FOR EVERY STEP OF THE WAY THERE'S
DATA

simple numerical bits encoding the essence of business

well, that's our business

The world moves in so many different directions, that it can be hard to see the full picture.
Controlling your data is a good start.
Comparing your data against benchmarks and competitors is a healthy practice.
And predicting what will happen tomorrow is an unfair advantage

Software Development

User-friendly and effective web and mobile applications tailor-made to fit your size and business processes, built on Microsoft stack - in cloud or on-premise.

Data Management & Client Reporting

We enable you to make business decisions across the enterprise using scalable BI and Data Warehousing strategy, consistently delivering timely and accurate data.

Data Science & Machine Learning

Enhance product capabilities, improve interaction with customers, streamline business operations, and create predictive and precise business strategies using data-driven machine learning.

Digital transformation

Transform your enterprise using digital technologies and create new, improved business processes, culture, and customer experiences to meet everchanging business and market requirements.

comminus
FOR EVERY STEP OF THE WAY, THERE'S DATA
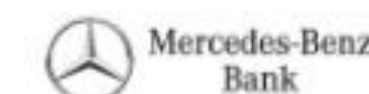
Gold
Microsoft Partner

■■ Microsoft

Gold Application Development
Gold Application Integration
Gold Data Platform
Gold Data Analytics
Gold Datacenter
Silver DevOps
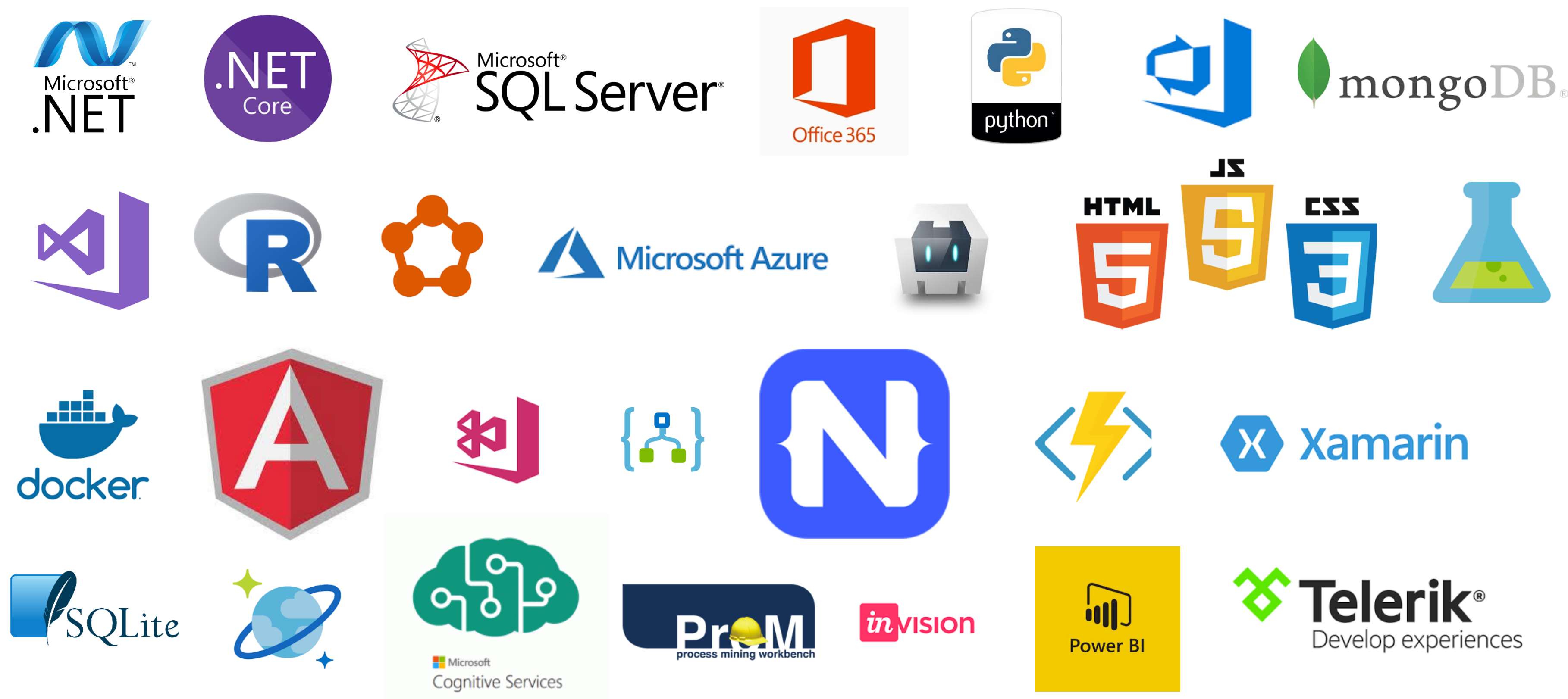Silver Small and Midmarket Cloud Solutions

Informationssicherheit
DQS
ISO/IEC 27001

Quality Management
DQS
ISO 9001

2016
AAa®
CREDIT-
WORTHINESS
CERTIFICATE
HOLDER

Constant growth since founded in 2004. || Solutions and services on the **Microsoft platform**

key references

Technology experts
implementing tailored solutions

Comminus

Platforms

Asset audit management

CASE STUDY

Financial services of one of the biggest German car producers uses our system to manage the audit process of leased cars. Client managed to make extraordinary savings in outsourcing 3rd party auditors, number of field force auditors and their traveling expenses.

ASSET AUDIT MANAGEMENT SYSTEM

This solution implemented as a web application supports daily business processes in a way that the processes are automated and the end result of those processes is shown to key users. Auditing of assets is done based on an automated daily feed of data, and is done every morning.

In that way, by providing end results of an automated asset audit process to key users in the morning, key users can take a look at all potential issues and handle them effectively within a day.

FRAUD PREVENTION SYSTEM

The solution implements multiple security features that help recognize and prevent fraudulent scenarios:
• Centralized task distribution
• Visual recognition
• GPS location and time capture
• Live picture/video capture
in order to remove the possibility to:
• Fake the actual vehicle location
• Fake the actual vehicle state
• Give pre-audit notices to the dealers

AUTOMATIC PROCESS HIGHLIGHTS

The system is integrated with a 3rd party service used by the Client that gathers data from leased vehicles in the fleet, including GPS location and delivers the live information to asset audit management system.

Key functionalities
• Daily load of asset information
• Automatic activation/deactivation of asset/vehicle
• Dealer and location management
• Audit process and audit matrix setup based on fleet size, financial data, country/region/exact store location, geo-fence polygon's and flexible business rules
• Tracking exceptions over a task management workflow
• Fully customizable user roles, audit process and audit matrix configuration
• Fully customizable reporting

MANUAL PROCESS HIGHLIGHTS

• Daily task distribution removing the possibility of fraud
• Field force auditor task management
• Digital data collection on the self-audit app including picture upload
• Self-audit app with offline mode, storing data locally until Wi-Fi is available
• Prevention of fraudulent scenarios by capturing auditors GPS location, time and other details
• Visual recognition of the vehicle in pictures
• OCR detection and extraction of a VIN number and tachometer state of kilometers from the pictures

SELF-AUDIT APP

• iOS based application with the possibility to support other mobile platforms
• Enables end users to perform inventory audits and send audit data to be evaluated in the background (database layer) and results being displayed in the front-end Web based application

Features
• Customized questionnaires
• Photo capture & upload
• Location tracking
• Automatic task distribution
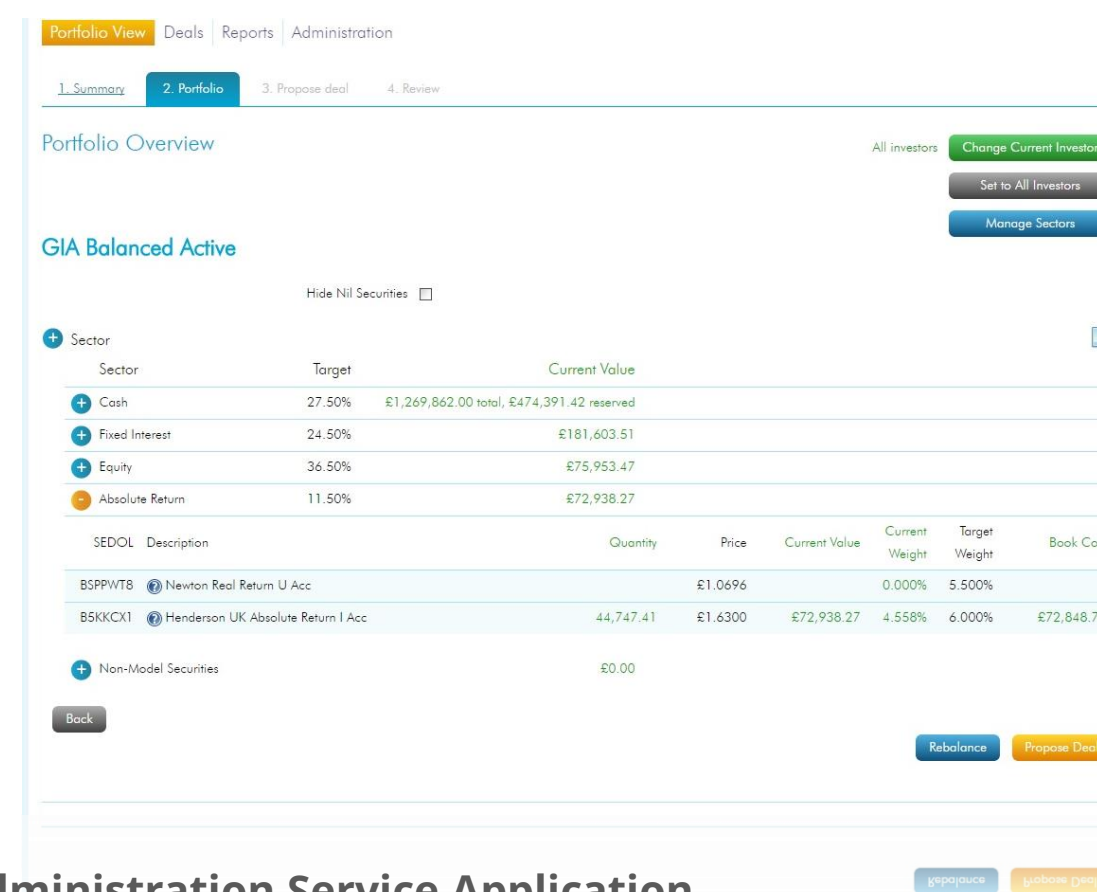• Offline mode
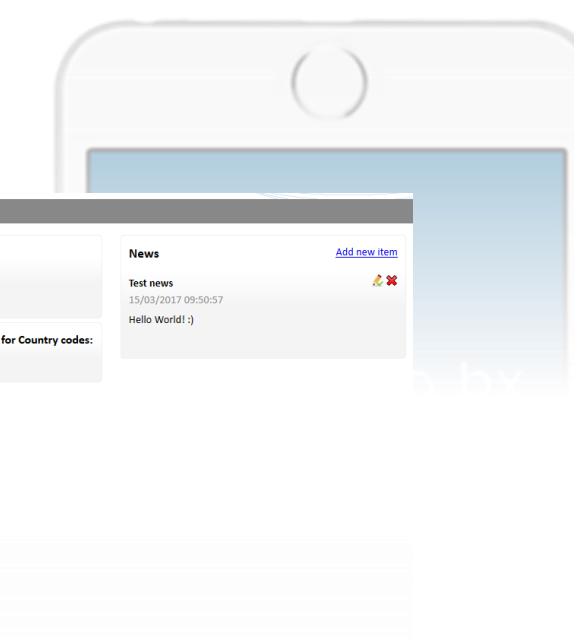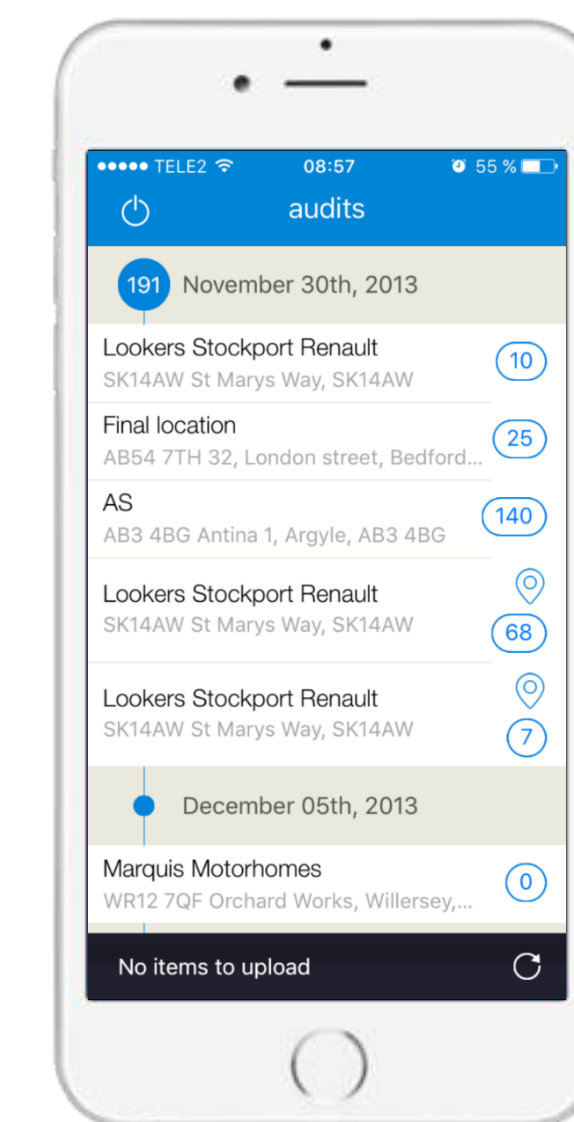
Online Trading Platform

