

# ENESA- EY NLP Enabled Support Automation



The better the question. The better the answer.  
The better the world works.







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2. What is ENESA and how it works?
3. ENESA Demo
4. Our credentials



# 1

## ENESA approach & considerations

# EY NLP Enabled Support Automation (ENESA)



An AI based solution for automated email classification, response, routing, and straight through processing of customer queries received by service desk in organizations

## Key benefits of ENESA

- ▶ **Cost reduction** through automated email workflow
- ▶ **Reduced SLA of case resolution** through NLP based classification and automated response
- ▶ **Straight through processing** of customer requests using RPA
- ▶ **Auto-allocation of cases** to the correct agent using machine learning
- ▶ **Analytic insights** due to availability of structured data
- ▶ **Improved customer satisfaction** through faster query resolution
- ▶ **Easy integration** with company systems using APIs and RPA

## Key challenges of traditional process

- ▶ **High costs of operation** due to human labor cost
- ▶ **Longer turn-around-time** due to manual steps of query resolution
- ▶ **Low scalability** as it takes a long time to hire and train human workforce
- ▶ **Low data insights** due to lack of structured data, analytics is limited to MIS
- ▶ **Sub-optimal customer satisfaction** because of long turn around time

## What role can EY play?

- ▶ **Holistic solution provider** offering both consulting and technology capabilities

### Consulting

- ▶ Business case
- ▶ Target operating model and roadmap
- ▶ Implementation PMO
- ▶ Risk governance and control framework
- ▶ Change management

### Technology

- ▶ Technology solution **design and architecture**
- ▶ **Feasibility assessment**
- ▶ **Customization and deployment** of the solution on-premise or on cloud, as per requirement

## EY's NLP enabled support automation solution

**Digital, agile, scalable, secure, low cost platform** with following attributes:

- ▶ **Cognitive solution** for all types of support queries
- ▶ NLP based **auto-classification** and **auto-response**
- ▶ **Easy to configure** and customize
- ▶ Easy **integration with BPM tools**
- ▶ **Analytics dashboard** for business insights



## 1 Advisory

We provide end to end consulting services for document digitization and information structuring requirements. The services include:

1. Business case and requirement assessment
2. Solution design
3. Technology assessment and selection
4. Centre of excellence setup
5. Control, governance and best practice

## 2 Implementation and Delivery

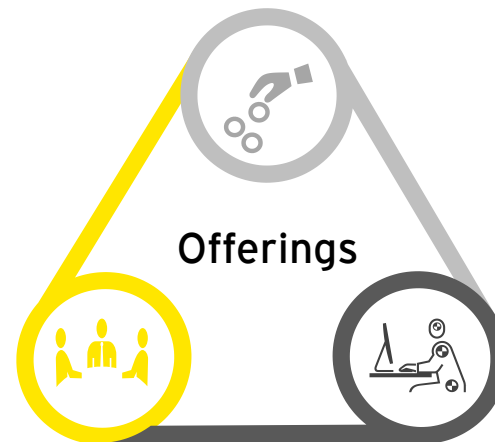
EY has qualified and experienced technical delivery team for taking implementation responsibility. We support client for:

1. Turn-key project deliver (Build Operate and Transfer model)
2. Technical over-sight and training : Enabling the client teams to implement and maintain solutions
3. Technical development support
4. Post production support
5. Testing support

