**4. Approach & Deliverables**

* + - * 1. Supplier is using the Agile Scrum methodology in which the entire scope is not fully defined at project start, but rather during the project itself through constant engagement between Supplier and Monsanto. The term "Product" refers to the functional capabilities defined by the user stories as prioritized by a single Monsanto representative also known as the “Product Owner”. The main elements of the Agile development/build phase include:
* Daily Standups
* Sprint Workshops
* Sprint Retrospective
* Sprint Release
* Sprint Artifacts (Sprint Burndown Charts, Release Burndown, Sprint Velocity)
* Story Review, Sprint Plan

The Professional Services provided pursuant to this SOW will be performed in the following stages pursuant to the methodology below.

## Project Kick-off

### At the start of the engagement, Monsanto will host a kickoff meeting to define the objectives, milestones, deliverables, expectations, success criteria, and risks for the engagement. In addition, Monsanto will define the extent of Supplier’s involvement in QA testing and deployment. Timing of ceremonies will be solidified and communicated at that time. Monsanto reserves the right to participate in ceremonies.

### Monsanto will communicate technical architecture and best practices at the time of the kick-off.

## Iteration 0 - Specification & Design

1. The Iteration 0 phase of the SOW is intended to develop and understand the initial backlog of user stories and to establish a high-level design as well as the necessary detailed design to begin the development effort. Since Supplier leverages an iterative methodology some design tasks are ongoing during the development iterations of the Professional Services.

## The Iteration 0 phase is comprised of the following activities and deliverables:

## Design Review and Technical Specification Meetings (activity)

## As needed, Monsanto will conduct Design Review and Technical Specification Meetings to review design deliverables and further expand upon the information collected during the Definition phase to in order develop a design and detailed technical specifications for defined data and system integrations, as well as legacy data migration.

## Iterations 1 through n

1. Multiple iterations of product backlog and refining of backlog.
2. Expectation is working software. Team working off a prioritized product backlog
3. PO will prioritize backlog, Team will work on highest priority
4. Supplier and Monsanto will configure and customize the system based on stories for each iteration.
5. Supplier will be on-site as needed
6. At the conclusion of each iteration, Supplier and Monsanto will conduct an iteration review and retrospective.

Project Closeout, Integration and Transition

Supplier will provide requested documentation and developers on the project will conduct a final review.

Key members of Supplier’s project team will be available to assist Monsanto with questions or issues that may arise.

Deliverables will be set in the Sprint 0 and will be mutually agreed upon in writing between Monsanto and Supplier.

1. Monsanto Product Development Teams are required and expected to participate in a bi-weekly Software Demo. Supplier will be expected to present working software within this forum.
2. Sprint review will occur every one or two weeks or as agreed upon at kick-off meeting.
3. Supplier will work towards delivering a prioritized set of the following activities to Monsanto:

* **AWS Design & Migration** 
  + Configure IAM
  + Design & implement Account and VPC strategy
  + Set up and configure bastion host(s)
  + Migrate existing resources (S3, SNS, SQS, lambdas, API Gateway configs, etc) from Legacy Monsanto AWS to newly designed AWS environment
  + Designed solution will meet ISO CSR Controls
* **App Container/ Serverless Epic** 
  + Set up and configure ECS Fargate solution
  + Create migration strategy for CloudFoundry to ECS with Fargate or similar & moving of AWS Lambdas to environment
  + Test and confirm migration of sample set of services (up to 25.)
  + Deployment and configuration of new Jenkins instance to support sample set of applications and migration as listed above.
  + Migrate Cloudfront from legacy AWS environment to the new account structure
  + Set up and configure Service Discovery in ECS/Fargate
* **Database Services & Compliance Epic** 
  + Develop and operationalize a strategy to move databases into net new AWS account. Test and confirm migration of sample set of databases (up to 10 (postgres, aurora, redis)).
    - Potential solutions - Snapshots, VCP Peering, Postgres dump/restore
  + Supplier will review current processes and implement solutions for SOX adherence
  + Migrate Elasticache instances from legacy environment to new AWS account structure
  + Analyze and implement an alternative for the current Event Store Database
* **Messaging Platform Epic**
  + Perform analysis and implement a solution for refactoring from current Kafka instance to one or multiple of the following technologies:
    - AWS MKS
    - Confluent Kafka as a Service
    - AWS Kinesis
    - Dedicated Kafka Instance
* **API Management Epic**
  + Evaluate, plan and migrate from Bayer’s Akana/Ocelot to independent instances
  + Evaluate API Gateway and Ping integration
  + Set up proof of concept of similar solution if API Gateway does not satisfy Bayer needs.
* **Secrets Management Epic**
  + Conduct discovery and analysis on current Vault implementation and make recommendations for replacing Jumpbox and Secrets storage
  + Set up AWS secret manager and integrate with Bayer services.
  + Migrate data from Vault to VCT Segret Manager (eg. AWS Secret Manager)
  + Deployment and integration testing with selected secret manager (E.g. AWS Secret Manager) to ensure rotation of keys between VCT and POD platforms
  + Build test environment to support jumpbox and rotation of keys
  + Develop Database credential rotation automation
  + Implement AWS SSM Parameter Store or similar solution
* **Identity and Access Management Epic**
  + Develop and implement tool migration plan from Bayer Ping to a “cost per use” based solution that supports OAuth2 and SAML such as AWS Cognito
  + Design and implement RBAC and group authentication policies/controls
  + Implement an entitlement management solution to replace existing Value Capture solution
    - Integrate into new IDM
    - Migrate legacy entitlements to new account structure
    - Ping integration with SAML until cutover
  + Develop a migration strategy to migrate users from Ping to Cognito or like solution
* **Monitoring & Logging Epic**
  + Analysis between maintaining an ELK stack and using Splunk Cloud
  + Design baseline dashboards in selected logging tool (E.g. ELK or Splunk)
  + Configure CloudWatch Alerts and centralized logging

Set up and configure agreed upon monitoring and logging solution

* **DevOps Tools Epic**
  + Build and deploy Cloud versions of Jira and GitHub Enterprise
  + Create new instances of Nexus, NPM, and migration from existing Bayer infrastructure