

netcetera

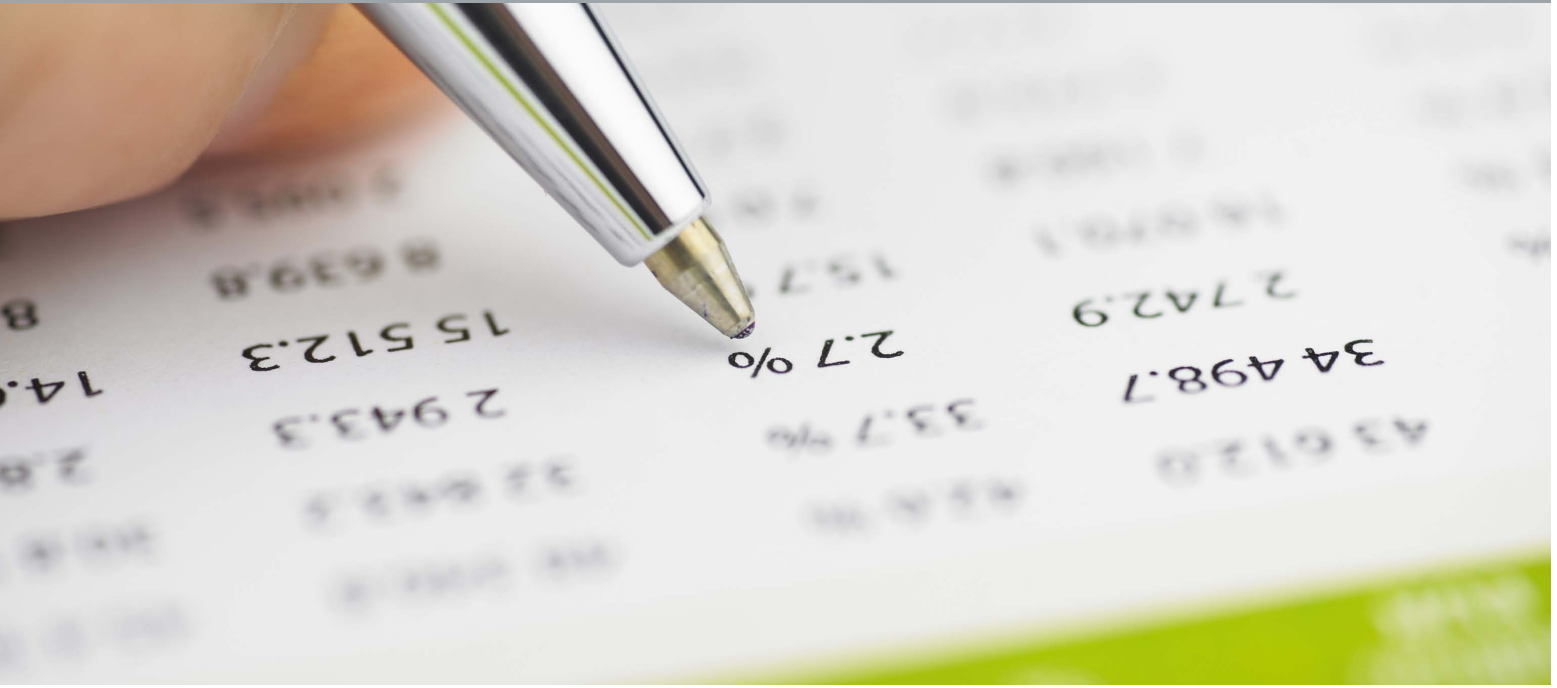
Quality
Software
Engineering

KEH

Knowledge Engine for Health



The Challenge



Value added Data Analysis

Health authorities all over the world are facing rising healthcare costs. It is their task to meet the growing demands of the population, without losing sight of the budget. Compiling the relevant information and conducting an in-depth analysis of the data set is the key to meeting this challenge.

The Health Authority – Abu Dhabi (HAAD) is responsible for the development and regulation of the Emirate's healthcare system. It ensures the quality of healthcare for its community by monitoring the health status of its residents.

HAAD also shapes the regulatory framework for healthcare providers by inspecting, enforcing standards, as well as encouraging the adoption of internationally accepted best practices and performance targets.

Furthermore, HAAD encourages programs which increase an awareness and adoption of healthy living standards among its population.

