Application of Artificial Intelligence in Automation Industry

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ABSTRACT

The advancement of Artificial Intelligence is fast-moving promptly and amalgamation of Artificial Intelligence with automation has commenced to alter the business backcloth. Companies and business are centering on applying prevailing Artificial Intelligence with automation progressions to avail the new tops of proficiency and excellence. The paper gives a picture of artificial intelligence and automation, and it stabs to reveal the audience how both Artificial intelligence and automation are linked and how they may be more operative when they work as one and may offer competitive benefit.

INTRODUCTION

Artificial intelligence (AI) concentrates on getting machines to do things that we would demand intelligent behavior. Examples include sighted, learning, using apparatuses, understanding human speech, intellectual, making good conjectures, playing games, and verbalizing plans and objectives. AI focuses on how to get machines or computers to perform these similar kinds of activities, though not essentially in the same way that humans or animals might do them.

The term automation was invented in the automobile industry about 1946 to describe the enlarged use of automatic devices and controls in mechanical production lines. The origin of the word is credited to D.S. Tougher, an engineering manager at the Passage Motor Company at the time. Over time, we've grown needful on automated technology. It starts in almost every part of our lives, from automatic doors to workshop line robots, to marketable process automation.

Nowadays, artificial intelligence is the conversation of the urban, and the dreaded robot overthrow appears to be undecided ever closer (Taher-Uz-Zaman et al., 2014)). We have chatbots handling customer service, AI in our back pockets, and gradually 'smart' homes. The excessive use of Automation shows people interest on large scale and it becomes the

mega source of world development nowadays. Now, people dreaded the effect of automation on their jobs.

Figure 1: The Automation in AI

EARLY MACHINES AND CONCEPTS

The concept of Automation intelligence (AI) isn't as innovative as you'd think. In fact, some people advise that the idea of artificial intelligence was considered by the Ancient Greeks. Nevertheless, without touchable machines and computers, we wouldn't have established any kind of mechanical automation. And so, the history of automation starts far-off closer than Aristotle and Socrates.

The initial life of automation starts, then, with the industrial revolution and industrial equipment between 1790 and 1840. Then, like now, people dreaded the effect of automation on their jobs (though it all turned out well in the end). As for AI, well that needs a computer.

In 1837, Charles Babbage started the invention of the sample machine he called 'The Analytical Engine', which was the first device to earn the name 'computer'. His friend Ada Lovelace, in the meantime, shaped the first-ever computer program, which would have run on the machine. Miserably, Babbage expired before his prototype was complete. Let's take a look at why Intelligent Automation is the need of the hour?

WHY INTELLIGENT AUTOMATION IS THE NEED OF THE HOUR

With the burst of data and developing automation skills, administrations are looking at how they can enhance business processes to achieve greater operational productivity. They're probable to find the engine runs efficiently until shapeless data enters the mix. At that point,

the process stands – or even stops dead in its pathways (Nau, 2009). This is a problem for establishments that want to take full advantage of what robotic process automation (RPA) has to offer, including greater efficacy and a lower total cost of ownership (TCO) for their automation creativities.

Figure 2: Automation in artificial intelligence

Documents and other amorphous data, such as PDF, videos, photographs, communications, and websites, make full end-to-end automation of commercial operations difficult because they require a human to investigate, understand, and make a conclusion based on the information checked within each. This creates blocks and intensely slows workflow – quite the opposite of what establishments want to achieve with their automation creativities.

This situation is far from rare, making it a significant risk to companies' automation ambitions. As much as 60 percent of business processes contain some kind of formless data. That means 60 percent of the time robots have to stop their work up until a human mediates.

For example, in the entitlements processing world, nearly every feature of the process remainders paper-based. People mail or email physical or scanned documents to a system, where humans must then review and organize them by hand. For those with full automation dreams, this is frightening.

It also might clarify why, despite two periods of business process management (BPM) applications, full process automation is still the exclusion. According to AIIM's 2019 Emergent Technologies Market Report, "two-thirds of organizations say that specific core back-end processes are less than 50% mechanical."

And while some traders are using RPA for records management, customer communication, check processing, and other paper-exhaustive processes, fewer than one in five organizations have fully automated their central back-end processes, AIIM found.

