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COMPANY VALUATION – APPLICATION TO A COMPUTER SERVICES SPECIALIZED ENTERPRISE: KEYRUS GROUP

Graduation work presented at Escola Politècnica da Universidade de São Paulo for the accomplishment of the “Diploma de Engenheiro de Produçao”

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RESUMO

Hoje em dia testemunhamos parcerias entre *gigantes* empresariais em todos os setores como, por exemplo, Crédit Agricole-Crédit Lyonnais (2004), BNP-Paribas (2000), Vivendi-Seagram (2000), France Télécom-Orange (2000), Air France-KLM (2005). Quando uma empresa decide aumentar a sua fatia de mercado, ou o seu tamanho, surgem alternativas: de crescimento interno e de crescimento externo. O primeiro caso denota que a empresa prefere crescer sozinha. O segundo caso refere-se as situações em que a empresa decide conquistar novos mercados adquirindo outras empresas ou atividades de outras empresas. Este projeto tem como objetivo determinar o Valor Econômico da empresa *target*: Keyrus Group, e tirar conclusões adequadas sobre o valor calculado e o suposto valor de mercado. Foram utilizados os métodos do Fluxo de Caixa Descontado e de Múltiplos (avaliação relativa). Este trabalho de formatura se encaixa no escopo do meu estagio no banco de investimento BNP Paribas, e na vontade de aprender mais sobre os métodos de avaliação de empresas e por primeira vez desenvolver meu próprio modelo, que nunca tive a oportunidade de fazer durante meus seis meses de estágio. Este trabalho foi desenvolvido a partir das bases e trainings fornecidos pelos analistas durante esse período e está sobre influencia importante dos métodos clássicos usados nos bancos de investimento como a construção de diversos cenários, a importância dada ás premissas do setor e da empresa estudada. Além disso considerei o fato de usar vários métodos na avaliação primordial para a consistência do resultado final. A escolhia da empresa foi motivado pelo meu segundo estágio, de *data Science* na Keyrus, demais listada o que facilito o trabalho de benchmarking e a comparação final com os preços históricos.

O valor final alcançado com base nas premissas utilizadas foi de €175,148,961.

Palavras chaves: Fusões & aquisições, avaliação de empresas, métodos de avaliação.

ABSTRACT

Nowadays, we witness marriages between corporates in all sector, for example Crédit Agricole-Crédit Lyonnais (2004), BNP-Paribas (2000), Vivendi-Seagram (2000), France Télécom-Orange (2000), Air France-KLM (2005). When a company decides to increase its market size or its size, an alternative arises: organic growth and external growth. The first case means that the company prefers to grow alone. The second case refers to situations in which the company decides, to conquer new markets acquiring other companies or activities of other companies. This project aims to determine the economic value of the company target: Keyrus Group. And draw appropriate conclusions about the value found and the assumed market value. The discounted cash flow method and the multiple method (relative evaluation) were used. This work was made in the scope of my internship at the investment Bank BNP Paribas and the will of learning more about valuation methods and for the first time build my own model, thing i never had the opportunity to do so during this six months' period. This report was developed from the bases and trainings provided by the analysts during that period and is under important influence of the classic methods used in the investment banks as the construction of several scenarios, the importance given to the assumptions of the sector and the company studied. In addition, I considered using several methods relevant for the consistency of the final results. The choice of the company was motivated by my second stage, in Data Science at Keyrus, furthermore the company is listed which facilitated the benchmarking work and the final comparison with historical prices.

The final value achieved based on the assumptions used was 175,148,961€.

Keywords: Merger & acquisition, company valuation, valuation methods

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1 INTRODUCTION

1.1 CONTEXT OF THE STUDY

This work insert itself in the continuity of the two internships I did over the past year. The first one within the French Investment Bank BNP Paribas in the Advisory area in *merger and acquisitions* and the second one as a data scientist in the French company Keyrus. It is a valuation report, subject on which I dedicated my first internship at BNP Paribas. But on a very specific company, Keyrus, a consulting firm involved in new technologies and big data management where I actually work as a data scientist.

This study will present different approaches to brand valuation, analyse in detail theoretical methods and finally evaluate the company.

1.2 OBJECTIVE

Corporate finance and valuation are academic subjects with very advanced theoretical foundations. However, there is a significant difference between academic finance and valuation as a practical method. Valuation is presented as an exact science, consisting in finding the value of an unknown. But valuation is a very complex task, where analyst must take assumptions on himself and with the help of the company being evaluated. The huge disparities in brokers recommendations illustrate the uncertainty with valuation. Enterprise value is the first mission of the administrator, valuate regularly its business is major to manage it.

This study aims to provide an adequate order of value of the enterprise for the shareholders from Keyrus Group as well as a panel of the major methods and habits in the professional world of valuation. This work can be motivated by the pursuit of strategic objectives for example buying or selling new shares according to the comparison between real share price and the share price found by the valuation, or by the search for profits.

Business valuation is a very sensitive operation. An analyst must understand perfectly how the business studied runs. As a result, another objective is to predict the evolution of the company's revenues, as well as general trends for the digital sector which is hard to predict.

Through this work we will try to provide some clarifications to the following question: what are the different business valuation methods? This lead to examine the particularities of the most used methods in M&A and rules of accounting, key subject to build the financing model.

1.3 METHODOLOGY

In this case our work will be a determination of the value of our company and analyse other peers from the target sector. In order to do that, we will proceed initially to a review of the sector of the company, and make a quick profile of its business and main divisions. Secondly, we will set up a reminder of the different concepts related to our subject, accounting, concept of value and the theory of the valuation methods and we will employ by distinguishing trading and transaction multiples methods from discounted cash flow method (based on forecasts). Then, we will try to implement the different valuation methods for Keyrus and set up the specific uses of financial modelling, key skills in this division.

2 KEYRUS GROUP

2.1 OVERVIEW

During the last 20 years, Internet and digital tools have revolutionized working methods, providing access to information and speeding up exchanges. This revolution made easier to understand customer issues by disrupting digital innovation through better use of data. The challenges of a company are twofold: maximize its performance and establish its durability in a highly evolving and diversified ecosystem. In just a few years, Big Data technologies and new business models based on Digital Experience (Uber, Airbnb) have upset the balance of power between historical players and innovative start-ups. The company now has no choice but to constantly adapt its model and anticipate changes. Specialist in the fields of Data Intelligence in Digital Business Transformation and Experience, Keyrus was created in 1996 with the aim of offering companies the best tools for managing and supporting their continuous transformation, taking advantage of potential growth offered by the Digital Revolution. Data Science is one of diversified hearts of corporate strategy and take an increasing importance in enterprises performance.

Keyrus Group is a French company specialized in Consulting and Technologies. Keyrus Group operates through 2 brands: Keyrus and absys.cyborg. Keyrus is specialized in Major Accounts however, absys.cyborg focus on Mid-Market.

Keyrus operates through three main divisions: Management & Transformation, Data Intelligence and Digital Experience. The company is responsible for the digital transformation of corporate clients from middle market to global and leading companies. Keyrus has a diversified portfolio of clients: Industry, Bank & Insurance, Telecommunications, Retail, Public sector, Transport and Utilities.

Keyrus‘s offer formulate itself around a triple expertise:

- Management & Transformation:

Keyrus Group accompany the client to understand its challenges, drawing with it its strategy of evolution, advising with organizational choices and deploying architectures and solutions that will support its transformation. This division focus more on human resources and performance pilotage.

- Data Intelligence:

'Data Intelligence' activity is dedicated to the exploitation, analysis and valuation of the Data. Keyrus group acts in Data through 6 domains of expertise: Data Science / Artificial Intelligence - Big Data / Cloud Analytics - Enterprise Performance Management - Externalization and Formation

- Digital Experience:

Digital section is dedicated to digital transformation and clients data pilotage. This branch focus on client's Digital Experience. Keyrus group acts in Data through projects in the fields of Innovation and support for digital transformation • Service Design • Design Thinking & Sprint Design • Web Platforms & Service Platforms • Omnichannel e-Commerce Solutions • Mobile Applications among others.

Absys.cyborg sells it services in Management Solutions in diversified areas (ERP, Financing, CRM), Reporting and Decisional Solutions and is a multi-Cloud provider. Keyrus Group has a geographic footprint in 18 countries, representing 4 continents and counts more than 3,200 employees.

2.2 TIMELINE

The period 2000-2006 is marked by a solid growth supported by the successful integration of structuring acquisitions. In 2000 Keyrus acquired Cyborg, a reference player in Consulting integration of management systems. It also made a series of acquisitions with the objective of consolidating its positions in France and conquer other international places. The same year Keyrus's CEO, Eric Cohen brought the company public being now listed in the Paris Stock Exchange place Euronext.

Between 2007 and 2010 Keyrus decided to expand its expertise and turned to Management Consulting activities. Then came the creation of Keyrus Management in 2010. Also in 2010, Keyrus formed partnership with SAP Hybris in order to deploy its e-commerce solution to emergent markets (Brazil and China). In 2011 the company acquired Vision.bi, a Big Data Solutions specialist and in 2014 BIPB, specialized in Big Data and Analytics for financial market. The current organization in three main pillars, Data, Management, Digital was made in 2015. Keyrus Group is a dynamic actor in innovation as it participated in the creation of the Data Science chair at the French school Polytechnique.

2.3 KEY FIGURES

Keyrus Group operates delivering computer services to clients from diversified sectors. However, Industries, retail and Bank-Insurance represent more than 75% of its revenues. IN the same order of idea, big accounts represent the huge majority of its revenue and tend to gain importance since 2014.

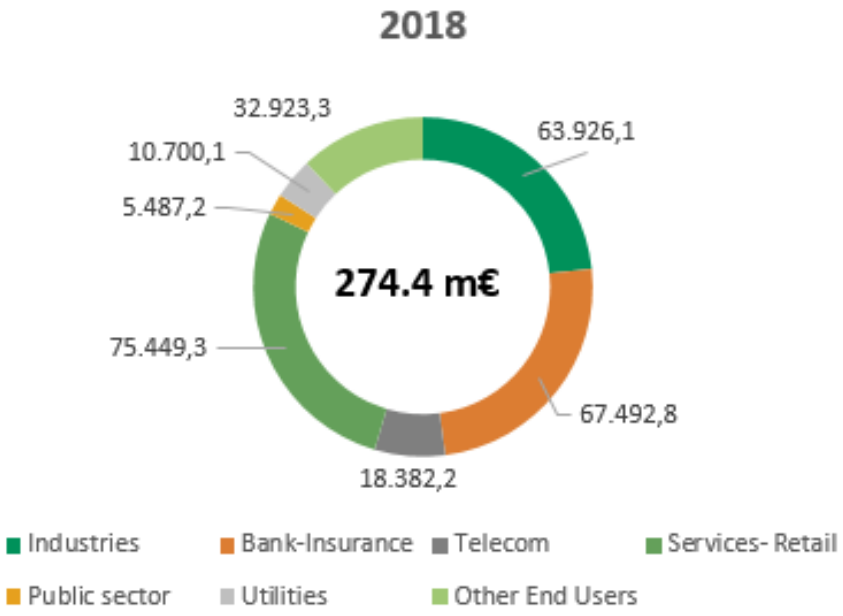

Figure 1: 2018 Keyrus revenue breakdown by end-users

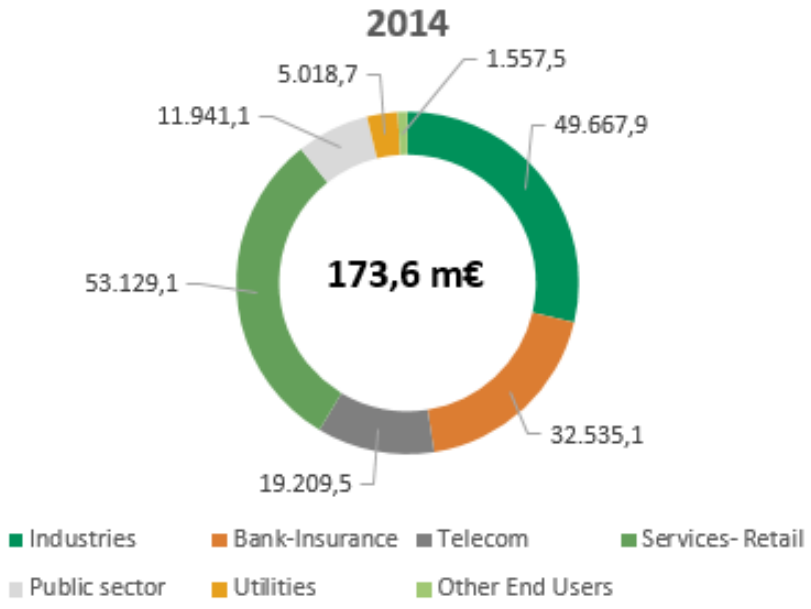

Figure 2: 2014 Keyrus revenue breakdown by end-users

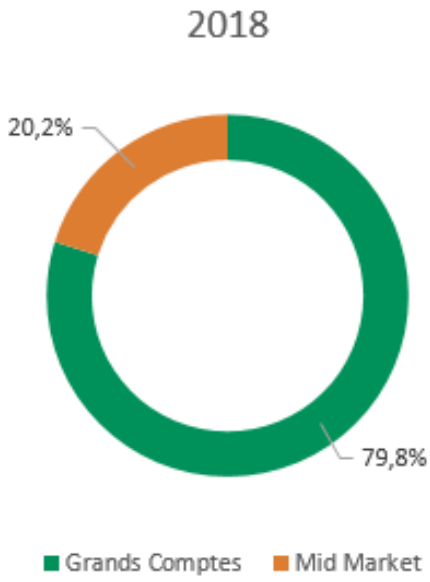

Figure 3: 2018 Keyrus revenue breakdown by market segment

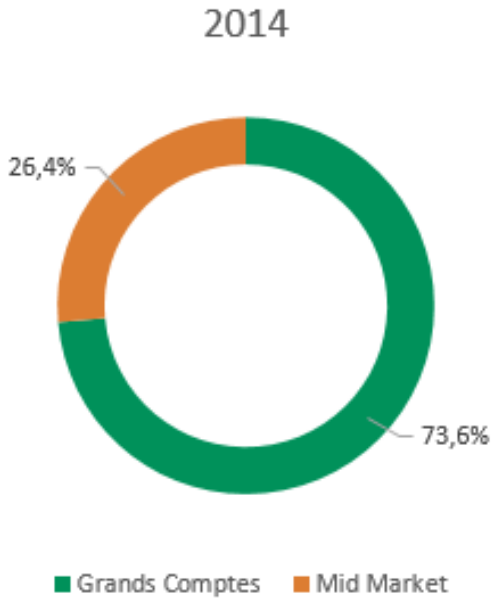

Figure 4: 2014 Keyrus revenue breakdown by market segment

We provide here the breakdown most used by the company in its annual reports: by market segment. However, in our study we won't use it due to lack of information f this particular breakdown.

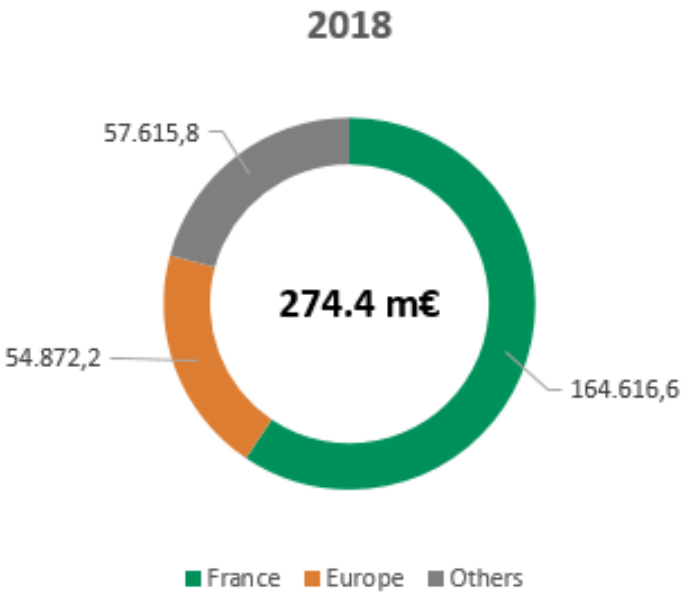

Figure 5: 2018 Keyrus revenue breakdown by region

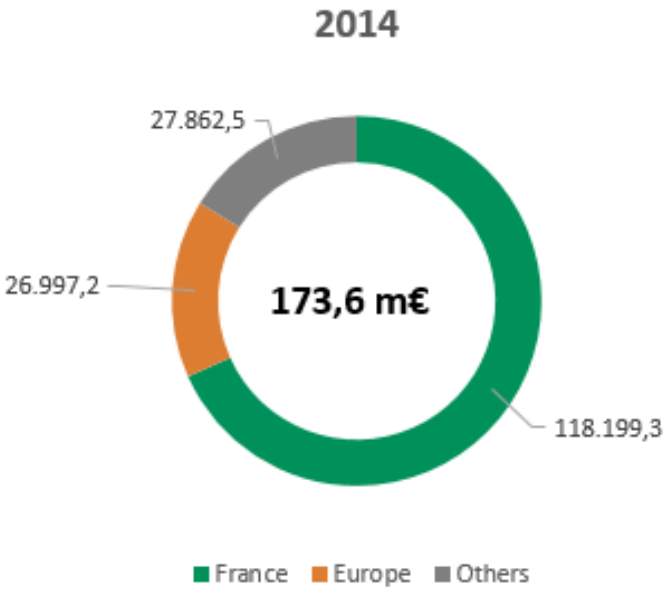

Figure 6: 2014 Keyrus revenue breakdown by region

From this analysis we will build our scenarios revenues, based on one hand on end-user's clients and on the other hand on region revenue trends.

2.4 DIGITAL TRANSFORMATION MARKET ANALYSIS

Our revenues assumptions will be partially based on a market report made by Grand View Research (GVR) from 2017 to 2025.

Grand View Research is a market research and consulting company that provides syndicated research reports GVR helps clients make informed business decisions, they offer market intelligence studies customized research reports, and consulting services. The report segmented the digital transformation market based on types, deployment, enterprise sizes, end-use, and regions. For our work we will use forecast breakdown by end-user and regions, presented in the revenues assumptions.

The report includes in solutions offered analytics, cloud computing, mobility, social media, and others that are used for planning, creating, managing (ERP) and distributing information. These solutions help in digitalizing operations and improving productivity which is one of Keyrus's core business. Analytics is the process of analyzing data through data tools and techniques. Cloud computing is the implementation of network servers for managing data. The segment covers Infrastructure-as-a-service (IaaS), Platform as a service (PaaS), and Software as a service (SaaS). The segment further includes the types of cloud services including public, private, and hybrid cloud. Social Media covers marketing that helps companies achieve access to higher customer base. This is the focus of Keyrus Digital branch, improving customer experience. The service segment is referred to professional services and implementation services required for digital transformation.

