

Make room for innovation with low-code and the power of business rules

Finally put an end to uncontrollable IT

Explore new possibilities

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To increase support for both internal and external customers, IT managers usually opt for one of two standard scenarios: either reduce the complexity of the IT landscape and standardize back-end systems or leave the current core systems in place for as long as possible for fear of something going haywire.

The lack of flexibility that arises in the workplace in both cases is eliminated with task-oriented apps. The problem is, the more apps of this type are added at the front, the more difficult it is to integrate them at the back with the systems of record.

However, there is a way to add intelligence and integration power to back-end applications relatively quickly and cost-effectively, or to rebuild back-end applications. The solution is the combination of low-code and business rules.



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Low-code for the back-end

An increasing number of IT managers are embracing low-code to develop front-end applications. However, they usually aren't aware that this technology can also provide added value on the back-end by allowing users to build new systems and use investments in (legacy) software for much longer. It goes without saying that this ensures a decrease in complexity and delivers scalability and flexibility in the back-end.

> **There is a way to not only quickly and cost-efficiently add intelligence and integration power to back-end applications, but also to rebuild back-end applications: the combination of low-code and business rules.**

Business rules provide a single point of definition

This is possible by taking business rules as a starting point and automating them with low-code. This approach offers two advantages. From a business perspective, business rules are the beginning and end of everything you do in every company. These are the rules and conditions that you apply and that are written in the language of the business. From a technical perspective, a business-rules approach means you need only change a single business rule to implement a change across the company – a single point of definition. You no longer have to think in terms of processes and connecting workflows. This makes the software more stable and flexible over a more extended period. This way, business rules reduce complexity and strengthen manageability.

Rebuild or an intelligent shell?

With business rules, you can completely (re)build existing back-end applications. But you can also develop an add-on for your current system. And you can even put an intelligent shell over the different back-end systems. Behind the scenes, the actions that are required to start and complete a process take place. In this ebook, we describe how this works.

> **With business rules, you can completely (re)build existing back-end applications, develop an add-on for an existing system or superimpose an intelligent shell on the different back-end systems.**



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The Act-Now economy: what do customers expect from you?

1

As consumers, we have become very spoiled in recent years because systems have started to think for us. Is your flight delayed, and does that mean the transfer time for your next flight becomes very short? Before you've even realized it, you've already received a message from your airline about the procedure at the airport you will arrive at.

> **How many companies are automatically and proactively notified by their suppliers that a delivery has been delayed? And how many suppliers are looking for an alternative for that customer?**

Do you want to order a product from a webshop that's no longer in stock? Before you've even thought about an alternative, three options will appear on your screen. Do you want to order a new washing machine for your elderly mother? Before you have a chance to discuss it with your brother who will connect it, the webshop asks if you want to use their installation service.

We call this the "Act-Now economy". In such an Act-Now world, companies offer a personalized experience that is tailored to the needs of their customer at that very moment in time. It's the business model that has allowed companies such as Amazon and Spotify to grow into the large businesses they are today.

A personalized experience, tailored to the needs of the moment

You come to expect this personalized experience at work, too. Both in your role as an employee and as a user of business products. However, this isn't exactly a trend. Older business software, in particular, can't provide users with proactive advice. Most workplaces use different software packages, so data is fragmented and users have to switch between systems many times each day. Whether or not certain manual entry work has been automated also depends on the product. The same goes for how a company has organized its processes so that you can respond quickly, directly and personally to customers.

Our experiences at work are quite far from the convenience that we have become accustomed to as a consumer. In the relationship between B2B customers and suppliers, in general, personalized customer experiences are usually lacking. How many companies are automatically and proactively notified by their suppliers that a delivery has been delayed? And how many suppliers are looking for an alternative for that customer?
It is not that companies intentionally make it difficult for their employees or customers. Instead, they fail to remove the barriers that older IT systems create. And that's unfortunate because they unconsciously and unnecessarily damage both employee and customer satisfaction.



Uncontrollable IT: three causes and consequences

2

Why is it that IT is often uncontrollable? Because as soon as we understand why, we can often identify a solution. We can pinpoint three causes of uncontrollable IT.

