



**Automation of business rules,
an untapped automation potential**

Deloitte Grab'n Go
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Deloitte Analytics and Cognitive

Welcome

Today's presenter



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Agenda

Welcome and introduction to today's topic

Types of business automation

A short introduction to the different flavors and uses of business automation.

Use-Cases for business rule automation

The characteristics of a business rule automation use-case and a demonstration an implementation.

How to get started with business rule automation

What characterizes a business rule implementation project and how can you start small without a lock-in.

Wrapping up

Deloitte's Implementation partner.

Questions

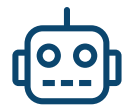


Types of Business Automation

An ultra short summary...

The technology landscape for intelligent process optimization covers a number of tools

Use the right tool for the right purpose



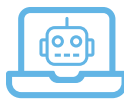
RPA
Robotic Process
Automation

RPA is used to automate back-office processes that do not require human input during the processing.



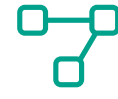
BPM
Business Process
Management

BPM is a process orchestration tool that brings together a range of technologies. In addition, the tool focuses on creating a simple work interface for the employee.



RDA
Robotic Desktop
Automation

RDA is used to automate front-office processes where human input is provided before or during the processing itself.



BRM
Business Rule
Management

BRM is used to define, execute, maintain and orchestrate complex business logic and rules.



Chatbot

A chatbot acts as a virtual chat-based assistant that can assist and interact with both employees and customers.



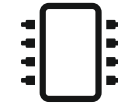
PM
Process
Mining

Process Mining is used to analyze the large logging database, in order to provide detailed insight into the company's workflows and processes.



ML
Cognitive

Machine learning can be used to make predictions and advanced decisions, based on trained algorithms.



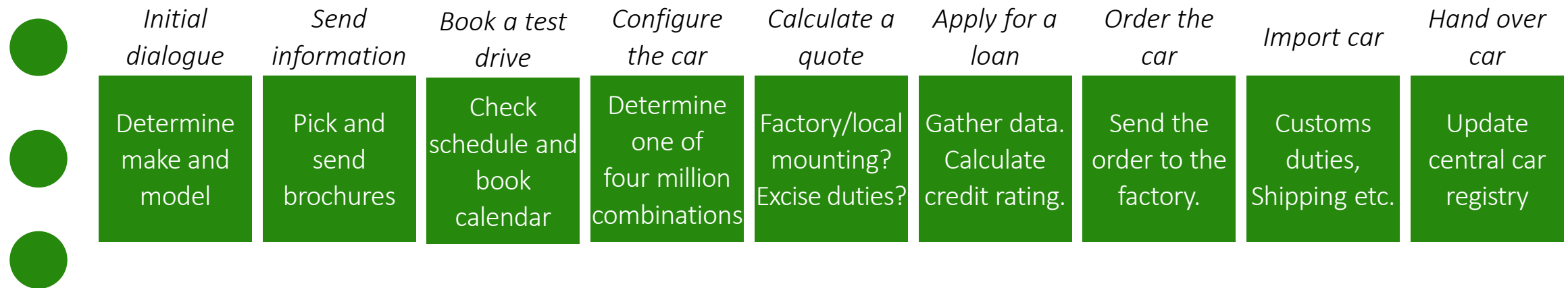
ESB
Enterprise
Service Bus

ESB can be considered as a precursor to the modern BPM tools, as the term covers a term for making application data available.

Types of business automation

How are we trying to automate

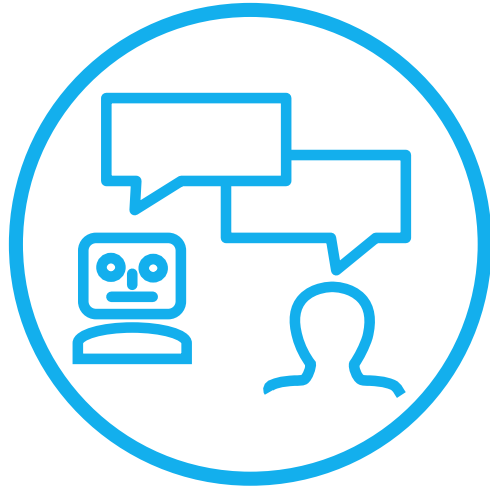
A very common and well-known business process, Sell Car,



The “Sell Car” or “Buy Car” depending upon your perspective has nine activities. Each activity may be conducted by different employees in the same organization, often in different departments. The process can have multiple triggers and it should execute in the same manner every time.