The company annual reports provide us some assumptions of the sector illustrating the high potential of this area. In France and Global the services and software sector, according to Syntec Digital, increased in 2018 by + 4.1%, growth higher than that announced (+ 3%). The expected growth for the year 2019 is + 3.9%. This progression is mainly boosted by Digital transformation projects (Cloud, Analytics, Security). The Gartner firm announced a 4.4% growth in Software and Services. Expected growth in consulting areas in 2019 is 3,0%, and IT consulting 5,2%. Concerning digital sales sector growth is particularly present in the south east Asia market as well as Latin-American market where the percentage of Internet users in the area increased from 16.6% in 2005 to 62.3% in 2016 according to Digital Element.

Keyrus Group is an important player on the IT consulting market and software services, a highly potential market in expansion in northern countries as well as emerging markets.

3 THEORETICAL FOUNDATIONS

This chapter will cover the main theoretical topics of this work, and describe the tools used in the next chapters.

3.1 ACCOUNTING FUNDAMENTALS

Accounting is a way of ascertaining and resuming in a standardized way the results of a company within a period or at a precise moment, providing to the market (customers, partners, investors, suppliers) and to the employees of the enterprise, treasury and other information on the company's performance, liquidity, general health and equity. Accounting information is used in profitability analysis, cash flow analysis, forecasts, corporate valuations, credit analysis, deal structuring (M&A, LBO, divestitures) and building company profiles among other uses. We analyse the past in order to form a view of the future. Experts analyse the accounts to know what made an account go down or up, what are the inputs, or outputs, what were the flows into and out an account, what drives the level of the account. The company accounts and moreover the annual reports are the raw material of our study. We will do the analysis and forecast based on the past of the company, and assumptions of the sector.

An annual report is made of 3 main divisions: the income statement, the balance sheet and the cash flow statement and the most useful information, but notes at the end of the report gives the details of the operations, or non-recurrent events, and the details necessaries to understand different breakdowns. The annual report always begins with an overview of the company: sector, key executives among other information. The balance sheet is a snapshot of the company’s assets. It is made of 3 main parts: assets, liabilities and equity. The income statement represents the income, expenses and profits of the company during the fiscal period. The cash flow statement shows the cash inflows and outflows for the entire period.

3.1.1 BALANCE SHEET

The fundamental equation of the balance sheet is:

Equation 1: Fundamental equation

$$Assets = Liabilities + Equity$$

Balance sheet assets

We represent the main items figuring in the balance sheet assets category of the balance sheet:

- *Cash and cash equivalents*: Cash is the amount of money available to maintain the company operations, in cash equivalent we have to include all short-term investment securities. It concerns for example bank deposits, commercial papers, stock-options.
- *Accounts receivables*: Receivables are amounts of money that are owed to the company by others counterparties, the company has not received yet this money so as it has to be discounted it in the cash flow statement.
- *Inventories*: Inventory is defined as items used by a company that represent finished goods or stocks.
- *Deferred income taxes*: A deferred tax liability or asset is created when there are differences in time in Tax Accounting.
- *Property, plant and equipment*: also named PP&E or tangibles, it includes all physical properties own by the company, in the counts of net PP&E we have to take into account all cessions and acquisitions.
- *Intangibles*: refers to software's, chairs, all non-physical assets of the company. Thus they form the other largest category of long-term assets.
- *Goodwill*: the goodwill is considered as the excess value created by affiliates sold, synergies. It is composed by intangible assets. While predicting it we generally keep it constant.

Balance sheet Liabilities

- *Account Payable*: accounts payable are generated when a company purchases goods from its suppliers are on credit. It is expected to be paid within a year, it is short term obligations.
- *Accrued liabilities*: Current liabilities are a company's debts or obligations that are due within one year. Current liabilities appear on a company's balance sheet and include accounts payable, accrued liabilities, among other debts.
- *Short term debts*: financial debts to be pay off within a year or an operating cycle.
- *Current portion of long term debt*: we include them in short term debts, it is the part of debts that are to be pay within the current fiscal period. We include them in short term debt in the model.
- *Long term debt*: financial debts to be pay off in a period longer than one year.

Current assets

The accounts which are expected to be realized in the perspective cash value less than one accounting period (one year) are current assets, while the remaining are in non-current assets. According to the fundamental equation, an effect of a purchase of equipment on the balance sheet is none due to the increase of equipment in the non-current assets and the decrease of the same amount in cash from the current assets. Current assets include cash and cash equivalent, short term investments, accounts receivables, prepayments and inventories for example. Inventories are the production which had not been sold by the company, stocks. Cash and cash equivalent represents highly liquid investments, from which the company can dispose at any moment.

Current liabilities

Current liabilities include obligations that must be paid within 1 year. It concerns short term debts, usually it is made up of short-term bank loans, or of commercial paper. But also counts payable by customers.

Non-current assets

They are assets help for more than one year. It includes net property, equipment and plants (resting depreciations), but also intangible assets, goodwill for example.

Non-current liabilities

Non-current liabilities are also known as long-term debts. It is financial debts that are to be pay in a term longer than one year.

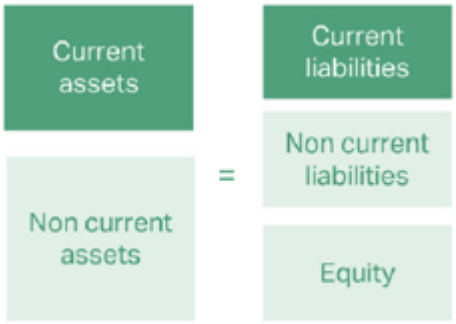

Figure 7: Balance sheet Source: AMT Training

Working Capital (WC)

Equation 2: Working Capital (WC)

$$Working\,Capital = Current\,assets - Current\,liabilities$$

Working capital (WC) is the money available to a company for day-to-day operations. Understanding the working capital is important for cash flow analysis. Working capital is a measure of efficiency of the company. It also reflects how debt, inventories, revenue collection, payments are managed. WC is calculated on a precise date, and not over a period. Consequently, it will depend on the day of the accounting period.

3.1.2 INCOME STATEMENT

The income statement focuses on the four key items - revenue, expenses, gains and losses. It does not cover receipts (money received by the business) or the cash payments/disbursements (money paid by the business). It starts with the details of sales subtract the costs, and then compute the net income and eventually the earnings per share (EPS). It is used to see how revenues gets into net earnings (profit or loss). Net earnings (or net income) must be positive to achieve profitability but also big enough to pay shareholders invested capital.

Revenues comes from the sales of goods or products delivered as well as from services performed. Revenues are the first part of the income statement.

Gross profit is the difference between revenues from goods sold and the cost of this merchandise sold, without considering administrative, selling and financing expenses. For a company that provide services, it is the difference between revenues from services and the cost of services performed without considering referred expenses. This section also includes goods devolutions given that it is an operational item. Examples of Cost of Goods Sold (COGS) are raw materials, factory labor, factory maintenance costs, depreciation of factory buildings and equipment.

We compute the operational income or EBIT (Earnings Before Taxes) subtracting expenses from sales, general and administration expenses (SG&A). They are non-production business costs like marketing, sales, supporting services, insurances costs. It is important to aggregate monetary variations in operational expenses. Monetary variation is due to exchange rate variation, a company which contracts a loan in a foreign currency at the beginning of the term may have losses if the Brazilian real had been depreciated.

The next part is related to financing. To achieve Profit Before Taxes (PBT) we have to add the financing result to the operational result (EBIT). Financing result is the sum of financing expenses and financing incomes. Financing expenses are interests paid, bank commissions. The expenses will have to be compensated by adding the incomes. Financing incomes include interest received, discount obtained, financing applications (stock options). The law (Lei de Sociedades por Açoes) allows the companies to segregate EBIT into two parts: EBIT before financing result and EBIT after financing result.

Net income is very important for the company. It is one of the main link of the investment cycle. It is used to pay dividends to shareholders or reinvest in the company's assets. The ratio Earnings Per Share (EPS) is the portion of the net income allocated to each common stock. It is an indicator of profitability. We can distinguish diluted EPS which is the net income divided by diluted weighted average number of shares outstanding (WASO) and the basic EPS equal to net income divided by basic WASO. WASO take into account the number of shares issued or removed by the company. We used for calculation the weighted average number of shares which is the sum of weighted shares of all periods of the fiscal year.

3.1.3 CASH FLOW STATEMENT

The cash flow statement is a record of cash flows over an accounting period. It is a list of cash inflows and cash outflows, and it explains the difference between opening and closing cash on the balance sheet, from it we also access to depreciation and amortization. Despite the fact its presentation is not mandatory it is an important to understand the health of the company.

3.2 CONCEPT OF VALUE

Why valuate a company? We know that it does exist several valuation methods, that could give us many different results. It seems primordial to ask ourselves: valuation is the same for all companies? The context of valuation does have an influence on final value? Does it exist a real value for an enterprise?

We begin this analysis commenting the definition of valuation with a theoretical method which is the discounted cash flow (DCF). As is it the case with bonds, the company value is equal to the sum of future cash flow generated taking into account the effect of time, in fact a euro does have a higher value today than in 1 year. However, this method has its defaults, it highly depends on the actualisation rate, period of forecast and future cash flow expected. It requires a high knowledge of the business, and one would has to be an omniscient analyst to predict exactly the future cash flows.

According to Pierre Vernimmen, a company above all a company is a set of assets. This would turn the business into a good for which the rules of supply and demand are applied, bringing in the notion of utility and price. These notions do not include the intrinsic value of a good, but the notion of utility, which is the satisfaction that this good gives to it. It is important to remember that in the Fusion Acquisition, the buyer offers a price that he would be willing to pay, the profile of the purchaser would affect this value as the utility function differs for different agents. When valuing a business, it should be taken into account who makes this valuation because it may require a different method, but also for the same method, give different results depending on the profile of the acquirer. The value of a company is thus dependent on the purchaser in particular because it can emphasize a certain valuation method. Valuation also depend on the buyer given that he infuences the hipotesis and the methods used for this. Indeed, for the DCF method, the Weighted Average Cost of Capital (WACC), is calculated with the

Beta, which is the correlation between the development of the company and the market. In addition to relying on market performance, valuation may depend on the company's view within the market, notably to form a sample of comparables for the comparables method. Mapping a sector can be done in different ways, depending on the aspects put forward by the valued company. If it has a diversified business, the buyer will target its comparables based on the division which, in his eyes, is the most significant and with the biggest growth. This requires assumptions about the development of the company.

The context of valuation implicate a disparity in the final value because it indicate the goal of the valuation. If we choose for example the valuation by precedent transactions, the price will be superior due to the premium paid, instead in comparable method, the price would in the average be lower.

The valuation of a company follows strict rules and it is based on theoretical concepts, in reality deviates from the theory mainly due to the uncertainties of the future, the agents' bias and the context of valuation. Finding the value which approach the best the theoretical value is the main task of the banker in Fusion Acquisition. Thus, during any valuation work, it is not required to calculate "the" value of the company but "a" value of the company. Nobody is omniscient, the goal is to get as close as possible. In this case it is necessary to use several methods, vary the assumptions and give more weight to certain methods depending on the context and the profile of the person making the valuation or who is the target. The approval of a price is not the validation of the value of the company but the approbation of hypothesis made by the analyst.

Evaluating a company consist in proposing a value or a range of values to the assets of the firm. But it is not proposing a price. In a M&A transaction, the work of valuation of the target is handled by both the seller and the buyer. A company’s value is different for different buyers and it may also be different for the buyer and the seller. The value should not be confused with price, which is the quantity agreed between the seller and the buyer in an operation involving the sell or purchase of a company.

From the buyer’s viewpoint, the basic aim of a valuation analyst is to determine the maximum value it should pay. However, from the seller’s viewpoint, the aim is to determine the minimum value at which it should accept the operation. In our case we evaluate the company from the point of view of the enterprise (so the seller) given that our study should provide information

to shareholders helping them to take strategic decisions. In the valuation of listed companies, the valuation is often used to compare the value obtained with the share's price on the stock market and decide to sell or buy shares. In the same order of idea, the evaluation of a company and the different assets is important to decide what unit abandon or continue. It is also an indicator of value creation or destruction. The firm can measure the impact of its policies on value creation doing the evaluation at different moment of the company's life. The value of the company is fundamental to know where the boat is going and how to drive it.

The Enterprise Value (EV) or the value of the operating business is the market value of the business. The business is the net operating assets (not considering cash), EV obey to the next equation:

Equation 3: Definition of Enterprise Value

$$EV = Equity\ Value + Net\ Debt$$

We give consequently the relation between net debts and debts:

Equation 4: Definition of Net Debt

$$Net\ Debt = Debt - cash\ and\ cash\ equivalent$$

EV is the sum of the value of equity financing (shareholder value) and the value of net debt financing. This EV is the economic value of the company, it is the aim of our study. It considers the capacity of revenues of the company in the future. EV might be estimated using valuation such as DCF or comparable. In the case of listed companies, equity value can be derived by estimating EV and resting net debt financing and then compute share price to compare with real share price.

3.3 VALUATION METHODS

3.3.1 COMPARABLE MULTIPLES

DCF valuation is known to be the most accurate and flexible valuation method for companies, projects and assets. However, it relies on revenue and EBITDA forecast that might be improper given that it depends a lot of the analyst and the senior in charge of the project. Errors in estimating the company's return on invested capital (ROIC), revenues, and its weighted average cost of capital (WACC) can lead to mistakes and a fortiori to strategic errors.

To minimize the risk of forecast errors, we use a trading comparable analysis, it compares the company's multiples with the multiples of other listed companies from the same sector or which have partially the same core business. This method aims at obtaining the value of the company from the multiples of looking forward earnings obtained for the comparable companies. In reality, it is a ratio analysis where a valuation measure of the company (it is the numerator: EV, Equity Value) is compared with a value driver from its financial statements (denominator: EBIT, EBITDA, Net income). In case of an important divergence between DCF and trading comparable methods, the company can make arrangements in its previsions: well executed the analysis help the company to stress-test its cash forecasts. On top of that the company will be able to see its strengths and weaknesses against other companies.

The inconvenient of this method is the choice of comparable companies, in order to form the list of comparable we have to choose companies with similar traded values, from the same sector, the choice may not be so easy. Furthermore, it is very dependent to the comparable set being used. The comparison will also be affected by limited liquidity of the companies (if it is the case). And it uses forecast earnings within a small horizon.

In the process of selection of the peers, in addition to overviewing the sector of the listed companies, we have to make an operational benchmarking (sales, EBITDA) to refine. We can't compare a small company with a huge multinational. Once the multiples calculated, we can exclude companies with a very different multiple. Furthermore, we can compute the values for different exercises (2018, 2019, 2020 for example) to give a range of value. Finally, we get the median or average value of all the trading multiples. In general analysts take the average multiples and compute average +1 and average -1 to have a range of multiples. This is how we decided to operate in our work.

The multiples most commonly used to find the EV are:

- **EV/Sales**: for fast-growing companies with no earnings
- **EV/EBIT**: for industries where operational figures are the most important
- **EV/EBITDA**: most commonly used to avoid divergences due to depreciations that depends on accounting standards

The multiples most commonly used to find the Equity value are:

- **Share price / Diluted EPS(P/E)**: for listed companies in mature industries with the same leverage
- **PER**: Price Earning Ratio equal to market capital divided by net income

3.3.2 PRECEDENT TRANSACTIONS

Transaction multiples method uses the values of ancient deals for companies of the same sector. It is a resume of the recent M&A activity for a particular industry. The multiples are calculated at the time of the deal (use figures of the deal's year). The advantage of this method is that it is based on public information. However, the data may be difficult to find. To keep consistency, we use the same multiples as for trading comparable method: EV/Sales, EV/EBITDA or EV/EBIT.

3.3.3 DISCOUNTED CASH FLOW METHOD

We will see in this section the main steps of discounted cash flow analysis, forecasting free cash flows, and computing the terminal value.

This method is based on the fact that the company is evaluated on basis the present value of future cash flows the business will attract in the next few years. The forecasts are based on the analyst's analysis. One of the advantages of this method is that DCF relies on free cash flows and eliminate subjective accounting policies. DCF reflect the best company's board estimations, capture the future long term growths estimations, However, one must be confident on cash flow assumptions.

Key steps of DCF method:

- Calculate the Free Cash Flows (FCF) and estimate the key numbers
- Calculate the WACC (Weight Average Cost of Capital)
- Estimate the time value of DCF analysis and the Terminal Value (TV)
- Discount FCF and TV using the WACC
- EV = DCF + TV
- Bridge to stock price and Equity Value

3.3.3.1 FORECASTING FREE CASH FLOWS

The first step is to select the assets which correspond to the core business of the company, in our case we selected the company as a whole due to the specialized characteristic of its business. We apply DCF on the core business so that we exclude non-core assets as well as financial investments. FCF are generated by the operations of the firm, furthermore the company has to be in a "steady state" at the end of the forecasting period (order of 10 years in general). On top of that the analyst must be aware of many possible scenarios. Enterprise value is computed actualising with the WACC rate future cash flow to their present value:

Equation 5: Enterprise value

$$Enterprise\ value = \sum_{t=1}^{\infty} \frac{Enterprise\ cash\ flows}{(1 + WACC)^t}$$

Free cash flows are calculated as follow:

EBIT	**100,0**	
tax on EBIT	(30,0)	
= NOPAT	**70,0**	
+ Depreciation and Amortization	30,0	
- Increase in OWC	(10,0)	
+/- other cash flow adjustments	(5,0)	
- CAPEX	(40,0)	
= Free Cash Flow	**45,0**	**cash available to pay investors**

Figure 8: Forecast free cash flow

3.3.3.2 ESTIMATING THE WACC

The Weight Average Cost of Capital reflects the time value of money and the risk of cash flows. It is in other words the return expected of an investment in the company or the weighted mean of the cost of equity and cost of debt. It is the rate from which we convert future value of cash to present value (if the goal is to evaluate the company in the present)

WACC is calculated according the next formula:

Equation 6: Definition of WACC

$$WACC = we.Ke + wd.Kd.(1 - t)$$

Where we is the weighting of equity in capital structure and wd the weighting of debt in capital structure;

$$we = \frac{Equity}{Capital} \quad wd = \frac{Debt}{Capital}$$

Ke is the cost of equity which represents the expected return for equity investors and Kd the cost of debt which is the expected return for debt investors.

t is the tax rate, cost debt is known, it is the average interest rate paid by the company each year, ie the total interest costs of the debt by the total debt. Cost of Debt is assumed to be the cost of current long-term debts of the company.

