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Пояснювальна записка
до магістерської роботи

на тему
Creating a Data-Driven Business Transformation in IT Service company

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ABSTRACT

Providing complete, prompt, and reliable information for in-depth analysis and evaluation of the company's operations and decision-making procedures becomes a competitive advantage. It helps the company to improve its operational efficiency. Therefore, the data-driven business transformation of the company is an essential aspect in the decision of this question. Currently, the current framework provides a holistic picture of the change of the data level and the corresponding processes within the company.

Забезпечення повною оперативною і достовірною інформацією для проведення поглибненого аналізу і оцінки діяльності компанії і процедур приняття рішення стає конкурентою перевогою та допомогає компанії в підвищенні ефективності операційної діяльності. Тому дата-орієнтована трансформація компанії постає важливим аспектом у вирішені даного питання. На данний момент варіант рішення забезпечує цілісну картину трансформації не тільки рівня данних, а і відповідних процесів всередині компанії.

VOCABULARY

Word/Abbreviation	Comment
BI	Business intelligence
COE	Center of Excellence
MDM	Master Data Management
EBITDA	Earnings before Interest, Taxes, Depreciation and Amortization
ROI	Return On Investment
TCO	Total Cost of Ownership
DWH	Data Warehouse
ETL	Extract, Transform, Load

INTRODUCTION

According to the McKinsey Global Survey in 2021 [11], using in-depth analytics and artificial intelligence to create additional value will increase a 10-15% increase in EBITDA. Moreover, the value is in using deep analytics and the practical application and interpretation of the data it provides.

At Infopulse, one of the challenges that needed to be addressed was creating a data platform and building an in-depth analytics system around it. In the discussion was determined that analytics system is designed to help increase sales, employee retention, and understanding market trends in IT outsourcing. In addition, it is no secret that technology in IT tends to change trends quickly, and understanding trends can provide a competitive advantage, both in developing proposals to the client and the labor market, which in recent years is quite overheated. The acquired knowledge at LVBS has allowed me to consider this task much more broadly. Namely, introducing a technological platform will not provide the desired effect if the company's processes are not prepared for it. Therefore, a compulsory component is the transformation of processes and the introduction of new ones that meet the needs of transformation.

Furthermore, any change, as we already know from the Digital Disruption module, is an innovation, which requires the use of approaches to adapt the change to the company. Adaptation is always quite a complex issue and refers to the creation of a specific culture. Moreover, this culture should be the attitude towards data as a strategic asset based on this task.

Analyzing the solutions that exist on the market and the companies that have already tried to solve this issue, we concluded a great demand for a systematic approach or framework. According to HBR 72% of large companies do not have a data culture; 69% habe not created a data-driven organozation; 53% don’t treat data as a business asset; 52% are not competing on data and analytics. [10]

First, about Infopulse. Infopulse Ukraine was founded in 1991, since 1999 it has been registered under the brand name ‘Infopulse Ukraine”. Since its foundation,

the company has significantly grown and now the company has a team of over 2,000 professionals and is represented in 11 countries worldwide.

Infopulse is an international solution provider with its headquarters based in Ukraine (Kyiv, Zhytomyr, L'viv, Kharkov, Odessa, Chernihiv and Vinnitsa).

Over the course of the years, Infopulse has progressed from being a supplier of software development services to become one of the largest IT companies in Ukraine, offering a full range of services in high tech area such as: tailor-made software development; project management, implementation of ITIL, ISO standards, consultancy on project management and software development methodology; enterprise application integration services; design, implementation, testing, integration, maintenance and support of IT solutions; IT infrastructure management; business analysis and IT consulting. Infopulse Ukraine has never been subject to any litigation in regard to any of its activities.

Long-term experience in IT market allowed us to achieve high efficiency of IT services and offer our numerous customers high quality products and services at competitive prices.

In 2007 Infopulse became a part of IT group EVRY A/S — an international vendor of services in the areas of Software R&D, Application Management, Cloud & IT Operations, and Cybersecurity to SMEs and Fortune 100 companies across the globe.

In 2019, EVRY, a leading Nordic tech company and a parent company of Infopulse, and Tieto, global Finnish IT services and software company, announced the closing of the merger agreement to create TietoEVRY – one of the most competitive digital services and software companies in the Nordics. With the local proximity and global capabilities, a workforce of 24,000 professionals, and the annual turnover of approximately EUR 3 billion, TietoEVRY Corporation will deliver Digital Advantage for its 10,000 corporate clients across 90 markets. [9]

The company has implemented systems that allow to do traditional analytics (linear statistics, local calculations, Excel files). However, the current maturity of analytics does not allow us to realize analytics on a business level. The business only

uses the current solution to understand "what happened?" Moreover, there are no answers to the questions "what happens if?" and recommendations for a specific solution for future trends.

In a deeper analysis of the solution to be created, several challenges provide insight into where the increase of 10-15% to EBITDA of which McKinsey Global Survey says [11], is hidden:

1. The existence of shadow data. Every department and even some decision-makers have their analytics, built based on Excel, transmitted to subsequent systems as reports. Moreover, when combining these analytics at the company level, questions about the sources and to what extent they can be trusted because sometimes some indicators are distorted in the direction of a person concerned. The problem is disclosed in more detail in chapter 1.1.2

A survey showed that the problem is also relevant for similar companies and even the following market segments - retail, bank, CPG (Appendix A)

2. Absence of a unified data platform.

Building analytics on different sources generates more confusion about the source of truth. The study, which is cited in section X, shows that the routine task, which faces the need to reconcile and bring data into a single consistent format, takes 409 hours and costs the company more than $ 17,000. Moreover, that is just one process for calculating PnL metrics.

The implementation of data integration between corporate systems will be a challenge for development teams, which create a different master data and then interpret it from their point of view. According to the company data, creating such a master data system costs from $ 13,000 to $ 20,000 and takes up to 3 months, and that for a team of 10 employees (one Delivery Manager, one Analyst, five Developers, and three Quality Assurance Engineers). Furthermore, this, although modern business, requires quick solutions to market challenges.

The survey, which we carried out, confirmed the relevance of most companies in the necessity of a single source of data with which all stakeholders may subsequently work.

3. Creating a system of in-depth analytics based on which to automate the decision-making process. The creation of such systems has become more than affordable, as we have the following needs at the input: the cost of data storage and processing, data availability, and mathematical models. Data storage and processing systems have high performance and low cost. Data availability - the amount of data to process and build models is more than sufficient, allowing the company to use current data training rather than building complex mathematical models. It is worth noting that the level of decision automation is very dependent on the maturity of the company and the development of its analytics practice. Section 1.1.2 indicates that the primary time (50% of the entire chain) to implement the case study takes redesign and implementation of processes.

Thus, the challenges are identified, and it is necessary to move on to the solution. In the solution section, we tried to show a comprehensive approach, which is not limited to the size of the company or market segments. The testing of this approach is currently going on at Infopulse. This approach may well be applied to any other company ready to transform and ready to add value. In the addendum, we point out the potential of using advanced analytics by industry from McKinsey, that the total potential is $15 trillion.

Goal.

As a consequence of the problems described above, there are the following goals and success factors that determine the success of a project.

- **Effective enterprise data management system** implementation
- **Single data platform** implementation & TCO reduction for business applications support
- Providing company management with **complete, prompt, and reliable information** for conducting in-depth analysis and evaluation of the enterprise's activities and decision-making procedures;
- **Increase the staff productivity** by:
    - elimination of inconsistency and information lacks;

- enterprise business processes optimization & elimination of double information entries;
- online access to required business information.

Key factors for project' success

- **Top management commitment and involvement:**
  - invest by human resources
  - invest time by coordinating
  - ability to push changes and innovations
  - ability to put the highest priority on the project
- **Goal-oriented project team, dedicated experts with decision-making authority**
- **Commitment to Data-Driven Framework**
- **Project involvement & commitment of entire company staff**

CHAPTER I. PROBLEM STATEMENT

1.1.Low Business Intelligence Maturity Level

Analyzing the current state of data, we should say that there are problems, such as employees' resistance to the adoption of new technologies, knowledge of data management, organizational and corporate culture. This, in turn, causes the problem of maturity of the BI system.

Based on Garner's assessment system for BI maturity, the company falls into the Level 2 and Level 3 categories.

For most analytics, it means a loss of the possibility to increase productivity and efficiency of the organization.

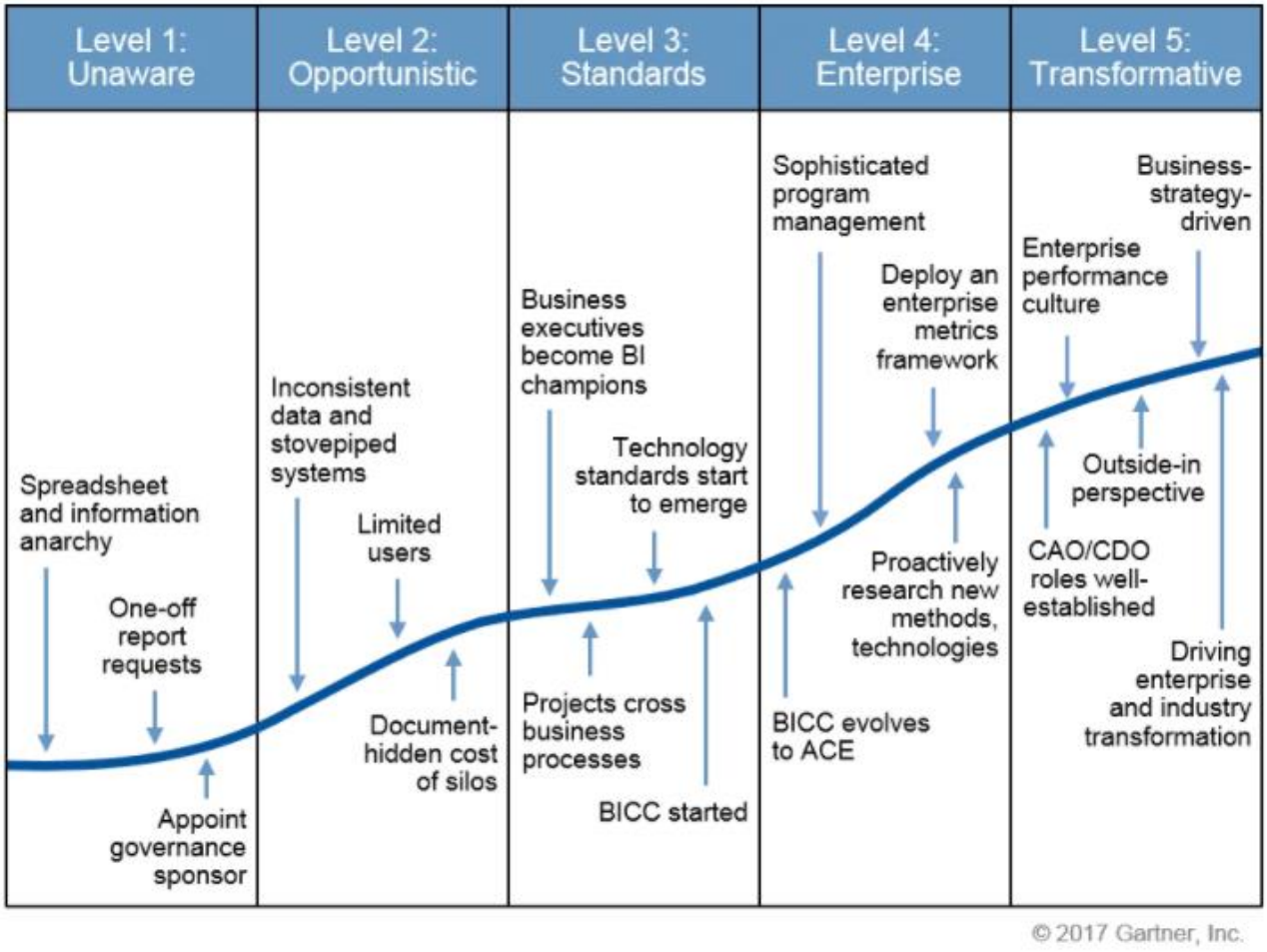

Figure 1.1 Garner's assessment system for BI maturity

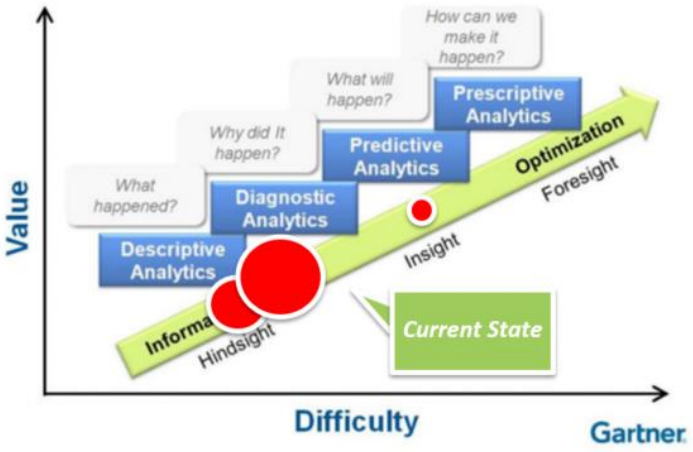

Figure 1.2. Gartner Analytics Ascendancy Model

With the standard approach in consulting, the first thing we do is assess the current level of maturity, which showed that the entire analytics is between the levels of descriptive analytics and diagnostic analytics, there are some parts of the predictive, but this is not enough to calculate the maturity level improvement. Based on an understanding of the current state, the next step is to create a roadmap for improvement.