Completely online investing proposition with access to Funds, Shares, ETF and Investment Trusts. The first step into a new world of investing can be easier than you ever imagined, and with substantial cost saving benefits.

PLATFORM HIGHLIGHTS

Clients expect easy access to financial information and to be able to invest quickly and at a time that suits them. Whether you Clients whish to research a fund, invest or get an up-to-date portfolio valuation, they can now do all of these and more online with Comminus Online trading platform.
By moving to our online platform, you are able to reduce business costs and provide additional savings to Clients.

Online Investment Frontend
Includes robust and industry proven 24/7 online investment site. Investors now solely have the ability to invest into variety of products and trade securities with ease and whenever they like thanks to the Online trading Application.
Streamlines and helps Investors with registration procedure encompassing Anti-money laundry check procedure, Postcode finding and contributing via debit card, direct debit or transfer-in. Percentage of monthly direct debit can be invested into securities.
Income generated from dividends can be automatically invested into same security.

PLATFORM ADVANTAGES

- Secure web platform
- Leading database system on security, performance and price
- User authentication and authorization with role based access
- Automatic data load and data validation
- Input/output history tracking
- Logging and change tracking
- Output (raw files, report generation, e-mail delivery and notification)
- Ability to manage and change
- Data visibility and transparency
- Fast delivery
- Robust solution

We recognize the difference between markets, and that each partner will have a unique approach to success. We ensure that every partner has all the necessary support and tools to launch and operate a successful business, by providing online trading platform based on years of industry experience.

Online Administration Service Application
Enables Portfolio managers to effectively allocate stock/funds in each portfolio on percentage (target weight) base. Investor are free to chose from variety of products with range of models that hold stocks and funds. Portfolio management system is run by Portfolio Manager for an Investor.
Featuring following modules: Messaging, Buy/Sell Operations, Anti Money Laundry service, Fee Administration.

Integration with several services
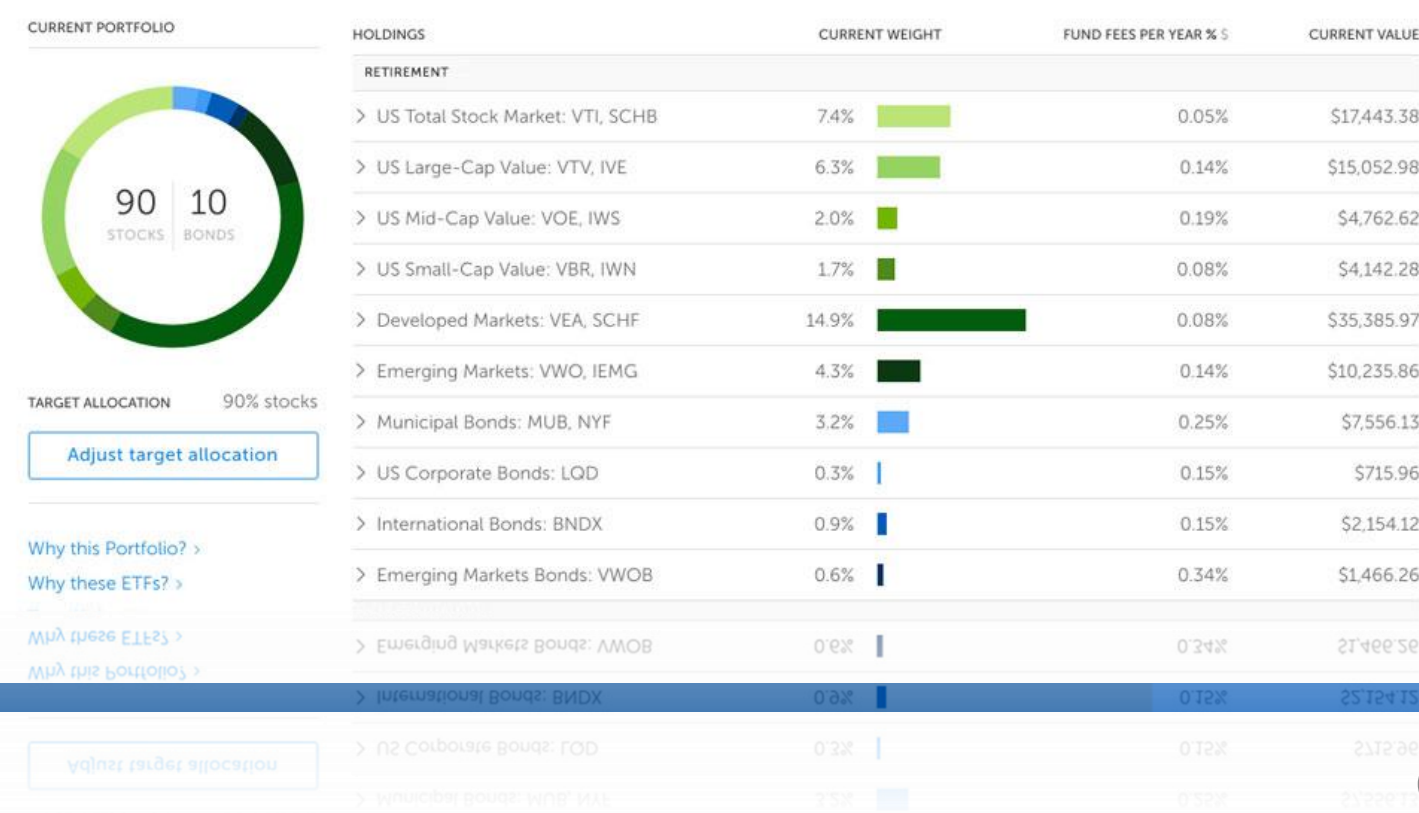Anti Money Laundry service, Nexus service, Winterflood, BarcleyCard and Infobip messaging service.

Reporting service
Featured with custom tailored reports, Regulatory reporting, advance analytics and advance filtering capabilities.

Transactional Inventory Analysis

Inventory compliance and analysis made easier than ever

FEATURES

- Process structured and unstructured documents, extract relevant data and verify document compliance
- Process incoming invoices (scanning), extract items and prices, verify compliance with relevant contract (contracted services), raise exceptions for noncompliant inputs and import extracted data to financial systems currently in use by the company
- Identify overpayments, duplicate and inaccurate billing both historic and current
- Processes multi-language and multi-currency transactions and automate ongoing supplier invoice validation before potentially incorrect payments are made to a supplier
- Unstructured information processed over 300 times faster than humans and without human error
- Contract compliance and audit trails for suppliers, customers, employees, legal and finance
- Compliance is instantly achieved and recognized for board and regulatory bodies
- HR savings on researching contracts and claim resolution
- Legal savings on researching contracts and established for due diligence on corporate matters
- Company assets are easily identified and tracked

INGESTION

We place the utmost importance on how we ingest an organizations most valuable asset – its data. Irrespective of where the data comes from, structured or unstructured, in whatever file format and in whatever volume, the system is able to ingest, decipher, index, reference and be able to fully analyze everything that is ingested releasing the true value from the data.