We generally use the Capital Asset Pricing Model to estimate the cost of equity (Ke).

Equation 7: CAPM formula of Ke

$$Ke = Rf + \beta.(Rm - Rf) + Rp$$

- β represents the risk of a specific stock option against the risk of the global market. If beta is superior to 1, the company is considered riskier than the market mean, however a steady company will have a beta inferior to 1, its stock price will fluctuate less according to the market. In the practice we compute the unlevered beta βa from peers companies and then the equity beta β used in the formula of the cost of equity.

Equity beta is given by the next expression:

Equation 8: Definition of Equity beta

$$\beta = \beta a.(1 + (1 - T).G)$$

G is theTarget Gearing (D to E ratio).

Rp is the country risk, Rf is the risk free rate, the return for an investor for a risk free project. Rm is the expected return for the market.

$Rm - Rf$ is the equity risk premium (ERP). The risk free rate is assumed to be the yield do US T-Bond (10 years). Country risk is assumed to be the one of France. ERP is the median spread between S&P 500 and US T-Bond (50 years).

3.3.3.3 CALCULATE THE TERMINAL VALUE

The Terminal Value must be added to the previous amount calculated by DCF method. The terminal value estimates the value of the business after the forecasting period, it captures all cash flow future value assuming the company is in a constant state (constant or null growth for example). It exists many approaches for calculating the terminal value. The first one is assuming growth is perpetuating. Free cash flows growth following a constant rate from the end of the forecasting period. One may be careful while computing the terminal value in this case. The second method is assuming a multiple of earnings constant, generally lower than the exit year multiple.

Arriving at the end of the forecasting period, we sum the free cash flow taking into account this factor we call g constant. The next figure represents since the end of the forecasting period the cash flow with a growth of g.

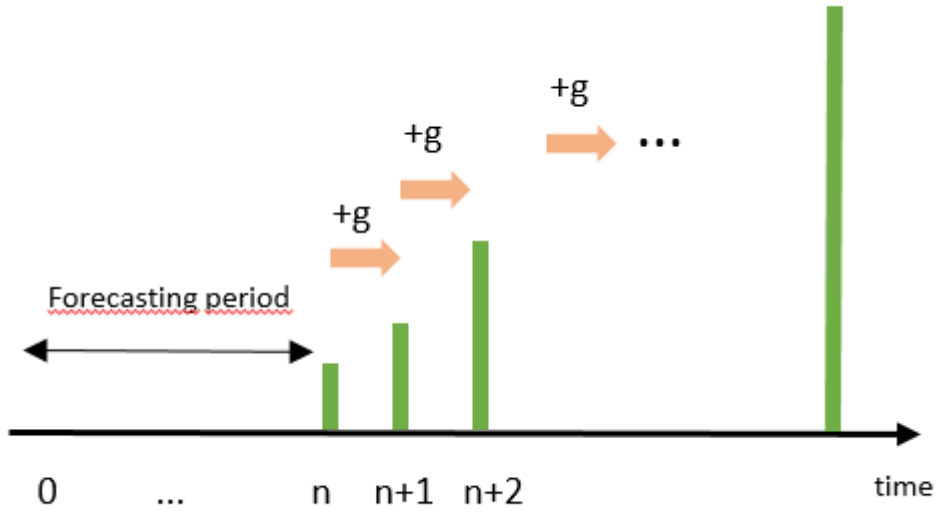

Figure 9: illustration of the time value of money

We calculate the terminal value as follow:

Equation 9: Terminal Value

$$Terminal\ value = \sum_{k=0}^{\infty} \frac{FCF_k}{(1+WACC)^k}$$

Equation 10: Terminal Value

$$Terminal\ value = \sum_{k=0}^{\infty} \frac{FCF_N.(1+g)^k}{(1+WACC)^k}$$

Equation 11: Terminal Value

$$Terminal\ value = \frac{FCF_N.(1+g)}{(WACC-g)}$$

G is the long term growth rate; it can't be higher than the WACC. While FCF_N is the free cash flow in the year N (final of the period).

The second method commonly used is the exit multiple method. The requisites for this method is to use only enterprise value multiples (EBITDA, EBIT for instance). They should reflect the steady state in which the company find itself at the end of the forecasting period. In Investment banking we usually avoid this method which gives too importance too

Once calculated the terminal values from both methods it is useful to cross-check the results.

The next step is to discount the terminal value to present value. In economy, time has value. 1$ promised in one year doesn't have the same value than 1$ today.

Once the core business evaluated by the DCF method, we convert the enterprise value into a share price. The method called *the bridge* permits the transfer from the enterprise value to the equity value. We add cash, non-core assets (if it exists) and retire debts and preferred stocks. Preferred stocks are stocks owned by primary shareholders, they have the priority on dividends against common shareholders but also limited voting rights.

4 FINANCIAL MODELLING

In this part of our work we present the continuous logic of how we built our financial model within the example of Keyrus Group. The content will be practical (illustrations of our method with Keyrus figures) as well as academic. We opted for a *matrix* structure for our model, the most common design for modelling enterprises. The representation in Excel is formulas spread across multiple sheets. Each sheet has a particulate purpose (calculations, income statement, balance sheet etc). The other method, called *tower*, all on one sheet is less used. In order to build the financial model of Keyrus Group we did have to walk through different main steps. Once input historical data and calculate main ratios of operational and financial aggregates, we make the assumptions of all items which will figures in the 3 fundamental statements (income statement, balance sheet and cash flow statement).

Key steps in building our model:

1) Input historical data in the income statement and the balance sheet
2) Calculate ratios
3) Build assumptions
4) Income statement
5) Balance sheet
6) Cash flow statement
7) Balance the balance sheet

4.1 INPUT BALANCE SHEET AND INCOME STATEMENT HISTORICALS

4.1.1 INCOME STATEMENT

We begin with inputting historical data in the income statement and balance sheet. Keyrus Group is a French listed company with financial data available in annual and mid-term reports. Consolidated main financials are presented in appendix. Results are presented in French. French accounting has different rules from Anglo-Saxon accounting, we translated in English all items presented in the financials. It is very important to make a detailed description of each item featuring in the income statement and balance sheet. The following figure shows the new income statement filled with historical data.

Keyrus Group Income Statement	Hist. 31-Dec-14	Hist. 31-Dec-15	Hist. 31-Dec-16	Hist. 31-Dec-17
Revenues	173.059,0	202.268,0	228.125,0	257.809,0
Sales growth	*8,9%*	*16,9%*	*12,8%*	*13,0%*
Cost of goods sold	(63.171,0)	(73.311,0)	(85.265,0)	(93.224,0)
COGS margin	*(36,5%)*	*(36,2%)*	*(37,4%)*	*(36,2%)*
Depreciation	(817,0)	(811,0)	(992,0)	(1.130,0)
Gross profit	**109.071,0**	**128.146,0**	**141.868,0**	**163.455,0**
Gross margin	*63,0%*	*63,4%*	*62,2%*	*63,4%*
SG&A	(100.323,0)	(116.324,0)	(130.353,0)	(146.263,0)
SG&A margin	*(58,0%)*	*(57,5%)*	*(57,1%)*	*(56,7%)*
Taxes	(2.047,0)	(2.032,0)	(2.270,0)	(2.312,0)
Amortization	(349,0)	(358,0)	(252,0)	(334,0)
Other operating incomes	(1.127,0)	(3.715,0)	(1.618,0)	(2.338,0)
Operating profit	5.225,0	5.717,0	7.375,0	12.208,0
EBIT	**6.165,0**	**8.117,0**	**9.175,0**	**14.108,0**
EBIT margin	*3,6%*	*4,0%*	*4,0%*	*5,5%*
EBITDA	**7.331,0**	**9.286,0**	**10.419,0**	**15.572,0**
EBITDA margin	*4,2%*	*4,6%*	*4,6%*	*6,0%*
Non-recurring expenses	(940,0)	(2.400,0)	(1.800,0)	(1.900,0)
Interest income	658,0	854,0	733,0	471,0
Interest expense	(1.362,0)	(1.461,0)	(1.404,0)	(1.589,0)
Profit before tax	**4.521,0**	**5.110,0**	**6.704,0**	**11.090,0**
PBT margin	*2,6%*	*2,5%*	*2,9%*	*4,3%*
Tax expense	(1.563,0)	(1.810,0)	(2.091,0)	(3.319,0)
Net income	**2.958,0**	**3.300,0**	**4.613,0**	**7.771,0**
Net margin	*1,7%*	*1,6%*	*2,0%*	*3,0%*
Dividends (in euros)	0,0	0,0	14,0	(102,0)
Net income minority interests	(232,0)	417,0	(259,0)	(716,0)
Net income to company	**2.726,0**	**3.717,0**	**4.354,0**	**7.055,0**
Net income to company margin	*1,6%*	*1,8%*	*1,9%*	*2,7%*
Shareholder information				
Weighted average shares outstanding (diluted) (in ,000)	15.566,9	15.707,2	15.786,6	15.801,2
Earnings per share	0,18	0,24	0,28	0,45
Dividends per share	0,00	0,00	0,00	(0,01)

Figure 10: Keyrus Group Income statement

Revenues includes turnover and other products of the activity, an important attention must be pay to depreciation and amortization due to the difference between both accounting rules in France and England. Amortization is used only for intangible assets (licenses, patent, software), while depreciation is used for tangible assets (property, plant and equipment). However, in France, 'amortisement' is the accounting recognition of an irreversible decrease in the value of an asset due to the use, time life of the asset, while 'depreciation', whether physical or functional, is the loss of value of a good for various occasional causes. Depreciation is found looking to the 'amortisement' part and just taking 'amortisement' from tangible statement, and amortisation taking 'amortisement' of intangibles. SG&A breakdown is as follow:

SG&A ('000€)	2014	2015	2016	2017
Wage and salaries	71.376,0	83.995,0	93.303,0	106.197,0
Social security charges	27.493,0	30.181,0	34.244,0	36.878,0
Other personal expenses	1.332,0	2.005,0	2.689,0	3.050,0
Pension commitment	121,0	142,0	117,0	137,0
Total	**100.322,0**	**116.323,0**	**130.353,0**	**146.262,0**

Figure 11: Sales, General and Administration expenses

Other operating incomes includes provisions for loss of value, and the rest of operating incomes current as well as non-recurrent.

The difference between Earnings Before Interest and Taxes (EBIT) and operating profit in our model is the non-recurring expenses. Our guideline is that EBIT and EBITDA has to be recurring and represent the real efficiency of the company, meaning include all revenues and expenses that will happen in the future. As a result, we decided to not to add non-recurring expenses to EBIT. So in this case of non-recurring expense that the company has reported about operating profit line we add it back to operating profit. Earnings Before Interest, Taxes, depreciation and Amortisation (EBITDA) is computed adding Depreciation and Amortisation to EBIT. This aggregate is used to analyse profitability among companies and industries, as it eliminates the effects of capital expenditures. EBITDA is an important metric in our model because we are going to use EBITDA multiples (EV/EBITDA) to valuate the company. EBIT and EBITDA are in constant increase in the last years, EBIT margin increased by 4,3% in average since 2014, EBITDA margin 4,9%. Non-recurring expenses are mostly due to

reorganisation costs (74% of non-recurrent expenses). According to financial result, cost of net debts is responsible for most financial charges, the rest counts exchange loss. Keyrus is present in 4 continents and has a percentage non negligent of its turnover in foreign currencies, explaining exchange loss. We do not input intermediate results like EBIT, EBITDA, net income for example. This is very important to be sure all data are well input checking if net income matches with net income from data sources.

4.1.2 BALANCE SHEET

Once the income statement completed we can begin to complete the balance sheet with historical data.

Keyrus Group's original balance sheet is presented in appendix. The translated balance sheet into Anglo-Saxon accounting rules is presented in the next figure.

Keyrus Group Balance Sheet	Hist. 31-Dec-14	Hist. 31-Dec-15	Hist. 31-Dec-16	Hist. 31-Dec-17
Assets				
Cash & cash equivalent	17.383,0	20.297,0	20.278,0	20.671,0
Operating current assets	79.390,0	88.171,0	96.963,0	112.139,0
Total current assets	**96.773,0**	**108.468,0**	**117.241,0**	**132.810,0**
Property, plant and equipment, net	2.322,0	2.534,0	3.365,0	5.142,0
Intangible assets net	699,0	386,0	390,0	627,0
Goodwill	42.368,0	40.312,0	44.371,0	44.079,0
Diferred tax assets	4.827,0	4.650,0	4.706,0	4.997,0
Other assets	23.317,0	22.777,0	25.361,0	27.779,0
Total assets	**170.306,0**	**179.127,0**	**195.434,0**	**215.434,0**
Liabilities & equity				
Short-term debt / revolver	16.710,0	24.323,0	19.797,0	25.225,0
Operating current liabilities	85.967,0	94.976,0	104.842,0	110.210,0
Total current liabilities	**102.677,0**	**119.299,0**	**124.639,0**	**135.435,0**
Long-term debt	18.287,0	7.210,0	15.515,0	15.626,0
Other long-term liabilities	13.236,0	13.157,0	10.914,0	13.250,0
Diferred tax liabilities	295,0	174,0	123,0	278,0
Total liabilities	**134.495,0**	**139.840,0**	**151.191,0**	**164.589,0**
Equity	35.811,0	39.287,0	44.243,0	50.845,0
Total liabilities & equity	**170.306,0**	**179.127,0**	**195.434,0**	**215.434,0**
Balance check	0,0	0,0	0,0	0,0

Figure 12: Keyrus Group balance sheet

4.1.2.1 ASSETS

The first item from current assets is cash & cash equivalent which includes cash and marketable securities. Cash is clearly indicated in the consolidated balance sheet of the company. Operating current assets represents short term receivables and inventories which are mainly software. From non-current assets we count tangibles (PP&E) and intangibles net. Those are reported clearly as well as differed tax assets and the goodwill which take the same name in the French accounting literature. Thereafter is represented other non-current assets breakdown.

Other non-curent assets ('000€)	2014	2015	2016	2017
Security deposit	2.784,0	3.149,0	4.324,0	5.152,0
Unbound equity interests	974,0	549,0	831,0	944,0
Other receivables falling due after more than one year	19.560,0	19.079,0	20.205,0	21.683,0
Total	**23.318,0**	**22.777,0**	**25.360,0**	**27.779,0**

Figure 13: Other non-current operating assets

4.1.2.2 LIABILITIES

From all items in the balance sheet liabilities were the most difficult to translate as results published by the company present debts in other categories involving current liabilities as well as debts.

Beginning with short term debts the first comment that must be add is that we included revolver line of credits (“découvert bancaire” in french) in short term debts, the balance will be balance with cash and cash equivalent and not revolver as it is the case in many financial models. Short term debts include short term bank debts and part of long term debts falling due before than one year.

Operating current liabilities covers provisions, supplier debts, fiscal and social debts, and the item other financial liability excluding a section “other” in other financial liability from original balance sheet.

Long term debts, item which appears in non-current liabilities includes long term debts and the amount of issued obligations during the period.

Long term liabilities involve provisions, and a part of other financial liability not detailed in the reports. Next figure represents the 2016 and 2017 breakdown of this financial liability, for understanding concerns we add the due date representing both this long term and short term financial liability.

Financial liabilities ('000€)	2016		2017	
Due date	> 1 year	< 1 year	> 1 year	< 1 year
Bank loans	9.181,0	3.018,0	8.271,0	4.558,0
Receivables financing	6.334,0	16.522,0	7.355,0	20.483,0
Bank overdraft	-	257,0	-	184,0
Other	3.822,0	986,0	4.210,0	1.090,0
Total	**19.337,0**	**20.783,0**	**19.836,0**	**26.315,0**

Figure14: Financial liabilities

Once the balance input is done we create a line *check* in order to check if balance is well balanced. Formula entered here can be the difference between total assets and total liabilities.

4.2 BUILD ASSUMPTIONS

Financial forecasting is the process of estimating how a business will perform in the future. It is the art of making best predictions and build assumptions based on the best hypothesis as possible. Running a DCF model, or building multiples of EV is approving analyst's assumptions. Most common type of financial forecast is the income statement. However, we always add the balance sheet predictions. Cash flow statement is not an obligation. In our case we decided not to build a complete cash flow statement based with historical data from Keyrus documentation because of the translation we did on the fundamental financial reports and because cash flow statement only remains on balance sheet and income statement forecasts. Cash flow statement is deducted from the difference of assets and liabilities from the balance sheet (creation or loses of cash). In this subpart on how to build a financial forecast, we will complete the income statement model from revenue to net income and the balance sheet following the same layout as presented in the first academic accounting part.

Each feature in our model must be forecasted in a term of the forecasting period. We decided to choose the period of 8 years. Most valuation reports forecast period is comprised between 4 and 10 years. All assumptions will be reunited We first begin with the income statement forecasts.

4.2.1 FORECASTING REVENUE

We begin with the very first item of the income statement. We tried to make our revenue assumptions as realistic as possible. This is the most important item to be forecast, sales can be forecast only basing ourselves on historical data, calculate ratios and trends to predict revenue evolution. We opted for revenue forecast by forecasting revenue growth rate.

We make revenues assumptions on basis expectations of the market. We extracted from a report of GVR (Grand View Research) on Digital Transformation from 2017 to 2025. GVR is a market research and consulting company that provides research reports. The report provides the market values for the base year 2016 and a yearly forecast up to 2025 in terms of revenue (USD Billion). Furthermore, it gives digital transformation market breakdown by geography market, by industry, solution etc… This helped us building assumptions for Keyrus Group future revenue. We decided to create 2 revenue scenarios, one based on geographic trends and the other one on the sectors Keyrus is involved in through its clients. Keyrus Group provides revenues breakdown by industry and geography in its financials.

