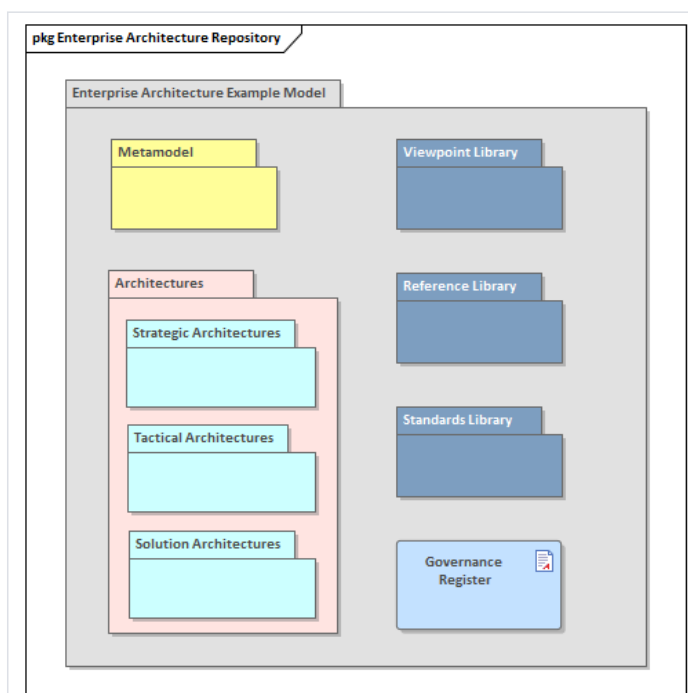


SparxSystems CE: Nictiz developed a reference architecture for hospitals with Enterprise Architect

Nictiz is the Dutch competence centre for e-health. Based on Enterprise Architect, the hospital reference architecture ZiRA was created there, which is attracting great interest not only in the Netherlands. The framework is used to facilitate the inventory, development and innovation of hospital IT. In a practical handbook, particularly interesting examples are presented to support the dissemination of the reference architecture.



Enterprise Architecture Repository: Regardless of the architecture framework chosen, Enterprise Architect is a fully-fledged architecture repository that can store and manage all architecture content.

(All graphics: ZiRA Practice book)

ZiRA (Ziekenhuis Reference Architecture) was born out of the realisation that Dutch hospitals were dealing with similar problems, but there was no framework for cooperation in the field of IT. So ten IT specialists from different hospitals in the Netherlands joined forces and developed ZiRA using Enterprise Architect based on information needs and best practice examples. ZiRA is part of the iZiekenhuis community, in which hospitals share their knowledge and experiences in terms of information provision. ZiRA also provides a digital platform for sharing knowledge, information and best practices. In addition, workshops with and for information architects are organised on a regular basis.

ZIRA HANDBOOK WITH PRACTICAL EXAMPLES

The ZiRA reference architecture is the replacement for the Domain Reference Model for Hospitals (RDZ), which has been used for many years to develop various applications in Dutch hospitals. A separate practice manual explains the general principles of ZiRA and gives practical examples. It states that ZiRA provides a reference framework and helps in the development of the organisation and information provision in hospitals. The reference architecture is intended to support daily work, but does not claim to be complete or absolutely correct. The initiators of ZiRA invite all interested parties to use ZiRA to their advantage and to adapt it to their own purposes and contexts. By means of concrete examples, the practitioner's handbook is intended to encourage people to join the growing ZiRA community and to have their work made easier by modelling. ZiRA addresses a large group of people working in hospitals: Enterprise and information architects, information managers, solution architects, functional and technical designers, functional administrators, policy officers, consultants and others involved in organisational and process change. The examples in the handbook show very well how diverse the uses of the reference architecture are and how they can contribute to the benefit of hospitals.



Hans Bartmann, CEO of SparxSystems
Central Europe



The current Corona pandemic in particular shows us how important modern and crisis-proof hospital management is. We therefore congratulate nictiz on the creation of the hospital reference architecture ZiRA, which has already been widely used in the Netherlands. At the same time, we are of course pleased that ZiRA was developed with the help of Enterprise Architect. This clearly shows that modelling has also found its way into the healthcare sector and supports the people working there, which are so important for all of us, in the best possible way.