ABBYY
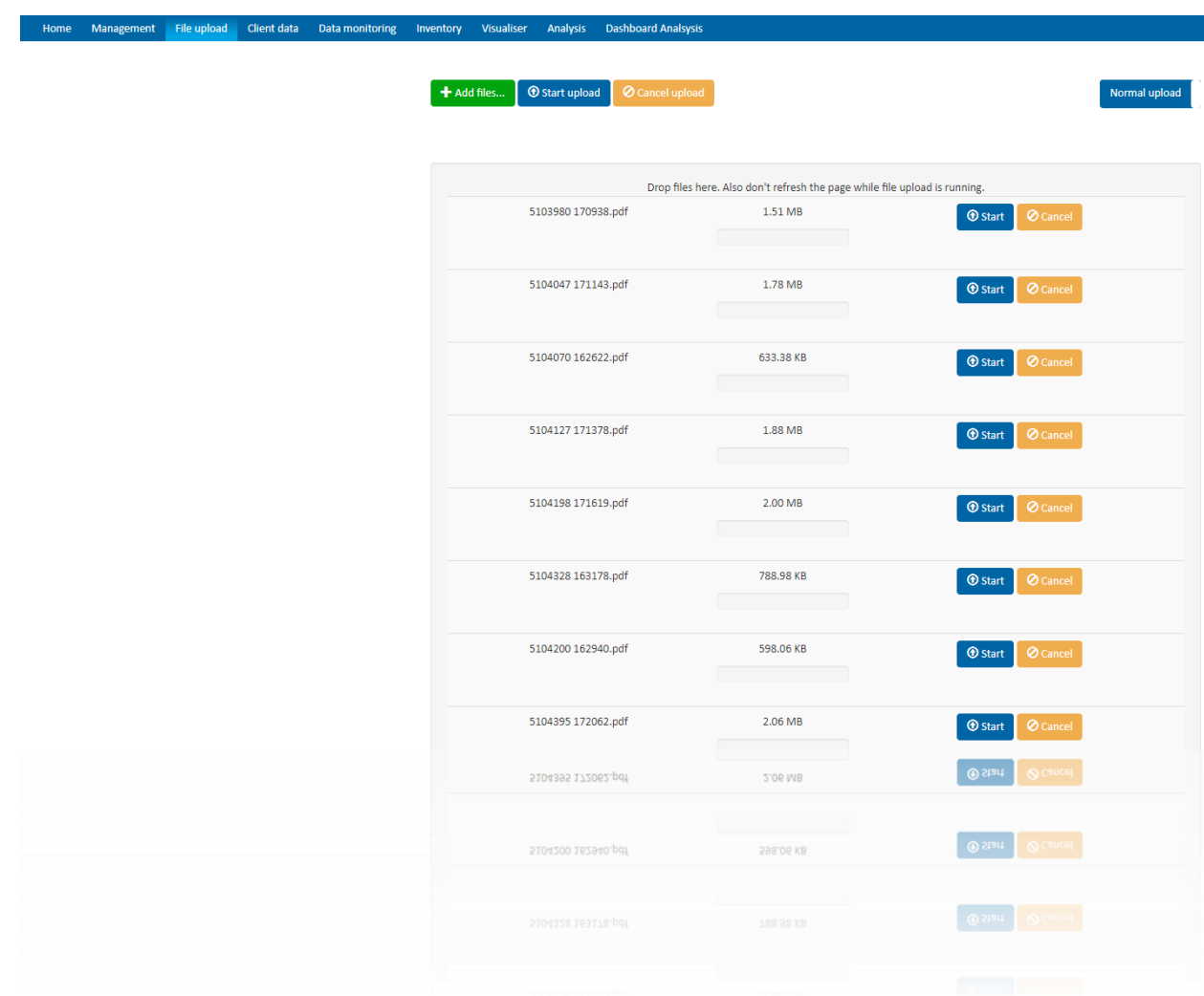
INVENTORY

One of prime directives is to establish a real, accurate and up to date list of assets that are in use or have been disposed of and can include details of anything from servers, mobile phones to property. If the inventory is correct, then all details around that including supplier invoicing, agreements, pricing, tariff incentives, discounts, credits and refunds will have reality and will provide true control over costs and suppliers. Organizations rarely have the time, resources, skills or the technology to enable them to tackle this ever-growing problem, with the result being gross inefficiency, incorrect accounting and worst of all, loss of bottom line profit.
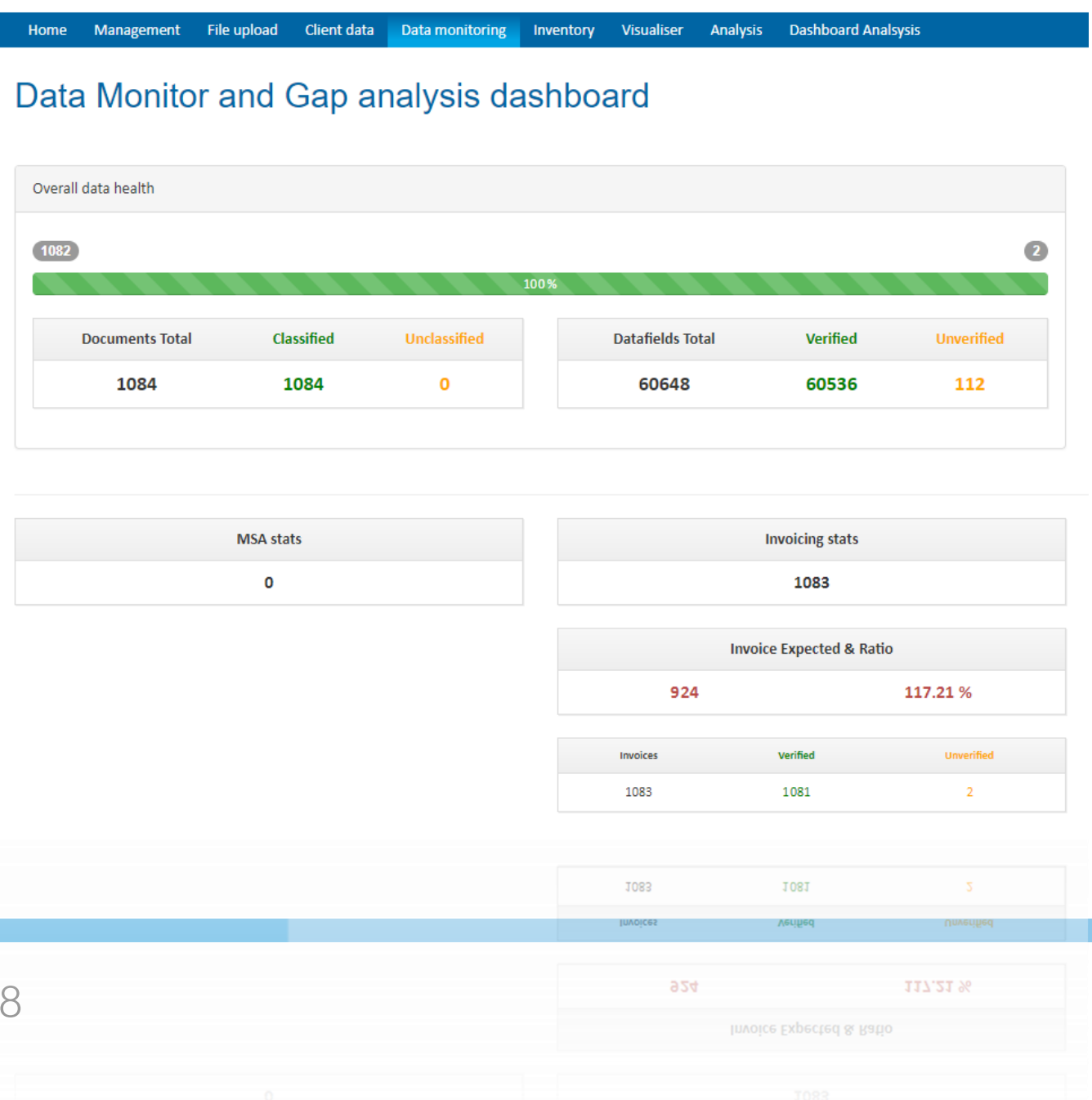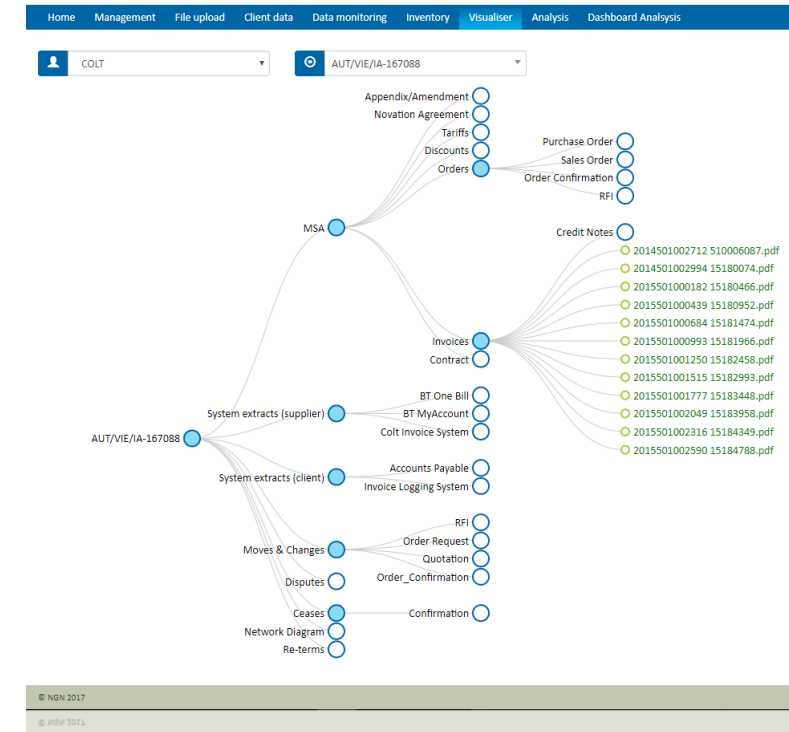
Data Monitor and Gap analysis dashboard

Transactional Inventory Analysis

CASE STUDY

Inventory compliance and analysis made easier than ever

CONTRACT COMPLIANCE

As organizations become more regulated either by Government legislation or specific market sector regulatory bodies, they are required to ensure all data collected, captured and stored meets the increasingly stringent compliance requirements. System can play a major part in this process. System is able, through its advanced analytics and machine learning capability to quickly and thoroughly decipher, cross reference, analyze and validate all information. System is the ideal application to assist you to achieve a far higher level of clarity and information accuracy and therefore compliance.

CONTROL OVER COSTS

Another vital aspect is an organization's ability to ensure all their suppliers are invoicing them correctly and within the contractual terms. Certain industry sectors, such as Telecoms, are well known for needing to invest heavily in additional staff, resources and systems just to try and resolve the problems associated with incorrect billing, however this problem is certainly not restricted to the Telecoms industry. All organizations currently have the same problem to a greater or lesser extent with the overhead in terms of additional staff, resources and systems specifically employed to address the increasing problems. System provides a fast, thorough and accurate way for an organization to ensure it has complete control over supplier costs relating to products or services provided. Using system to ensure the inventory is correct it further ensures that all invoices are also accurate. Whether system is used for ensuring billing accuracy going forward, or if necessary carrying out a historic review, it is the ideal platform for ensuring an organization achieves high levels of Revenue Assurance.

Mobile BI dashboards

Fully customized mobile BI solutions with actionable insights delivered in an intuitive, self-service business intelligence environment.

BUSINESS INTELLIGENCE ON THE GO

Highlights include

- Touch screen optimized
- Supports offline mode
- Delta sync
- Multiple KPI's
- Drilldown
- Multiple dashboard screens
- Presentation/Storytelling feature
- User engagement with comments
- Tasks & alters
- News feed

Awarded and recognized by our Clients

DAIMLER
Daimler Financial Services

Game Changer
Award
2016

CFO INNOVATION
THE CFO INNOVATION AWARDS 2017

comminus
FOR EVERY STEP OF THE WAY, THERE'S DATA
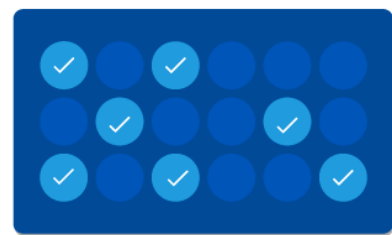
Customer Loyalty @ Retail

comminus
FOR EVERY STEP OF THE WAY, THERE'S DATA

CASE STUDY The largest pharmacy retail chains in Croatia use our loyalty program to manage the satisfaction of existing customers in order to stay competitive on the market.

LOYALTY PROGRAM SYSTEM

Along with the main goal of managing and securing the satisfaction of existing customers, the loyalty program helps clients in retaining the leading positions on the market for its respectable segments.

Also, additional business benefits of the system are in various product bundling options, direct insight into customer segments and therefore more precise targeting, custom report capability etc.

Our loyalty program is used by:
• more than **175,000 users**
• almost **1.500 active shops** and
• produces more than **40.000 monthly invoices**

CLIENT PORTAL

The central part of the loyalty program IT system consists of

Three levels of users
• Program members / buyers
• Authorized employees
• Administrator

Functionalities
• Registration and data overview
• Score points
• Product records
• Segmentation
• Manage scoring and award rules
• Overview of marketing actions and promotion
• Lost card and mini card
• Newsletter subscription

3rd PARTY API

API ready for integration with 3rd parties:
• Point-of-sale
• Web

SCORING AND AWARD RULES

Score points are collected in several different ways. The prerequisite is the purchase of a product that is in the scoring system.