However, it is worth considering that data is not a permanent representation of the world; it changes according to business changes and market trends. Therefore, applying analysis tools without creating a data platform is doomed to failure.

When calculating the possibility of increasing sales, it was assumed that without the intervention of data science, the next month's revenue could be 2 million USD. After implementing the pricing and promotion model (based on the intervention of data science), the revenue will increase by 5%, and according to this increase of 100 thousand dollars. Nevertheless, the preparation of this model has many more parameters, which require pre-cleaning and preparation, which is very difficult to achieve in a short period of time.

Despite the optimistic scenarios, the big problem in achieving predictive and prescriptive analytics is the lack of guarantees that the data contain all the information needed to build valuable analytics.

So approaching analytics maturity should not be approached linearly, but in increasing maturity in two dimensions: supporting data-driven decision-making and implementing serving processes.

However, the main reason for the low level of analytical maturity, we believe, is the presence of data shadow, which makes it challenging to build a single source of truth.

1.1.1 The Data Shadows problem

Today, the basis of the ruling force is the data, even if accurate, the information is derived from the data. The information provides insight in making decisions and reduces ambiguity.

However, any data requires prior processing to become functional. For a business person, the vital data is not understandable and can not be used in making decisions.

One of the problems is the emergence of a large amount of data, which the company cannot process. Interaction of the company with customers, partners, and suppliers generates a large amount of data. The company observes and monitors information about its competitors, market, and customers through various channels.

The organization also collects data well but does not understand them well. The data have no value if there is no understanding of what the data is, how to analyze it, and how to act based on this data.

Everything is complicated because many people in the organization require information to make decisions. A few C-level management received information for analysis in the past. Managers of all levels now use analytics in their work.

To improve the efficiency of the department, managers create their reporting systems – data shadow systems. Moreover, these decisions can create risks for the whole business. As a rule, these reports are part of the production process.

Data shadow systems are indeed a group of spreadsheets and specialized databases that the business group created to collect reports and analytics. Historically, it was a set of spreadsheets and relational or statistical databases. Data

shadow systems support most business processes, such as budgeting, forecasting, profitability analysis, analysis of efficiency. It receives data from various corporate systems and data warehouses, external sources. It starts as spreadsheets and then evolves into data shadow systems.

This approach is both good and bad at the same time. The business group quickly receives the necessary information and can react to changes in the market. Also, using Microsoft Excel as a familiar tool for managers makes it possible to formulate term queries on information and makes them more independent of the IT department.

Negative aspects of data shadow systems depend on how they are used and whether they are integrated into the general BI architecture of the organization. The most important thing is that the BI architecture is not integrated into the organization's general BI architecture, which never happens. One of the most significant drawbacks is that the network data system is a "silo" of data, as shown in Figure 1.3.

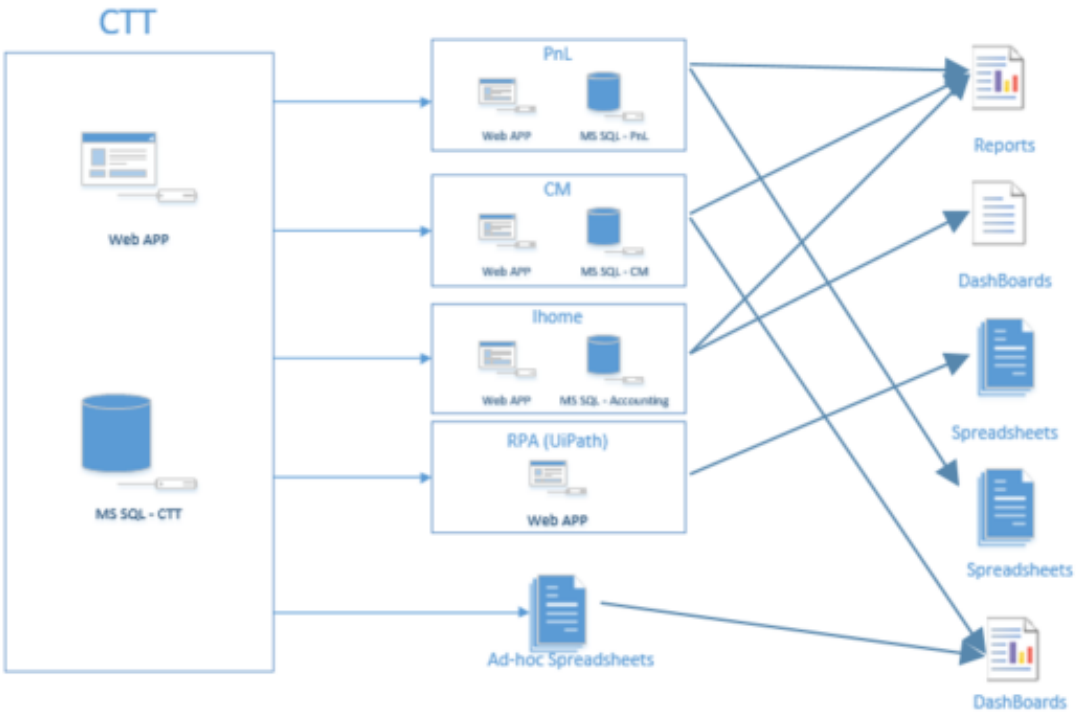

Figure 1.3. Data flow

As shown in Figure 1.3 it will create data that is not compatible with other data used by the company. To achieve a high level of quality, the data must be considered from processes and integrity. The data can be correct within the framework of each information environment. However, the information will not be consistent, relevant or meaningful, if viewed in the scale of the entire enterprise.

List of problems caused by data shadow systems :

- Enterprise-wide data unreliability
- Misreporting of data when importing, calculating, or changing data sources
- Stale data
- Limited scalability
- Increased risk
- Lack of discipline
- No audit trail
- Lack of documentation

Too often, people who use data shadow systems too often believe that as long as the data that their silo uses comes from the same source as others, everything is fine. However, with a myriad of data filters, business rules, data manipulation, and macros applied to each silo, it is almost guaranteed that the data will not stay the same.

It's almost guaranteed that the data will not stay consistent.

1.1.2 Lost productivity

Productivity loss through "analyst time sink" - business analysts can spend half their time every month creating, uploading, and maintaining data systems. Instead of analyzing the data, these highly paid employees act as surrogate data system technicians, collecting, processing, and integrating the data themselves. Many executives initiate BI-projects just to unload these complex tasks of data management.

There is also a significant loss of productivity through the bottleneck - another productivity bottleneck. This is the time wasted on the judgments about which numbers are correct and the imminent analysis of the check, which will be necessary to "confirm" the numbers. This wasted time is inevitably due to the incompatibility of the data. This is a more subtle time sink, but one that takes business people away from gaining insights from the data and running the business.

The process of collecting data to calculate PnL indicators shown in Table 1.

Table 1.

Pnl Calculation – Activity Analysis

	Month 1	Month 2	Month 3	Total
Activity ‘X’ hours worked pm	126	164	119	409
FTEs doing ‘X’	2.5	1.5	2.8	6.8
Number of people that do 'X'	4	3	4	11
Average % dedication	75	47	31	51
Quality: defects per thousand	65	49	110	224
Avg Grade (1 = CEO; 10= lowest)	5	5	6	5
Performance (5 = Excellent; 1 = Poor)	4	3	4	4
Competence in skill ‘Y’ (4= Expert; 1= Novice)	4	3	3	3
Avg years experience	7	5	5	5
Average Salary Cost	2500	2760	2630	7890
Total cost for activity X	6250	4140	7364	17754

Inconsistent, inaccurate data will undoubtedly ruin the image of the data system for business people. However, they will also experience the stress of creating and managing their departmental systems.

Ideally, they should focus on their "real" jobs and spend less time looking after and feeding the data system. When the people most experienced in using an undocumented data flow system move on to other jobs, those who are left have little knowledge and documentation of the data flow system's inner workings.

1.1.3 HIPPO (highest paid person's opinion) Problem.

The hallmark of a data-driven organization is a compelling value chain through analytics. It defines how data and reports are transformed through analysis into insights and recommendations that managers use to make effective and informed decisions. This chain is a cyclical process: the application of analytics leads to changes in the business. The changes are evaluated, and this information is fed into the next iteration of the analysis. [7]

The seemingly natural concept that analytics helps the manager make better decisions is not always realized in practice.

In many cases, the so-called "highest-paid person's opinion" becomes an obstacle for analytics. (highest paid person's opinion, HiPPO). These know-it-alls often fundamentally ignore data, reasoning, and recommendations, preferring to do what they want because they "know best" (because their paycheck confirms it!). [7]

This situation is acceptable if these people reasonable and their strategy work, but in most cases, it does not. There is no system of accountability in many organizations, which allows management to make any decision because no one can challenge it.

One of the cases that happened in the company was the Vice Presidents' refusal to implement a service line for a promising area. The sales department provided the analytical of this direction, and this data showed the possibility of increasing company turnover by 3%, which was almost 1,5 million dollars per year. As a consequence, competitors quickly filled this niche, and the colleague left the company.

If any employee provides data that convincingly contradicts the viewpoint of the 'authoritarian' manager, it can be cause for dismissal or negative attitude.

CHAPTER II.

SOLUTION (DATA-DRIVEN TRANSFORMATION MODEL)

Implementing correctly selected technologies to solve the above problems is the easiest way. The most challenging thing is to change habits, perceptions, behavior, processes, and systems. People do not change independently, primarily if they have achieved some success with a set of tools and processes for analyzing data and making decisions.

An effective analytics chain, which defines being data-driven, depends entirely on the culture of the organization. Therefore, it is necessary to create a data culture. This is a multifaceted task involving data models, master data, data quality and sharing, analyst recruitment and training, communications, aligned infrastructure, metrics development, decision-making, and more. Analytics, for example, is worth nothing if we have low-quality data.

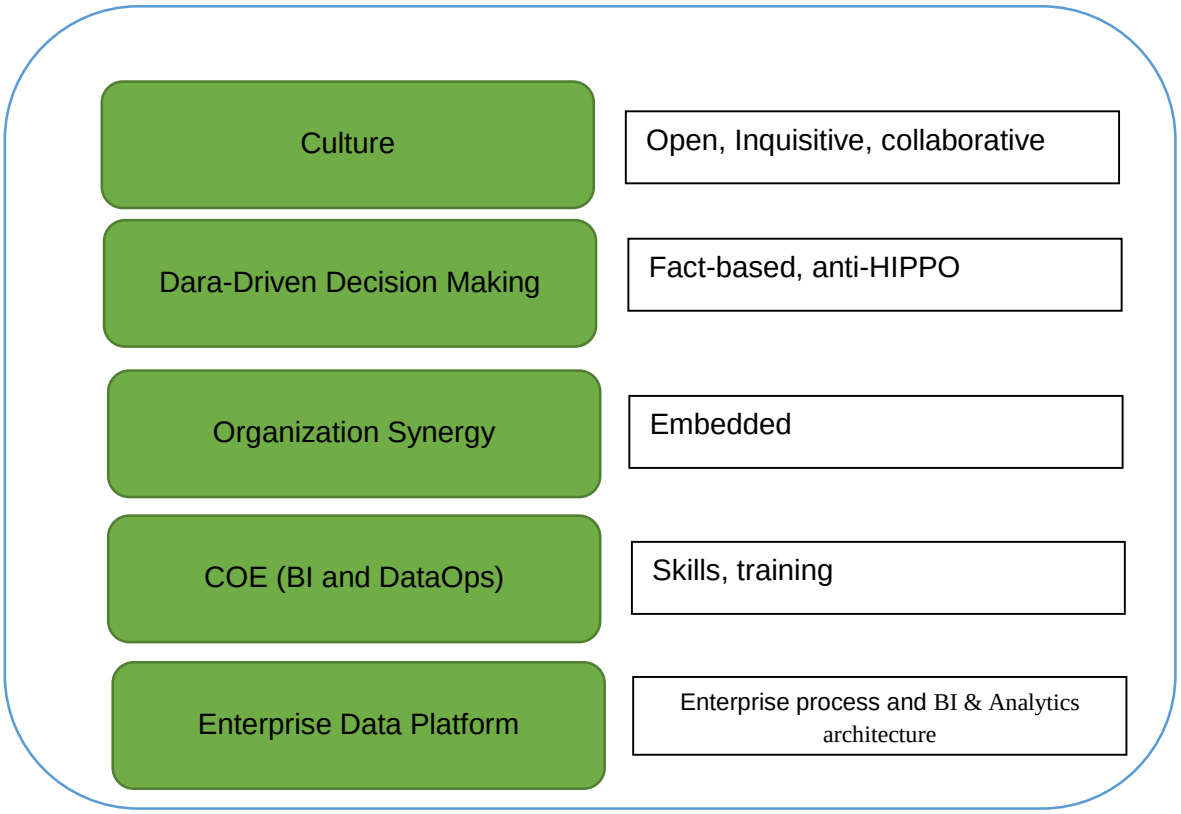

Figure 2.1. Data-Driven Transformation model

The first fundamental brick is the Enterprise Data Platform, which includes data management practices and a cohesive BI & Analytics architecture.