In the intervening time, the problem caused by formless data is only going to get inferior. Half of the respondents to the AIIM review say 70% of the data in their organizations is formless. At the same time, organizations are antedating huge data growth. According to the survey, 35% expect the amount of data to increase quintuple over the next two years. It's no miracle that 70% of organizations surveyed by AIIM say unstructured information is the "Achilles' Heel" for many RPA employments.

To achieve stable levels of automation, businesses will need to associate RPA with artificial intelligence – a core ability of an Intelligent Automation stage. With advanced reasoning detention and entity removal, examining and interpreting formless data becomes authenticity. Intelligent automation allows establishments to digitally change knowledge-based business procedures, turning their dreams into satisfying dreams.

An Intelligent Automation platform can manage article parting, organization, and directing, increasing the speed of processing and accuracy, while reducing the need for human participation. Thus, routine tasks that before derailed a robot are handled more proficiently.

Consider what occurs when a customer annoying to open an account via the bank's mobile request uploads a photo of their driver's certificate. The image must be read, and the data removed, or how RPA alone handles a patient email that includes significant details about a recent entitlement. In both cases, the RPA bot can't handle this urbane data. A human must step in to deliver, understand, and make a conclusion.

But an Intelligent Automation (AI) platform organizes that and additional. Using intellectual document automation (CDA), the platform imprisonments read and understand the information. Because CDA can read data in the variability of arrangements, it can transform the driver's license and the email into usable info. Using machine learning and natural language dealing out, the Intelligent Automation platform then understands the data and controls what happens next.

An Intelligent Automation platform grips this job more successfully and at a lower charge than a "bolt-on" solution. This enables businesses to create greater competences, lower TCO, and fully automate their business processes endwise.

For organizations that are stressed to reach more developed levels of automation due to data limitations creating blockages and slowdowns, a key thought should be applying a solution that integrates RPA with artificial intelligence. Rather than endure the frightening, organizations can advance automaton initiatives from boring transactional use cases to more multifaceted knowledge-based business processes – ornamental customer experiences and operational excellence. With the combination of AI and intelligent automation skills, your teams can begin working and reach greater statures in automation.

DIFFERENCES BETWEEN AUTOMATION AND AI

Robotic Process Automation (RPA) software is great for simple doings and boring tasks that follow instructions or systems set by entities. RPA has the ability to do different tasks with more accuracy which humans can't do properly. It is best suited for highly repetitive and foreseeable tasks. Automated tools require guide outline and human management to effectively perform campaigns. The trick with RPA is for humans to antedate every variation so the machine is automatic to behave the right way every time (Hankiewicz, 2018). This is why constant attentiveness is required. If the environment changes, marketers must manually step in and make the essential changes.

AI represents how computer systems can use vast amounts of data to duplicate human intelligence and mental, agreeing with the system to learn, predict, and commend what to do next. An AI capable of sympathetic marketing KPIs can use various algorithms that act in performance to find a signal in the noise of data and find tracks to resolutions that no human would be accomplished. Most AI today works in an assistive if the next best action references to humans who then decide whether to trust them or not and then physically make changes.

Differences between Artificial Intelligence and Automation

Table 1: The differences between Artificial Intelligence and Automation

S.NO.	ARTIFICIAL INTELLIGENCE	AUTOMATION
1	AI makes decision based on the learning from past experience & information it receives.	Automation is like preset and self-running to perform specific tasks.
2	AI is system that helps experts to analyze situations and arrive at certain conclusion.	Automation is kind of machine programmed to carried out a routine job.
3	AI is for non-repetitive tasks.	While Automation is for repetitive tasks based on the commands and rules.
4	AI have interaction with humans and it learns from past experience and compare the situations and then work according to it.	While Automation have no interaction with humans and it works on instructions.

COMBINING AUTOMATION AND AI

When robotic process automation is collective with elements of AI such as machine learning, the result is known as intelligent process automation (IPA). An IPA tool is powerful because it consents us to earn both the profits of automation — increased speed, efficiency, time-savings, and ability to measure — with the visions, elasticity, and processing power of AI.

