

Intelligent continuous improvement, when BPM meets AI

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CEO and co-founder



 **Bonitasoft**

**BPM IS NOT
DEAD.**

But we should admit though, BPM has been a bit **unsexy** lately.

And exactly, what is your job about?



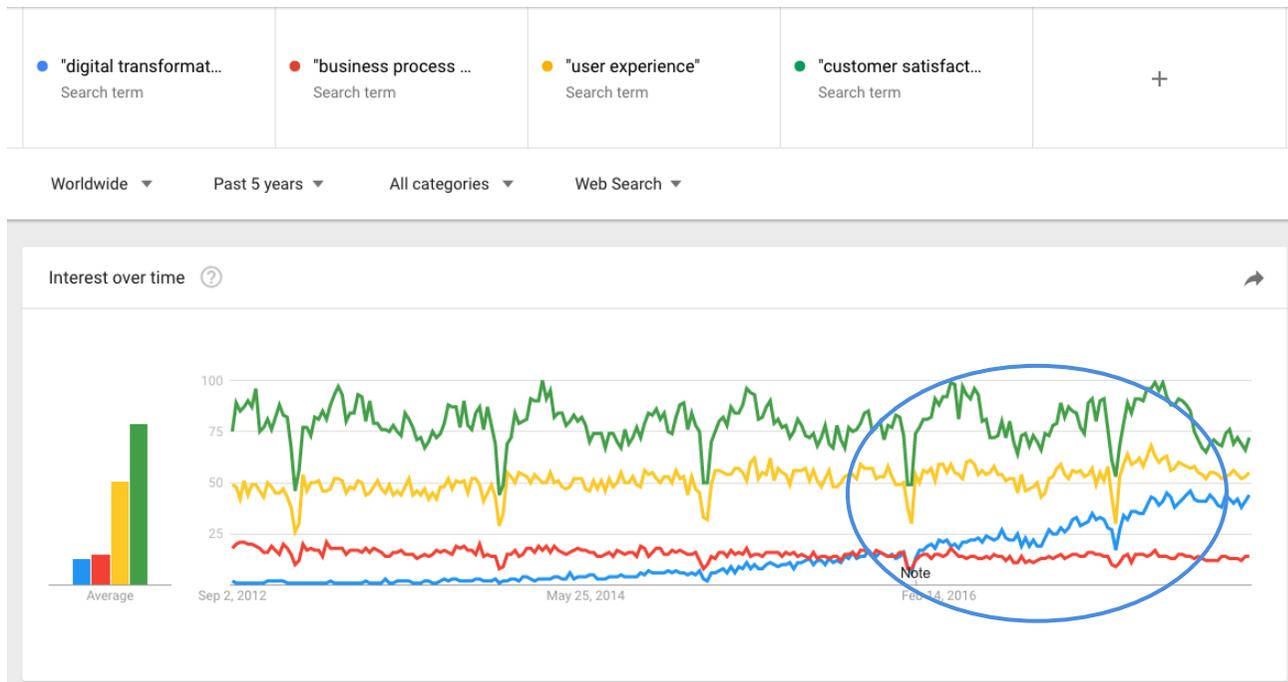
I'm the CEO of software company. We help companies to automate their processes and to improve their operational efficiency.

I'm an engineer in a research center. I'm developing a project about coordination of collaborative activities in a BPM system

Strategy is about doing things differently, not simply doing them better than everyone else!

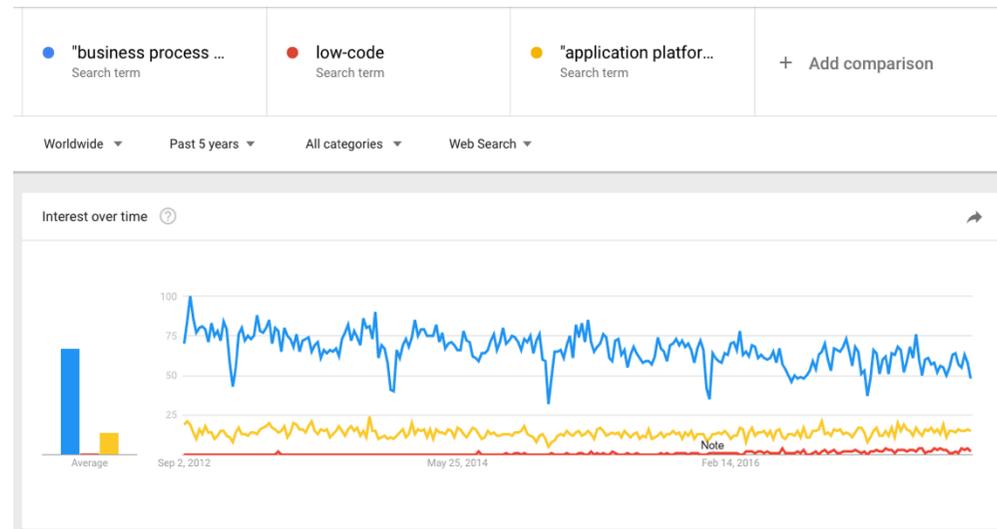
A big majority of BPM projects are related to cost reduction and efficiency improvement
Simply improving operational effectiveness does not provide a robust competitive advantage.

Customer obsessed operating model



* Source: Google trends

It's maybe time
to jump on this
opportunity.



* Source: Google trends

The “what” of Digital Transformation

“Even though a great many executives consider digital transformation as a top priority, we’ve found very little agreement between executives about what Digital transformation actually means”.

Neil Ward-Dutton – MWD Advisors



* Source: MWD Advisors

How BPM will take a central role in Digital Transformation?



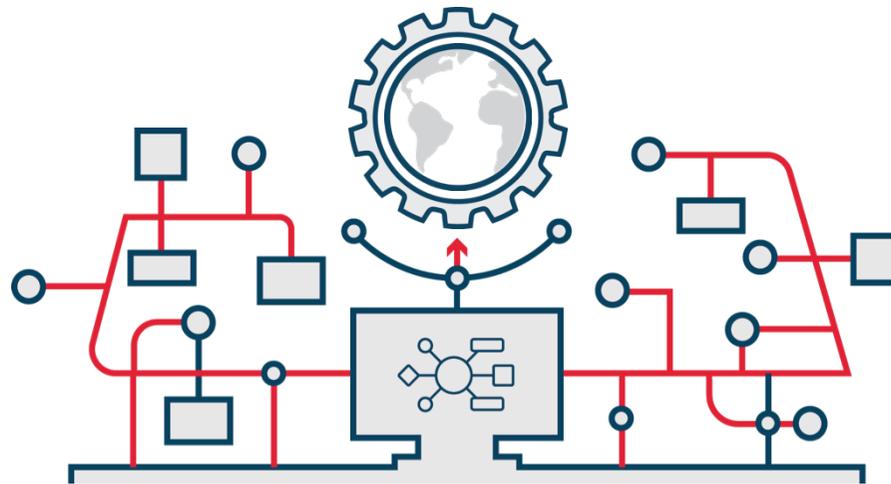
Make back-office processes accessible to end users

Improve digital user experiences for customers and employees

Enable multiple organizations to trust a common set of critical processes

Enhance human intelligence with AI for continuous improvement

Make back-office processes accessible to end users



Isn't that an enterprise app?

