

# ArchiMate Modeling in Practice

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*This description is based on a series of blog entries posted by Bas van Gils & Sven van Dijk, June - December 2013. I collected them in one document and shortened them to focus on specific aspects relevant for making clear, which kind of decisions are made on architecture level. For each section a reference to the original text is given.*

Knut Hinkelmann

## Introduction<sup>1</sup>

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Building on earlier blogs, we now present a series of postings where we illustrate these best practices in the context of a (fictitious) case study. This posting kicks off the series, and is intended to introduce the organization that we will be using over the next few weeks.



### **BriteLite - towards a brighter future**

For many decades, Jansma Lichten has been one of the most successful lamp producers of The Netherlands. The company was founded in 1923 as *Lampenfabriek Jansma* and renamed in 1974 to Jansma Lichten.

The company's most successful period dates back to the period between 1960 and 1990. After the 1990s, several socio economic developments have caused for some serious threats to the company. During that period, Jansma Lichten invested large amounts of resources in new production facilities and techniques for the highly successful line of light bulb and light bulb fittings. Unfortunately, since the early 2000s, the need for incandescent light bulbs started dropping rapidly year over year and as a result, Jansma Lichten was left with diminishing turnover and high costs. This was in large part caused by new regulations that will banish the incandescent lights all together in favor of LED and other innovative lighting products.

More recently the company experienced yet another setback, due to the retreat of several key investors as a result of the financial crisis. Halfway through 2010, the company was well on its way to become bankrupt when a few new big investors were contracted, under the condition that the current board of directors would make way for a new team that could change the strategic course of Jansma Lichten and revive its business.

The new Board prepared a major strategic shift for the lamp manufacturer. Among other things, the company will shift its focus from the national to the international market. Therefore, the company is going by its new name since January 2011: BriteLite. Since that time a lot has happened:

- BriteLite is well on its way to making a shift to LED-products. Staff has been re-trained where necessary and plants have had a major overhaul

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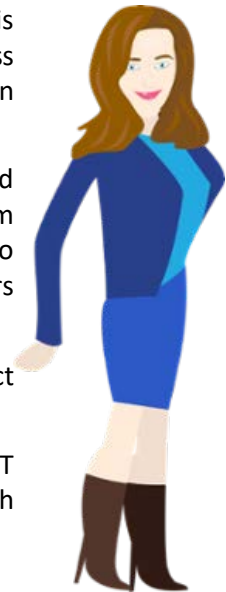
<sup>1</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-introduction-case-study>

- A new consulting team has been added to the company. This team works with (corporate) clients to define custom lighting solutions. The team is largely successful and managed to secure over 60% of the graphic design industry and also does a lot of work for office buildings, show room and lighting solutions for events and trade shows
- On the international side, small offices and warehouses have been built in Belgium, France, Germany and the UK. Reselling partners have been recruited in the Americas, Asia, and Australia. Expansion is small but increasing steadily
- BriteLite's financial position is improving steadily. However, IT cost are sky-rocketing. This is in large part due to the fact that the board has decided to build the new business on the old *platform for execution*.

There is so much going on for the company that the constant stream of changes is becoming a problem. The company acknowledged that successful business transformation could only be achieved through a structured approach, based on Enterprise Architecture techniques and -modeling.

After some debates and advice, BriteLite decided to hire Brenda, a seasoned Enterprise Architect with many years of experience under her belt to help them face these challenges. Brenda (a.k.a. Brenda Architect) was hired some time ago and she has started her new job with a series of interviews with all the key players in the BriteLite organization. Her key challenges are:

- Quickly develop a **baseline architecture** that can be used to analyze impact of change and plot a direction towards a brighter future for BriteLite
- Develop a **target architecture** and a roadmap for overhauling the IT landscape and reduce IT cost. This should, of course, be in line with BriteLite's plans for international expansion so some flexibility is needed



# Getting Started<sup>2</sup>

Brenda the Architect has her work cut out for her: developing a baseline and target architecture for BriteLite seems like a challenging task. The organization is still in the middle of the transformation towards production of LED based lighting products for international markets and tries to get used to the new way of working with the consulting team.

There has been some tension between the sales/ consultant teams and the production department over schedules, time to market and so forth.

Three weeks in Brenda is ready to get started and, after some debate with top management she gets going:

- Top management sends out a lengthy E-mail, letting staff know that Brenda will be involving them in an architecture modeling exercise
- A small team with experts from business and IT is assembled. They are mainly selected for their knowledge and history with the organization. However, extra care was taken to select team members with a good network and reputation
- With the team assembled, another lengthy mail is sent out to inform every one of the plan: the small team will do most of the work, will involve experts as much as possible and all intermediate results will be published on a shared network drive. All input is welcome, so the mail ends with a warm invitation to join.



## Starting with the basics: a business function model / capability map

As the first problem to tackle, Brenda gives her team a brief instruction on developing a business function model. As an inspiration, she shows high-level diagrams of Porter's value chain model, capability maps that can be found online and several smaller business function models from previous engagements. She gives her team the following guidelines for the business function model:

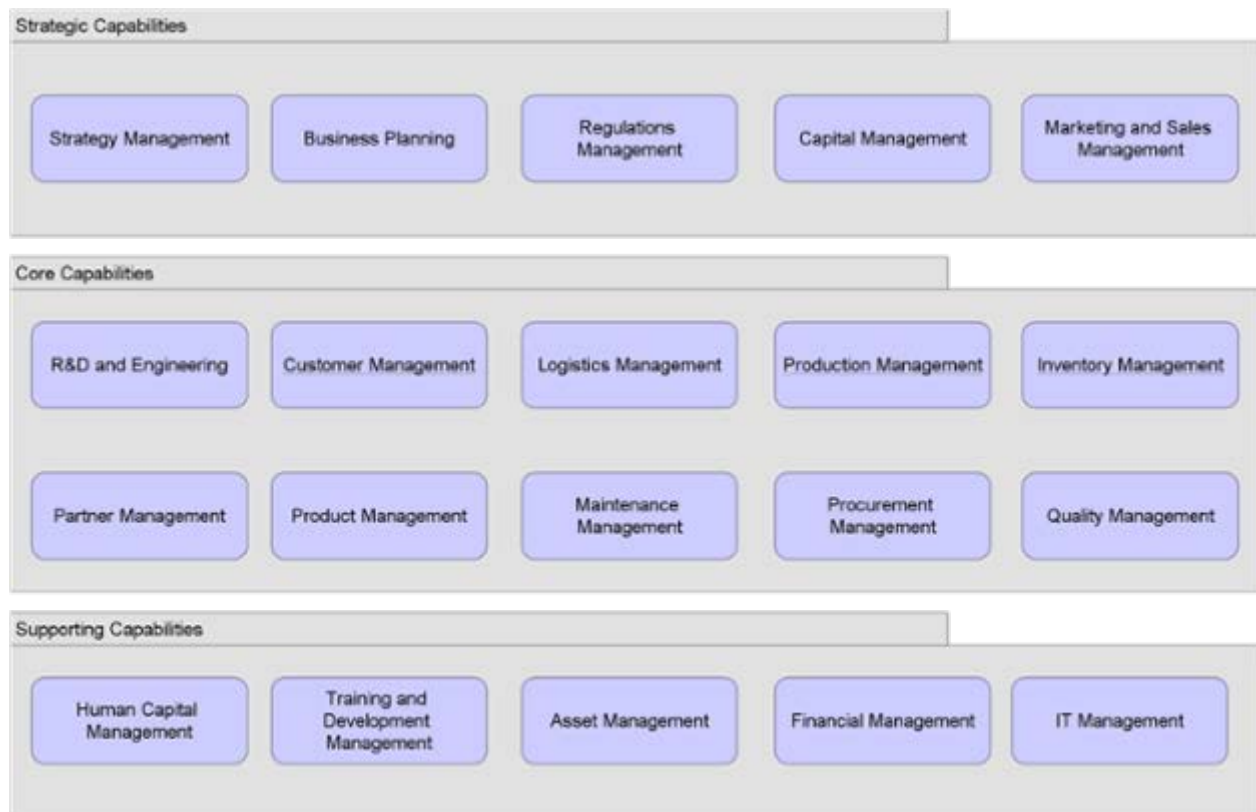
- The business function model is to be set up as a capability map, where capabilities are defined as "an ability or capacity that an organization may possess or exchange to achieve a specific outcome or goal".
- The name of a capability (modeled as a function) is a noun, not a verb.
- The model describes what the organization does with a business focus. There is no such thing as an "IT capability", a capability is a capability.
- Capabilities will be *stratified*, distinguishing between strategic capabilities (related to the direction of the organization such as strategy management, finance management), core capabilities (adding value for customers), and supporting capabilities (such as training and HR management)

In the first round the goal is to find the top level (or: "level 0") capabilities. This will be validated with people in the organization before moving on the adding more details. Ideally we'll at least get to level 2 capabilities to get a consistent model for the organization.

## The first draft

The first draft of the model is developed in a half day workshop by the team. They come up with the following draft high-level capability map:

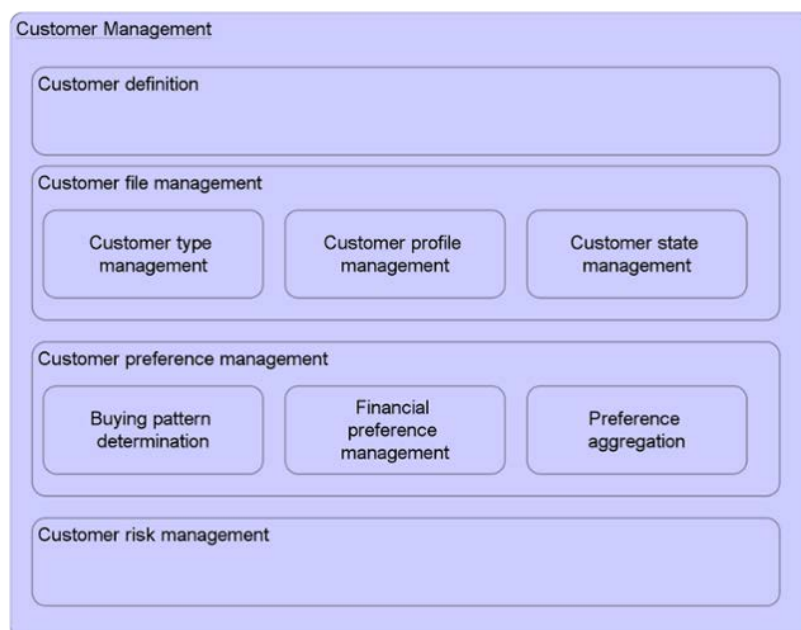
<sup>2</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-getting-started>



Management agrees that this model is good enough to start with and the team proceeds with drilling down to more detailed capability models, starting with the core capabilities as these are expected to be needed the most.

## Detailed capability maps

The team starts with planning a series of workshops, inviting experts from across the organization. Indeed, most of the capabilities have been mapped out consistently after three weeks. Again, the results are documented using BiZZdesign Enterprise Studio. The tool allows to easily navigate between the layers by double-clicking and hence drilling down into the details layer by layer (level 0, level 1, etc.). Here are some of the results:



# Where are we going?<sup>3</sup>

Brenda realizes that, in order to assist management in decision making about an overhaul of the IT-landscape she needs quite a bit of information... not just about the IT landscape. Both in the baseline and the target situation she needs to understand the relation between products/services, data/information, and systems.

To start the discussion, Brenda wants to plan a series of short, focused workshops to gain a deeper understanding in questions such as:

- Who are the key stakeholders that we have to take into account?
- What products do we currently offer, and can we distinguish between different categories of products? In other words, what is our product/service architecture?
- Do we expect any major changes in this architecture? Are we going to offer more products and services that fit within this categorization, or do we expect to also add new categories?
- Are there important developments in the external world to take under consideration, such as new types of products, technological advances in production mechanisms, legal developments etc.?
- What is our operating model (see e.g. Ross and Weill [1])? That is, to what extent do we standardize or integrate our processes?
- Do we have a product strategy? An IT strategy? A sourcing strategy?



After some discussion with her sponsor, Brenda gets the thumbs-up for a full-day kick-off session with management and their strategic advisors.

## The workshop

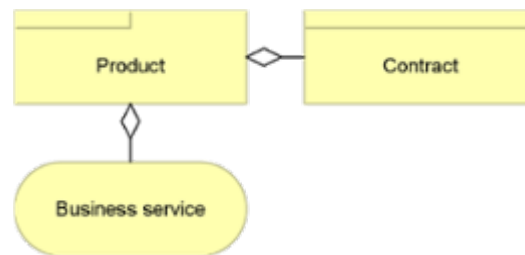
To soothe the emotions a little, Brenda starts the sessions with some case studies about why these elements are key, illustrating each point with clear examples. At the end of the day she has at least achieved an action list:

- The strategic advisors will work on the product/ IT/ sourcing strategies. The architecture team will review the results, after which management will rubber stamp them.
- The architecture team is asked to map out the products and services and come up with a classification scheme.
- The management team will work on an environment analysis using the 5 forces <[https://en.wikipedia.org/wiki/Porter\\_five\\_forces\\_analysis](https://en.wikipedia.org/wiki/Porter_five_forces_analysis)> + PEST <[https://en.wikipedia.org/wiki/PEST\\_analysis](https://en.wikipedia.org/wiki/PEST_analysis)> models.
- The discussion on the operating model is postponed until the capability map is completed.

This is a pretty good result. Brenda and her team are well under way with the capability map, which frees up time to start on the analysis of products and services.

<sup>3</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-where-are-we-going>

## Products and services



As before, Brenda starts with a brief introduction in the way of modeling, based on the ArchiMate specification:

- The distinction between product / services is not the same as in natural language
- Services are about what we do for the environment, about added value. E.g. ordering a bike, or making a payment
- Products group services, where a service may be part of more than one product
- A product may also have a contract, which is close to an SLA

They agree to take a three-step approach: first come up with a list of all the services and definitions, then do the bundling in products, and finally come up with a categorization.