Sellers who use IPA can enlarge their skills, while off-loading boring operating management tasks to the machine. This is dissimilar from pure robotic automation in that the AI can start, stop, or even change what it is doing based on the atmosphere in which it operates (Anurag, 2020). What's more, because the best AI systems allow sellers to set railings, there's no chance of unexpected events taking results too far astray.

For sellers, this means sooner, more modified implementation and processes, greater use and correctness in data, and improvements in overall client experience. Marketers shift from bothering over bid modifications and budget distributions to higher value-added, human-centric donations like, "How do we grow our value intention to drive more business?"

Because of these clear profits, Forrester expects that by 2021, 25% of Fortune 510 companies will report hundreds of examples of IPA use cases. Perhaps up to 2050 we completely depend upon Automation and AI, because it makes life easier and more accurate.

Benefits of Automation and AI for Marketers

IPA technologies not only exterior visions for marketers but really turn visions into action. For example, Albert can produce historical digital operating data across channels, craft policies for implementation, and explore dissimilar groupings of messages, creatives, and occurrence across audiences (Anurag, 2020). Developing unremittingly over time, the

intelligent machine's autonomous competences allow it to actually shift finances, adjust offers, audiences and optimize operations 24x8 in insistent search of KPIs that a marketer has set.

This is exclusively important as customers continue to demand more from products; Salesforce's 5th Annual State of Marketing Report revealed that 55% of customers now expect modified offers, and 62% expect businesses to antedate their requirements. IPA technologies are becoming the only way to distribute modified tracepoints for an optimal client experience across salaried digital channels. This discussion shows the excessive use and demand for Automation and AI increases day by day. Maybe up to 2050 we completely depend upon Automation and AI, because it makes life easier and more accurate.

Probability of Automation in different fields

Table 2: Probability of automation in different fields

Probability of Automation	Employment
97%	Secretarial jobs (general)
97%	Bank advisers and other counter staff
96%	Telephone operators
90%	Cashier
85%	Post distribution auditors
82%	printers
72%	Agricultural employees

Major Components of AI in Automation

An intelligent automation system purposes using these three mechanisms of artificial intelligence. Dependent upon the need, they can be collectively used or used to distinctly to create a fully automated resolution:

Machine Vision: Machine vision denotes the potential of a program to know photographic input. The machine uses the drill data (images) as a base for an organization or documentation mechanism. The suitable case of machine vision is the face recognition is the iPhone. Face recognition is the best modern future located in iPhones. The Facebook Artificial Intelligence Investigate Database is also a good example as it investigates images, classifies qualities, and then organizes and explains the new illustrations to the user.

Natural Language Processing: Where machine vision works on the illustrations, Natural Language Processing (NLP) does the same to recognize the human voice and text inputs. We originate a long way in the creation of NLP well-organized. Now it is thinkable for machines to recognize the context behind the announcement and take actions based on the prebuilt data and background variable star. Apple's Siri, Amazon Alexa, and Google Assistant all rely on NLP to deliver value to employers.

Machine Learning: Machine learning is the capability of the machine to acquire from the data fed, outcomes of conclusions, and atmosphere variables to improve itself. Using machine learning we can improve the effectiveness of current resolutions. For example, if an issue arises under an intelligent automation system and human involvement comes into play to solve it, the next time system will mechanically follow the procedure used by a human. Hence over time, the competence will progress and human effort will diminish. Feasibly up to 2050 we completely depend upon Automation and AI, because it makes life easier and more accurate.

WHY CHOOSE INTELLIGENT AUTOMATION?

The use of artificial intelligence (AI) in automation makes it a lot easier for traders to perform routine operations and scale recklessly. Here are some details why using this method is beneficial:

Decreases Cost: The charge rate of training a human in a task of routine nature is of periodic nature. You'll need to deal with worker revenue, give time for skill expansion, and experience occupational charges. On the other hand, a machine once proficient only recovers all over time and has no cost intricate in repeat training.

Improvement in Efficiency: No matter how well-organized people they will always make faults. An automation solution is much more infallible and it leaves little (or no) mistakes. With time it absorbs from the outputs hence also improves its efficiency.

New Human Roles: Just like computers transported a whole new type of job so will artificial intelligence. People with extraordinary skills will find themselves training low-level automation schemes to do most of their work.

