

MemoBase

Relationship Management Technology

White Paper

*"The efficiency of hardware doubles every 6 to 9 months.
So far, the same has not been the case with software ... "*



By Søren Sommer and Mogens Esbech

Table of contents:

- 1 – Electronic Relationship Management (eRM)
- 2 – In need of a new method for Systems Integration
- 3 – In need of a 10 times better performance within software
- 4 – eRM suppliers
 - 4.1 - System Integrators
 - 4.2 – Start up companies
 - 4.3 - Application Service Providers
 - 4.4 - Software companies
- 5 – In need of a generic data model
- 6 – In need of business logic stored as data
- 7 – The complete architecture for data and business logic
- 8 – Examples
- 9 – Contact information

1 – Electronic Relationship Management (eRM)

In a historical perspective, software has always generated fragmented solutions.

The reason for this is, that within a company software is ordered by the different department managers. Managers from economy, sales and marketing, production and human resources.

The compliance of the demand from the various parts of the organization, has led to such systems as ERP (Enterprise Resource Planning), CRM (Customer Relationship Management), SCM (Supply Chain Management), e-Business, e-Commerce, Office etc.

Each of these systems has its own data base, which consists of exactly what this particular area of competence needs. The finance division do not have customers, but debtors – and debtors have unpaid invoices. It is the other way around in the sales and marketing divisions, where customers generate turnovers, provisions and market shares.

The major part of systems in a company has been purchased or built for internal use only.

Mergers, buying and selling of companies in large corporations, have complicated the IT environment in many companies. Normally, the idea is to eliminate the poorest of the systems and keep the best in order to simplify operations and maintenance. However, it has proven to be more difficult than it would appear. The difference of culture between two merging companies is reflected in their systems, and often companies have legal ties to customers or suppliers, which prevent them from choosing “the right” technical solution. Other preventing factors might be differences in hardware, operating systems, databases and programming language.

In recent years software is being reformulated to be equal to Relationship Management. We realize that a company must share its information and functions with the customers, partners and suppliers. We realize that the borderline between the company and its surroundings have changed when it comes to doing business.

We realize that the company’s surroundings are willing to perform tasks that used to be taken care of by the employees. We realize that it is not only a question of willingness from the surroundings – it is often a demand, which will have a negative influence on the company’s competitiveness, if not met.

The positive side of this development is, that the surroundings experience a higher level of satisfaction - and thereby loyalty. The company can also save costs by reorganizing the tasks. Also, it is much easier to cross sell to a customer because of the close electronic dialogue.

The negative side of this development is the need for investments in sufficient technology. It is not a low cost operation to integrate several fragmented systems. Like it is expensive to replace legacy systems with more modern standard solutions or framework systems. It is well known, that for example a SAP implementation is quite costly and requires a reorganization of the company’s business routines and, consequently, a change of the company’s culture.

Another negative side is the speed of changes in modern business. The speed is much higher than just 20 years ago. IT has to cope with these changes – but cannot. The reason is that the process of developing and implementing software has not been able to follow the general development in IT innovation.

The development of hardware is very fast. Every 6-9 months the hardware capacity is doubled at proportionally unchanged prices. However, the speed of development and implementation of software have not changed significantly over the past 10 years.

Why is that?

Simply because we use obsolete methods when we develop and implement software. First we describe what we want to make in detail, - then we program, - then we test, - then we correct the errors we didn't find during the test, but was exposed in real life in a production environment.

And in the meantime, the world has changed yet again, leaving us far behind the demands from ourselves and our surroundings.

What would be the alternative?

The alternative is called **Structured Business Rules Objects Modeling**. This method eliminates both the specification and programming phases. In stead all changes in the company's business logic are translated into data, and stored in a database. The result is IT functionality, ready for testing.

The MemoBase method resembles "Iterative Design" and "Extreme Programming" - but without the disadvantages known from these methods. The starting point is eRM, producing a single view of customers, partners and employees. This is the foundation for modeling object oriented business logic.

The translation of business logic to data is most comparable to stenography (short hand). Translating business logic to data is much faster than writing business logic in a specification - i.e. words in a document. A lot of time is saved here.

The method has another important advantage, which is related to man's natural limits. We cannot foresee all implications of our decisions from the desk. We have to test the decisions in real life - or at least in a test environment.

This is how we find our mistakes, enabling us to make the corrections. This process must have a very short turn around time, because it is NOW everything is clear inside our heads. In

just a few days, man's "curve of oblivion" will have cut quite a lot of what was clear knowledge.