## Results

An initial brainstorm results in a preliminary list of services. Each team member takes a full copy of this list for validation with various roles and departments: marketing, product development, and sales are among the key players in this realm. After consolidation, the list of services is grouped into products by creating a matrix in the BiZZdesign Enterprise Studio:

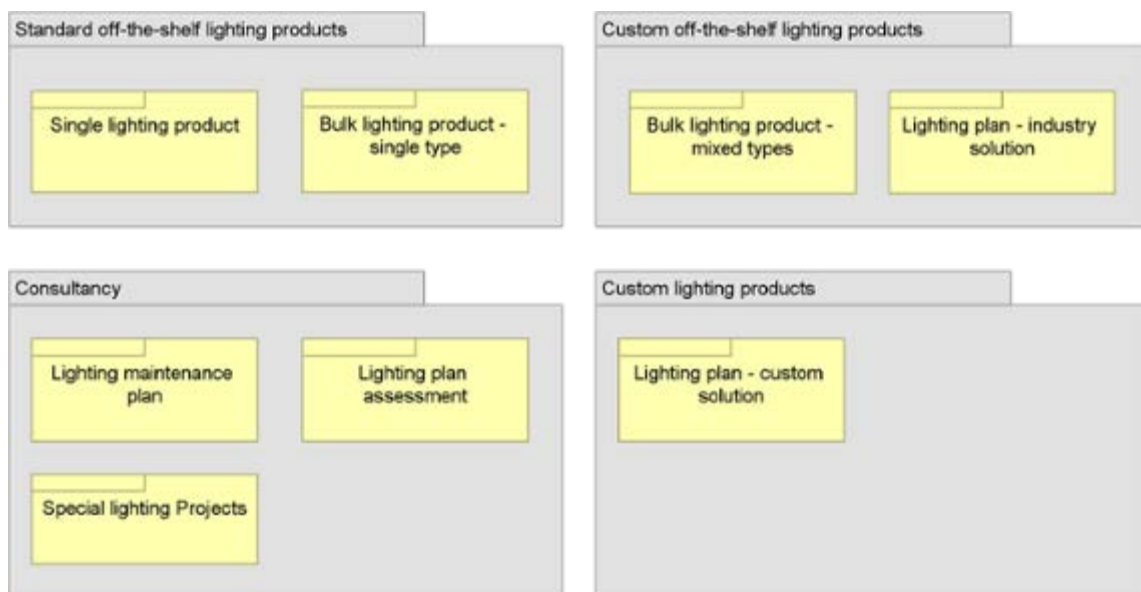
Product X Service	Service	Handle complaint	Light assessment	Deliver light product - bulk	Online customer portal	Local Helpdesk	Lighting product recycling	Light maintenance	Install lighting solution	Create light plan	Custom industry lighting solutions	Deliver light product - single
Product												
Lighting plan assessment		x	x									
Lighting plan - industry solution				x	x	x	x	x	x	x	x	
Lighting plan - custom solution				x	x	x	x	x	x	x		
Special Lighting Projects		x	x	x	x	x	x	x	x	x		
Single lighting product		x					x					x
Bulk lighting product - single type		x		x			x					
Bulk lighting product - mixed types		x		x			x					
Lighting maintenance plan		x		x	x	x	x	x				

The team is aware that this captures the essence of the products/services architecture, but that some additional services may have been missed. The consensus is that these will be caught only when a 'layered view' is created where services are linked to processes. After some further debate, the team agrees that this is "good enough for now". However, Brenda reminds them that an additional product should be made: grouping the products into categories.

The team is 'unsure' about this area. They call in the cavalry by bringing in one of the 'old timers' from marketing which seems to do the trick. After a quick discussion about the goals of the exercise the team gets to work and comes up with the following categorization:

- Standard off-the-shelf lighting products: has all the products and services associated with mass produced standard products, both to retailers and business customers
- Custom off-the-shelf lighting products: standard, mass produced products are bundled in a specific way for a specific customer for a specific price. It requires a different process with much more customer interaction.
- Consultancy: with the consulting team growing, especially internationally, the team feels that this should be a separate category.
- Custom lighting products: pertains to all the major deals with custom lighting solutions. There was some debate for splitting this up to retain the consulting / production / installation split, but the team decides that this is already handled by defining specific products for this category.

To wrap-up, Brenda make sure the team creates the following ArchiMate view:

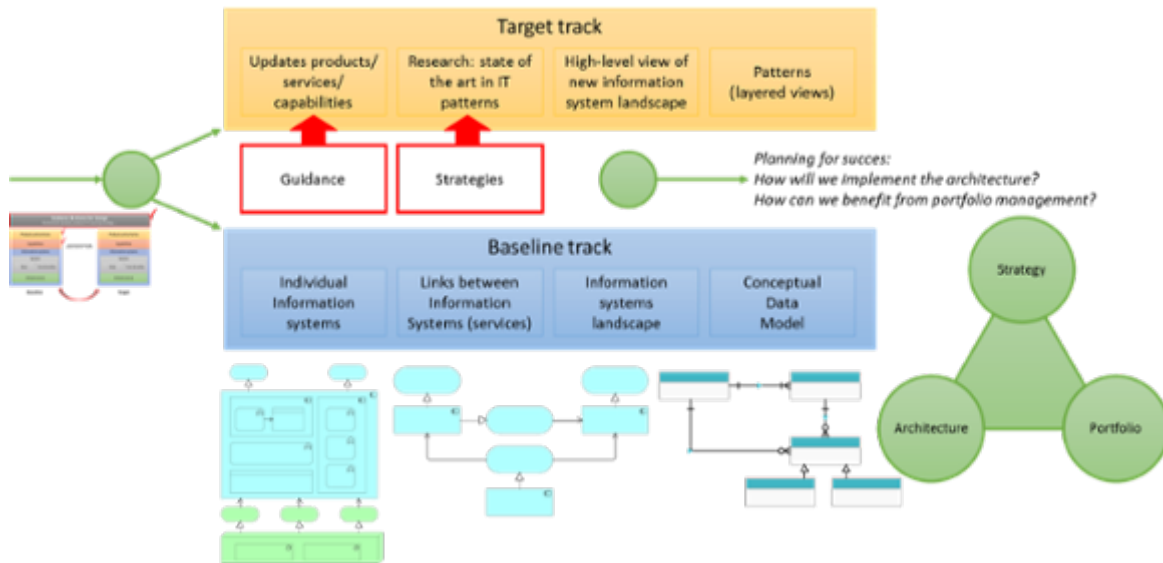


## References:

[1] J. Ross, P. Weill and D. Robertson, Enterprise Architecture as Strategy -- Creating a foundation for business execution, Harvard Business School Press, 2006.



# Two Tracks<sup>4</sup>

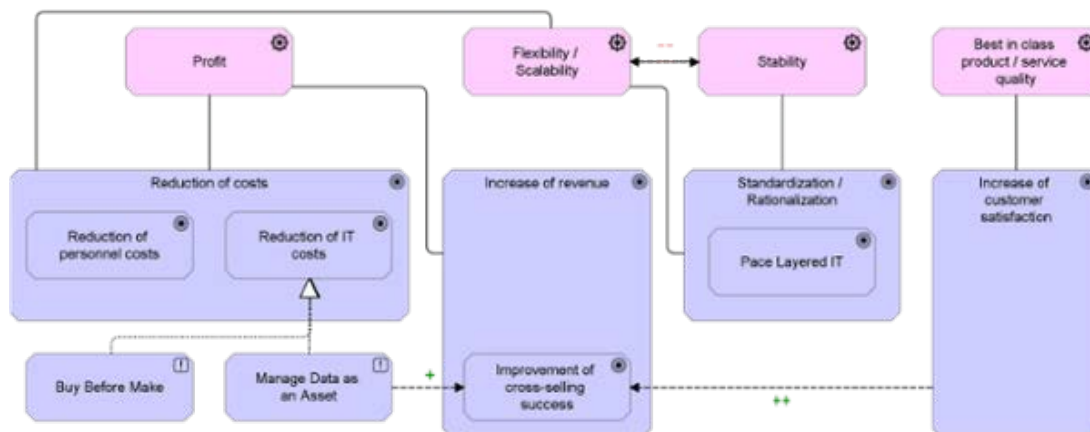


Brenda gives a clear overview of what she intends to do going forward with her team, based on a two-pronged approach:

- Part of the team will worry about the information systems architecture in the baseline , ploughing through one system after another and then connecting the dots.
- The second track is to start work on the target architecture, validating the business parts (products, services, capabilities) based on management guidance before diving into the information systems part and again connecting the dots. This track requires creative thinking, strategic skills, and the ability to stay away from the details.

## The workshop

Brenda uses ArchiMate's motivation extension to create a first overview of the main strategic drivers and goals that underlie BritLite's current business transformation initiative. She also takes into account some of the key architecture principles, and uses influence relationships to visualize any reinforcing and contradicting elements in the strategic landscape.



<sup>4</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-two-tracks>

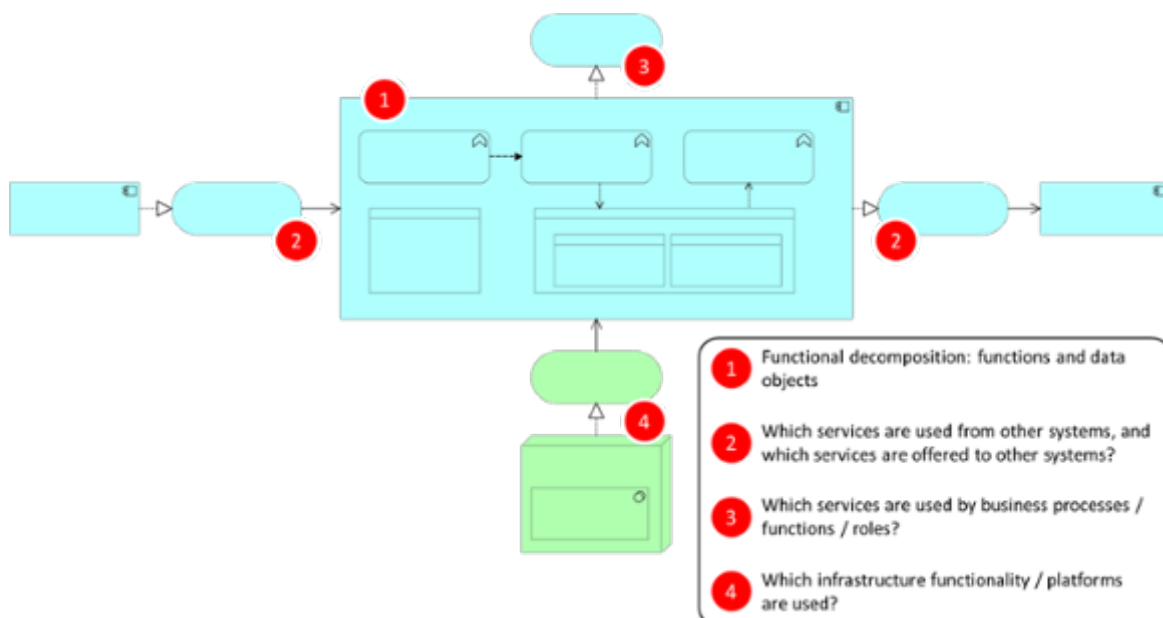


# Continuing the Baseline Models<sup>5</sup>

After some careful planning, Brenda now has two sub-groups that will work semi-independently on both topics. There are bi-weekly update meetings so that everyone will get a clear picture of the progress. The work with a 6-8 week plan for figuring out the next iteration.

## Way of working

The baseline team of four people with mostly an IT background starts with an instruction by Brenda on the way of modeling in ArchiMate. There is a bit of resistance to deal with as this is experienced staff who claim to have seen it all. Brenda realizes that most of the team members are experienced *UML* modelers so explaining a new language should not be too hard. She makes sure to spend some extra time in explaining the *relationships* as these tend to be the hardest to grasp for UML-modelers who have seen the “lines” used in ways that are vaguely similar but precisely different.



As expected, there is some debate about the relations. The pragmatic remark that “this is how it was defined so, whether we like it or not, we’d better learn to work with it” settles the debate and the group quickly goes to work.