CHALLENGE: CHOOSING THE RIGHT TIME AND PROCESS TO IMPLEMENT AUTOMATION

For some administrations, the first challenge is significant where to begin for IPA. Though IPA offers numerous benefits, many companies and their staffs are used to the set developments and systems (Kuykendall, 1999). Also, ever-changing toward automation can verify to be both devastating and cost-intensive for staff and the association.

For example, if a labor-intensive process is low-cost for an organization in contrast to automating the process, an association would not spend on automating that development since it would involve large-scale savings that would not generate satisfactory returns. Thereby, selecting the right time and right process for instrument automation is acting as one of the challenges for the development of the market.

Here we have a graph that shows the intelligent process automation size from 2016 to 2023.
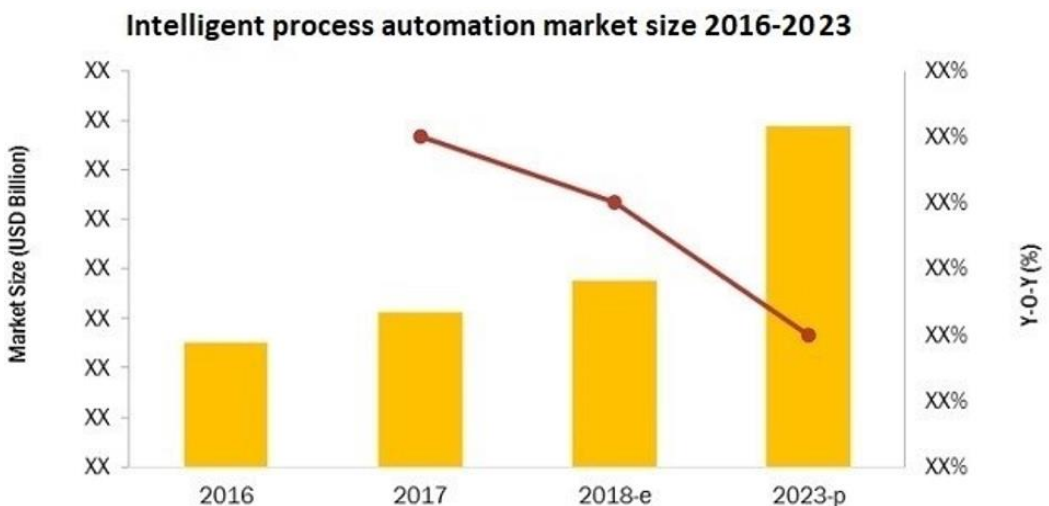
Graph 1: The intelligence process automation market size 2016-2023

Scope of the Report

Table 3: Scope of Automation and AI

Report Metrical	Specifics
Market size available for years	2015–2023
Base year measured	2016
Forecast period	2018–2023
Forecast units	USD billion
Segments enclosed	By Constituent (Solutions, Facilities), By Application (IT Operations, Business Process Automation, Application Organization, Content Organization, Security, Others), By Technology (NLP, Machine and Deep Learning, Neural Network, Virtual Agents, Self-sufficient, Computer Vision), By Vertical (BFSI, Telecommunication and IT, Transport and Logistics, Media and Entertainment, Retails and e-commerce, Industrial, Health care and Life Sciences, Others)
Geographies enclosed	North America, Europe, Asia Pacific, Row
Companies enclosed	Accenture (Republic of Ireland), IBM (US), Cognizant (US), Genpact (US), Atos (France), Infosys (India), Tata Consultancy Services (India), Capgemini (France), Xerox Corporation (US), Pegasystems (US), Wipro (India), EXL Service (US), Troughton (UK), CGI Group (Canada), UiPath (Romania), HCL Technologies (India), Happiest Minds (India), Symphony Ventures (India), Vansant (US), Avanade (US), Virtual Operations (UK),), Blue Prism (UK), and Syntel (US), Sutherland Global Services (US), KPMG (Netherlands), Tech Mahindra (India).

FOUR INTELLIGENT AUTOMATION METHODOLOGIES

The methodologies are harmonizing, have harmonies, require different assistances, and should be part of the overall meta-repetitions within an intensive digital conversion effort.