1. Processes change faster than IT can keep up

Nowadays, business processes change faster than back-end systems can keep up with. Markets are changing much quicker today than they were twenty years ago. Whether you look at banks, wholesalers, or the manufacturing industry, customers demand more speed and flexibility. Companies are responding to this with new business models – business models that are not well supported by, for example, legacy systems. To make the new processes feasible, apps are glued to the front. Although these apps create an excellent facade, they often do not or hardly integrate with the back-end systems. As a result, many manual operations have to take place, and both the processes and IT at the back-end become very complex. This leads to errors, rework and poor insight into the status of processes. Moreover, it has quite an impact on data quality. Many businesses believe that data is the gold of their company, but its value has gone unnoticed for so long that it will soon be worth little more than scrap iron.

Companies think that data is the gold of their company, but its decreasing value goes unnoticed. If this continues, that data will soon be worth little more than scrap iron.

We haven't even talked about the nuisance caused among employees who have to deal with daily rework and numerous inefficiencies due to errors. These nuisances are further intensified by the fact that management introduces all kinds of controls to prevent errors. This creates a whole bureaucracy that makes processes slow and cumbersome. While the goal of many new business models was once to increase customer interaction, employees are now only concerned with running the internal bureaucracy. And although the initial desire was to shorten lead times to the customer, the lead time is now only getting longer. This incurs high costs without people noticing.

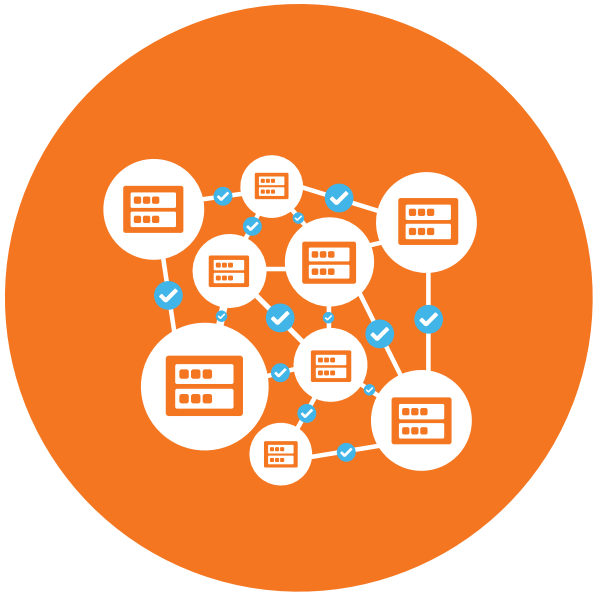




2. IT systems are islands that do not interact

An end-to-end process consists of many steps that are handled by different departments and in different back-end systems. This is only increasing in today's Act-Now economy. The systems are hardly ever connected or only in a limited manner. The transfer from one department to another usually happens via email, along with all the associated consequences for data quality and integrity. This leads to the same problems as poor integration between front-end apps and back-end systems: a lot of manual work, a high chance of error, long response times and poor insight into the status of processes.





Onboarding and e-commerce: sub-processes create complexity

An example of inefficiency due to systems that do not interact is the onboarding of a new employee. A process started by HR that sets many sub-processes in different departments in motion: a desk must be arranged, an access pass must be made, a laptop and telephone ordered, an email address must be created. This is all manual work that can be automated easily.

Another example is the delivery of e-commerce orders ordered today before 20:00 and delivered tomorrow. Because systems aren't linked, only the delivery time is considered and not the most optimal conditions of delivery, such as travel time, driver behavior, the correct order of the delivery addresses and the intelligent combination of delivery and collection locations.

3. Changing a process recorded in an IT system is very difficult

Within one system—for example, ERP—the cause-effect chain is fully automated. This removes the drawbacks mentioned above but introduces another problem: because there are dependencies between the different process steps, a change in one process part has consequences for all underlying follow-up steps. The entire cause-effect chain must then be adapted. This means that a small change can lead to a significant system modification. These changes often also have an impact on the connections that have been set up with other systems. Before you know it, you are going to mess up a lot.

For this reason, many companies don't implement a change in system technology and bother employees with point solutions and workarounds. As processes run across multiple systems and the number of solutions to overcome problems increases, the challenges grow exponentially.



