

For your business expansion:

Successfully automating decisions – leveraging the potential of AI and expert knowledge more effectively





Digital decisioning platforms allow application developers to combine the knowledge and decision-making logic of experts with artificial intelligence, so as to create applications that can make automated digital decisions. This is made possible by techniques and functions that experts can use to transfer their decision-making paths and logic to the platform and to enhance them with data-driven AI technologies, such as machine learning.

## What makes decision platforms attractive

### **DIGITAL PROCESSES ALSO REQUIRE DIGITAL DECISIONS**

Many aspects of our world are being digitized at ever-increasing speed and to an ever-greater extent. Any decisions involved along the way must also be made digitally. These are often about pricing, supply chains, logistics, loan approvals and a great many other things – decisions that humans can no longer make consistently in a short time.

## AI QUICKENS SIMPLE BUSINESS-RULES SYSTEMS

Companies have long used business-rules systems to map and use experts' decisions in applications. Nowadays though, that is no longer enough. With the aid of artificial intelligence and data-driven machine-learning models, far more decisions can be digitized and accelerated than is possible with purely rule-based systems.

## UTILISING THE BEST OF BOTH THE HUMAN AND THE MACHINE

Humans are intelligent, as are computers – albeit in very different ways. The brilliant thing about digital decisioning platforms is that they give professional application developers techniques for pouring knowledge and skills from both worlds into applications that are important to their own business.

## What makes digital decisions stand out

What is the reason why some companies do better than others? Why do some overcome difficult situations better than others? Moreover, why is it that some become global market leaders and others do not? Naturally, you have already guessed the answer: It is the decisions. They must be made promptly – and of course they must be successful.

However, it is not just a matter of deciding on prices, which products and services make sense, and how best to help customers. Often, it is also a question of how efficiently and quickly decisions can be made and implemented – at strategic, operational and customer levels.

Humans are second to none when it comes to tactical and strategic decisions. But in business applications, many operational decisions have to be made in a short time. When this is done in a fully automated way with the aid of an application, we call them *digital decisions*.



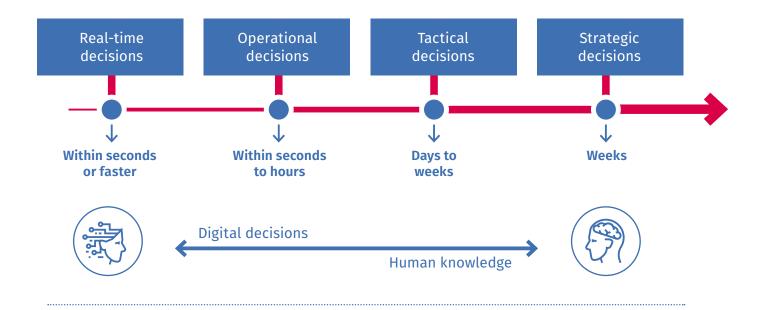
This means business decision-making logic, defined by experts, enriched with analytical data and embedded in applications to continually make operational and customer-generated decisions in real time, thus identifying a pattern, making a choice, starting a process, ensuring regulatory compliance or triggering an event.



## Humans and machines both have their advantages, depending on the type of decision:

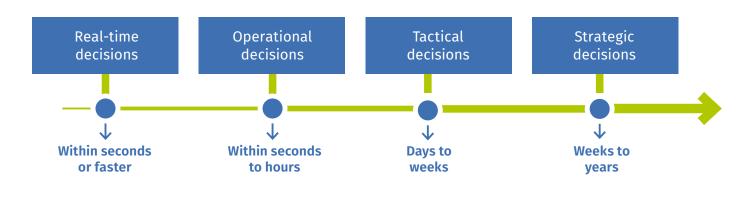
## A: FREQUENCY OF THE DECISION

Looking at frequency, *how often* certain decisions have to be made, it quickly becomes evident that operational and real-time decisions often need to be made every second, which is hardly compatible with human ways of working.



## B: TIME FOR A DECISION

Also, if the yardstick is the *time* taken to *make* a decision, it becomes apparent that ultimately only tactical and strategic decisions are made by experts.