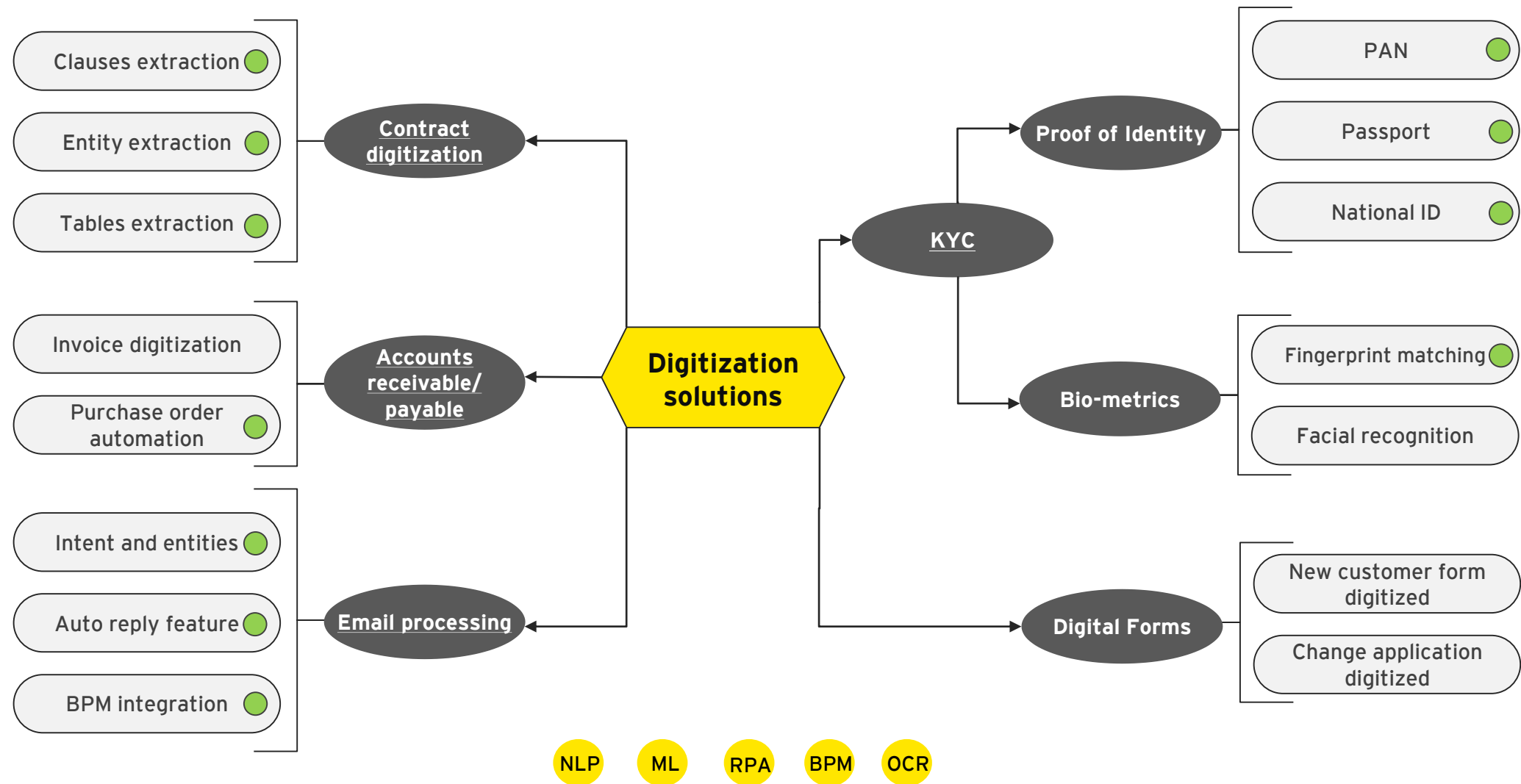
## 3 Managed Services

EY has comprehensive managed services offering:

1. On-site managed services
2. Off-site managed services
3. Platform as a service (over Cloud)

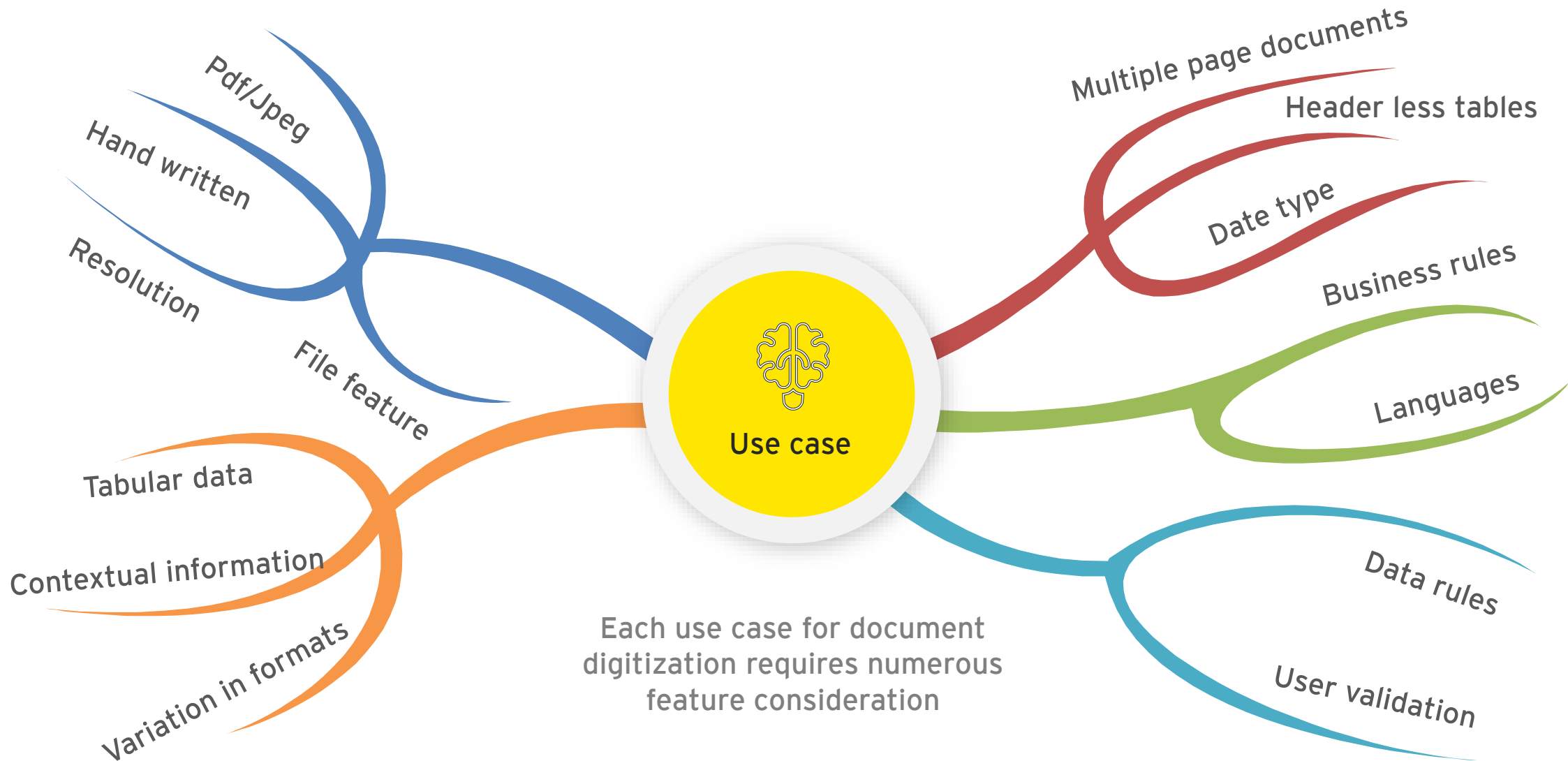


# Data digitization solutions

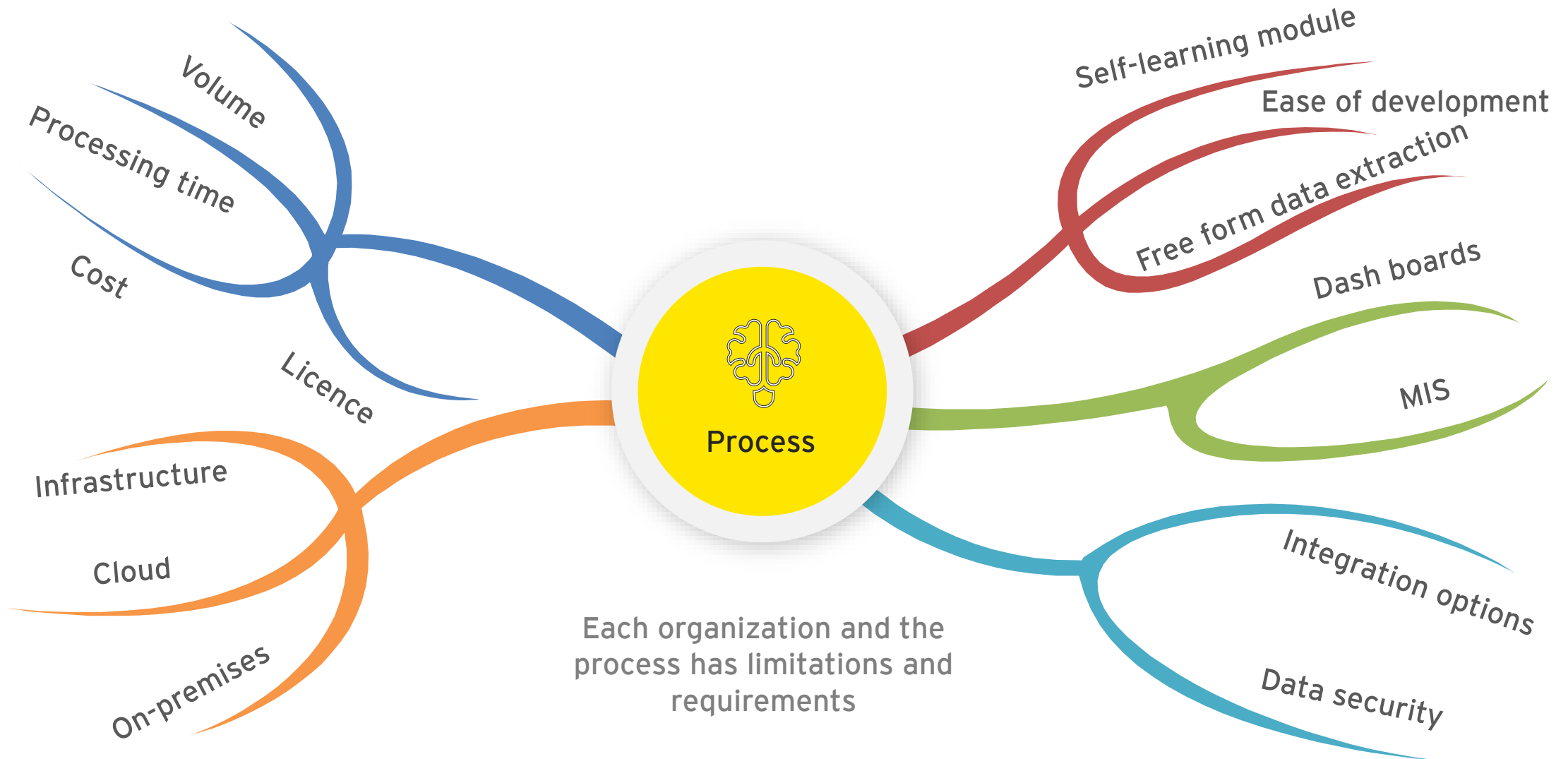


● Case study available

# Use-case specific considerations

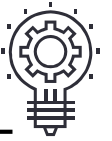


# Process specific considerations





# Technology Stack



## Digitization pre-built platforms



## Digitization custom solution toolkit

### Open source tools



Tensorflow



Python



Keras



Tesseract OCR



OpenCV

### APIs (Computer vision/OCR/Language)



1. Computer vision API
2. Speech to text API
3. Language Understanding API



1. Amazon Rekognition
2. Amazon Polly
3. Amazon Lex
4. Amazon Textract



1. AutoML vision
2. Cloud vision API
3. Cloud text to speech API
4. Cloud Natural language API

## ENESA Tech Stack

### Tools



Keras



Python



### Azure services (Language)



1. Microsoft Azure Machine Learning services
2. Microsoft Azure Cognitive services
3. Azure Kubernetes services
4. Microsoft API management
5. Microsoft PowerApps