Make underlying systems and processes that were once considered “back-office” accessible in order to turn data into insights and respond to customer needs in moments, rather than hours or days.

Biopharmaceutical company innovative approach to drug discovery has allowed scientists to focus on science.

“ Delivery time for a production-ready application was reduced by half. Since the initial implementation in 2014, process based apps have expanded to other organizations: Biologics, Veterinary Sciences, Histology, and High Throughput Screening.

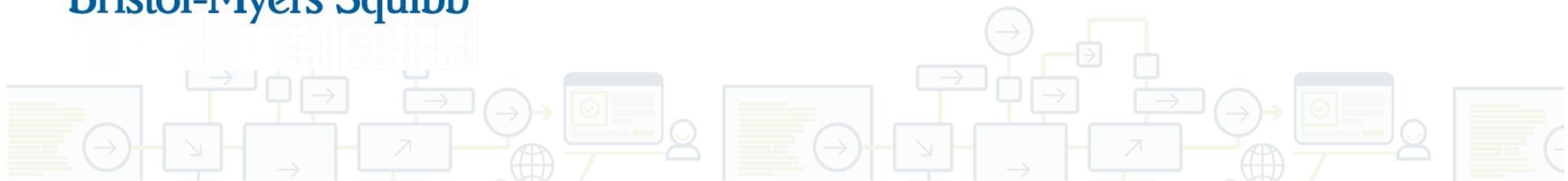
Over 600 new requests are submitted daily. We are currently working on delivering 4 additional applications and expect to deliver 10-15 more over the next 2-3 years. ”

Operational requirement, strategic opportunity.

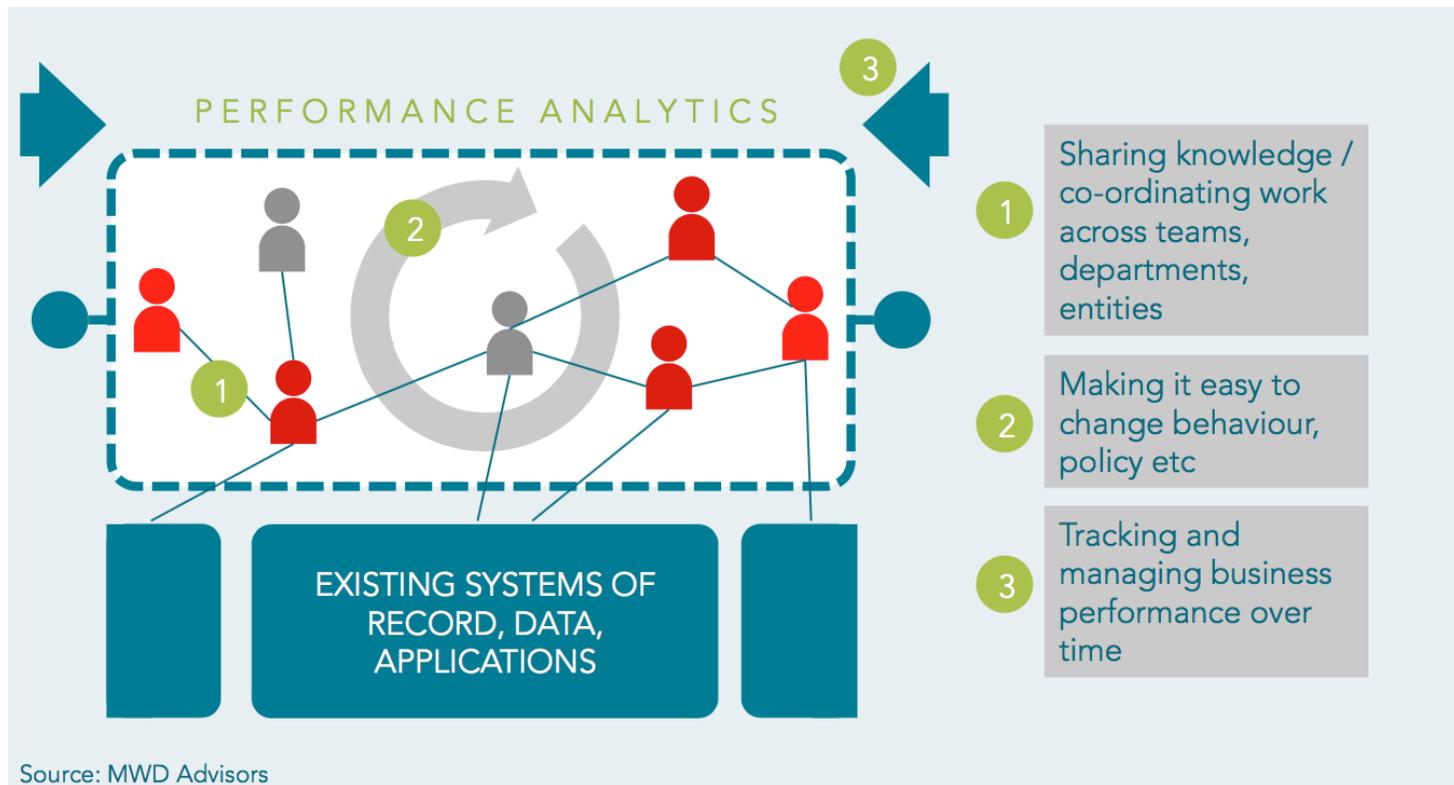
BMS took the innovative approach of delivering inter-lab process based applications through the use of a BPM platform, integrating them with domain-specific laboratory information management systems (LIMS), whose workflows are not portable to other domains.



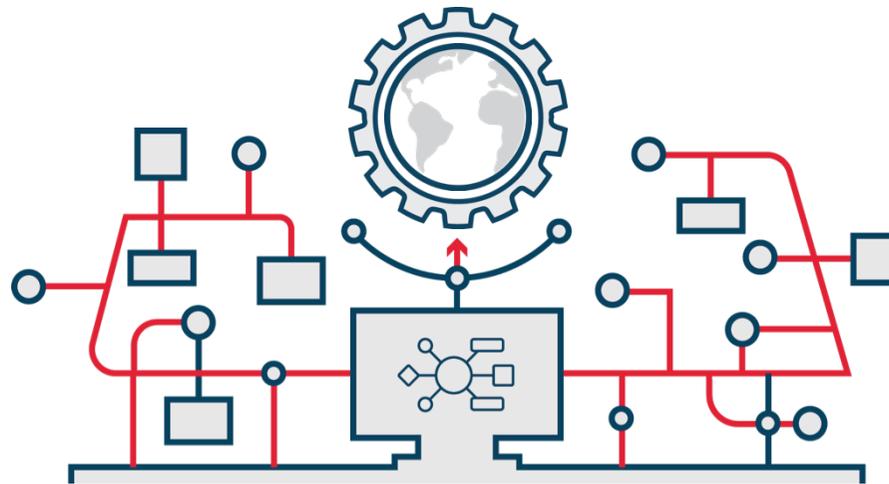
Bristol-Myers Squibb



The value of a model driven, low code platform



Improve digital user experiences for customers and employees





CALLING THE BEST & BRIGHTEST

OUR USERS DESERVE A BETTER EXPERIENCE

IT'S TIME THE WORLD KNOWS THE POWER OF UX

* Source: Flightforux.com

Tasklist, to-do list or worklist views, really?