Types of business automation, chatbots

Chatbots use dialogue to identify root causes, provide answers to common questions or further identify information



Chatbot characteristics

Is available for a (specific) dialogue (24/7/365)

Offers a simulacrum of a personalized interaction

Can answer routine questions and provide predefined answers

Can forward a user to a human caseworker

<i>Initial dialogue</i>	<i>Send information</i>	<i>Book a test drive</i>	<i>Configure the car</i>	<i>Calculate a quote</i>	<i>Apply for a loan</i>	<i>Order the car</i>	<i>Import car</i>	<i>Hand over car</i>
Determine make and model	Pick and send brochures	Check schedule and book calendar	Determine one of four million combinations	Factory/local mounting? Excise duties?	Gather data. Calculate credit rating.	Send the order to the factory.	Customs duties, Shipping etc.	Update central car registry

Types of business automation, desktop robots

Software robotics substituting human interaction with multiple IT systems



Robotics Characteristics

Robots acts as a human user through a user interface, albeit faster and without the typing errors.

Robotics are cheap to license and require minimal infrastructure changes

Robots are fast to implement and are technically lightweight to configure

From a business process perspective, a robot automates an activity

<i>Initial dialogue</i>	<i>Send information</i>	<i>Book a test drive</i>	<i>Configure the car</i>	<i>Calculate a quote</i>	<i>Apply for a loan</i>	<i>Order the car</i>	<i>Import car</i>	<i>Hand over car</i>
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Types of business automation, business rule automation

Business rule automation can, given rule and data advice or decide on complex business rules in seconds



Business Rule Automation

Executes complex interdependent rules extremely fast

Rules can be stated and maintained by business users outside IT departments

Eliminates rule interpretation and bias from decisions

Makes it possible to centralize otherwise dispersed rule maintenance

<i>Initial dialogue</i>	<i>Send information</i>	<i>Book a test drive</i>	<i>Configure the car</i>	<i>Calculate a quote</i>	<i>Apply for a loan</i>	<i>Order the car</i>	<i>Import car</i>	<i>Hand over car</i>
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Types of business automation, cognitive systems

Cognitive automation can, within a limited scope, help in the execution of an activity



Cognitive automation

Assists in the execution individual steps such a scanning a CV for keywords

Learns from experience (if provided with feedback)

Can analyze massive amounts of unstructured data e.g., imagery, sound, etc. fast

Is probalistic as opposed to business rules that at deterministic

<i>Initial dialogue</i>	<i>Send information</i>	<i>Book a test drive</i>	<i>Configure the car</i>	<i>Calculate a quote</i>	<i>Apply for a loan</i>	<i>Order the car</i>	<i>Import car</i>	<i>Hand over car</i>
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Types of business automation

End to end process encapsulation place a common UI layer above all the IT systems that facilitate collaboration



Business process workflow management technologies

Guides the user from start to end always presenting the next step

Presents the current status of all process instances in a dashboard

Can integrate IT systems, Robots and Business Rule Engines

Ensures handover of the work and manages deadlines and escalation

<i>Initial dialogue</i>	<i>Send information</i>	<i>Book a test drive</i>	<i>Configure the car</i>	<i>Calculate a quote</i>	<i>Apply for a loan</i>	<i>Order the car</i>	<i>Import car</i>	<i>Hand over car</i>
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Traditional approaches to pen rules carry its own risks



From the Railroad Authorities maintenance *guideline*:

“In case of *many close fissures* over *a longer distance* the rail should *usually* be replaced *as soon as possible*.”



In the mind and collective experiences of employees, known as the “gut feeling”.



In policies, guidelines, contracts, minutes mails, and numerous other texts.



Embedded into program code, often in multiple IT solutions developed independently .

Business Rules requirements and forms 101

Business rules come in five forms; even highly complex rules can be broken down into these forms



Data properties

Information characteristics on the field level: Length, Type, pattern



Data relationships

An “employee” must have an “employer”, a building must have an “address”



Formulas

Multiply “Hourly rate” by 1,5 for “Overtime”. Multiply “Price” by 1,25 to add “VAT”.