No more time for real innovation

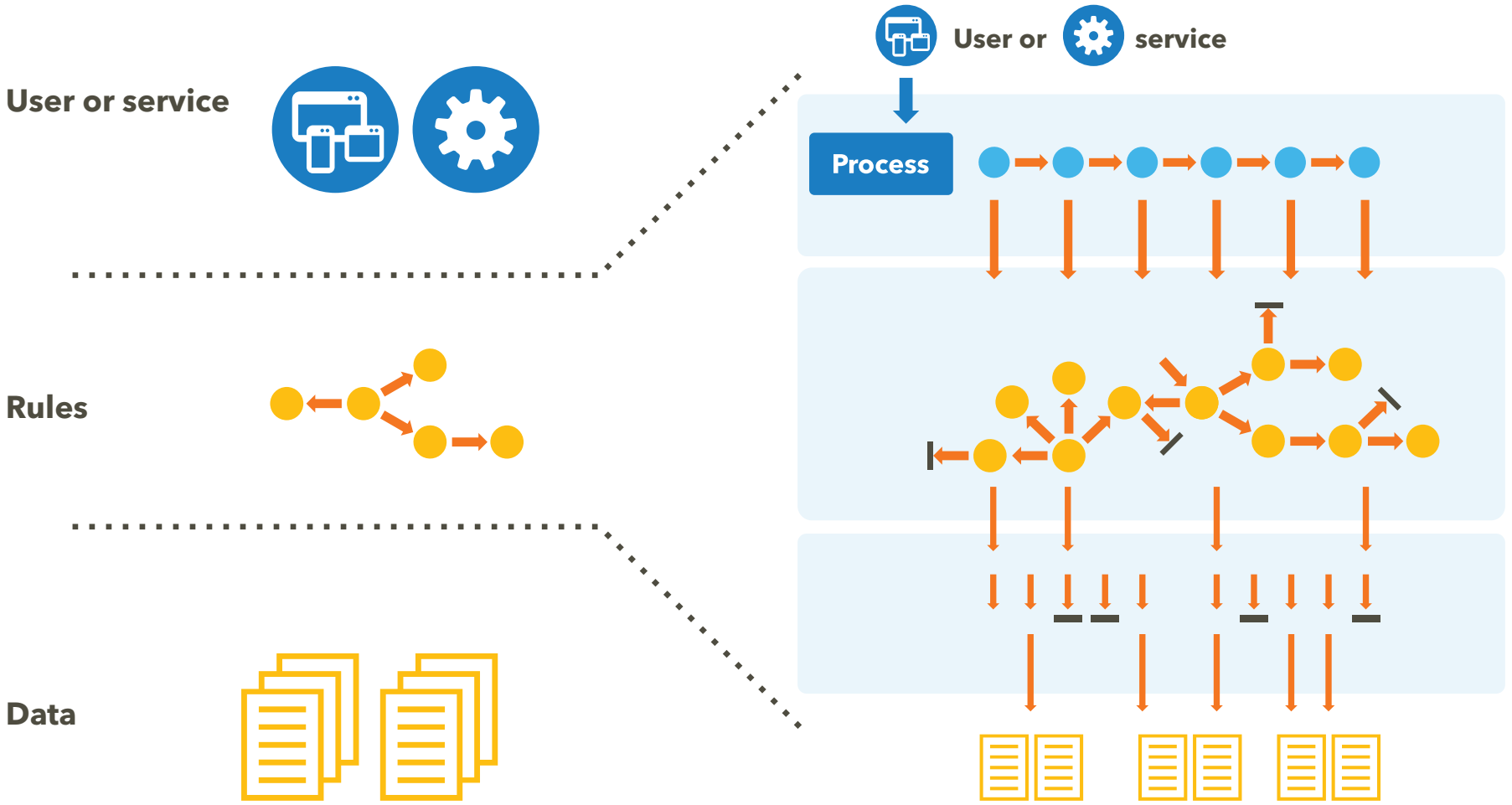
Of course, IT departments are trying to put an end to this. That's why they come up with all kinds of task-oriented apps that bypass the complexity of back-end systems. That's great, but how do you keep track of all those different apps? Sometimes you can link them to the back-end systems with a relatively simple business API. But that means you have to maintain a lot of APIs. How do you arrange governance? How do you ensure, for example, that all those apps keep up with rapidly changing laws and regulations?

Moreover, you can act quickly through those front-end, low-code apps, but this doesn't change how the back-end is organized. Ultimately, the challenges at the back-end are only getting worse, especially in the longer term.

IT departments are already dealing with scarce resources. Before you know it, they are kept busy ensuring the complex landscape continues to work and there is no time for real innovation. By applying low-code using a 'back-end-first' approach, laying a rock-solid foundation, you reduce pressure on the IT department and create time for more innovation.