HAAD's Vision

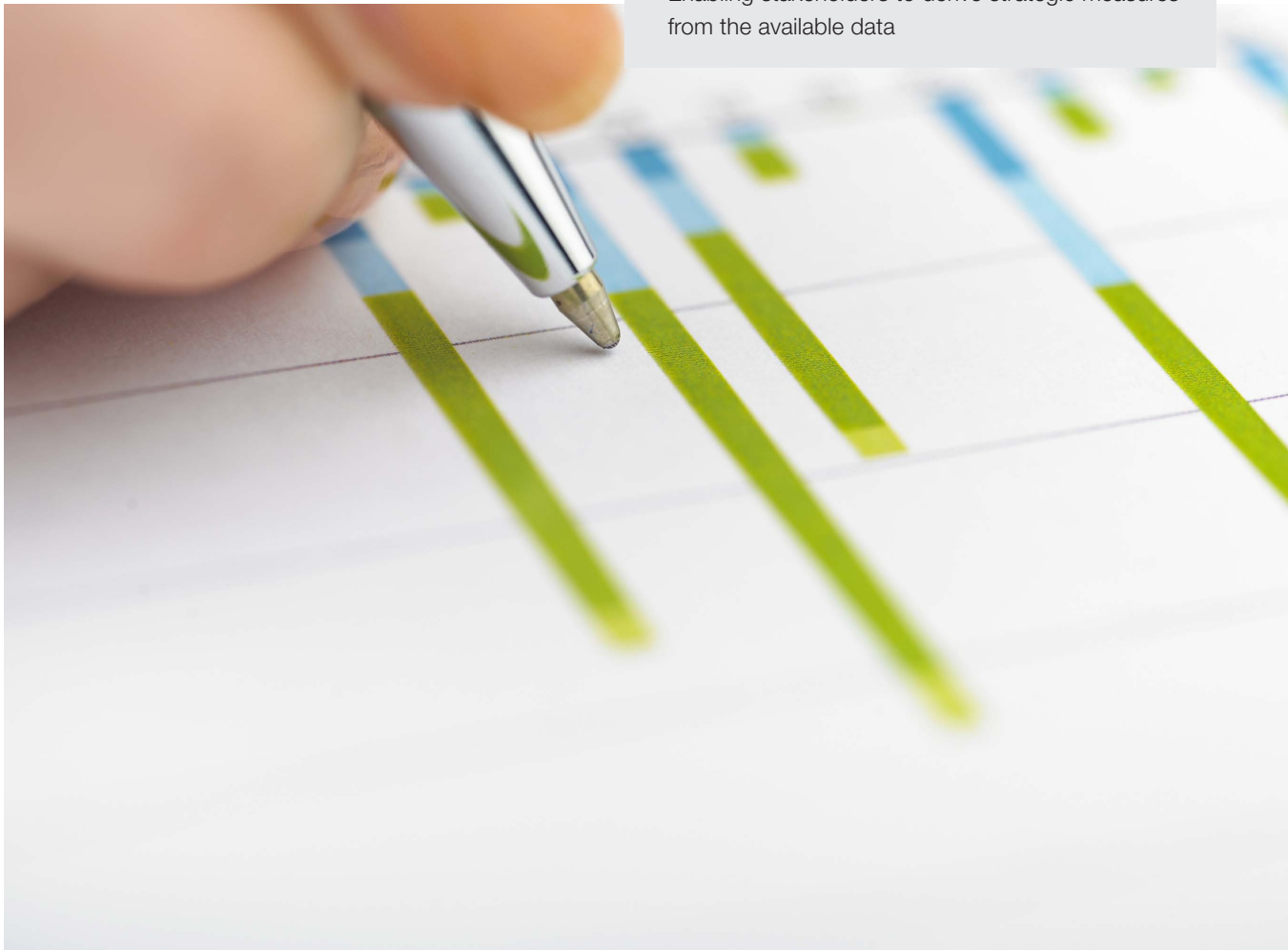
The health system in Abu Dhabi provides access to high-quality healthcare services for all residents. In order to do so, it relies on data. This data needs to be collected from all the institutions providing healthcare services and health

insurance within Abu Dhabi.

Compiling this information must not generate an additional burden for the healthcare industry. Instead, the data should be a by-product of routine operations.

HAAD's Challenges

- Ensuring high-quality data through centralized information management
- Providing controlled access for all stake-holders, i.e. authorities, insurance companies and service providers such as hospitals or convalescence centres
- Creating easy processes for the data collection
- Enabling stakeholders to derive strategic measures from the available data



The Solution



KEH - Knowledge Engine for Health

- KEH is a platform built for the analysis of health data within the Emirate of Abu Dhabi
- The platform serves as a repository for health-related information and can be used for regulating, policy making, monitoring, statistical analysis etc.
- HAAD requires healthcare providers and insurance companies to supply the relevant information to feed KEH
- The data collection process is based on defined standards and procedures to ensure data of high quality and accuracy
- Based on the collected data, stakeholders are able to carry out a wide range of analytical operations to derive valuable key information

KEH is an open source ⁽¹⁾ analytical solution that uses data from electronic claims and creates an analytical database suited for processing statistical and analytical requests.