Decision Tables

Explicit representation of every possible permutation of dependent rules



Sequence

Ask about applicants Age before enrolling applicant for driving lessons

“Green” car tax per year							
Fuel type	Gasoline		Diesel		Hybrid		Electric
Km/liter	>19	≤20	>30	≤30	>50	≤51	N/A
dkr./year	2000	1600	2400	2000	1400	1200	0

Rules must be repeatable

Decision is made a set point in time

The rules take consistent input

The rules are complex or non-trivial

Rules may change and be traceable

Use-Cases for business rule automation

Don't tell me, show me

Salary control

Salary control is a key service delivered by Danish unions to their members.

Salary checks are an essential part of the "Danish model"

- Upholding the salaries laid down in the collective agreements
- No public authorities are checking salaries
- The employee is often in an exposed position and stands to lose

Trust is nice... control justifies trust

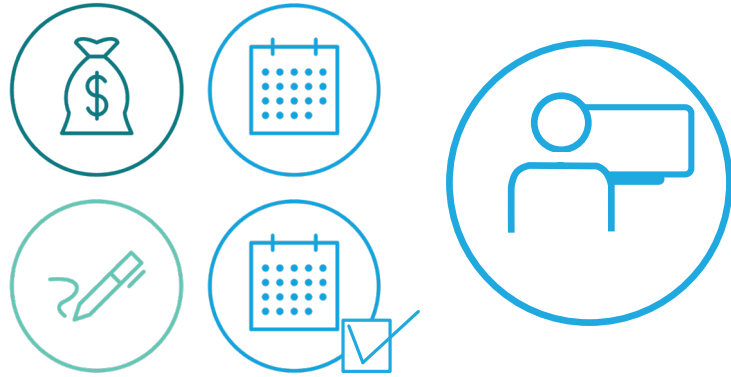
The examples presented yielded an average post payment of 127.234,- Danish kroner

The unions wish to increase the capacity and quality of their salary control service



Business rule automation

Behind the scenes



Data capture

- Soon to be a web UI 😊.
- Hosted by Deloitte's business partner or the client
- Choose the collective agreement
- Enter contract data, salary, roster, time. etc
- Show the result



Distributing the hours into categories

- Interim calculation of the hours
- Distributes the hours into categories
- Uses a library of customized rules that define a business rule language use to represent the rules.



Calculating the result

- Every hour is accounted for
- The rules are referenced
- Shows the formulas, rules and data

Three months of data is processed in 1-2 seconds. 600 rules are used for circa 1200 calculations.

Three use-cases

Examples where investigating the use a rule engine is time well spend



Configurable products

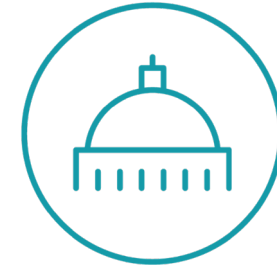
Complex product or services that consists of multiple selectable parts that each carries different price points are candidates. If a product is sold via different sales channel that implement different price models this can be a real challenge.



Salary or social benefits

Calculating salaries can help estimate the cost of a change in a roster as it is made.

Social benefits can be calculated in seconds, as can a host of other financial rulesets.



Taxes, direct and indirect

Both authorities and private organizations need to calculate taxes. The rules are complex, they change often, and the result needs to be documented.

Whether you need to calculate customs duties or excise tax of a compound product a rule engine can help.

Key Capabilities business rule engines

Examples where using a rule engine should be investigated

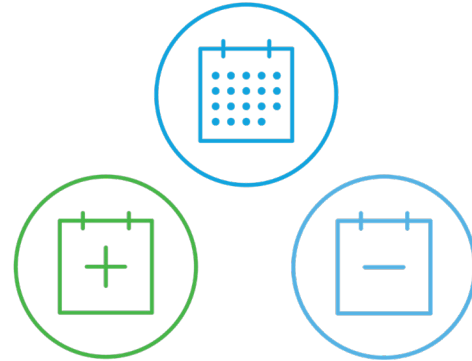


Write your rules in natural language

The project will construct a natural language that will enable business user to write rule, without involving a programmer.

