



Toward Decision Management in Robotic Process Automation

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10.08.2021 – FPF – Automation without AI?

Increased Capabilities of RPA

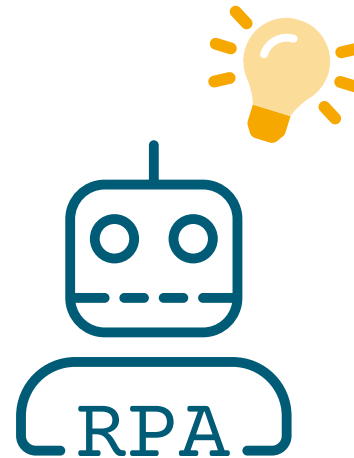
COMPUTER VISION

NATURAL LANGUAGE PROCESSING

MIMIC USER INTERACTION

ARTIFICIAL INTELLIGENCE

E-MAIL CLASSIFICATION



ROBOTIC PROCESS MINING

START + STOP SOFTWARE

TEXT UNDERSTANDING

TRANSFER DATA

PROCESS UNSTRUCTURED DATA

Increased Capabilities of RPA

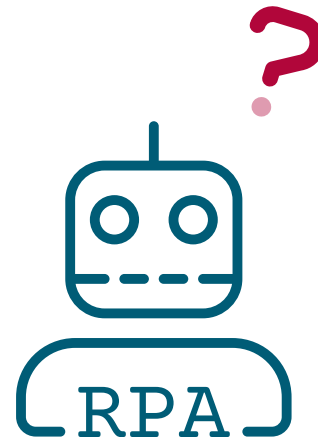
NATURAL LANGUAGE PROCESSING

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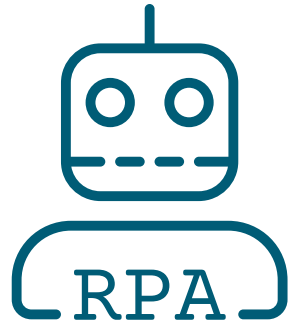
TEXT UNDERSTANDING



DECISION-MAKING

E-MAIL CLASSIFICATION

PROCESS UNSTRUCTURED DATA



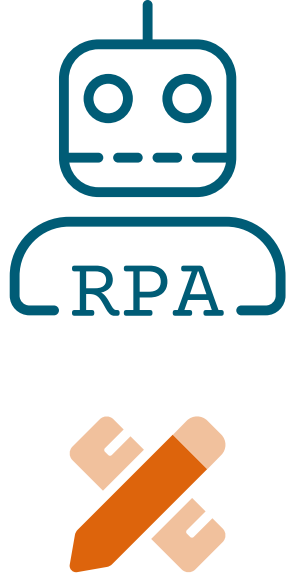
Machine Learning

- Make decision based on observed behavior
- Requires a lot of data (past executions)
- Works with probabilities