The whole system, from data collection to its analysis, consists of three main layers. The system's core is the Business Intelligence – KEH, a data warehouse with OLAP cubes for data analysis. The second layer is the system's Service Oriented Architecture layer (Post Office), which provides web services for the automated exchange of transactions and information. The third and final layer is the Web Portal. It serves as an application for the exchange of information, as well as a platform for communication and discussions. KEH is operational and has been used by HAAD since 2010. It has since been enhanced with new types of analyses as requested by HAAD.

What Data is stored by KEH

KEH collects encounter claims. The data set consists of four main parts: administrative information, diagnosis, activity and observation. The administrative elements describe patients, claims including financial data and encounters. The diagnosis elements outline the patients' medical conditions. The activity elements, in a third step, reports on consultations, diagnostics and treatment. Finally, the observation elements detail specific observations as a result of medical activities, e.g. a lab test.

Answers given by KEH

KEH provides answers based on population, clinical, financial and governance analysis.

- How are the cases of blood cancer distributed geographically across Abu Dhabi?
- What is the average time a patient stays in hospital due to a broken leg?
- What kind of medical treatment is most effective in cases of diarrhoea – and do the results differ depending on the patient's age?
- How did the number of claims related to asthma develop in 2010 in Abu Dhabi City?
- How many patients with heart attacks were treated by a specific hospital in March 2011?

Your Advantages with KEH

- KEH helps you better analyze population, clinical, financial and compliance data
- KEH allows you to study correlations between insurance or health service products and health data and, consequently, create products that are more profitable
- KEH is flexible and robust: Start with a high-level breakdown and then drill down to line items. You can either use predefined reports or create new ones to gain new insight.
- KEH enables you to optimize the composition of your product basket
- KEH facilitates the institution of prevention measures
- Ease of use: KEH uses the familiar and powerful Microsoft® Excel® 2010 to create and edit reports
- KEH requires modest investments due to the availability of an open source license ⁽¹⁾