The rules for awarding points are divided into 3 categories:
1. **General rule**: <number> of <money> delivers <number> of points
2. **Member rule**: welcome, birthday, recommendation of another member
3. **Product rule**: brand, manufacturer, product group

Award rules:
1. **Financial rule**: For <number> of points the member receives a discount of <number>% on the amount of the receipt
2. **Material rule**: The <number> award is the product <product name>

A loyalty program discount on individual items of the receipt may be limited if the item is already in retail discount or its margin is lower than the discount.

In the case of multiple rules at the same time, the member is given the highest possible discount depending on the points earned.

MOBILE APPLICATION

Mobile application for iOS and Android.

Functionalities
• Mobile card barcode
• Review of members score points status
• Review of news and actions
• Company / brand information
• Loyalty program information
• List of business branches

REPORTING SYSTEM

Reporting done per
• Members, products, groups of products. manufacturers, point of sale, time of purchase, collected and spent points, realized discounts, realized income.

List of predefined reports includes
• Overview of sales by product
• Top 20 most wanted products
• Review of sales by members
• Review of earned and spent points by members
• Analysis of revenue by period and point of sale
• Review of the members activities
• Analysis of members revenue over time
• Analysis of members demographic structure
• Analysis of income by age structure

ADDITIONAL COMPONENTS

Customer Rankings:
• Define the rankings (gold, silver, and bronze buyers)
• Adjustable scoring and award rules

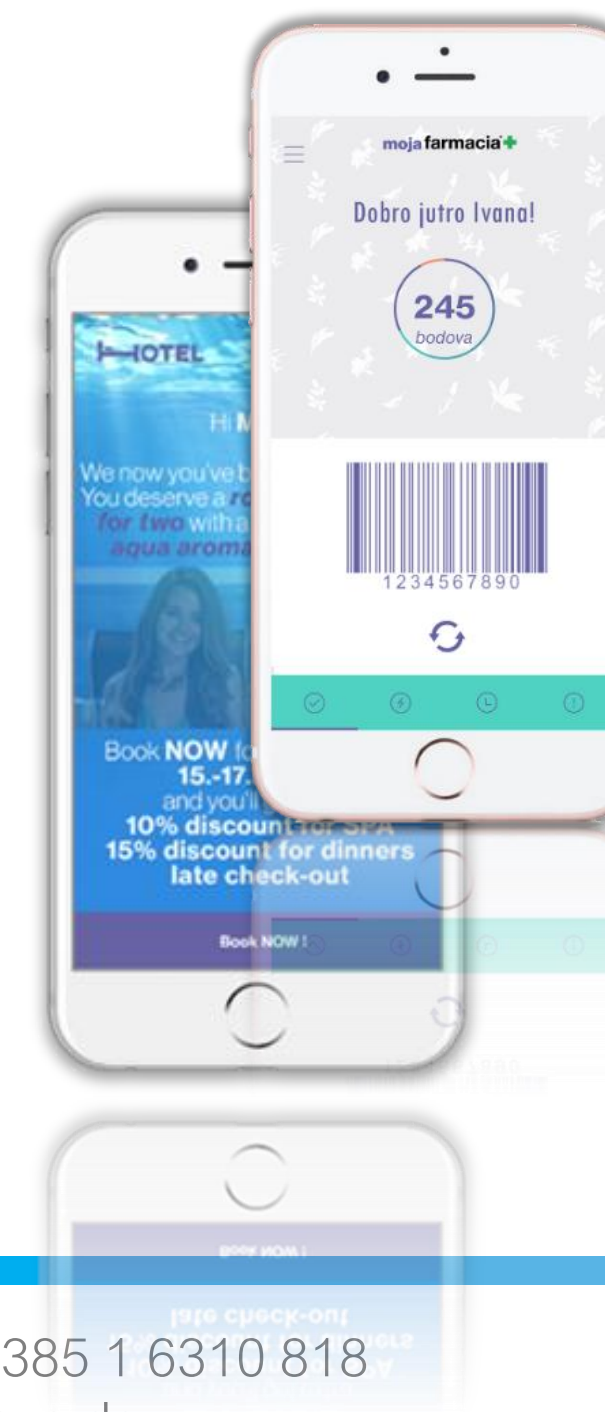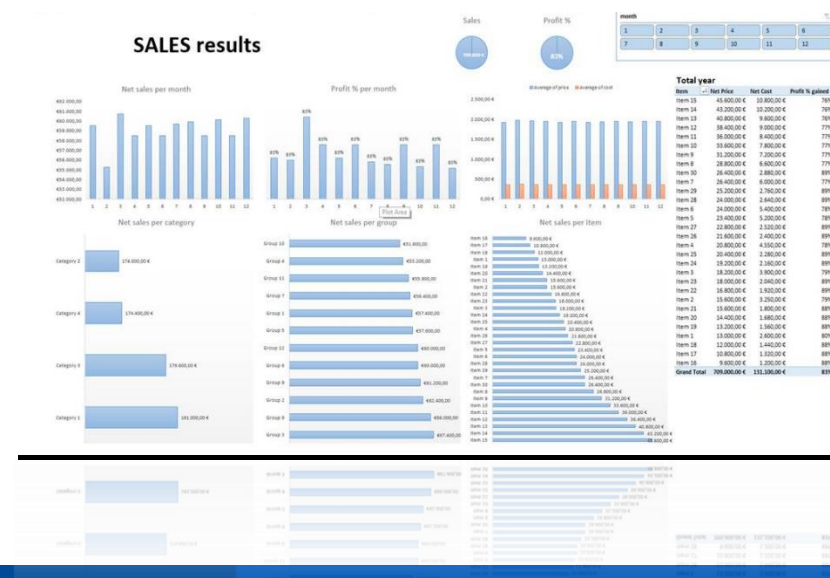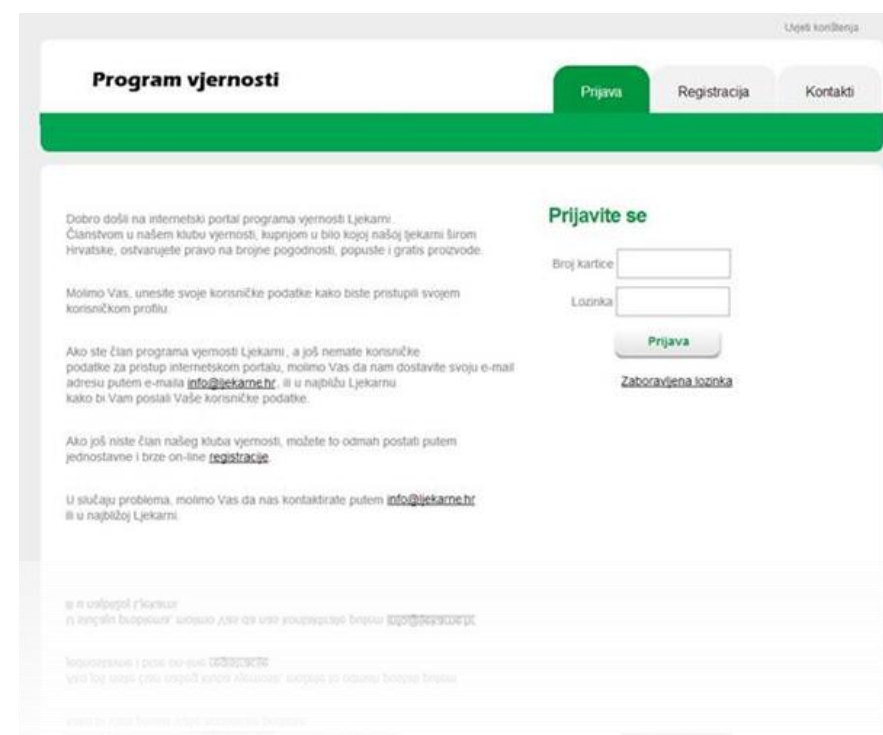**Integration with social networks**

Location marketing
• Member location detection
• Notifications: welcome message, store actions, recommended points, reward points etc.

Marketing interface
• Segmentation (age, gender, customer activity, profitability), mail campaigns and mobile notifications

Recommendation engine
• Up-selling & cross-selling benefits

Online Betting platform

Support for every aspect of your gaming business including Online, Mobile, Retail, and Live thanks to a complete and seamlessly integrated range of products encompassed in a single platform

KEY COMPONENTS

Online Betting Application - a robust and responsive online betting application which features Prematch and In-Play (Live), Casino, Virtual betting and Live Games.

SUPPORTED CHANNELS

Land based shops
Betting terminal
Online (desktop)
Mobile (Web and application)
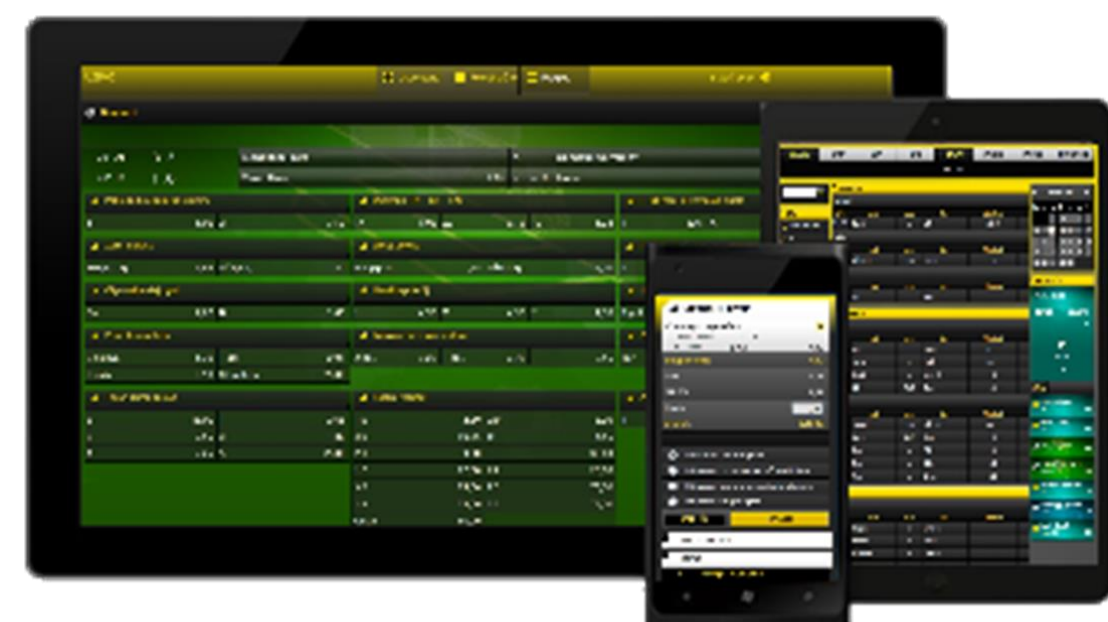
PRODUCTS AND MARKETS

- Betting
- Pre-match betting (Sport)
- In-play betting (Live)
- Lotto
- Virtual sports
- Statistics, Resulting, TV stream, etc.
- Casino
- Slot games
- Table games
- Casino Live
- Skill games

INTEGRATIONS

- BetRadar – sports, prematch, live, virtuals
- SiS – horse & hound racing
- Live video streaming
- Regulatory systems
- Payment gateways
- Bank API interfaces