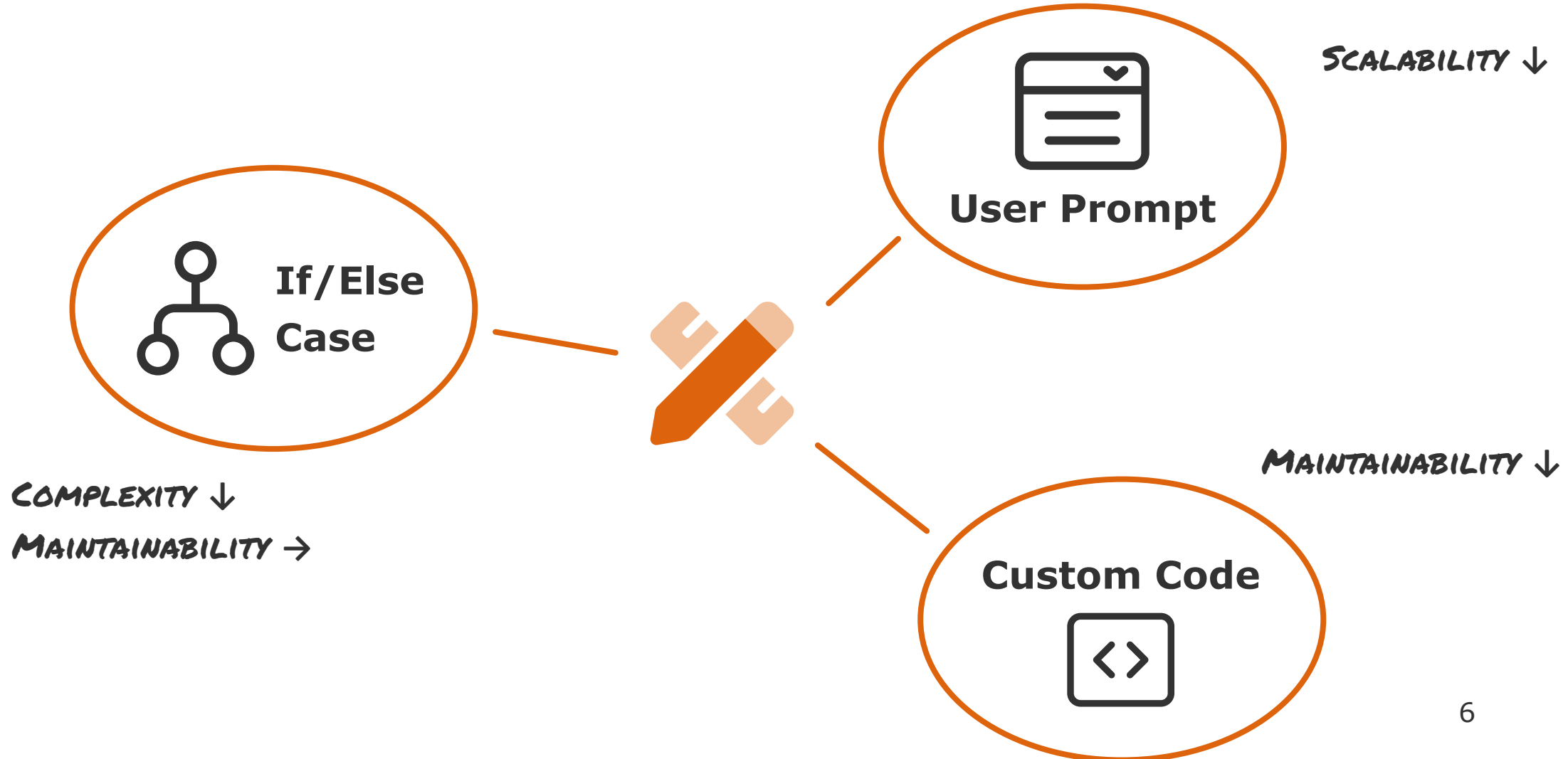


Modeling

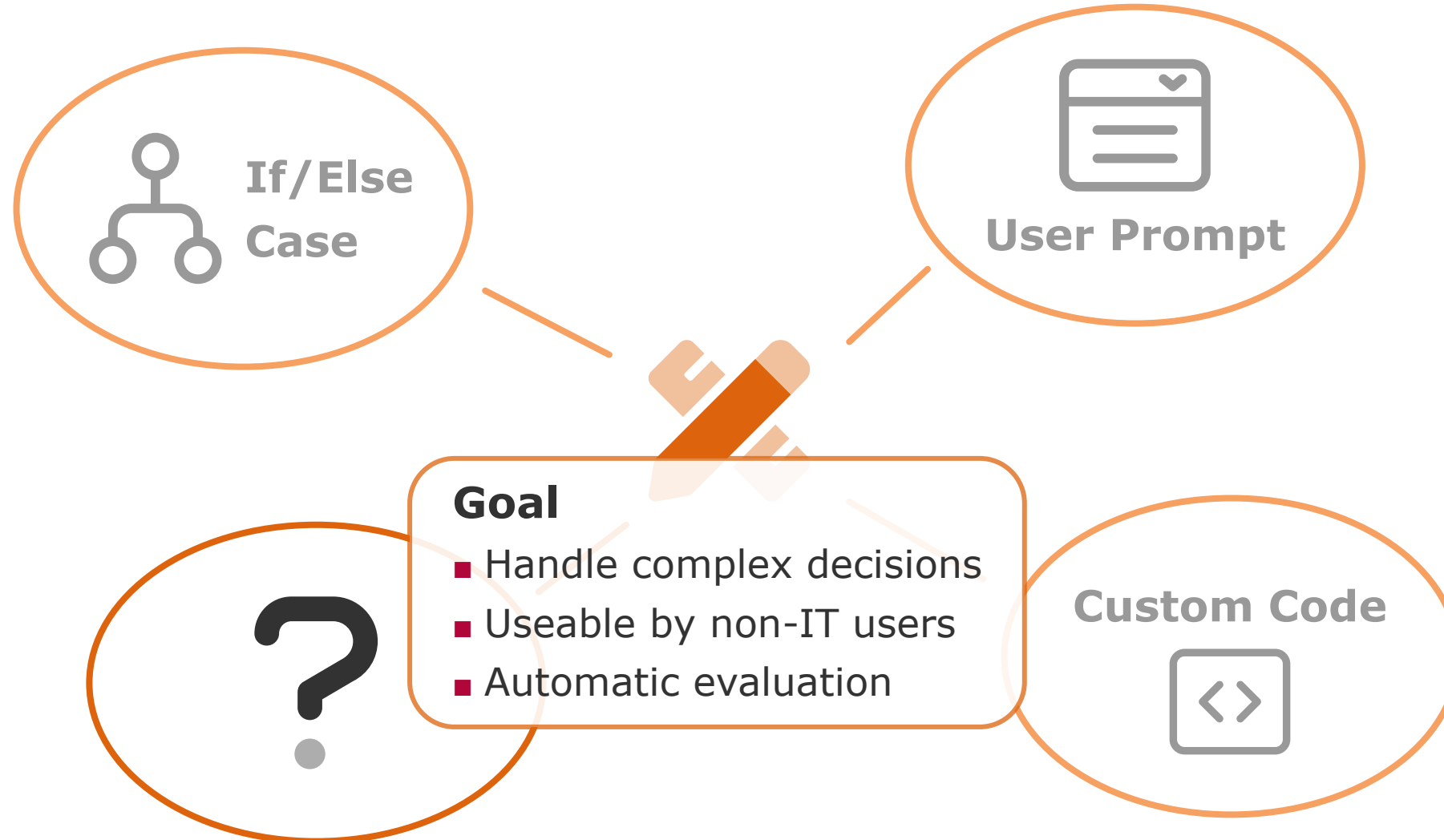
- Traditional approach
- Requires in-depth knowledge of decision logic
- Based on defined set of rules