Tasks Cases Processes

Filters

Process: All Search...

Task list

Task name	Process name	Due date
Review report	Expense report	May 20 5:17 PM
Review report	Expense report	May 20 5:52 PM
Review report	Expense report	May 20 5:53 PM
Review report	Expense report	May 20 5:53 PM

Energy Global

Current: 13 456 Mwh Status: Healthy

Weekly usage (Mwh)

Service availability: 99.5%

Energy Global

Current: 13 456 Mwh Status: Healthy Prevision: Warning

Weekly usage (Mwh)

UI's development freedom



Out-of-the-box, generic and configurable interfaces
Graphical studio to create standalone web/mobile apps
Comprehensible REST APIs for teams that prefer to build

A mix of all three approaches

UX ≠ UI

UX is the take away feeling of a user after an experience in a digital environment.

Seamless experiences

Personalized user interfaces

Reliable business processes and operations

Relevant business data



EnerNOC has delivered more than \$1 billion in customer savings to date with a cross-organizational digital transformation initiative



“

“On a hot summer day when everybody is going to crank their air conditioners, utilities will expect high energy use and contact us and say, At 11:00 AM we want you to start giving us back a gigawatt of savings and keep doing that until 4:00 PM.”

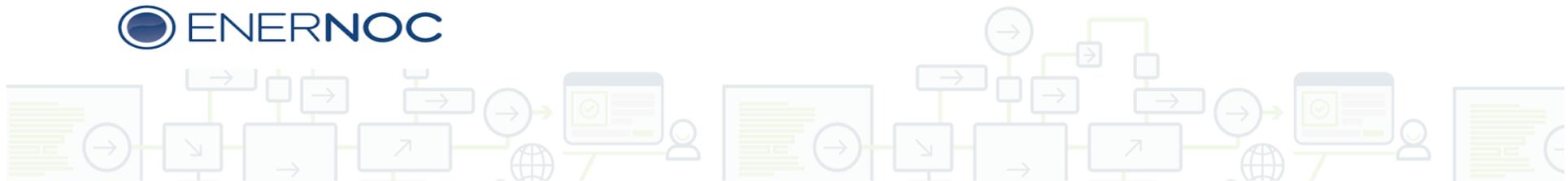
... we turn to our “providers”, say a grocery store or a big sawmill [more than 6,000]. We have meters on their buildings and have created a baseline of their energy usage, so we can ask them to curtail usage compared to those baselines

”

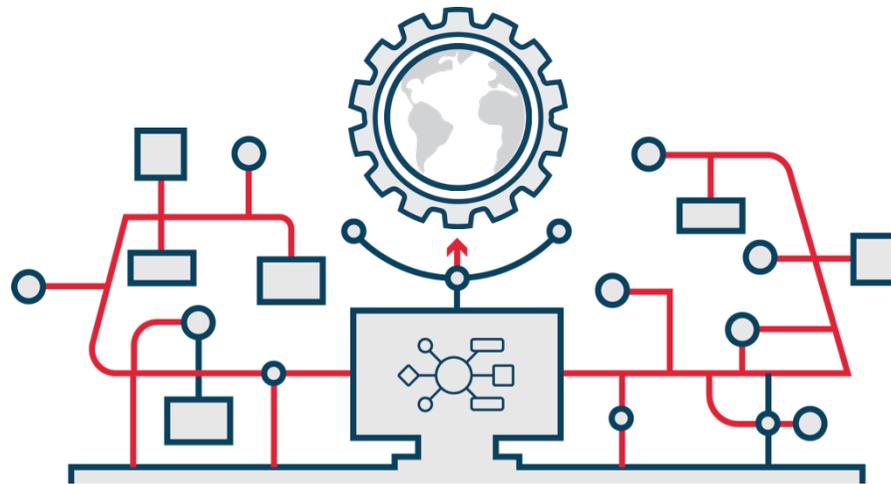
Energy intelligence software

BPM is used to handle the automation throughout the entire demand response dispatch process. The percentage of manual vs. automatic depends largely on what kind of facility is participating

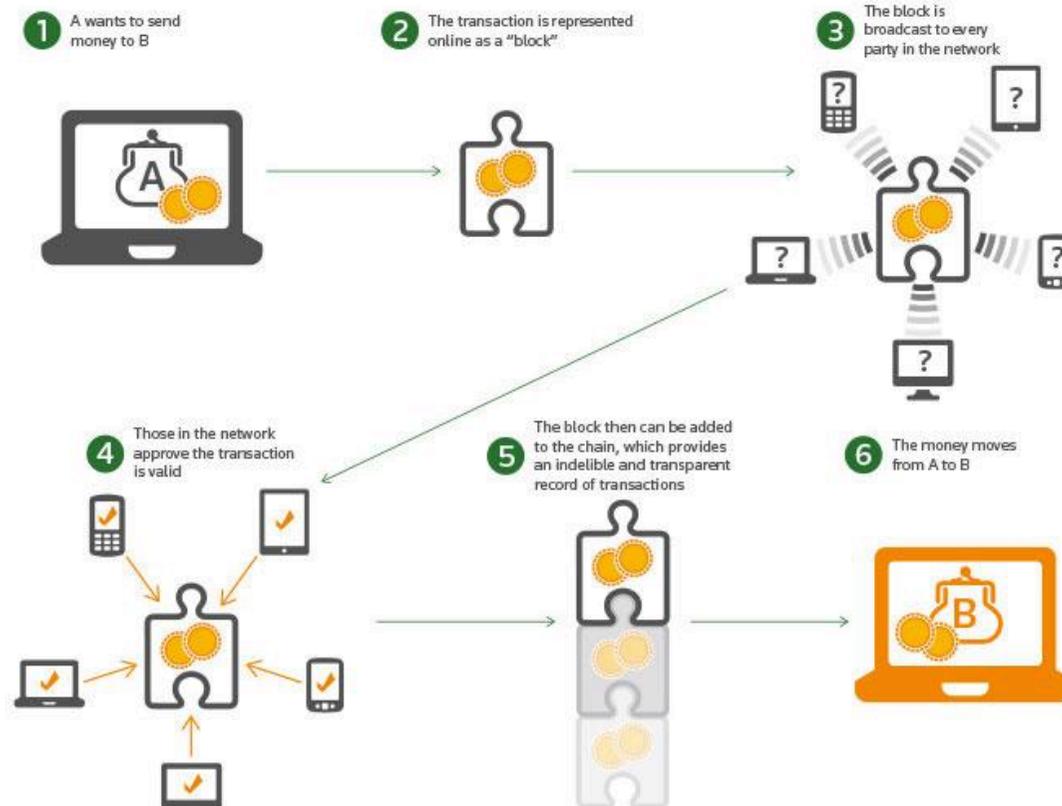
Per Gyllstrom
EnerNOC Chief Architect



Allow multiple organizations to trust
a common set of critical processes



Blockchain – in a nutshell



* Source: Financial Times

Benefits

Virtual continuity

Transparency

Resilience

Immutability

Independency

Self trusted

Challenges

Young technology

Regulation

Energy consumption

Privacy

Integration

Adoption

Private blockchains

Transaction speed is considerably improved

Data is not publicly available to anyone with a net connection.