BETTING FUNCTIONALITIES

- Registration, verification and login
- Account management
- Regular and system betting (sport, lotto)
- Result verification
- Online pay-in, bank pay-out
- Responsible betting – player self-control
- Live stream integration
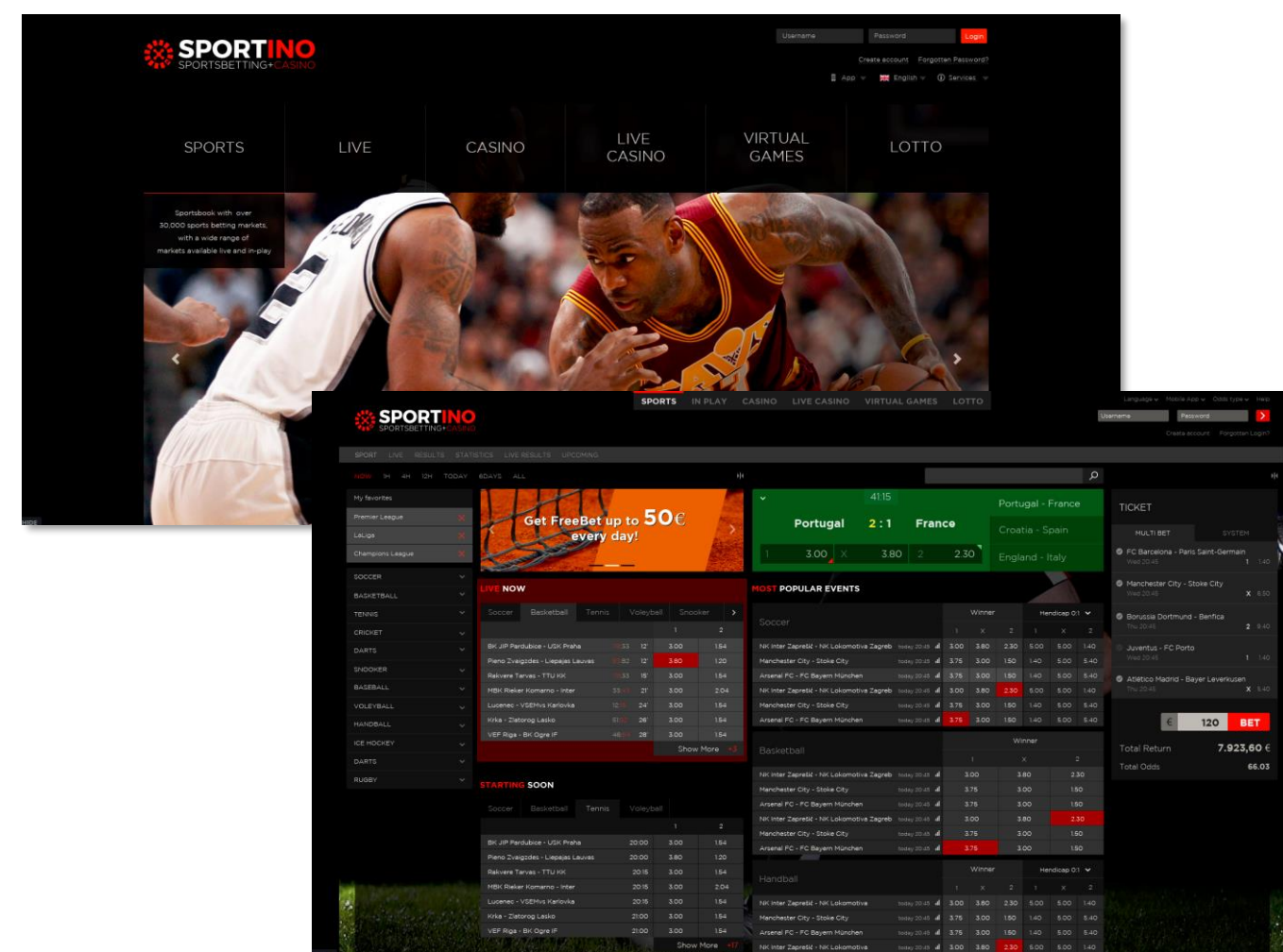
BACKOFFICE ADMINISTRATION & RISK CONTROL

- Desktop app for admins and bookies
- System settings and risk control
- Betslip overview
- Offer management
- Automatic and manual authorization of betslips
- Risk control customization
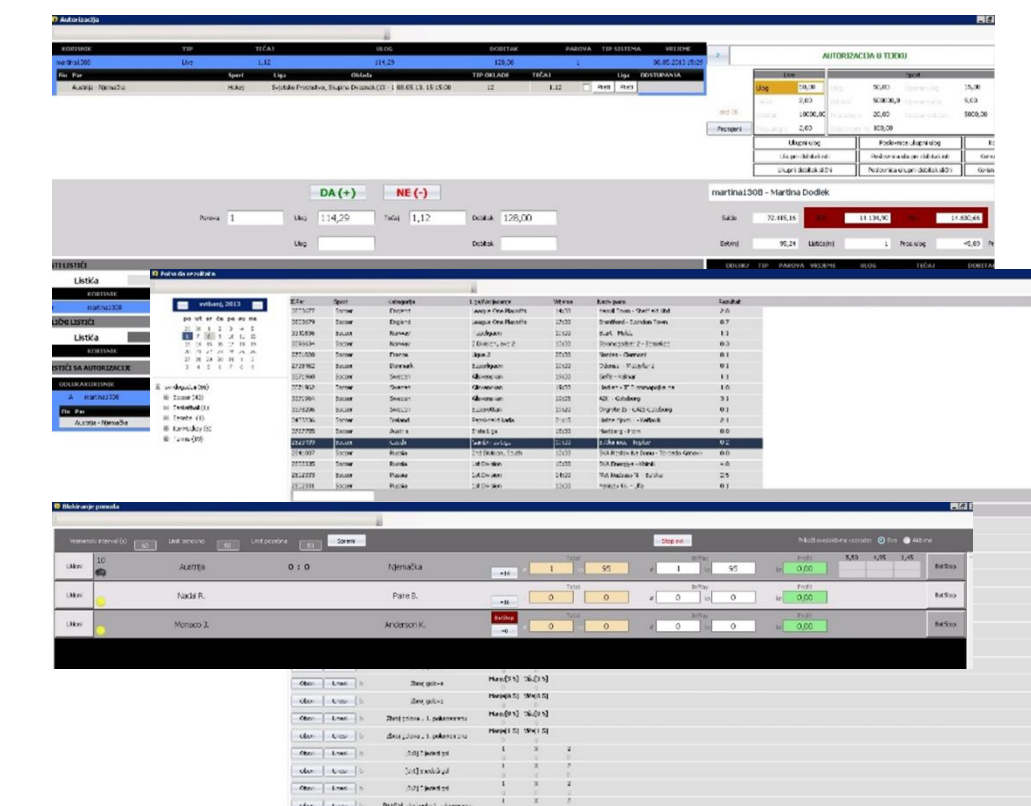
Comminus
Services

Custom SW development

Custom software (also known as bespoke software or tailor-made software) is software that is specially developed for a specific organization or business process.

BUILDING A STRONG FOUNDATION

Our software development process is a hybrid between that taught by the PMI and those commonly referred to as Agile Development.

ITERATIVE

There are uncertainties in every software project. It's our job to make sure there aren't surprises as well. We provide progressively refined deliveries, estimates (both for schedule and cost) throughout a project so that you control your own priorities.

6 EASY PHASES

We begin projects with a Foundation Phase, in which we work with you to flesh out requirements and create user-interface mockups. We then develop your system over a series of incremental stages, each one demonstrating new, tested features, finishing with a full release.

1 PROPOSAL PHASE

Our first phase, for which we don't charge, seeks to determine the vision of your project. We will schedule a few conversations, get a sense of your overarching goals, and give you a rough ballpark range for what sort of budget might be required to meet your needs.

2 FOUNDATION PHASE

We call it the "foundation phase" because there's so much more that goes on than just jotting down a list of features. This is the phase in which we come to really understand your business. We often will create a framework for supporting the evolution of the software solution beyond its first iteration, we'll consult on process improvements in your organization, and we'll address adoption and rollout plans.

3 DEVELOPMENT PHASE

During this third phase we build the solution in question. Much of the work is done in the code, but we hold regular status meetings with clients to maintain control, visibility, and to ensure we can accommodate changes in plans. Our clients are active members of our development team and have full access to the code, our development servers, and project management tools.

4 AGILE ITERATIONS

Custom software only works if its users love it. Our process follows elements of the Agile methodology: we often step through foundation-development-deployment phases, in iterative units called "sprints", to ensure you and your team can see the software coming together, use it, and adjust course as the software evolves.

5 DEPLOYMENT PHASE

We learned early on to give enough time and mindshare to rolling out systems. Sometimes a deployment can be easy, but in times when a data migration or server issue arises, it's always best to have a clear plan. Our team has worked with some of the most exacting IT organizations in the world: we understand that getting a deployment right is critical for a business.

6 SUPPORT PHASE

It's rare that a business solution is ever finished: your business evolves, and it's important that your software can as well. We can provide ongoing support for projects we've deployed (sometimes for years) and continually modify them to suit the needs of your team.

Business Intelligence

Fully customized BI solutions with actionable insights delivered in an intuitive, self-service business intelligence environment.

DATA DRIVEN DECISIONS

Many businesses today are challenged by information overload but yet cannot get real-time, data driven insight to help make decisions quickly. Comminus provides a best fit approach to establishing a scalable BI and Data Warehousing strategy that consistently delivers timely and accurate data to drive business decisions across the enterprise.

We focus on seamless integration of ETL solutions and data analysis tools with the BI processes and information systems that currently exist in your company. We offer comprehensive BI solutions that are instrumental in understanding the critical business metrics, help eliminate waste, and enable more informed strategic decision-making.