The MemoBase method is 10 times as fast as conventional development and implementation. During this tenth of the time, the quality obtained is higher because the method allows the try-and-error process.

2 - In need of a new method for Systems Integration

SAP and Oracle, for example, follow a "vertical" product development strategy. They develop with the goal of being able to deliver all necessary IT functions to a company - i.e. one integrated solution.

Siebel and i2, for example, follow a "horizontal" product development strategy. Siebel wants to be the best in Customer Relationship Management (CRM), while i2 wants to be the best in Supply Chain Management (SCM) - i.e. two fragmented solutions without any enclosed integration.

System integrators such as Cap Gemini Ernst & Young and Accenture can carry out both a SAP implementation as well as a Siebel or/and i2 implementation, including integrating to any given ERP system.

A company, who wants all or parts of her system renewed, will do well, because of the large supply of standard systems, - and the large supply of system integrators, who can create coherence between the many standard systems.

However, the result of any given renewal project is, that the company is in danger of - so to speak - "selling its soul",

Any company has a "soul" which is related to the originality of its products/services and/or its way to do business. This "soul" is the foundation of the company and is responsible for the company's emergence and is the background for the company's future existence. The "soul" is what separates one company from all other companies in the same line of business.

A company's "soul" is reflected in the company's data and the business rules connected to the data.

When a company buys a standard system, it really buys a collection of business rules, executable on a specific IT platform.

Things are okay if the company's existing business rules fit within the frames of the standard system. Then the only problem is whether new business ideas – and thereby new business rules – also fit within the frames of the standard system. If they do, things are still okay.

But in real life things are not going that smoothly.

A standard system must cover a number of industries and a number of countries. The language and cultural differences in the same line of business across a number of borders alone make the standard system swell in size. If the system also covers two or more lines of businesses, the system is even more comprehensive.

If the system also must cover all corners of the company's organization, because it is one integrated system, we are close to the limit of what is possible. And if the system also must be deep enough to ensure, that unique business ideas, which we will first have in a year or two, is supported by the standard system, we are definitely beyond the limit of what is possible.

It is neither incompetence among developers, nor among implementers that causes the difficulties of implementing standard systems. For most cases, the reason is that the systems are very large and extremely complex, combined with the fact that most companies use only 5-10 pct. of the system's functionality. Those 5-10 pct. functionality is, however, spread across 80 pct. of the system's code.

Business Rules cannot function without data. So when a company purchases a standard system, the data is converted to fit the database that comes with the system and to fit the database design required by the standard business

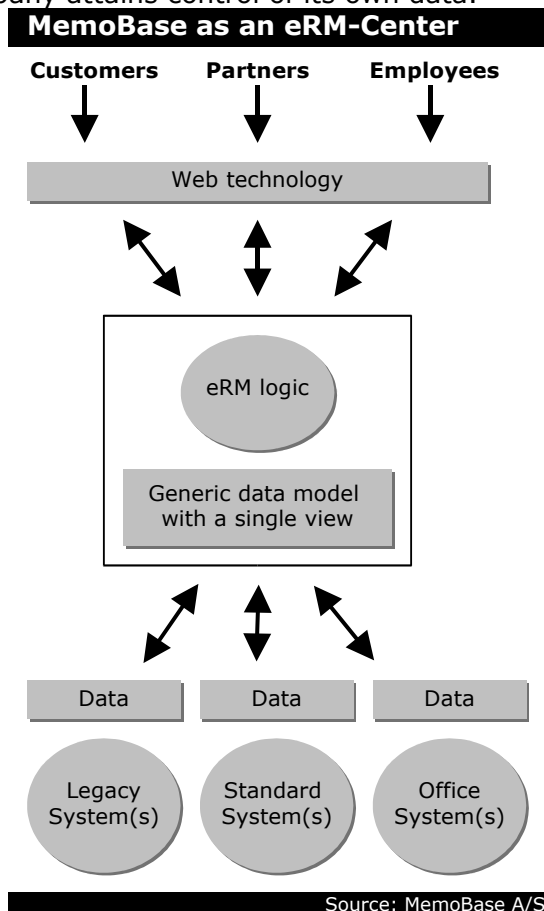
rules. Only specialists are able to grasp the complexity of the tables and the database design.

A company that implements a standard system, lose control over a substantial part of their own data – consequently losing the control over the development of new business ideas that needs to be supported by IT.