> **Front-end low-code apps allow you to act quickly, but this doesn't change anything on the back. By applying low-code from a "back-end first" approach, laying a rock-solid foundation, you create time for more innovation.**

The USoft business rules approach





What does a business rules-oriented approach look like?

3

As we've just seen, processes have many dependencies. If you change one step in a process, it will lead to changes in many others. So, to make a small process change, quite often, a lot must be adjusted in the IT system. Is there a way to leave the back-end systems undisturbed and still make changes? Yes. By starting with business rules.

You can rebuild an application from scratch with business rules. You can also build the business rules as a kind of add-on for an existing system or shell over multiple systems. Next, the business rules talk to the underlying systems and ensure that an event is handled correctly.

Is there a way to leave the back-end systems untouched and still make changes? Yes. By starting with business rules.

Processes are about the how, business rules are about the what

Business rules are the rules of the organization. These are rules that underlie every process but aren't usually mentioned explicitly. A process revolves around the how question: which steps do we take in which order to complete a process from A to Z? Business rules are about the what: what should be done? Which criteria should be applied? And what policies apply to it? Business rules focus on the value you want to create, while a process is about implementing those rules and how to get there. And we all know how often the order of a process is adjusted while the base, the value that is built up, remains the same.

Business rules as an add-on to the existing system

Back-end systems are built to implement rules and agreements. That's great. You already own the software. You just want to make it more flexible and intelligent.

You add flexibility by automating the "game rules" of your company – the business rules. That way, you only have to adjust a business rule and the process behind it will automatically change.

The processes are controlled from a newly developed software layer that encapsulates your existing back-end system. You start with the steps where you, as an organization, generate the most profit. This can be innovation on the business side, but also the rationalization of IT so that more time is available for innovation. Often, the first step is a very simple add-on on a single system. Over time, you develop this into a more extensive layer that spans multiple systems.

Subprocesses are a thing of the past

When onboarding a new employee, the business rules check which criteria an employee meets. Are they entitled to a laptop, a telephone, a lease car, for example? It then automatically initiates the associated processes. The system monitors progress and intervenes in case of disturbances based on pre-set rules. If there is already so much to gain in these kinds of standard processes, imagine what gains you could make in your company's core business.

Add-on adds intelligence

In addition to flexibility, this add-on or shell also adds intelligence. For example, if the cleaners were not entitled to a phone in the past, but the plan is to have them work with a cleaning app that suddenly puts this group of employees under the Bring Your Own Device (BYOD) policy, you change the business rule that determines which job groups are entitled to which assets. By merely indicating in the business rules that cleaners will now receive a company telephone, nobody will have to remember to order that telephone. There is no need to send an email from HR to Purchasing and IT because this event has already been fully automated in their systems.

> **Business rules focus on the value you want to create, while a process is about implementing those rules and how to get there.**

Rebuild back-end systems

It is also possible to rebuild an existing application based on business rules. USoft has rebuilt an existing application for Schiphol airport doing just this. The existing specifications were used, which were supplied in an extensive document and a giant Excel sheet. From this, we distilled all business rules, resulting in a document of only three and a half pages. This resulted in a significantly simpler application, as well as a better understanding of the business and more transparent discussions about why certain business rules are used.