It is quite sarcastic that creativities and methodologies within the same group endeavoring to align calculated objectives to implementation are often themselves siloed (Gaynor, 2020). We shall concentrate here on methodologies that are annoying to operationalize and understand the most important potential of Intelligent Automation (IA) Digital Transformation (DX). We will condense it as DX IA. IA is accomplished through Digital Process Automation.

The four methodologies deliberated in this article are quite harmonizing. There are unities, but they do require dissimilar skills. They all should be part and piece of the overall meta-repetitions within an intensive digital renovation effort.

The four methodologies are:

- Design Thinking Methodology
- Agile Delivery Methodology
- DevOps Methodology
- Continuous Improvement Methodology

Each of these DX IA methodologies establishes itself in specific stages and repetitions of continuous revolution. They are alliterative and incessant at their core. Different digital technology tools and abilities come into play while employing these methodologies. However, the background of IA is at its core Digital Process Automation (Donepudi, 2017). Whether we are construction, operationalizing, or improving initiative submissions at the end of the day, work is being automated, and work always relates to a process.

INTELLIGENT DIGITAL PROCESS AUTOMATION

The following exemplifies the development of IA from traditional and bequest requests, administrations, and structures. Digital technologies such as Social, Mobile, Raincloud, Internet of Things, Blockchain, Mock Aptitude, and Robotic Process Automation have each had their part of the inspiration in the development of robust DX solutions – particularly the ones authorized through developing Intelligent Automation DPA stages.
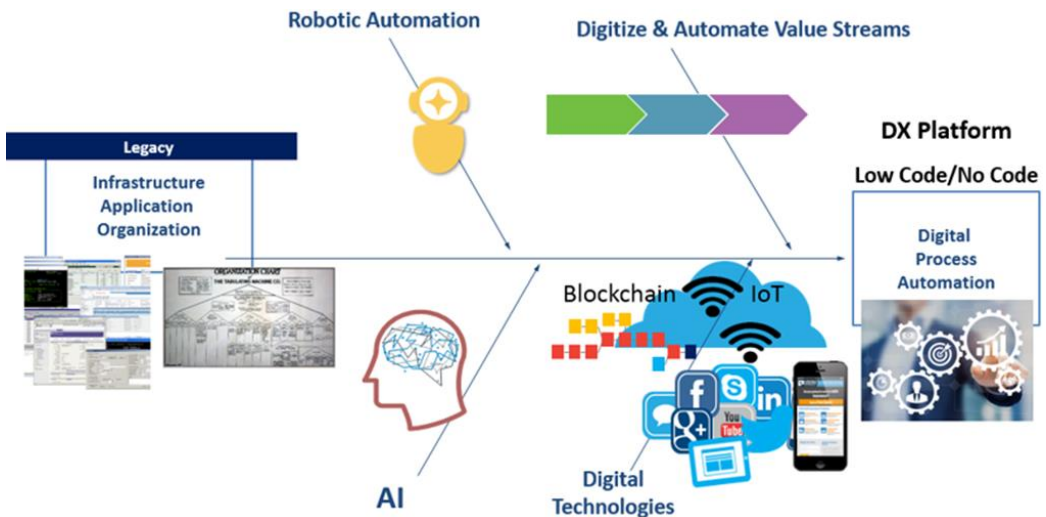

Figure 3: The robotic and digital automation

The new digital-era commercial process platforms now include Low Code/No Code competencies to support Citizen Designers. The conversion is now understood through the speed of digitization and robotics of end-to-end value streams – through DPA.

The fruitfulness of the digital skills and the authorization originating from Low Code/No Code development emphasizes the importance of methodologies and the finest perform.

The four methodologies described here are not rectangular. They are dependent on incessant feedback. They need to be merged in robust end-to-end continuous revolution initiatives that realize the potential of autonomic initiatives in motion.

