

R(P)Aban : Process for Robotic Process Automation Projects

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ABSTRACT

Advancement of the software industry and artificial intelligence made the way to Robotic Process Automation (RPA). Business processes with structured, rule-based, and repetitive tasks that produce definitive outputs are candidates for automation using RPA. RPA improves accuracy and productivity while reducing cost. However, still, the industry fails to identify a suitable RPA delivery approach, and 30% - 50% of the RPA projects fail due to unmatched delivery approach. In this paper, we propose an RPA delivery approach named R(P)Aban. R(P)Aban is derived based on an extensive study of RPA implementations by a multinational, service-based organization. We identified the best fit RPA delivery approaches based on a set of interviews with the RPA implementation teams. The proposed framework could be used to reduce RPA project failures, as well as improve the project performance while reducing the cost.

OBJECTIVE

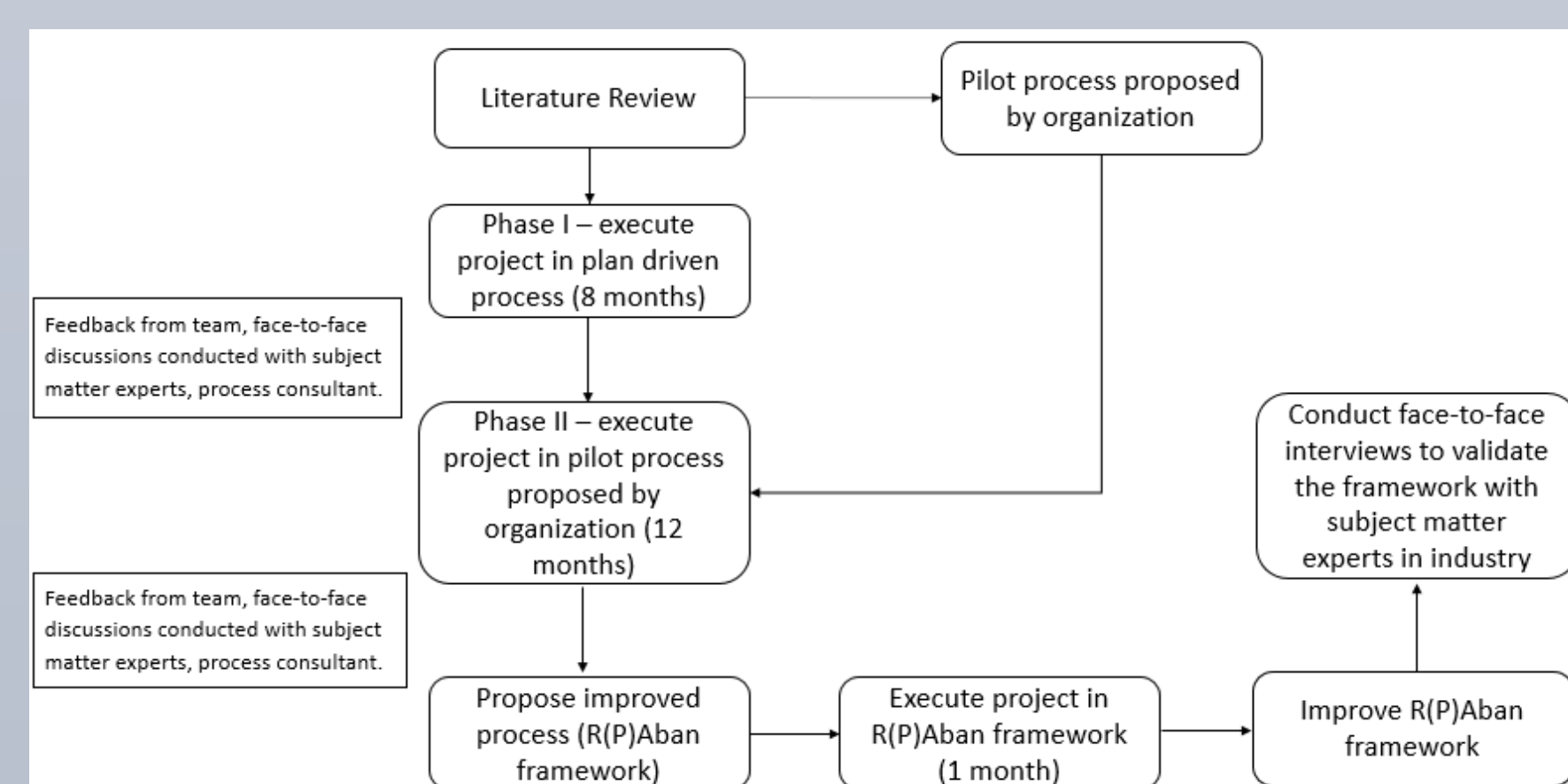
Identify best-fit process for Robotic Process Automation project.