The two next figures give us historical data about Keyrus Group revenues:

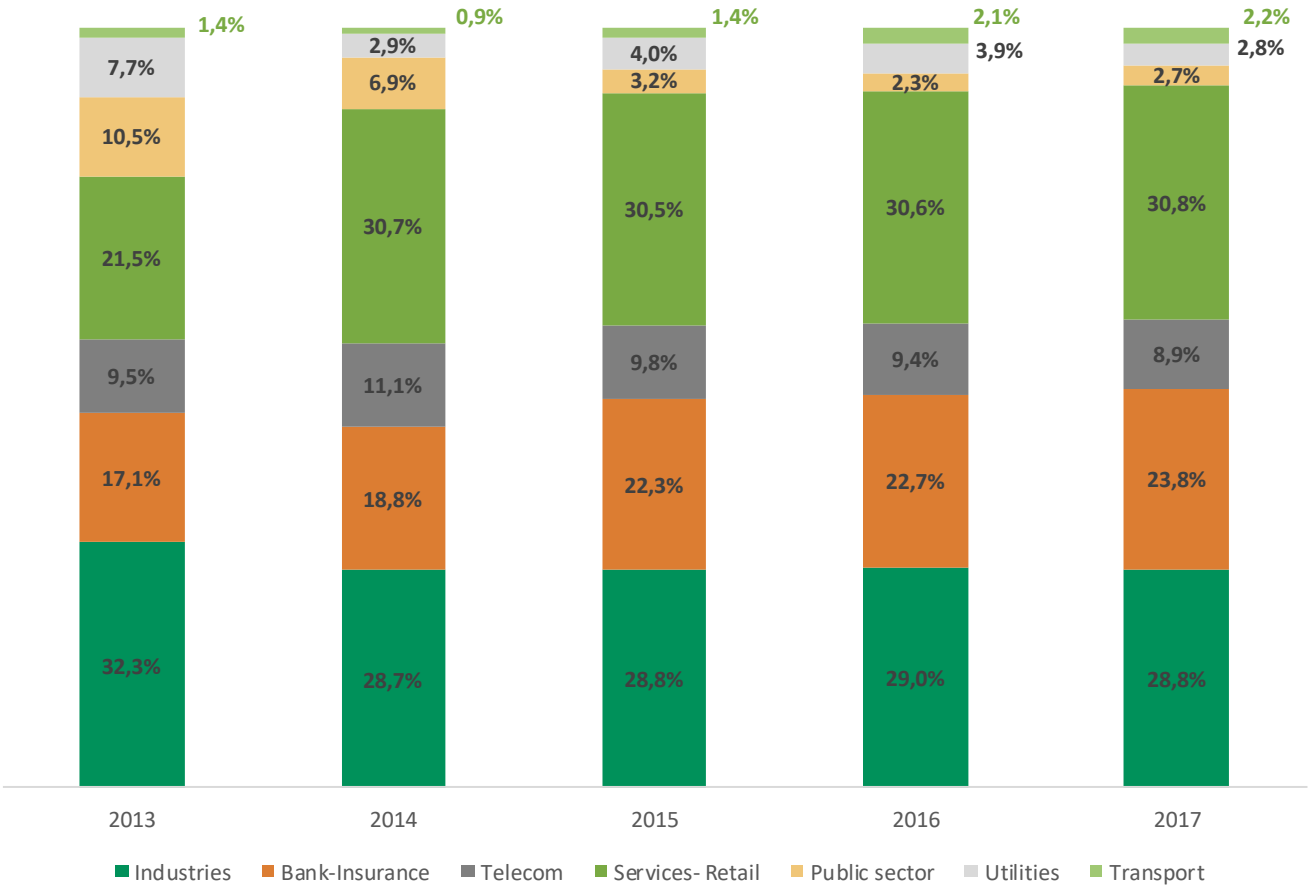

Figure 15: Keyrus Group revenue breakdown by end-users (in%)

Figure 16: Keyrus Group revenue breakdown by end-users (in'000€)

Report provides us expectations of the sector for period 2018-2025 for geographic zones as well as for end-user's industries.

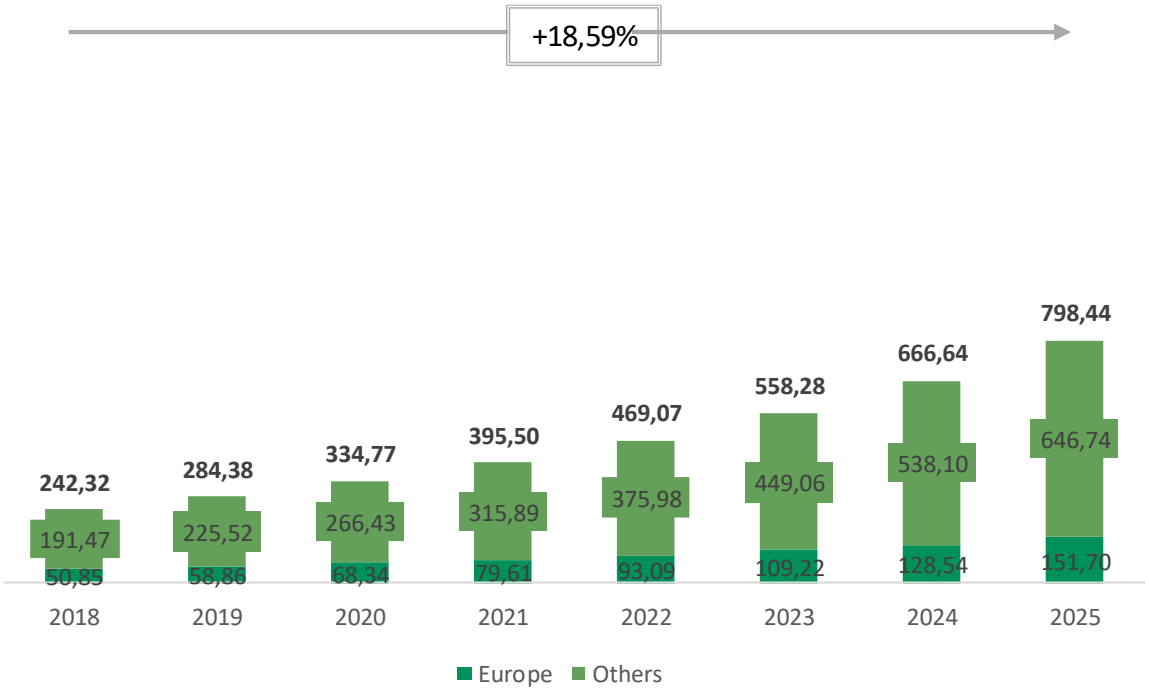

Figure 17: Digital Transformation Market Global revenues by geography (in bn USD)

We will base our assumptions on those data tables provided by GVR.

Beginning with the first scenario (by sector), the next figure shows Keyrus revenues predictions to 2015 just basing ourselves on market trend as a whole without considering external competition, internal growth etc… It is a sector average. The calculation done in its parts is multiplying growth rate from each sector with Keyrus past revenues. Confronting the results of this forecasts with historical data from Keyrus internal reports shows that it is inconsistent to choose that growth rate and take those revenues for our model given that Keyrus is not only focussed on Digital Transformation, report don't take into account the presence of new entries in the market, the company possess its core business mainly in France, so revenues mustn't be only based on global trend. Estimations of Keyrus revenue will be done by ratio estimations.

Figure 18: Keyrus Group revenue based on end-user's trends

In the same order of processing, the second scenario gives us the next figure for future revenue:

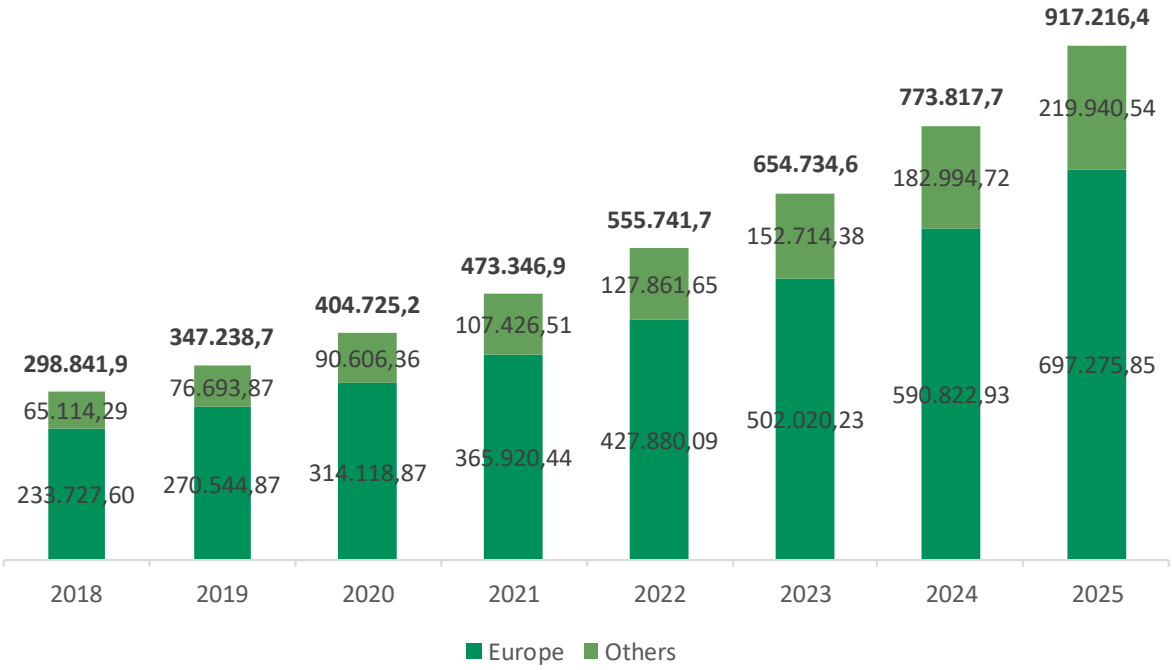

Figure 19: Keyrus Group revenue based on geographic trends

Both scenarios give us a different academic growth rate of the market though similar. We will build our model taking both choices of assumption basis: founded on geographic and end user's trends. In function of the scenario used, EV founded and the implied share price will be different. After computing revenue assumptions just taking market growth rate into account in both cases and confronting the results with historical internal company revenue we see that this is incoherent to just take market growth rate and extrapolate to Keyrus example. In fact, Keyrus revenues are mostly made in France, and the market study used compute global rates. Furthermore, the report provides information as a whole and not compute average by company. The increasing competition in the computer services sector combined with disparity of Keyrus revenue geographic repartition may be a reason for why Keyrus Group is not growing as much as global market. That is why we decided to make next assumptions.

4.2.1.1 FIRST SCENARIO

We acted as follow to build the first revenue scenario; we built data tables provided by the reporting on Global Digital Transformation Market segmenting by end-user (clients of Keyrus) growth expectations.

Then we classified our categories into seven divisions: industries, bank & insurance, telecom, retail, public sector, utilities and others. The precedent figures show that the company does not growth as much as the market does, this must be due to external factors like competition, Keyrus doesn't have revenues perfectly distributed between different users etc.

This is why we decided to make a correction based on ratios between market growth rate and Keyrus growth rate. We see in comparison with the market how does the company grow. The next tables give us global market growth rates forecast, ratios forecast and Keyrus growth rate forecast until 2025. We set the ratio forecast in 2019 as the average between last historical ratios (3 years) in order to free results from elder's trends.

This method permits ourselves to take into account the market trends. The output result is the revenue forecast of each end-user for the forecast period. We then compute the total revenues and we have the total growth rate forecast that we will input afterwards in the income statement.

The expected growth from this scenario is 11,6% in 2019 and increase to 22,5% in 2025.

Figure 20: scenario 1

Global Market growth rate

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Industries		16,1%	16,4%	16,6%	16,9%	17,2%	17,5%	18,0%	18,4%	18,8%	19,2%	19,5%
Bank-Insurance		17,2%	17,4%	17,6%	17,9%	18,2%	18,5%	19,0%	19,4%	19,8%	20,2%	20,6%
Telecom		16,8%	16,9%	17,2%	17,4%	17,8%	18,1%	18,5%	19,0%	19,4%	19,8%	20,1%
Services- Retail		16,5%	16,6%	17,0%	17,2%	17,5%	17,9%	18,3%	18,7%	19,1%	19,5%	19,8%
Public sector		15,7%	16,0%	16,2%	16,4%	16,8%	17,1%	17,5%	18,0%	18,4%	18,8%	19,1%
Utilities		15,3%	15,0%	15,3%	15,5%	15,8%	16,2%	16,6%	17,0%	17,4%	17,8%	18,2%
Other End Users		15,3%	15,0%	15,3%	15,5%	15,8%	16,2%	16,6%	17,0%	17,4%	17,8%	18,2%

Keyrus growth rate / Market growth rate

Assumptions												
Industries		1,1	0,8	0,7	(0,8)	0,2	0,2	0,2	0,2	0,2	0,2	0,2
Bank-Insurance		2,2	0,9	1,1	0,6	0,8	0,8	0,8	0,8	0,8	0,8	0,8
Telecom		0,2	0,5	0,4	(1,1)	(0,1)	(0,1)	(0,1)	(0,1)	(0,1)	(0,1)	(0,1)
Services- Retail		1,0	0,8	0,8	(0,3)	0,4	0,4	0,4	0,4	0,4	0,4	0,4
Public sector		(2,9)	(1,2)	2,0	(1,3)	(0,2)	(0,2)	(0,2)	(0,2)	(0,2)	(0,2)	(0,2)
Utilities		4,0	0,7	(1,2)	3,1	0,8	0,8	0,8	0,8	0,8	0,8	0,8
Other End Users		5,4	4,6	1,2	1,2	2,3	2,3	2,3	2,3	2,3	2,3	2,3

Keyrus growth rate forecast by end-users

	Hist	Hist	Hist	Hist	Hist	Proj	Proj	Proj	Proj	Proj	Proj	Proj
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Industries	(3,2%)	17,3%	13,6%	12,2%	(13,9%)	4,2%	4,3%	4,4%	4,5%	4,7%	4,7%	4,8%
Bank-Insurance	19,7%	38,6%	14,8%	18,5%	10,0%	14,9%	15,2%	15,6%	15,9%	16,3%	16,6%	16,9%
Telecom	27,3%	3,2%	8,2%	7,0%	(19,9%)	(1,5%)	(1,5%)	(1,5%)	(1,6%)	(1,6%)	(1,6%)	(1,7%)
Services- Retail	55,5%	16,1%	13,2%	13,8%	(5,0%)	7,6%	7,8%	8,0%	8,2%	8,3%	8,5%	8,7%
Public sector	(28,4%)	(45,8%)	(18,9%)	32,7%	(21,2%)	(2,5%)	(2,6%)	(2,6%)	(2,7%)	(2,8%)	(2,8%)	(2,9%)
Utilities	(59,0%)	61,2%	10,0%	(18,9%)	48,2%	13,4%	13,7%	14,0%	14,4%	14,7%	15,1%	15,3%
Other End Users	(30,0%)	81,8%	69,2%	18,4%	18,4%	36,9%	37,8%	38,7%	39,7%	40,7%	41,6%	42,4%

Figure 21: Keyrus scenario 1 revenue forecast

Keyrus revenues forecast

	Hist	Hist	Hist	Hist	Hist	Proj	Proj	Proj	Proj	Proj	Proj	Proj
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Industries	49.667,9	58.253,2	66.156,3	74.249,0	63.926,1	66.642,5	69.528,6	72.617,2	75.919,3	79.450,6	83.221,5	87.242,0
Bank-Insurance	32.535,1	45.105,8	51.784,4	61.358,5	67.492,8	77.568,3	89.367,3	103.273,4	119.730,8	139.226,0	162.339,1	189.770,9
Telecom	19.209,5	19.822,3	21.443,8	22.945,0	18.382,2	18.109,7	17.836,1	17.560,5	17.282,5	17.002,6	16.722,1	16.441,3
Services- Retail	53.129,1	61.691,7	69.806,3	79.405,2	75.449,3	81.210,3	87.549,3	94.530,3	102.244,0	110.780,3	120.219,9	130.637,8
Public sector	11.941,1	6.472,6	5.246,9	6.960,8	5.487,2	5.348,4	5.210,3	5.072,6	4.935,0	4.798,2	4.662,3	4.527,9
Utilities	5.018,7	8.090,7	8.896,9	7.218,7	10.700,1	12.129,5	13.787,1	15.717,5	17.978,2	20.626,3	23.731,8	27.374,1
Other End Users	1.557,5	2.831,8	4.790,6	5.671,8	32.923,3	45.074,0	62.090,7	86.106,9	120.323,0	169.284,2	239.693,8	341.323,5
Total	173.059	202.268	228.125	257.809	274.361	306.083	345.370	394.878	458.413	541.168	650.590	797.317
Scenario 1 : Growth rate output	8,9%	16,9%	12,8%	13,0%	6,4%	11,6%	12,8%	14,3%	16,1%	18,1%	20,2%	22,6%

4.2.1.2 SCENARIO 2

The second scenario is based on regional trends. We analysed the report and decided to do the same breakdown as in the company annual report. We broke revenues into 2 categories, Europe and others. This breakdown is valid given that Keyrus makes its revenues above all made in France and Europe. The weight of European incomes in front of foreign incomes in the balance of Keyrus is about 80%.

We built our consolidated income statement by regions adding revenues from those 3 segments: Analytics, Solutions, and IT Services (implementation & Integration).

The methodology was computing consolidated revenues from those 3 segments, and then compute for each zone (Europe and Others) the market growth rates. The second step was recalculating market growth rate adapting the previous one with Keyrus Group repartition of revenues (80% in Europe and 20% outside Europe), this consists in calculating the weight average between European growth rate and the rate of other regions.

Thereafter we compute the ratio between Keyrus historical growth rate, that is known, and the last computed global market weight rate. Assumptions are presented in the next figure, we forecast European weight in Keyrus revenue decreasing by 0,4% per year, and others increasing by 0,4%. We keep the 2018 ratio Keyrus growth/market growth as assumptions until 2015. Finally, we compute Keyrus growth rate multiplying this ratio with market weight growth rate.