Condition: make business rules explicit

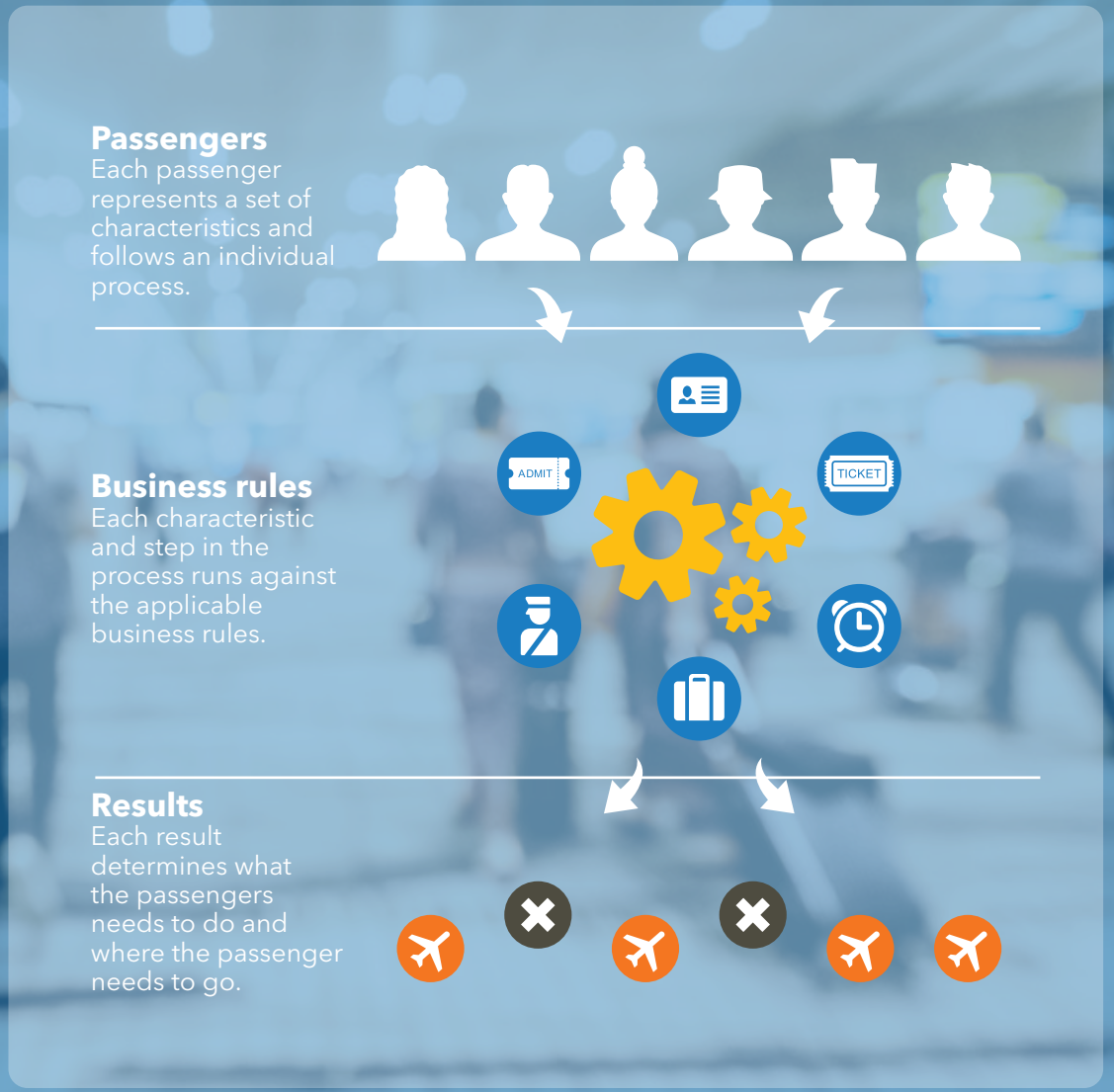
You may wonder: if business rules are based on value creation, why haven't we been using them to automate processes for much longer? This is because business rules are often implicit. They are often partly recorded or not at all, or implicitly included in a work instruction and certainly not in a central location. Consider, for example, the rules of the GDPR. Employees receive training on which customer information they can and can't share with other departments under this Act. At best, the protocols can be adapted, which can be found somewhere on the intranet. But the applications that employees work with are not adjusted. As a result, they aren't supported by software in the implementation of new business rules and they can very quickly accidentally forward information that they shouldn't have shared.

A business rules-based approach naturally requires that you make the business rules explicit. And with that, the lion's share of the work is done. Because with low-code, automating those business rules is a piece of cake. The significant advantage of such an approach is that business and IT work together. As a result, IT understands better why the business chooses certain business rules and understands exactly how an application works.

Easily adjust business rules for Brexit

Let's take aviation as an example. Several universal rules determine whether or not a passenger can board an aircraft. A passenger must carry a valid ticket and ID, check-in on time, drop off their luggage and pass security and customs before boarding. If one of these criteria is not met, a person can't travel.

Although the processes and the underlying IT systems differ per airport, the business rules at each airport are the same. If you automate these business rules in an add-on that you add to the current IT environment, you can easily adjust them without changing the underlying systems. For example, if Great Britain is no longer part of the European Union due to the Brexit, only the characteristic of Great Britain needs to be adjusted in one place, from 'European Union' to 'Non-European Union'. The rule is executed automatically, without any change in the back-end systems.