# 2

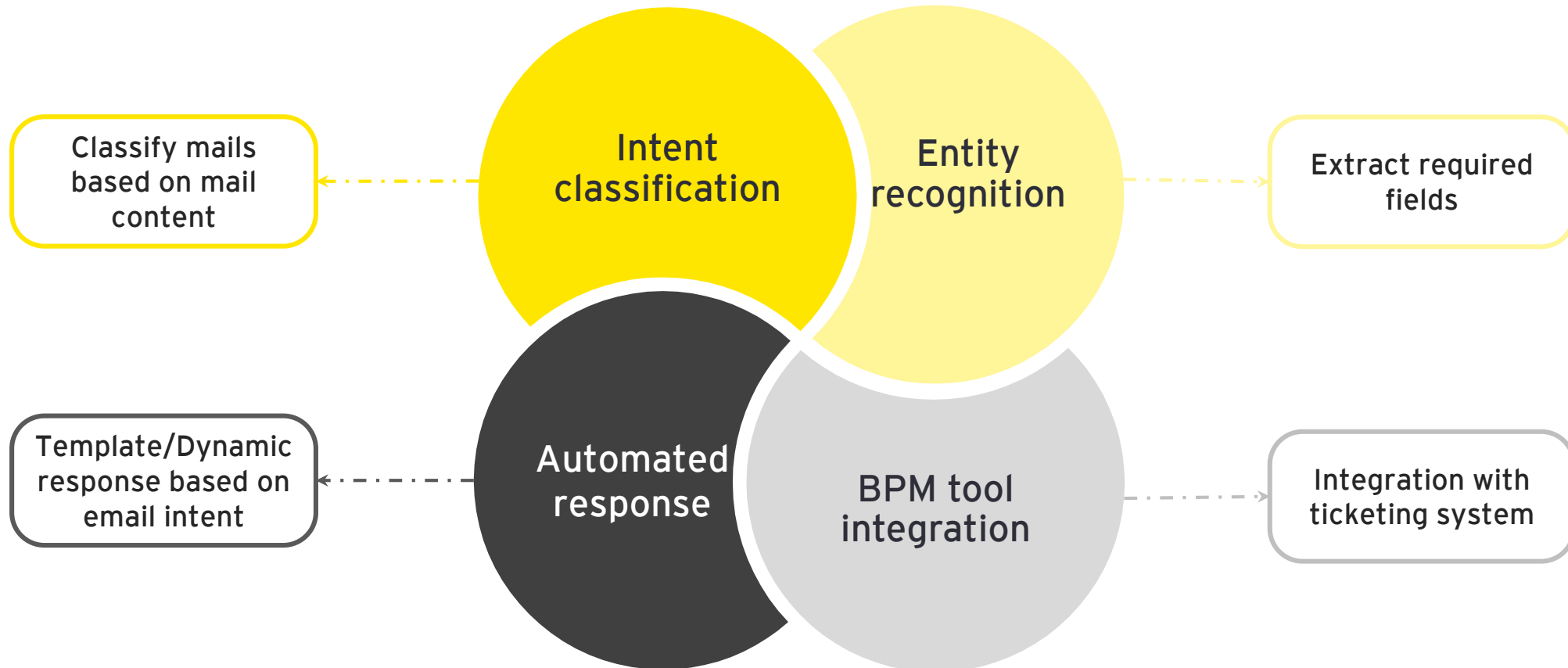
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What is ENESA and how it works?

