RHODES

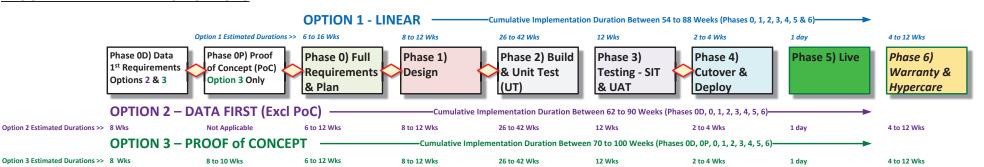
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Esri Utility Network Model (UNM) -Implementation Approach Options

tment from both clients and vendors. Implementation of the UNM is highly beneficial for utilities aimed at producing a digital twin mirror of the asset data information that sits in your GIS and EAM systems. The approach to implementing the benefits of the real world data fidelity that the UNM provides is highly structured, compre ed by the most experienced practitioners who know how to consult, plan for, and lead a UNM program. The implementation approach can be 1) Linear, 2) Data First or 3) Proof of Concept. We recommend in all cases onducting a Phase 0 to get the detailed requirements first. Each approach has merit and depend on the appetite for time, risk, budget, and duration. The financial and efficiency benefits of implementing the UNM are extensive ut dependent on a successful program implementation and the specialist and proven Rhodes Management experience to lead it.

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PROGRAM IMPLEMENTATION OPTIONS Note: Durations quoted are for utilities of a generally geographically larger scale with integrations to EAM, customer and billing systems. Smaller utilities may take less time, while very large utilities may take more time.



Option 1 is the LINEAR (or Traditional) approach. It commences with a Phase 0 - Full Requirements Gathering of the business process inventory, data editing, asset data tracing (with logical and physical connectivity), asset searching, architectural requirements, data analysis requirements, data modelling requirements, data migration requirements including network data quality assessment (NDQA), network data cleansing and augmentation (NDCA) requirements, network data gap analysis (NDGA), system integration requirements, infrastructure requirements, and requirements for testing and training (collectively this is "PETSAARMMIITT"). Phase 0 is typically done as a separate project and includes a full program management plan for implementation. It then continues with Phase 1 Design elements for business processes, integrations, web apps, editing, tracing, searching, infrastructure, and test plans. Phase 2 Build (also comprising configurations) for all GIS, integrations, future processes, and comprehensive Unit Testing (UT). UT should be done with the rigor of System Integration Testing (SIT) and User Acceptance Testing (UAT) with documented and completed test cases and regression resolution. Once UT is passed this forms the basis of confidently entering Phase 3 SIT and UAT and will usually include performance and security testing. Cutover planning occurs during the test phase of the program and is very extensive involving agreed data model and editing freezes, training, which in turn leads to Phase 4 and actual cutover execution and deployment of all software, technical and data migration components. Once all data is migrated and smoke and product verification testing (PVT) is completed, the system can go live in Phase 5, which is then followed by Phase 6 and a defined period of Warranty and Hypercare in Phase 7. Option 1 is the shortest in cumulative duration.

Option 2 is the DATA FIRST approach commencing with Phase 0D. Before getting all requirements it focuses on the potential fit of existing legacy data to the future UNM data construct, whereas Option 1 does this in the Full Requirements gathering approach. Phase 0D focuses on network data quality assessment (NDQA), network data cleansing and augmentation (NDCA) requirements, and network data gap analysis (NDGA). The remainder of the approach is the same as Option 1 however the Requirements and Plan phases excludes the data component as it is already done. By doing Phase QD first it provides an indication of scale and a measure of risk to the remainder of the program and is an excellent way to gauge and mitigate program risk and completeness. Option 2 takes longer than Option 1, due to the Data First being analyzed separately prior to everything else.

Option 3 is the PROOF of CONCEPT (PoC) approach and builds on Option 2 by incorporating a UNM Proof of Concept Phase 0P. It does this completing the normal Phase 0D Data First activities (NDQA, NDCA, NDGA), and then takes a select group of assets in a defined geographic extent. For an electric utility this would be a transmission, and/or distribution, feeder run to premise in a specific geographic location. For a water utility this would be a source to tap run of select water and potentially waste water assets, also in a specific geographic location. The PoC aims to prove asset data editing, asset data editing, asset data tracing, and asset data searching. It may also include asset data integrations on a reduced scale to other EAM or customer billing systems. Option 3 takes longer than Option 2 due to the cumulative duration extension of the PoC itself incorporating Phase 0D and Phase short it allows you to iteratively scale with controlled and informed risk. This is particularly important if you are migrating from a non-Esri geospatial data model.

## PROGRAM IMPLEMENTATION STREAMS



All streams and options presume a business case is approved and a procurement process concluded

Stream 1 - Program Management: Overall Planning, Governance & Delivery RHODES

Stream 2 - Data Migration: Utility Model Design & Utility Model Enrichment Stream 3 - Enterprise GIS: PETSAARMMIITT

Stream 4 - Technical:

Architecture, Infrastructure, & Integrations

Stream 5 - Business Analysis:

Process Management, Test Management, Change Liaison

Stream 6 - Change Management:

Change Readiness, Impacts, Communication & Training

## **LEGEND**

Phase 0) Requirements & Data

Purpose of this mandatory and essential phase is to elicit functional, business, integration, architecture and data requirements. This is best done through a separate "Phase 0" project. If done correctly it will take 6 to 12 weeks. Note if Option 2 or Option 3 is undertaken, the data component of the Requirements phase (for Option 1) is excluded because it is already completed taking either approach.

Phase 1) Design

Purpose of the Design Phase 1 is to focus on the major elements to be designed in detail for utility mode design and utility model enrichment, major components of current and future state Processes, Asset Data Editing, Tracing, and Searching, Architecture, GIS Asset and Customer Integrations, and Infrastructure.

Phase 2) Build & Unit Test (UT)

Phase 2 Build focuses on the PETSAARMMITT aspects of the project comprising Processes, Editing, Tracing, Searching, Architecture, Analysis, Modelling, Migration (consisting of cumulative and Iterative Data Design and Migration known Product Data Migration Increments (PDMI)), Integration, Infrastructure, (unit) esting and (later) Training. Unit Test cases feed into Training content.

Phase 3) SIT Test & UAT Test

Purpose of Phase 3 is to conduct System & Integration Testing (SIT) and User Acceptance Testing (UAT). Completion of this activity is premised on a comprehensive, thorough, and proven Unit Testing regime. SI is intended as the most intensive "use in anger" testing activity. UAT should tick off final usability criteria The back end of UAT testing should also be used for scripted Performance (in a pre-production environment), Penetration and Security Testing (in the pre-production and production environment)

Phase 4) Cutover & Deploy

Cutover *planning* occurs during the test phase of the program and is very extensive involving agreed data model freezes, data editing freezes, change and training parameters. Phase 4 cutover execution and deployment occurs once ALL data, functionality, testing, and change management concludes and is approved. It's the Go Live pre-cursor. The data migration process is usually the longest phase during this period. For large utilities the data migration process can run 24/7 for up to 2 weeks straight.

hase 5) Live

or Phase 5, the live date should ideally be planned for a low impact commencement; for example a Friday afternoon to allow for any unforseen circumstances or technical issues to be resolved over a weekend prior to a full Monday "use in anger" commencement. At this point Warranty and Hypercare commences.

Color Logical program approval, critical decision, or funding point. Note all times and durations outlined are based on informed estimates and experience.