Solution Benefits

- Overcome limitations of ready-made solutions
- Realize your own innovative vision of BI methodology
- Take advantage of technologies synergy
- Cost reduction through extending corporate applications built-in analysis tools
- Increased productivity
- New mission-critical features, reports, and KPIs
- Speedup of data collection, aggregation, and cross-checking
- Smooth data flow
- Eliminated human error risks and routine operations
- Enterprise-wide reporting
- Online analytical processing
- Predictive analysis
- Data mining
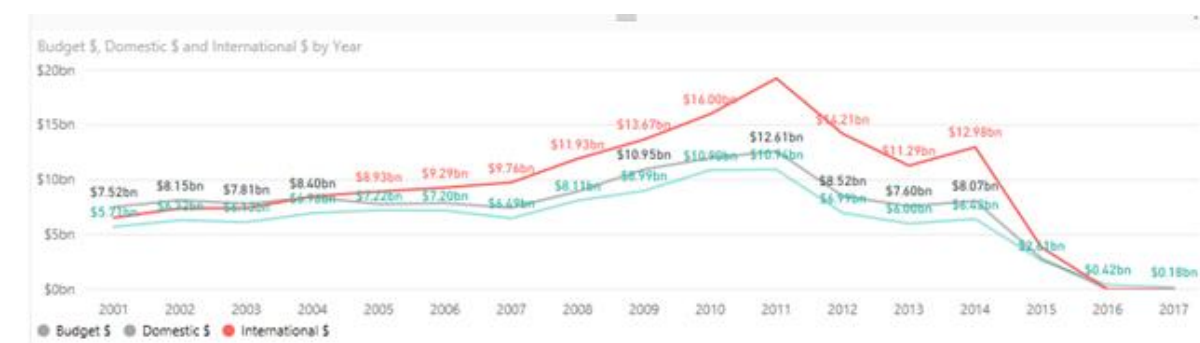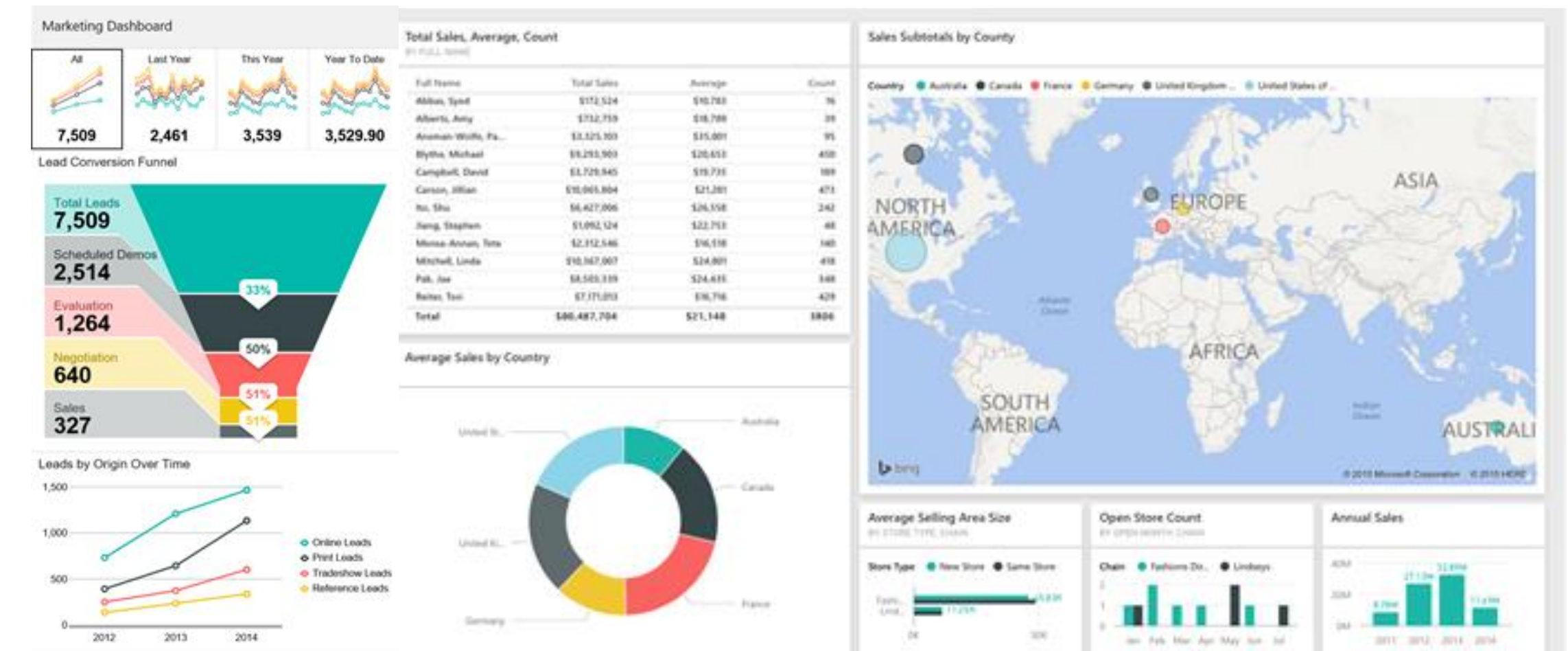
DATA WAREHOUSE

Low quality (e.g. incomplete, unattributed, disaggregated or out-of-date) data cannot be successfully utilized for business analysis. Transition helps to review and calibrate existing business processes. We concentrate our efforts on developing a smart data warehouse solution that would enable effective capturing, cross-linking and retrieving the key data from multiple processing systems, customer data directories, CMS, etc. securely delivering it to a single consolidated database.

VISUALIZATION

A confusing, or even unaesthetic visualization of obtained results may run down to nothing all the efforts to create an efficient BI system. We offer multiple options for data visualization and presentation (charts, diagrams, digital dashboards, scorecards, spreadsheets generation), so that you can make the optimum use of the deployed capabilities and get a clear vision of your division-or company-level performance.

ANALYSIS AND REPORTING

We offer years of experience in building effective Online Analytical Processing (OLAP) systems that are able to filter, sort, analyze and present selected data in various levels of detail - from initial person-based productivity indicators to overall business performance and provide executives and senior managers with comprehensive reports for insightful decision-making. We carefully design specialized analysis models that help business aggregate data according to specific user-defined parameters and deliver comprehensive reports in just seconds! The inbuilt decision engineering module performs real-time analysis and generates action scenarios users can interact with (like forecasting, optimization algorithms, simulations, decision trees, etc.) to foresee the results of decisions.

SQL Server Excellence

Consultancy and support services that enable full potential of SQL infrastructure.

comminus
FOR EVERY STEP OF THE WAY, THERE'S DATA

MICROSOFT SQL SERVER TEAM

Comminus SQL Server consultants and DBAs are available around the clock to ensure a reliable, scalable, and efficient SQL Server production for your business. Our dedicated team of certified experts can help you mitigate improve response times, skill shortages, increase performance and availability while reducing operating costs and risk.

We promote the tradition of our founder (owner of one of the first Microsoft SQL MVP in the world) regarding preserving the technical excellence and the highest standards and competence in the field of data management and primarily Microsoft SQL Server product group.

Microsoft SQL Server team have extensive knowledge in all aspects of monitoring, replication, tuning, upgrading, migrating, auditing, reporting, cloud, and high availability solutions. Our services apply to on-premise, cloud/private cloud and Microsoft Azure-based environments, ensuring the speed, security, and road map of your systems and your data.

Microsoft® SQL Server®

MICROSOFT SQL SERVER SERVICES

During years of work and experience, we defined as a unique set of knowledge, skills and personal preferences into the solution for the complex problems that arise in large databases:

Deployment services
- Microsoft SQL Server database installation, configuration, and setup of 2008 R2, 2012, 2014 and 2016 versions.
- High availability/Disaster recovery (Clustering, Log Shipping and Mirroring)
- Cloud migration
- Upgrades, migrations and replications

Development services
- Data modelling and database design
- Integration Services (SSIS) and general ETL development
- Business Intelligence: SQL Server Analysis Services (SSAS) and SQL Server Reporting Services (SSRS)

Performance and maintenance services
- Advanced troubleshooting
- Performance tuning, capacity planning, T-SQL coding, and optimisation
- Monitoring
- In-memory

Training services
- SQL Server
- SQL Server Integration Services
- SQL Server Analysis services
- Reporting Services

SQL SERVER TUNING

Application
Database
SQL Server
Operating System
Windows Server System
Server Hardware
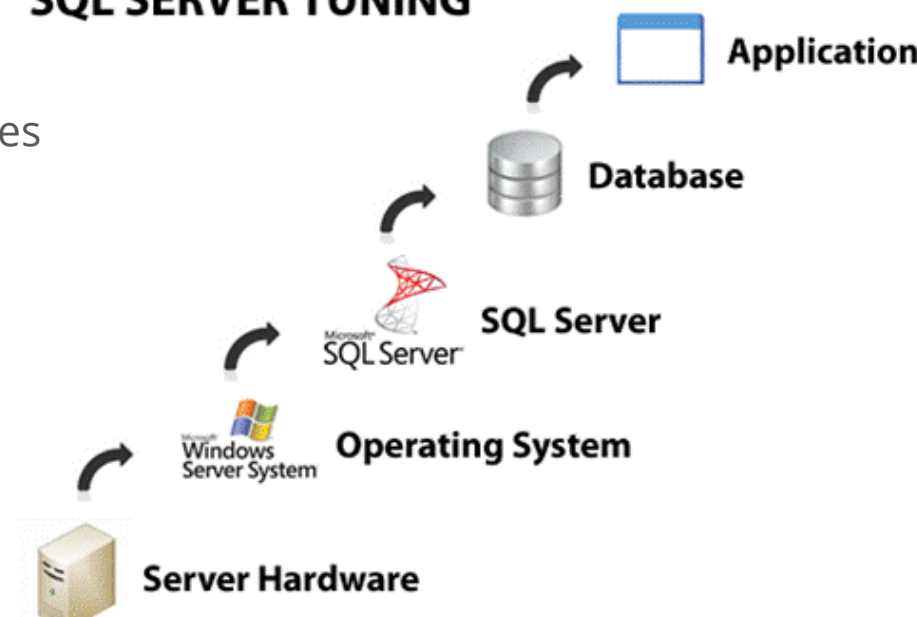
UPGRADES AND MIGRATIONS

Upgrades are the necessary part of any technology system, but they are also one of the riskiest maintenance processes. They can introduce new bugs, performance issues, and cause unexpected downtime. Our database experts performed hundreds of upgrades throughout years. We know how to plan, conduct testing, and iterate migrations to make sure there are no surprises when it comes time to upgrade. Whether you want to upgrade to the latest version of Microsoft SQL Server or move SQL Server, migrate data to SQL Server from another database, out SQL team can help.

IN-MEMORY PERFORMANCE

Microsoft SQL Server offers a stack of in-memory technologies that push the boundaries of performance and take full advantage of today's multi-core, large memory servers. Comminus consultants can help you decide where these features might fit inside your solutions, the best way to deploy them, and technical rules that you need to be aware of.

SQL SERVER HEALTH CHECK

Health check looks at all aspects of your SQL Server environment regarding best practices in the areas of Performance, Configuration, Security, High Availability/Disaster Recovery and the ability of your environment to scale to projected future loads. With each health check, we provide a detailed report of our findings.
You may choose Comminus to fix some or all of the problems found by a health check or may prefer to have your team do the work. In either case, there will be detailed information from a health check to guide the process.

Business Science

Applied Data Science - Because some problems require a data-driven approach and a group of unique minds

comminus
FOR EVERY STEP OF THE WAY, THERE'S DATA

The Data Science Process

Ask an interesting question.

What is the scientific **goal**?
What would you do if you had all the **data**?
What do you want to **predict** or **estimate**?

GET the data.

How were the data **sampled**?
Which data are **relevant**?
Are there **privacy** issues?

EXPLORE the data.

Plot the data.
Are there **anomalies**?
Are there **patterns**?

MODEL the data.

Build a model.
Fit the model.
Validate the model.

Communicate and **visualize** the results.

What did we **learn**?
Do the results make **sense**?
Can we tell a **story**?

Derived from the work of Joe Blitzstein and Hanspeter Pfister, originally created for the Harvard data science course http://cs109.org/.

AUGMENT YOUR KNOWLEDGE

Somewhere in the lakes of data surrounding your company are the insights you need to improve your business.

Doing your business is your forte, understanding data and behavior is ours, and co-operation leads to new heights.

Business Science - a unique combination of business know-how, data science, and behavior analysis created to crack the toughest problems.

ON DEMAND ADVANCED ANALYTICS

Our consultants collect data from offline and online sources, from internal and external locations, and supplement it with 3rd party research when needed to create a tailor made data set needed to solve your specific business problem.