PROBLEM STATEMENT

What is the best-fit process to execute RPA projects with high quality, productivity, and efficiency while minimizing cost?

METHOD

- Both the vendor and client are new to RPA implementation.
- No existing study for R(P)A process.
- Vendor is multinational service base software development organization.
- Research conducted for a project in banking domain and introduce bots to market operations in banks to drive operations by RPA and cognitive computing.
- RPA in the bank is to reduce the manual effort involved in the process.
- Also to release subject matter experts' bandwidth to improve overall efficiency and to develop a cognitive framework to automate the processing of unstructured data in the business process.
- RPA tool provider for the project is 'WorkFusion'.
- Below image illustrated the research methodology.

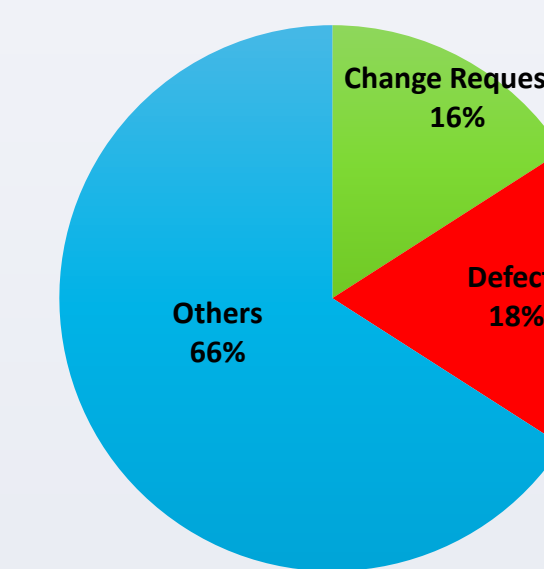


Research Methodology

RESEARCH RESULTS

PHASE I

- Client has identified 182 issues during the User Acceptance Testing (UAT) phase.
- Only 33 (18%) accept as defects.
- 29 (16%) has identified as Change Requests(CRs).
- Project Definition Document(PDD) revised for multiple times during bot development.
- Unable to deliver bots on time.
- Budget Overrun.



UAT defect analysis	No of defects
Change requests	29
Data error	45
Defects	33
Network failure	17
Incorrect credentials	11
Database error	07
Other loading failures	36
Technical limitations	06

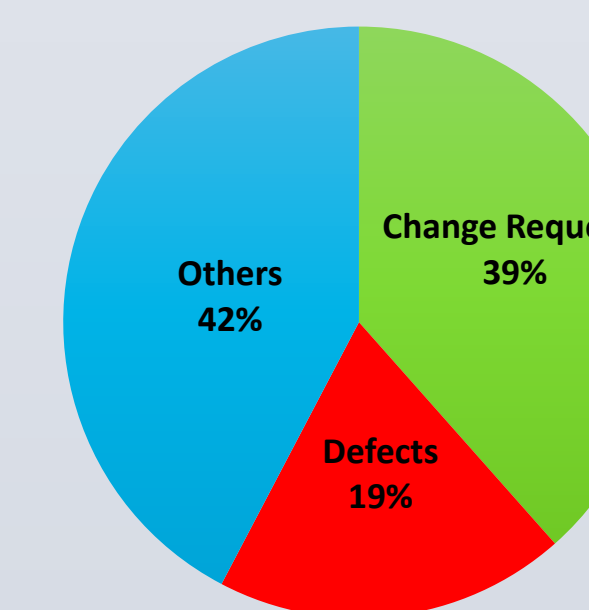
RCA conducted for defect identified during UAT - Phase I