SOME APPLICATIONS OF ZIRA

- Mapping the value proposition of hospital, project and service
- Reference list for architectural principles
- Determining distinctive and non-distinctive core competencies
- Provide insight and overview of costs, benefits, risks and bottlenecks in the business function model
- Basis for capacity and volume management
- Basis for process design
- CIA classification
- Application mapping for mergers
- Person definition
- Development of enterprise architecture
- Information modeling
- Tool for future description of application architecture

KAROLINSKA INSTITUTE DEVELOPED A CAPABILITY MODEL

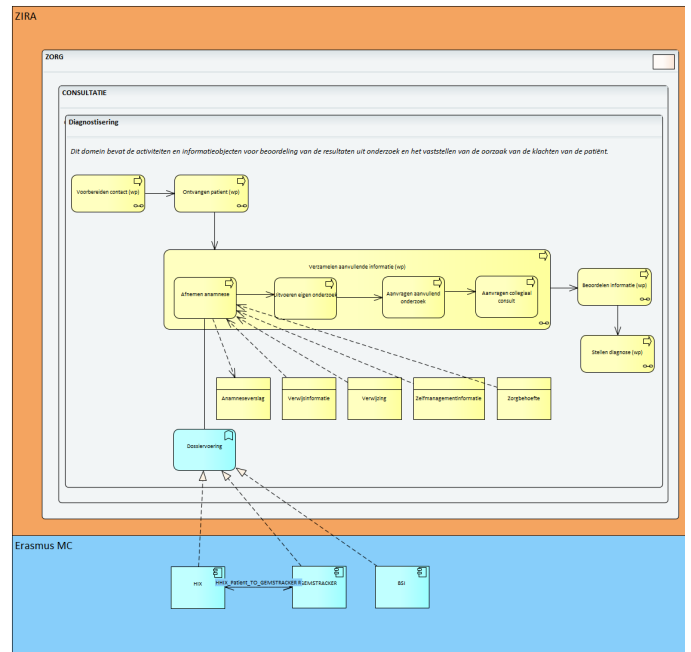
Shortly after the ZiRA Reference Model was published, the world-famous Karolinska Institute in Sweden became interested in it. They used the ZiRA business function model to derive a capability model. This describes what Stockholm County needs to fulfil its mission of support and continuity of health care in the future. The capability model has already been used in specific tenders. The operational vision in the model describes what an organisation must be capable of according to the Health and Medical Services Act in order to fulfil its mission. Incidentally, the Karolinska Institute also decides on the award of the Nobel Prize in Medicine every year.

ERASMUS MC: ENTERPRISE ARCHITECTURE REPOSITORY

As in many companies, models are often used in hospitals to map the existing IT. This gives an overview of hardware and software and their interdependencies, which helps in replacing obsolete things as well as in further developing the system. The Erasmus University Medical Center in Rotterdam is considered one of the most important university hospitals in Europe and has used ZiRA as the basis for its own Enterprise Architecture Repository (EAR). An EAR is ideally suited to describe the ACTUAL and TARGET states of IT mentioned above. Regardless of the architecture framework chosen, Enterprise Architect is a fully-fledged EAR that can store and manage all architecture content. In Erasmus MC, they added their own organisation-specific concepts: organisations, subsidiaries, themes, pillars, departments, etc. The applications were read from the CMDb (Configuration Management Database) and linked to the application functions. In addition, the own architecture principles and the data centres, servers, networks and nodes from the infrastructure layer were added. This EAR

serves as a starting point and basis in various projects and is supplemented in each case by project-dependent elements and views.

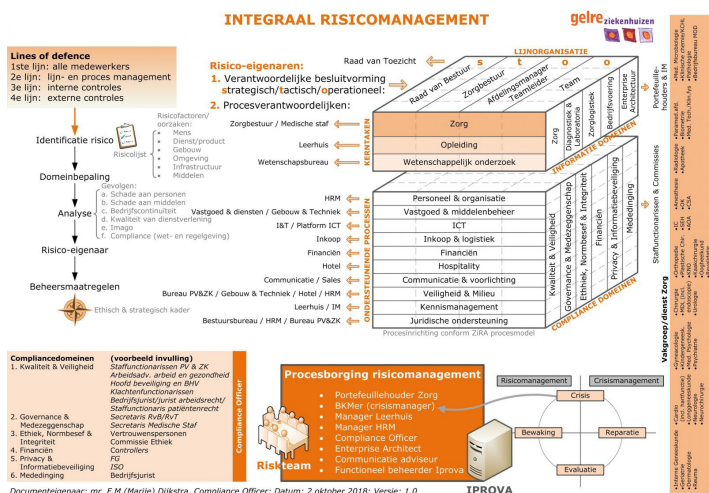
In the diagram, this process is illustrated using the example of the business activity 'Taking anamnesis'. Erasmus MC thus used the meta-model, structure and concepts of ZiRA as a basis for setting up the repository, but enriched it with its own organisation-specific elements.



Erasmus MC used the meta-model, structure and concepts of ZiRA as a basis for setting up the repository, but enriched it with its own organisation-specific elements (e.g. anamnesis collection).