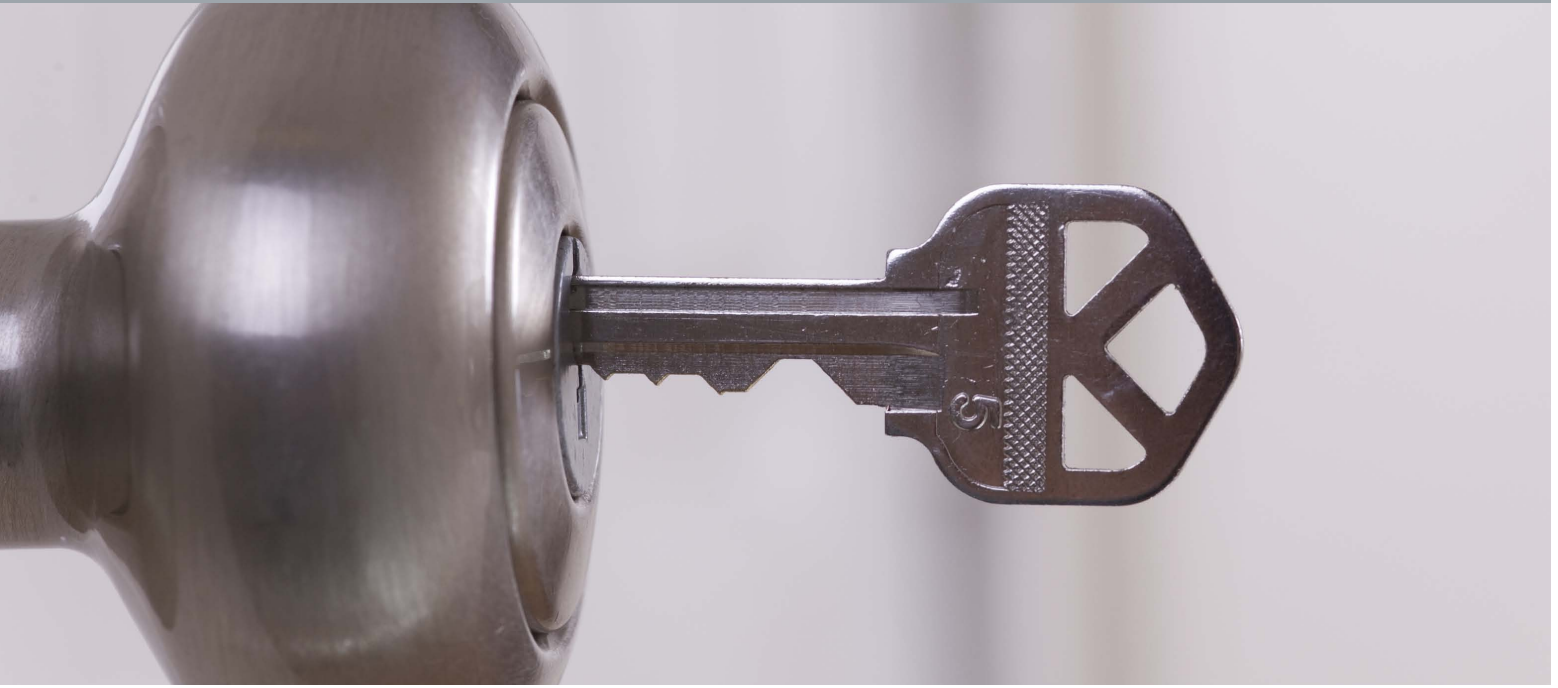
Technology used

- KEH is developed on top of the Microsoft® .NET technology stack
- It uses Microsoft® SQL Server® 2008 as its database server
- The ETL process (extract, transform and load) is handled by SQL Server 2008 Integration Services
- The data warehouse with the analytical data cubes is maintained with SQL Server 2008 Analysis Services
- KEH uses Multidimensional Expressions (MDX) as query language for the online analytical processing (OLAP) databases. The communication is generated automatically by a Microsoft® Excel® 2010 plug-in.
- The user interaction (UI) with the data cube operates on Excel 2010



⁽¹⁾ This does not apply to Microsoft products

Our Offer



Value Added KEH Services by Netcetera

- We deploy and maintain KEH in your enterprise
- We instruct end-users in the use of KEH
- We consult on the possibilities that emerge when using KEH
- We provide analytical solutions that fit your specific needs

Contracted by HAAD we developed KEH in 2010. Since August 2010 we have been maintaining the platform and have thus been building our in-depth knowhow pertaining to KEH. In combination with our extended expertise in the areas of business intelligence in general and specifically the health industry we are able to provide all-in-one services. We offer you a wide range of services in business and technical support.

Business Support

- Business analysis and consultation
- Preparing standard and tailor-made reports
- Training the end-users of KEH
- Consulting in governance and standards regulation

Technical Support

- Deploying, maintaining and supporting KEH in your enterprise
- Tailor-made extensions and modifications of KEH
- Enhancing KEH with your other data source

We guide and advise you efficiently and competently on the introduction of KEH in your company.

«KEH serves as a powerful information system to monitor, analyse and regulate financial and clinical activity in the health care sector, enabling the Health Authority to leverage its distinctive information assets effectively.

The smart yet straightforward data architecture effectively creates a shared language within the Health Authority and simplifies cross-disciplinary sharing of insights and analysis — whether at a strategic level or drilling down to individual patient visits.

Netcetera's agile deployment of deep expertise has been critical in delivering this demanding solution during a period of rapid health system reform. The design and high quality of the software is such that we now license KEH to payers and providers under an open source agreement, which is proving to be of significant value for our stakeholders. We value Netcetera's willingness to partner with us and challenge us, while adapting very flexibly to our specific needs and reliably delivering solutions that do not compromise on quality.»

Dr. Philipp Vetter
Director Strategy — Health Authority Abu Dhabi

Your Benefits with Netcetera's KEH Services

- Netcetera's extensive and profound KEH knowledge helps you to smoothly roll out KEH in your enterprise
- Netcetera provides training sessions for all aspects of business intelligence and data analysis
- All-in-one services: Deployment & maintenance, training, business analysis & consulting, support

«The KEH analysis solution Netcetera deployed for us, allowed our business to tap into data that was difficult to get key insights.

It helps in identifying areas for improvement, hence enabling us to take better and sound business decisions. Netcetera is a very reliable partner who delivered high quality work - on time.»

Peter Bauer
Chief Services Officer — Daman

«We are pleased that KEH was developed using Microsoft products. Netcetera's profound expertise matched HAAD's visions to have a highly sophisticated data warehouse based on Microsoft technology.»

Mohammed Saleh
Director of Industry and Market Development Healthcare — Microsoft

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