## The plan

The team has decided on a simple and pragmatic approach with several workshops that all take about a half day:

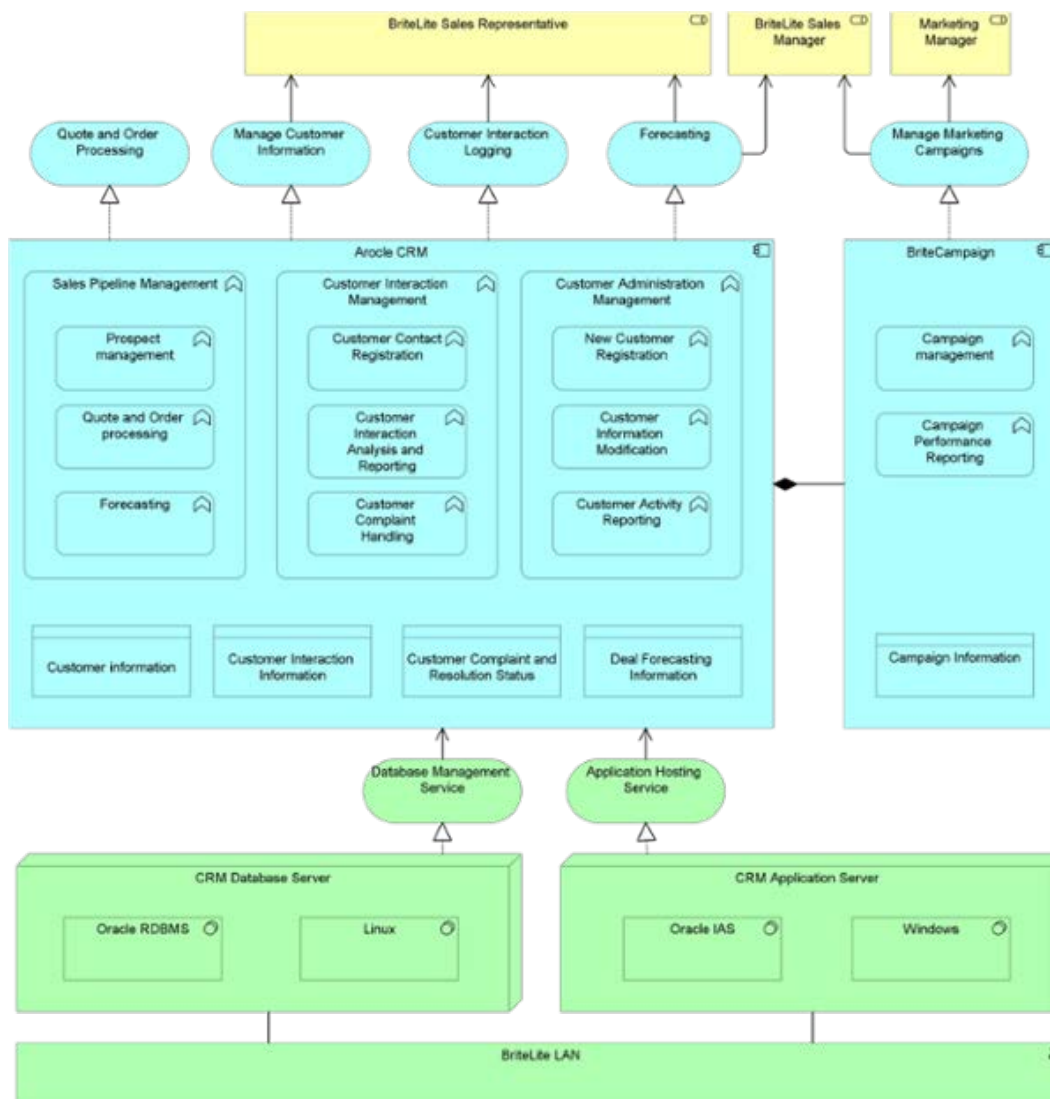
- Two workshops to get the “big picture”: what are they key systems that are in scope ?
- Try to avoid more than two workshops for a single system: yes a system could be more complex, but ROME (Return On Modeling Effort) should be kept under consideration

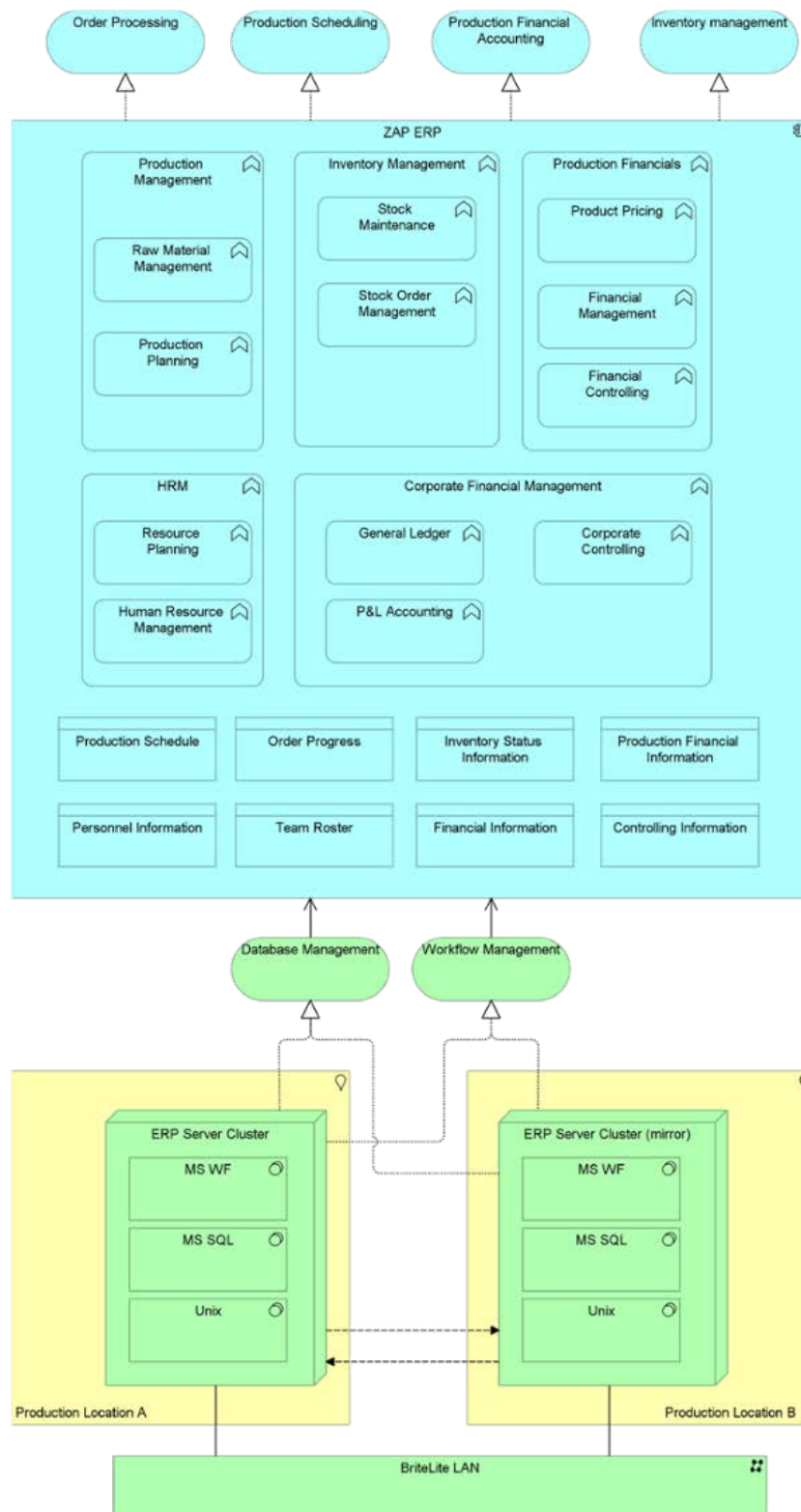
The team plans to create one view per system and one total overview that only shows components, services, and nodes (i.e. the functional decomposition + platforms are left out).

<sup>5</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-continuing-the-baseline-models>

## Results

The CRM system and the ERP system are early targets, since they are quite well-known to the group, and moreover heavily used by many stakeholders at BriteLite.





## Publication

The two teams (baseline / target) have agreed to be as open and transparent as possible. The plan is to publish a new HTML-based report on intranet just before the bi-weekly update meeting. In that way the entire organization will stay up-to-date as to what is going on, which may result in extra input and acceptance of the results.

# Project Interruptions<sup>6</sup>

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## A distraction?

James, one of the advisors of the management team piles these questions onto Brenda's task list:

- One of the database vendors is pushing for an extension of the licenses.
- Key questions are:
  - Which products are we using from this vendor, and where? Are we using all the stuff that we pay for?
  - Do we expect to stay with this vendor in the target architecture?

## The plan

When James has left, Brenda urges the team to come over in a hurry for an impromptu meeting. She explains the situation and gives two simple instructions:

- The baseline team are to focus on the infrastructure layer first, complete that in a hurry and generate a cross table of information systems x platforms to see which products of the vendor are used where. It need not be perfect, it has to be here fast.
- The target architecture team has a more complex task.
  - Brenda asks them to create a deck of max 5 slides to explain *the operating model*. Her claim is that the operating model for BriteLite is *Coordination* and she wants the team to explain why
  - She herself will create a draft framework for the target architecture in a hurry. This will be used to answer the second question from management

## The execution

Three days in, Brenda meets with the sub teams separately to confirm that they are on the right track. And indeed, by the end of the week, all the results are in.

## Baseline analysis

During the modeling work for the baseline application landscape <[see previous blog](http://blog.bizzdesign.com/archimate-modeling-in-practice-project-interruptions)>, the servers (modeled as Nodes) and platforms (modeled as System Software) were added to the models and linked to the applications they support. The team decides to have a table view generated by the [BiZZdesign Enterprise Studio] tool in which they show which applications use which database platforms. In the cells, they show the node or nodes on which the database platforms run. The resulting table is depicted below:

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<sup>6</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-project-interruptions>

Application x DB Platform (via Node)	MS SQL	EnterpriseDB Open Source DBMS	Oracle RDBMS
ZAP ERP	<b>ERP Server Cluster (mirror) ERP Server Cluster</b>		
IPPS			<b>General Purpose Server Cluster IPPS Server</b>
Route planning			<b>General Purpose Server Cluster</b>
QPlus system			<b>General Purpose Server Cluster</b>
L-Info			<b>General Purpose Server Cluster</b>
OrderPRO			<b>General Purpose Server Cluster</b>
E-support			<b>General Purpose Server Cluster</b>
Arocle CRM			<b>CRM Database Server</b>
BriteCampaign			<b>CRM Database Server</b>
TeilPunkt DMS		<b>TeilPunkt Server</b>	

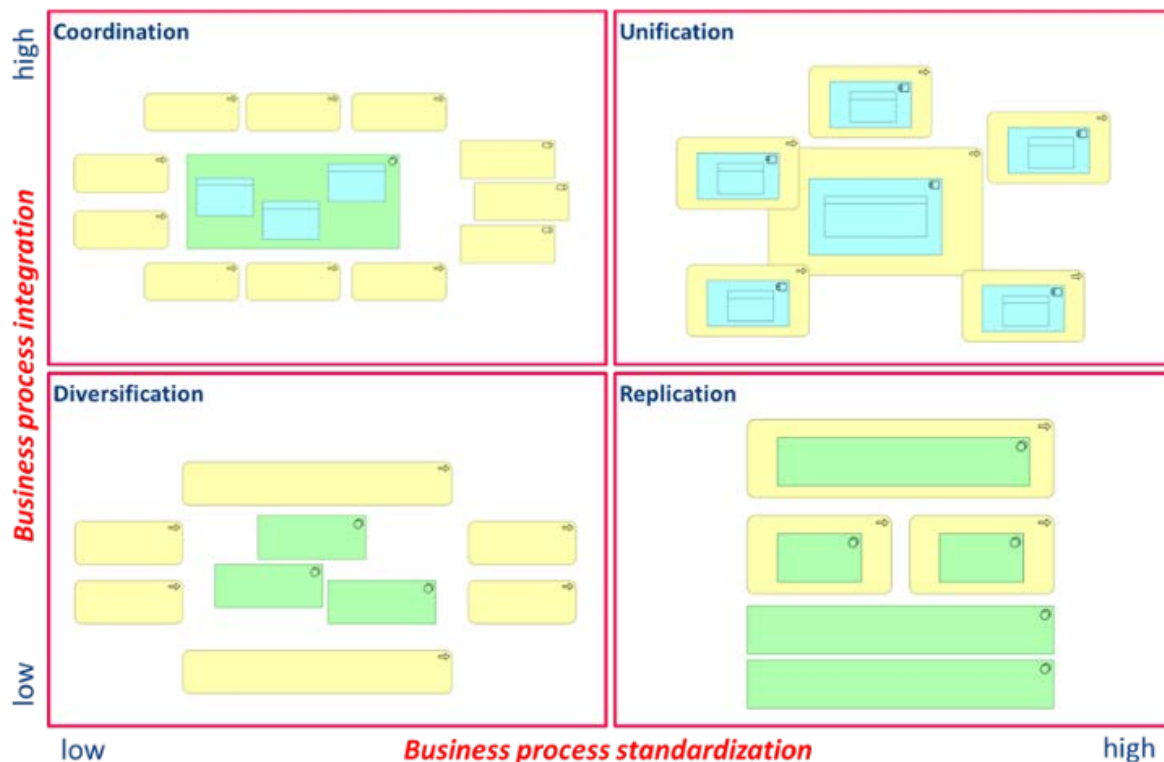
Three database platforms are in use. The IPPS application used to be a dedicated application supporting HRM functions and processes. However, BriteLite started using the HRM functionality as part of the ZAP ERP system with the goal to fully decommission IPPS.

## Operating Model

The target architecture team had also done a good job. They came up with a simple deck with a good layout that explains:

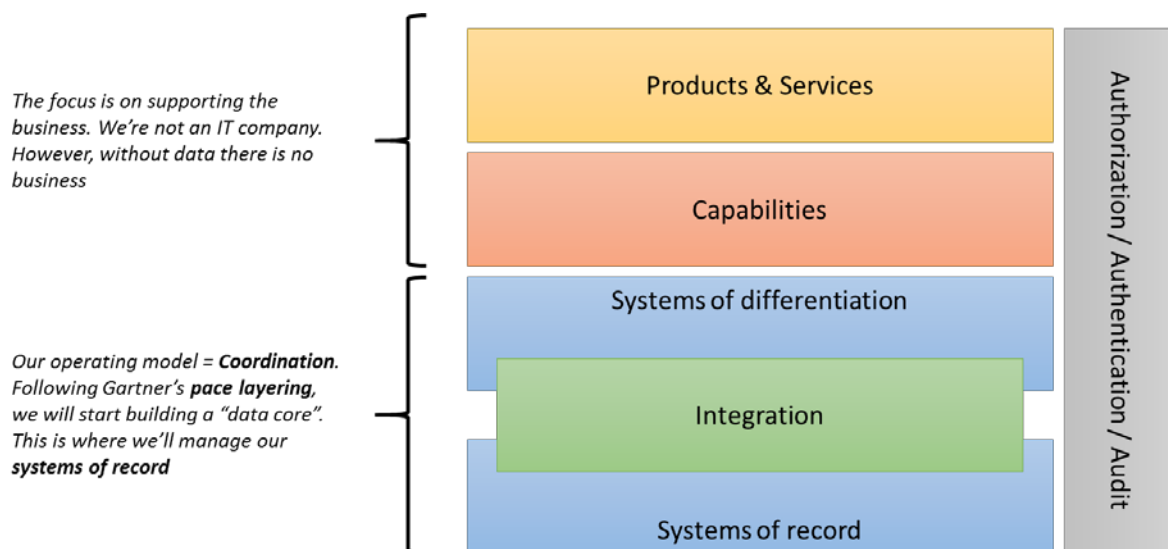
- What the operating model is and why it is important
- The main dimensions (process standardization / integration) as well as the characteristics of the 4 quadrants
- An analysis that explains that the main processes from BriteLite (consulting, production, etc.) are very different, but need to work on the same data. This suggests a Coordination model
- In the last slide, they explain that BriteLite does not have a pure coordination model, but has some aspects of Diversification and Unification as well

The figure below was included in the presentation deck of the target architecture team, in order to support and explain the points mentioned above.