Are there no other, more flexible and economically attractive ways to go?

Sure there are.

By separating data from business logic the company attains control of its own data.



(FIG 1)

The separation is carried out by assembling all data in one database, and let this database work as a data server for the various standard systems, the company wishes to use. Often the standard systems have their own databases, but all data is replicated from the mutual data server. The server also works as a data deliverer when a standard system needs new data.

This means that the existing IT environment can be seen as pure functionality – i.e. business rules. Existing functionality can be totally or partly replaced by new functionality.

Also, the data necessary for running the daily operations, are constantly under control. New functionality can be created either conventionally through a program, or through MemoBase Business Rules Objects (business logic in the form of data in the mutual data server).

Read more about Business Rules Objects (BRO) in the next section.

3 – In need of a 10 times better performance within software

Methods of development and implementation of software have not changed radically in many years: Functionality is obtained by a set of programs, communicating with one or more databases.

MemoBase Business Rules Objects totally breaks with this tradition, because the method eliminates the use of programs.

In stead business logic is being described and stored as data – just as it is with conventional data.

Compared to conventional development, you can expect an increase of performance by the factor of ten using this method of development and implementation. The factor 10 is increased even further if it is possible to reuse components from other projects with a similar functionality.

Along with the MemoBase system, you find a range of standard components aimed at CRM, ERP, SCM and e-business. A company can choose from a catalogue, and (without any extra costs) select exactly those components it needs to carry out its task.

The philosophy behind Business Rules Objects is to return the control of data and functionality to the company.

And to create a very short turn around time from the conception of a business idea until it is supported by IT in a production environment.

Differentiation from competitors is now back in the hands of the company, and reflects the company's strategy and strategic abilities – not the boundaries set by a standard system.

When a Business Rules Object is created or modified to a higher or lower level of functionality, it much resembles stenography (short hand). The BRO's are described using a of characters, structured according to man's way of thinking.

After just 3 weeks of education you can create new and alter existing Objects after your own liking. You do not need an IT background (but people with an IT background has a natural advantage, for example when during data modeling, testing and trouble shooting).

The vision of creating a system complex, where data and logic is stored side by side, just like in the human brain, has been underway for many years. MemoBase initiated this project back in 1983. Back then we were able to eliminate 80 pct. of the programs in a system complex. Now we have managed to eliminate the last 20 pct. too.

MemoBase Business Rules Objects is supported by a generic data model - read more about this in chapter 5.

4 – eRM suppliers

In the future, all companies to some extent will be eRM suppliers. Especially companies with many internal and/or external relations, for whom it is important to control the relations and follow up on them in the right time.

In an IT environment, one of the major problems regarding relations, is how to create a steady data quality. Today it is possible to merge different databases and to eliminate duplicates in the pursue of a single view of the customer, partner, supplier or employee.

But it will not help much if we lose that single view an instant later. What we created was just a snapshot. We must be able to create a single view internally as well as externally, at all points of contact and at any time, i.e. through the Internet, per telephone, at meetings etc. To deal with new orders and requests about the products and administration, it is important that there is a dual response feature built in the system.

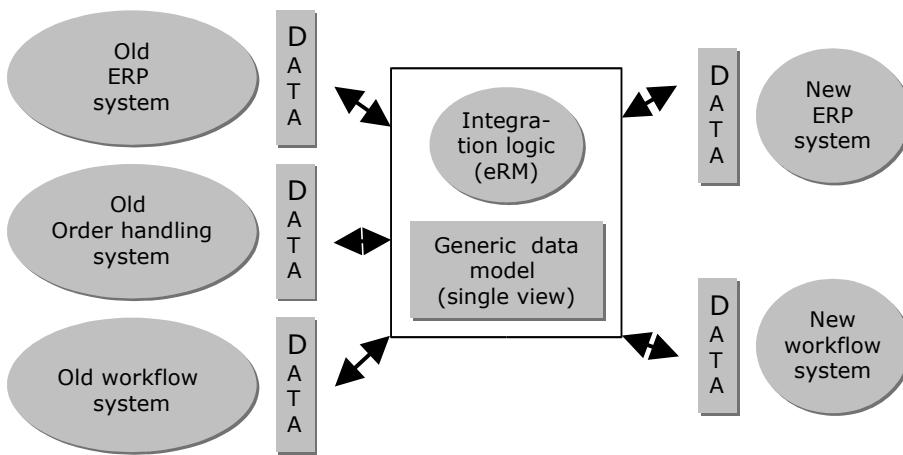
This can be done in both batch and real time mode.