Solutions market

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Europe	20,37	23,28	26,64	30,55	35,11	40,44	46,72	54,16	63,01	73,55	86,12	101,10
Others	71,82	83,53	97,32	113,60	132,90	155,90	183,42	216,56	256,69	305,31	364,31	436,03
	92,2	**106,8**	**124,0**	**144,2**	**168,0**	**196,3**	**230,1**	**270,7**	**319,7**	**378,9**	**450,4**	**537,1**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Europe		14,3%	14,4%	14,7%	14,9%	15,2%	15,5%	15,9%	16,3%	16,7%	17,1%	17,4%
Others		16,3%	16,5%	16,7%	17,0%	17,3%	17,7%	18,1%	18,5%	18,9%	19,3%	19,7%
		15,9%	16,1%	16,3%	16,6%	16,9%	17,2%	17,6%	18,1%	18,5%	18,9%	19,2%

Analytic market

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Europe	8,86	9,95	11,18	12,60	14,22	16,09	18,26	20,78	23,74	27,20	31,26	36,02
Others	30,71	35,08	40,15	46,01	52,86	60,86	70,29	81,46	94,74	110,58	129,45	151,98
	39,6	**45,0**	**51,3**	**58,6**	**67,1**	**77,0**	**88,6**	**102,2**	**118,5**	**137,8**	**160,7**	**188,0**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Europe		12,3%	12,4%	12,7%	12,9%	13,2%	13,5%	13,8%	14,2%	14,6%	14,9%	15,2%
Others		14,2%	14,5%	14,6%	14,9%	15,1%	15,5%	15,9%	16,3%	16,7%	17,1%	17,4%
		13,8%	14,0%	14,2%	14,5%	14,7%	15,1%	15,5%	15,9%	16,3%	16,6%	17,0%

Services market

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Europe	8,57	9,95	11,57	13,48	15,74	18,42	21,62	25,45	30,08	35,67	42,42	50,58
Others	29,97	35,34	41,74	49,39	58,56	69,62	83,01	99,33	119,29	143,75	173,79	210,73
	38,5	**45,3**	**53,3**	**62,9**	**74,3**	**88,0**	**104,6**	**124,8**	**149,4**	**179,4**	**216,2**	**261,3**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Europe		16,1%	16,3%	16,5%	16,8%	17,0%	17,4%	17,7%	18,2%	18,6%	18,9%	19,2%
Others		17,9%	18,1%	18,3%	18,6%	18,9%	19,2%	19,7%	20,1%	20,5%	20,9%	21,3%
		17,5%	17,7%	17,9%	18,2%	18,5%	18,8%	19,3%	19,7%	20,1%	20,5%	20,9%

Figure 22: Solution, Analytics and Services market revenue (in USD Billion) and growth rate

Figure 23: Scenario2 results

Consolidated Digital Transformation revenu by region

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Europe	37,80	43,18	49,39	56,63	65,07	74,95	86,60	100,39	116,83	136,42	159,80	187,70
Others	132,50	153,95	179,21	209,00	244,32	286,38	336,72	397,35	470,72	559,64	667,55	798,74
	170,3	197,1	228,6	265,6	309,4	361,3	423,3	497,7	587,6	696,1	827,4	986,4

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Europe		14,2%	14,4%	14,7%	14,9%	15,2%	15,5%	15,9%	16,4%	16,8%	17,1%	17,5%
Others		16,2%	16,4%	16,6%	16,9%	17,2%	17,6%	18,0%	18,5%	18,9%	19,3%	19,7%
Total market growth		15,8%	16,0%	16,2%	16,5%	16,8%	17,2%	17,6%	18,0%	18,5%	18,9%	19,2%
Weight growth rate		14,6%	14,7%	15,1%	15,3%	15,6%	16,0%	16,4%	16,8%	17,3%	17,6%	18,0%

Weight of each region in Keyrs Group revenues

	Hist	Hist	Hist	Hist	Proj	Proj	Proj	Proj	Proj	Proj	Proj	Proj
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Europe	83,9%	82,8%	82,5%	78,5%	79,2%	78,8%	78,4%	78,0%	77,6%	77,2%	76,8%	76,4%
Others	16,1%	17,2%	17,5%	21,5%	20,8%	21,2%	21,6%	22,0%	22,4%	22,8%	23,2%	23,6%
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

RATIOS	1,2	0,9	0,9	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Scenario 2: Growth rate	16,9%	12,8%	13,0%	7,5%	7,8%	8,0%	8,2%	8,4%	8,6%	8,8%	9,0%

The last step is building a last table which concentrate both scenarios growth rates. The CHOOCE function from excel (ESCOLHER in Portuguese) will take as parameter the switch (in the cover page) and give a list of revenue growth rate in function of what is input in the switch (1 for scenario 1 and 2 for scenario 2).

4.2.2 BUILDING THE REST OF ASSUMPTIONS

All assumptions, including sales growth calculated in another sheet, are concentrated in the same sheet of the Excel model, which is called Assumptions. We divided assumptions in 5 parts: income statement, assets, liabilities, debts and interest rates.

Assumptions that concerns the income statement are presented in the figure x, sales prediction will depend on the chosen scenario (scenario 1 based on end-users and scenario 2 based on region breakdown). To drive forecast and make prediction more relevant we usually compute and forecast ratios of aggregates that have strong interrelation (COGS and Sales, Depreciation and CAPEX, tax and Sales etc). We assume that COGS will first increase and then decrease due to acquisitions and recent implantations and then stabilize due to maturation of the company. We also assume that SG&A with maturity of the company will reach 52,7% (nearly 50% of sales) decreasing per year of 0,5%. The effective tax rate for a corporation is the average rate at which its pre-tax profits are taxed. According to DAMODARAN, for the effective tax rate we take the average across only money making companies for global companies which is 29,89% that is why as we kept 29% for the forecast period. Furthermore, the company tend to depend more and more on emerging markets, and not only Europe justifying the global tax rate employed. As well as the Goodwill we decided to forecast non-recurring expenses at the 2018 value and keep it constant. The majority of items to be forecast are set to be constant at the average of the last years given that we don’t have direct access to predictions and they are not easy predictive aggregates or just keep it at the same value than the last historic year (2018). It is for example the case of Taxes, we forecast its ratio as % of sales, operating incomes, and minority interests. All assumptions can be find in appendix.

According to assets, we proceed in the same order of ideas, Keyrus is expanding, investment in equipment will be necessary in the next years (US, Canada), and generaly Keyrus has an important expansion strategy which helps us to do the estimations of CAPEX. We predict an increase of CAPEX as a percentage os sales, reaching 3,5% at the term of 2025. Acquisitions

of intangible assets is set to be forecast as a percentage of sales of CAPEX, it is the same with amortization, as well as depreciation and acquisition of tangibles assets. Excluding 2018, we forecast trends to be 34,2% the weight of intangible in acquisitions, and 65,8% for tangible assets. Differed tax assets are forecast as a percentage of sales.

Operating liabilities and long term liabilities are forecast as a percentage of sales. In the case of debts, we use the leverage ratio equal to total debts over total equity. This ratio is forecast as the average of last historic ratio: 90,1%. Then we set the weight of short-term debts to 56% and long term debts to 44%. That is how we predict the debts which are represented in another sheet named “Debts”. In the assumption sheet figures also short term debts as a percentage of sales, it is a method to forecast debts but we do not use this approach in our work. All assumptions are located in appendix for more details.

4.2.3 CALCULATIONS

We compute CAPEX, tangibles and intangibles in a sheet of the model called “Calculations”. The ending balance which will be presented in the three statement are computed adding disposals, depreciation (for PP&E), amortization (intangibles) and the beginning balance. We then link the result to the balance sheet. Shareholder’s equity is computed adding the beginning valance, net income and dividends. There also figures Operating Working Capital, equal to the difference between operating current assets and operating current liabilities. We compute debts in one sheet made express for it. Debts sheet is presented in appendix.

Once assumptions are built, we must link them to the three fundamental sheets. Once the model is built we have to verify if the balance sheet does balance. The key item to do that is cash and cash equivalent, if the mechanic of the model is done without errors, cash will balance the balance sheet. All predictions in statements are presented in appendix. Thereafter are presented all income statement and balance sheet forecast.

Income Statement	31-Dec-19	31-Dec-20	31-Dec-21	31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25
Revenues	295.780,6	319.417,8	345.580,9	374.685,4	407.005,2	442.893,7	482.702,6
Sales growth	*7,8%*	*8,0%*	*8,2%*	*8,4%*	*8,6%*	*8,8%*	*9,0%*
Cost of goods sold	(109.438,8)	(121.378,8)	(131.320,7)	(138.633,6)	(146.521,9)	(155.012,8)	(164.118,9)
COGS margin	*(37,0%)*	*(38,0%)*	*(38,0%)*	*(37,0%)*	*(36,0%)*	*(35,0%)*	*(34,0%)*
Depreciation	(597,0)	(1.881,6)	(2.035,8)	(2.648,7)	(2.877,1)	(3.652,6)	(3.981,0)
Gross profit	**185.744,8**	**196.157,4**	**212.224,4**	**233.403,2**	**257.606,2**	**284.228,3**	**314.602,8**
Gross margin	*62,8%*	*61,4%*	*61,4%*	*62,3%*	*63,3%*	*64,2%*	*65,2%*
SG&A	(166.610,7)	(178.328,2)	(191.206,9)	(205.436,8)	(221.122,4)	(238.405,9)	(257.421,2)
SG&A margin	*(56,3%)*	*(55,8%)*	*(55,3%)*	*(54,8%)*	*(54,3%)*	*(53,8%)*	*(53,3%)*
Taxes	(2.571,2)	(2.776,7)	(3.004,1)	(3.257,1)	(3.538,1)	(3.850,0)	(4.196,1)
Amortization	(214,3)	(675,5)	(730,8)	(950,8)	(1.032,9)	(1.311,3)	(1.429,1)
Other operating incomes	(1.534,1)	(1.656,7)	(1.792,4)	(1.943,3)	(2.111,0)	(2.297,1)	(2.503,6)
Operating profit	**14.814,5**	**12.720,3**	**15.490,1**	**21.815,0**	**29.801,9**	**38.364,0**	**49.052,8**
EBIT	**16.914,5**	**14.820,3**	**17.590,1**	**23.915,0**	**31.901,9**	**40.464,0**	**51.152,8**
EBIT margin	*5,7%*	*4,6%*	*5,1%*	*6,4%*	*7,8%*	*9,1%*	*10,6%*
EBITDA	**17.725,8**	**17.377,5**	**20.356,7**	**27.514,6**	**35.811,9**	**45.427,9**	**56.562,9**
EBITDA margin	*6,0%*	*5,4%*	*5,9%*	*7,3%*	*8,8%*	*10,3%*	*11,7%*
Non-recurring expenses	(2.100,0)	(2.100,0)	(2.100,0)	(2.100,0)	(2.100,0)	(2.100,0)	(2.100,0)
Interest income	628,6	977,6	1.439,5	2.055,9	3.001,6	4.406,3	6.286,1
Interest expense	(1.353,9)	(1.379,1)	(1.528,2)	(1.716,5)	(1.990,8)	(2.375,2)	(2.881,5)
Profit before tax	**14.089,3**	**12.318,8**	**15.401,4**	**22.154,5**	**30.812,7**	**40.395,1**	**52.457,3**
PBT margin	*4,8%*	*3,9%*	*4,5%*	*5,9%*	*7,6%*	*9,1%*	*10,9%*
Tax expense	4.085,9	3.572,5	4.466,4	6.424,8	8.935,7	11.714,6	15.212,6
Net income	**18.175,2**	**15.891,3**	**19.867,9**	**28.579,3**	**39.748,4**	**52.109,7**	**67.670,0**
Net margin	*6,1%*	*5,0%*	*5,7%*	*7,6%*	*9,8%*	*11,8%*	*14,0%*
Dividends (in euros)	(181,8)	(158,9)	(198,7)	(285,8)	(397,5)	(521,1)	(676,7)
Net income minority interests	(767,0)	(767,0)	(767,0)	(767,0)	(767,0)	(767,0)	(767,0)
Net income to company	**17.408,2**	**15.124,3**	**19.100,9**	**27.812,3**	**38.981,4**	**51.342,7**	**66.903,0**
Net income to company margin	*5,9%*	*4,7%*	*5,5%*	*7,4%*	*9,6%*	*11,6%*	*13,9%*
Shareholder information							
Weighted average shares outstandin	15.808,0	15.808,0	15.808,0	15.808,0	15.808,0	15.808,0	15.808,0
Earnings per share	1,10	0,96	1,21	1,76	2,47	3,25	4,23
Dividends per share	(0,01)	(0,01)	(0,01)	(0,02)	(0,03)	(0,03)	(0,04)

Figure 24: Income statement forecast

Balance Sheet	31-Dec-19	31-Dec-20	31-Dec-21	31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25
Assets							
Cash & cash equivalent	42.505,6	62.587,9	89.388,7	130.505,1	191.579,0	273.306,7	382.886,7
Operating current assets	126.700,3	136.825,5	148.032,7	160.499,9	174.344,3	189.717,5	206.770,0
Total current assets	**169.205,9**	**199.413,4**	**237.421,4**	**291.005,0**	**365.923,3**	**463.024,3**	**589.656,7**
Property, plant and equipment,	7.316,9	11.083,2	15.158,0	20.459,5	26.218,4	33.529,5	41.497,8
Intangible assets net	3.698,0	5.088,2	6.592,1	8.548,9	10.674,5	13.373,0	16.314,0
Goodwill	52.695,0	52.695,0	52.695,0	52.695,0	52.695,0	52.695,0	52.695,0
Diferred tax assets	6.803,0	7.346,6	7.948,4	8.617,8	9.361,1	10.186,6	11.102,2
Other assets	32.062,9	34.625,2	37.461,3	40.616,3	44.119,8	48.010,1	52.325,4
Total assets	**271.781,7**	**310.251,6**	**357.276,2**	**421.942,5**	**508.992,0**	**620.818,4**	**763.591,0**
Liabilities & equity							
Revolver	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Short-term debt / revolver	38.875,9	46.431,1	55.973,7	69.870,1	89.348,9	115.005,6	148.439,3
Operating current liabilities	112.851,4	121.869,9	131.852,1	142.956,5	155.287,7	168.980,6	184.169,1
Total current liabilities	**151.727,3**	**168.300,9**	**187.825,7**	**212.826,7**	**244.636,6**	**283.986,2**	**332.608,5**
Long-term debt	30.506,8	36.435,5	43.923,8	54.828,7	70.114,1	90.247,5	116.483,7
Other long-term liabilities	12.127,0	13.096,1	14.168,8	15.362,1	16.687,2	18.158,6	19.790,8
Diferred tax liabilities	414,1	447,2	483,8	524,6	569,8	620,1	675,8
Total liabilities	**194.775,2**	**218.279,8**	**246.402,2**	**283.542,0**	**332.007,7**	**393.012,4**	**469.558,8**
Equity	77.006,4	91.971,8	110.874,0	138.400,5	176.984,4	227.806,0	294.032,2
Total liabilities & equity	**271.781,7**	**310.251,6**	**357.276,2**	**421.942,5**	**508.992,0**	**620.818,4**	**763.591,0**
Balance check	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Figure 25: balance sheet forecast

5 VALUATION

5.1 COMPARABLE COMPANY ANALYSIS

Comps valuations are based on applying the valuation multiples of one company, in our case Keyrus Group to value the target business. As no two companies are exactly the same the most similar companies are sought. The companies (both target and comparable) should have similar business activities, geographic localisation, size and operating profiles. Corporate information's are found on specialized platforms for example Bloomberg, Capital IQ, Emis Securities or in company sites. In our case we base ourselves on Capital IQ predictions because it is the only reliable source we have access to. The relevance of the different valuation benchmarks changes over time as business models evolve. The question to be solved when we use valuation by multiples is what multiple should be use to find the proper EV of the target. We commonly employ in investment banking universe the EV/EBITDA multiple. EV/EBITDA ignores depreciation / capex, as well as tax regimes and tax profiles. There are two methods that can be used for the valuation by multiples; using historic multiples or expected multiples. The past method consists in calculating historic multiples over a period of 10 years. The future method consists in calculating multiples of 3 next years. We use future method. The reasons of our choice is the profile of the target. Keyrus is a company with a high growth rate, the firm is at a transition stage, represented by high growth sales, it has still an evolving structure. We prefer base our assumptions on future trend than past figures. Comparables were chosen according to their size, operating figures, geographic footprint, core businesses. All comps are listed in their countries.

The set of companies chosen for our valuation is presented as follow:

- DATAGROUP SE
- KPS AG
- Groupe Open
- Adesso AG
- SNP Schneider-Neureither & Partner SE
- GFT Technologies SE
- CS Communication & Systemes SA
- Ordina N.V.
- Devoteam SA

- Densan SA
- Business Brain Showa-Ota Inc.
- INES Corporation
- Redcentric plc
- O2i Société Anonyme
- Sodifrance SA

We presented an operating benchmark confronting comps with Keyrus Group. The metric chosen were sales growth, EBITDA margin, EBIT margin and net margin. It allows us to make a quick comparison of listed companies chosen to be comparable companies with Keyrus.

Company	Country	Business description
DATAGROUP SE		DATAGROUP SE provides information technology (IT) services and solutions primarily in Germany. The company operates in two segments, Services, and Solutions and Consulting. It provides IT workplace services, including selection and procurement, on-site implementation, and exchange and disposal of old equipment.
KPS AG		KPS AG provides management consulting services in the areas of business transformation and process optimization in retail and consumer goods sectors in Europe. It offers strategy, process, application, and technology consulting services in the areas of ERP, e-commerce, and CRM.
Groupe Open		Groupe Open engages in digital and industrial transformation business in France, Belgium, the Netherlands, Luxembourg, and China. The company offers IT and digital consultancy services; project management assistance; The company serves banking, insurance, finance, services and transportation, energy, industrial, telecom, media, commerce, and distribution markets, as well as public sector. Groupe Open was founded in 1989.
Adesso AG		Adesso AG operates as an IT service provider focusing on consulting and software development in Germany, Austria, Switzerland, and internationally. It operates through IT-Services and IT-Solutions segments. The company offers IT consulting, software development, and IT management services. The company was founded in 1997.
SNP Schneider-Neureither & Partner SE		SNP Schneider-Neureither & Partner SE provides software-related consulting services worldwide. The company has a strategic alliance with NTT DATA Global Solutions to provide software and automated transformation services for companies and organizations in the Asia-Pacific region. SNP Schneider-Neureither & Partner SE was founded in 1994 and is headquartered in Heidelberg, Germany.
GFT Technologies SE		GFT Technologies SE provides information technology (IT) consulting and solutions for retail and investment banking clients. It operates in the United Kingdom, the United States, Canada, Brazil, Costa Rica, Mexico, Germany, Italy, Poland, Switzerland, and Spain. The company was founded in 1987 and is headquartered in Stuttgart, Germany.
CS Communication & Systemes SA		CS Communication & Systemes SA designs, integrates, and operates mission critical systems worldwide. It is involved in the consultancy, design, development, integration, maintenance, and operational support of infrastructure security, data security and security of paperless interactions, and security governance solutions.