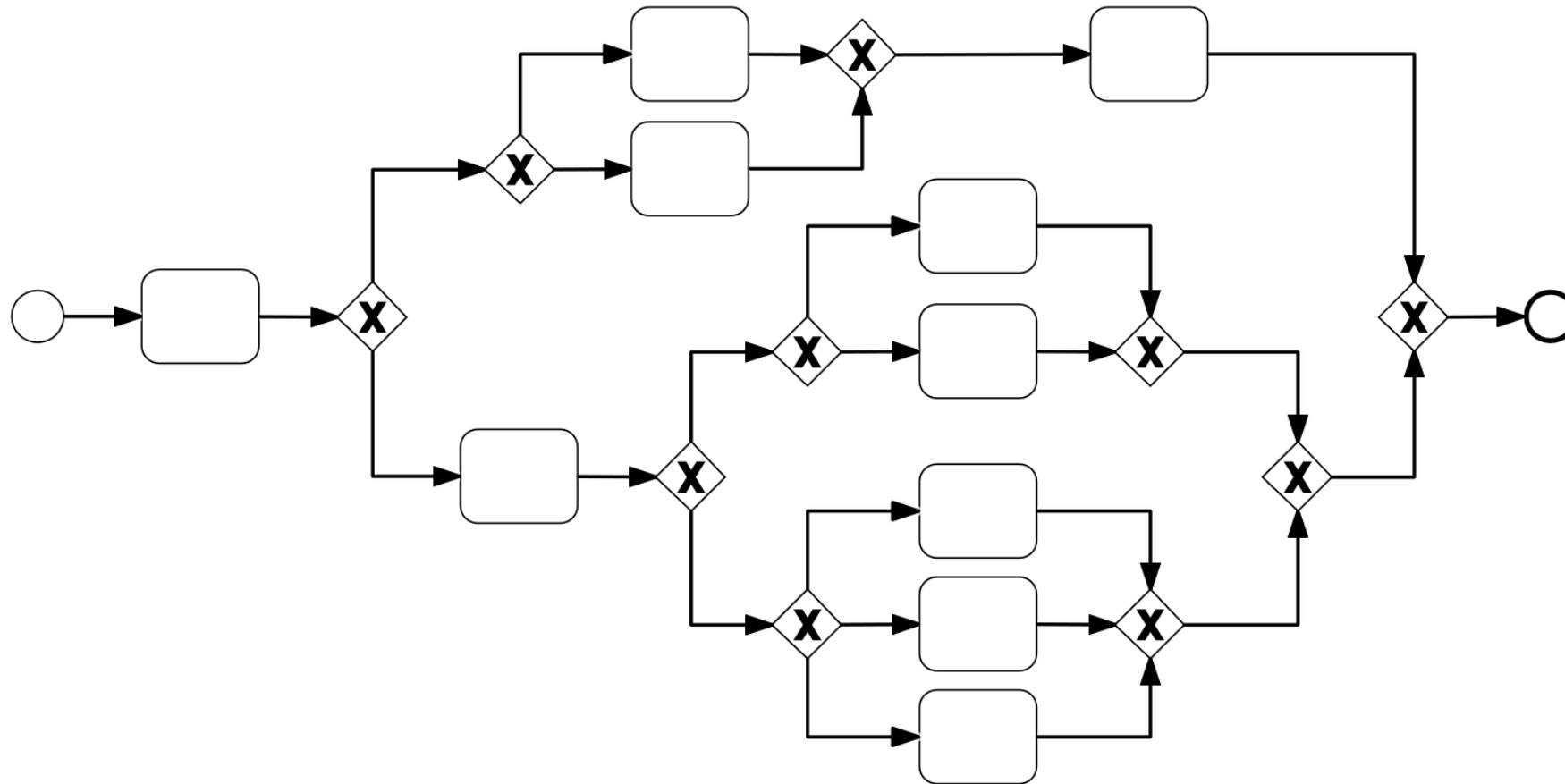
Current Options for Modeling Decisions



Current Options for Modeling Decisions



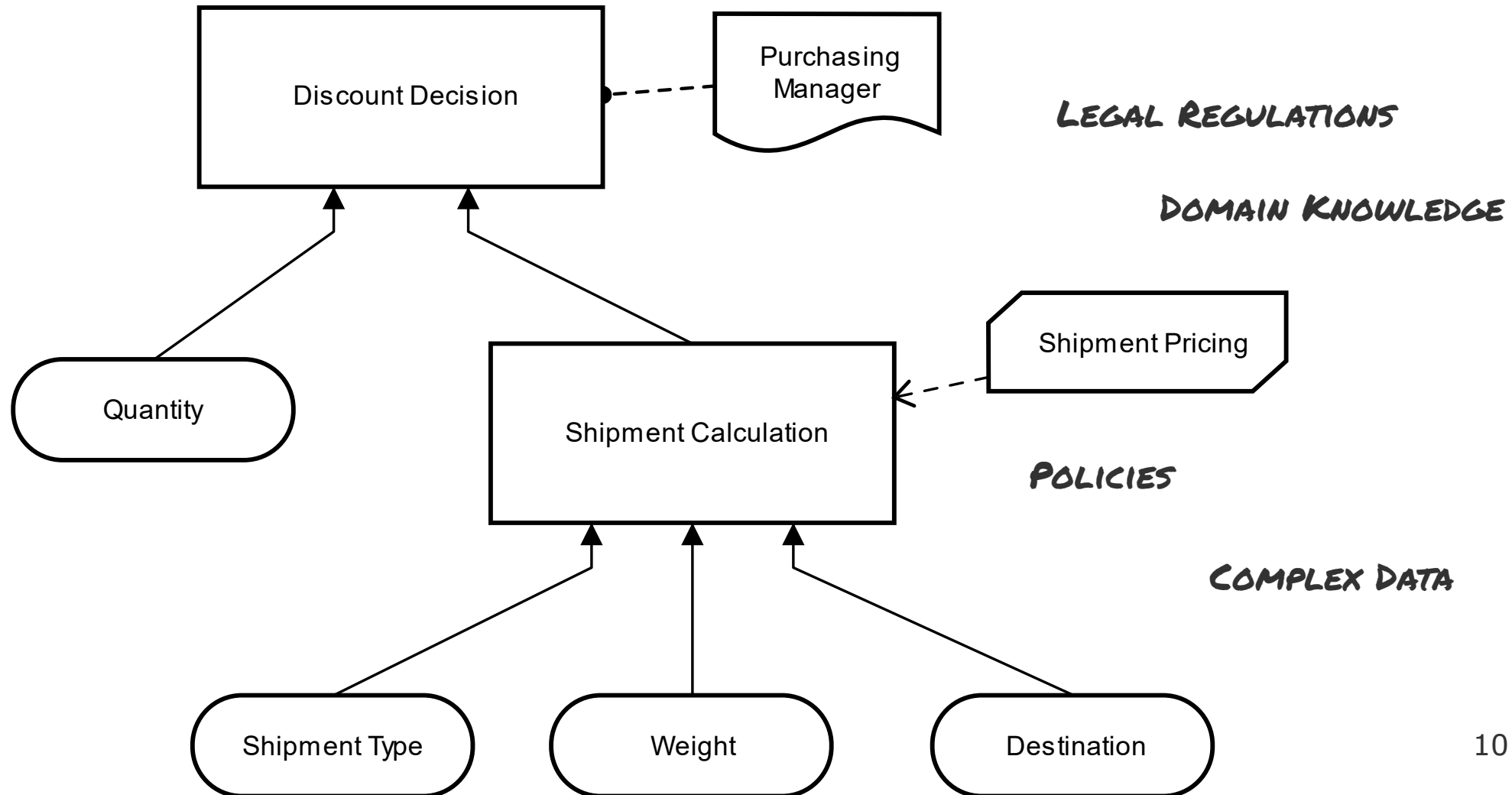
Related: BPMN and Decisions



Decision Model and Notation (DMN)

“DMN is a modeling language and notation for the **precise specification of business decisions and business rules**. DMN is **easily readable** by the different types of people involved in decision management. **These include: business people** who specify the rules and monitor their application; business analysts.”

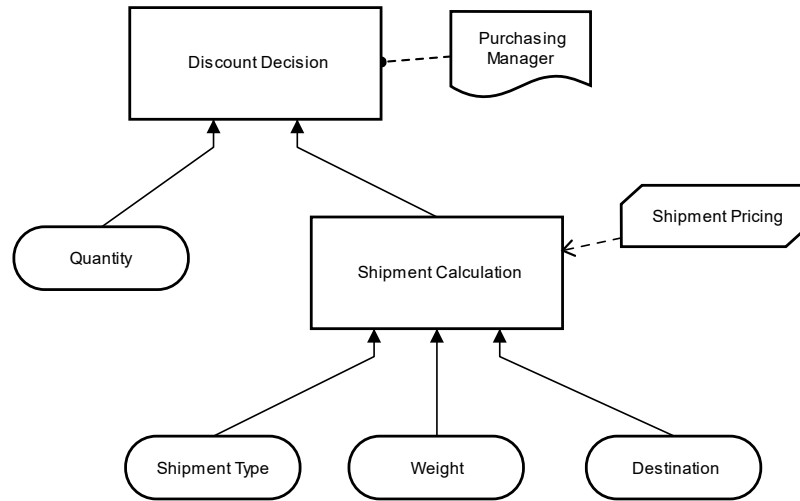
DMN – Decision Requirements Graph



DMN – Decision Table

Shipment Calculation Hit Policy: Unique					
	When shipment type "parcel","letter","postcard"	And weight integer	And destination "domestic","international"	Then price integer	And responsibility "logistics","sales","applicant"
1	"postcard"	-	"domestic"	50	"applicant"
2	"postcard"	-	"international"	90	"sales"
3	"letter"	<= 30	"domestic"	80	"sales"
4	"letter"]30..50]	"domestic"	95	"sales"
5	"letter"	<= 100	"international"	250	"logistics"
6	"parcel"	<= 2000	"domestic"	450	"logistics"
7	"parcel"]2000..5000]	"domestic"	600	"logistics"

