers to accurately check billing balances: because of stale data, customers did not receive correct balance information, which prevented reliable payment execution.

- Inability to provide stable service: high traffic volume and resulting bottlenecks caused widespread inaccessibility to billing information for many customers.

Data Processing Flow

Rating — Data Sync — ORACLE

Real Time Billing Inquiry

Limit Management — ALTIBASE Real Time Processing

Solution

The company can implement ALTIBASE HDB into its next generation integrated billing solutions in. The multi-level performance increase allows for further scaling and development of even more complex products and services.

Example of Healthcare solutions:
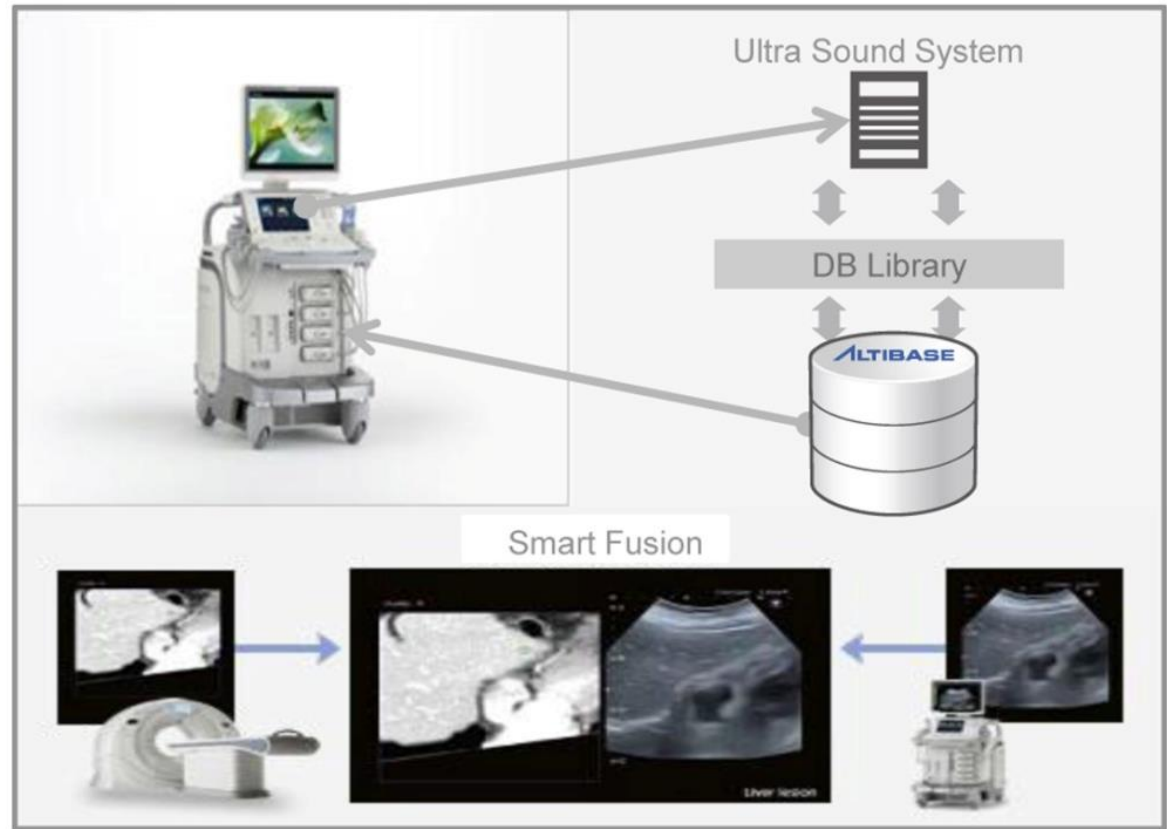
ALTIBASE HDB in Healthcare

A Global Leader in Medical Equipment Manufacturing (Company Confidential)

Use Case:

After months of rigorous testing among ten DBMS leaders, the company chose Altibase's In-Memory and on-disk database, solving all of its needs in a single engine.

Example of Healthcare solutions:

The case with: **MRI/CT – A Global Medical Equipment Manufacturer**

The company needed a solution to maintain its competitive advantage in medical imaging equipment.

- Increasing data loads, coupled with the added pressure of skillful planning of equipment upgrades, required a feature-rich DBMS solution.

- Advances in medical equipment of other competing industry giants meant stiffer competition. The company had to produce better equipment with lower TCO.

- Required an on-disk DBMS that would allow seamless access to historical data with the ability to store a plethora of information.

Example of Healthcare solutions:

The case with: **MRI/CT – A Global Medical Equipment Manufacturer**

ALTIBASE HDB allowed the company to benefit from innovative, cutting-edge software, enhancing planning strategies and dominance.

- The company received the coveted "Competitive Strategy Leadership of the Year" award from a renowned global market research firm.

- The company's new equipment, endowed with a gain **of over 200%** processing speed, further supports its growth curve.

We hope we have been helpful.

Thank you.

QUESTIONS?
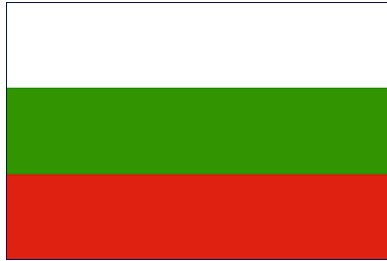
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