Figure 26: data set of comparable companies (1) Source: Capital IQ

Figure 27: data set of comparable companies (2) Source: Capital IQ

Ordina N.V.		Ordina N.V. provides IT services in the Netherlands, Belgium, and Luxembourg. The company develops, builds, and manages IT applications in the public sector, financial services sector, in industry, and in healthcare. It also provides consulting services, such as advising clients on translation of their business processes into IT; and solutions in various areas, such as strategy, business processes, business intelligence, and chain integration.
Devoteam SA		Devoteam SA provides technology consulting and cloud solutions in Europe and the Middle East. It offers transformation management, agile IT, cyber security, digital workplace, data as a service, business process excellence, and customer experience services. The company was founded in 1995 and is headquartered in Levallois-Perret, France.
Densan		Densan System Co., Ltd. operates as an integrated data processing service company in Japan. It offers a range of services, such as business proposals, systems engineering and development, the procurement of hardware for the construction of systems environment, it offers systems integration services comprising the installation of application systems for systems or office equipment, as well as office equipment, and procurement and sales systems.
Business Brain Showa-Ota Inc.		Business Brain Showa-Ota Inc. provides consulting and IT solutions in Japan. The company offers consulting, work restructuring, system development, system integration and sustainment and managed services. It also provides managed services based on specialized human resources
INES Corporation		INES Corporation provides information network system services to industrial corporations, financial institutions, and public entities primarily in Japan. The company offers system integration services for software and hardware systems.
Redcentric plc		Redcentric is a leading UK service provider that delivers innovative technology to improve business productivity, operations and efficiency. Redcentric provides application management services, infrastucture Cloud services, network implementations, as well as mobile services.
O2i Société Anonyme		O2i Société Anonyme provides tools and business solutions for press/media/digital production sectors. The company offers professional IT training services; and publishes management software and collaborative platforms for multimedia production. It also engages in the computer engineering business, including outsourcing for graphic production, distribution of professional equipment, and hosting.
Sodifrance AS		Sodifrance SA offers technical consultancy, digital transformation, information systems modernization and transformation, data management, infrastructure, and application services. The company also provides training services in the areas of new technologies, business intelligence, systems and development, and office and change management. It serves insurance, social welfare, banking, public sector, and health and hospital sectors.

Source: Capital IQ

Company	Country	Sales growth			EBITDA margin		
		2019e	2020e	2021e	2019e	2020e	2021e
DATAGROUP SE	Germany	8,57%	7,02%	6,25%	14,67%	15,11%	15,36%
KPS AG	Germany	5,24%	7,86%	9,66%	14,04%	15,10%	16,09%
Groupe Open	France	1,48%	4,01%	n.a.	8,18%	8,55%	n.a.
Adesso AG	Germany	10,26%	9,50%	9,01%	10,74%	11,02%	10,99%
SNP Schneider-Neureither &	Germany	11,98%	8,26%	7,99%	5,92%	9,66%	13,77%
GFT Technologies SE	Germany	1,08%	3,73%	5,24%	8,69%	9,50%	9,82%
CS Communication &	France	15,42%	4,54%	4,76%	9,50%	9,72%	10,54%
Ordina N.V.	Netherlands	4,74%	3,79%	n.a.	5,33%	7,00%	n.a.
Devoteam SA	France	18,44%	9,95%	8,84%	12,30%	12,00%	n.a.
Densan	Japan	6,63%	4,62%	4,17%	5,92%	5,88%	5,88%
Business Brain Showa-Ota	Japan	5,57%	n.a.	n.a.	7,87%	n.a.	n.a.
INES Corporation	Japan	5,60%	n.a.	n.a.	11,34%	n.a.	n.a.
Redcentric plc	United Kingdom	(5,79%)	2,60%	0,67%	17,82%	18,76%	18,56%
O2i Société Anonyme	France	7,71%	7,65%	n.a.	8,09%	9,60%	n.a.
Sodifrance AS	France	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Average - Computer Services Companies		**6,86%**	**5,99%**	**6,29%**	**10,18%**	**11,12%**	**12,63%**
Median - Computer Services Companies		**5,60%**	**4,62%**	**6,25%**	**9,50%**	**9,72%**	**12,38%**
Max - Computer Services Companies		**18,44%**	**9,95%**	**9,66%**	**17,82%**	**18,76%**	**18,56%**
Min - Computer Services Companies		**(5,8%)**	**2,6%**	**0,7%**	**5,3%**	**5,9%**	**5,9%**
Keyrus AS	France	**7,81%**	**7,99%**	**8,19%**	**5,99%**	**5,44%**	**5,89%**

Figure 28: operating benchmark (1) Source:Capital IQ

Company	Country	EBIT margin			Net margin		
		2019e	2020e	2021e	2019e	2020e	2021e
DATAGROUP SE	Germany	8,12%	8,98%	9,57%	5,27%	5,73%	6,11%
KPS AG	Germany	12,84%	13,99%	14,90%	8,59%	9,68%	10,59%
Groupe Open	France	7,36%	7,85%	n.a.	4,12%	4,41%	n.a.
Adesso AG	Germany	6,24%	7,03%	7,23%	3,70%	4,41%	4,63%
SNP Schneider-Neureither &	Germany	4,07%	6,33%	8,63%	1,17%	3,81%	6,63%
GFT Technologies SE	Germany	5,07%	6,21%	7,48%	4,01%	4,94%	5,74%
CS Communication &	France	7,29%	7,66%	7,88%	4,51%	4,78%	n.a.
Ordina N.V.	Netherlands	4,23%	5,51%	n.a.	3,12%	4,00%	n.a.
Devoteam SA	France	11,24%	11,25%	n.a.	6,61%	6,30%	n.a.
Densan	Japan	4,67%	4,78%	4,94%	3,15%	3,15%	3,15%
Business Brain Showa-Ota	Japan	6,94%	n.a.	n.a.	4,00%	n.a.	n.a.
INES Corporation	Japan	5,69%	n.a.	n.a.	3,91%	n.a.	n.a.
Redcentric plc	United Kingdom	9,55%	11,23%	10,79%	6,95%	8,48%	8,32%
O2i Société Anonyme	France	5,44%	6,95%	n.a.	3,65%	4,76%	n.a.
Sodifrance AS	France	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Average - Computer Services Companies		**7,18%**	**8,26%**	**8,93%**	**4,55%**	**5,43%**	**6,46%**
Median - Computer Services Companies		**6,94%**	**7,66%**	**8,25%**	**4,01%**	**4,78%**	**6,11%**
Max - Computer Services Companies		**12,84%**	**13,99%**	**14,90%**	**8,59%**	**9,68%**	**10,59%**
Min - Computer Services Companies		**4,1%**	**4,8%**	**4,9%**	**1,2%**	**3,2%**	**3,2%**
Keyrus AS	France	**5,72%**	**4,64%**	**5,09%**	**6,14%**	**4,98%**	**5,75%**

Figure 29: operating benchmark (2) Source: Capital IQ

Finally, we complete a table with all multiples EV/Sales, EV/EBITDA, EV/EBIT, and P/E. The P/E ratio shows the expectations of the market, it is the price you must pay per unit of current earnings (or future earnings, as the case may be). The current formula for P/E is share price / earnings per share. The source used to compute those future multiples is Capital IQ.

Company	Country	Mkt.cap. (EURm)	EV (EURm)	EV / Sales			EV / EBITDA		
				2019e	2020e	2021e	2019e	2020e	2021e
DATAGROUP SE	Germany	335,8	361,3	1,2x	1,1x	1,1x	8,3x	7,6x	7,0x
KPS AG	Germany	255,5	267,6	1,5x	1,4x	1,2x	10,5x	9,1x	7,8x
Groupe Open	France	141,2	139,5	0,4x	0,4x	n.a.	5,1x	4,7x	n.a.
Adesso AG	Germany	325,5	325,3	0,8x	0,7x	0,7x	7,3x	6,5x	6,0x
SNP Schneider-Neureither &	Germany	168,1	136,0	0,9x	0,9x	0,8x	n.m	8,9x	5,8x
GFT Technologies SE	Germany	238,5	297,5	0,7x	0,7x	0,7x	8,2x	7,2x	6,6x
CS Communication &	France	132,0	195,9	0,8x	0,8x	0,8x	8,9x	8,3x	7,3x
Ordina N.V.	Netherlands	177,7	159,3	0,4x	0,4x	0,0x	8,0x	5,8x	n.a.
Devoteam SA	France	836,1	805,9	1,0x	0,9x	0,9x	8,7x	7,7x	7,3x
Densan	Japan	250,9	208,8	0,7x	0,6x	0,6x	11,3x	10,9x	10,4x
Business Brain Showa-Ota	Japan	94,2	45,7	0,2x	n.a.	n.a.	2,9x	n.a.	n.a.
INES Corporation	Japan	228,5	149,0	0,5x	n.a.	n.a.	4,3x	n.a.	n.a.
Redcentric plc	United Kingdom	138,2	164,6	1,5x	1,5x	1,5x	8,4x	7,8x	7,8x
O2i Société Anonyme	France	18,1	n.a.	0,3x	0,3x	n.a.	4,2x	3,3x	n.a.
Sodifrance AS	France	63,6	83,4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Average - Computer Services Companies				**0,8x**	**0,8x**	**0,8x**	**7,4x**	**7,3x**	**7,3x**
Median - Computer Services Companies				**0,7x**	**0,8x**	**0,8x**	**8,2x**	**7,6x**	**7,3x**
Max - Computer Services Companies				**1,5x**	**1,5x**	**1,5x**	**11,3x**	**10,9x**	**10,4x**
Min - Computer Services Companies				**0,2x**	**0,3x**	**0,0x**	**2,9x**	**3,3x**	**5,8x**

Figure 30: Trading multiples (1) Source: Capital IQ

Company	Country	Mkt.cap. (EURm)	EV (EURm)	EV / EBIT			P / E[1]		
				2019e	2020e	2021e	2019e	2020e	2021e
DATAGROUP SE	Germany	335,8	361,3	15,1x	12,7x	11,2x	20,5x	17,9x	15,9x
KPS AG	Germany	255,5	267,6	11,5x	9,8x	8,4x	16,4x	13,5x	11,2x
Groupe Open	France	141,2	139,5	5,7x	5,1x	n.a.	11,2x	9,6x	n.a.
Adesso AG	Germany	325,5	325,3	12,6x	10,2x	9,1x	19,7x	15,8x	14,2x
SNP Schneider-Neureither &	Germany	168,1	136,0	n.m	13,5x	9,2x	n.m	26,0x	14,8x
GFT Technologies SE	Germany	238,5	297,5	14,1x	11,1x	8,7x	14,5x	11,6x	9,1x
CS Communication &	France	132,0	195,9	11,5x	10,5x	9,8x	12,9x	11,6x	11,6x
Ordina N.V.	Netherlands	177,7	159,3	10,0x	7,4x	n.a.	19,1x	10,0x	n.a.
Devoteam SA	France	836,1	805,9	9,5x	8,4x	7,7x	18,0x	16,1x	16,3x
Densan	Japan	250,9	208,8	14,3x	13,4x	12,4x	25,5x	23,8x	22,1x
Business Brain Showa-Ota	Japan	94,2	45,7	3,3x	n.a.	n.a.	11,8x	n.a.	n.a.
INES Corporation	Japan	228,5	149,0	8,6x	n.a.	n.a.	24,4x	n.a.	n.a.
Redcentric plc	United Kingdom	138,2	164,6	15,7x	13,0x	13,4x	18,9x	15,0x	15,6x
O2i Société Anonyme	France	18,1	n.a.	6,3x	4,6x	n.a.	n.a.	n.a.	n.a.
Sodifrance AS	France	63,6	83,4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Average - Computer Services Companies				**10,6x**	**10,0x**	**10,0x**	**17,7x**	**15,5x**	**14,5x**
Median - Computer Services Companies				**11,5x**	**10,4x**	**9,2x**	**18,5x**	**15,0x**	**14,8x**
Max - Computer Services Companies				**15,7x**	**13,5x**	**13,4x**	**25,5x**	**26,0x**	**22,1x**
Min - Computer Services Companies				**3,3x**	**4,6x**	**7,7x**	**11,2x**	**9,6x**	**9,1x**

Figure 31: Trading multiples (2) Source: Capital IQ

A valuation summary is necessary at the end; the multiple chosen is 2019 EV/EBITDA. In order to make a range of EV values and obtain a range of share price which is our final goal, we chose the median 2019 multiple and take

[2019 EV/EBITDA + 1; 2019 EV/EBITDA – 1] as the final range of min and max multiples. EV value is obtained multiplying by Keyrus 2019 expected EBITDA. We go up to Equity Value subtracting to EV net debts and non-controlling interests.

Metric	Min	Max
EV / 2019 EBITDA	**7,2x**	**9,2x**
EV	127.597,7	163.049,3
Net Debt - Non controling interests	27.644,2	27.644,2
Equity Value	99.953,5	135.405,1
Shares	15.808,0	15.808,0
Share price (euros)	**6,3 €**	**8,6 €**

Figure 32: Trading comps summary

5.2 PRECEDENT TRANSACTIONS ANALYSIS

Precedent transactions are also known as comparable transactions. They are used to calculate multiples of a target company confronting it with past transactions. Precedent transactions reflect the market value of a target's income stream in a takeover situation. The first step is looking for the recent acquisitions in the relevant sector. Comparable transactions are selected to include corporate activity of companies with similar business activities and ideally operating in the same geographical areas. Precedent transactions multiples are computed by dividing the transaction value by the target company's financials. Transactions information were found in Mergermarket and capital IQ platforms. We chose EV/EBITDA median multiple. To be consistent with the valuation by trading multiples. As before [EV/EBITDA + 1; EV/EBITDA – 1] will be our range of multiples values to compute share price.

Metric	Min	Max
EV / 2019 EBITDA	**13,5x**	**15,5x**
EV	239.298,5	274.750,1
Net Debt - Non controling interests	27.644,2	27.644,2
Equity Value	211.654,3	247.105,9
Shares	15.808,0	15.808,0
Share price (euros)	**13,4 €**	**15,6 €**

Figure 33: Precedent transaction summary

Figure 34: Transaction multiples

Date	Target	Acquirer	EV (EUR mm)	Implied EV/Revenues	Implied EV/EBITDA
January - 2018	**Northgate Public serv.**	NEC Corporation	433,7	2,9x	17,5x
February - 2018	**RealDolmen**	GFI Informatique	164,0	0,7x	11,6x
February - 2018	**GCI Telecom Group**	NEC Corporation	528,0	3,4x	n.m.
June-18	**H&D Int**	HCL Technologies	30,0	0,4x	n.a.
June-18	**Convergys Copr.**	Synnex Corp	1.884,0	0,9x	7,7x
July - 2018	**Syntel**	Atos	3.100,0	3,9x	14,5x
March-18	**Netcom Group**	Wipro	45,0	0,2x	n.a.
August - 2017	**Network related services**	Business&Decision AS	86,9	0,5x	n.m.
May-2017	**Network related services**	Business&Decision AS	86,9	0,4x	25,8x
March - 2017	**Redcentric plc**	MXC Capital Limited	175,3	1.6x	16.0x
June - 2016	**Redcentric plc**	MXC Capital Limited, Investment Arm	175,3	2.6x	11.8x
October - 2014	**O2i Société Anonyme**	Prologue S.A.	22,6	0,5x	22,9x
December - 2008	**Sodifrance SA**	Arkéa Capital Gestion, SCR, Unexo, SCR, Grand Sud Ouest Capital, S.C.R. SA., Sodero Gestion	81,8	0,3x	7,3x
Average - Computer Services Companies			**524,1**	**1,3 x**	**15,3 x**
Median - Computer Services Companies			**164,0**	**0,5 x**	**14,5 x**
Max - Computer Services Companies			**3.100,0**	**3,9 x**	**25,8 x**
Min - Computer Services Companies			**22,6**	**0,2 x**	**7,3 x**

source: Capital IQ

5.3 DISCOUNTED CASH FLOW ANALYSIS

5.3.1 WACC

The last valuation method we used to find Keyrus Group value is the Discounted Cash Flow method. We decided first to compute the WACC, very important in DCF valuation. WACC calculation is done on a separate sheet on the excel model. Free cash flow will be actualized to this rate. Risk free rate and Equity market premium are taken from Damodaran (last updated in Jan/2019) for Western Europe. The unlevered beta used for the calculation of levered beta is taken from Damodaran global cost of equity and capital sheet that we also integrated to our model. It is the mean of comparable companies from the sector of computer services. Global beta for computing industries corrected for cash is employed because it is less likely to be volatile over time. Normative tax rate is taken from 2018 historic. Levered beta is computed using the target gearing ie D-to-E ratio. A country risk premium is added to the classical cost of equity. The next figure shows WACC calculation summary:

WACC	
Risk free rate (Rf)	2,68%
Equity market risk premium (ERP)	7,11%
Unlevered beta of comparables (βa)	1,01
Normative tax rate (t)	19,58%
Target Gearing (D-to-E ratio) (G)	112,25%
Equity beta β = βa*(1+(1-T)*G)	1,93
Country Risk Premium (CRP)	0,40%
Cost of Equity (Ke) **Ke = Rf + β*ERP + CRP**	16,79%
Cost of debt	2,93%
Normative tax rate (t)	19,58%
Target Gearing (G)	112,25%
D / (D+E)	52,89%
E / (D+E)	47,11%
CMPC/WACC	9,16%

Figure 35: WACC calculation summary

It is a WACC of 9,16% we will use to compute discounted factors thereafter.

5.3.2 FREE CASH FLOWS

The next step consists in computing the free cash flows, calculation of our model is presented in figure x:

DCF	31-Dec-18	31-Dec-19	31-Dec-20	31-Dec-21	31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25
Free cash flows								
Revenues	274.361,0	295.780,6	319.417,8	345.580,9	374.685,4	407.005,2	442.893,7	482.702,6
EBIT	**14.818,0**	**16.914,5**	**14.820,3**	**17.590,1**	**23.915,0**	**31.901,9**	**40.464,0**	**51.152,8**
NOPAT	11.916,0	12.009,3	10.522,4	12.489,0	16.979,7	22.650,3	28.729,4	36.318,5
+ Depreciation	1.546,0	597,0	1.881,6	2.035,8	2.648,7	2.877,1	3.652,6	3.981,0
+ Amortization	555,0	214,3	675,5	730,8	950,8	1.032,9	1.311,3	1.429,1
(Inc) dec in deferred tax ass	(2.036,0)	230,0	(543,7)	(601,8)	(669,4)	(743,4)	(825,4)	(915,6)
Inc (dec) in deferred tax liab	528,0	(391,9)	33,1	36,6	40,7	45,2	50,2	55,7
(Inc) dec in OWC	(10.917,0)	(1.002,9)	(1.106,7)	(1.225,0)	(1.362,7)	(1.513,3)	(1.680,4)	(1.863,9)
(Inc) dec in other assets	(1.962,0)	(2.321,9)	(2.562,3)	(2.836,1)	(3.155,0)	(3.503,5)	(3.890,4)	(4.315,3)
Inc (dec) in other long-term l	(1.913,0)	790,0	969,1	1.072,7	1.193,3	1.325,1	1.471,4	1.632,2
- Capital expenditure	(6.561,0)	(2.533,5)	(7.985,4)	(8.639,5)	(11.240,6)	(12.210,2)	(15.501,3)	(16.894,6)
Cash Taxes								
Free cash flows	**(8.844,0)**	**7.590,5**	**1.883,7**	**3.062,5**	**5.385,6**	**9.960,4**	**13.317,6**	**19.427,0**

Figure 36: Free cash flow

Once free cash flows are computed, we must discount them with the WACC:

Discounting mode	31-Dec-18	31-Dec-19	31-Dec-20	31-Dec-21	31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25
Year count	1,0	2,0	3,0	4,0	5,0	6,0	7,0	8,0
Discount factor	91,6%	83,9%	76,9%	70,4%	64,5%	59,1%	54,2%	49,6%
PV of FCF	(8.102,0)	6.370,3	1.448,2	2.157,1	3.475,0	5.887,8	7.211,8	9.637,7

Figure 37: Discounting model

The sum of PV of each FCF gives one part of EV, that generally represent 70% to 80% of EV. Terminal Value can be calculated from two methods: one on basis EV/EBITDA multiple at the end forecast period (2025). This method called exit multiple terminal value is often used but not relevant due to the degree of arbitrariness. The second method is based on the fact that the company will still growth by a long term growth rate defined in our assumptions. In our case the company give 2% of long term growth rate. We still will compare both methods and resume them at the end.