Public auditability can be implemented (consortium blockchains and regulations)



BPM and Blockchain - In action



Unified platform to build critical applications involving multiple organizations.

Ability to encompass processes between different companies

Increased productivity when creating dedicated apps

Provide end-to-end traceability and real time audit trail

Increase blockchain adoption and provide better UXs



* Source: Stratumn - blockchain technology

Car order management example



Payment transaction

Without a BPM platform



Car store sells a car for \$10,000 to John Doe

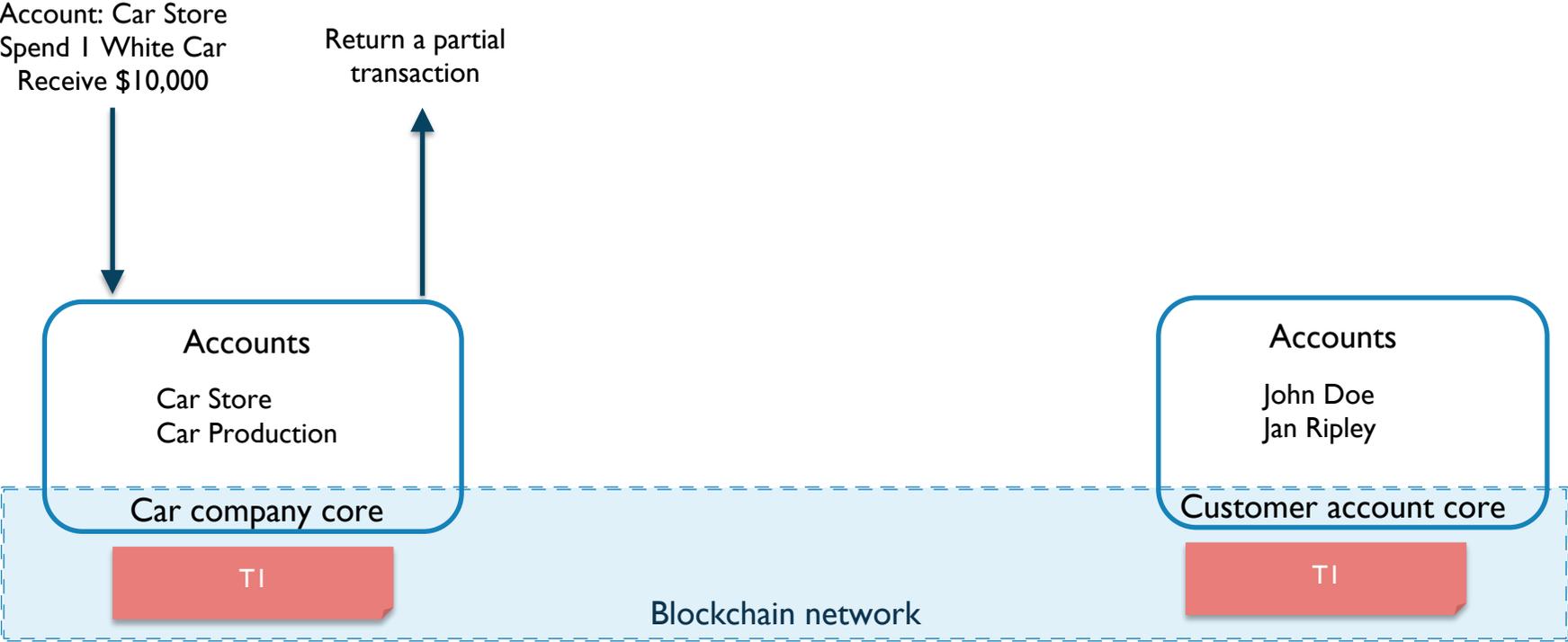


Payment transaction

Without a BPM platform



Car store sells a car for \$10,000 to John Doe

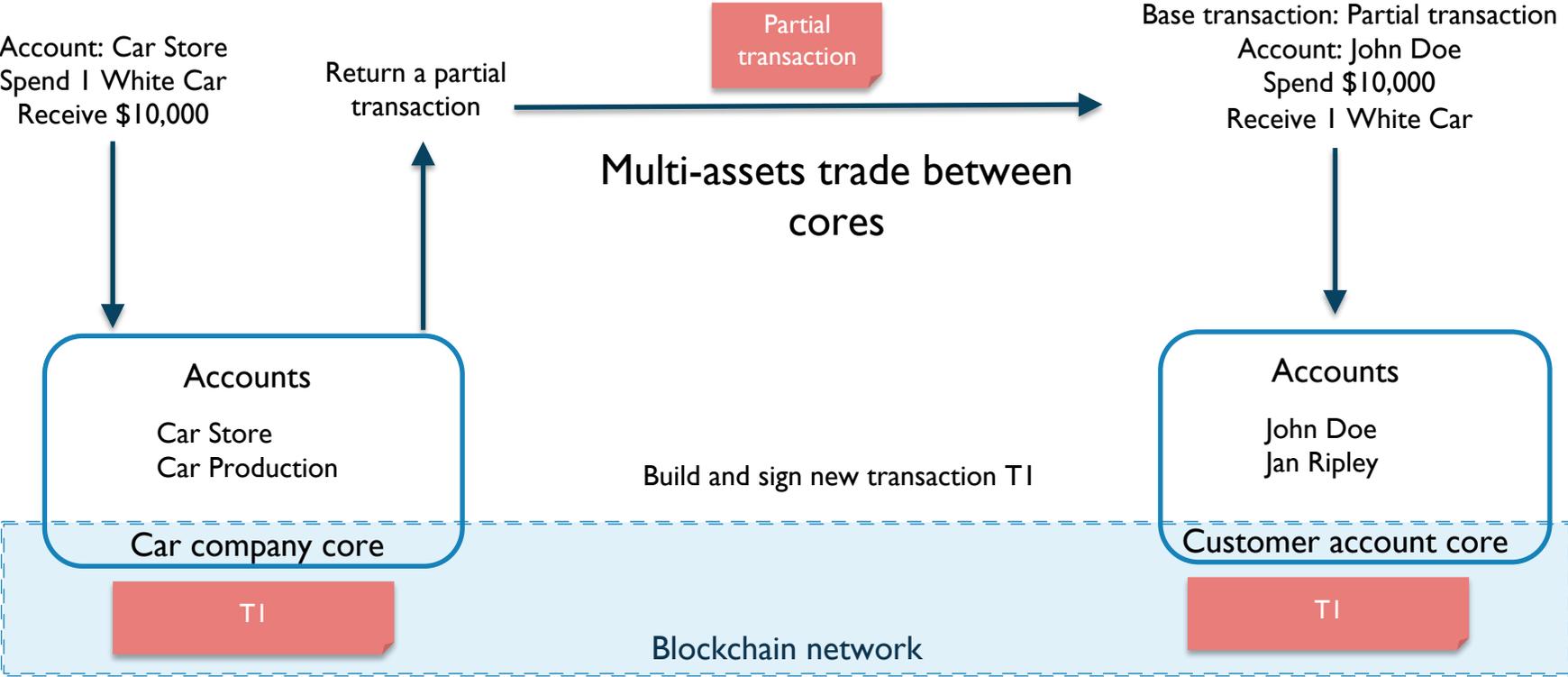


Payment transaction

Without a BPM platform

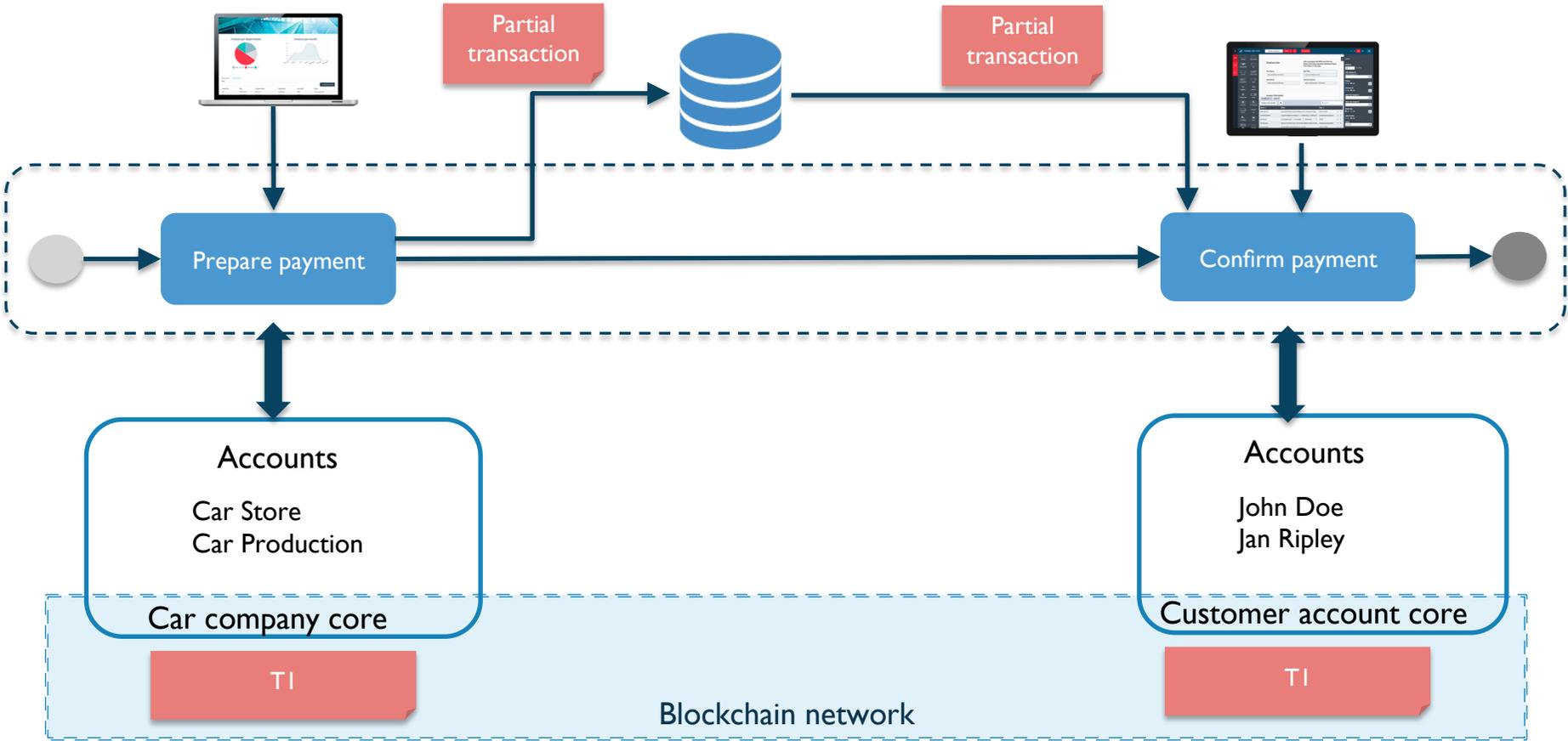


Car store sells a car for \$10,000 to John Doe

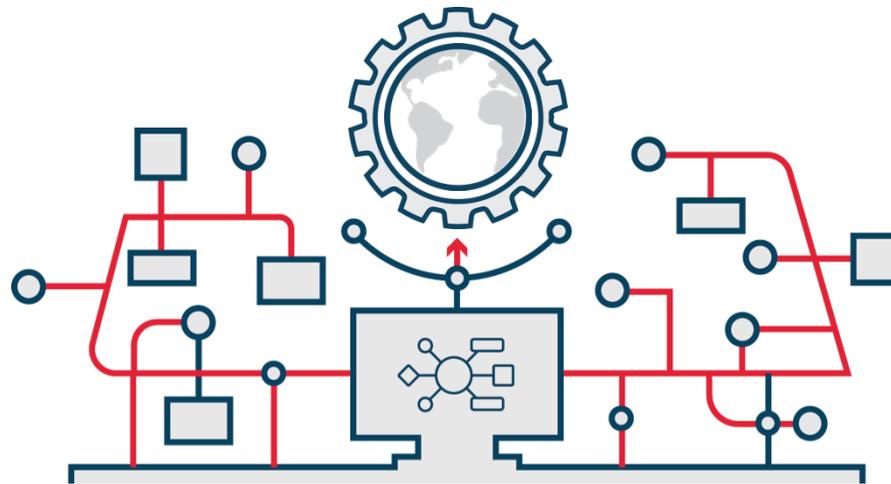


Payment transaction

With a BPM platform



Enhance human intelligence with AI for continuous improvement



Common use cases for AI in the context of BPM are related to using machine learning during the process execution.