Advantages of a business rules-based approach

4

Automating business rules offers several advantages. Some of these we have already mentioned implicitly; we make them explicit here again.



1. The focus is on value creation

In business rules, the focus is on the value you want to create. This can be a value that is essential for your product or service, but also laws and regulations that your organization must comply with all the time. Which steps are necessary to achieve the best result? And what conditions do you want to guarantee as an organization?

Is this approach completely different from a process-based approach? No, not at all. Business rules determine how e.g. people react to an event. They govern the behavior of your organization. This can be, for example, a series of what-if rules or rules of a complex nature. Processes also naturally have an event as a reason and are also characterized by what-if rules.

The big difference is that in traditional automation, the process steps themselves are central (if A happens, then we respond with B). At the same time, in a business rules-based approach, the outcome is much more decisive: why and when should what happen following which agreements?



2. Processes become less rigid and can be changed faster

By not focusing on the steps themselves, but more on why and when something has to be done, you can flexibly determine that in one situation, a certain control does take place, and in the other it does not. Or that you can skip a process step in one situation and not in another. Or that in one situation, the order of the steps does not matter and so you take the first step that you can take the fastest, while in the other situation, the order is decisive. This way, you bring flexibility to processes that were initially tight and rigid. This helps you give your organization the agility that is needed in the Act-Now economy.

A malfunction in the factory: inform the customer in time with business rules

Suppose the event is an unexpected malfunction in the factory, as a result of which the production process is halted for half a day. Some of the planned production orders concern make-to-stock products, others make-to-order. The production standstill has far greater consequences for the latter category of orders than for the former, requiring other mitigating measures. Traditional ERP software is unable to provide a direct list of customers whose orders are affected and the delivery times agreed with them. With business rules, you can easily add this intelligence. The production manager sees in real-time which orders are at risk of a delayed delivery time and can inform sales fully automatically so that they can immediately call their customers for consultation.

New compensation and payment schemes

In special situations, the government sometimes compensates damage that usually is uninsurable. Consider, for example, damage to homes due to natural disasters. Or the very exceptional income damage suffered by some professions due to the lock-down as a result of COVID-19. In those cases, a settlement must be set up immediately and payments must be made.

By including the conditions in business rules, you can use an existing system for the payment of compensation or benefits for such an entirely new scheme. In business rules, you determine which criteria a homeowner and the damage must meet to be eligible for compensation. Or what criteria in terms of occupation and loss of income a company must meet to qualify for a benefit. Subsequently, the settlement itself takes place in a system that has been in use for years.

Fast alternative to sold-out medicine

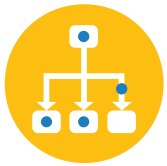
More and more often, medical suppliers are under pressure because manufacturers cannot meet their delivery obligations. If a certain medicine is no longer available, the health insurer, pharmacy and supplier determine which alternative medicine, with the same effect, will be delivered to the patient. Every health insurer and pharmacy has its preferred lists, which change quite often. There are certain dependencies between these preference lists, which means that the combination of both lists determines which alternative is chosen.

The wholesalers use the information from Farminform, a Dutch company that provides high-quality market information for the pharmaceutical industry and associated healthcare providers, to quickly find which medicine to supply. This company once started with punch cards. It now uses a business-critical application based on business rules. The company provides data to more than sixty stakeholders in the pharmaceutical industry. Because almost all Dutch wholesalers share and purchase market information, Farminform can map almost all of the Netherlands when it comes to the sale of medicines, including a large number of non-prescription medicines.



3. Business rules enable real-time decision-making

Business rules determine how you respond to an event. If you want to add a new type of response – for example, you want to give customers who meet certain conditions a discount – you can do this without modifying the back-end system, while still making it possible to respond to this event in real-time. A simple example: suppose a car rental company wants to give a discount to travelers who book a flight. By translating this into a business rule, the intelligence layer can see, in real-time, which people are eligible for a discount. Therefore, it can display this discount directly on their website for people who are booking a car.



4. Processes quickly become adaptable because you only have to adjust a business rule

To change the outcome of a process, you only have to adjust the relevant business rule in the intelligence layer. In the process automation itself (read: the back-end systems) nothing has to change.



5. You can set up a new process very quickly without having to design a back-end system first

By automating business rules, you can set up a new process quickly using existing back-end systems. You just have to define the business rules.



6. Predictability and data-driven decision-making

In the intelligence shell that you add, you can also show the data that employees need to make a decision or use data to make predictions. This method therefore supports data-driven decision-making (DDDM).