Based on EDP, the best approach to implementing a sustained enterprise data management strategy is establishing a data governance program and the BI and DataOps COEs.

The three-pillar approach to data management is a best practice for enterprises of all sizes, with the difference being that larger organizations will have three organizations. In contrast, smaller enterprises will have three processes.

The benefits of the data management trilogy:

- Leverages analytics to create business value;
- Improves the productivity of both business and IT people;
- In the long term, it is a cost-effective approach to becoming a data-driven enterprise.

Because a platform cannot exist by itself, it must meet business processes that generate data. Therefore, the next step is to integrate the data platform and the processes at each level. Consistency of processes and data (incoming and outgoing) is crucial in building a holistic picture, affecting analytics results.

The next step is the entire organization. We provide data to a wide range of employees and integrate a layer of processes to enable effective and informed decision-making. Training must be provided to everyone involved to interpret the metrics correctly.

Managing and developing this platform is an essential step for building sustainable company value.

Data culture involves bilingualism - analysts speak the language of the business, and the business speaks the language of the data.

A data culture will drive a culture of data-driven decision-making because data is a strategic asset.

All changes in the organization should occur at the level of aligning data changes with processes.

As a complete mapping, the combination of the above blocks is a data-driven transformation model.

2.1 Enterprise Data Platform

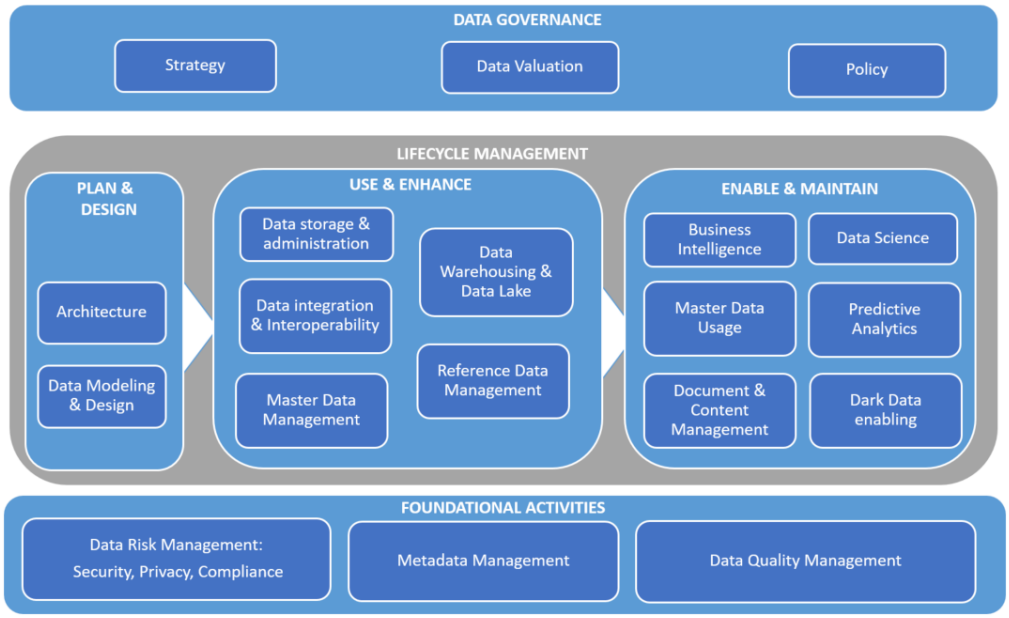

Figure 2.2. Infopulse Data Management practices

Data management is developing, implementing, and applying policies, programs, and practices to secure, validate, protect, and improve data and information assets throughout their lifecycle.

Building on the DAMA Data Management Framework, a set of practices have been defined that need to be started in a company.

The company has agreed on a set of data management processes. Implementing processes is a time-consuming task, as regulations and employees need to be prepared. Employees who have not worked with these procedures before becoming a bottleneck for implementation. Some of the practices were taken from the existing DAMA Data Management framework. The main parts of the practices are Data Governance Management and Foundational Activities, which become the foundation for change. The framework cannot be applied “as-is” but must be adapted to the needs of the company. The initial assessment found that the Data Governance practices are in their initial state, and the implementation and adaptation process is discussed in the following chapters.

2.1.1 Data Governance Management

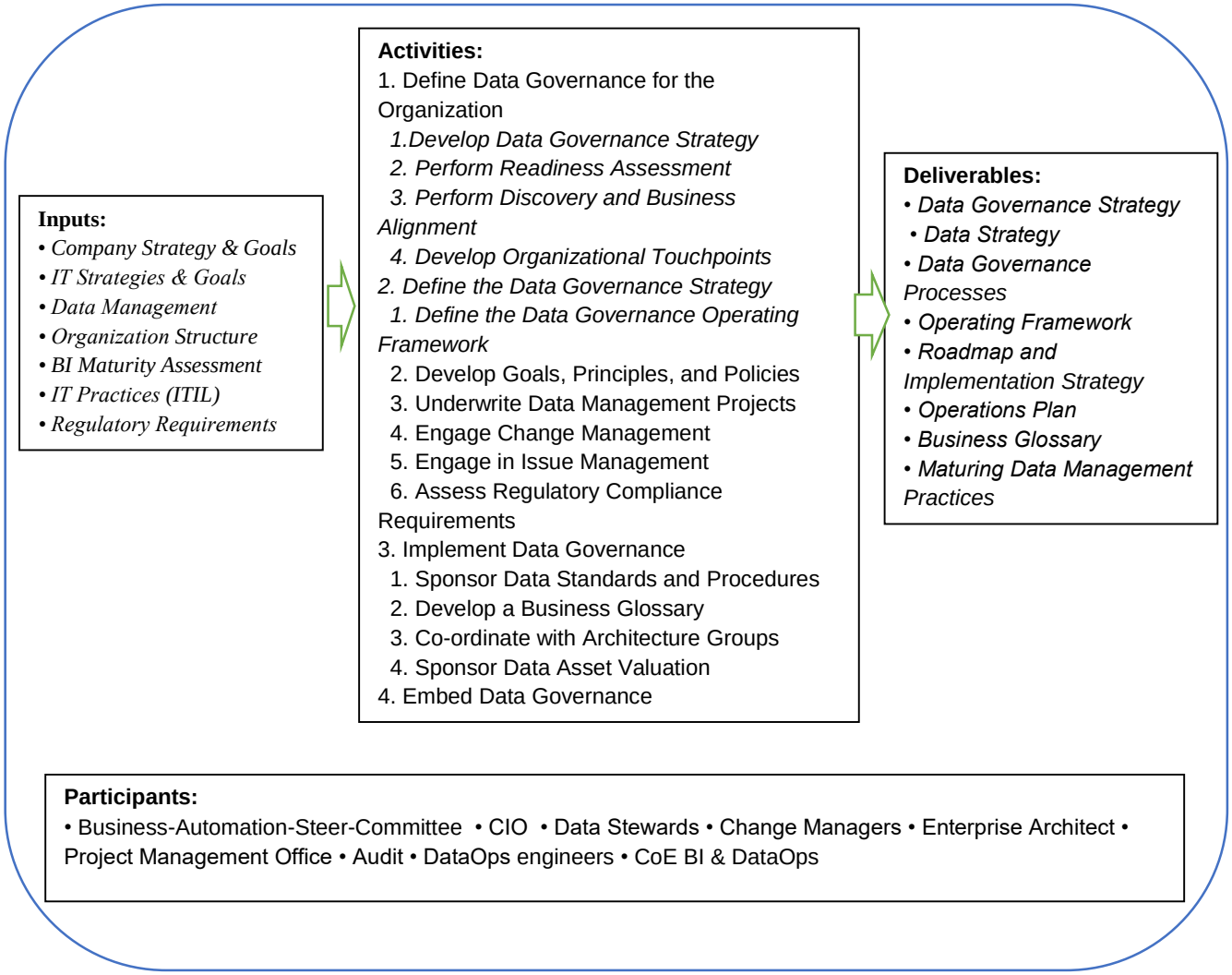

Figure 2.3. Context Diagram: Data Governance and Stewardship

Data governance is the initial practice that defines the control authority and principles of information asset management. Previously, the company delegated data management decisions to several departments - internal IT and security. A formal program previously did not exist, which gave rise to different visions of development trajectories. The purpose of data management is based on the strategy and objectives of the business, applying policies and standards of the organization to provide a strategy for data management. The outputs of the practice implementation are also data management policies, data development roadmap, glossary, data strategy.

The key components that the company identified in this group are strategy, evaluation of information assets, and compliance with policies regarding the

management, security, and quality of data and metadata. Participants and their roles under this policy were also identified.

The strategy, in its essence, implies, in this case, to communicate to all participants and implementers an understanding of the management and implementation of the management and data strategy in the company.

Fundamental is the policy, which defines the rules and procedures for access, use, distribution, and data quality. By implementing the policy at Infopulse, we immediately covered several risks related to data distribution for unauthorized data users. Thus, participants had formalized procedures for granting access to data and understanding who is responsible for them.

Evaluation of information assets allowed the company to build standards and processes for reconciling the value of information assets from business systems. Some of the information assets became complementary to the information model of the company and allowed us to start building more in-depth analytics.

It is worth realizing that the driver of data management implementation is the regulation of data for the company's needs and compliance with international laws on the processing of personal data. So, for example, implementing this policy has enabled the company to avoid penalties for violation of General Data Protection Regulation, which amounts to 20 000 000 euros or up to 4% of the annual worldwide turnover for the previous financial year.[12]

In addition, data governance has helped the company reduce data security, privacy, data quality, and metadata management policies.

The purpose of data governance is to create a holistic management process and provide frameworks and mechanisms for managing data at all company levels. The company-wide impact has been tremendous, as previously reported issues have been identified again. Some new gaps in the sustainability of the processes supported by the data have been identified. The data management process has been entered into the corporate registry and is available to all participants. The figure provides a representation of the process's input and output attributes and provides the main activities performed within Infopulse.

2.1.2 Lifecycle Data Management

The Lifecycle Management Process Group is the central core of a company's data operational life. This operational group contains practices for modeling, architecture, design, data warehousing, content management, and big data storage and processing necessary to build in-depth analytics. Infopulse's analysis showed that most of the previously existing processes and practices focused only on this part of the process group. However, having a process framework including the underlying functions allows the company to benefit from the data holistically. Since data moves horizontally within a company, the work done within these lifecycle practices overlap and complement each other at the same time. It is worth noting that an analysis of customer processes and most companies have shown that most companies develop within only this group of processes providing themselves with the operational need for data—more details about the processes that make up the group below.

1. Data architecture is a conceptual level of alignment with corporate data management and is built according to the company's strategy and data management roadmap. The company has defined an approach to building a conceptual data architecture for existing services and new services based on Archi notation.

2. Data modeling and design is analyzing, representing, and aligning data with the corporate data model. In this process, the company has brought the modeling with ER diagrams into a unified format. Moreover, relying on the corporate data model, design has accelerated by 40% of the time. The availability of the ready data model allows the designer to understand the information model of the company more extensively and the attributes that the company operates in the process of interaction. According to customer surveys in large companies, there is no approach to data design based on the corporate data model. Most departments use different frameworks and tools, which increases the time when aligning integrations between systems and change management.

3. Storage and data operations included processes for creating storage solutions and maintaining data to maximize value. These processes included

building a failover database management cluster with replication to another data center. Regulations for data storage and backup are critical to ensure business continuity. As part of this procedure, rollback and storage points were agreed upon for all services within the company. Part of this procedure was implemented in IT before the transformation and contained a set of fault-tolerant instructions. After the transformation, the practice was expanded with processes, procedures, and a roadmap for the next period, allowing resources to grow smoothly without interruption to business applications. Organizing the storage solution helped with distributed sources, where each business unit stored data in-house. By centralizing the storage approach, we were able to improve stackability and resiliency. According to the support team, more than 50 data recovery requests from employee workstations in 2020. Total recovery time took 4 to 8 hours in each case. That is an average of 6 hours per 50 cases, resulting in 300 hours of support work. Financially it is 300/168*1500 = $2700 per year. The amount is not much, but it doesn't include a stopping business process and an employee who performs his business functions. Which ends up being a much larger loss. Unfortunately, more details on these units and the cost of employees could not be collected because the support portal did not contain the necessary information.

4. Data security is one of the most important processes in this chain, which guarantees integrity, confidentiality, and protection against unauthorized access. The process contains a model for ensuring the security of information in the company. The transformation involved the classification of data and an inventory of all data in the systems. With this approach, we obtained an overall picture of data security. This map shows services and systems that store susceptible data and public data within the company. The data clustering process increased the processing rate by 25% for each of the participants.