Our team of data and behavior scientist sthen crunch the data and explore numerous options, employing a variety of techniques depending on the project scope and problem area.
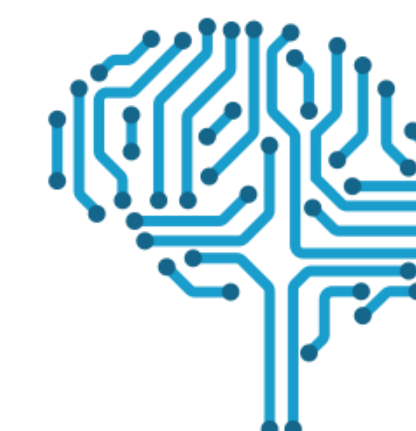
Finally, our experts crystallize the data and relate it to the understanding of your business and brand. Those insights lead to formulating scenarios that you can use to improve your business.
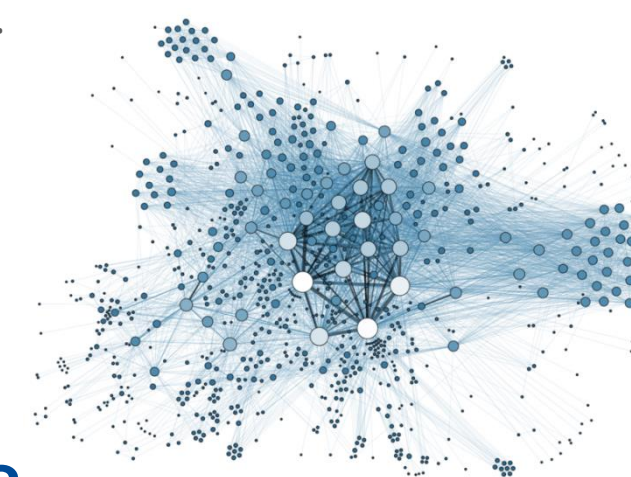

DATA ANALYSIS

Data analysis is a process of inspecting, cleansing, transforming, and modeling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, in different business, science, and social science domains.

BUSINESS SCIENCE NINJAS

Our team is assembled from experts coming from numerous domains like math, physics, psychology, economics, engineering...

They were forged in the fire of Ninja Tasks to ensure their capability of solving even the most complicated conundrum.

Always looking for ways to improve and apply their collective knowledge to help you improve your business.

Show them your problem, provide them the data, and let them work their magic.

MACHINE LEARNING

Within the field of data analytics, machine learning is a method used to devise complex models and algorithms that lend themselves to prediction. These analytical models allow researchers, data scientists, engineers, and analysts to "produce reliable, repeatable decisions and results" and uncover "hidden insights" through learning from historical relationships and trends in the data.
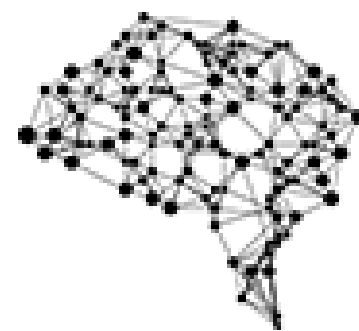
Big Data & IoT

The 'internet of things' (IoT) and 'big data' are two of the most-talked-about technology topics in recent years.

BIG DATA

Even companies that are fully committed to big data, that have defined the business case and are ready to mature beyond the "science project" phase, face a daunting question: how do we make big data work?

The massive hype, and the perplexing range of big data technology options and vendors, makes finding the right answer harder than it needs to be. The goal must be to design and build an underlying big data environment that is low cost and low complexity. That is stable, highly integrated, and scalable enough to move the entire organization toward true data-and-analytics centricity.

Data-and-analytics centricity is a state of being where the power of big data and big data analytics are available to all the parts of the organization that need them. With the underlying infrastructure, data streams and user toolsets required to discover valuable insights, make better decisions and solve actual business problems. That's how big data should work.

THE 5 V's of BIG DATA

Volume
The quantity of generated and stored data. The size of the data determines the value and potential insight- and whether it can actually be considered big data or not.

Variety
The type and nature of the data. This helps people who analyze it to effectively use the resulting insight.
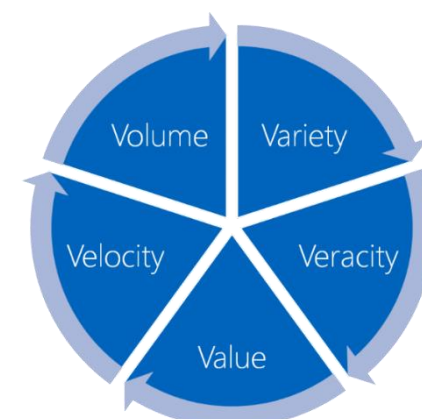
Velocity
In this context, the speed at which the data is generated and processed to meet the demands and challenges that lie in the path of growth and development.

Variability
Inconsistency of the data set can hamper processes to handle and manage it.

Veracity
The quality of captured data can vary greatly, affecting accurate analysis.

So-Lo-Mo

So-Lo-Mo, which stands for Social-Local-Mobile, refers to the integration of social, location-based, and mobile marketing tools into new customer acquisition platforms.

Embracing So-Lo-Mo means you're able to successfully keep up with the latest marketing tools and practices to ensure that you are providing your prospects and customers with the right content anywhere, at anytime!

Technologies and solutions we offer can help implement your digital marketing strategy.
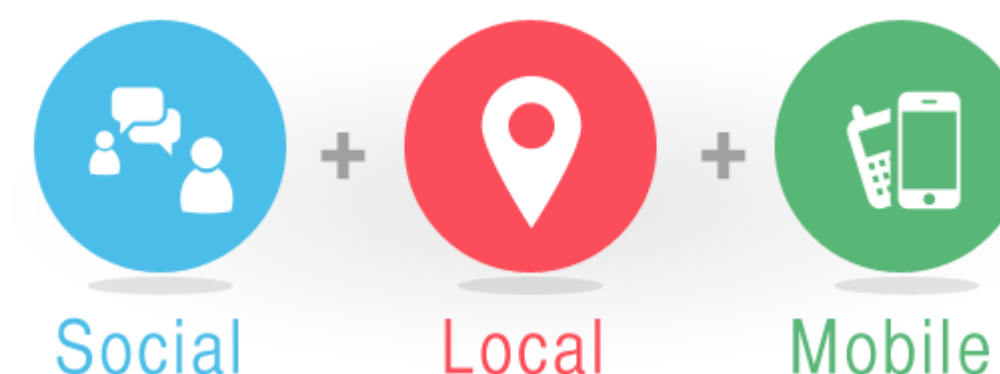
IoT

Enabling communication between devices, people and processes to exchange useful information and knowledge that creates value.

The IoT will massively increase the amount of data available for analysis by all manner of organizations. However, there are significant barriers to overcome before the potential benefits are fully realized.

We can help your company get up to date with available technologies and start creating new value.

Predictive Maintenance

Global leader in design, manufacture and distribution of agricultural solutions. Trough well-known brands (Fendt, Massey Ferguson, Challenger and Valatra) AGCO delivers solutions to farmers worldwide over a full line of tractors, combine harvesters, hay and forage equipment, seeding and tillage implements, grain storage and protein production systems, as well as replacement parts.

CASE STUDY

SUMMARY

Working on a Data Science project analyzing large data-sets collected on AGCO product lines with the aim of reducing business costs and providing additional savings to the company.

The overall goal of the project is implementation of Predictive Maintenance model aiming to save approx. 500kUSD/year as well as implementation of monitoring and reporting tools in the Operational Center.

APPROACH

Approach is based on CRISP-DM methodology covering the following life cycle phases:
* Business understanding
* Dana understanding
* Dana preparation
* Modeling
* Evaluation
* Deployment
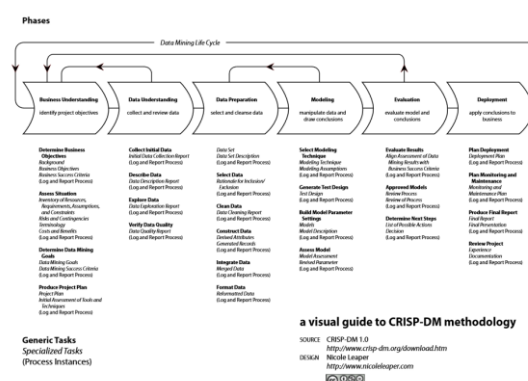
OPPORTUNITY

To keep up with the speed of globalization and growing customer demands for more technology-oriented farm equipment, failure identification is becoming increasingly more complex. Dependency relationships and interactions of components in farm equipment might give rise to some new types of failures that are not considered during the individual failure analysis of that component.

Main issues:
* Difficult to group issues as causal part relation is inconsistently identified in data (long tail)
* Engineering has limited capacity for addressing individual field reported issues
* Key information is stored in a text field in multiple languages supplied by the dealer

EXPLORATION

After initial workshops with AGCO team to understand business processes and main challenges, our team focused on the data exploration.

Data exploration and analysis proved to have relevant information from various sources including telematic, diagnostic, IoT, sales, warranty, service and campaign data. Each of those source challenged us in a unique way from data normalization, accuracy and sparsity to text parsing and processing.

As a very common step in this type of projects, our Data Management team initially focused on cleaning and filtering vast amounts of data provided by the Client, building a small and focused Data Lake that connected datasets from different sources and enabled us to analyze relevant information.

RESULTS

After the initial processes of understanding the problem and available data, we have focused on exploring relationship of specific system parts in order to find causal connections between the individual components and their contribution to impaired functionality.

Great deal of mechanical and electronical knowledge was assimilated especially in sensory (type, interval precision) and ECU (versioning issues, control over the actuator's, fault code mechanism etc).

Different models were applied while testing different hypothesis to create relevant prediction model. Finally, consuming data for 2 machine types, 4 brands, 16 different models and total of more than 4000 units, for a period of 3 years, model proved above 75% efficiency in detecting sliding windows of possible component failure. This research brought great advancement to supply chain management, in house research & development, as well as sales and warranty department.
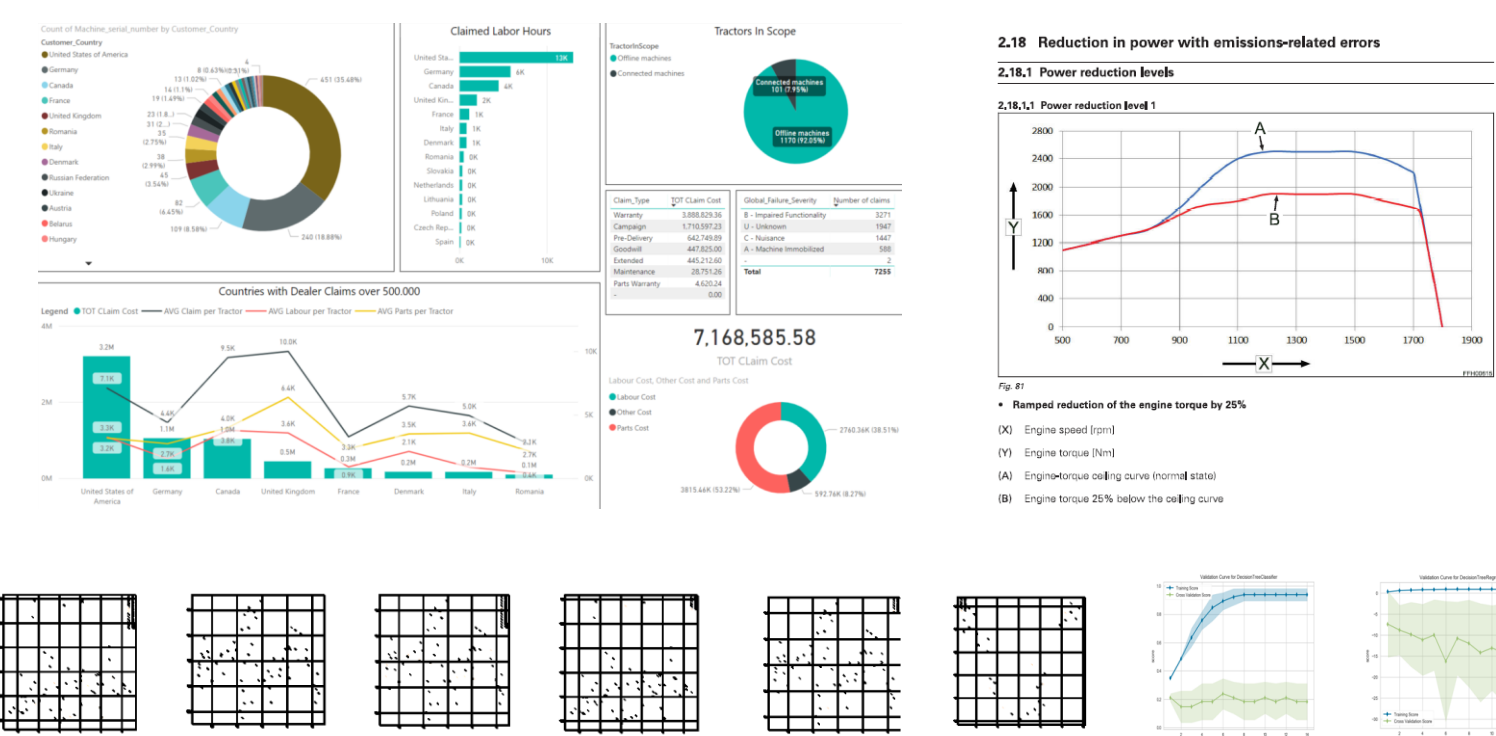
Recommender System