DMN – Applications



CALCULATION



CLASSIFICATION

ELIGIBILITY CHECK

RISK ASSESSMENT

MEDICAL DOMAIN

FINANCE +

INSURANCE



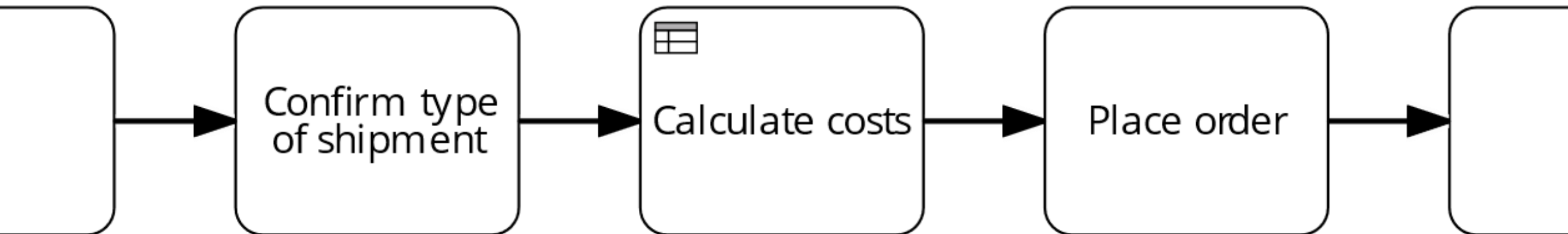
MANUFACTURING

PUBLIC ADMINISTRATION

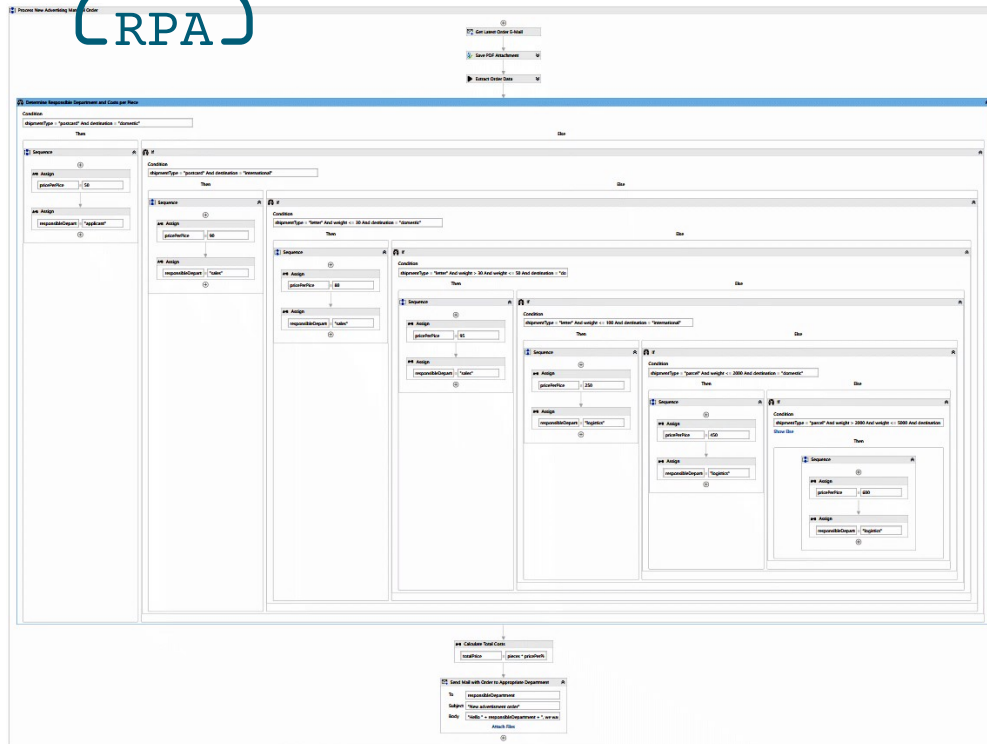
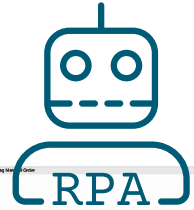
Shipment Calculation Hit Policy: Unique					
	When	And	And	Then	And
	shipment type	weight	destination	price	responsibility
	"parcel","letter","postcard"	integer	"domestic","international"	integer	"logistics","sales","applicant"
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DMN – Integration in BPMN