5. The data integration process contains regulations for data exchange both across data stores and between applications. The process is very dependent on data management at the company level, on the architecture and metadata being built. A process that is also responsible for linking structured and unstructured data and their

migration and conversion. During the construction of a unified data platform at the conceptual level, approaches to transformation were defined using metadata to improve the quality of data. In this way, a single data platform will solve data consistency between applications and reduce the costs of development teams.

6. The document and content management process contains planning and control over managing the unstructured flow of data and information available in companies on various media. Special audits are highlighted for documents that require regulatory approval and compliance.

7. The reference and master data management process is the core of maintaining critical data used within the organization by all departments and is the “single version of the truth" about the company's entities. The establishment of this process in the company was one of the fundamental solutions to the problems voiced earlier. MDM solved the problem of bad data and partially distorted data. Now all directories and data consumers can pull up basic data and get basic entities in a unified corporate interpretation. The cost of the Data quality process, which is shown in Table 1, has decreased by 65% with the introduction of MDM and freed up analysts' time to work with the results of the indicators, rather than bringing them into a single palette. During the MDM process, the main factor was creating central models of the company's essence, for which, in consequence, have been created information data models. Based on the master data applications no longer created decentralized data stores, which lost relevance with changes. Now, synchronization by identifier allows the application to get up-to-date information on all attributes of an entity. This single-source approach has helped solve the problem of duplicates in applications and increase the value of analytics. Regulatory policy practices were built around this MDM solution, with insights into key attributes and their sensitivity to regulatory laws. MDM, in this case, completely solved the problem of security breaches and non-compliance. Developed central models and examples are given in the Appendix E.

8. Data Warehousing and BI processes for managing consistent data used in decision making. As well as consistent datasets to build analytics across the various

dimensions of the company. In this process, the company has developed the concept of a reporting hub, which according to the business processes' structure, displays the company's indicators. Our vision, which we studied during the module on "business as a system," is that the processes cannot live by themselves but are a part of the company's strategy support; therefore, the indicators of these processes are indicators of compliance with the strategy. Also, we referred to the regulations for using the agreed reporting tool in the company, which became PowerBI. Moreover, here we would like to focus attention again that the tool itself is not a silver bullet, but only one link in a giant machine chain. (Appendix F)

2.1.3 Foundational Activities

The main fundamental activities are metadata management and data quality.

1. Metadata management process has as planning, implementation, and control on access to high-quality metadata, description of data flows, and data flow management according to the level of critical information.

2. Data Quality methodological solutions for data quality management, which provides control of the value of information and metrics to determine the quality of this data both in systems separately and the company as a whole.

2.1.4 Infopulse Target BI Platform

According to the current approach to the implementation of practices and procedures is expected to implement the following architectural solution.

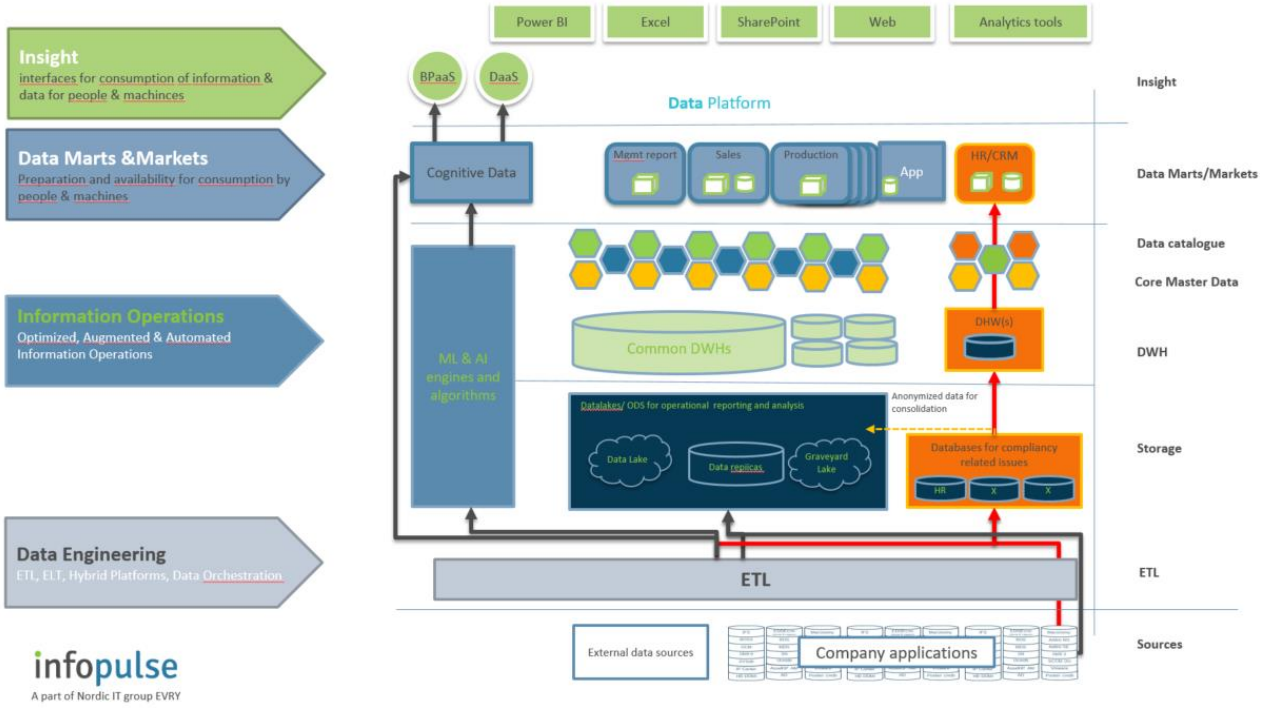

Figure 2.4 Target BI & Analytics architecture vision

The vision for implementing a target data platform architecture is a clustered approach to data processing. The data from the applications or external sources are transferred to the data lake. During the transfer, there are two approaches, using transformation and simply loading the data «as-is». The data from the lake gets into the data warehouse using core master data. Based on the data warehouse data, we build data showcases in different projections of the company.

This synergy is the holistic approach of data processing and getting value out of it. In the first phase of the project, it is planned from the technical side to build the core master data and part of the data lake. After that, we will design a data showcase for the sales department and provide the opportunity to build in-depth analytics. As the project involves a lot of transformational processes, which affect not only the technical component, but the human factor as well.

We were faced with the fact that some employees must have defended the old technology in the implementation of the solution. They do it not intentionally but because they do not know how to use the proposed solution. The single data platform

solution provided an opportunity for developers to look at the data they use in integration in a new way and begin to plan the use of this platform. The target platform completely solves the problem of a single truth source for analytics and eliminates duplicates.

Also, the data platform provides a consistent mechanism for obtaining master data and synchronization of facts when receipt of the request. An important factor is that it is impossible to build a target data platform without previously implemented processes. This is the synergy of data management processes in the company and technological components.

A detailed project plan is provided in the Appendix B

2.2 COE (BI and DataOps)

Centers of excellence (COEs) is organizational units that help to accumulate similar activities or technical skills. At Infopulse, a virtual division focuses on people who have enough experience and skills in a particular field. Using a competence center, we can quickly gain access to unique experiences and solutions, thus minimizing costs while maximizing value. Using the resources of COE, we achieve maximum utilization of resources and, at the same time, the solutions that are created to solve all the challenges of the business, maximizing the benefits for the customer.

To realize this transformation, we have already established The Business Intelligence COE (BI COE) and expect to establish the DataOps COE (DO COE) shortly.

In our case, The Business Intelligence COE (BI COE) combines resources and experience on BI. The breadth of expertise from SAP to PowerBI allows us to look at problems from a broad angle and offer the best solution.

- The DataOps COE (DO COE) is expected to coordinate and control resources and expertise in data integration, defining architectural practices, building complex data storage systems.

2.2.1 BI Center of Excellence

The BI COE is an organizational unit that involves a synergy of business and IT representatives interested in the development of BI practice in the company.

Objectives of the BI COE:

- Expanding analytics practices for more effective business management
- Increasing analytical expertise within the company
- Increase productivity and optimize resources through the use of in-depth analytics within the company
- Optimize resources used internally that connect to various tasks within their competencies

BI COE's area of interest was highlighted consulting projects or business units in the direction of BI and allocating to development teams who are hands-on specialists and can provide tasks from design, development, and implementation to BI application support.

They are combining the skills and experience of specialists to ensure the implementation of complex tasks and engage in the development of competencies. The more segmented direction allows developing competencies in a structured way and with significant effect. Thus a specialist development map was created based on the direction of technology and understanding of business processes. In order to provide training under conditions of creation of real value, but not virtual scenarios, specialists are involved in internal projects, where requirements and terms are softer.

Development and orientation are lined up in three projections - technical, business, and analytical skills.

In the technical skills requirement, professionals must be proficient in BI tools, understand data models, relationships between data models, define business metrics, understand how DataWarehouse and BI work, and correlate business needs to the technical capabilities.

Business skills include understanding business needs, what data various business groups need in building metrics. As a consequence, how those needs relate to business priorities and what value they provide. COE needs to help the customer

translate the strategy and business need into a technical challenge without losing value and purpose.

Experts must correctly identify business problems, patterns, relationships, trends, anomalies and translate them into quality analytics with analytical skills. Connecting technical and business competencies creates valuable analytics showcases that respond to business processes and demonstrate their effectiveness.

2.2.1 DataOps Center of Excellence

The DataOps COE (DO COE) team has competencies in building architectural data model practices, developing and implementing best practices for data integration into the company.

The goals of DO COE are as follows:

- Developing best practices for data integration, developing a unified approach for consistent data transfer between systems.
- Improve stability and performance when designing or developing data integration buses.
- Developing data models and keeping them up to date with integration or changes in data schemas
- Developing architectural approaches for managing a company's master data using cloud technologies.

Following the example of BI COE will be created a viral organizational unit, which involves the accumulation and development of expertise in one unit. Having development plans and a roadmap will allow to quickly increase efficiency and provide the business with an understanding of implementation value.

Building expertise and best practices in data integration in an ever-growing volume of data is a necessary skill set to be developed. Development of standards and architectural practices for various technologies and business segments depending on security requirements or architectural layers. Lessons learned will be applied to the needs of customers to enhance the value delivered through the stability

and reliability of the solution, which has been tested in the internal landscape of the architecture.

BI COE Specialist Skills:

- Data schema and database modeling
- Data segmentation
- ETL, ELT, or other data integration components
- Master Data Management
- DataLake Design
- DW Design
- Designing Data Schemas
- Architectural Approaches in Data Design
- Software design methodologies

The main task will be to move away from individually designed solutions to the construction of integrated design patterns, ensuring the integrity of the business process and transmitted data without losing the essence of the information model. Established data integration approaches will allow supporting multiple data sources and data receivers, which in turn allow reducing the cost of development of future systems.

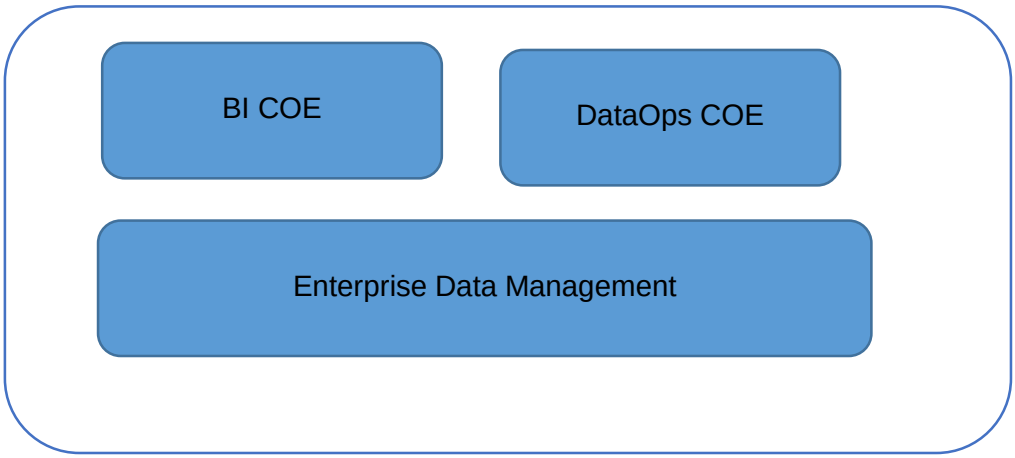

Figure 2.5. Three-part model COE

Implementing a sustainable data management strategy involves creating a sustainable data platform in conjunction with the deployment of expertise centers.

The three-part approach provides a cost-effective model for business-IT collaboration through shared value. Other benefits include creating business-relevant analytics, holistic data structure used in integration, sharing of practices between centers of expertise, and validation of current approaches on the current data platform.

Creating centers of expertise is not a new practice in large organizations whose activities have been repeatedly proven through the economic benefits and efficiency.

For smaller companies, the creation of alternative processes can be provided by individual specialists or a combination of specialists. At Infopulse, BI COE was created, and DataOps COE is envisioned to work on a single data platform.

The current BI COE solution has provided an increased understanding of data analytics, previously developed in business groups. Core company data sets have been developed, and calculated metrics have been prepared for the following business analysis.