We took for the exit multiple method a multiple of EV/EBITDA in 2015 about 6x, multiples are decreasing as we go over the forecasting period. We based this hypothesis on trading multiples future multiples. Once the terminal value computed we discount it with the discount factor in 2025 multiplying the terminal value with the factor. The sum of all present value of free cash flows and present value of the terminal value gives the EV.

In the second method, we assumed the long term growth rate is 1,75%. As before, terminal value is added to the sum of present value of free cash flow.

Valuation	EURm	% EV	Valuation	EURm	% EV
Using exit multiple			**Using LT growth rate**		
Total PV of free cash flows	28.085,9	14,3%	Total PV of free cash flows	28.085,9	17,8%
PV of terminal value using multiple	168.363,4	85,7%	PV of terminal value using LT growth rate	130.103,2	82,2%
Enterprise value using exit multiple	**196.449,3**		**Enterprise value using LT growth rate**	**158.189,1**	
Cash & cash equivalent	20.671,0		Cash & cash equivalent	20.671,0	
Goodwill	44.079,0		Non-core assets	44.079,0	
Total debt	40.851,0		Total debt	40.851,0	
Equity value	**220.348,3**		**Equity value**	**182.088,1**	
Shares outstanding	15.801,2		Shares outstanding	15.801,2	
Implied share price	**$13,95**		**Implied share price**	**$11,52**	

Figure 38: DCF valuation summary

5.3.3 SENSIBILITY ANALYSIS

Valuation is a methodology which is not risk free. The first measure of risk one must realise is a sensitivity analysis on the different economic assumptions of the valuation model and then applicate the current value criteria to each scenario. This aims to give a range of acceptable EV by the DCF method.

Technically on excel it is building assumptions table tests crossing parameters we want to evaluate the impact on the final value.

The next figures give us sensitivity tables and the range of EV for both DCF valuation method by discounted cash flow.

	Exit multiple								
	5,0 x	6,0x	7,0 x	8,0 x	9,0 x	10,0 x	11,0 x	12,0 x	13,0 x
	Implied EV								
Discount rate	5,0 x	6,0 x	7,0 x	8,0 x	9,0 x	10,0 x	11,0 x	12,0 x	13,0 x
7,56%	189.022,4	220.596,1	252.169,7	283.743,4	315.317,1	346.890,8	378.464,5	410.038,1	441.611,8
7,96%	183.601,9	214.251,8	244.901,6	275.551,5	306.201,3	336.851,2	367.501,1	398.150,9	428.800,8
8,36%	178.355,6	208.112,0	237.868,3	267.624,6	297.381,0	327.137,3	356.893,7	386.650,0	416.406,4
8,76%	173.277,3	202.169,3	231.061,3	259.953,4	288.845,4	317.737,4	346.629,4	375.521,5	404.413,5
9,16%	168.360,9	196.416,8	224.472,6	252.528,5	280.584,3	308.640,2	336.696,0	364.751,8	392.807,7
9,56%	163.600,8	190.847,6	218.094,4	245.341,2	272.587,9	299.834,7	327.081,5	354.328,3	381.575,1
9,96%	158.991,3	185.455,2	211.919,1	238.383,0	264.846,9	291.310,8	317.774,6	344.238,5	370.702,4
10,36%	154.527,2	180.233,4	205.939,6	231.645,8	257.352,0	283.058,2	308.764,4	334.470,6	360.176,8
10,76%	150.203,3	175.176,1	200.148,9	225.121,8	250.094,6	275.067,5	300.040,3	325.013,2	349.986,0
11,16%	146.014,7	170.277,6	194.540,5	218.803,5	243.066,4	267.329,3	291.592,3	315.855,2	340.118,1
11,56%	141.956,7	165.532,3	189.108,0	212.683,6	236.259,3	259.834,9	283.410,6	306.986,2	330.561,8
11,96%	138.024,8	160.935,0	183.845,1	206.755,3	229.665,5	252.575,7	275.485,8	298.396,0	321.306,2
12,36%	134.214,5	156.480,3	178.746,1	201.011,9	223.277,6	245.543,4	267.809,2	290.074,9	312.340,7
12,76%	130.521,8	152.163,5	173.805,2	195.446,8	217.088,5	238.730,2	260.371,9	282.013,6	303.655,3

Figure 39: Sensitivity table –Exit Multiple x WACC

		Perpetuity growth rate						
		1,5%	1,75%	2,0%	2,3%	2,5%	2,8%	3,0%
		Implied EV						
Discount rate		1,50%	1,75%	2,00%	2,25%	2,50%	2,75%	3,00%
7,56%	7,56%	210.102,3	217.802,3	226.194,7	235.377,4	245.467,5	256.606,5	268.966,8
7,96%	7,96%	193.308,8	199.869,0	206.979,6	214.712,9	223.154,3	232.405,8	242.589,9
8,36%	8,36%	178.554,7	184.189,4	190.267,1	196.842,1	203.978,1	211.750,1	220.247,1
8,76%	8,76%	165.500,7	170.375,3	175.610,5	181.247,7	187.335,2	193.929,1	201.095,4
9,16%	9,16%	153.878,5	158.122,7	162.663,2	167.532,3	172.766,9	178.409,9	184.510,8
9,56%	9,56%	143.473,0	147.189,6	151.152,0	155.385,4	159.918,6	164.784,7	170.021,7
9,96%	9,96%	134.109,9	137.381,5	140.858,6	144.561,1	148.511,8	152.736,5	157.264,7
10,36%	10,36%	125.646,6	128.540,0	131.606,5	134.862,1	138.324,7	142.014,9	145.955,8
10,76%	10,76%	117.964,8	120.534,9	123.251,7	126.128,1	129.178,6	132.419,6	135.869,3

Figure 40: Sensitivity table – LT growth rate x WACC

We extract the range of EV from calculation of minimum and maximum of coloured zones in the precedent sensitivity tables.

For the exit multiple method: EV min and EV max are computed assuming WACC fluctuates +/- 0.8% and exit multiple EV/EBITDA +/- 1.

For the long term growth rate method: EV min and EV max are computed assuming WACC fluctuates +/- 0,8% and LT growth rate +/- 0,25%.

DCF method	EV min	EV max	Shares	Share price max	Share price min	Exit multiples (EV/EBITDA)
Exit multiple	158.991,29	237.868,30	15.808,02	15,05 €	10,06 €	**13,0x - 18,3x**
LT growth rate	134.109,93	190.267,06	15.808,02	12,04 €	8,48 €	**11,0x - 15,5x**

Exit multiples max (EV/EBITDA)	**14,1x**	**11,2x**
Exit multiples min (EV/EBITDA)	**9,4x**	**7,9x**

Figure 41: DCF valuation summary

5.4 VALUATION SUMMARY

To summarize all share prices and EV found in the diversified methods, we build a football field. A football field chart is used to summarize a range of values for a business, based on different valuation methods. The graph on excel is commonly used in investment banking. We repeat the process for both scenarios of growth sales. The output is as follow:

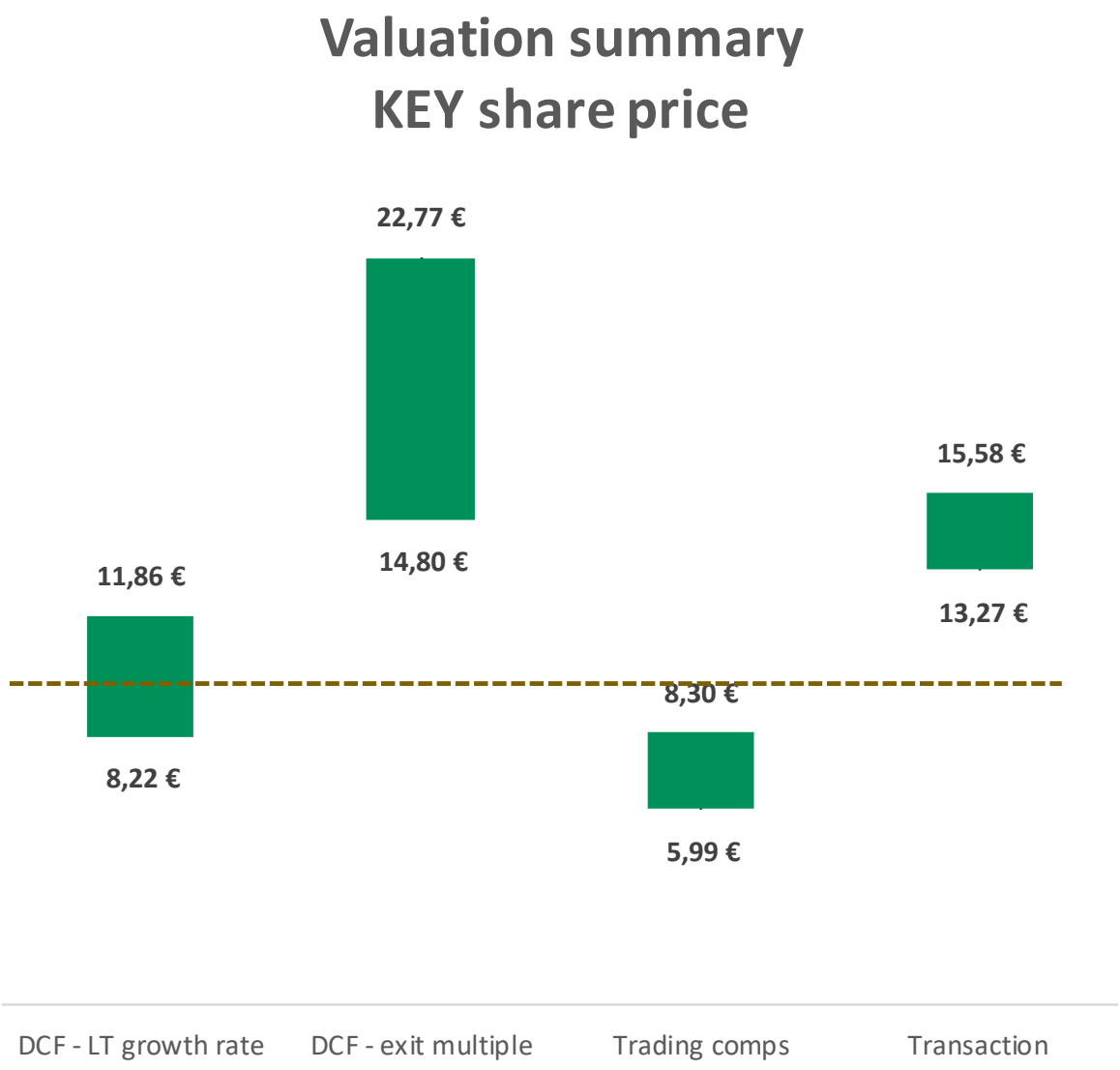

Figure 42: Football field-scenario 1

Values of share price found in the case of scenario 1 are generally higher than in the first scenario (sales forecast are much higher), EV from precedent transactions is much higher than EV from trading comps, this is due to premium added to EV during an acquisition. What we deduce from those results is that companies from computer services and IT consulting have a premium higher than other sectors explaining

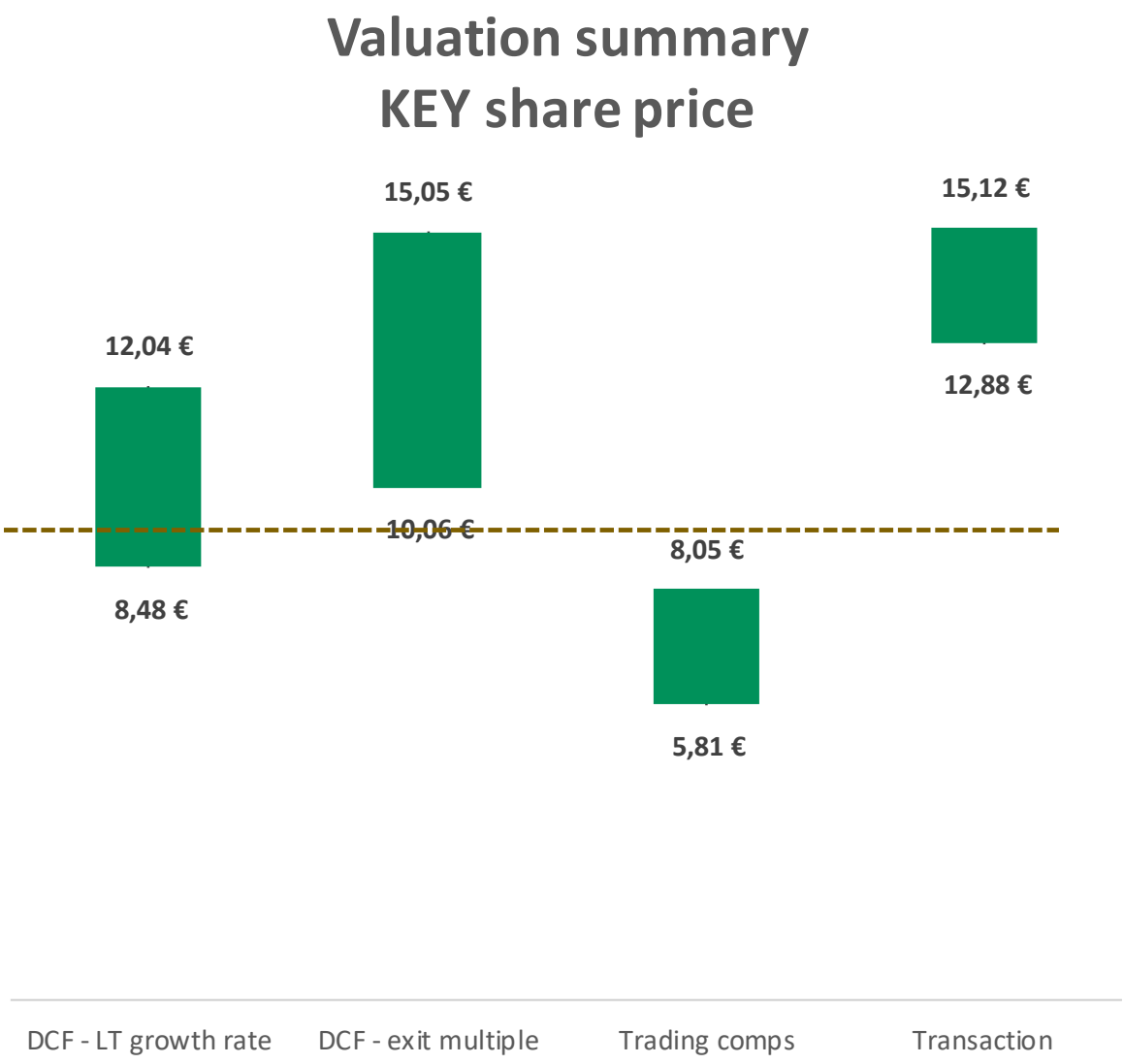

Figure 43: Football field-scenario 2

We consider the DCF – exit multiple method inadequate for valuation due to elevate range of share price value, and to the accrued importance given to exit multiple. From the first scenario we extract a share price of 9€, and from the second one 8,5€. Historical data about Keyrus share price is given in appendix.

An average of 8,75€ can be set, giving us an **EV of 175,148,961€**.

6 CONCLUSIONS

From our valuation summary we have to extract some conclusions that must be highlighted. In comparison to actual share price, Keyrus Group is being evaluated in this work much higher than specialized platforms (Capital IQ, Bloomberg) do. This might significate that Keyrus is being under-estimated by the market, so as other similar companies. Furthermore, a higher share price given by the precedent transactions method means that enterprises from this sector do have higher premium paid than other sectors. Synergies generated by acquisitions in IT services domains are consequents.

By the valuation work, even if the company is not on sale or wants to emit more shares, permits managers to be aware of current trends of the company. Is Keyrus being under or overestimated by market. Which direction the company is currently taking?

In the frame of my internship at Keyrus Brazil the model couldn't be built from all company assumptions given that this is strictly confidential. Even if help had been provided from the person in charge of Keyrus Brazil finances, this document is not adapted to further analysis of the company health as well as valuation. However, it might be a good indicator of the sector and the company trends for the next years.