## Target architecture

For the target architecture Brenda has crafted a slide that outlines the layering of the target architecture which will be used to start the discussion about retaining this vendor on the list of key partners.



Based on the baseline analysis, her final recommendation to the management team:

- We are using all the platforms that we are paying for
- A single data platform is highly unlikely. We most likely need a single relational database platform from a strong vendor with the addition of solid open source platforms

# Picking up Steam again<sup>7</sup>

## Team “baseline”

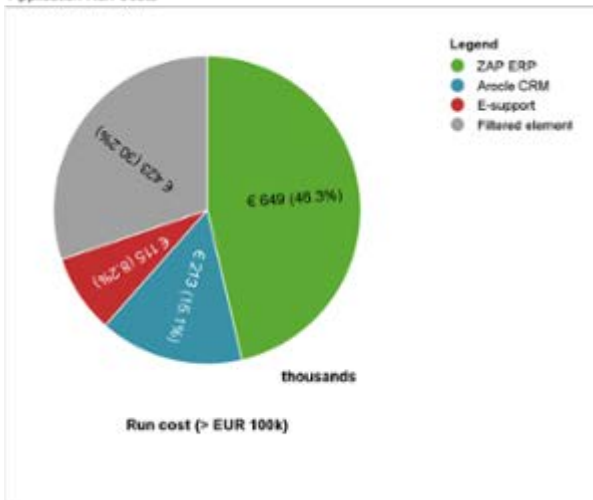
The baseline team leverages functionality that is available to add relevant data as attributes to components that are part of BriteLite’s Enterprise Architecture. This data can be used for presentation, e.g. in a table like in the example below:

Application Catalog

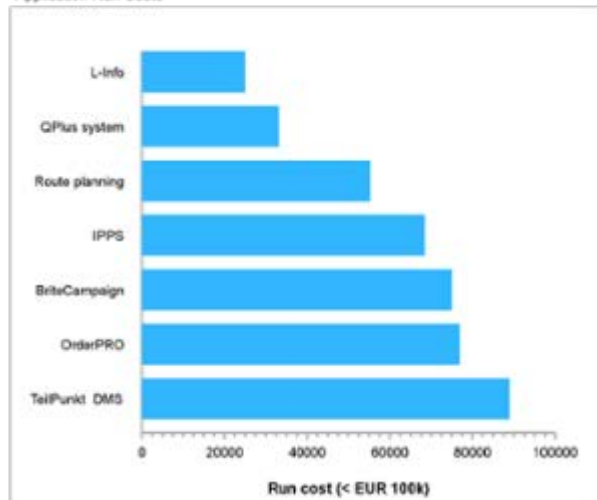
Object	Operational Since	Application Type	Frequency of Use	Online or Batch
Arcle CRM	01-01-2010	primary	daily	online
BriteCampaign	01-07-2012	support	monthly	batch
E-support	01-08-2008	support	daily	batch
IPPS	01-12-1999	support	unknown	batch
L-Info	31-07-2001	primary	incidental	batch
OrderPRO	15-05-2009	primary	daily	online
QPlus system	01-02-2010	support	monthly	online
Route planning	01-09-2011	support	weekly	online
TeilPunkt DMS	01-06-2012	support	daily	online
ZAP ERP	01-02-2010	primary	daily	online

The baseline team uses information available about the run costs of its current application and adds this to their model repository. Using this they can easily generate the following charts:

Application Run Costs



Application Run Costs



Three core applications have yearly run costs greater than 100k, shown in the pie chart on the left. The run costs of the remaining applications is shown in the bar chart on the right.

<sup>7</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-picking-up-steam-again>

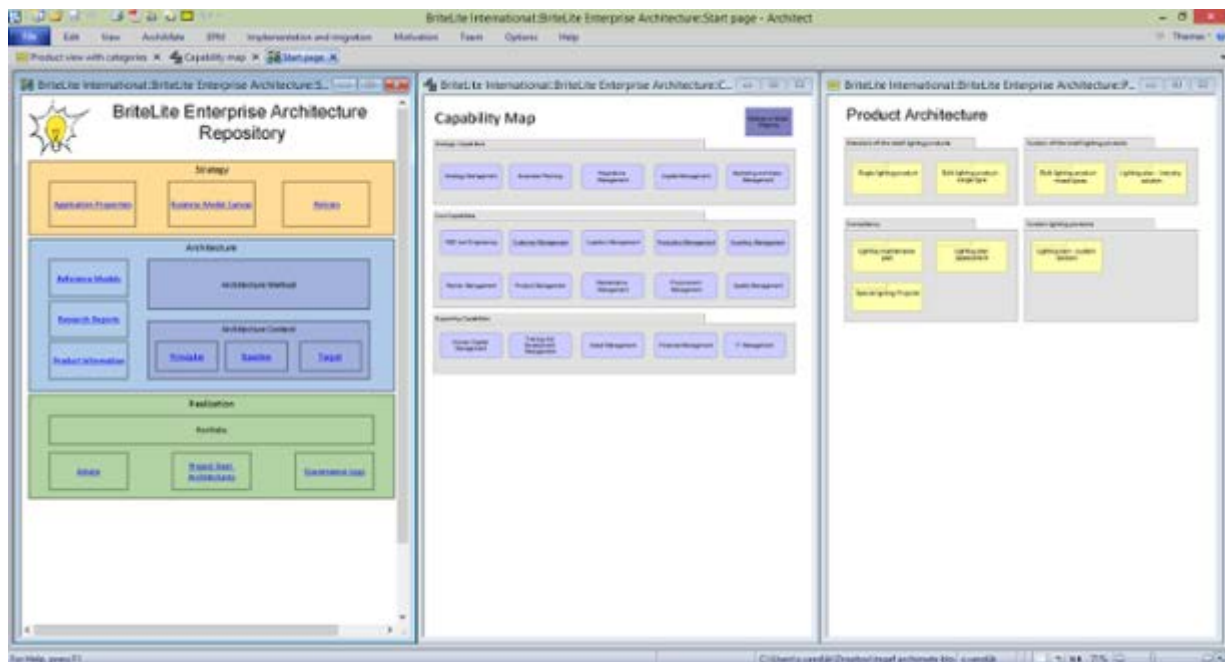
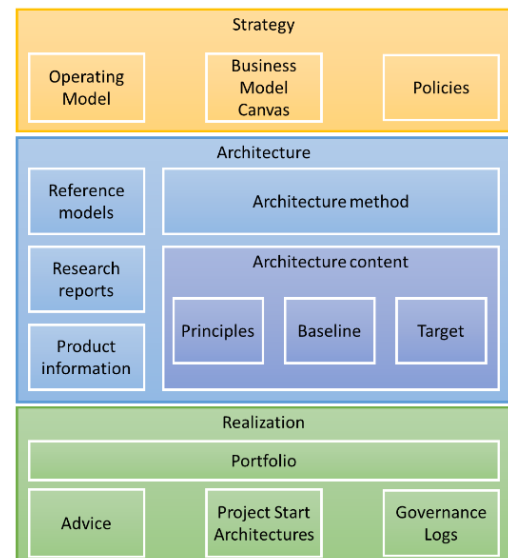


## Team “target”

The team that is working on the target architecture has claimed a work space on the intranet to set up the architecture repository. The figure on the right shows the various sections for different types of architecture content.

On the content side, team target has made some progress regarding the product/service architecture, which has been added to the new repository. For each of the product categories, a ‘bucket’ has been created. Each of these buckets lists the main products. To get to the details, one has to ‘drill down’ which will lead to a presentation / document that lists the underlying services and provides further explanation.

The top three levels of business capabilities have been documented and approved. The team decides to only show the top-level capabilities.



## Strategies

In the meantime, the management team has kept the pressure on their advisors as well. They have been fleshing out the requested strategic direction but is still struggling with the details. Brenda has a short meeting with them, and returns with the following notes:

- For manufacturing: The production machines come with their own software.
- Standard capabilities (such as CRM and ERP) are supported with standard COTS<sup>8</sup> systems.
- Do the important things first: Work on supporting the standard capabilities first

A quick analysis reveals, though, that going for *best of breed systems* means purchasing systems which may not follow the structure of the architecture too much.

<sup>8</sup> COTS = commercial off-the-shelf

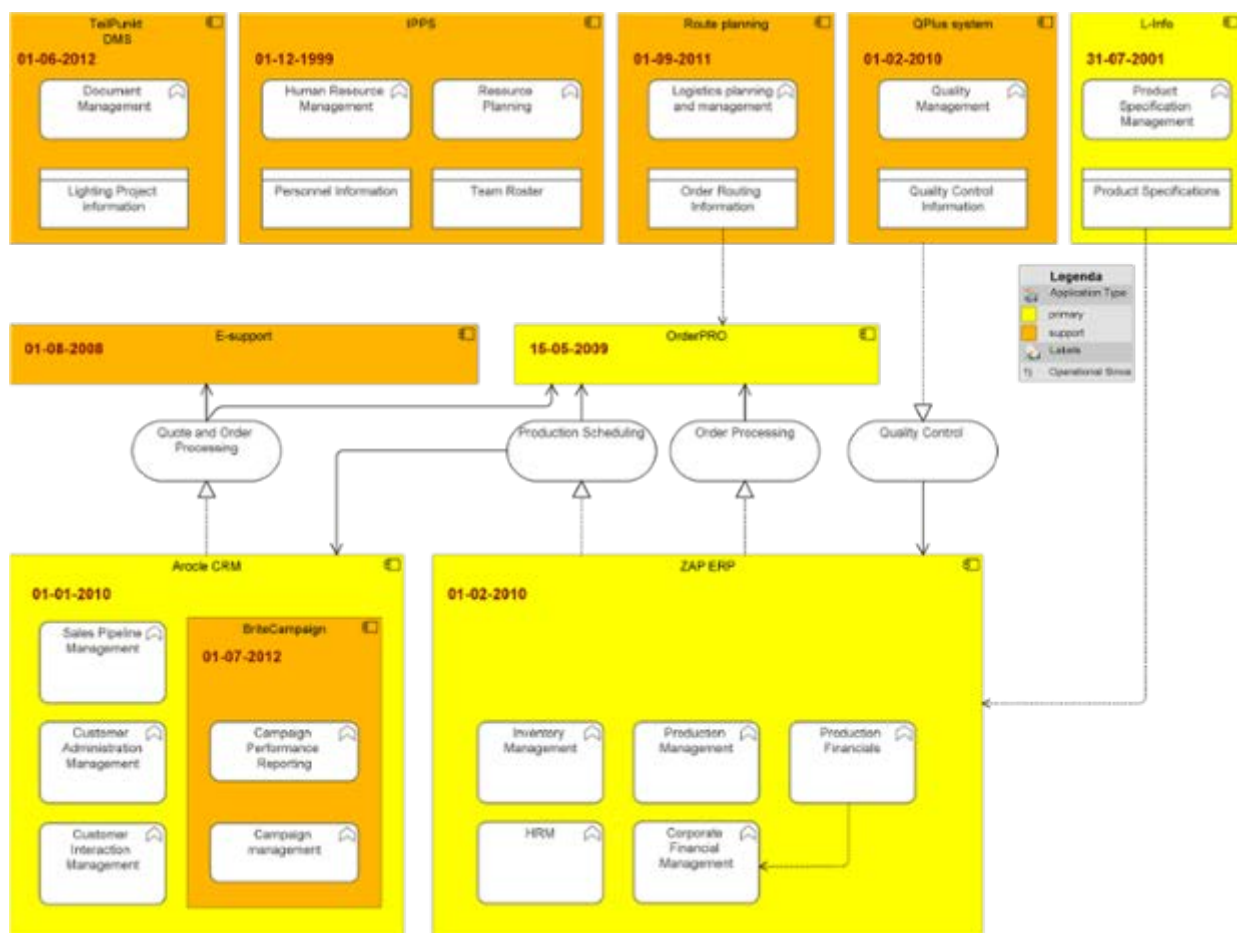
# Brainstorm<sup>9</sup> and Wrapping up the baseline architecture<sup>10</sup>

## Team baseline

The baseline team approach is to work with cross tables and then generate some views to show how everything fits together. The cross tables they have come up with are:

- Products & services x capabilities
- Capabilities x systems
  - This should also validate the application services that have been defined
- Systems x infrastructure
  - Which should validate the infrastructure services that have been defined

