Intelligent Process Automation
PwC’s view on RPA and beyond

Milan
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1. Introduction
2. Beyond RPA
3. Typical Implementation Approach
Introduction
Intelligent Process Automation (IPA) involves applying technologies to automate workflows in order to increase productivity and efficiency.

IPA in practice:

- Aggregating customer data to improve service
- Increasing efficiency while reducing errors
- Analyzing processes at scale
- Faster operations

85% of Banking & Capital Markets CEOs are concerned about the speed of technology change as a threat to their organization’s growth.

75% of CEOs are concerned about the availability of digital skills.

44% of CEOs say they are clear about how Robotics and AI can improve the customer experience.
Automation toolkit technologies

In light of specifics automation needs, best practices suggest to combine different automation technologies to achieve better results. Here the main technologies that are used as a “toolkit” in Process Automation projects.

- Robotic Process Automation
- Dynamic Case Manager

- Smart Document Capturing
- Digital Signature

- Signature presence
- Signature authenticity

- Digital Document Repository
- Natural Language Classification

- Computer vision
- Virtual Agents

- Machine Learning Process Decisioning
- Process Mining
Computer coded Robots (RPA) mimic the interaction of users and work cross-functional to enable the automation of static processes

Robots are ...

- **Computer coded software**
  - Non invasive, zero change integration on target system and security

- **Mimic interactions of users**
  - Record and automate user interactions
  - Interact with the user interface (UI) of existing applications

- **Work cross-functional and cross-applications**
  - Are entirely a technology agonistic and can be used with any application (e.g. ERP, DB, MS Suite, structured PDF)
  - Use a central repository for easy management of automation scrips and processes

- **Enable the automation of repetitive, rule-based processes**
  - Build workflows with dynamic decision/branch points and loops for scaling (up/down)

Robotics Process Automation can be used by teams or individuals who:

- Undertake structured, repeatable and computer based tasks
- Perform processes that follow a logical sequence and can be captured easily in what-if statements
- Access more than one system to complete the process
- Do information search, collation or updating
- Use workflow enabled interaction with people
The difference between BPA, RPA and more advanced automation is that RPA suitable processes are more static and structured.

If processes are static and structured it is easy to automate so here RPA will be the ideal solution.

Processes that involve complex decisions, a lot of exceptions, are dynamic and more unstructured are not suited for RPA but more advanced automation solutions can help in this case.

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**Static**

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**Dynamic & Interactive**

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RPA brings huge efficiency gains and operational cost reduction

RPA is experimenting a huge application in the market thanks to its benefits

- **Reduced costs**
  Overall operating costs are a fraction of an off-shore FTE

- **Increased quality**
  Quality of outputs is increased as chances of error are reduced significantly

- **Available 24/7**
  Capable of processing around the clock completing the work that, up, until now, humans have been doing

- **High scalability**
  An easily expandable workforce, instantly trained and deployed

- **Increased Productivity**
  Resources can now focus on more value-added tasks as RPA can take up the time-consuming and repetitive tasks

- **Increased Compliance**
  RPA tool provides full audit trail of processes performed and are rule-based

- **Non-invasive Technology**
  There is no need to change the underlying systems or technology as RPA is deployed on top of the systems and applications

- **Insights and Analytics**
  As all activities performed by a RPA tool are captured, visual dashboards can be created to identify areas for improvements
RPA overview on Italian Financial Services market

Italian Financial Services are widely adopting RPA

RPA is a well-established reality in Italian Financial Services sector, and the results prove that most of the players are experimenting mixed technologies solution instead of pure RPA.

- Of respondents at least has planned to start or has already performed activities to evaluate the potential of automation through RPA (90%)
- Of respondents has already widely adopted and implemented automation activities and projects through RPA (11%)
- Of respondents declares that the implemented RPA projects achieved the objectives set on schedule (70%)
- Average saving of FTE declared by the respondents in relation to the application scope of initiatives implemented (35%)

Source: PwC RPA in Italian Financial Services Survey 2018
https://www.pwc.com/it/it/services/consulting/robotic-process-automation/rpa-financial-services-italiani.html
Beyond RPA
Disruptive technologies – The Essential Eight

We analyzed 250+ technologies to zero in on the eight having the biggest business impact right now.
Embodied AI

Defined:
A physical IoT-enabled device embedded with AI capabilities, which can perform complex tasks locally.

Why it matters:
From simple cameras to sophisticated drones, embodied AI will be a key contributor to achieving the $15.7 trillion global GDP gains expected from AI, according to PwC’s Global AI Study.

Global AI chip market predicted to grow at 49% compound annual growth rate and reach $18B by 2023.

- *Market Research Future 2018 Market Report*

EXAMPLE

*From analyzing millions of satellite images to finding healthy plant microbiome strains, startups have raised $500M+ to bring embodied AI to agriculture.*
Automation programs are experimenting a shifting from pure RPA solutions to combine RPA and Artificial Intelligent solutions

AI is approaching or surpassing human abilities to sense, think, and act in complex business environments
AI is defined as “the designing and building of intelligent agents that receive percepts from the environment and take actions that affect that environment.” (*)

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**SENSE**

AI is becoming ubiquitous intelligence with the ability to see, hear, speak, smell, feel, understand gestures, interface with your brain, and dream

- Natural language
- Audio and speech
- Machine vision
- Navigation
- Visualization

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**THINK**

AI is helping us do tasks faster, better and cheaper – Automated Intelligence; helping us make better decisions – Assisted & Augmented Intelligence, or even taking over what we do – Autonomous Intelligence

- Knowledge and representation
- Planning and Reasoning
- Machine Learning
- Deep Learning
- Simulation and Digital Twins

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**ACT**

AI is equaling or surpassing humans in a number of other tasks – playing games, driving cars, recommendations (movies, books, finance, research) etc.