Week	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
Construction	Dev	Dev	Dev	Dev							
SIT			SIT	SIT	SIT						
UAT						UAT	UAT	UAT			
Code Freeze									PVT	PVT	
Construction	Dev	Dev	Dev	Dev							
SIT			SIT	SIT	SIT	SIT	SIT				
UAT						UAT	UAT	UAT	UAT		
PVT										PVT	

Phase I project execution schedule

PHASE II

- Client has identified 52 issues during the UAT phase.
- Only 10 (19%) accept as defects.
- 20 (39%) has identified as CRs.
- PDD revised for 32 times before start the bot development.
- Unable to deliver bots on time.
- Budget Overrun.



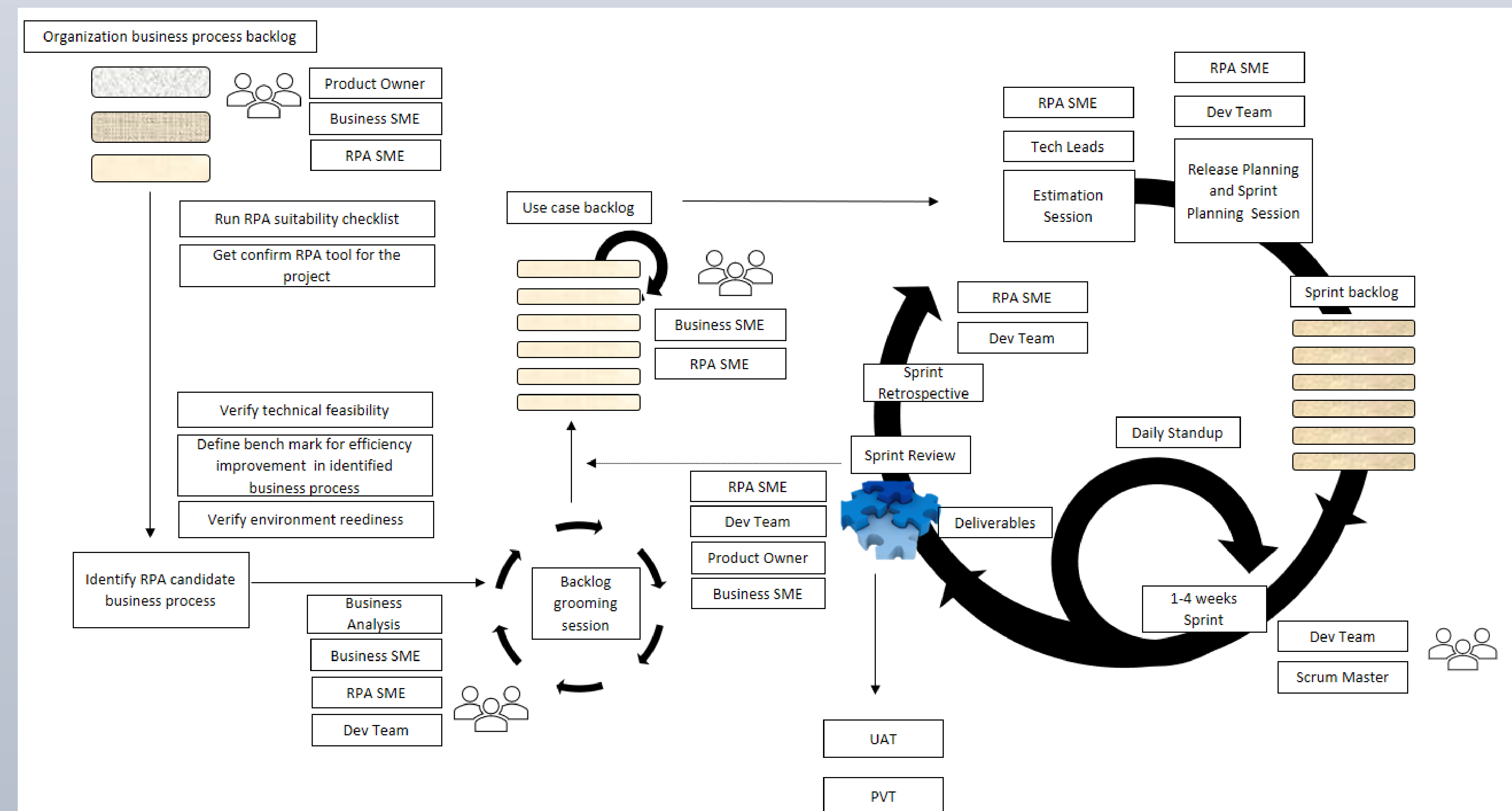
UAT defect analysis	No of defects
Change requests	20
Data error	02
Defects	10
Network failure	05
Incorrect credentials	03
Database error	05
Other loading failures	05
Technical limitations	02