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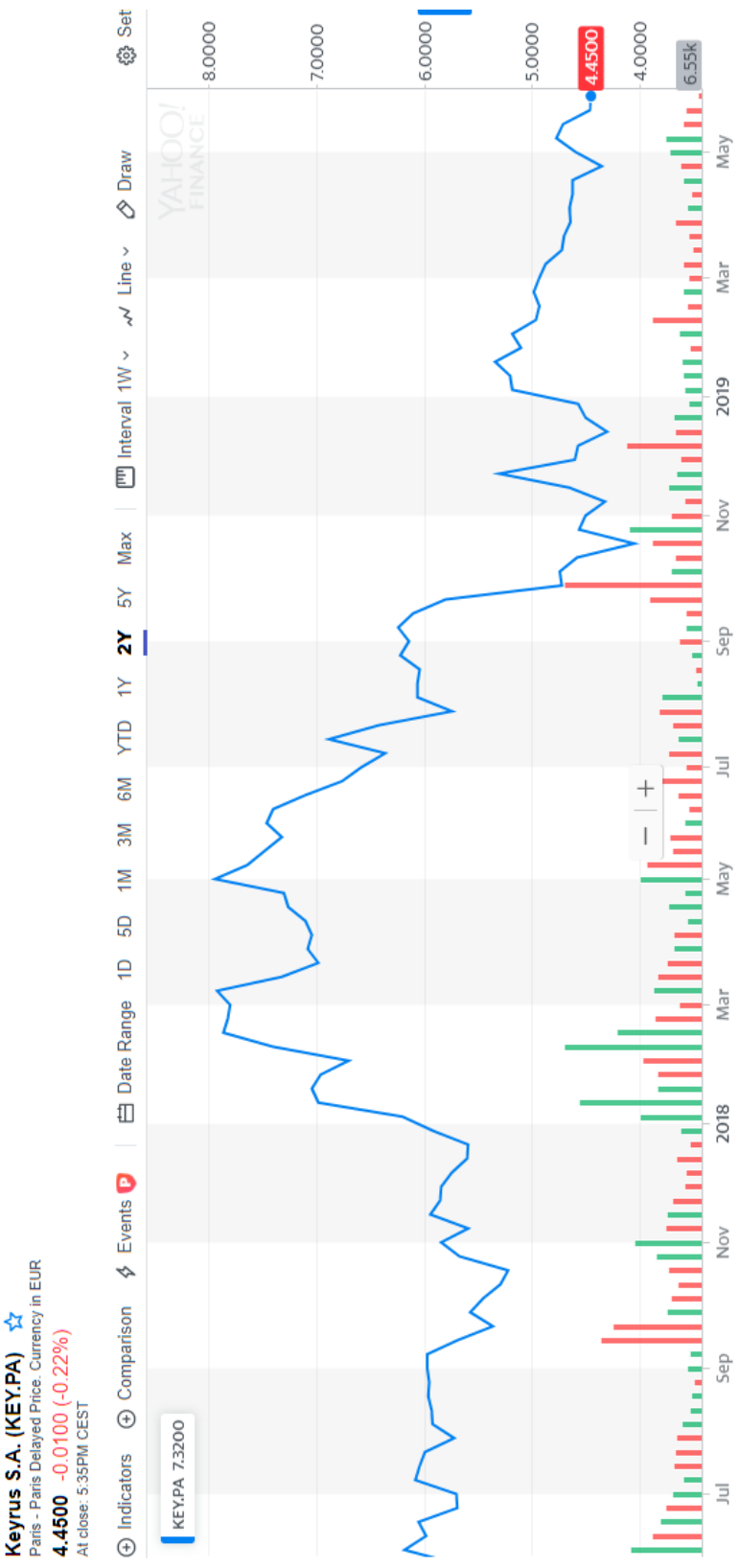
GLOSSARY

CEO	Chief Executive Officer
GVR	Grand View Research
M&A	Merger & Acquisition
LBO	Leverage Buy-Out
PP&E	Property, plant and equipment
WC	Working Capital
EPS	Earnings Per Share
COGS	Cost of Goods Sold
EBIT	Earnings Before Interest, Taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization

PBT	Profit Before Taxes
WASO	Weighted Average number of Shares Outstanding
DCF	Discounted Cash Flow
WACC	Weighted Average Cost of Capital
EV	Enterprise Value
ROIC	Return on Invested Capital
PER	Price Earnings Ratio
FCF	Free Cash Flows
TV	Terminal Value
CAPEX	Capital Expenditure
CAPM	Capital Asset Pricing Model
Ke	Cost of Equity
Kd	Cost of Debt
Rp	Country Risk
CRP	Country Risk Premium
Rf	Risk free rate
ERP	Equity Risk Premium
D&A	Depreciation & Amortization
D	Total Debt Value
E	Total Equity Value

APPENDIXES



Appendix A: KEY last two years' historical share price (€)

Income statement

Sales growth	8,91%	16,88%	12,78%	13,01%	6,42%	7,81%	7,99%	8,19%	8,42%	8,63%	8,82%	8,99%
COGS as % of sales	(36,5%)	(36,2%)	(37,4%)	(36,2%)	(36,4%)	(37,0%)	(38,0%)	(38,0%)	(37,0%)	(36,0%)	(35,0%)	(34,0%)
Depreciation as % of CAPEX	(50,8%)	(58,9%)	(46,4%)	(25,4%)	(23,6%)	(23,6%)	(23,6%)	(23,6%)	(23,6%)	(23,6%)	(23,6%)	(23,6%)
Amortization as % of CAPEX	(21,7%)	(26,0%)	(11,8%)	(7,5%)	(8,5%)	(8,5%)	(8,5%)	(8,5%)	(8,5%)	(8,5%)	(8,5%)	(8,5%)
Depreciation	(817,0)	(811,0)	(992,0)	(1.130,0)	(1.546,0)	(597,0)	(1.881,6)	(2.035,8)	(2.648,7)	(2.877,1)	(3.652,6)	(3.981,0)
Amortization $ amount	(349,0)	(358,0)	(252,0)	(334,0)	(555,0)	(214,3)	(675,5)	(730,8)	(950,8)	(1.032,9)	(1.311,3)	(1.429,1)
SG&A as % of sales	(58,0%)	(57,5%)	(57,1%)	(56,7%)	(56,8%)	(56,3%)	(55,8%)	(55,3%)	(54,8%)	(54,3%)	(53,8%)	(53,3%)
Other operating incomes (looses)	(1.127,0)	(3.715,0)	(1.618,0)	(2.338,0)	(1.423,0)	(1.534,1)	(1.656,7)	(1.792,4)	(1.943,3)	(2.111,0)	(2.297,1)	(2.503,6)
Tax in IS as % of sales	(1,2%)	(1,0%)	(1,0%)	(0,9%)	(0,9%)	(0,9%)	(0,9%)	(0,9%)	(0,9%)	(0,9%)	(0,9%)	(0,9%)
Non-recurring expenses	(940,0)	(2.400,0)	(1.800,0)	(1.900,0)	(2.100,0)	(2.100,0)	(2.100,0)	(2.100,0)	(2.100,0)	(2.100,0)	(2.100,0)	(2.100,0)
Effective tax rate	(34,6%)	(35,4%)	(31,2%)	(29,9%)	(19,6%)	(19,6%)	(19,6%)	(19,6%)	(19,6%)	(19,6%)	(19,6%)	(19,6%)
Dividend payout rate	0,0%	0,0%	0,3%	(1,3%)	(3,1%)	(1,0%)	(1,0%)	(1,0%)	(1,0%)	(1,0%)	(1,0%)	(1,0%)
Weighted average shares outstanding	15.566,9	15.707,2	15.786,6	15.801,2	15.808,0	15.808,0	15.808,0	15.808,0	15.808,0	15.808,0	15.808,0	15.808,0
Other operating incomes (looses) as % of sales	(0,7%)	(1,8%)	(0,7%)	(0,9%)	(0,5%)	(0,5%)	(0,5%)	(0,5%)	(0,5%)	(0,5%)	(0,5%)	(0,5%)
Minority interests	(232,0)	417,0	(259,0)	(716,0)	(767,0)	(767,0)	(767,0)	(767,0)	(767,0)	(767,0)	(767,0)	(767,0)

Assets

Operating current assets as % of sales	45,9%	43,6%	42,5%	43,5%	42,8%	42,8%	42,8%	42,8%	42,8%	42,8%	42,8%	42,8%
Capex as % of sales	0,8%	0,6%	0,7%	1,4%	0,9%	0,9%	2,5%	2,5%	3,0%	3,0%	3,5%	3,5%
Goodwill	42.368,0	40.312,0	44.371,0	44.079,0	52.695,0	52.695,0	52.695,0	52.695,0	52.695,0	52.695,0	52.695,0	52.695,0
Diferred tax assets as % of sales	2,8%	2,3%	2,1%	1,9%	2,6%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%
Other assets % of sales	13,5%	11,3%	11,1%	10,8%	10,8%	10,8%	10,8%	10,8%	10,8%	10,8%	10,8%	10,8%
Intangible as % of sales	0,4%	0,2%	0,2%	0,2%	1,2%	1,3%	1,6%	1,9%	2,3%	2,6%	3,0%	3,4%
Acquisitions of intangible assets as % of CAPEX	14,6%	14,7%	20,2%	18,2%	64,2%	34,2%	34,2%	34,2%	34,2%	34,2%	34,2%	34,2%
Amortisation of intagible assets as % of CAPEX	(21,7%)	(26,0%)	(11,8%)	(7,5%)	(8,5%)	(8,5%)	(8,5%)	(8,5%)	(8,5%)	(8,5%)	(8,5%)	(8,5%)
Acquisition of tangible assets as % of CAPEX	85,4%	85,3%	79,8%	81,8%	35,8%	65,8%	65,8%	65,8%	65,8%	65,8%	65,8%	65,8%
Amortissement of tangible assets as % of CAPE	(50,8%)	(58,9%)	(46,4%)	(25,4%)	(23,6%)	(23,6%)	(23,6%)	(23,6%)	(23,6%)	(23,6%)	(23,6%)	(23,6%)
Disposals of intangibles	0,0	140,0	(174,0)	(238,0)	(1.026,0)	(211,1)	(665,4)	(719,9)	(936,6)	(1.017,4)	(1.291,7)	(1.407,8)
Disposals of tangibles	0,0	(153,0)	117,0	(732,0)	176,0	124,8	393,5	425,8	553,9	601,7	763,9	832,6
Disposals of intangibles as % of acquisition of intangibles		69,3%	(40,4%)	(29,3%)	(24,4%)	(24,4%)	(24,4%)	(24,4%)	(24,4%)	(24,4%)	(24,4%)	(24,4%)
Disposals of tangibles as % of acquisition of tangibles		(13,0%)	6,9%	(20,1%)	7,5%	7,5%	7,5%	7,5%	7,5%	7,5%	7,5%	7,5%
Acquisitions of intangible assets	235,0	202,0	431,0	811,0	4.211,0	866,4	2.731,0	2.954,7	3.844,3	4.175,9	5.301,4	5.778,0
Amortisation of intagible assets	(349,0)	(358,0)	(252,0)	(334,0)	(555,0)	(214,3)	(675,5)	(730,8)	(950,8)	(1.032,9)	(1.311,3)	(1.429,1)
Acquisition of tangible assets	1.374,0	1.176,0	1.706,0	3.638,0	2.350,0	1.667,0	5.254,4	5.684,8	7.396,3	8.034,3	10.199,8	11.116,6
Depreciation of tangible assets	(817,0)	(811,0)	(992,0)	(1.130,0)	(1.546,0)	(597,0)	(1.881,6)	(2.035,8)	(2.648,7)	(2.877,1)	(3.652,6)	(3.981,0)
PP&E Charges for the year	(313,0)	(153,0)	117,0	(732,0)	176,0	176,0	176,0	176,0	176,0	176,0	176,0	176,0
Intangibles Charges for the year	0,0	140,0	(174,0)	(238,0)	(1.026,0)	(1.026,0)	(1.026,0)	(1.026,0)	(1.026,0)	(1.026,0)	(1.026,0)	(1.026,0)

Liabilities												
Operating liabilities as % of sales	49,7%	47,0%	46,0%	42,7%	38,2%	38,2%	38,2%	38,2%	38,2%	38,2%	38,2%	38,2%
Operating long-term liabilities a	7,6%	6,5%	4,8%	5,1%	4,1%	4,1%	4,1%	4,1%	4,1%	4,1%	4,1%	4,1%
Debt												
Short-term debt as % of sales	9,7%	12,0%	8,7%	9,8%	13,7%	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%
Short-term debt	16.710,0	24.323,0	19.797,0	25.225,0	37.598,0	35.494,1	39.971,4	45.606,0	53.852,5	65.430,6	80.651,3	100.444,4
Ration Short term debt in gross	47,7%	77,1%	56,1%	61,7%	56,0%	56,0%	56,0%	56,0%	56,0%	56,0%	56,0%	56,0%
Leverage ratio	97,7%	80,3%	79,8%	80,3%	112,2%	90,2%	90,2%	90,2%	90,2%	90,2%	90,2%	90,2%
Diferred tax liabilities as % of s	0,17%	0,09%	0,05%	0,11%	0,29%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%	0,1%
Long-term debt	18.287,0	7.210,0	15.515,0	15.626,0	29.504,0	27.853,1	31.366,4	35.788,1	42.259,3	51.344,8	63.288,9	78.821,0
Ration Long term debt in gross	52,25%	22,86%	43,94%	38,25%	43,97%	44,0%	44,0%	44,0%	44,0%	44,0%	44,0%	44,0%
Interest rates												
Interest rate on revolver and short-term debt	0,9%	0,9%	0,5%	1,0%	2,0%	2,0%	2,0%	2,0%	2,0%	2,0%	2,0%	2,0%
Interest rate on long-term debt					2,1%	2,1%	2,1%	2,1%	2,1%	2,1%	2,1%	2,1%
Interest income on cash		4,9%	3,6%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%

Appendix C: Calculation sheet

Calculations	31-Dec-14	31-Dec-15	31-Dec-16	31-Dec-17	31-Dec-18	31-Dec-19	31-Dec-20	31-Dec-21	31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25
Property, plant and equipment, net												
Beginning balance		2.322,0	2.534,0	3.365,0	5.142,0	6.122,0	7.316,9	11.083,2	15.158,0	20.459,5	26.218,4	33.529,5
PP&E acquisitions	1.374,0	1.176,0	1.706,0	3.638,0	2.350,0	1.667,0	5.254,4	5.684,8	7.396,3	8.034,3	10.199,8	11.116,6
Depreciation	(817,0)	(811,0)	(992,0)	(1.130,0)	(1.546,0)	(597,0)	(1.881,6)	(2.035,8)	(2.648,7)	(2.877,1)	(3.652,6)	(3.981,0)
Disposals		(153,0)	117,0	(732,0)	176,0	124,8	393,5	425,8	553,9	601,7	763,9	832,6
Ending balance	2.322,0	2.534,0	3.365,0	5.142,0	6.122,0	7.316,9	11.083,2	15.158,0	20.459,5	26.218,4	33.529,5	41.497,8
Intangible net												
Beginning balance	40.851,0	699,0	386,0	390,0	627,0	3.257,0	3.698,0	5.088,2	6.592,1	8.548,9	10.674,5	13.373,0
Intangible acquisitions	235,0	202,0	431,0	811,0	4.211,0	866,4	2.731,0	2.954,7	3.844,3	4.175,9	5.301,4	5.778,0
Amortizations	(349,0)	(358,0)	(252,0)	(334,0)	(555,0)	(214,3)	(675,5)	(730,8)	(950,8)	(1.032,9)	(1.311,3)	(1.429,1)
Disposals		140,0	(174,0)	(238,0)	(1.026,0)	(211,1)	(665,4)	(719,9)	(936,6)	(1.017,4)	(1.291,7)	(1.407,8)
Ending balance	699,0	386,0	390,0	627,0	3.257,0	3.698,0	5.088,2	6.592,1	8.548,9	10.674,5	13.373,0	16.314,0
CAPEX												
CAPEX	1.609,0	1.378,0	2.137,0	4.449,0	6.561,0	2.533,5	7.985,4	8.639,5	11.240,6	12.210,2	15.501,3	16.894,6
net CAPEX/Sales		0,7%	0,9%	1,3%	2,1%	0,8%	2,4%	2,4%	2,9%	2,9%	3,4%	3,4%
Shareholder's Equity												
Beginning balance		35.811,0	39.287,0	44.243,0	50.845,0	59.780,0	77.006,4	91.971,8	110.874,0	138.400,5	176.984,4	227.806,0
Net income	2.958,0	3.717,0	4.354,0	7.055,0	8.784,0	17.408,2	15.124,3	19.100,9	27.812,3	38.981,4	51.342,7	66.903,0
Dividends	0,0	0,0	14,0	(102,0)	(294,0)	(181,8)	(158,9)	(198,7)	(285,8)	(397,5)	(521,1)	(676,7)
Ending balance	35.811,0	39.287,0	44.243,0	50.845,0	59.780,0	77.006,4	91.971,8	110.874,0	138.400,5	176.984,4	227.806,0	294.032,2
OWC												
Operating current assets		88.171,0	96.963,0	112.139,0	117.525,0	126.700,3	136.825,5	148.032,7	160.499,9	174.344,3	189.717,5	206.770,0
Operating current liabilities		94.976,0	104.842,0	110.210,0	104.679,0	112.851,4	121.869,9	131.852,1	142.956,5	155.287,7	168.980,6	184.169,1
OWC		**(6.805,0)**	**(7.879,0)**	**1.929,0**	**12.846,0**	**13.848,9**	**14.955,6**	**16.180,6**	**17.543,3**	**19.056,6**	**20.737,0**	**22.600,9**

Appendix D: Debts sheet

Debt	31-Dec-14	31-Dec-15	31-Dec-16	31-Dec-17	31-Dec-18	31-Dec-19	31-Dec-20	31-Dec-21	31-Dec-22	31-Dec-23	31-Dec-24	31-Dec-25
Short-term debt / revolver												
Balance	16.710,0	24.323,0	19.797,0	25.225,0	37.598,0	38.875,9	46.431,1	55.973,7	69.870,1	89.348,9	115.005,6	148.439,3
Interest rate					2,0%	2,0%	2,0%	2,0%	2,0%	2,0%	2,0%	2,0%
Interest expense					497,8	742,0	767,2	916,3	1.104,6	1.378,9	1.763,3	2.269,6
Long-term debt												
Beginning balance		18.287,0	7.210,0	15.515,0	15.626,0	29.504,0	29.504,0	29.504,0	29.504,0	29.504,0	29.504,0	29.504,0
Change												
Ending balance	18.287,0	7.210,0	15.515,0	15.626,0	29.504,0	29.504,0	29.504,0	29.504,0	29.504,0	29.504,0	29.504,0	29.504,0
Interest rate				0,0%	2,1%	2,1%	2,1%	2,1%	2,1%	2,1%	2,1%	2,1%
Interest expense					324,1	611,9	611,9	611,9	611,9	611,9	611,9	611,9
Debt summary												
Short-term debt	16.710,0	24.323,0	19.797,0	25.225,0	37.598,0	38.875,9	46.431,1	55.973,7	69.870,1	89.348,9	115.005,6	148.439,3
Long-term debt	18.287,0	7.210,0	15.515,0	15.626,0	29.504,0	30.506,8	36.435,5	43.923,8	54.828,7	70.114,1	90.247,5	116.483,7
Total debt	**34.997,0**	**31.533,0**	**35.312,0**	**40.851,0**	**67.102,0**	**69.382,8**	**82.866,6**	**99.897,5**	**124.698,8**	**159.462,9**	**205.253,2**	**264.923,1**
Interest expense summary												
Revolver					0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Short-term debt					497,8	742,0	767,2	916,3	1.104,6	1.378,9	1.763,3	2.269,6
Long-term debt					324,1	611,9	611,9	611,9	611,9	611,9	611,9	611,9
Total interest expense					**821,9**	**1.353,9**	**1.379,1**	**1.528,2**	**1.716,5**	**1.990,8**	**2.375,2**	**2.881,5**
Interest income												
Cash balance	17.383,0	20.297,0	20.278,0	20.671,0	27.331,0	42.505,6	62.587,9	89.388,7	130.505,1	191.579,0	273.306,7	382.886,7
Interest rate		4,9%	3,6%	2,3%	2,6%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%	2,3%
Interest income	658,0	854,0	733,0	471,0	547,0	628,6	977,6	1.439,5	2.055,9	3.001,6	4.406,3	6.286,1