Digital decisions are thus predestined to be frequent quick decisions, for instance when many customers apply for a loan on a website, or if goods deliveries have to be balanced out for hundreds of branches.





## Typical use cases for digital decisions

There are more use cases for digital decisions in operational business than is often assumed. Here are a few examples:



## **CHECKING A FACT**

Do wages and overtime arrangements for new staff comply with government and collectively agreed regulations?



## **EVALUATING STATUS, CONDITIONS OR PATTERNS**

A web shop sends a user an email reminder after a few days because there are still products in their shopping cart that they have not yet purchased.



## **MAKING A CHOICE BASED ON KNOWLEDGE**

HR software uses data to decide whether an employee has been absent due to sickness or leave and logs this accordingly.



## TRIGGERING A WORK PROCESS

A query causes banking software to assess an online loan application.



## **COMPLYING WITH LEGAL REQUIREMENTS**

Insurance software assesses coverage of a medical treatment's costs on the basis of previous cases of illness and treatment.



## **RESPONDING TO A CUSTOMER'S ACTION**

Unsubscribing from an email newsletter generates a survey page to determine the reasons for unsubscribing.



### **OFFERING HELP**

When a user spends a long time on a web page, a dialogue window opens, so they can talk to



# Why in-house software development is not the solution

Packaging and executing business processes and decisions within applications is a matter of routine in every company. When firms develop software for their purposes and subsequently make productive use of it, this goes through the typical software-development cycle: The challenges are identified, the logic behind them is extracted, this in turn is formulated as product requirements, then the whole thing is programmed, tested and delivered. Most business processes and automated decisions are implemented in such a manner. But this has several disadvantages:

## **EXPENSIVE DEVELOPMENT AND TIME-CONSUMING ADJUSTMENT**

Even with the agile approaches that are now common, software development is expensive. To get from the idea to the implementation, you need business analysts, software architects, project managers, scrum masters, developers, testers and DevOps people.

The same applies when it comes to making changes later: You have to analyse the whole software application and ultimately repeat the software-development cycle just described. And this can happen relatively often if you work in a field like the medical or financial services industries, for example, where regulations change frequently at the federal or state level.

## LACK OF DATA ANALYTICS AND ARTIFICIAL INTELLIGENCE

Most business-rules systems model the specifications for how human experts would decide on the basis of the respective business decision's given conditions. This works well for simple rules systems and if-then cases. However, humans have difficulty extracting rules and knowledge from thousands or millions of individual pieces of information. The analytics department can handle this (as can AI systems) but is often not connected with the relevant specialist departments and only rarely involved in rule-based solution development.

An example: A production line manager would set a certain temperature limit as a rule-based trigger, shutting down the production equipment when this is exceeded, so as to then search for the cause. An AI application that continually evaluates the production equipment's data via machine learning would let it continue to run, even at higher temperatures, as long as there are no signs of malfunction (such as increased vibrations).

# Digital decisioning platforms combine AI and human knowledge

Agile companies regularly review their market situation and products, in order to pick up on new customer demands, to seize opportunities that others miss and to react quickly, even in chaotic times (during a pandemic, for instance). They are always able to innovatively and strategically realign themselves, to optimize their business processes, and to implement changes quickly and frequently.

Of course, this does not work if companies have to go through a complete software-development life cycle (SDLC) for every change to business processes. They achieve it by using digital decisioning platforms (DDPs). These make it easy to digitize rule-based processes, integrating both human expert knowledge and artificial intelligence. They also increase the opportunities to utilize the company's knowledge in business applications.