Objects have been developed for using the Web in e-business initiatives.

Objects have been developed, that exchange XML documents based on an XML repository and Business Rules Objects to control the business logic.

System Integrators may use MemoBase as the data layer, that makes it possible to integrate

MemoBase between yesterday's and tomorrow's systems



existing systems. Or as the data layer that makes it possible to renew existing systems and maintaining a link to the past while the future is being created.

Start Up Companies

Start Up Companies have the advantage of not being burdened by an IT past. On the other hand, they have the disadvantage that the business concept on which the company is founded, almost always turns out to be inadequate

System Integrators

MemoBase has developed a range of Business Rules Objects for System Integrators, which examines the data quality from several data sources. The examination is aimed at the presence of data, the variation of data and the interdependence of data, because in practice it is known, that the available documentation is not always reflecting reality.

Objects have been developed, that detects duplicates and merges them while maintaining the history of the single view.

Objects have been developed, that exchange data between a number of production systems, while keeping the rules of correct data quality active.

Objects have been developed, that can send data to a calculation engine, start that engine and receive the result.

Source: MemoBase A/S

in the real world.

Usually a Start Up Company needs to adjust its business logic several times during the initial 1 or 2 years of existing. Unfortunately, there are numerous examples of companies who ran out of money during this phase, because the wrong technology (i.e. conventional technology) was chosen from the start.

For Start Up Companies, MemoBase have developed a wide range of Business Rules Objects with solutions within ERP, CRM, SCM and e-business – all in ONE integrated database.

Apart from gaining access to actual and necessary functionality here and now, there is an advantage in the fact, that this functionality can be altered very quickly. As the need arises. And the need for changing the logic will arise for a Start Up Company. (but nobody knows where).

For a Start Up Company, MemoBase solutions through an Application Service Provider is very suitable.

Application Service Providers (ASP)

There is a lot of sympathy for the vision of an ASP, supplying IT functionality, data power and help desk over the net. The problem is, however, that the ASP's in the market think conventionally in standard software and server solutions.

This means that the expected cost savings from large-scale operations do not appear. The reason is, that the ASP is running a lot of small operations in a "large" place, - and that does not result in cost savings or new flexibility worth mentioning.

For the ASP, MemoBase has developed a Multi Master functionality. This means, that a MemoBase installation can handle any number of companies, each with its own data dictionary and each with its own database. The database will include conventional data as well as the data that controls the company's business logic.

The range of Business Rules Objects available for the Start Up Companies, are also available for the ASPs - and they can easily be modified to match the segments of the market, that the ASP finds most attractive.

Software companies

Software companies with a horizontal market strategy - i.e. those who meet the demand of a fragment of the market, for example CRM in a number of industries - must find themselves seriously threatened by the software companies who work with a vertical market strategy. The customers want fewer and more coherent systems.

Most customers are willing to sacrifice the 5-10 percent "state-of-the-art" functionality in change of having a coherent system. The same is true for new releases. New releases are well liked, when systems are coherent. If

they are not, new releases may cause considerable problems and added costs.

For software companies, MemoBase have developed integration facilities to both other software products as well as to legacy systems (systems developed by the company itself). MemoBase is functioning as the "adapter", connecting a fragmented system to a larger systems environment.

Below you can read more about how the MemoBase philosophy is put into a technology.

5 - In need of a generic data model

If all data in a company - the data we know today as well as data we do not know yet - shall be assembled in one database, - it's necessary to have a generic data model. I.e. a data model, which - at record level - can absorb everything.

This is not an easy task. Those, who have worked with a DataWare House for a few years, know that. In the MemoBase system we have a generic data model that was originally "just" a philosophy about data and the coherence of data. In the first release of MemoBase, from 1983, the philosophy was built in as an integrated part of the software.

This philosophy's strength is, that no matter what happens in the future, the data model will be able to absorb it.

All that will happen in the future can be described by:

- New products (P)
- New groups (G)
- New members (M)
- New relations
- Events connected to the above (transactions)

Seen from a holistic viewpoint, there can be no other events in the future.

The philosophy is not just about conventional data.

It also covers business logic expressed as data. Thinking this way, is an IT historical paradigm shift with enormous advantages in efficiency.

We enter business logic into a database as pure data. We allow the company itself to do this. And it can be done without assistance from IT-professionals.