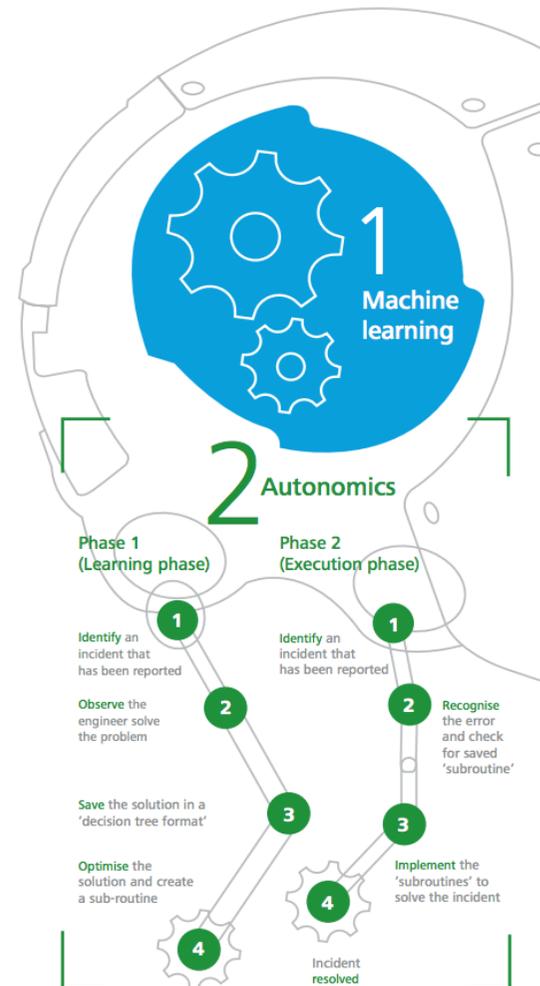
Trigger a new process based on a ML intuition

Route processes in motion depending on ML predictions

Render recommendations (ie next best action)

Intelligent Robotic Process Automation (RPA).

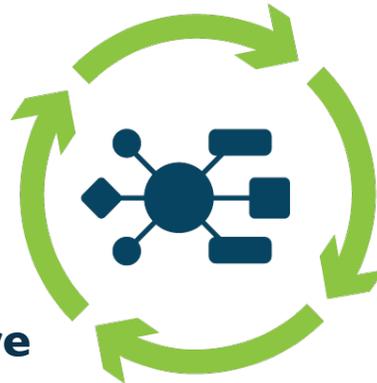
Robots that can observe and learn of what people are actually doing, that can highlight and automate those patterns so people don't have to do redundant work.



* Source: Deloitte - Intelligent automation entering the business world

Intelligent continuous improvement of process based apps

Predictions based on a
specific **goal**



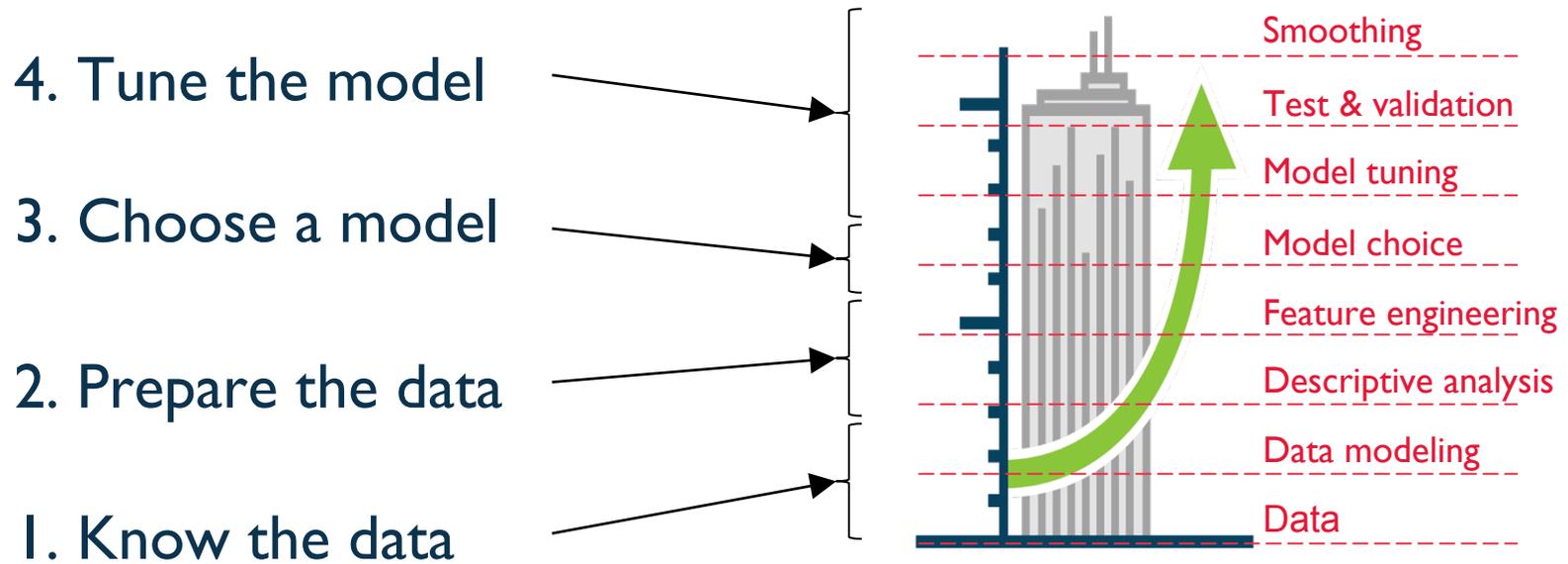
Recommend
improvement actions

Mesure
Impact of corrective actions

Act
Short loop : Task reallocation, form update,
connector replacement, next best action