# ENESA- EY NLP Enabled Support Automation

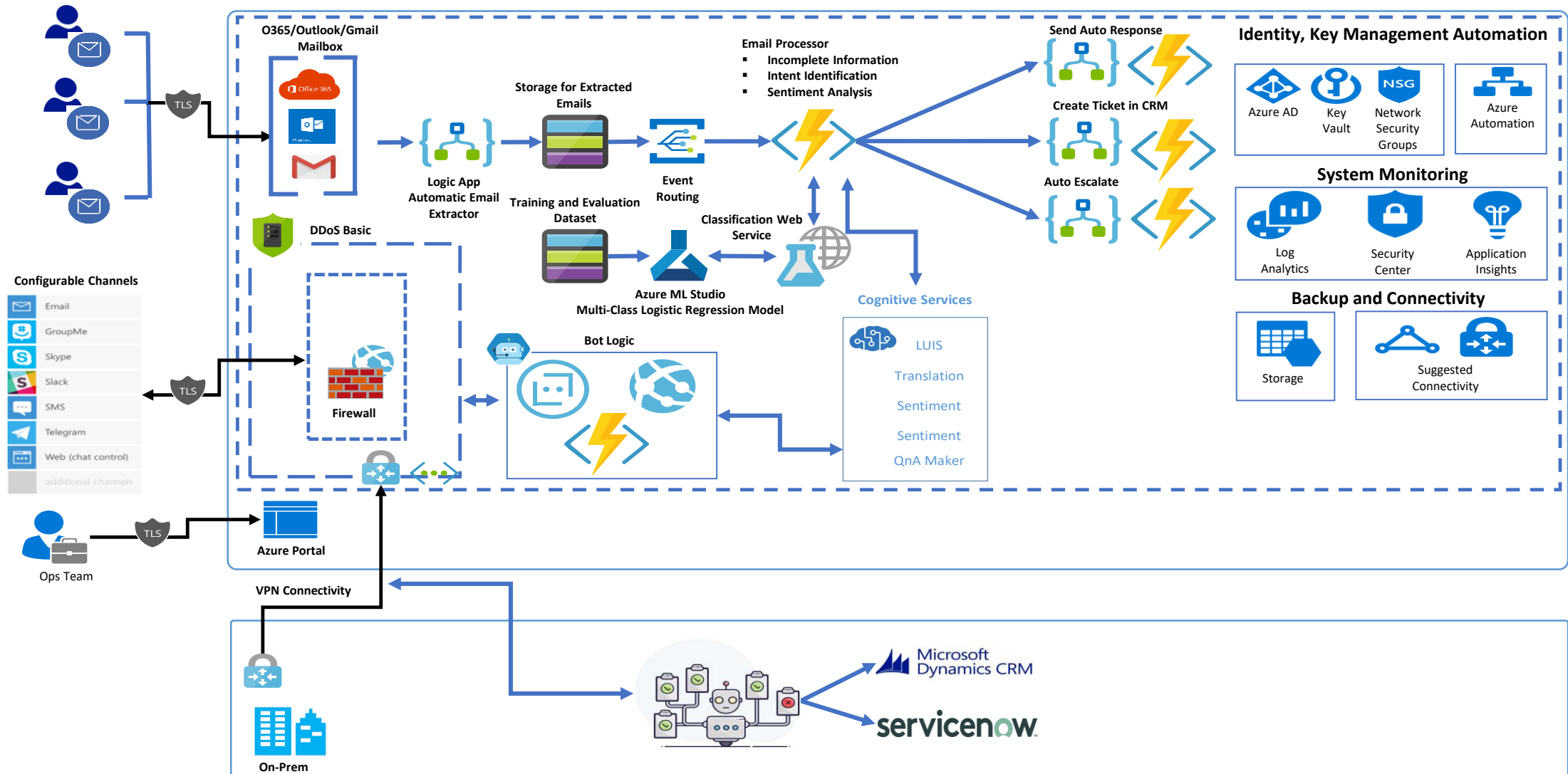


Automated email classification, response, routing and straight through processing of customer queries  
ENESA leverages machine learning and natural language processing to infer context based on historical information.



Functionalities in ENESA

# ENESA architecture with Microsoft Azure services





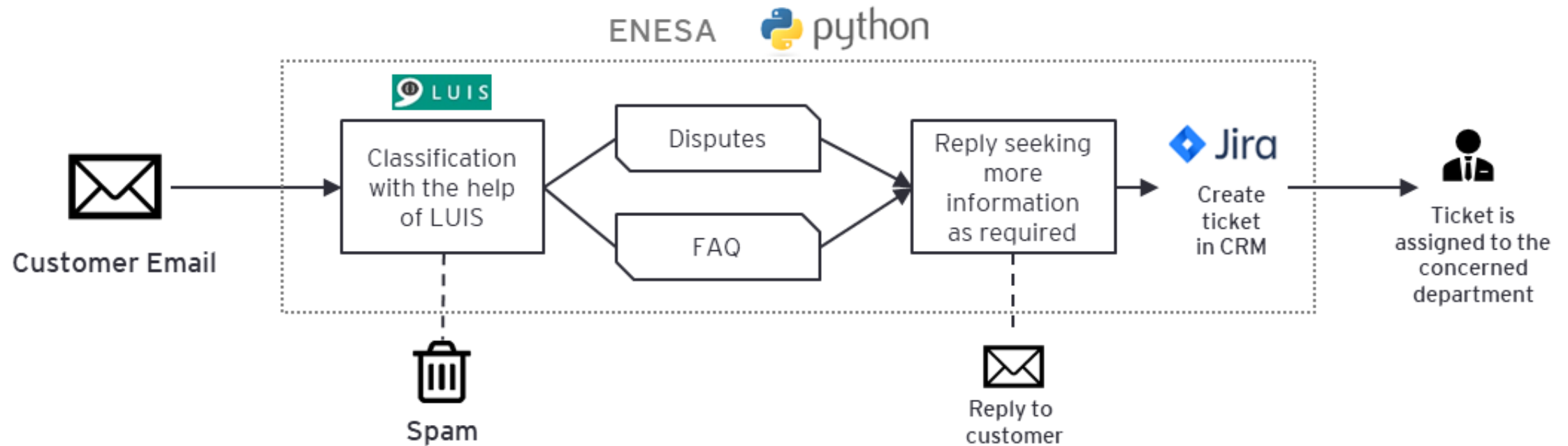


# 3

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ENESA Demo

# ENESA demo solution architecture



# ENESA in action



### Spam Classification

**Automation**  
Service desk project

Back to project

Queues  
HBFC Bank Customer ... 1

New queue

We're updating the issue view to help you get more done. [Learn more](#) or [See the old view](#)

Back AUT-85

**I need Your Urgent Assistance**

sa.official001@gmail.com raised this request via Jira

DESCRIPTION  
Hello dear Uncle, My name is Grace Shukla an orphan, I have a business proposition which will interest you. Please get back to me for full details. I wait for your quick response. Regards, Grace

STATUS  
Resolved Done

SLAs  
7h 59m Time to first response within 8h  
15h 59m Time to resolution within 16h

ASSIGNEE  
Spam

REPORTER  
sa.official001@gmail.com

REQUEST TYPE  
None

ORGANIZATIONS  
None

COMPONENTS  
None

Activity Comments

Add internal note / Reply to customer

### FAQ Classification

**Automation**  
Service desk project

Back to project

Queues  
HBFC Bank Customer ... 1

New queue

We're updating the issue view to help you get more done. [Learn more](#) or [See the old view](#)