These facts represent a new freedom. The company can collect all its intellectual capital (logic and data) in a single database and be able to update this capital every minute.

Imagine to be able to come up with new strategic decisions – or alter existing ones – and see the result in a fraction of the time known today.

This is true freedom for a company.

When the business logic is stored as data, and when we have a generic data model, we find ourselves having a “backbone” containing the entire company’s intellectual capital.

All knowledge can now be distributed to the employees, customers and partners through the Internet, Extranet or Intranet. All you need is a browser.

6 – In need of business logic stored as data

Once the generic data model is ready, we need a method for describing business logic as data. This is necessary in order for a single database to contain both conventional data and logic data, and to be able to execute it’s own logic (controlled either by certain events or by a timer).

The human brain thinks in logical steps. First we do this, then we do that. The brain calculates and compares – and uses checkpoints to find out if we are going in the right direction. The brain works with synonyms, and it knows that a film is the same as movie.

By adopting this from the human brain, and subsequently by defining a data symbol for each function, it was possible to create a coherent symbol

language, that can be expressed by pure data. This development led to the MemoBase Business Rules Objects. With around 75 symbols, we can describe all imaginable business logic.

So what can a Business Rules Object do?

It can:

Read
Write
Count
Sort
Compare
Calculate
Remember
Read tables
Import
Export
Write reports
Write letters
Write e-mails
Write SMS
Write labels
Find duplicates
Merge duplicates
Start other Objects
Start Special Objects

7 – The complete architecture for data and business logic

The system’s core is a data model so capacious and abstract, that it can describe EVERYTHING. The model is called PGM (fig.3).

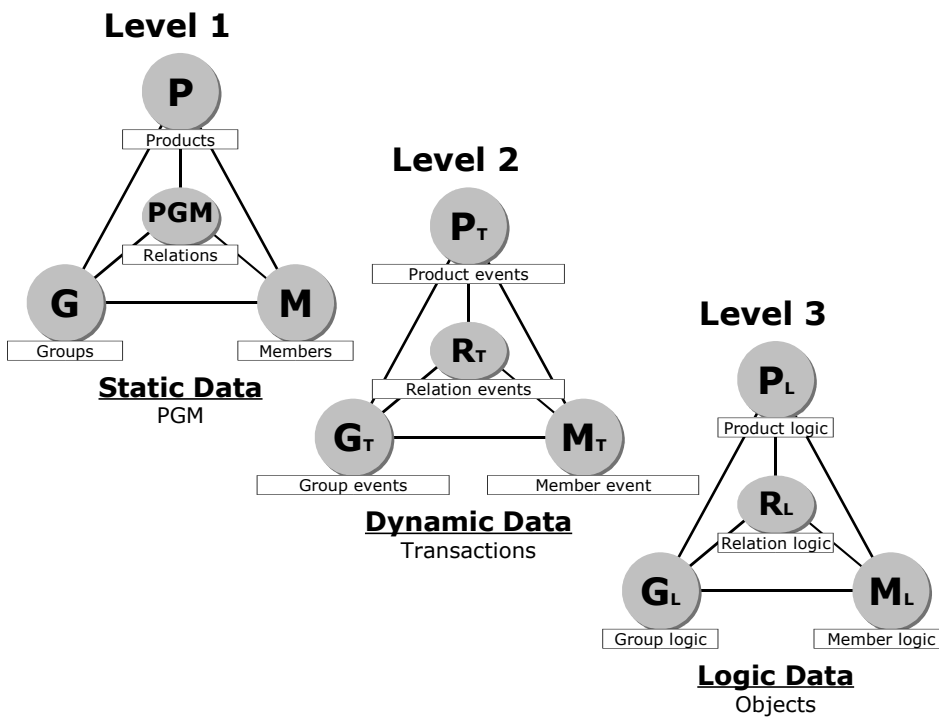
- The **P** is for **Products** – Material as well as immaterial products.
- The **G** is for **Groups** of Members – for example a household, a department, a company, a corporation, etc.
- The **M** is for **Members** – people.

You can say, that the P represents **supply** and the G and M represent **demand**.

All that people ever do, professionally as well as privately, comes down to supply and demand.

Once we know the demand and supply – including the latent demand – it is just a question of tying the relations together. This way, we see a market place for what **has happened**, - what **is happening**, - and what **will happen** in the future.