Long loop : Process or UI redesign, UI performance
analysis

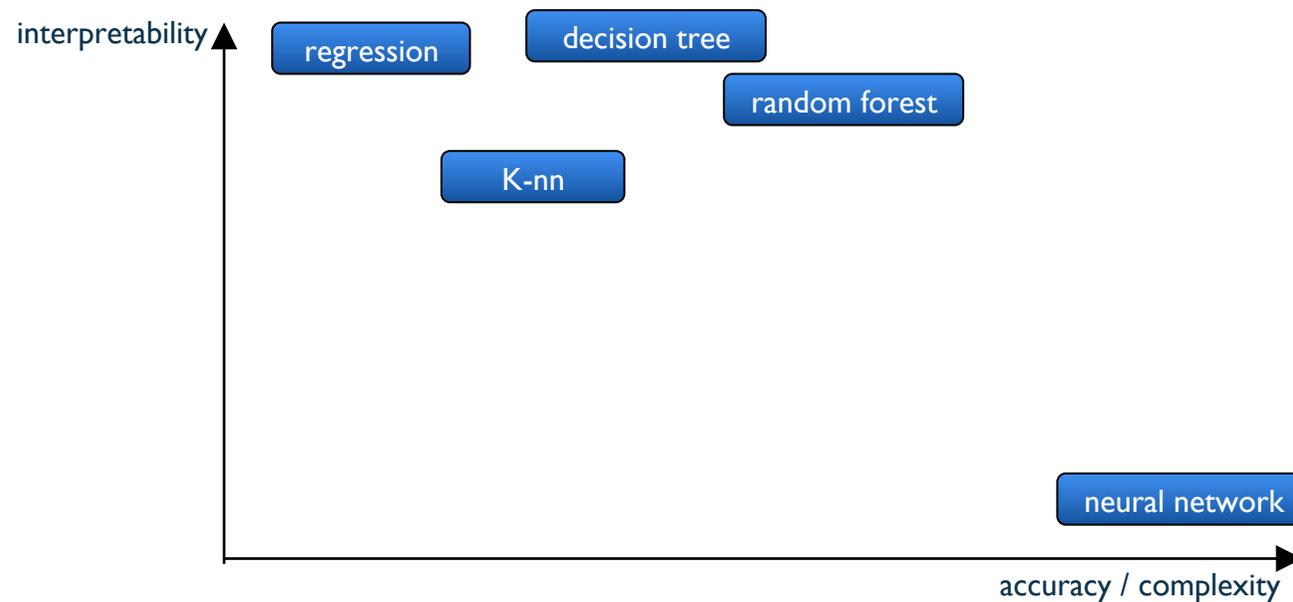
Guided approach to AI in the context of BPM



Choosing the right model



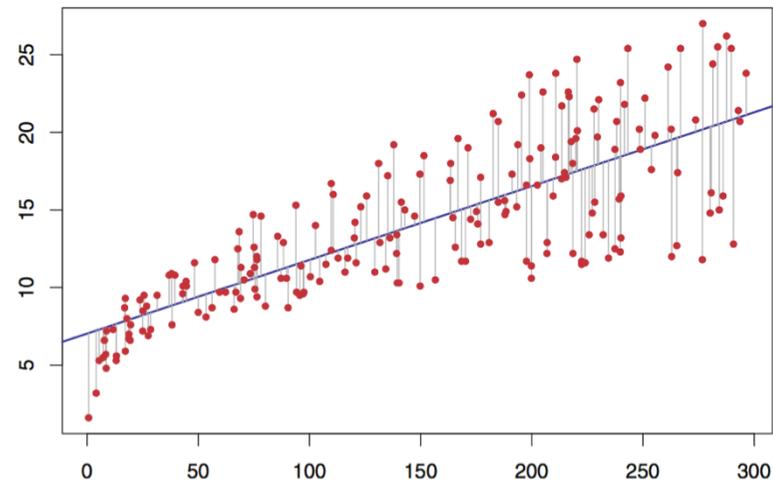
Dual objective: Allow **predictions** (duration, path, data, ...) and **recommendations** of improvements on any process-based application.



Linear regression advantages



- Easy to model and use
- Provide overall good results
- Easy to interpret

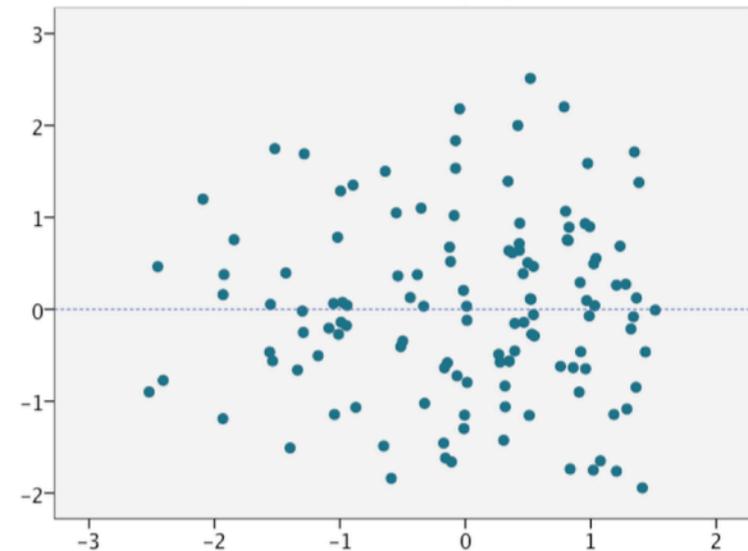


Linear regression drawbacks



It requires to well know the data to test and define the best model.

Unable to apply a generic linear regression on any process-based application.

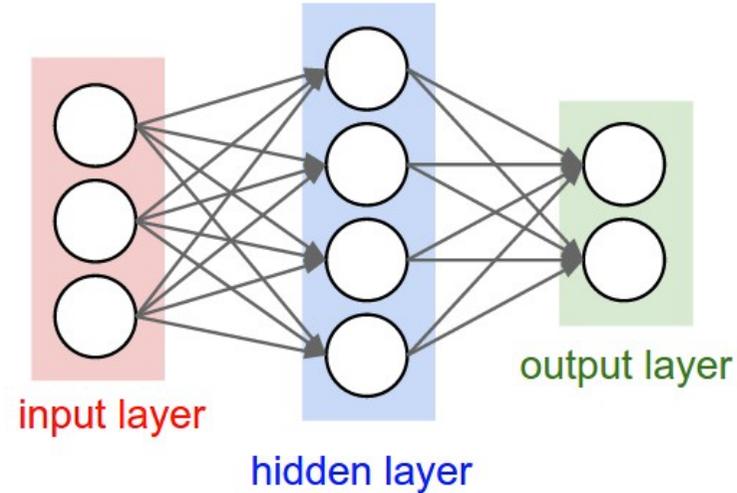


Neural network advantages



Neural network algorithms inspired by biological neurons to learn from observation.

Excellent to do classification and prediction. The results (prediction) are often very accurate.



Neural network drawbacks



- It is like a “black box”
- Hard to retrain when data changes
- Unable to interpret the results
(hard to make *recommendations*)



Process Mining

- Traditional Process mining
 - **Discover:** Previous (*a priori*) models do not exist. Based on an event log, a new model is constructed or discovered based on low-level events.
 - **Enhance conformity :** Used when there is an *a priori* model. The existing model is compared with the process event log; discrepancies between the log and the model are analyzed.
- **Extended to predict**
 - Used when there is an *a priori* model. The model is extended with a new aspect or perspective, so that the goal is *not* to check conformance, but rather to improve the existing model.
 - ⇒ predict process duration, behavior of the process, ...