RCA conducted for defect identified during UAT - Phase II

PHASE III

- Zero defects identified during UAT.
- Only 5 CRs identified.
- Deliver bots on time.

Developed R(P)Aban FRAMEWORK



R(P)Aban in Detail

- Identifying the business process for RPA candidate is critical.
- RPA SMEs should consult client on RPA candidate selection for the implementation.
- Business Analyst (BA) start investigating the selected business process.
- BA conduct daily sessions with the business SMEs, RPA SMEs, Dev team, and BAs.
- During the demos and discussions use case diagrams and path flow diagrams should be developed, and PDD.
- Once PDD is finalized and signoff by the client, use-case backlog needs to be developed.
- Team leads and RPA SME should work on estimating the use cases.
- Release planning, and sprint planning session conducted by the Dev team and RPA SME decide the release plan and sprint use-case backlog.
- Dev team starts working on the sprint use-case backlog.
- Daily standups conducted within Dev teams facilitated by a scrum master.
- Sprint review conducted with the client's operational users.
- Sprint retrospective conducted within the dev team.

#	Agile principles	Agile principle applicability	Applicability to RPA process	#	Agile principles	Agile principle applicability	Applicability to RPA process
1	Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.	Main business process can decomposed in to sub processes. These sub processes can deliver to operational users, whose going to use the bots in future. Product owner will get the ROI once the bot delivered to customer.	Yes	7	Working software is the primary measure of progress.	Team can deliver working software, which can be deployed to the operational users. Though team cannot start work using partial developed bot, this habit get proper early as possible and start work on the user trainings. Contract phase make the team relax and more focused.	Yes
2	Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.	Iterative and incremental process in RPA projects helped operational users to get the full features early. User trainings can start early, iterative and incremental development helps to identify the features added newly to the system by system support team. Hidden features exposed during testing.	Yes	8	Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.	Continuous attention to technical excellence and good design enhances agility.	Yes
3	Deliver a working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter time frame.	Complete bot will be deliver within couple of months, however, have a weak working software can be delivered to operational users.	Yes	9	Technical excellence and good design enhances agility.	Follow best practices like refactoring.	Yes
4	Business people and developers must work together daily throughout the project.	Dev team needs to work together with this and client operational users for successful project execution.	Yes	10	Simplify, the art of maximizing the amount of work not done is essential.	RPA subject matter experts along with the product owner decide the highest priority process to develop the bot. Prioritizing the bot for implementation is really important because it impact the organization return on investment.	Yes
5	Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.	Business people and developers must work together daily throughout the project. Conducting daily standups extremely helpful to resolve the impediments, before they become critical.	Yes	11	The best architectures, requirements, and designs emerge from self-organizing teams.	RPA implementation team is self-organize team where they know their role and responsibilities.	Yes
6	The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.	Face-to-face communication is really important in RPA implementation process, since it is mostly dealt with the existing system. Communicate through video calls helps to strengthen the trust with in the team.	Yes	12	At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.	Defining a sprint at 2 weeks, team can work on regular intervals. After completing every sprint, team conduct retrospective and look for improvements. Team can do root cause analysis for the identified defects, identify the waste and adapt.	Yes

Agile principles and its applicability to RPA process

CONCLUSION

- When project execute using R(P)Aban Framework;
- Team experienced zero defects during User Acceptance Testing(UAT) and Production Verification Testing(PVT).
 - Only five Change Requests(CRs) captured during UAT and PVT.
 - Industry can use our research results to eliminate the RPA project failures, improve the project performance and reduce the project cost.

FUTURE WORKS

- Further improve the R(P)Aban framework for different technologies.
- Derive/ Identify metrics to measure R(P)Aban process.

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