Generic Object Oriented Model For Data And Logic



Source: MemoBase A/S

Fig. 3

The data model aim at creating the total market place for EVERYTHING. Notice that the data model integrates the two markets business to consumer (via PM) and business-to-business (via PG and PGM). It is quite important for companies working on both markets, to have a single view both places.

P, G and M and the relations between P, G and M, constitute a certain type of data, which we call "Temporary Static Data". We call them that, because this type of data is characterized by having a life span. A product has a certain life span as do people and groups.

During a life span, a range of events occur that can be difficult to keep track of. Things are bought and sold. Questions are asked. Negotiations take place. Things are being advertised. Satisfaction is being expressed and so on.

We call these events Dynamic Data. Dynamic Data are stored as transactions in the data model, and is

tied to P, G, M, PG, GM, PM or PGM.

Furthermore, the transactions are split into several logic groups called Systems.

Once you distinguish between Temporary Static Data and Dynamic Data, you create a range of new and unique datamining options.

If you notice something special in the PGM part of the data model, you can find out what have happened, by looking at which events have occurred or not occurred.

Also, you might have some specifiv events, and want to find the

people behind the events.

Segmentations and surveillance of segments or trends in the market, is also possible with the PGM data model. You can survey a segment, and let the system automatically alert the person in charge of that market

8 – Examples

Example of systems integration.

Vital Insurance.

The second largest life insurance company in Norway, Vital, uses MemoBase in order to create a single view of its customers. A range of BRO's the development in certain customer segments, and the result is published on the company's Intranet. Other BRO's feed the work flow system with an updated image of the customer, and others again constantly work with data cleaning.

IF Insurance



IF Insurance – the largest insurance company in Scancinavia – uses MemoBase to create a single view of their customers, private customers as

well as companies. The system sends out questionnaires and offers, based on the events connected to each single customer. Via www.if.no the customers have access to a general view of his/hers insurances, to details about each policy, they may report a claim or a change to an insurance and may follow the status of a claim.

MemoBase and an American CRM-tool were benchmarked, producing 1 million letter. MemoBase turned out to be 19 times faster than the American counterpart.

Example of a Start Up Company: Vejr2 (www.mitvejr.dk)



Vejr2 (Weather2) spent 2 months building an Internet solution for local weather forecasts,

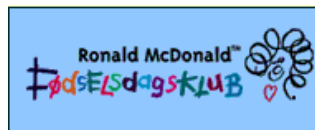
which included handling of new weather data each hour, handling of subscriptions from weather dependant companies, issuing of warnings at individually defined weather events, CRM to new bizz, cross sales and maintaining customers, and ERP for book keeping and debtor/creditor handling. All in one data model with PGM and Business Rules Objects.

TradeFacta.com (<http://www.tradefacta.com/>)

TRADEFACTA

TradeFacta is an International business-to-business portal, where companies can find products and distributors. Behind the portal is a MemoBase data model with 2.2 million companies and a synchronized register of trades. In addition there is a back office for administration, sales and CRM. The site functions in Danish, English, Norwegian, Swedish, Finnish and Italian. All texts and translations are also controlled in a MemoBase Data model. The entire system was built by 3 persons in 2 months.

Example of Web Development McDonald's Denmark



In Denmark, Norway and Sweden the Ronald McDonald Birthday club is hosted by a MemoBase database.

The club's members have access to the database through the Internet, the restaurants have access through the McDonald's Extranet and the club's administrators have access, via a set of special passwords, through the Internet. Business Rules Objects clean the database, send out birthday letters, handle local campaigns and survey the general development.

Example of Direct Marketing: ANWB (www.anwb.nl)



Since 1988, the Dutch Automobile Organization, ANWB, has used MemoBase to control

Direct Marketing campaigns aimed at their 3,6 million members. The segmentation, and all other campaign logic, is created by the employees of Marketing as Business Rules Objects, - typically 2 to 4 campaigns a week. The system contributes to both huge savings and substantial income. In 2002, the system was downsized from a mainframe to a PC-server, contributing even more to the cost savings.

9 – Contact information

Mogens Esbech, CEO and systems architect.

MemoBase

Selsmosevej 2, vest, 3rd floor
DK-2630 Tåstrup

Phone: +45 56640421

Fax: +45 56640411

e-mail: me@memobase.dk

www.memobase.dk

www.memobase.com

Søren Sommer, CTO and Project Manager.

MemoBase

Fredericiavej 99

DK-7100 Vejle

Phone: +45 75822221

Fax: +45 75824075

e-mail: sol@memobase.dk