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Accelerate & Deliver better Software by Cost Saving and Cost Optimization Continous Improvements through Agile Methods

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***Abstract*—With Agile development being used in todays projects across the globe there has been huge increase in the need to do software application development in highly organized, process driven and efficient way. With Continuous Improvements there can be numerous ways in which the software development can optimized both in terms of quality and in terms of cost savings using our existing resources. We can look at ways to save the cost using the Agile methodology existing tools in the markets**

Keywords—Agile; CostSavings; Software Developments)

I. INTRODUCTION

Agile Development being iterative development, scope for improvement in terms of requirements, solutions and collaboration is more. The core reason for teams to follow Incremental and iterative work is mainly to assist the teams in responding to changes. Software development can be unpredictable and would lead to enormous cost even with or without business value added. We are at a situation to come up with new technologies, new process and various improvements in addressing the concerns of software development.

II. AGILE IS A MINDSET

A. *Business Agility*

First, this is everywhere, and it is being done in every project development. A recognition that for people in an organization to operate with an Agile mindset, need for organization change structure and operations to work in an uncertain environment.

B. *Incremental Development*

Successive version of the product is usable, and each build upon the previous version. This is way we build big complex projects, independent, value based, estimate able, size able and testable components are built and these increments add to the product as finished ones

III. NEW AGE OF AGILE

We turn towards the future or new Age of Agile which is XP and Agile technical practices. we have practitioners who are moving the industry forward in a variety of ways.

What elements should Agile XP change to adapt to the rapid evolution of socio-technical systems, after exploring the history of XP tells things have evolved with continuous improvements which now has developed into mature fast pace development model

A. *Iterative Development*

Iterative insofar is known as they intentionally allow for "repeating" software development activities, and for potentially "revisiting". It is related to Sprint being done in running race where we complete lap and then return to same routine complete another lap. In a specified timelines we keep repeating and do the iterative development

B. *Milestone Retrospective*

- All of the team's permanent members can invest one to three days in a detailed analysis of the project's significant events
- People/Technology wise there can be improvements such Reducing the usage AWS instances and also in creating dashboard for all of Instances & its usage.
- Process- we can do improvements such as Read and Load PDF Content one by one Instead of Reading / Loading all the pages at a time. This gives Best User Experience by avoiding Slow load and also to avoid HTTP long waiting period.
- Market Facing - Ansible common implemented for all projects. Now on demand basis we are bringing up the environment using AWS ansible common. Which saves lot of developers' efforts

C. *Cost Reduction*

The Cost Savings and Reductions can be calculated based on the resources and how it is reduce the operation cost.

Below is an example where we have.

7 Services | 5 Environments | 11 instances = 77 instances

$ saved monthly

2 Hrs. per week

52 Weeks per year

25$ savings per hour = 2 H* 52W * 25$

Another example where we would the Cost Savings

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20 Hrs. per week

52 Weeks per year

25$ savings per hour = 20 H* 52W * 25$

D. Cost Savings

- Across Service Line, we must work together and come up with improvements in a quality manner to do Cost Savings, especially to have it achieved over years as a continuous improvement.
- We must go for regular process of having Cost Saving implemented on yearly basis, also with reviews done monthly. We need encourage our teams to work collaborate and achieve Cost savings team wise These savings can be of Direct or Indirect, we need to have this achieved across various teams.
- We need to have a mechanism to interpretation of benefits in areas of AWS Cost (Cloud Cost), Better operability
- Areas of Improvement can be in
    - People/Technology
    - Process
    - Market Facing

IV. COST SAVINGS

After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the naming convention prescribed by your conference for the name of your paper. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper; use the scroll down window on the left of the MS Word Formatting toolbar.

A. Savings Type

The Cost Savings normally are into the way it is being achieved either through direct means of realization or through indirect means of realizations.

1) Direct.

a) Significant Cost Savings- AWS Instance Reduction - unused instances removal

b) Configured actuator instead of New Relic for Monitoirng Stage and Production sever environments. No additional resources required for Actuator configuration

c) AWS Instances usage reduced to 50%

d) Nightly based on the usage instances will be tear - Performance teardown

2) Indirect: Cost Savings in terms of realization in a indirect manner.

a) Fewer Customer Impacting Incidents - Created a dashboard in New relic for (insights) project and also integrated Hip chat, pager duty and other notification channels for monitoring purpose.

b) Deploying instances with Ansible framework - Creation of AWS resources using Ansible provides control over AWS resources maintenance. These resources would be tagged to the team properly and incidents like accident deletion of resources will be avoided

c) Improved Customer Experience - As a company, has come up with the mandate that in all the Configurable Items (all Source files), their copyright should be added. This tool helps in automating this and can be used across various projects

d) Faster Time to Market-Initial design was having single instance of DB, however our team proposed fallback DB replica approach and implemented the same. This will improve the stability and availablity of the application

B. Savings Category

Cost saving can be done overcoming various challenges especially in the areas of

- Significant Cost Savings
- Fewer Customer Impacting Incidents
- Deploying instances with Ansible framework
- Improved Customer Experience
- Faster Time to Market

C. Figures and Tables

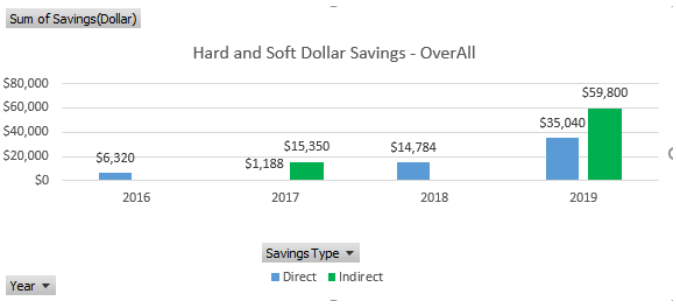
TABLE I.

Cost Saving	Cost Savings – Savings Type		
	Direct Savings	***Indirect Savings***	***Total***
2016	$6,320		$6,320
2017	$1,188	$15,350	$16,538
2018	$14,784		$14,784
2019	$35,040	$59,800	$94,840

[a] Sample of a Table footnote. *(Table footnote)*

[b]

Fig. 1. *Cost Savings Hard and Soft*



ACKNOWLEDGMENT

Cost Optimization & Cost Savings with focused efforts always brings wonders and gives the best possible way to handle Cloud Resources with visibility on the spend, bring standard to the team and it's development cycle. DevOps with Cost optimization will enable teams to self-manage their cloud spend.

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