2.3 Organization Synergy

It is worth noting that data management is not an end in itself but a means of providing processes and control over the holistic structure, which allows a company to build effective analytics for the company. The long-term goal is to provide business units with the necessary data to make decisions. Building analytics can be aimed at several levels of abstraction. The first level is analytics within the business process and compliance to performance indicators or strategic goals. The second level is analytics that is built on understanding market and customer trends. In this case, we will have different levels of data and their analytical goals that reflect metrics ranging from operational efficiency to strategic market fill.

The synergy of analytics and organization is achieved when data behind each process and metrics are built on it. Ensuring the integration of data and competencies is done from the COE. Some of the COEs are expected to have roles in the internal

IT department and handle communications between the business sponsors and the development teams.

Determining the direction the business is taking gives an understanding of how to build data governance and how to begin defining a set of high-level metrics. A data-driven organization using KPIs tracks and monitors the direction of the business. Monitoring and responsibility can be delegated to business units, where specific KPIs can expand the set of indicators only for that unit. As a result, we have defining and diagnostic metrics that control activities, tasks, projects, and resources. These metrics must be precise and correctly calculated. Otherwise, incorrectly displayed metrics may do more harm than good. Bringing metrics together at the process level, we can see a picture of the company, somehow which department is not achieving the required indicators and decompress to smaller entities, thereby establishing a cause-and-effect relationship. The goal of processes is to provide the strategy with indispensable data if one goal is achievable and in what perspective.

There are different approaches, such as the balanced scorecard or Bernard Marrs KPIs. [13]

Bernard Marr, a famous consultant, and futurist has defined 75 KPIs. They show the company's performance in all dimensions and describe what this or that index means and what needs to be done and what data must be collected. The example is presented in Appendix D. [13]

Some of these indicators are already implemented in the company. However, it is impossible to decompose them at the level below and understand the reason for certain deviations. Such clarifications take quite a long time. For example, the index of customer satisfaction in one of the segments was lower than expected. In order to understand precisely where the problem happens and which division is responsible for it, it took more than 60 hours for two analysts. As always, when collecting reports in the standard version, the data is blurred and does not contain the details.

It is assumed that the final goal will be a great company dashboard containing key business metrics, and there is an opportunity to drilldown into the right level of data and understand the reasons and trends.

2.4 Data-Driven Decision Making

Strategy management is a fairly time-consuming process, which is performed at different levels of the company. The situation is the same when making decisions, some of which are supposed to be built in the silos of Excel and PowerPoint. And very often, executive management lags behind in decision-making from digital practices.

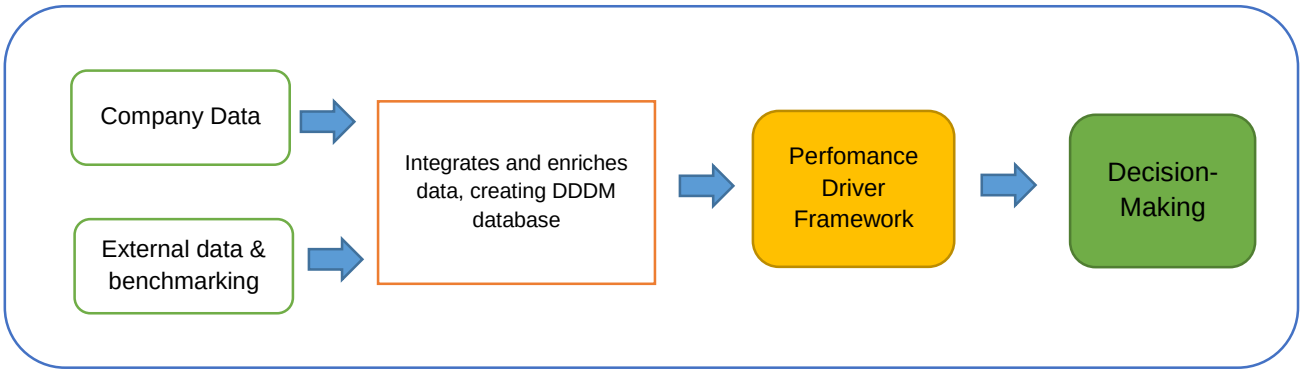

Figure 2.6. Decision-Making Process

The process begins with downloading company data, such as financial statements, business reviews, strategy reviews, business investments, market analysis, performance assumptions and assumptions for strategy. The integration process determines, "What comes first? What is related to what? Are we measuring the data well? Is there a hierarchy in the data? What are the priorities? What solutions have been proposed in the past?"

This solution involves the process of creating a digital workplace for making decisions based on analytical data. Of course the data should be enriched with benchmarks, benchmarks, sustainability indices, trend alanization models. The basis of the decision-making model in a data-driven company:

1. Creation and analysis of business scenarios, to make decisions on previous decisions.
2. Dashboard to provide understandable information about the companies' performance.
3. Modeling the impact of changes on assumptions and operating plans.

4. Integration of strategic plans with budgets and forecasts in a unified structure for the operational and strategic process.
5. Aligning diversity and change.
6. Alignments in the business model.

2.5 Data Culture

Culture plays a key role in this transformation. A data-driven company must embrace data as a strategic asset. Data should not be a side artifact of processes or applications. The transformation of processes, then, requires the assurance of high quality data. Based on decisions, which should also be made based on analytical data, the effective management of data assets becomes a very high priority. Most companies tend to confuse the concepts and often understand information technology as data. Management in IT is different from data management, and this transformation of thinking can be a huge obstacle to creating a corporate vision of data management.

Accordingly, the company should emphasize the following principles in the culture:

- Managing data as a corporate asset.
- Best practices for data management should be encouraged
- The data management strategy should be aligned with the overall company strategy
- Continuous improvement of data management processes

Data-driven decision-making allows the company to become proactive and forget about the reactive past.

Solving the problem of shadow data with the right technologies that regulate processes is the easiest part. The hard part is changing people's habits and perceptions. People don't change on their own, especially when they have past successes in solving their problems the old tried and tested way.

And here the first important step is the explanation from the management about the importance of data and keeping them in a coordinated form, the

formulation of correct behavior. Very often, some heads of departments become accomplices of shady data. And those who brought quick answers get rewarded, regardless of how they got the analytics, from shadow data or not. So change needs to be done from the top down. All change needs some incentives and the right organizational levers help to implement change faster.

A data-driven company is supposed to be more open and transparent and data is available to many people in the organization. In order to make better decisions, as many people as possible should have access to this data. This does not involve violating security policies or ignoring regulations, but only building monitoring dashboards which contain highly detailed analytical indicators. This way managers who are at a lower level can make more informed decisions without having to pass decisions upstairs. And these upward referrals not only lengthen the decision chain but also reduce the overall efficiency. It is important to build this culture from the top down, making employees feel that they are trusted and empowered to make decisions based on transparent analytics and their goals. Scorecards should be available to all employees so that they understand how some of their work affects the progress of the team and the company as a whole.

Also one of the main theses is the involvement of employees in the construction of hypotheses. It should be possible to provide a hypothesis and try to implement it in the company. When a company has clear goals and metrics for success, employees will be not indifferent to the failure of experiments. Specialists will dig deeper and try to do a better job. Even if the A/B experiment fails, it should be perceived as a learning experience and not a failure, this is new fuel for the data lake and hypotheses you plan to test on next time.

Anti-HiPPO Culture

As discussed in the chapter on HiPPO problems, HiPPO is not based on data. Decision-making is based on previous experience, preconceived notions and intuition. HiPPO is often opposed to a company culture that is data-driven. The important thing here is to structure the data and facts in such a way that they consistently point to the right decision, even if HiPPO doesn't agree with it. When

you have no chance to argue against it, make the data-oriented decision the way HiPPO did. It is worth convincing HiPPO that it is his decision and that it is based on analytics. It is very important to show the value of the decision and what corresponds to this information.

CHAPTER III. CHANGE MANAGEMENT

It is worth recognizing that there are a number of fundamental limitations that recognize that change is not easy.

The transformation into a data-driven company is unlikely to happen just because it has been announced. Employees need to feel the value of the process. The process of data management and the use of a single data platform reveals facts that sometimes one does not want to see and these facts cannot be hidden or distorted. Specialists will need to change the interaction between the data and the specialists who operate with the data. It is very important that the specialists were informed about the changes that take place. Specialists perceive data-centric transformation as an additional control and consider such changes dictatorial. But here the essence of changes should be built on the fact that employees themselves offer information models and analytics that help them in their routine work, thus involving them more deeply into this process.

Figure 3. The Kotter Change Model

Change is inevitable and it will iterate from one maturity model to another. We shouldn't focus on the fact that it happened because we've always done it that way; we should show the usefulness and value of the solution. Understanding the roots of problems helps the company consolidate its forces and avoid failures in change. It's important to articulate the right impetus for change to leave past problems behind.

Using Kotter's eight-step change process, you need to understand why these changes fail.

The first is that in order to implement an end goal, it is necessary to clearly articulate a VISION of goals that is shared among the stakeholders. To begin with it is necessary to understand what is to be avoided in the implementation of this kind of changes in the company according to Kotter:

- An inverted data culture that locks decision making within the department and not external metrics.
- Bureaucratic processes that block the implementation of data management in the company through internal levers.
- The political aspects of distorting the benefits of change so as not to reveal the benefits of implementing in-depth analytics that show effectiveness from a different perspective.
- Low level of trust in data, variations in concept substitution and distortions of data quality
- Lack of a team approach to data-centric company implementation, delaying processes and technical implementations.
- Arrogant attitude towards data-driven changes and criticism of the values of analytics
- Lack of a leader who is ready to defend the position of transformation and full implementation of the data platform
- Fear of not understanding what is expected to happen as a result of the data-centric transformation.

A step-by-step model of major changes implies a solution to these problems. Each step involves solving one fundamental error, which undermines the transformation effort.

And the first four steps of the model mitigate entrenched positions. It is very important to initiate change and communicate the usefulness of implementing a date-oriented company.

1.Communication of a general understanding of the problem and the urgency of the change

In the context of the first step, the urgency of the change is supposed to be created through:

- Awareness of the risks and potential threats of data loss
- Threats of noncompliance with regulations that govern data privacy
- Existence of required external audits that include data management controls
- Creating and communicating a bleak picture of impending problems

2. Leading Coalition.

This step will create an effective coalition for change. This coalition will be created in the form of a date-oriented transformation committee. The key stakeholders in the data will be invited to support the coalition's position. The experts will be drawn from the centers of expertise established earlier. The rules of the committee's creation provide for the participation of several vice-presidents in the life cycle. This will ensure that the leaders are understood. It is important to encourage all participants to comply with data management methodologies, to develop practices for evaluating data decisions, and to encourage the practice of "leaders speak last.

3.Develop a vision and strategy.

The vision is a clear understanding of the picture that is supposed to be achieved in the final data transformation. The vision should be clear. Specialists should understand the value of data management processes and the essence of a unified data platform. In addition the specialists need to convey the motivation to move in the right direction and that these changes will bring.

4. Communication of the vision of changes of the company.

Here it is supposed to hold a series of webinars and discussions. Real cases of successful transformations and analytics application will be considered. Work with feedback and provision of explanatory work. It is important to reach a consensus between the use of data form and regulatory processes.

5. Launching of large-scale measures.

This step assumes the launching of a single data platform and the construction of analytics on its basis. Introduction of processes and regulations assumes wide use by the company. Some of them have already been implemented. Thus data management regulates the processes and data classification.

6. Providing tangible local results.

Getting early data based on in-depth analytics is important to connect to business metrics. Quick results are important for development teams that get master data, business analyst teams that build metrics for business reporting.

7. Accumulating evidence of the usefulness of changes.

Every step in implementing data-centric transofrmation should be transparent to the company and key stakeholders. Analysis of what was done right and where there are small hitches suggests making the next steps of transformation possible. The implementation of the dashboard for the business will be updated with new indicators, which will strengthen the belief in change.

8. Fixing the changes in the culture of the organization.

The current solution as discussed earlier should become the culture of the company. The success of the implementation should be communicated to all levels of the company and through all channels. Culture change can be considered successful if the solution applied in the company is based on the indicators of the analytical platform and monitored by the dashboards.

Kotter's model allows to apply the changes in a consistent way and to eliminate the counteracts step by step. It is very important to receive feedback and move towards predetermined goals. And remember that it is not organizations that make changes, but people.

CHAPTER IV.

COMPETITIVE ADVANTAGE

There are no competitors at the moment. There is no solution that would cover the entire transformation. It is worth noting that there are no competitors only for the entire transformation. Large management consulting firms are competitors in the field of process transformation. Competitors in the context of providers are different analytical systems. However, the solution which is highlighted in this work does not exclude the possibility of using various components or providers which are already implemented in the companies. The solution which is presented only supplements the data-centric transformation in the companies which will apply it.

We considered McKinsey's proposal about data-driven transformation. An important point is that McKinsey standard transformation costs from $500,000 to $1200,000. An example in Appendix D.

The solution Deloitte offers is presented in Appendix C. As you can see, the solution is based on the ServiceNow platform. Deloitte consultants are supposed to be in the same price segment as McKinsey.