Overtime = 'Hourly rate' x 1,5

'Happy hour' is between 10:00 and 16:00



All rules have 'valid from' and 'valid to' controls

You can edit and deploy a rule and it will self-activate when the times is right...

Or

You can feed the system "old" data and it will apply an "old" rule to match.



Test new rules on old data and compare results 1:1

Old data can be kept and re-used to test and compare the effect of new rules or changes to old rules.

If you wish to test the impact on the revenue of a rule change... take your rule and old date out for a spin...



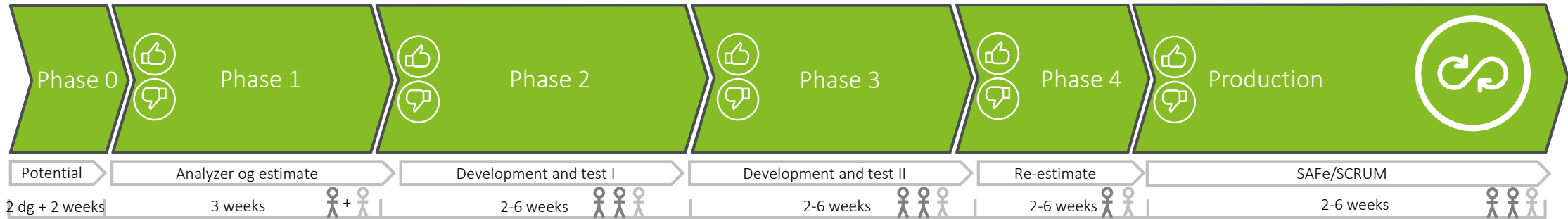
Manage the rules in one place and reuse it globally

Eliminate the need to simultaneous updates of the same rule across the IT landscape.

Once a rule is implemented it can be connected to any online device or system.

Overview of the activities and recommended process starting a business rule exploration

Activities and evaluation points of a typical business rule implementation



Key Activities

Phase 0

- Discover the business Potential
- Identify advantages and cost elements

Phase 1

- Determine the rule consistencies and size the BAL construction activity
- Re-estimate of the test and pilot project

Phase 2

- Develop at partial test solution that will test the estimate and deliver a partial solution and UI
- Final estimate of the pilot project

Phase 3

- A full pilot working pilot on a rule-set in a cloud test environment including a web user interface

Phase 4

- Estimate and analysis of additional rule sets / libraries
- Pilot operations and service run by Deloitte as a Service

Main deliverables

Phase one: An in-debt rule analysis

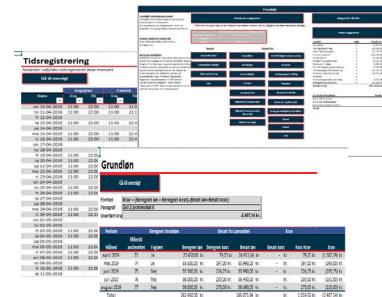


- Project plan
- Solution design
- Estimate
- Contract

Phase two: A working prototype



Phase three: A working pilot solution



Phase four: An operational pilot



Wrapping up

Tell tale signs of a business rule automation case



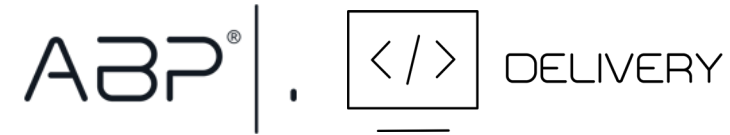
General properties of a business rule use-case

- Irregularities in daily execution
- If decisions need consistent documentation
- The rules are complex, and seniority is a prerequisite for effectiveness
- Rules are interpreted differently by different people
- The rules change frequently
- The rules are re-implemented in different systems that are hard to coordinate
- Rule evaluation take a lot of your organizations time and effort

THE FORRESTER WAVE™
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Deloitte and Agile Business Process Consultancy cooperation



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In our cooperation with ABP we focus on:

- Business analysis, solution scoping and business design
- Overall project and delivery management
- Front end development
- User experience development

ABP is a Business Process Management company specialized in developing tailored and "fit for purpose" digital experiences.

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- Cost effective development resources
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