Process mining algorithm for prediction



Apply to any process model

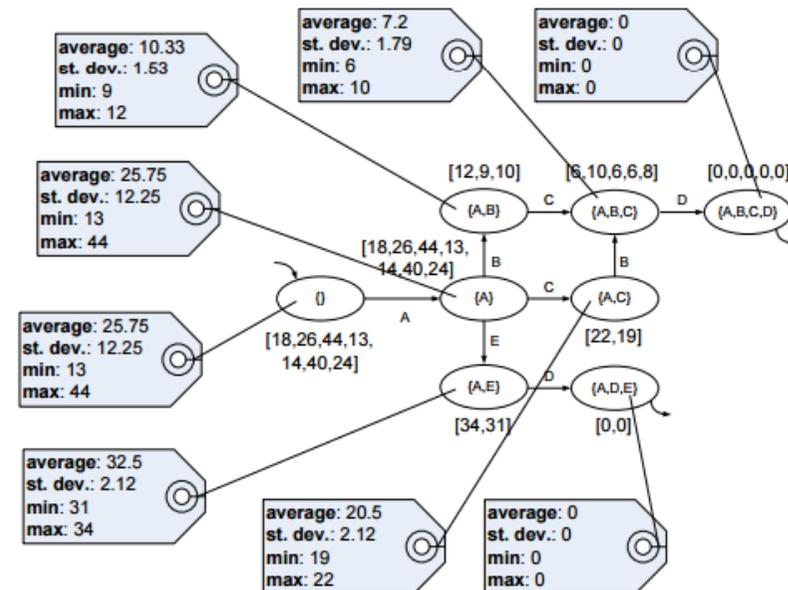
Storage of all event logs corresponding to a process

Conversion of the model into a transition system

Annotated with time information (ie entering time)

Collection of results per state (ie remaining time)

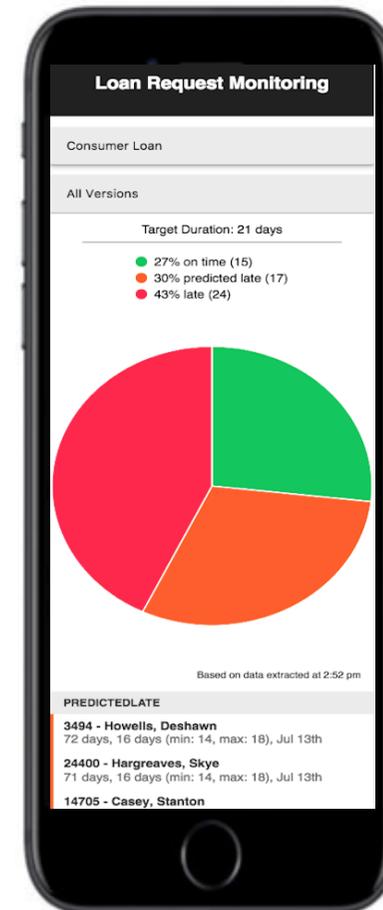
Compute functions (ie average)



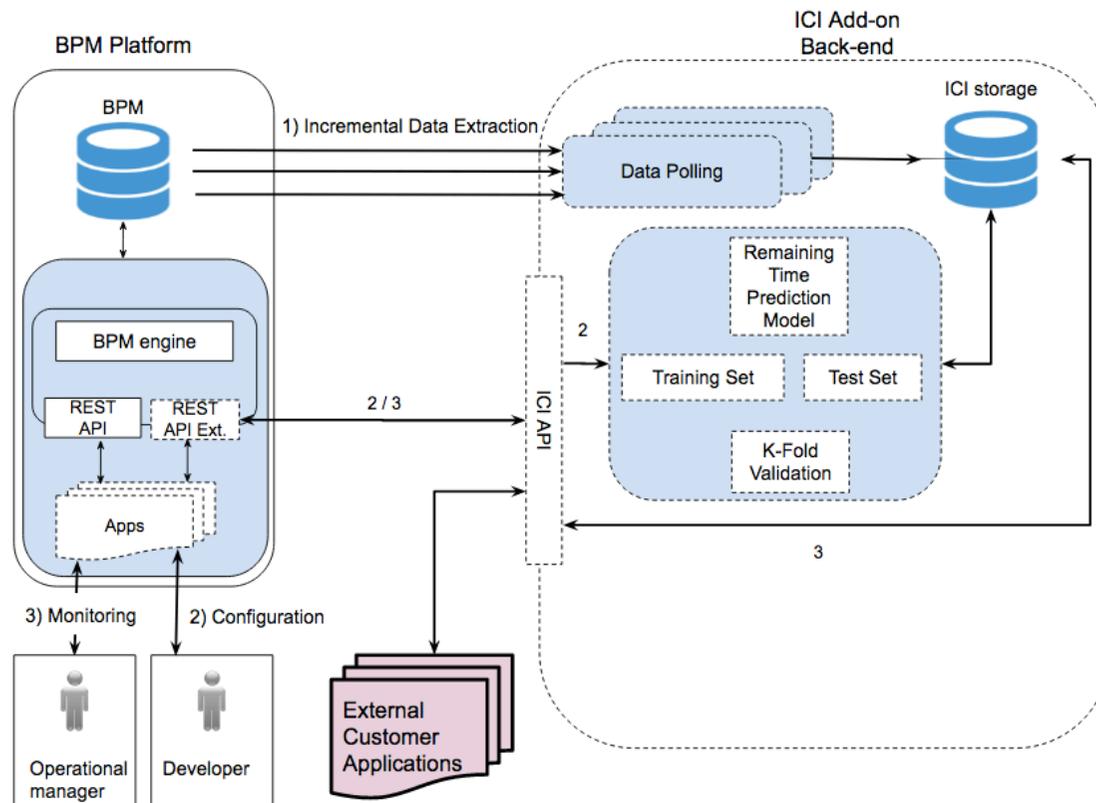
* Source: W.M.P. van der Aalst, M.H. Schonberg, and M. Song - Time prediction based on process mining

Service Level Agreement Monitoring app - sample

Predict when a SLA may not be fulfilled
Get alerts when a case duration is late
Recommend corrective actions



Technical architecture



Process mining extension - advantages

No need to know the data

Easy to understand/interpret

Same algorithm can be used for prediction and recommendation

Can be extended for further prediction use cases

Perspectives for further predictions



Integrate contextual and business data to refine predictions

Team efficiency (combined with resource management)

Probability to encounter technical errors or outages

Applicability to user interfaces in connection with processes

Why is a manual step in the process taking so long?

There are some situations in which UI analysis data would be handy to improve predictions and recommendations



Label	Run Count	Error Count
TABLE	115	204
Name	101	101
Commission	94	94



User experience analysis across a whole process based application.

Section	Boundary Event	Error	Occurrence in Runs
7 (16.3s)	1 (0.0s)	0	100%

* Source: BP-3 - Brazos CX Insights product

Intelligent continuous improvement of user interfaces and their connection with business processes.

Extended process mining based on user interactions and browser usages
UI pageflows analysis in connection to processes as a way to improve UX's.

Bright future ahead



BPM platforms will enable innovative teams to create apps that support better digital user experiences.

Apps with tailored UI's that seamlessly connect with back-office operations

AI as a powerful technology that empowers human intelligence to continuously improve user interactions and processes execution

“BPM isn’t gonna solve it all, but is
a damm good place to start”.

Inspirational source: Macklemore



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