- Robotic process automation
- Deep question and answering
- Machine translation
- Collaborative systems
- Adaptive systems

(*) Artificial Intelligence: A Modern Approach Stuart Russell and Peter Norvig (Pearson, 2014)
Artificial General Intelligence vs. Artificial Narrow Intelligence

Artificial General Intelligence

Artificial General Intelligence (AGI) is the intelligence of a machine that could successfully perform the full range of human cognitive abilities, like attention, the formation of knowledge, judgment and evaluation, reasoning, problem solving, decision making, etc.

Artificial Narrow Intelligence

Artificial Narrow Intelligence (ANI) is the intelligence of a machine that allows to study or accomplish specific problem solving or reasoning tasks. In essence, narrow AI works within a very limited context, and can't take on tasks beyond its field.

The Turing test

The "standard interpretation" of the Turing Test, in which player C, the interrogator, is given the task of trying to determine which player – A or B – is a computer and which is a human. The interrogator is limited to using the responses to written questions to make the determination.


Virtual Assistant

A virtual assistant is a software agent that can perform tasks or services for an individual. Examples of Virtual Assistant are Apple's Siri, Google Assistant, Amazon Alexa, and Microsoft Cortana. Virtual Assistants can also be accessed via online chat: in those cases, they are referred to as Chatbots.

The three next AI waves

**Algorithmic wave**
Automation of simple computational tasks and analysis of structured data in areas like finance, information and communications (e.g. RPA and AI combined solutions)

**Augmentation wave**
Automation of repeatable tasks such as filling in forms, communicating and exchanging information through dynamic technological support, and statistical analysis of unstructured data in semi-controlled environments such as aerial drones and robots in warehouses

**Autonomy wave**
Automation of physical labour and manual dexterity, and problem solving in dynamic real-world situations that require responsive actions, such as in manufacturing and transport (e.g. driverless vehicles)

Today

To early 2020s

To late 2020s

To mid 2030s
Example of RPA and AI combined solution: Contact Center Automation

**Contact channels**

- Email
- Chat
- Lettera
- Telefono

**Front-offices management**

- Operatore Banking Center
- Natural Language Processing Engine (NPL e)
- Chatbot

**AI empowered**

...requests are processed, based on different channels, by an assistant or by an AI empowered solution...

**Back-office management**

- Robotic Process Automation
- Operatori desk II e III Livello

...requests are processed, based on different types, by an RPA solution or by an II or III level assistant...

User's requests through one of the channels available...
Typical implementation approach
Typical Intelligent Process Automation program phases

Start small - learn quick - leverage the potential and scale up...

Proof of Concept

Process Assessment

Implementation

Establish

Scale
The common challenges in adopting IPA that can help our clients to think ahead and plan

By rushing in and looking for quick savings, firms are trying to solve the wrong problems
- Focusing only on bottom line vs. holistic benefits (e.g., quality, risk, capacity)
- Applying a “band-aid” vs. fixing the process, accelerating up and downstream issues and leaving benefits on the table
- Implementing where underlying systems are under significant transformation, requiring regular updates

By operating in silos, firms miss scale opportunity by learning from mistakes
- Since implementation is relatively easy, many functions and regions implement independently
- On the flip side, some institute centralized control over all initiatives, stifling innovation and experimentation

By endlessly debating approach and governance, firms lose momentum
- On-going debate between IT and operations governance – “Is it an operational tool? A software product”?
- Concern over risk (technology and operational) as well as regulatory control (e.g., audit of 2-eye, 4-eye checks)

A clear understanding of operating models and processes

A consistent method for identifying opportunities

A mechanism for effectively measuring and communicating RoI

A sustainability agenda in which robotics are embedded as BAU
Implementing IPA requires a specific Target Operating Model

- **Organisation**
  - Identify CoE Approach (centralised, decentralised, hybrid)
  - Define a roadmap for future automation
  - Defining a **IPA strategy** inline with the digitalization strategy of the organization

- **Governance**
  - Definition of tasks, responsibilities and roles within the IPA TOM
  - Detailing a release process during process changes
  - Necessary escalation paths to secure the implementation process as well as the operational work
  - Setting up a reporting (for example, service including KPIs, implementation status, identification of IPA potentials)

- **People & Culture**
  - Communication plan to control and ensure information between business analysts, IPA developers and IT
  - Development of a stakeholder analysis
  - Establish and anchor the culture of a continuous improvement process
  - IPA training concept diversified to develop roles

- **Technology**
  - Define procedures for selecting one or more IPA providers (longlist, shortlist, evaluation criteria)
  - Instruction to observe the market to keep up to date with IPA trends and developments

- **Process**
  - Implementation process including the potential analysis, process selection process and implementation
  - Definition of test cycles and maintenance plan
  - Business Case Creation
  - Change Request (CR) Management
Once the robots are live, monitoring is important to maintain and continually improve the bots

Once installed in the digital workforce, continuous monitoring is essential to ensure that the BOTs carry out their specified process efficiently and respond accordingly to any changes.

This stage will include:

- **Monitor Digital Workforce**
  Regular and repeated observation of the digital workforce is essential to ensure that it is carrying out its role at maximum capacity

- **Maintain Digital Workforce**
  If and where needed, the digital workforce will require maintenance due to underlying system changes or process changes

- **Optimise**
  As your business grows and your internal processes develop, your digital workforce will require optimisation in order to meet expectations

- **Continuous Improvement**
  Where the system is seen to be lacking, improvements will be identified and made going forward
  Identify opportunities for further automation
Thank you!