Back AUT-86

**Update address**

sa.official001@gmail.com raised this request via Jira

DESCRIPTION  
Hello Sir/Madam, How do I update my credit card address? I have recently moved to a different city. Please explain???? Thanks, Manish Kumar 9123000570

STATUS  
Resolved Done

SLAs  
7h 59m Time to first response within 8h  
15h 59m Time to resolution within 16h

ASSIGNEE  
FAQ

REPORTER  
sa.official001@gmail.com

REQUEST TYPE  
None

ORGANIZATIONS  
None

COMPONENTS  
None

Activity Comments

Add internal note / Reply to customer

### Bot responds seeking more information

**Customer Service Response** Inbox X

bankhbfc@gmail.com 14:49 (0 minutes ago)

to me

Dear Valued Customer,

Thank you for contacting HBFC Bank. We are very sorry to hear you had this negative experience. In order to better investigate your case please provide us with the following information:

- Your Full Name
- Date and Time of Each Disputed Charge
- Last 4 Digits of your Credit Card
- Unique 12 Digit Transaction Id Associated with Each Disputed Charge
- Amount of Money Charged

Thank you for being our customer,  
HBFC Bank

Reply Forward

relevant details

### Classification of Disputes and further assignment

**Automation**  
Service desk project

Back to project

Queues  
HBFC Bank Customer ... 1

New queue

We're updating the issue view to help you get more done. [Learn more](#) or [See the old view](#)

Back AUT-87

**Unauthorized Transaction**

sa.official001@gmail.com raised this request via Jira

DESCRIPTION  
Dear HBFC Bank Team, Sir, I have been charged Rs. 3,431 by Delmonte LLC but I did not authorize this transaction (transaction id is #987327564825). Please take immediate action and refund this amount as soon as possible. Regards, Varun

STATUS  
Waiting for customer

SLAs  
15h 59m Time to resolution within 16h  
7h 59m Time to first response within 8h

ASSIGNEE  
Transactions/Complaints

REPORTER  
sa.official001@gmail.com

REQUEST TYPE  
None

ORGANIZATIONS  
None

COMPONENTS  
None

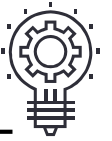
Activity Comments

Add internal note / Reply to customer

### Video Demo

Folder -  
Videos/Email Classification.mp4

# Other NLP use cases







# 3

## Our Credentials

# Business Case - ICR Order Entry



## Background

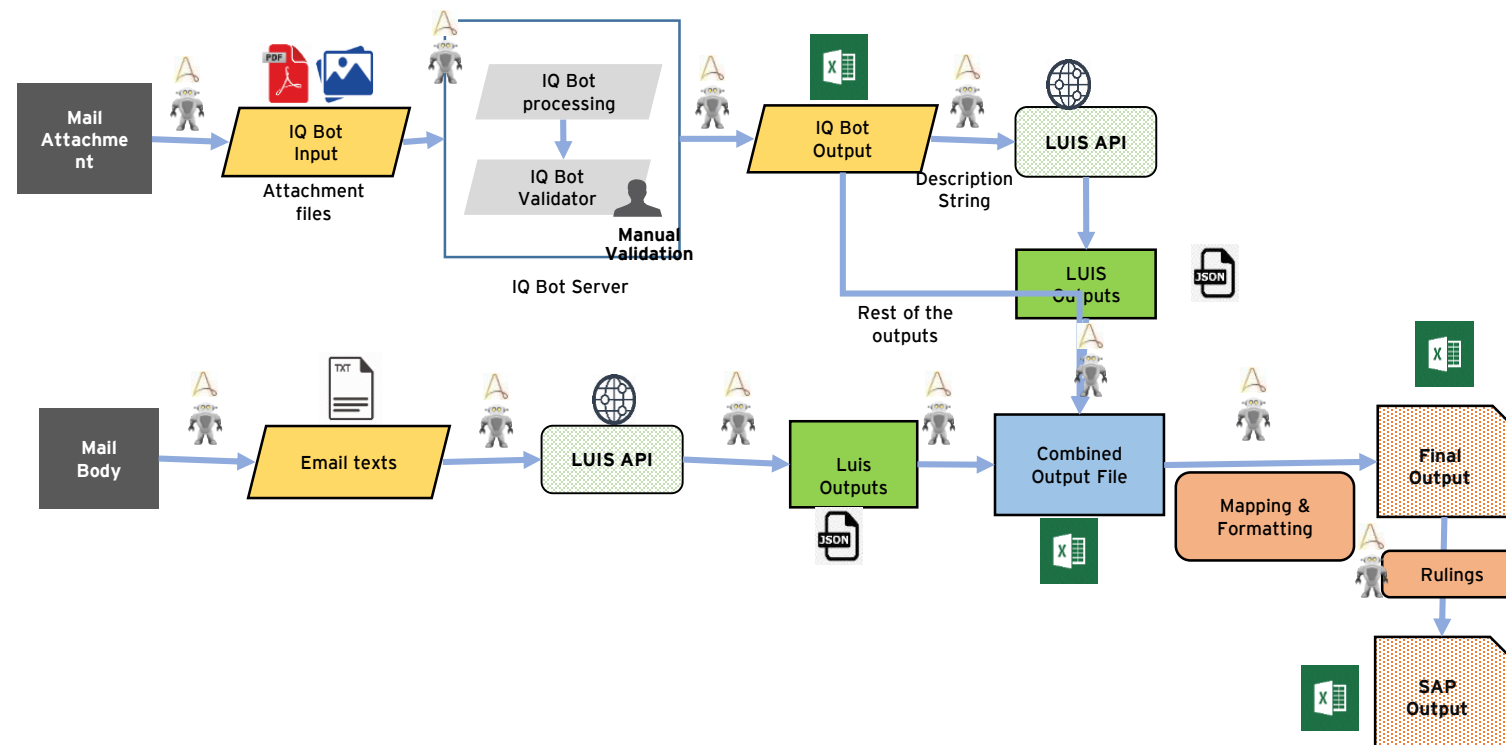
- ▶ A multinational steel manufacturing corporation performed the order entry process manually. The process involved manually recording and digitizing purchase orders and invoices with multiple vendors