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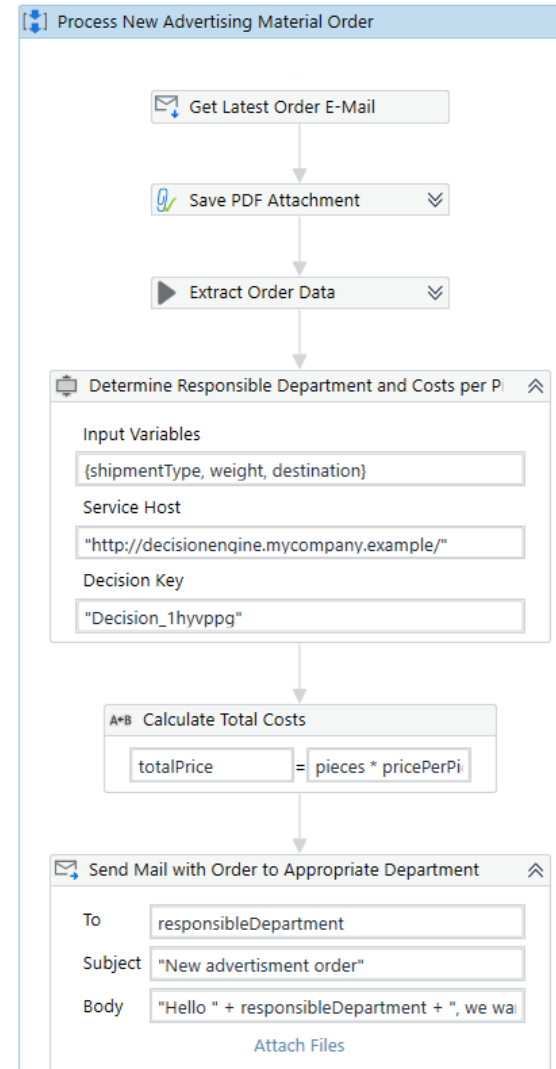
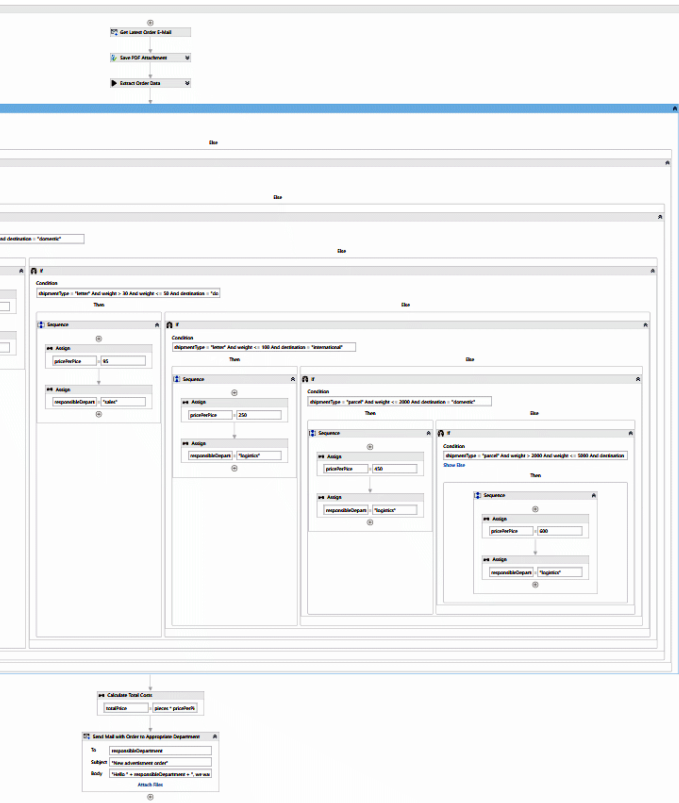