Using advanced ML algorithms you can provide your users with personalized information by learning the user's interests from traces of interaction.

Recommender Approaches

Model Based
Training SVM,
LDA, SVD for
implicit features

Collaborative
Filtering – Item-
Item similarity

(You like Godfather
so you will like
Scarface - *Netflix*)

Attribute-based
recommendations
(You like action
movies, starring
Clint Eastwood, you
might like "Good,
Bad and the Ugly"
Netflix)

Social+Interest
Graph Based (Your
friends like Lady
Gaga so you will
like Lady Gaga,
PYMK – *Facebook*,
LinkedIn)

Collaborative
Filtering – User-
User Similarity

(People like you
who bought beer
also bought
diapers - *Target*)

Item
Hierarchy

(You bought
Printer you
will also need
ink - *BestBuy*)
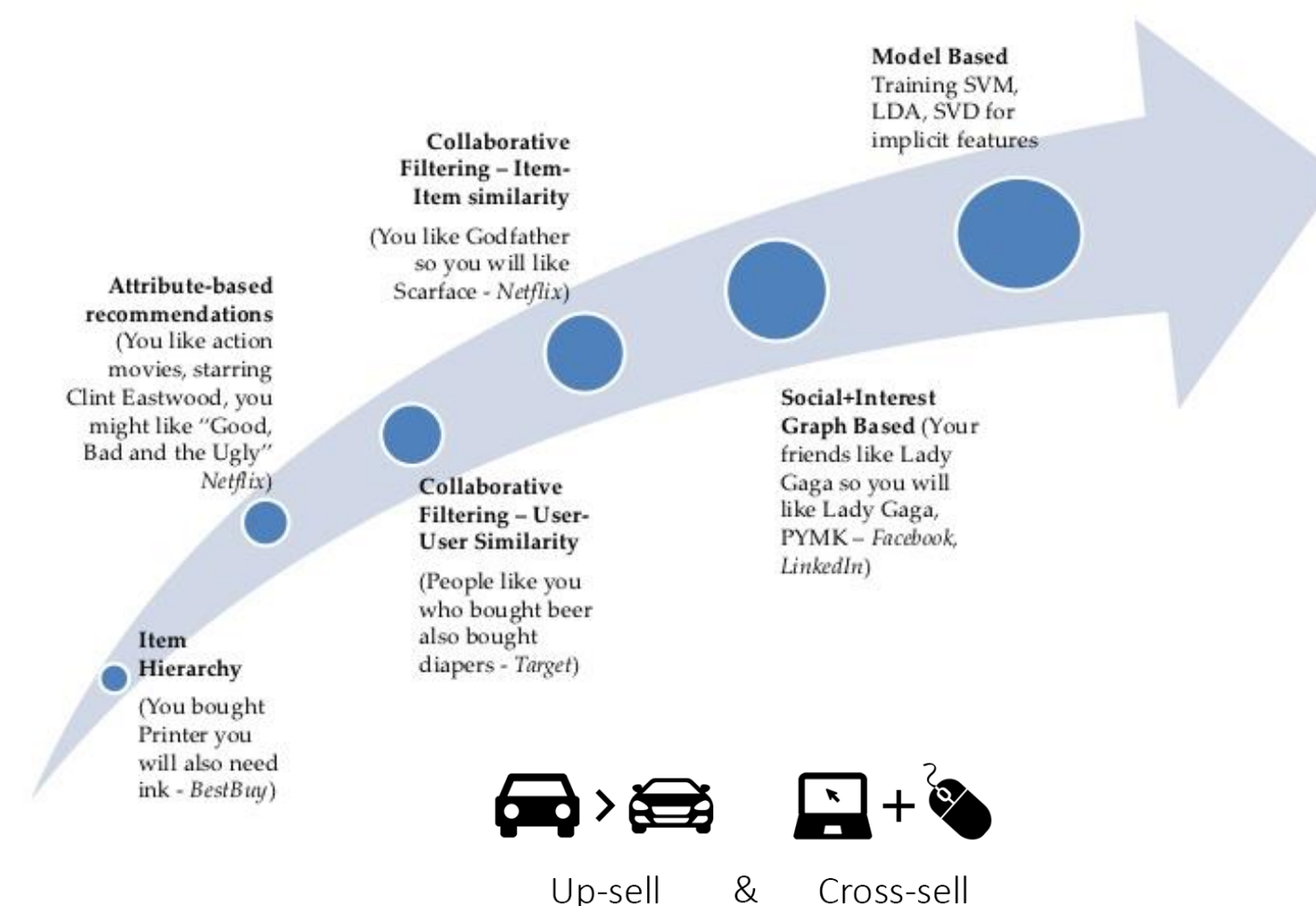
Up-sell & Cross-sell

RECOMMENDER SYSTEM

Recommender systems typically produce a list of recommendations in one of two ways – through collaborative and content-based filtering or the personality-based approach.

Collaborative filtering approaches building a model from a user's past behavior (items previously purchased or selected and/or numerical ratings given to those items) as well as similar decisions made by other users. This model is then used to predict items (or ratings for items) that the user may have an interest in.

Content-based filtering approaches utilize a series of discrete characteristics of an item in order to recommend additional items with similar properties.
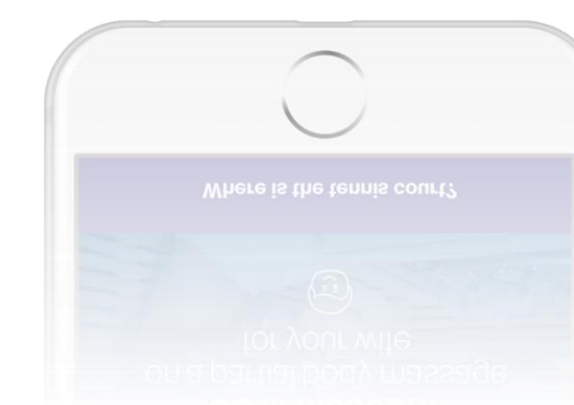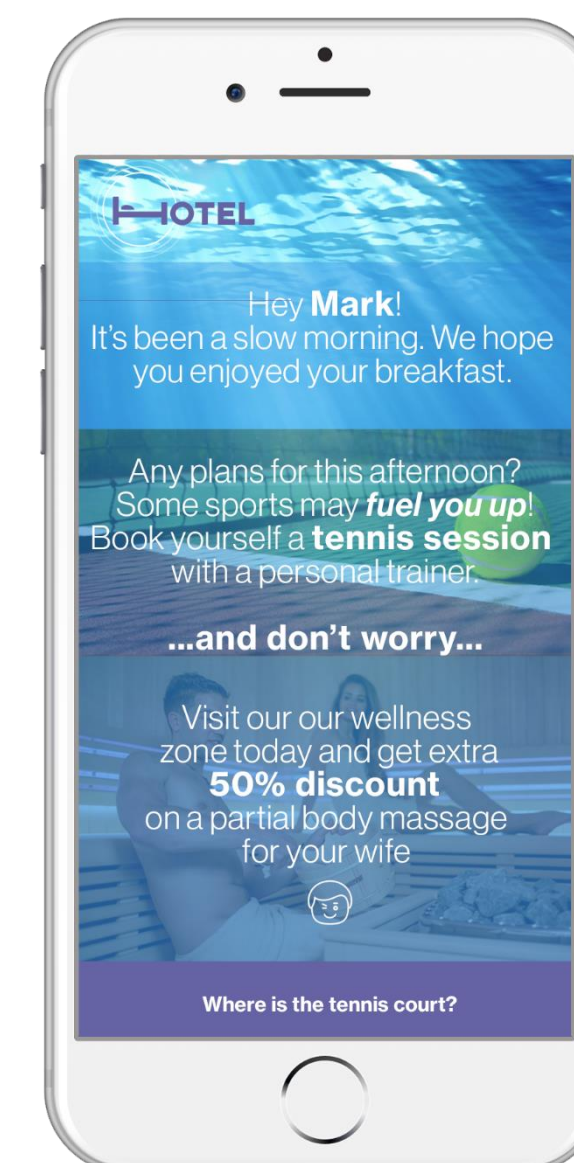
CONTENT BASED FILTERING

Content-based filtering, also referred to as cognitive filtering, recommends items based on a comparison between the content of the items and a user profile. The content of each item is represented as a set of descriptors or terms, typically the words that occur in a document. The user profile is represented with the same terms and built up by analyzing the content of items which have been seen by the user.

COLLABORATIVE FILTERING

Collaborative filtering, also referred to as social filtering, filters information by using the recommendations of other people. It is based on the idea that people who agreed in their evaluation of certain items in the past are likely to agree again in the future. A person who wants to see a movie for example, might ask for recommendations from friends. The recommendations of some friends who have similar interests are trusted more than recommendations from others. This information is used in the decision on which movie to see.

HOTEL

Hey **Mark**!
It's been a slow morning. We hope you enjoyed your breakfast.

Any plans for this afternoon? Some sports may *fuel you up*! Book yourself a **tennis session** with a personal trainer

...and don't worry...

Visit our our wellness zone today and get extra **50% discount** on a partial body massage for your wife

Where is the tennis court?

OMNICHANNEL APPROACH

Using advanced ML algorithms our team can help you define recommendation strategy and provide your users with personalized offers:
- repeated buying of a product - **„You didn't buy your vitamins this month? Do you need a new pack?"**
- similar buyers and similar habits - **„Here is your ovulation test. Would you like folic acid?"**
- product target group - **„Would you also like a digital thermometer for kids?"**

The personalized offer can be distributed to your users via any available communication channel like PoS, e-mail campaign, web shop, mobile app, etc.

Thank you

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