## EY Approach & Solution

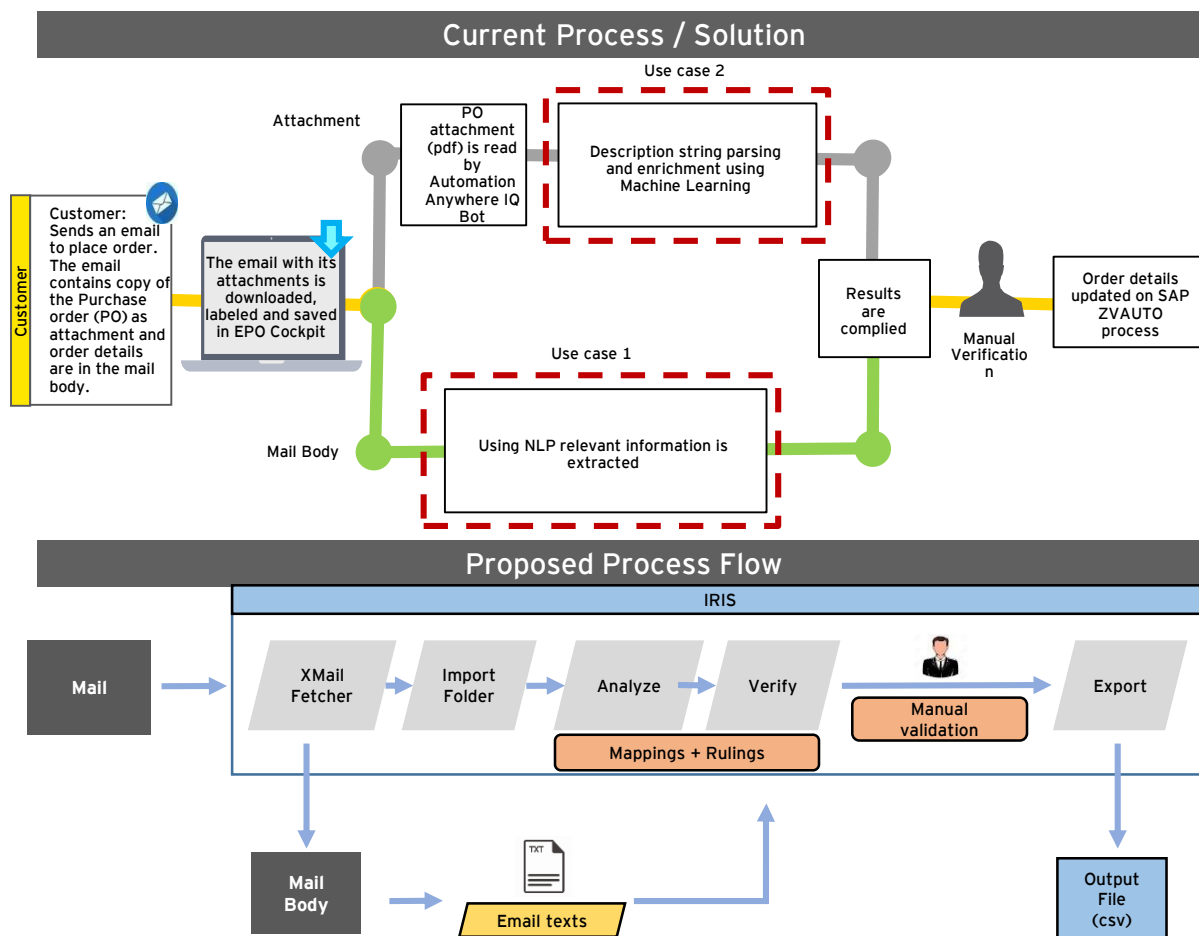
- ▶ EY a study of the process and shortlisted OCR/ICR platforms to be integrated with the client's system
- ▶ An end to end ICR and NLP based solution to be designed for the vendor's PO and Invoice digitization process
- ▶ End to end automation integration to digitize PO and Invoice documents and combine the outputs to be fed into the ERP system in place

## Outcome

- ▶ EY conducted extensive feasibility assessment exercises with multiple global vendors
- ▶ IRIS Xtract was finalized to conduct OCR/ICR digitization
- ▶ Microsoft LUIS was deployed to conduct NLP classification
- ▶ End to end automation by deploying Automation Anywhere was achieved
- ▶ The solution reduced total SLAs and increased overall efficiency of the process.