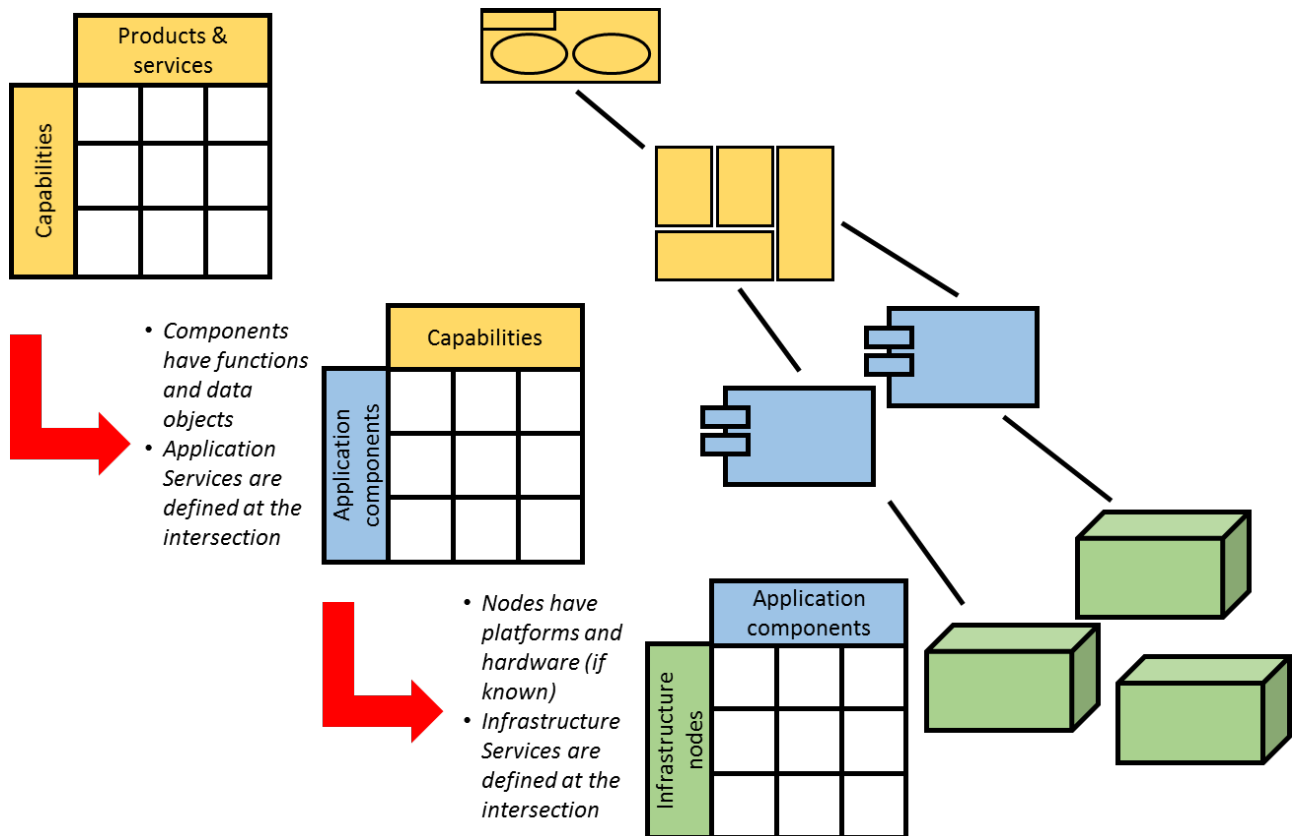
Also, the baseline team finished the application landscape. The example below visualizes BriteLite's application landscape, showing application type as a color, and the operational-since date as a label.



The team has brought along the following diagram to illustrate their way of working:

<sup>9</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-brainstorm>

<sup>10</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-wrapping-up-the-baseline-architecture>



Brenda is quite proud that her team manages to convey their approach so well, especially when the baseline team explains that they have also used the [modeling tool](#) to generate several layered views to verify insights with stakeholders in the organization.

Brenda encourages the team to also write a newsletter that will be distributed to all stakeholders in the organization.

## The results

At the end of the week, both the baseline team and the target team are proud to announce that they have completed their task. The baseline team gets to present their findings first, and distributes big sheets of paper that show the cross tables they have made:

Application \ Capability	Capability	Logistics Management	Quality Management	Asset Management	Procurement Management	Inventory Management	Product Management	Production Management	Customer Management	Material Resource Management	R&D and Engineering	Marketing and Sales Management	Business Planning	IT Management	Partner Management	Financial Management	Training and Development Management	Human Capital Management	Capital Management
Application																			
Route planning		X																	
Optus system			X																
L-Info				X	X	X	X												
OrderPRO		X						X	X										
E-support			X							X	X								
BriteCampaign									X			X	X						
TellPunkt CMS											X			X					
Avicore CRM									X			X			X				
ZAP ERP				X	X			X					X			X	X	X	X
IFPS		X											X				X	X	

## Application x Capability Matrix generated using the BiZZdesign Enterprise Studio

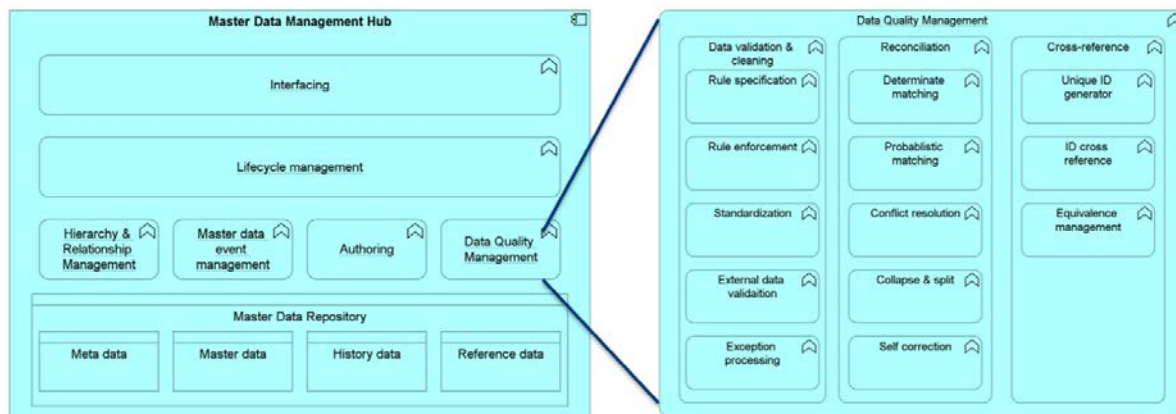
Node x Application	Application	ZAP ERP	E-support	OrderPRO	L-Info	QPlus system	IPPS	Route planning	TeilPunkt DMS	BriteCampaign	Arode CRM
Node											
ERP Server Cluster		X									
ERP Server Cluster (mirror)		X									
General Purpose Server Cluster			X	X	X	X	X	X			
TeilPunkt Server									X		
IPPS Server							X				
CRM Database Server										X	X
CRM Application Server										X	X

## Node x Application Matrix generated using the BiZZdesign Enterprise Studio

### Team target

The key is to consider a system as a collection of data and functionality with separate (master) data management (MDM) stores for key entities such as customer and product.

The team wants to know why an MDM solution is required if we go for *best-of-breed* solutions: because several of these best-of-breed systems will require access to the *same* data! Using an MDM hub will also be a good step in getting a data management capability off the ground.

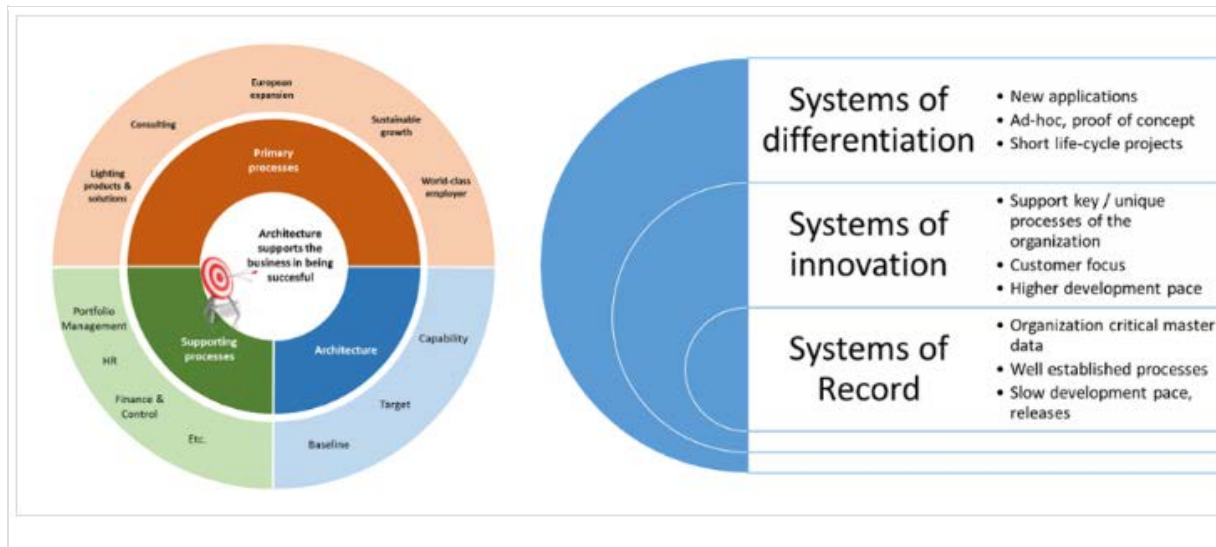


Dreibelbis, Allen; Hechler, Eberhard; Milman, Ivan; Oberhofer, Martin; van Run, Paul; Wolfson, Dan (2008-06-05). Enterprise Master Data Management: An SOA Approach to Managing Core Information (IBM Press). Pearson Education.

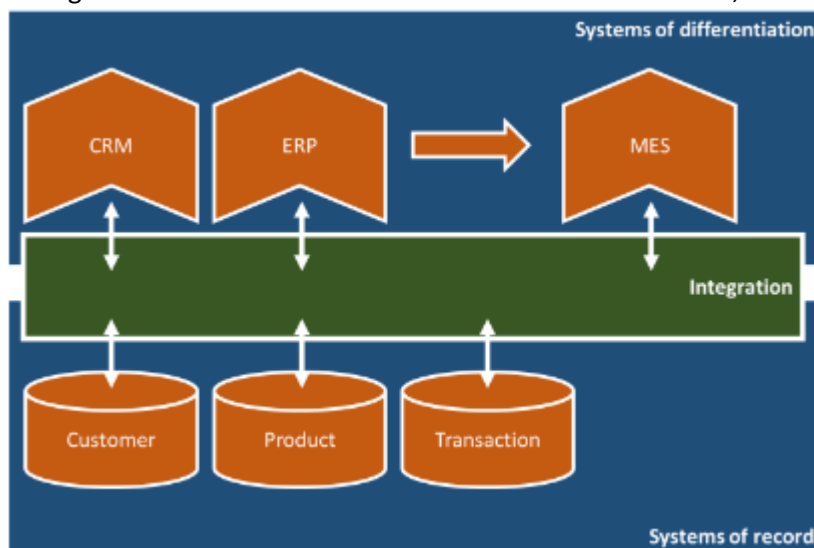
### Moving on

The team agrees that this approach would solve many issues, but recognizes that it would also be expensive. Still working at the whiteboard, they figure out a story line to present to management.

The target team has worked on a presentation that illustrates the business-focused nature of the target architecture. It also shows the relation to the MDM components and explains the way this maps to the business strategies that are close to being signed off.



This (first) part of the presentation goes quite well. Especially the business focus, and the different development “paces” are well received. However, there is also some impatience and push-back: management seems to be in a “we-are-different” mood, and is not looking for “academic”



discussions on development pace. With that in mind, Brenda decides to only briefly mention the need to think ahead, to consider “smart lighting” in the context of the Internet of Things, and moves on to the architecture framework to illustrate the line of thinking for the target architecture.

She pulls up a simplified PowerPoint version of the results from the brainstorm

and sets out to explain how, in this setup, data will be the core of the architecture – and is careful not to go into detail as to what that entails: this is a discussion for next time. It will be supported with (data management) processes to make sure data will stay consistent and of high quality.

Continuing the discussion, she then explains how best-of-breed systems can be purchased to support the key capabilities of the organization. This requires strong data integration, a topic that will be discussed later. She also links back to the general notion of supporting manufacturing with a standard Manufacturing Execution System (MES), while keeping the new policies in mind. This will streamline planning and production processes while the separate “data core” (systems of record) entails control over the data.

While some people seem to “glaze over”, several of the key players seem to understand the benefits of such an approach, but sense a “catch”. After explaining that flexibility and control isn’t “free”, she argues the case for an integration layer and stresses the cost/ benefit aspects rather than the technology itself. But at the same time, there are arguments against adding an integration layer into the enterprise architecture, as shown in the table below:

Advantages	Disadvantages
Supports loose coupling of applications (Systems of Differentiation)	Higher cost through additional technology
Central management of data (promotes reuse of data for reporting, easier auditing)	Higher complexity because of extending the application/technology landscape
Opportunity to leverage use and analysis of integrated data that otherwise remains separated	Increased vulnerability (single point of failure)
Scalability, easy to plug in additional source and/or target systems	Requires an Enterprise Data Model that all stakeholders should agree on
Supports “think big, start small”, easy to adopt and implement in an incremental and controlled way	Requires solid and coordinated organization in terms of (data management) processes

Advantages and disadvantages of using an integration layer in the Enterprise Architecture

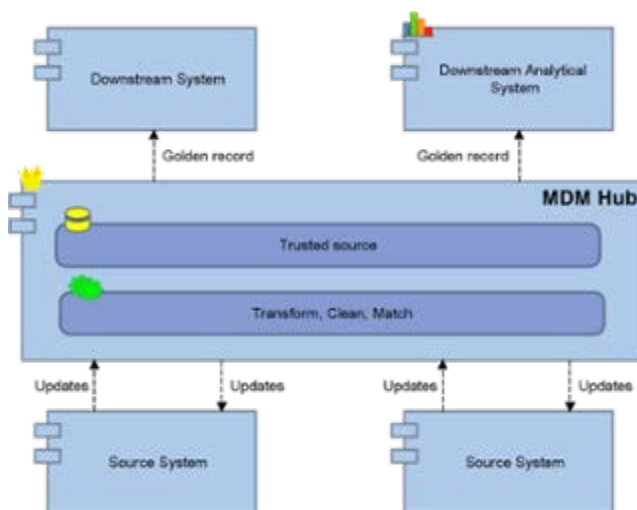
While, again, there is some push-back, there is also support for her approach: management appreciates being involved so early, but doesn’t understand enough of the impact to decide either way. Understanding the need for approval / guidance, the agreement is that the team can continue for now, but will have to come back with a more formal analysis later.