Table.4.1

ServiceNow Cost

Size & Revenue/Budget	Year of the request	ServiceNow product	License needs	Annual License price, usd
2000 Employees. Revenue – N/A	2021	IT Operations Management, ITSM, Givernance & Risk	2000 requesters, 260 approvers, 70 fulfillers	230000

The total amount, even in an optimistic scenario is 500000 + 230000 which equals 730000 dollars. This amount does not include the cost of platform

implementation, process transformation, so the final amount will be much higher. Based on the data obtained, the solution that is proposed to implement in the company is much cheaper.

CHAPTER V. PROJECT PLAN

5.1. PROJECT Team (Phase 1)

The team and the skills with which it is supposed to start the implementation of the platform is described in Table 5.

Табл5.

Position	Description
Delivery Manager	- Experience in CRM/DWH/MDM projects, with an understanding of the digital and supply chain impact of technology. - Proven experience in implementing complex measures throughout the project lifecycle. - Experience as working with digital and complex projects in both B2C and B2B environments.
Architect	- More than 8 years of experience with technical solutions, including more than 5 years in DWH/MDM areas. - High skills and understanding of DI/MDM solution development using MS MDS / Informatica MDM Hub / and other distributions. - Excellent understanding of the underlying infrastructure for data management solutions (data modeling, ETL, data quality, mapping, and merging). - Experience with Azure Cloud technologies and SQL databases. - Deep understanding of data analytics and data visualization. - Skills in system structure development and data modeling. - Strong written and verbal communication skills. - Excellent analytical and problem-solving skills.
Analytic/ QA	- More than 3 years of experience in testing or similar technical positions. - Focus on the full implementation of user requirements. - Skilled in designing and implementing testing of simple systems for complex implementations. - Able to ensure that user expectations are fully achieved in the testing process. - Experience in preparing FSD and S2T documents. - Works effectively in a work environment in various functional teams.

	- Over 5+ years of skills in ECM, CRM and Power Apps. - Experience in system structure development and data modeling. - Basic business analysis skills. - Deep experience and understanding of Power Apps rework (CDS/CDM, Model-Driven and Canvas). - Strong experience in SharePoint rework.
Data engineer	- Azure ETL/MDM technologies: Azure SQL, MDS, ADF, PowerApps, SharePoint. - Programming languages: SQL, PowerShell scripts. - In-depth understanding of database development and implementation.
Power Apps Developer	- Over two years of Power Apps and software development. - Deep experience and understanding of Power Apps development using Canvas UI, CDS/CDM, plugins, Model-Driven UI - Custom UI development (PCF). - Deep understanding of Power Automate and related Azure integration tools (Logic Apps, Connectors).
Infrastructure / Integration Engineer/ Consultant	- Extensive experience in Azure Cloud. - Experience in configuring and administering ADF, SQL, MDS, PowerApps, SharePoint - Experience in setting up and administering the following ERP solutions: 1C, MS Dynamics 365 - In-depth understanding of security setup in Azure environment. - Extensive experience in environment automation and deployment, infrastructure-as-code, specification, and deployment data flow development (3 years). - Focused on details with excellent interpersonal verbal and written communication, coordination, documentation, analytics, and problem-solving skills. - Over 5+ years experience with infrastructures and deployments. - Basic systems development skills. - High skills in Azure, Azure SQL integration, and SharePoint configuration. - High skills in refining application logic. - High Azure DevOps / CI/CD skills.

5.2. PROJECT RISKS (Phase 1)

Project risks are identified and assessed for each period and activity of the project plan.

Risk Number	Risk Category	Sub Category	Risk Name	Probability, %	Size of loss, days	Risk Score	Response Plan needed, Y/N	Responsible Party
1	Technical	requirement	Prototyping has inconclusive evidance for final design	40	10	4	N	EA
2	Technical	technology	Depended systems are incompatible during integration	35	12	4,2	N	EA, IT
3	Technical	complexity	Lack of comprehensive data from data sources	20	5	1	N	IT
4	Technical	reliability	Weak processes for acquiring, validating, storing, protecting, and processing data for its users	60	15	9	Y	EA
5	Technical	quality	The inability for an organization to ensure their data is high quality throughout the lifecycle of the data	60	15	9	Y	EA
6	External	Regulatory	Data Protection Regulation	20	20	4	N	Data Protection Officer
7	Organizational	resources	Unavailability of resources due to overload in the main BU	70	5	3,5	Y	DM

8	Organizational	finance	budget reduction	40	20	8	N	AM
9	Organizational	priority	Going behind schedule due to unforeseen complications	40	5	2	Y	DM
10	Organizational	resources	A key employee leaves	30	30	9	N	DM

5.3. PROJECT ROADMAP

A roadmap for this project has been approved.

Terms	Activities
2020-2021	• Data Governance & Stewardship • Platform Foundational activities • Master Data Management • Plan & Design • Sync operational processes and architecture
2021-23	• Cloud Enablement (Appendix H) • Synergy realization • Data-driven Infopulse (transformation) • Advanced Analytics • Real-Time Processing
2023-2025	• Data Operation excellence • Superior end-user experience • Digital Infopulse (continued change) • ML & AI

5.4. Approach to project management

Main tasks & action	Required results
Detailed planning of all project tasks	• Project Plan • Project Charter • Detailed plans: 2-Explore/3-Realise/4-Deploy phases
Project tasks tracking & continuous control	• Weekly status reports/Phase detailed plan tracing • Monthly status reports to Steering Committee • Steering Committee meetings (monthly/phase acceptance)
Procedures: Risk Management	• Identification and analysis of potential project risks • Evaluation for most effective ways for risk assessment & mitigation • Reporting procedures/Continuous monitoring of risk statuses (Risk Log)
Procedures: Change Management	Change management procedure ccommitment: • Project scope (organizational and functional) • Terms of phases /milestones • Project Budget Changes • Change for Request tracking • Resource project framework tracking (adherence to planned project team workload)
Project Handover & Closing Record	• Project documents handover/Knowledge transfer for DDBT project team • End-user training • Internal support team forming • Project Closing Record

CHAPTER VI. FINANCE

The first iteration is determined by the end of this year. A separate cost center has been allocated to calculate the finances of the project in the future. These calculations do not include costs at the company level for communication and adaptation processes.

Table 6.1

Budget for Data Management: Phase 1

Milestone	Tasks	Position	Hours	AVG. Cost per month	Total
Data Governance & Stewardship	1. Define Data Governance for the Organization 2. Define the Data Governance Strategy 3. Implement Data Governance 4. Embed Data Governance	EA, Security	320	3 500	7 000,0
Foundational activities	Metadata Management	EA	480	3 500	10 500,0
	Data Risk Management	Security			
	Data Quality Management	EA			
Data Modeling	1.Plan for Data Modeling 2. Build the Data Models 3. Review the Data Models 4. Manage the Data Models	BI Architect	320	4 000	8 000,0
Master Data Management	Install and configurate Microsoft SQL MDS	IT DevOps	2720	3 000	52 000,0
	Create Core Model	BI Architect / IT DevOps			
	Create Core Enitity	BI Architect / IT DevOps			
Migration to MDR	Plan	EA	80	4 500	2 250,0
	Design	EA / IT SA			
			Total		79 750,0

The solution proposed in the paper should have a positive effect.

Improvement of management processes and implementation of the data platform leads to a reduction in financial costs.

One of the metrics we propose to use is return on investment. This is a financial indicator to measure the likelihood of obtaining a return on investment.

How it is calculated:

ROI = Net Return on Investment / Cost of Investment * 100%

Net Return on Investment, as we have previously seen in our work, has many components. I suggest using the mckinsey indicator - 10-15% of EBITDA

Technical cost (Servers) presented in Appendix G

Let's calculate in some scenarios

1. Pessimistic scenario (5% from EBITDA)

   ROI= $(14400000*0,05)/$79 750*100 = 902%

2. Realisitic scenario (10% from EBITDA)

   ROI= $(14400000*0,10)/$79 750*100 = 1805%

3. Realisitic scenario (10% from EBITDA)

   ROI= $(14400000*0,15)/$79 750*100 = 2708%

These calculations show a tremendous effect on the return on investment.

GENERAL MANAGERIAL CONCLUSIONS

Work with the project showed a holistic approach to the transformation of the company. Determination that such transformation should be exactly data orientation, confirmed by finances and solutions that are proposed in the work. In the work we tried to describe not only the implementation of technological components but also the process transformation, as processes complement and regulate the data management in the company. It was very important to note that the solution is not only the subject of operational improvements, but also a competitive advantage in the market. An important aspect was the issue of adapting the data culture of the company, which should be perceived as an integral part, as the transformation is performed by people, not organizations. It was a great experience to build a holistic solution, and thanks to LvBS we were able to look at it from a different perspective and understand what the business needs. Bringing the problem and solution options to the business helped in getting the support of key people in the company who take an active part in the date of transformation.

During the work I used the knowledge from all the modules of the training, but I would like to highlight them once again:

- Product Management
- Digital Disruption
- Business as a system
- Business Strategy
- Leadership and Management Methods
- Sales Management
- Software Architecture
- Financial Decision Making
- New Technological Entrepreneurship

What conclusions I would like to highlight:

1. Companies are ready for transformation, if you specify what problems will be solved and by what means.

2. Providing a project map and solving pain points allows you to systematically improve business performance and attract stakeholders.
3. The company is ready to transform into a data-oriented solution if they see the big picture and understand the solution to the problems. It is important to note that the solution should complement previous negative experiences, if any.
4. The process transformation and the introduction of the data platform is not a silver bullet to solve all the problems, it is necessary to work with the specialists and explain what benefits they will get and what their motivation is.
5. Without MsTM program I wouldn't have been able not only to start this level of project but also to start planning.
6. MsTM program gave me the structure and knowledge with which I now approach problems.
7. MsTM program helped me to move from the technical side of problem solving to understanding business issues. To rise above the problem and look at it from a different angle.

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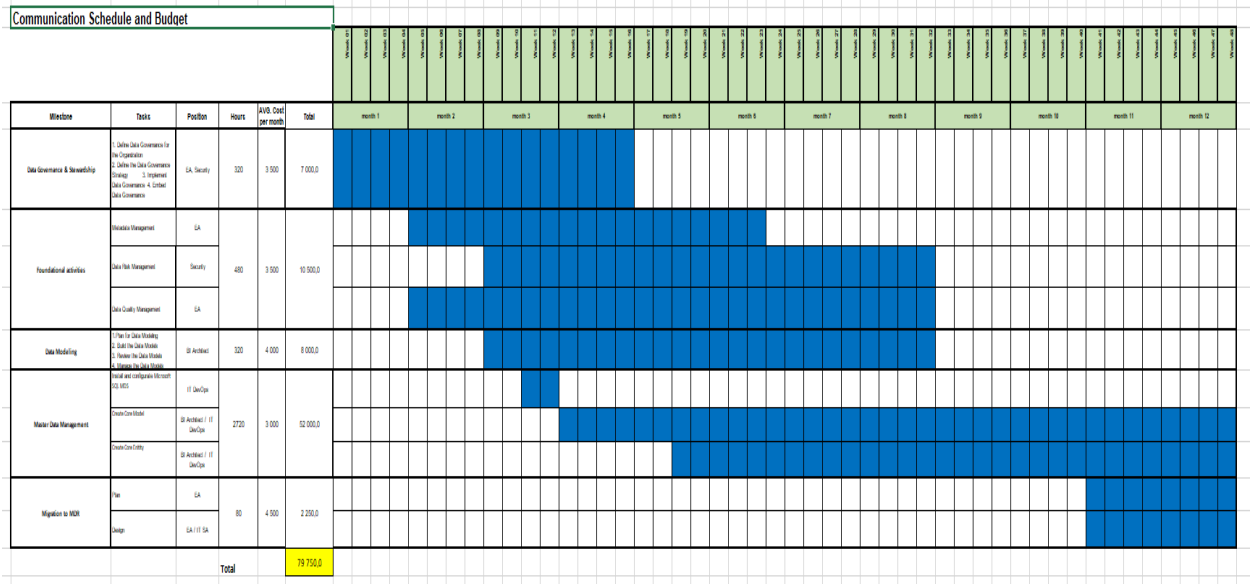
APPENDIX A

Figure A.1 Potential incremental value from advanced analytics

APPENDIX B

Table B.1

Communication Schedule and Budget



Communication Schedule and Budget

Milestone	Tasks	Position	Hours	AVG. Cost per month	Total
Data Governance & Stewardship	1. Define Data Governance for the Organization 2. Define the Data Governance Strategy 3. Implement Data Governance 4. Embed Data Governance	EA, Security	320	3 500	7 000,0
Foundational activities	Metadata Management	EA	480	3 500	10 500,0
	Data Risk Management	Security			
	Data Quality Management	EA			
Data Modelling	1.Plan for Data Modeling 2. Build the Data Models 3. Review the Data Models 4. Manage the Data Models	BI Architect	320	4 000	8 000,0
Master Data Management	Install and configurate Microsoft SQL MDS	IT DevOps	2720	3 000	52 000,0
	Create Core Model	BI Architect / IT DevOps			
	Create Core Entity	BI Architect / IT DevOps			
Migration to MDM	Plan	EA	80	4 500	2 250,0
	Design	EA / IT SA			
		Total			79 750,0