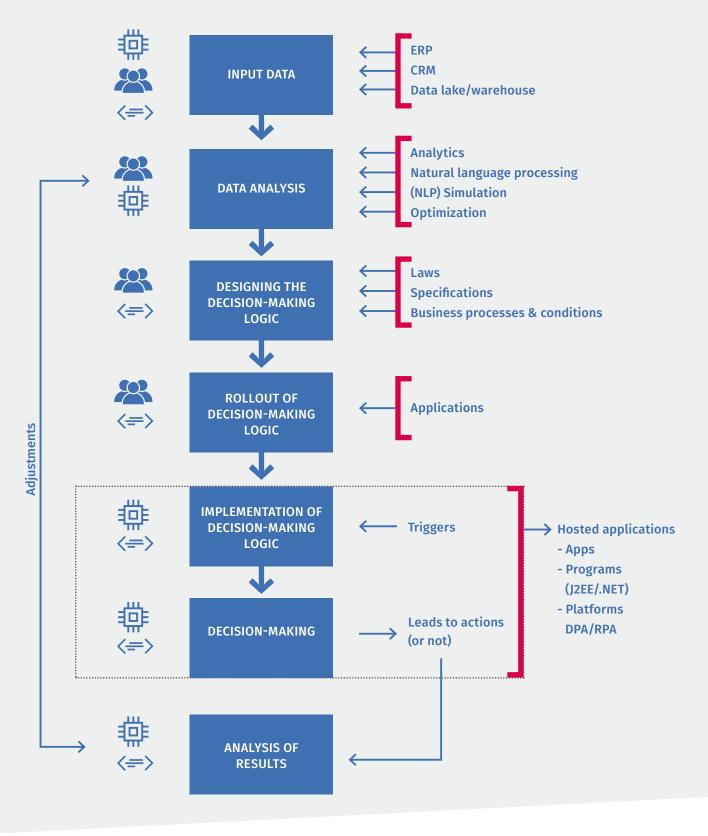
A digital decisioning platform is characterized by its ability to provide application developers and business users with tools for quick and easy implementation of decision-making logic, making use of possibilities for advanced analysis, along with AI and machine-learning technology. It can be utilized in a wide range of business applications, mapping the complete decision-making-logic life cycle – from the idea to the implementation and through to feedback loops, so as to keep improving the rule set.

### WHAT MAKES DIGITAL DECISIONING PLATFORMS SO SPECIAL:



- **They use new technologies to improve human decisions.** Humans are good at making decisions, even when the data is unclear, but they do also make mistakes. Decision-making logic can become much smarter if it incorporates analytics and artificial intelligence. DDPs provide the tools with which to easily make use of analysis results, machine learning and mathematical optimization.
- ModelOps allows easy rollout and monitoring of decisions in a production operation. A digital decisioning platform stores and manages all decision-making logic at one central location. This makes it easy to review and change all digital decisions, because creation, collaboration, versioning, testing and debugging happen at one place. Taking a ModelOps approach, specialised experts can constantly review and easily adjust the effectiveness of decision-making models.
- Automatic optimization of decisions via feedback loops. Whenever the world changes, decisions must be adapted. DDPs can monitor customer feedback or the success of measures taken and adjust the decision-making logic if decisions are no longer being made as effectively as before, or as desired. This can occur on the basis of user ratings or via a machine-learning model that determines which content assets in an email campaign work better under certain circumstances.
- They provide the decision-making logic for a multitude of business applications. Business applications are coded directly (for instance with J2EE or .NET) or built using low-code, RPA or DPA. Application developers can transfer decision-making logic to DDPs and, either via interfaces or direct integration, use advanced analytics and AI technologies in their applications. Decisions thus remain consistent across a multitude of applications, yet can be adapted and improved with ease.





LEGEND:





**⟨=**⟩ Program code

This chart shows the process from initial data transfer to automated decision-making and feedback for process optimisation in modern decisioning platforms with connected host applications.



# Specialised technology makes DDPs even better

Despite their importance, digital decisioning platforms (DDPs) ultimately only constitute a fraction of the technologies that enable knowledge-based business decisions to be made. Accordingly, they must have the ability to integrate other technologies, so as to make optimal decisions. In logistics, for example, both an ML model and human decisions can be used in the redistribution of goods...