# Fleshing out the MDM part<sup>11</sup>

The team is particularly enthusiastic about going for a combination of best-of-breed systems mixed with an MDM solution.

## MDM – the co-existence pattern

The team starts by exploring the co-existence pattern in more detail. In this pattern, all source systems keep their own data, based on the data model specific for the source system. All source systems are connected to the MDM hub which receives every update in the source system to any of the data entities that are managed by the MDM hub. The MDM hub make sure that these updates are also pushed to other systems in the landscape, including other source systems, downstream systems, as well as analytical systems. The team created the following diagram describing the co-existence MDM strategy.

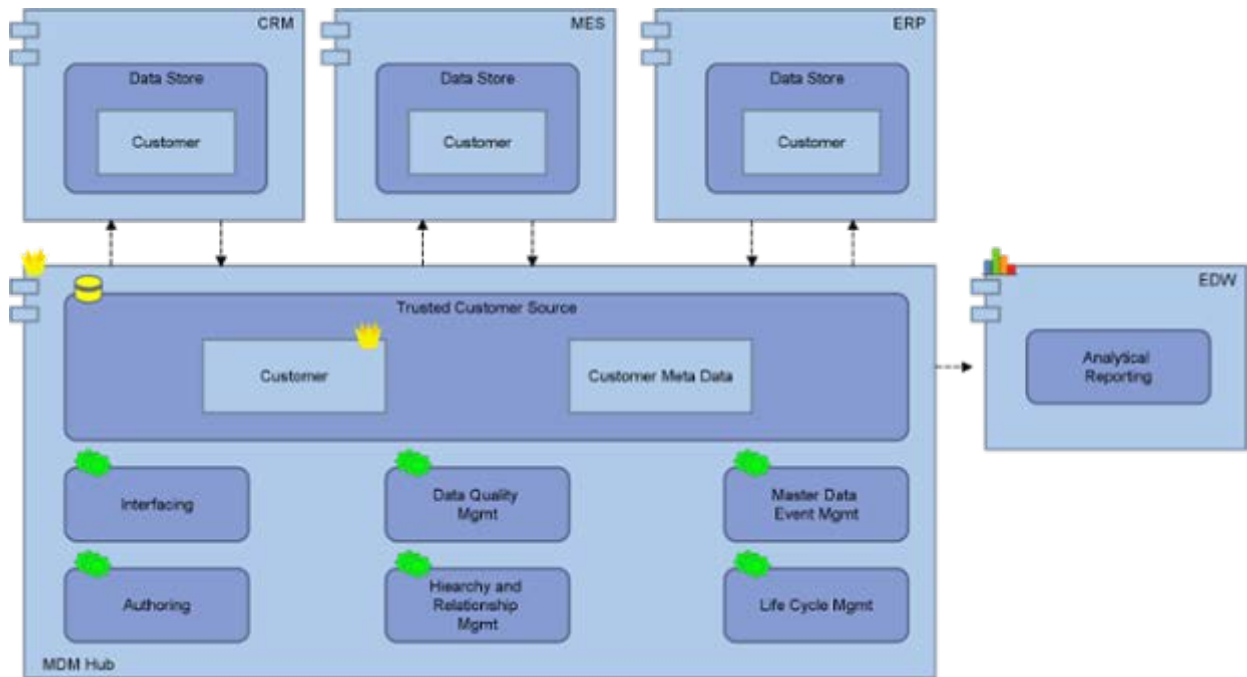


The diagram uses the usual [ArchiMate concepts](#) to model things like application components and flow relations. By using specialization of ArchiMate concepts, the different MDM roles of the objects in the diagram can be visualized. In this case, specialized objects are identified with an icon: the application component with the crown icon is an MDM system. Application functions modeled as part of the MDM hub include data storing functions (the database icon), and processing functions (the double gear icon).

The team then starts building on this pattern, and creates a first draft of the target application landscape for the standard capabilities. The landscape is visualized below. The transaction systems CRM, ERP, and MES should provide functionalities according to the needs of BriteLite. At this point, only the data storing functions are identified as part of the transaction systems, other functionalities will be added to the model at a later point in time. For now, the diagram focuses on the integration aspect of the architecture based on the co-existence pattern.

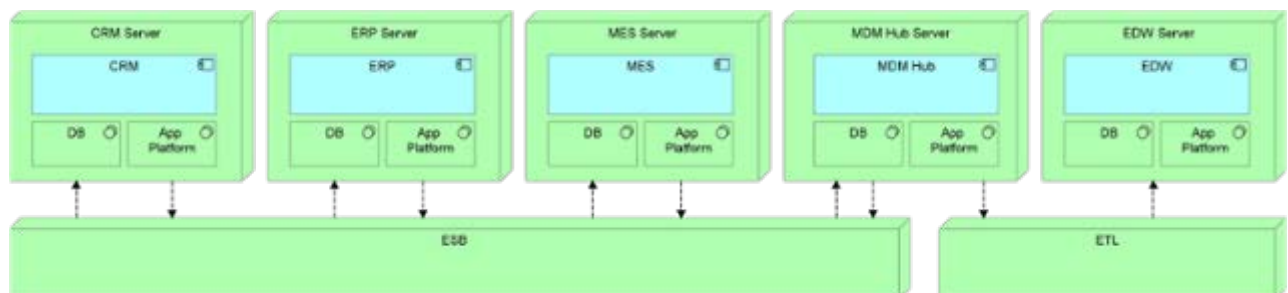
<sup>11</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-fleshing-out-the-mdm-part>





While the view is very “high-level”, the team is happy to be able to visualize why the MDM-solution is important for BriteLite. This diagram is expected to help in discussions on data quality, being able to deliver operational / management reports quickly, and to make sure that the various systems have access to the same data.

The team also starts thinking about the deployment perspective of the target architecture. The diagram above identifies the applications and shows that data is exchanged between components. Using technology layer concepts from the ArchiMate language, the team models an initial overview of the target technology landscape. This identifies technologies such as Enterprise Service Bus (ESB) and Extract-Transform-Load (ETL) that provide functionality to support the exchange of information among objects in the IT landscape.



The diagram serves as a starting point. In a later stage, more detail has to be added including the database platforms and application deployment technologies to support the application landscape. For now, placeholders already have been added.

# Reference Models<sup>12</sup>

The team agrees that the only way to show management the power of MDM is to work through an entire use case. In order to do so, they want to use story boarding techniques to show how the integration will work. Brenda only gives guidance to use reference models whenever possible to figure out the main functions of each of the systems.

## Selecting reference models

The team quickly finds out that reference models can be found at two levels:

- Reference models pertaining to the manufacturing industry
- Reference models from vendors

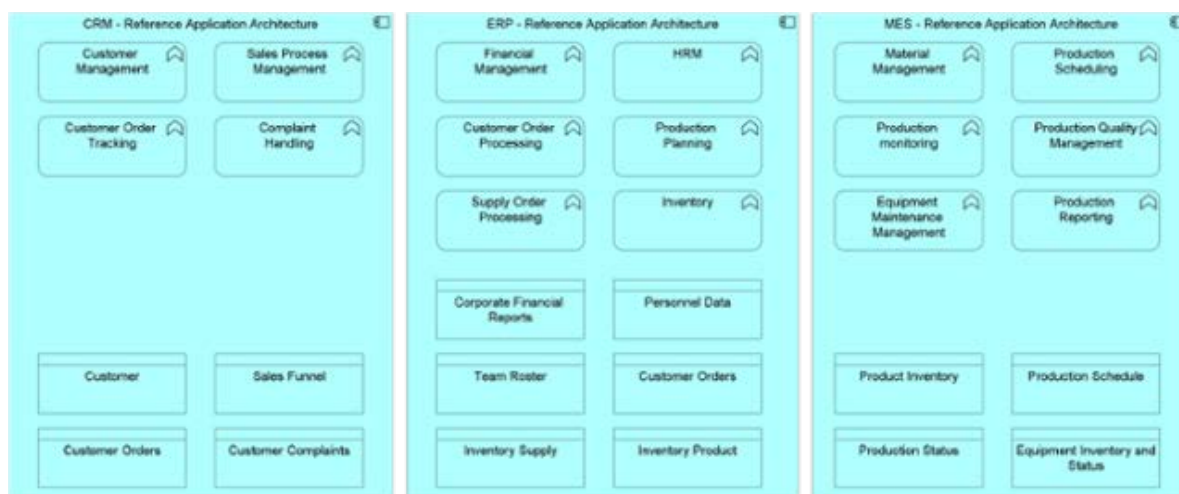
## Developing the reference model

The team has selected the following components to develop a reference model for:

- The CRM system, which will hold all the data around relations, including customers, vendors, partners etc.
- The ERP system will do anything related to planning, inventory management etc.
- The MES will support the actual manufacturing

They decide to document reference models in their EA tool BiZZdesign Enterprise Studio, by consolidating information found in industry and vendor reference material. In this way they build up a model for each of the core applications to be adopted by BriteLite: CRM, ERP, and MES.

It appears that each vendor has its own unique 'reference model' and integrating them is a complex task. For now, the team decides to attempt to integrate models from various sources. Each of the applications is broken down into the key application functions that will support BriteLite's business capabilities. The example below shows an early result where the applications are modeled using Application Components, with the assigned Application Functions nested in them, as well as the data entities modeled as Data Objects:



The reference architectures show that there are functions that are available in multiple systems. An important aspect of deciding on the actual target architecture for BriteLite includes making decisions

<sup>12</sup> <http://blog.bizzdesign.com/archimatemodeling-in-practice-reference-models>

on what functions will be required for each of the core applications, while making sure that in the overall architecture all functions required to support BriteLite's business capabilities are available and aligned. The other aspect is to identify what information is managed in what application, and how it should be exchanged with the other application. For the actual exchange, the team will be building on the MDM patterns as explored [previously](#).

The team analyzes the reference models of the core applications, and uses coloring to identify and visualize unique and overlapping functions, as well as unique and overlapping data entities. The example below shows one of the results of this analysis:



The diagram shows that some of the functionality and data typically available in the core systems overlaps with functionality and data in the other systems. The colors show these duplications, as explained in the legend. The overlapping data objects in the systems underline the added value of the MDM solution.

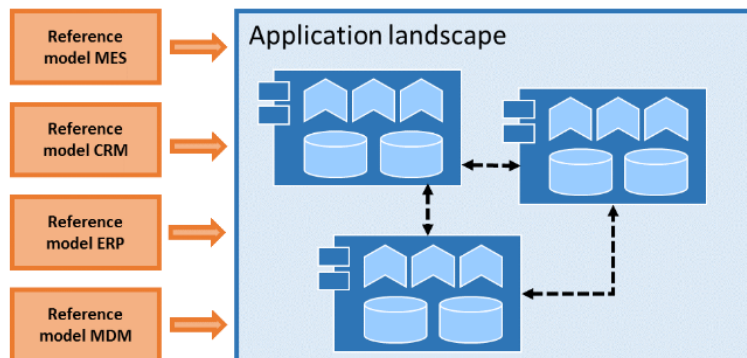
# Defining the Application Landscape<sup>13</sup>

## Modeling the application landscape

In order to kick-start the modeling of the actual application landscape, Brenda has developed a simple poster to guide her team. Her mantra is “model as little as possible, but not less”.

Support of capabilities by (data + functions in)  
the applicatie landscape

	x		x		x
		x		x	
	x				
		x	x		



Starting with the reference models that have been developed by the team, the team first understands at a high-level which capabilities are supported by which functions / data in the system landscape, and then do a mapping on the actual components. Modeling the landscape also include clear insights in how data will move from one component to the next. This will most likely be the hard part to define, given that the team wants to use an MDM-based solution.

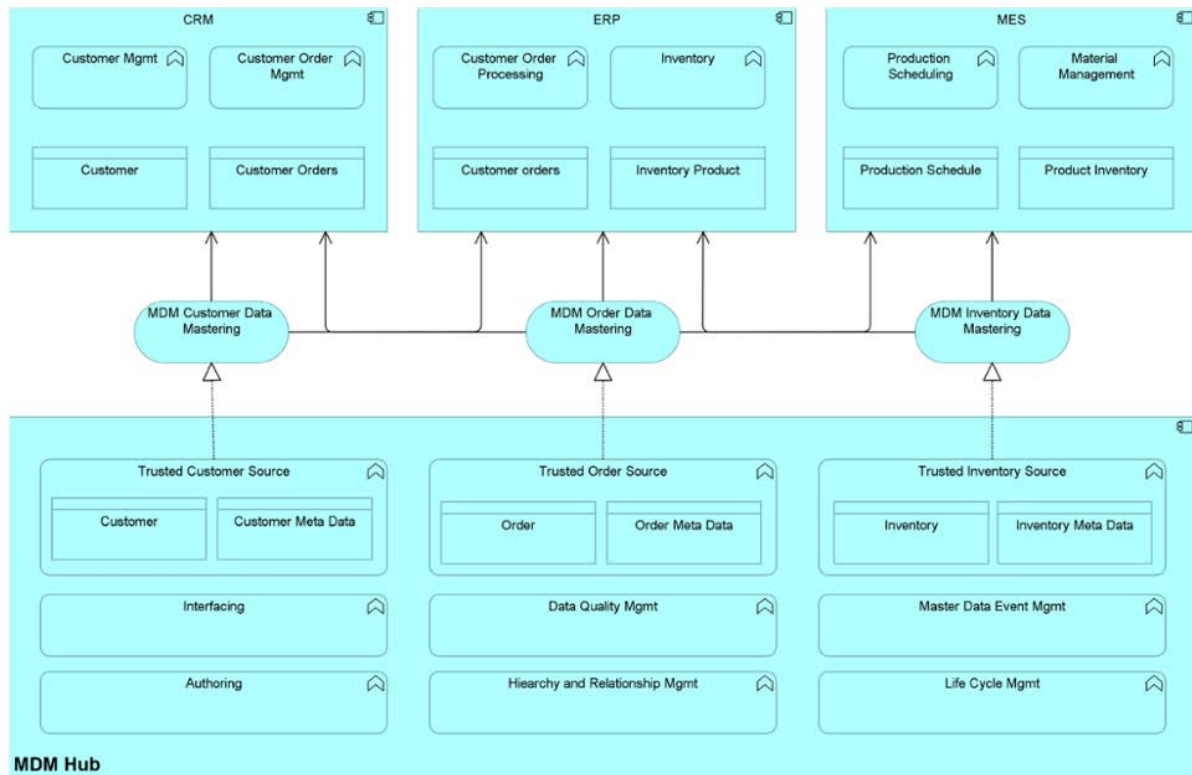
## The target architecture for the application landscape

At this point in the process, the team really starts to benefit from all the preliminary work. The different pieces of the puzzle can now be connected and transformed into a solid and future proof target architecture for the BriteLite organization. The MDM studies and patterns, and the reference application models have been documented consistently in the ArchiMate language. This means that creating models for the target architecture is “merely” a matter of reusing and generating new diagrams based on existing information.