APPENDIX D

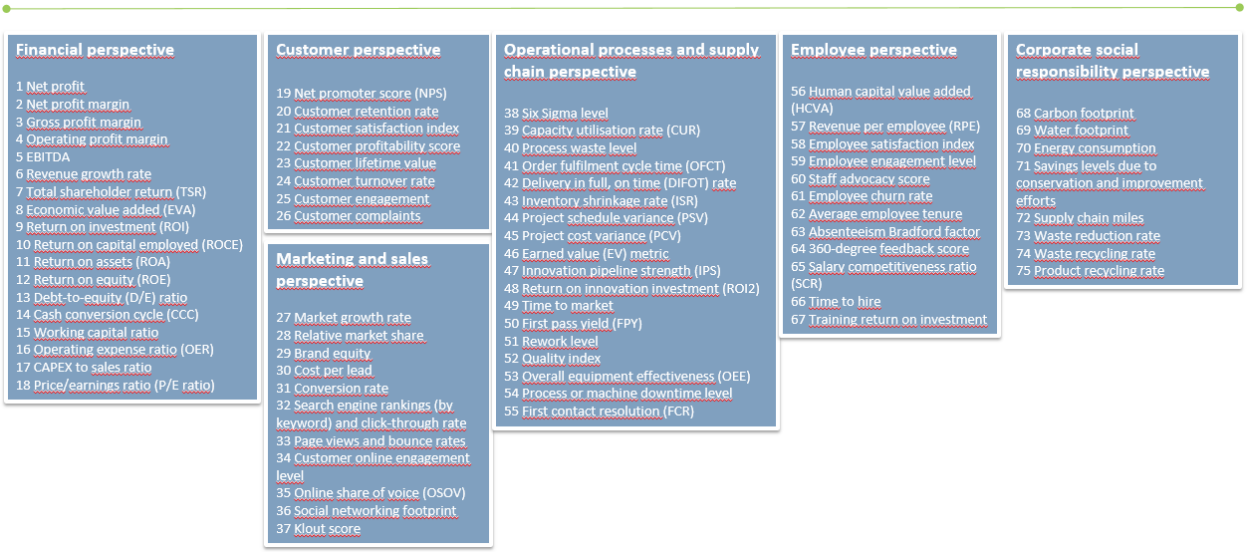


Figure D.1. Bernard Marr KPIs

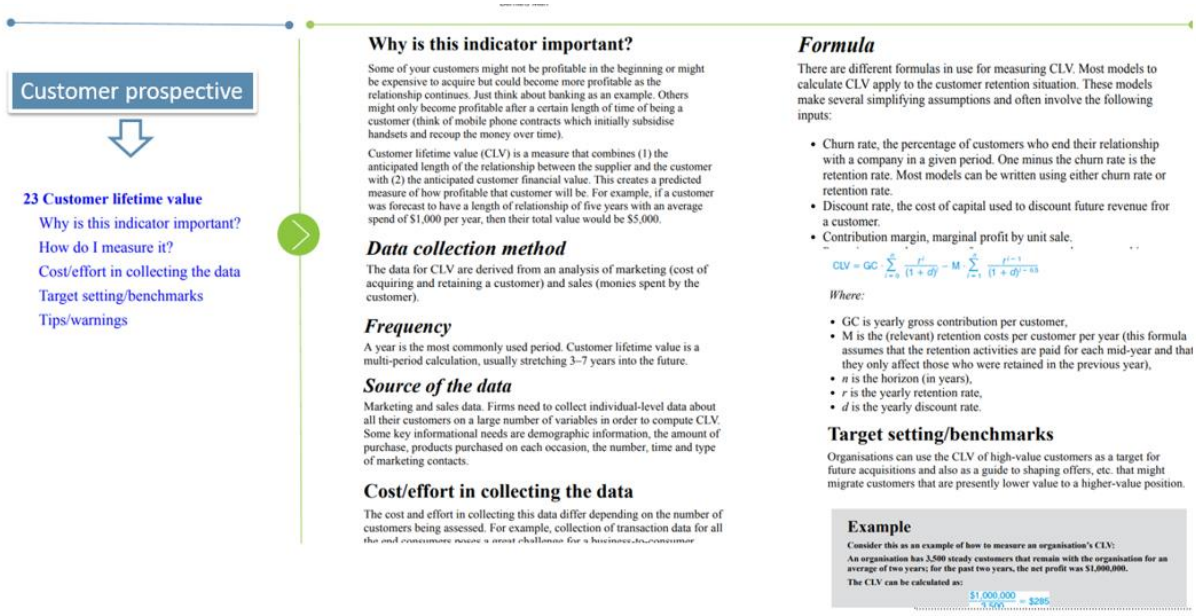


Figure D.2 Bernard Marr KPIs Sample

APPENDIX C

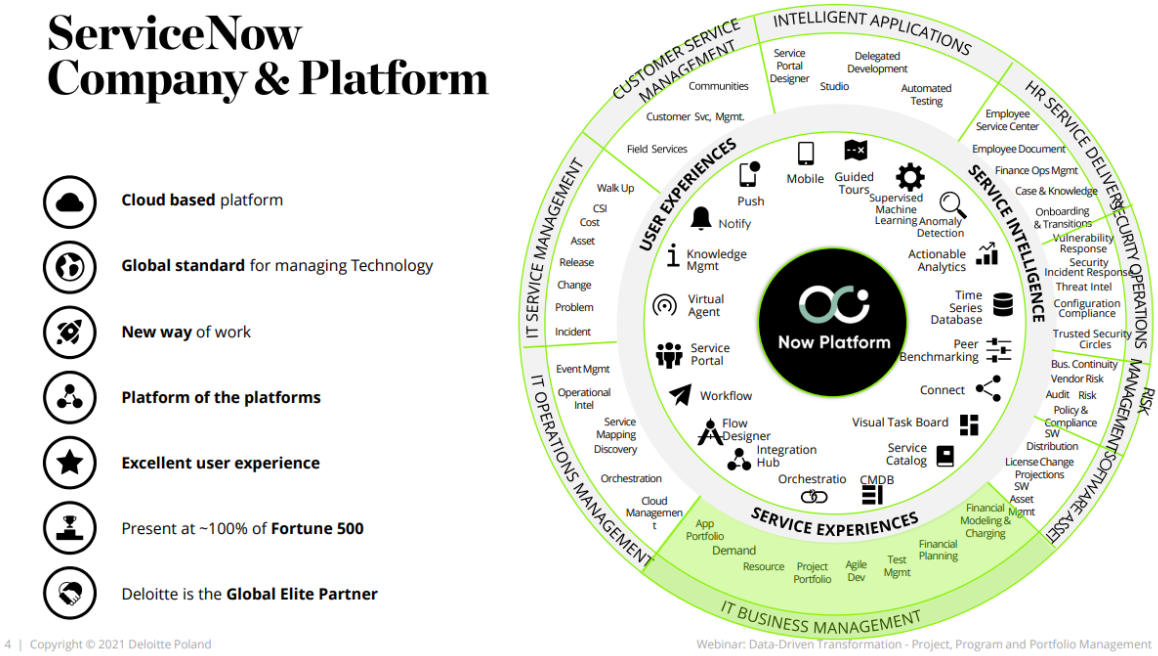


Figure C.1 ServiceNow Platform for Transformation

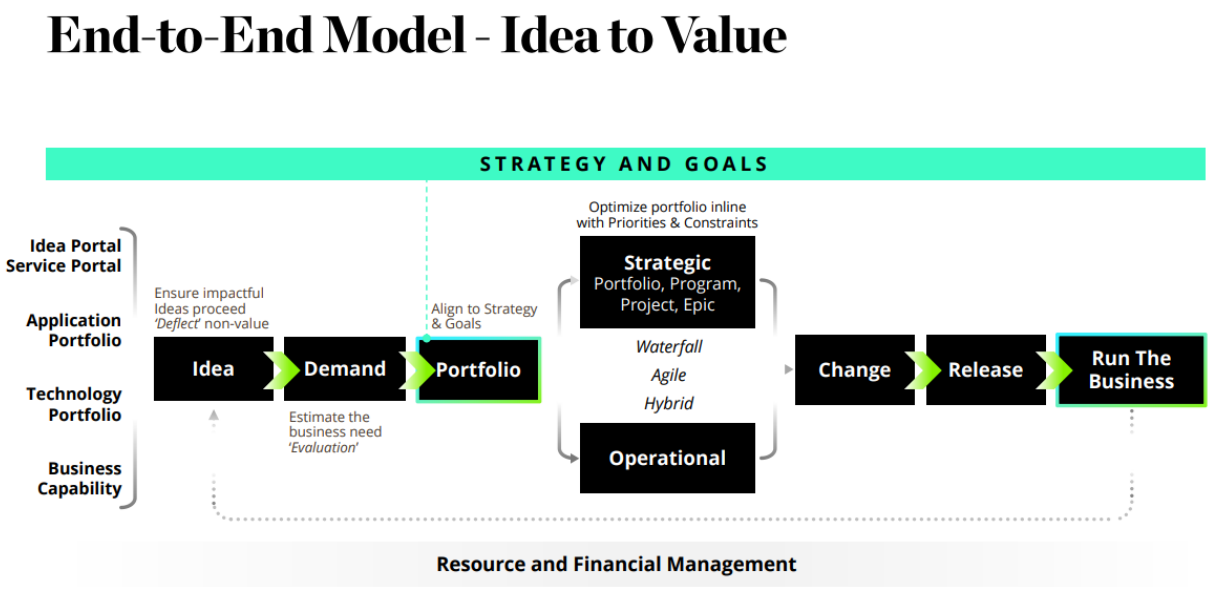


Figure C.2 Process Transformation

APPENDIX D

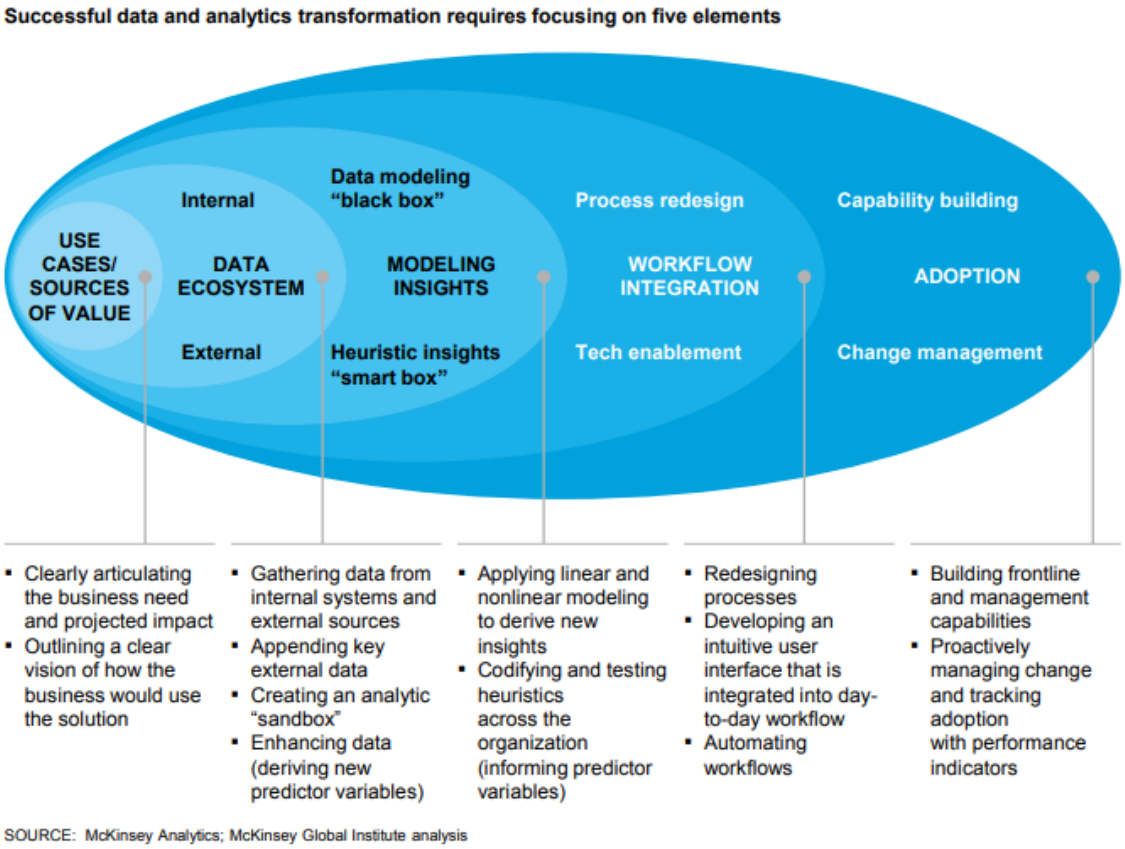


Figure D.1 McKinsey Process Transformation

Table D.1

McKinsey Proposal

Exhibit 4.1: Proposed price for Workstream #1

McKinsey Proposed Team Structure	Weekly Rate	Weeks	Total Price
Partner/Associate Partner leadership; plus 5 full-time consultants; additional subject matter experts; as well as research and support from McKinsey COVID centers of excellence	$181,560	1-6	$1,089,360
Partner/Associate Partner leadership; plus 2 full-time consultants; additional subject matter experts; as well as research and support from McKinsey COVID centers of excellence	$127,500	7-10	$510,000
SUBTOTAL Firm Fixed Price for Workstream #1			**$1,599,360**