AVL USES ZIRA FOR CARE AND CAPACITY MANAGEMENT

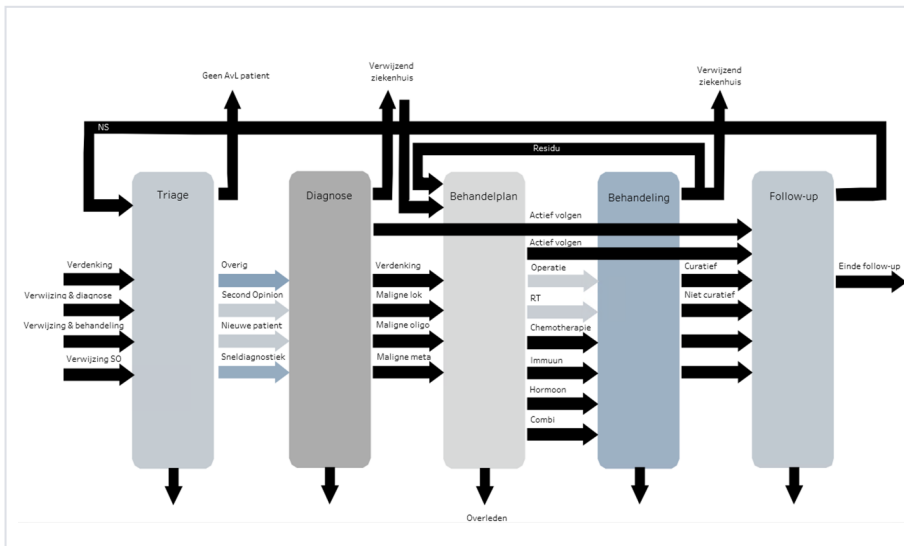
The Antoni van Leeuwenhoek (AVL) Hospital in Amsterdam is a leader in cancer research and treatment. It is named after the Dutch naturalist of the same name (1632 - 1723) and most important microscopist of the 17th and early 18th century, often referred to as the „father of bacteriology“. With the help of the consulting company Logiqol, AVL launched the „Integrated Capacity Management“ programme in 2017 to optimise logistics processes in the healthcare sector and is thus able to better manage throughput and access times. With ZiRA, it was possible to provide the required control information. Thus, on the basis of the ZiRA process reference model, the workflow for the largest patient group was described down to the level of work processes. It was found that the ZiRA model was well understood and at the same time well suited as a uniform language for the other tumour groups. Therefore, a printed manual of the ZiRA work processes was created, which is available to all those involved in the process. With the help of the process description, points in time and patient flows were identified, on the basis of which the care process is presented in five phases in a dashboard. This gives the tumour working group an up-to-date overview of the scope of activities in their patient flow in a given week.



The Gelre hospitals used the ZiRA process model to gain insight into their own risk management.

GELRE: BUSINESS INFORMATION AND RISK MANAGEMENT

At Gelre Hospitals in the Netherlands, the ZiRA information model was used to develop a business information model. For example, the distinction between activity and outcome information objects proposed in ZiRA was found to be very useful and was adopted. The business model should provide an overview of which business information objects exist in the primary care process and how they relate to each other. In a functional and technical design, it is now easy to determine whether information objects already exist and can be reused or whether a new object needs to be created. A data architect can also easily validate the design and communicate about changes in the design. The next step is to link the information objects to the business activities to gain insight into which information is used in which business activity. In parallel, the ZiRA process model was used to gain insight into the company's own risk management. For each process area, it was determined who is responsible for identifying, assessing and managing risks. Since no suitable reference model could be found for comprehensive risk management, Gelre Clinics began to develop its own model, using the ZiRA process model as a starting point. It was found that the existing processes almost corresponded to the ZiRA model, as it provides a good overview of the generic processes in the hospital.



At the Antoni van Leeuwenhoek (AVL) Hospital, a printed manual of the ZIRA work processes was created. With the help of the process description, points in time and patient flows were identified, based on which the care process is presented in five phases in a dashboard.

About Nictiz

Nictiz is the Dutch competence centre for electronic exchange of health and care information. Nictiz develops and manages standards that enable electronic information exchange. We ensure that healthcare information can be recorded and exchanged unambiguously. We also collect and share knowledge on electronic information exchange in healthcare, focussing not only on the Netherlands, but on international developments as well.

www.nictiz.nl

About SparxSystems Central Europe

Sparx Systems Pty Ltd (Australia) was founded in 1996 and is the manufacturer of Enterprise Architect, a globally successful UML modeling platform. Enterprise Architect is used to design and build software systems, to model business processes and to model any process or system. Enterprise Architect in its current version 15 is valued by over 850,000 users for its performance at an unbeatable price. Enterprise Architect is an easy-to-understand, team-oriented modeling environment that supports companies in the analysis, design and creation of precisely traceable and documented systems. With the help of this tool, companies are enabled to centrally collect and display the often very distributed knowledge of teams and departments.

In order to offer the best service around Enterprise Architect to the numerous customers in their language and time zone, SparxSystems Software Central Europe was created in 2004, which supports the entire German-speaking region in the acquisition of licenses as well as through training and consulting.

www.sparxsystems.eu