DESIGN THINKING METHODOLOGY

We enclosed Design Intelligent Methodology in an earlier post, where we expounded on the Prioritization of novelty schemes. Design Intelligent is not a one-and-done methodology. Sometimes administrations have a workshop for Design Thinking, and that develops the end of it. The method adopted here is to make Design Thinking – especially ideation for invention and then Ranking – continuous.
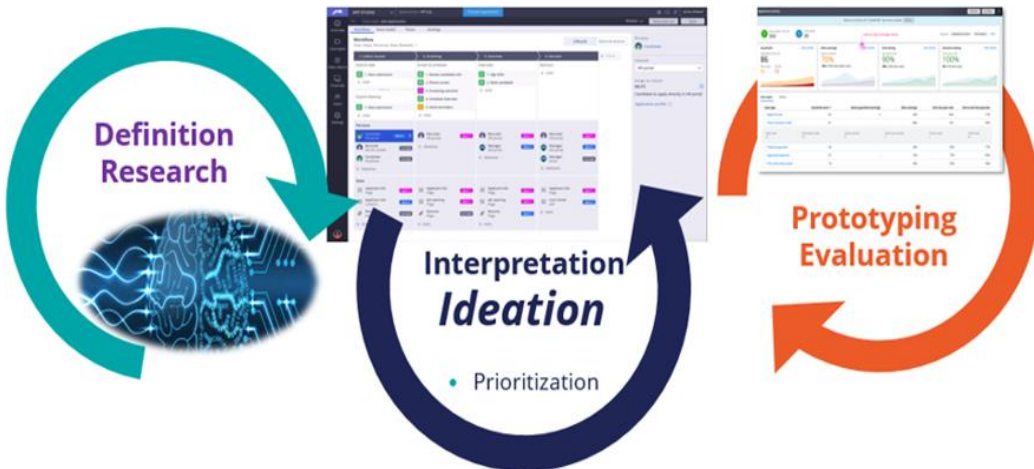
Figure 4: The evaluation in Automation

The output of Design Thinking processes is an accumulation of "Quick Wins" or "Low Hanging Fruit" DX Projects that feed to the Sprightly Methodology – for expansion and delivery. The Ranking balances comfort of employment with business value:

Business Value: How important is the invention project to the business investors? Some KPI's (Key Performance Indicators) include increased income, operational greatness for cost reduction, governing agreement, and customer experience optimization.

Ease and Complexity: Every DPA innovation project applicant will require addition with systems of greatest or other developing technologies such as IoT or Blockchain. There are also other deliberations, such as scalability, UX design, security, and privacy necessities. Each of these factors impacts the overall difficulty of the application.

Figure 5: The Graph between business value innovation and Ease

AGILE METHODOLOGY DX SOLUTIONS

The second repetition is, in some ways, the core advanced application expansion or delivery methodology. Ideally, business, IT, and Operations investors collaborate leveraging the numerous competencies of the DPA platform and uninterruptedly repeating for multiple releases. With a methodology such as Scrimmage, the investors can provide feedback and, in fact, in some cases capacity even decide to release the current variety – sometimes even ahead of the timetable – as they might deem it good enough for manufacture.

Figure 6: The planning and delivery concept

In Scrum, you will have an ordered product backlog—a list of business and technical topographies that need to be realized. The DPA platform supports the repetitions as you are building the DPA solution. Each of these repetitions is mapped onto DPA fundamentals, such as business rules for risk, approval cases, addition, UI, and other application assets. Ideally, the Scrum team contains members from business, IT, and operations. With nimble repetitions in each sprint or even daily Scrum, the investors – particularly the business – have direct visibility and admittance to the solution that is being built.

DEVOPS METHODOLOGY

"DevOps" stands for Development and Operations. The main business goal of DevOps methodology is quick, high-eminence, and continuous repetitions towards the arrangement. The output of an Agile Scrum methodology (Development) wants to be "hard-bitten" for manufacture and organization for clients with high quality in all areas – including safety, consistency, and performance. With conservative and manual methods, the "hardening" could take weeks or even months, thus dipping the impact of the invention for the end client. This clearly exemplifies the importance of all phases of the methodologies to be associated with speed and competencies.