# Business Case - ICR Vendor Selection



Vendor Analysis								
SI	Technology Platform	NLP/ Semantic search	Free form OCR extraction (No template configuration)	API Integration	Ease of configuration	Customizable User Interface/ Validation screens	Auto data validation rules	Handling multiple PO in single file
1	IRIS Data Capture							
2	EssDocs							
3	Pendo Systems							
4	ABBYY							
5	Infrd AI							
6	EssDocs							
7	ODYSAI/Doc Digitizer							
8	Expert Systems							
9	Nuance							
10	AA IQ Bot							

# Business Case - ICR Vendor Selection



## Background

- ▶ A multinational investment bank's Accounts Payable process was handled by a vendor in-charge of data enrichment and validation services before further processing in ERP
- ▶ Key pain points: Multiple human touchpoints, regional variations, zero straight through processing, primitive reporting, no available audit trail

## EY Approach & Solution

- ▶ EY conducts a study of the process, gathers data around invoice volumes and peak loads, conducts meetings with stakeholders to understand their key issues and challenges
- ▶ Best fit analysis to identify evaluation parameters and create an evaluation framework to assess solutions in the market

## Outcome

- ▶ EY conducted demos, assessed functionalities & captured feedback from stakeholders & users. Built a model around those parameters to assess the solution based on technical, functional, financial and general vendor presence.
- ▶ Shortlisted solution based on agreed parameters and scoring was provided
- ▶ Suggest top 3 solutions : one primary solution and two alternate solutions & provide detailed implementation roadmap for the selected solution

## Key benefits

Current state		Future State
<b>5 days</b> Current SLA	▶ New solution to reduce the turn around time of invoice processing to less than 48 hours from current 5 days	<b>&lt;48 hours</b> Future SLA
<b>~15%</b> Existing OCR accuracy	▶ Implement intelligent OCR enabled by AI, ML to improve the OCR accuracy ▶ Reduce manual intervention due to high OCR accuracy	<b>&gt;90%</b> Improved OCR accuracy
<b>0%</b> Straight through process	▶ Input / invoice digitization to enable a straight through process ▶ Reduced manual intervention	<b>&gt;60%</b> Straight through process
<b>Serial</b> Processing of invoices	▶ New solution to bring in agile way of invoice processing ▶ Each invoice need not go through every queue for processing	<b>Agile</b> Processing of invoices
<b>X</b> Audit trail, invoice traceability	▶ Improved traceability of invoices ▶ Customizable dashboards available for MIS reporting and status check	<b>✓</b> Audit trail, invoice traceability, dashboards

## Vendor Analysis

	IBM - MITS	TCS - CCS	IPS	SPS	Invoice Sharing
Empanelled	Exists	Exists	Does not exist	Exists	Does not exist
Language support	Exists	Does not exist	Exists	Does not exist	Exists
PO-flip	Does not exist	Does not exist	Exists	Does not exist	Exists
E-invoicing	Does not exist	Does not exist	Does not exist	Does not exist	Exists
Vendor portal	Does not exist	Does not exist	Exists	Does not exist	Exists
QR code	Exists	Does not exist	Does not exist	Does not exist	Exists
Invoice processing bot	Does not exist	Exists	Exists	Does not exist	Exists
Vat coding bot	Does not exist	Does not exist	Does not exist	Does not exist	Exists
Time to go-live	High	High	Low	Medium	Low

■ Exists  
■ Does not exist



# Business Case - ICR Vendor Selection



## Background

- ▶ A leading Global investment banking client performs KYC refresh for over 20,000 entities each year. The process involves manual tasks of document collection from various sources, data extraction and data validation.
- ▶ The process involves FTEs manually collecting publicly available document from different sources and extracting required data fields and conduct extensive validation through their downstream systems

## EY Approach & Solution

- ▶ EY conducted a feasibility assessment of data extraction technologies that can be deployed on premises with the ability to extract data using NLP / semantic search.
- ▶ EY identified evaluation parameters and measured the technology platforms' ability to integrate with upstream and downstream systems

## Outcome

- ▶ EY conducted extensive feasibility assessment exercises with multiple global vendors
- ▶ Data extraction was found feasible as per our study
- ▶ Suggested top 3 platforms: one primary platform and two alternate solutions & provided detailed implementation roadmap for the selected solution
- ▶ Due to limited time and training data, EY relied on the platform's robustness in a well trained scenario, first pass accuracy, credentials, references and assessment of the technology.

## Vendor Analysis

### Functionality Matrix

EY assessed the shortlisted technology platforms specifically for features relevant to GS. Below is a summary of top 5 Technology Platforms:

Technology Platform	On-Premise Deployment	NLP/ Semantic search	Rule engine	API Integration	Processing Speed	Self learning modules	Ease of on-boarding new document	Training & Support Services	Enterprise Class Management
Pendo Systems	Strong	Strong	Strong	Strong	Strong	Strong	Intermediate	Strong	Strong
Expert Systems	Strong	Strong	Strong	Strong	Strong	Strong	Intermediate	Weak	Strong
Ikarus	Strong	Strong	Strong	Strong	Intermediate	Strong	Intermediate	Intermediate	Strong
EY In-house	Strong	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Strong	Strong
IBM Datacap	Strong	Intermediate	Weak	Weak	Intermediate	Intermediate	Weak	Intermediate	Strong

### Strength definitions

Strong



Denotes a capability that is; in a mature state of existence, easily demonstrable.

Intermediate



Denotes a capability that is; approaching maturity but with gaps to fully satisfy the client requirement or business need.

Weak



Denotes a capability that has; either not been developed or is in its infancy. The capability will quite often be in beta or not a focus for the Technology Platform