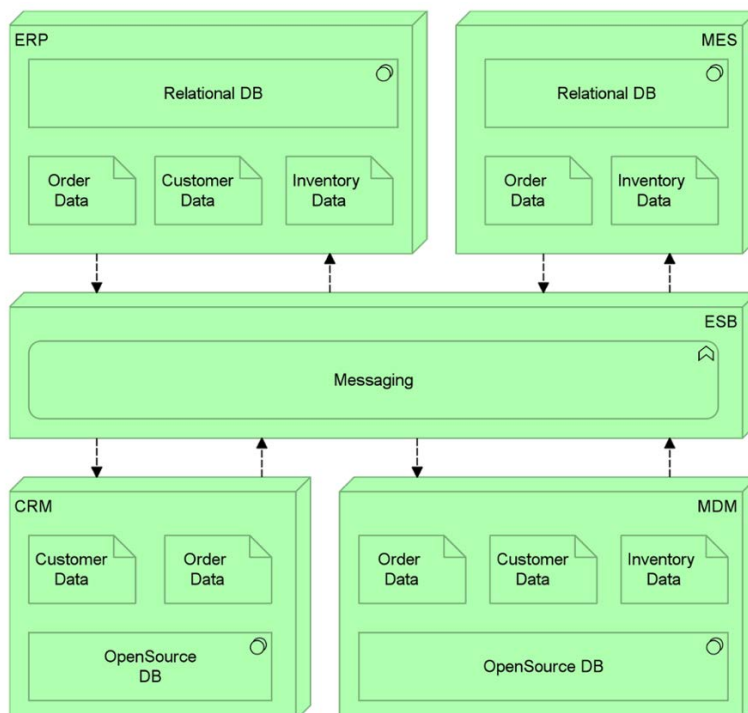
The view below is an example that illustrates this point. It visualizes how the core applications in the landscape are aligned based on the co-existence MDM pattern. The applications share functions and data around customer management, order management, as well as inventory management. The data in the individual source systems is consolidated and managed by the MDM hub. One of the key functions of the MDM hub is to maintain the “golden record” for each of the shared data objects.

The team uses a “service oriented” approach. Application services represent “useful” automated functionality for users (human users, or other objects in the application landscape) of a system. The MDM hub realizes a “data mastering service” that can be used by the transaction systems. To make this picture even more specific, and to put a focus on what data is mastered by the MDM hub, three “instantiations” of a data mastering service are modeled, by type of data.

<sup>13</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-defining-the-application-landscape>



The team also works on the target technology architecture. Team members use the objects from the technology layer in ArchiMate to create diagrams that provide insight on the deployment perspective of the target architecture. The example below shows how ESB technology is incorporated in the infrastructure to support the actual exchange of data between the components, including the core applications, as well as the MDM hub.



# Planning Realization<sup>14</sup>

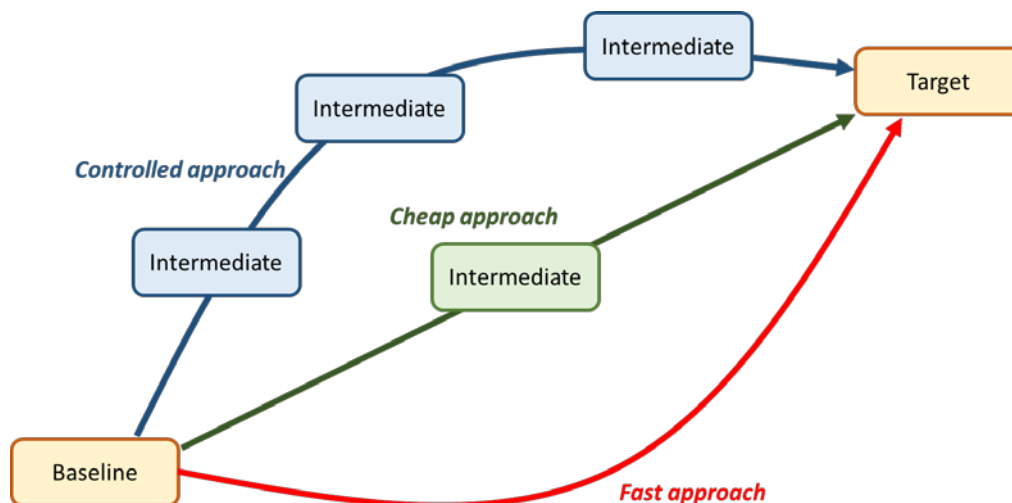
The work for gap analysis is in full swing. The team found the approach “a lot of work, but doable”.

The team has started with the information systems part of the landscape in their gap analysis. They keep it relatively high-level and the focus is on showing that the functionality of the system largely maps on existing functionality, yet the actual systems will change according to the new vision and target architecture. Part of the team also started working on a high-level gap analysis for the business layer, focusing on business processes and department structures.

During her weekly meeting with management, Brenda has indicated that the team is about ready for thinking about realization of the architecture. The idea is to setup a roadmap with plateaus and then worry about work packages and deliverables. In order to gain additional buy-in and speed up the work as much as possible, she requested help from one of the lead program managers of BriteLite. After all, program management is a skill and discipline in its own right and close co-operation will surely be beneficial.

## All roads lead to Rome

The first priority is to make sure the team understands that ‘all roads lead to Rome’... in other words, there is a choice to be made.



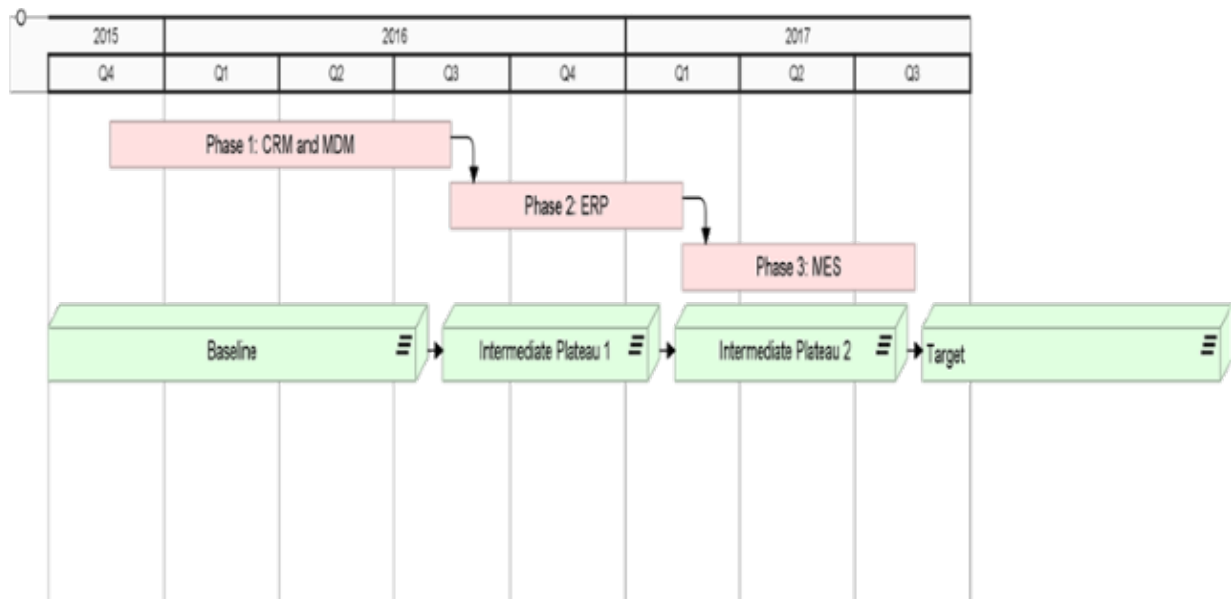
Choosing an approach will require management support. Each has its own advantages and disadvantages.

For example, the fast approach is considered to be very risky, stressing the fact that big-bang migrations have a very poor reputation. The counter-argument is also made: a slow approach will reduce risk but doesn't get us to where we want fast enough. No one seems to like the “cheap” approach, which is therefore quickly discarded.

Finally the team settles on a simple approach:

- Work on CRM first: remove all the old CRM “stuff” and replace it according to the new architecture. This will be a big plateau as it will likely include a large chunk of the integration layer, the MDM solution etc.
- With CRM in place, the ERP will be built on top of the infrastructure, and finally the production systems are added.

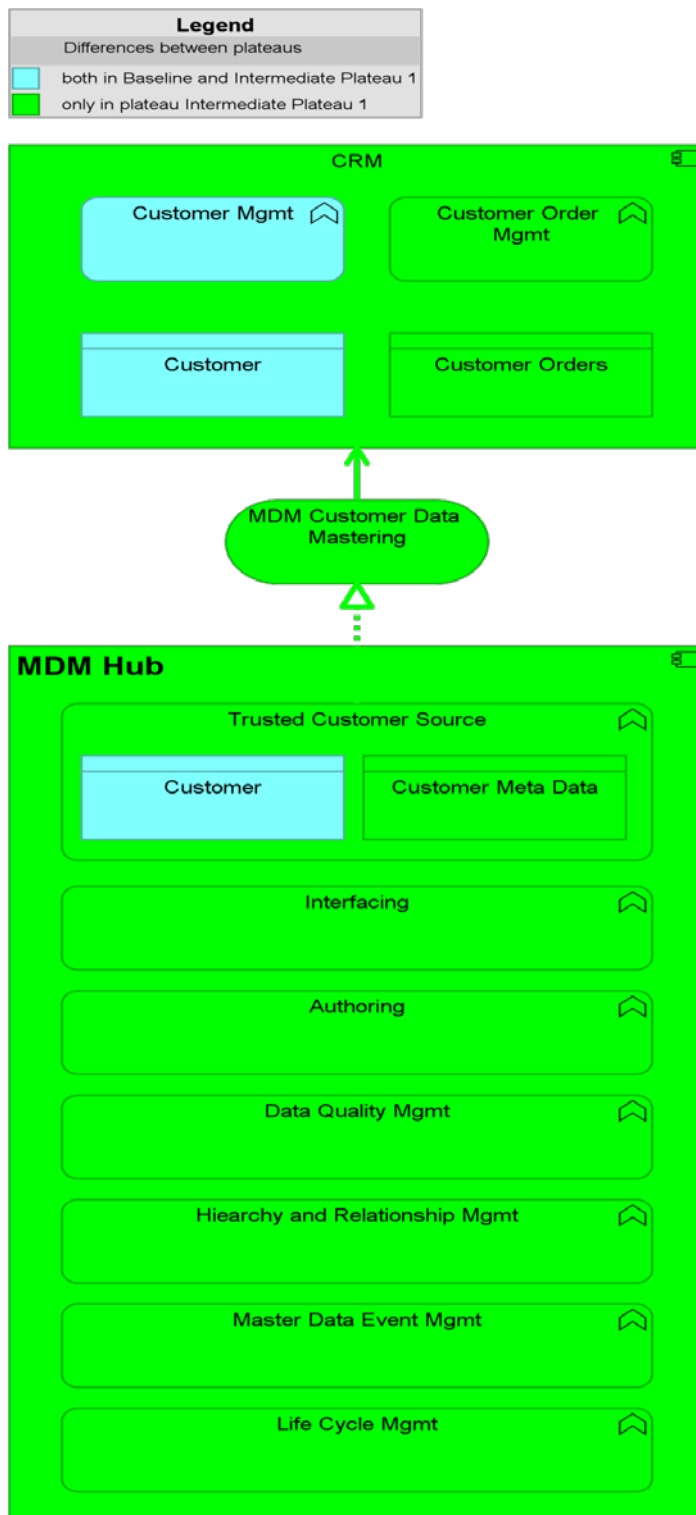
<sup>14</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-planning-realization>

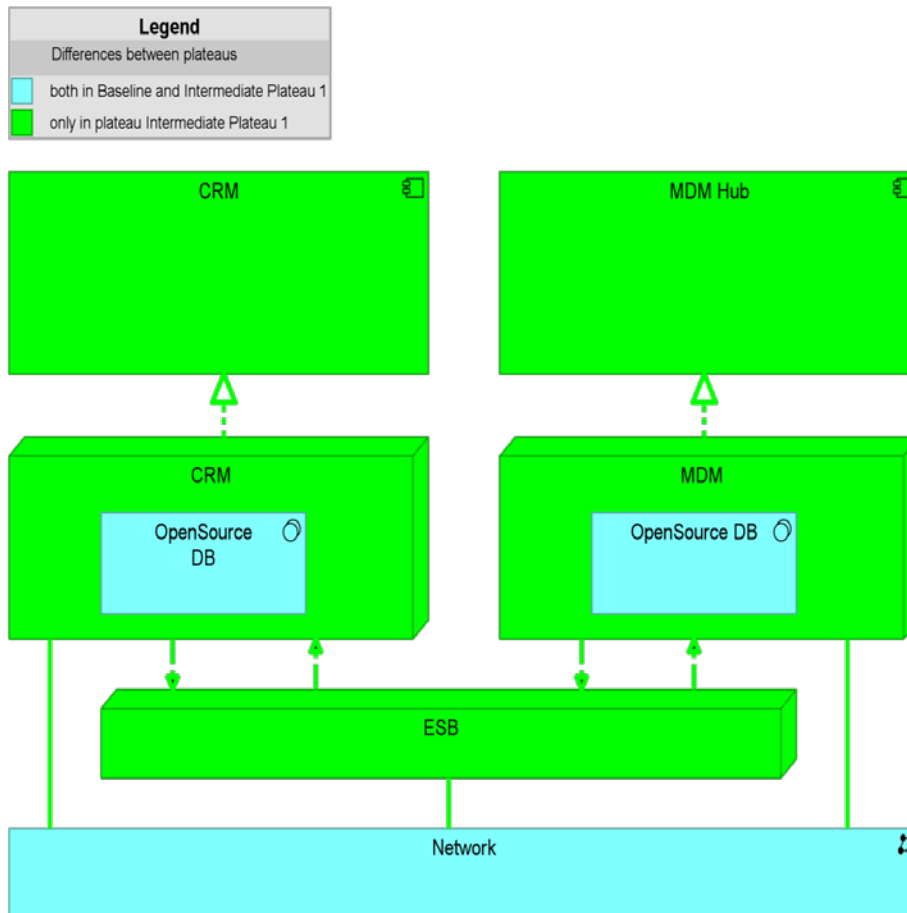


The timeline shows not only the work packages (projects) to be executed, but also the plateaus: When CRM and MDM go live, we basically transfer from the baseline state, to the first intermediary state. That is when we start preparing and configuring the ERP system, which will bring us to the second intermediary state once we take it live, etcetera.