Exhibit 4.2: Proposed price for Workstream #2

McKinsey Proposed Team Structure	Weekly Rate	Weeks	Total Price
Partner/Associate Partner leadership; plus 4 full-time consultants; additional subject matter experts; as well as research and support from McKinsey COVID centers of excellence	$168,300	1-8	$1,346,400
Partner/Associate Partner leadership; plus 2 full-time consultants; additional subject matter experts; as well as research and support from McKinsey COVID centers of excellence	$127,500	9-12	$510,000
SUBTOTAL Firm Fixed Price for Workstream #2			**$1,856,400**

Exhibit 4.3: Proposed price for Workstream #3

McKinsey Proposed Team Structure	Weekly Rate	Weeks	Total Price
Partner/Associate Partner leadership; plus 5 full-time consultants; additional subject matter experts; as well as research and support from McKinsey COVID centers of excellence	$181,560	1-8	$1,452,480
Partner/Associate Partner leadership; plus 3 full-time consultants; additional subject matter experts; as well as research and support from McKinsey COVID centers of excellence	$144,840	9-12	$579,360
SUBTOTAL Firm Fixed Price for Workstream #3			**$2,031,840**

Exhibit 4.4: Total proposed price for Workstreams #1-3

TOTAL Firm Fixed Price for all Workstreams	**$5,487,600**

APPENDIX E

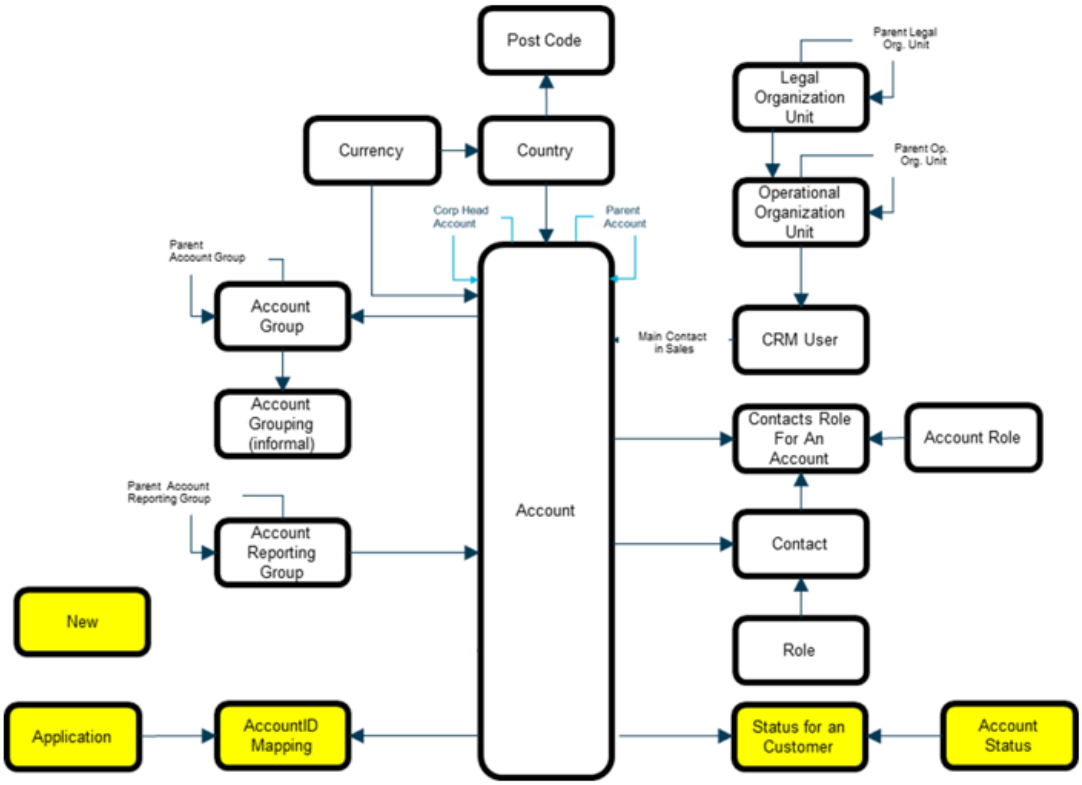


Figure E.1 Customer Information Model

APPENDIX F

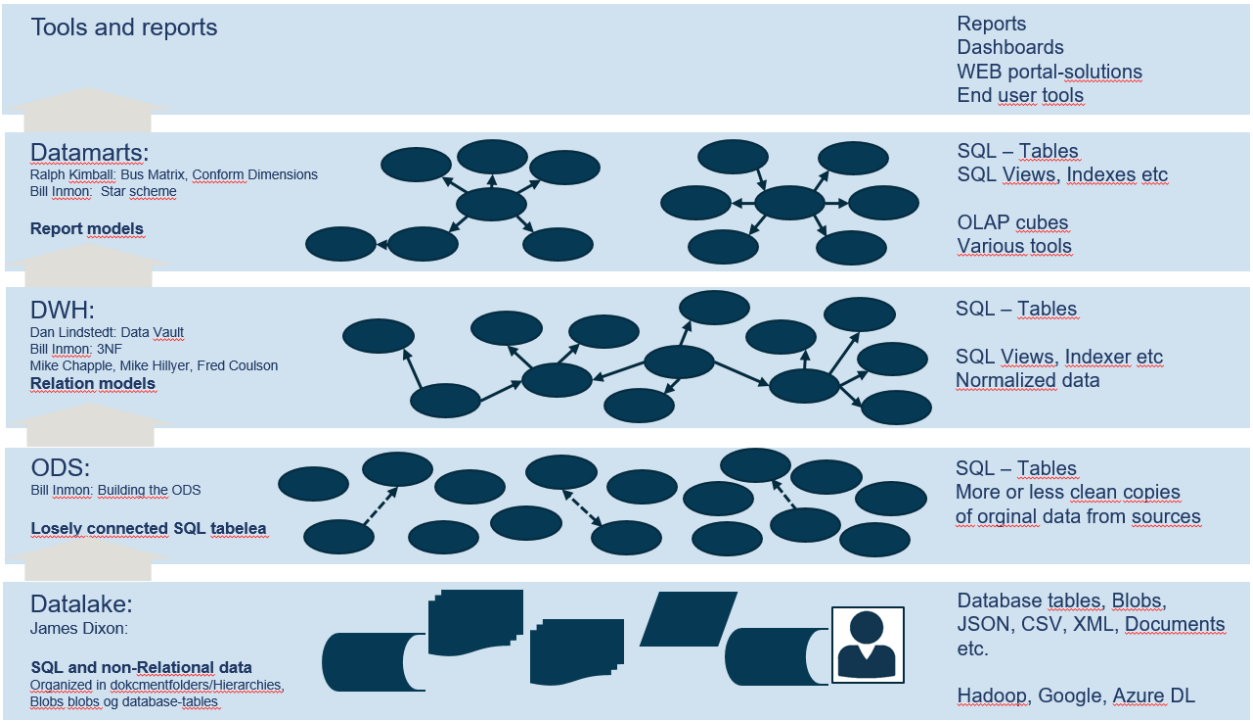


Figure F.1 Data Gameboard

APPENDIX G

Table G

Pricing Azure Main Components

	Amounts EUR Year							
	Pay-as-you-Go				3 Year Agreement			
	Small	Medium	Large	X-Large	Small	Medium	Large	X-Large
Databricks								
CPU + Memory	4.164	7.596	15.192	30.372	2.220	4.428	8.868	17.724
Total	4.164	7.596	15.192	30.372	2.220	4.428	8.868	17.724
Data Factory								
Dataflow (CPU)	5.844	11.700	23.400	46.800	5.844	11.700	23.400	46.800
Data Factory (Movement)	2.424	5.664	13.968	25.092	2.424	5.664	13.968	25.092
Other Cost								
Total	-	-	-	-	-	-	-	-
SQL (Managed Instance)								
CPU	7.536	30.168	45.252	75.420	5.016	20.076	30.108	50.184
Storage (Max size 8 TB)	5.208	5.208	10.452	10.452	5.208	5.208	10.452	10.452
Total	12.744	35.376	55.704	85.872	10.224	25.284	40.560	60.636
SQL (Managed Instance Hybrid benefit)								
CPU	7.536	18.348	27.528	45.876	2.064	8.256	12.384	20.640
Storage (Max size 8 TB)	5.208	5.208	10.452	10.452	5.208	5.208	10.452	10.452
Total	12.744	23.556	37.980	56.328	7.272	13.464	22.836	31.092
SQL Synapse Analytics (Azure SQL DW)								
DataStorage blocks (CPU & Memory)	10.272	41.076	102.684	205.368	3.588	14.376	35.940	71.880
Storage (No max limit)	5.472	8.208	10.944	10.944	5.472	8.208	10.944	10.944
No SQL Query DataLake Option	408	408	408	408	408	408	408	408
Total	16.152	49.692	114.036	216.720	9.468	22.992	47.292	83.232
SSAS Tabular								
SSAS Tabular (S0,S1,S2 etc)	5.988	15.000	59.916	105.036	5.988	15.000	59.916	105.036
Total	5.988	15.000	59.916	105.036	5.988	15.000	59.916	105.036
DataLake								
Datalake HOT option	3.528	7.632	11.304	15.288	3.204	6.084	8.976	12.180
Total	3.528	7.632	11.304	15.288	3.204	6.084	8.976	12.180

Pricing Azure :

<u>Database:</u>

- Per Managed Instance: € 22’ – 60’
- Synapse Analytics: € 47’- 83’

<u>ETL:</u>

- ADF Movement: € 13’-25’
- ADF Dataflow: € 23’-47’
- Alternative Databricks: € 9’-18’

<u>SSAS:</u>

- Azure SSAS Tabular € 60’-105’
- Alternative: Power BI Premium
- Alternative: SSAS On Prem

<u>Datalake (30-40 TB):</u>

- Azure Datalake Hot € 6’-9’

APPENDIX H

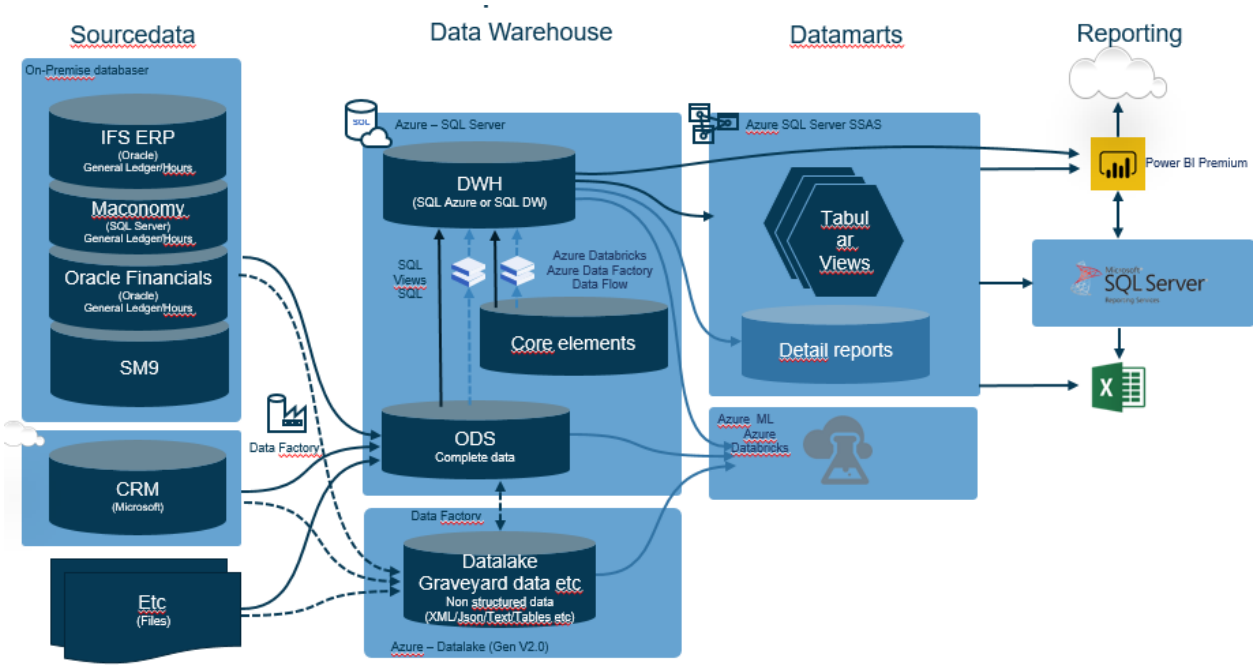


Figure H.1 Cloud Sample Solution Microsoft Azure