7. You can easily add additional intelligence– such as AI

Integrating AI (Artificial Intelligence) into your current back-end system usually require significant adjustments in that software. But adding AI to a business rules engine is much easier. As data, processes and systems become more and more involved, the need to apply more complex rules – in this case, AI algorithms – increases.



Accelerate time-to-market with low-code

5

Low-code has gained enormous popularity in the development of front-end apps in recent years. In fact, low-code apps are seen by many IT managers as the best way to bypass the barriers in back-end systems. Employees no longer have to complete their registrations in an unwieldy ERP system. Instead, they are given a task-oriented app. What they have forgotten is that, at some point, the management of those apps becomes so much work and the complexity of the environment becomes so great that it is almost impossible to overlook.

Advantages of low-code

Low-code means developing software with a minimal amount of coding. As a result, development teams can consist of a balanced composition of software developers, process experts and domain experts. This provides several advantages:



Better cooperation between business and IT



Less code leads to lower management costs



Ease of understanding ensures improved business involvement



Shorter time-to-market: up to ten times faster



Faster development and simpler maintenance leads to fewer IT resources



Customizable: easily adjust or extend applications



Deliver and test prototypes at lightning speed



Easily reusable components in and between applications



Extended lifespan of systems

Low-code at the back-end

We also use the power of low-code but in combination with a back-end-first strategy. This is because, nowadays, roughly 80 percent of an IT department's time is spent managing the systems of record. Our goal is to break this 80/20 rule so that your IT department can spend much more time on innovation. Innovations that give your company an excellent starting position in the Act-Now economy.

As described, the Act-Now economy requires not only a firm promise at the front-end, but also practical and efficient fulfillment at the back-end. So, we put the back-end first. This is all the more true in companies that have to respond to many different events daily, such as ports, airports, transport companies, the public transport sector, retail and industry. These companies can renew their back-end with a business rules approach or provide it with an intelligence layer that gives the originally rigid systems new flexibility. By using the USoft platform, you can develop the business rules application or integration layer with low-code.

The power of the combination of low-code and business rules management

The combination of low-code and business rules management yields some specific advantages that come into their own in the core processes of every organization:

- **You simply add intelligence to processes** – for example, automatic alarms if a hiccup occurs somewhere that ensures that an event is not handled within the stipulated conditions.
- **Events can be handled faster** because the business rules determine which steps are taken in which order, while in back-end systems, a fixed process sequence/workflow is often leading. This means that steps that do not add value are automatically omitted from the process. And for steps that do not necessarily have to be sequenced, the most time-efficient sequence is chosen.
- **Employees work in a user-friendly system** that adapts to their needs rather than in a complex system where they have to continually click through to find the right page and make sure they think of everything and inform everyone.
- **Organizations can make the most of existing investments** because existing back-end systems can simply remain intact.

> **Of course, IT managers want to know: how much time and energy does it take to develop such an intelligence layer? Our answer: relatively little if you use low-code.**