DevOps techniques and methodologies raise the frequency of placement of solutions or facilities. DevOps is really a postponement of the Agile methodology that increases the teamwork between the development and operation teams. Numerous tools are leveraged in DevOps, such as Jenkins for Incessant Integration and Incessant Delivery. The "integration" here relates to the incremental code or solution deviations that are integrated into a shared fountain. These need to go through numerous types of testing, especially unit testing. In the "delivery" stage, the detached is to fast-track moving and productizing the application or expansion changes to manufacture deployment, without sacrificing value. DevOps tooling includes the automation of the general build and transfer process, as exemplified here.
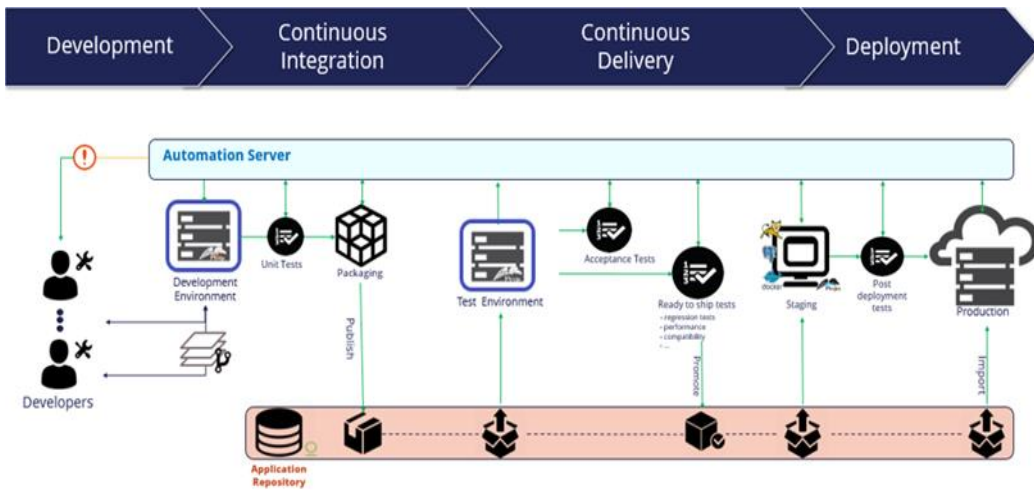
Figure 7: The general build and transfer process in automation

OPERATIONAL EXCELLENCE (REAL-TIME LEAN SIX SIGMA) METHODOLOGY

Once a product is transported and deployed through Nimble and DevOps, it is not the end of the digital alteration journey for that creation. The arrangement in Design Intelligent classifies a backlog of Quick Wins. The most important measurement in classifying Quick Wins is the business value. Some procedures are typically seized in Key Performance Indicators (KPIs) that need to be checked to make sure the objectives for the development were attained.

In addition to Incessant Integration and Continuous Delivery, there needs to be Unceasing Improvement for measurable business objects.

This is where Operational Superiority Methodology comes in. Of all the four procedures, it is the one that often gets the least courtesy. In some sense, it is the most significant. We have been – and continue to be – on the Operative Distinction path: especially through well-recognized Lean Six Sigma organizations. Another excellent treatment of this organization for DPA is obtainable in the paper "Active Excellence with Digital Process Computerization," which is a chapter in the book Intelligent Automation. Continuous Improvement involves:

- Process efficiency in development and organizing innovations: Plan
- Process efficiency in automatic implementation: Do.
- Process efficiency in process nursing and enhancement: Check
- Adjust process efficiency through re-use and concentration: Act