The team also starts detailing the roadmap, building on the models and gap analyses done in the previous phase.. On a detailed level, objects (applications, nodes, system software representing platforms running on nodes, etc.) are assigned to the roadmap. This allows the team to execute gap analyses on a more detailed level of the roadmap. The examples below show (a part of) the effects of moving from the baseline state to the 1<sup>st</sup> intermediary state, from an application architecture perspective, and from a deployment perspective, respectively:



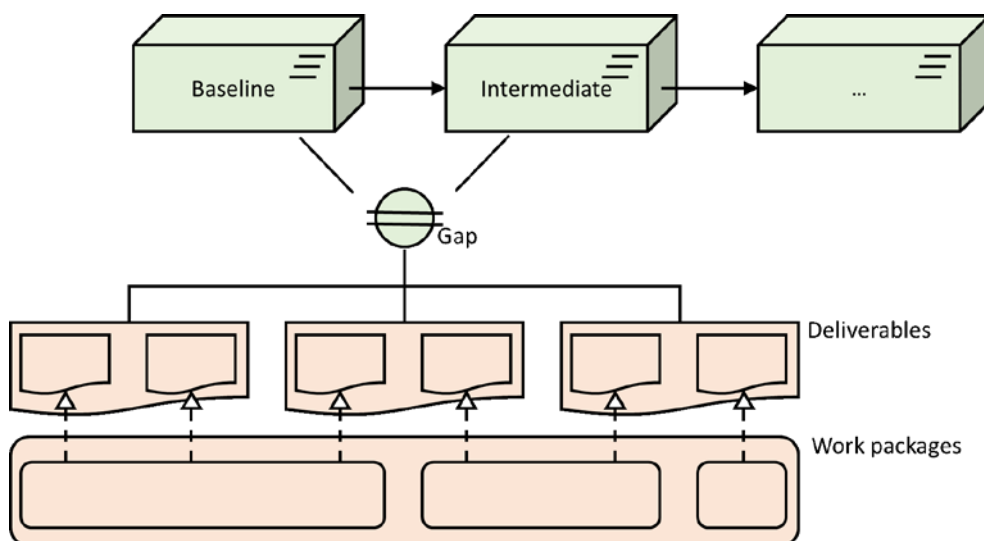




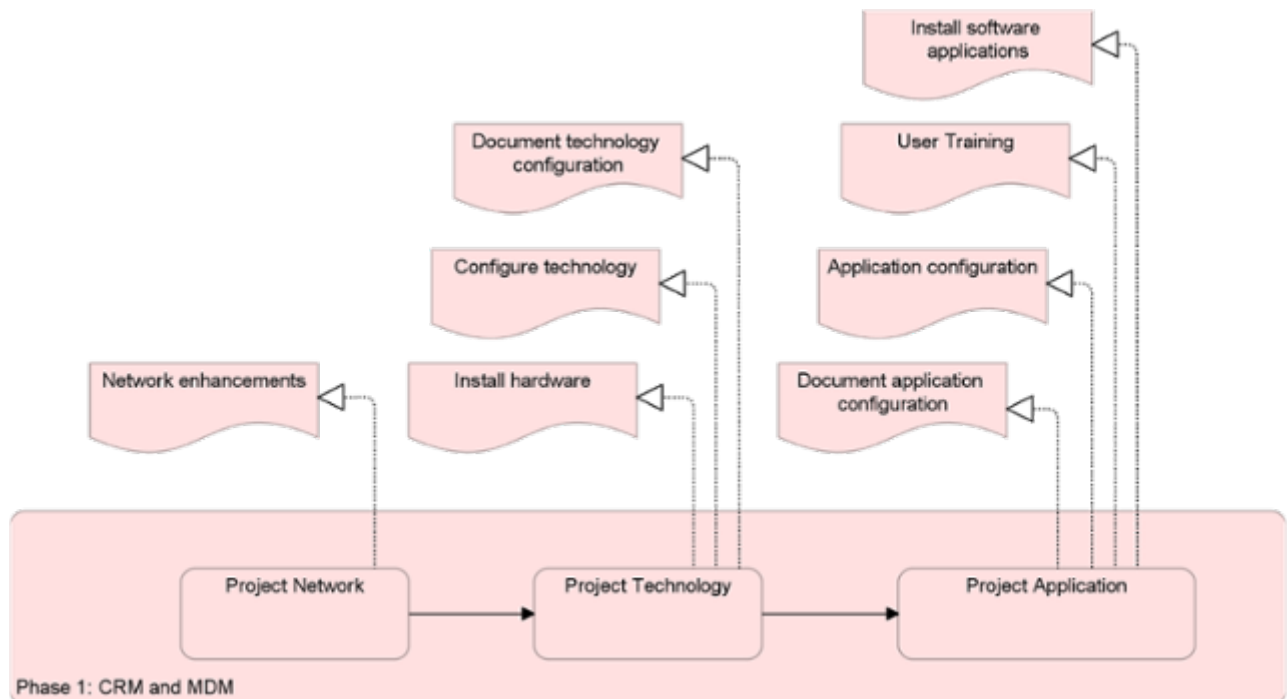
## From roadmap to program planning

While everyone agrees that the approach is solid and the analysis is valid at a high-level, the team suggests that (a) the analysis will have to be revisited as more detail becomes available, and (b) management should get on board as well.

To kick off the discussion about planning, the following diagram is prepared:

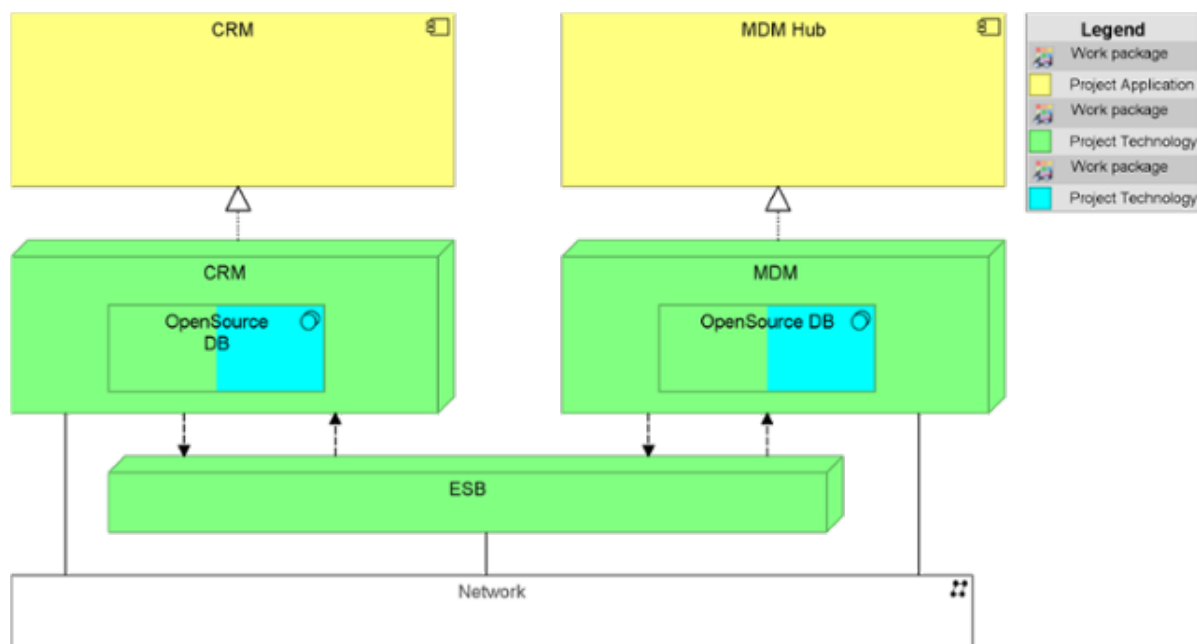


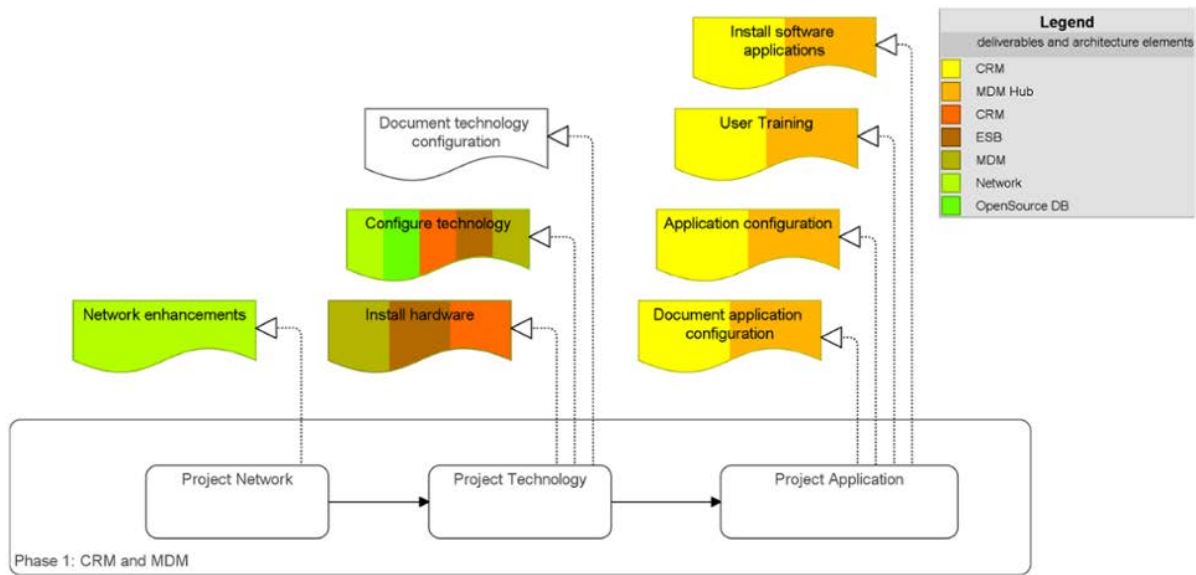
The assignment to the team is to come up with a rough break-down of the gap between baseline and the first intermediate in terms of deliverables. Matt would like these to be as concrete as possible, and include 'hard' things (i.e. systems installed, networks to be built) as well as 'soft' aspects such as training..



In ArchiMate the implementation and migration perspective is fully integrated. This means that the team can model, visualize, and analyze things like programs, projects, and work breakdown structures. The example above shows how the work for phase 1 is organized as a phased approach that consists of three steps executed in consecutive order. Each of the steps results in deliverables.

Not only can these structures be visualized, but of course also connected to other parts of the enterprise architecture. Using this approach, the team can use the tooling functionality to perform analysis and present the results in e.g. a diagram like in the examples below. The diagrams show the result of an impact analysis of the individual steps of Phase 1 of Britelite's transformation initiative. The first example shows this from the perspective of the application landscape in scope for the first phase. The second example shows results of the same impact analysis, but from the perspective of the deliverables of the work packages, and how they impact the enterprise architecture:





This analysis performed by the team sets the stage for the next phase of planning transformation at BriteLite on developing the business case: what are costs, business outcomes, risks, resource requirements associated with the roadmap.

# Conclusion<sup>15</sup>

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Over the last few weeks we have posted a series of articles about the challenges at BriteLite and the way Brenda the Architect has helped solve them using architecture practices in general, and ArchiMate in particular. Of course, the case is a work of fiction and names of characters, businesses, places and events are either the products of the author's imagination or used in a fictitious manner. Any resemblance to actual persons or events is, of course, entirely coincidental.

We have taken great care to paint a picture of what an architecture project could look like in practice, based on our experience in various organizations in both Europe and North America. We have worked with various organizations in many different branches and aspects of these projects have made their way into this blog series.

Learning ArchiMate is not very difficult. The basic structure and principles of the language are fairly straight forward. As always, though, the proof of the pudding is in the eating: only by actually applying ArchiMate can we really learn how to use it. With this blog series we hoped give novice modelers some guidance in how to get started. Also, we hope to have inspired more experienced modelers to try new things and to share their stories. Actual case studies – of successful projects or complete failures – are very useful for the modeling community at large.

We hope that you enjoyed reading about Brenda and her team. You may want to “get your own Brenda” to give your architecture initiative a boost!

Happy modeling!

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<sup>15</sup> <http://blog.bizzdesign.com/archimate-modeling-in-practice-conclusion>