## Overall, there are three different roles for the integration of special technology:

Data preparation and transfer: The transfer of structured and non-structured data to the decisioning platform is only the first step, albeit an important one, towards being able to make decisions. Some platforms have extensive functions that were implemented for this purpose. However, you cannot cover all conceivable cases in this way. Application developers must also be able to connect data-pipeline and stream-process platforms, for instance, because many companies already use them for tasks, such as the evaluation and preparation of website clickstream data or the filtering of IoT data. In the case of unstructured data like text or audio speech, platforms that process natural language can enrich the raw data with meta-information, then transfer it to the DDP. While most platforms also physically pass the data on to the digital decisioning platform, data virtualization platforms can do the preparation work even without data transfer.

**Decision optimization:** A generalist, no matter how good, can rarely keep up with a specialist in special cases. Even though, in recent years, digital decisioning platforms have implemented many functions in the fields of machine learning, mathematical optimization, simulation and predictive analysis, there are cases where a special application is easier to handle or delivers better results. For instance, a data scientist can calculate a numerical optimization with an application programmed for this purpose and use the result on the DDP.

**Decision analysis:** Analysis platforms can be used for more than just data preparation and decision optimization. Analysis specialists also use them in operational contexts to statistically evaluate the decisions made and to check their effectiveness. Companies also like to use streaming analysis platforms for this purpose. In addition, they can use tactical analyses to check whether too many decisions are leading to a decline in insurance claims, whether decisions bring a risk of regulatory intervention and whether the decision-making logic needs to be adjusted.

# Appropriate starting points for digital decisions

Digital decisioning platforms bring together the best of human logic, advanced analytics and AI to make the best possible digital decisions – which every single company makes dozens, hundreds and sometimes thousands of times a day. This cannot be done without governance, agility, feedback loops, intelligence and widespread implementation. Digital decisioning platforms can enable your company to make Al-supported, human-driven decisions in many areas.



## Business managers should begin as follows:

Draw up a list of digital decisions with high ROI potential. Take note of all applications that make digital decisions. Then ask yourself how complex the underlying logic is, how often you change it and how often you have to copy this logic in other places. Would you obtain higher quality and flexibility if this did not have to be done by a professional programmer? Next, make a list of the most complex logic-based decisions that are changed frequently and copied many times, increasing the time-to-market. These are the top candidates for implementation on a digital decisioning platform.

Focus on the decisions: Decisions are the decisive factor behind business success. Instead of starting with the data, analysis or programming, you should focus on digital decisions, such that large teams of professional specialists, developers and data scientists concentrate on uses of AI with high ROI potential. In the second step, this team determines what combination of human expertise, AI technologies and other complex analyses they can use to make the best possible digital decision.

**Stop the programming nonsense:** Currently, most digital decisions are cast in program code, often in Java. .NET or even Cobol. When converted into code, the underlying decision-making logic often gets forgotten. Frequently, these code fragments are copied many times over, such that adjustment becomes difficult, error-prone and slow (even in agile environments). Development managers should therefore identify the program code in existing and new applications that represents decisions, then transfer it to a digital decisioning platform.

Seek fast digital decisions in a targeted way: Digital decision-making can seem complex at first glance because it requires many different team members to work together. However, a single intelligent automated decision can be worth millions in terms of customer acquisition, customer retention and operational efficiency. For instance, by combining decisions with an AI model for predicting loss of customers, a company can take measures in good time, in order to prevent a negative trend. The company management can also assess the use of digital decision-making systems by filtering out decisions that have a particular impact on profit.

Change the mindset of the data analysts: Leading companies that want to make better use of their in-house knowledge often already employ a Chief Data Officer (CDO), who is tasked with moving the business forwards by pushing data analysis and making its results usable at management level. In the best case, such evaluations consistently improve frequently applied operational decisions, both internally and with regard to customers. CDOs who concentrate on lucrative knowledge-driven use cases can make digital decisioning platforms a key mechanism for adding value to projects that involve data and analysis.



# Do you need support?

Actico specialises in the integration of digital decisioning platforms into existing corporate IT infrastructures, as well as the incorporation of artificial intelligence and machine learning. We advise global corporations and medium-sized companies alike, on how they can make their decision-making processes and applications more agile and effective, in order to stay that decisive step ahead of the competition.

Would you like to realign your business and react more quickly to market changes? Then get in touch with us:

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