BRINGING IT TOGETHER: DX COMPETENCY CENTER

The earlier sections brief four iterative and continuous methodologies that all segment a common objective: Digital Transformation. There is an overall meta-arrangement from classifying low dangling fruit for innovative DX projects or products through Design Thoughtful, to reiterative Agile practices to develop and build products or facilities, to DevOps for continuous incorporation and distribution, to post-production valuation of business objectives through effective excellence punishments.
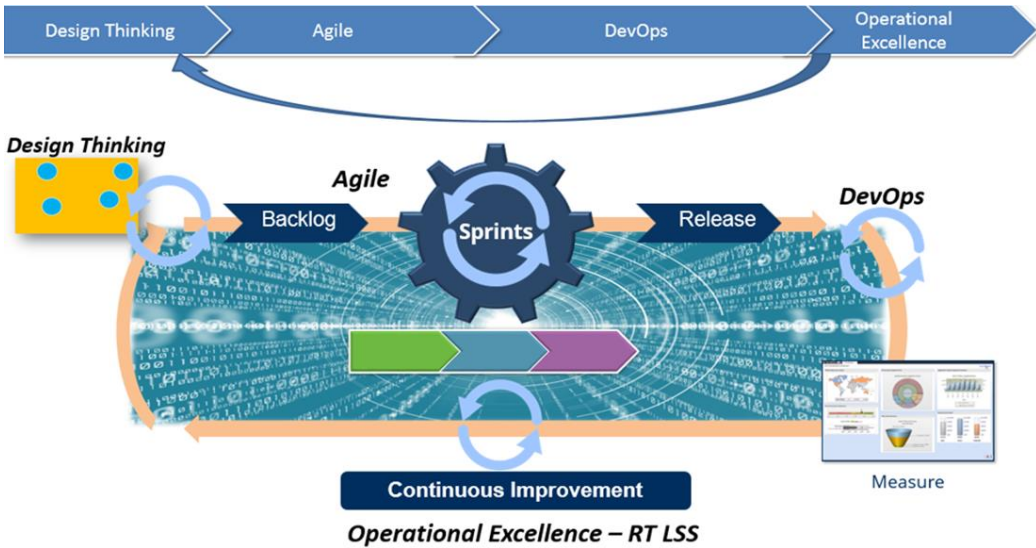
Figure 8: The operation Excellence -RT LSS

The interaction, transitions, and meta-repetitions between these four methodologies are multipart. Ignoring any aspect of these methodologies harmfully impacts Digital Conversion.

Table 4: AI tools their functions, features and charges

AI Tools	Functionality	Supported OS/ Languages	Best Feature	Charges
Content DNA Platform	Machine Learning/ Computer Revelation.	Outfits both Cloud and On-premises arrangement models.	Unsubstantiated Machine learning. Training on your data.	First time fee.
Google Cloud Machine Learning Engine	Machine Learning	GCP Console	Trains model on your data. Deploy it. You can manage it.	Per hour per training unit costs: US: $0.49 Europe: $0.54 Asia Pacific: $0.54
Azure Machine Learning Studio	Machine Learning	Browser based	Model will get deployed as a web service.	Free
Tensor Flow	Machine Learning	Desktops, Clusters, Mobile, Edge devices, CPUs, GPUs, & TPUs.	It is for everyone from beginners to experts.	Free
H2O AI	Machine Learning	Distributed in-memory Programming Languages: R & Python.	Auto ML functionality involved.	Free
Cortana	Virtual Assistant	Windows, iOS, Android, and Xbox OS. .	It can perform so many tasks from setting reminders to switching on the lights.	Free

These methodologies are not rectangular or separated. Agile and DevOps are being merged and integrated. Operational Superiority disciplines – especially with Real-Time Lean Six

Sigma events and techniques need to also be adjusted in the DNA of DX practices. Thinking energies the dynamic accumulation, and it too should be part of the overall meta-methodology – not a spate or one-and-done garage (which is often the case). To make this real, methodology siloes need to be evaded. As much as possible, the procedures of the methodologies themselves, as well as the ascendancy for methodology best practices, need to be digitalized and automatic. Enter DX Competency Centers (aka Centers of Excellence). There are four main purposes of an operative DX Competency Center:

Enablement: The onboarding and exercise of team members for DX: with aptitudes and errands for all four methodologies.

Continuous Review of DX Projects: Project selection, design evaluation, and expert services

Governance: The governance for the acceptance of automation best practices, methodologies (agile), and handrails to guide team voters.

Re-Use: The creation and organization of refillable assets: process remains, case types, business rules, logical models, UI, integration resources, etc.

CONCLUSION

Automation and Artificial Intelligence is the product of science. The idea that types of machinery could contemplate and perform tasks just as humans do is thousands of years old. The intellectual truths expressed in AI and Automation systems are not new either. It may be better to view these technologies as the operation of powerful and long-recognized intellectual principles through engineering. The use of automation and intelligence increases day by day almost all over the world. Nowadays people totally dependent upon them. These technologies are time-saving and can complete multiple tasks with more accuracy at a time which humans can't do.

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