The power of business rules and low-code combined



Intelligent operations



Increased responsiveness



Happy customers and employees



Improved performance

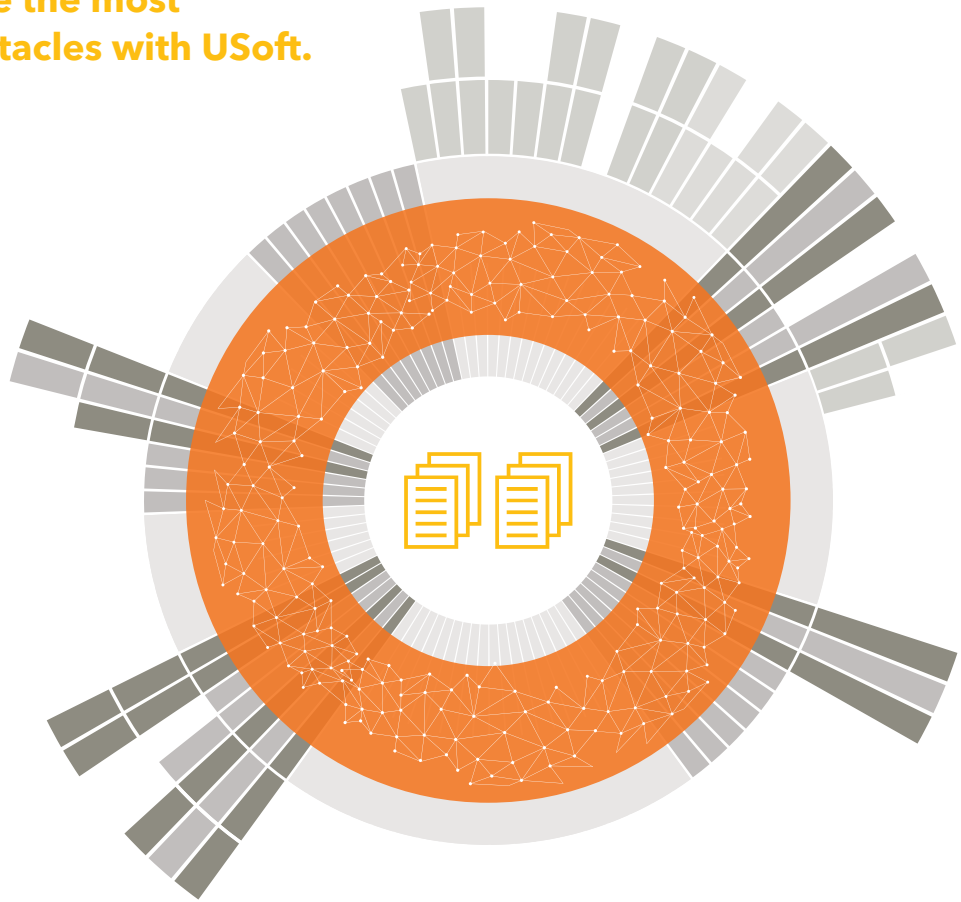


Low-code with the power of business rules: how do you start?

6

The reasons for choosing a business rules approach in combination with low-code can be diverse. Sometimes there is an obvious problem that requires an immediate solution, such as the payment of damages after natural disasters.

In that case, you can use the USoft platform to build a solution in a few days or weeks on top of your existing back-end systems. Sometimes, there is an immediate reason to reduce the complexity of IT because it obstructs innovation too much. In that case, you can quickly remove the most significant obstacles with USoft.



A pilot is an option, too

Sometimes an IT department first wants to get a feel for this approach. In that case, we do a pilot of one to a maximum of three months consisting of three phases. We start with a workshop on use cases to choose a suitable starting point. We then set up the pilot for everybody to gain experience, including the IT department, management and the employees who use the process in question. If the pilot runs satisfactorily, we deliver the technology upon which the organization can build in phase 3. You then decide for yourself how much help USoft will give you. If you want to take your time, you can do it yourself. But if you want to scale up quickly, we can help you with that.

Explore new possibilities

USoft offers organizations a low-code development platform for developing and redesigning business-critical systems.
The intelligent, flexible low-code platform is the perfect solution for clients who want to innovate fast and adapt to the needs of the market.

Our technology is engineered around the power of business rules so that your organization's context is always at the heart of everything you do.

To achieve the best result, USoft always immerses itself in the essence of the client's business operations and has a great track record for client satisfaction and excellent service.

USoft's low-code platform is used worldwide in government, aviation, education, financial services, transportation and logistics.

Unique culture

USoft is not just any software company. We have developed prestigious products and left the competition far behind for more than thirty years. That makes us proud professionals.

Driven by technology, we never stop developing our products. With the low-code USoft platform and additional software, we ensure the business processes of our customers function better. That feels like the icing on the cake and makes USoft different from average software companies.

Our approach is not common. We dare to take new paths and encourage our clients to think outside the box. The customer is always part of the team; that's why we ask them to have the courage to challenge us.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Would you like to know more?

Curious what low-code could mean for your organization, or do you want to know more about the Act-Now economy?

Feel free to contact us. We are happy to brainstorm with you or demonstrate our low-code platform. Call us on +31 (0)35 699 0699 or send an email via info@usoft.com.

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At USoft we understand that organizations desire the freedom to design their own business operations. We believe that software may never pose an obstacle and should instead clear that path. USoft offers organizations a low-code development platform for developing and redesigning business-critical systems.

The intelligent, flexible low-code platform is the perfect solution for clients who want to innovate fast and adapt to the needs of the market. Our technology is engineered around the power of business rules so that your organization's context is always at the heart of everything you do. To achieve the best result, USoft always immerses itself in the essence of the client's business operations and has a great track record for client satisfaction and excellent service.

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