Integration of DMN in RPA



Shipment Calculation Hit Policy: Unique					
	When shipment type	And weight	And destination	Then price	And responsibility
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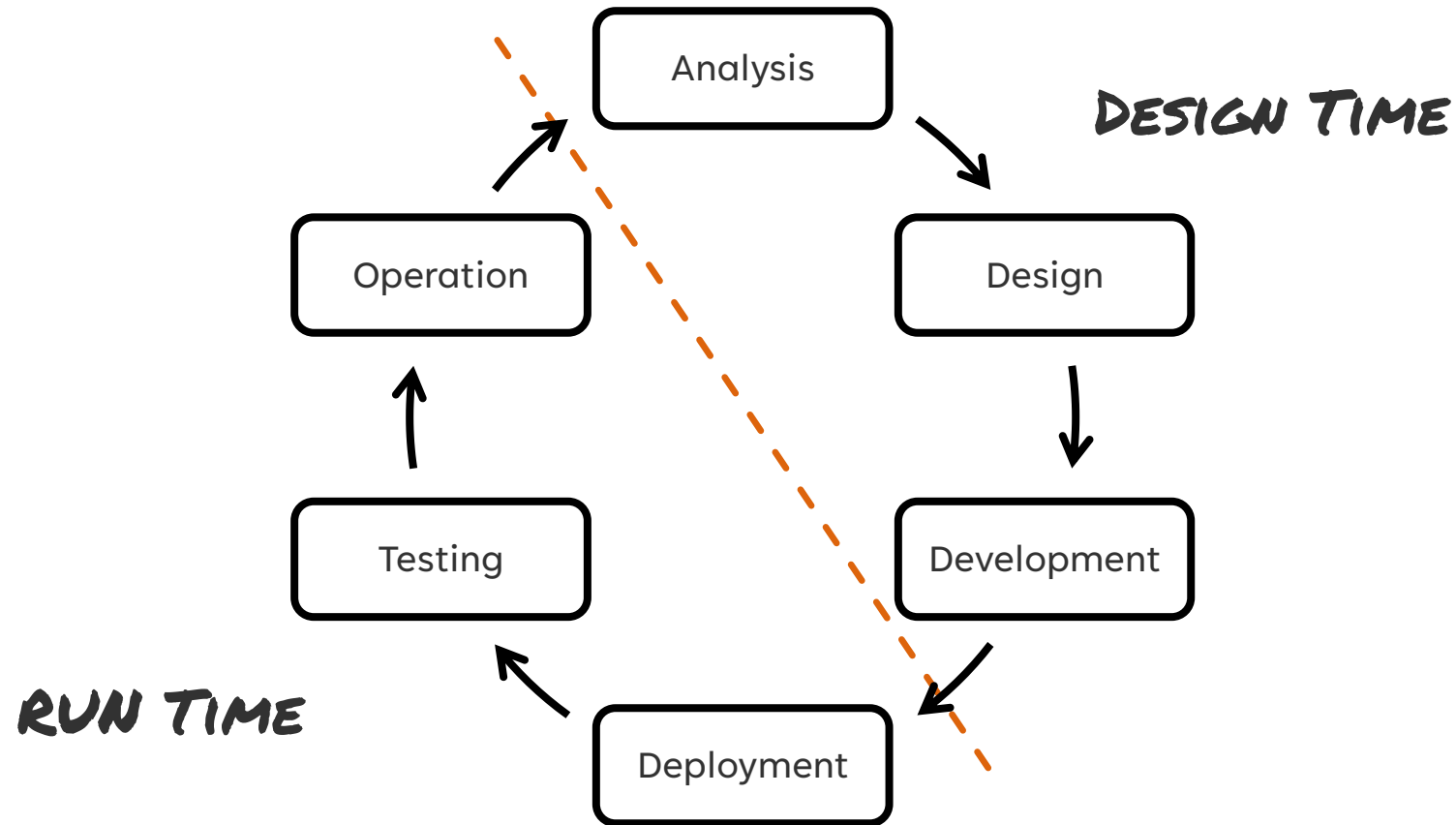
Integration of DMN in RPA



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Effects of the Integration of DMN in RPA



Effects – Design Time

Analysis

- Increased applicability of RPA, as decision-intensive processes can be modeled easier using DMN

Design

- Decision captured independent of RPA bot

Development

- Requires proficiency of another modeling language (DMN)

Effects – Run Time

Deployment

- Decision made by decision service not by RPA bot

Testing

- Decision tables enable some preliminary checks at design time

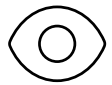
Operation

- Track and analyze decisions
- Decision logic can be updated without modifying RPA bot
- New performance indicators can be collected

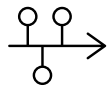
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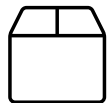
Central storage of decisions enables reuse in bots and processes



Can be modified and reviewed easily



Decision-making processes are logged



Decision logic not exposed to bot

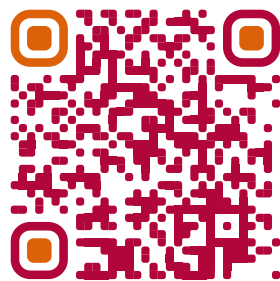
Conclusion

- RPA becomes more and more intelligent
 - Integration of DMN enables
 - Visual modeling of complex decision logic
 - Decoupling decision logic from bot model
 - Traceability of decisions
-

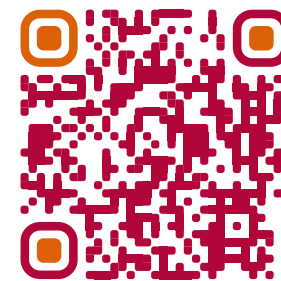
Contact



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[https://github.com/bptlab/
rpa-dmn-operation/](https://github.com/bptlab/rpa-dmn-operation/)



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