

SOL ENGINEERING SERVICES

The Daniel Group LLC

SUPPORTING DOCUMENTATION PACKAGE

ALICE: Adaptive Labor Intelligence and Capacity Engine

SBIR Topic DLA26BZ03-NV011 | Defense Logistics Agency

ARTIFACT 8 OF 11

Assumptions Register

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Artifact Title	Assumptions Register
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Prepared By	SOL Engineering Services | The Daniel Group LLC
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Assumption Count	16 total (ASM-001 through ASM-016). ASM-001 through ASM-008: carried from TNA v1.0 Section 24 and reconciled with PRD Section 23. ASM-009 through ASM-016: identified during SDP cross-artifact analysis.
ID Convention	All IDs preserved from prior approved SDP artifacts. ASM-009 through ASM-016 introduced in this artifact.

1. Purpose and Scope

This Assumptions Register is Artifact 8 of the ALICE Supporting Documentation Package. It consolidates all assumptions underlying the ALICE architecture and program execution into a single authoritative record, providing the complete assumption base required for Phase I program planning, risk management, stakeholder decision-making, and Phase II ATO preparation.

The register covers 16 assumptions in four groups. Group A (ASM-001 through ASM-008) carries the eight assumptions from TNA Section 24, reconciled against PRD Section 23 to resolve differences in numbering and framing. Group B (ASM-009 through ASM-012) covers SDP-identified technical and design assumptions identified in the component, interface, and risk analysis. Group C (ASM-013 through ASM-014) covers SDP-identified regulatory and standards assumptions. Group D (ASM-015 through ASM-016) covers SDP-identified pre-Phase I design artifact assumptions whose materialization is itself a program execution dependency.

Each assumption record documents: a stable identifier; a concise assumption statement; the source basis; criticality (Critical, High, or Medium); the impact if the assumption proves false; the validation method and timing; the action required if the assumption fails; related risks, requirements, ADRs, and open questions; and the owner responsible for validation confirmation.

Criticality ratings distinguish assumptions that, if false, would prevent Phase I deliverable acceptance (Critical) from those that would require scope or design revision (High) or operational adjustment (Medium). All 16 assumptions are currently open — none has been formally validated as of July 2026.

2. Assumption Summary Index

ID	Statement (abbreviated)	Criticality	Group	Source	Owner	Validation Timing	Related Risk(s)
ASM-001	DLA will designate a GTPOC within 30 days of contract award with SME access and data sharing authority.	High	A — Program	TNA ASM-001; PRD ASM-001	DLA Contracting Officer	At contract award	RISK-001
ASM-002	De-identified DCPDS extract is obtainable within 60 days of contract award under a Memorandum of Understanding.	High	A — Program	TNA ASM-002; PRD ASM-002	DLA GTPOC; DLA CDO	Phase I Month 2	RISK-001; RISK-016
ASM-003	Phase I pilot sub-component contains at minimum 300 positions.	Critical	A — Program	TNA ASM-003; PRD ASM-003	DLA GTPOC	Phase I kickoff	RISK-003
ASM-004	DCHRMS migration does not reach the Phase I pilot sub-component during the 6-month performance period.	High	A — Program	TNA ASM-004; PRD ASM-004	DLA GTPOC	Phase I kickoff	RISK-002
ASM-005	Open-source or commercially licensed ABM frameworks are available without DoD-prohibitive license restrictions.	High	A — Program	TNA ASM-005; PRD ASM-005	SOL	Phase I Month 2	RISK-005
ASM-006	DLA's existing RMF ATO portfolio includes inheritable common service controls applicable to ALICE.	Medium	A — Program	TNA ASM-006; PRD ASM-006	DLA ISSO; DLA GTPOC	Phase I Month 3	RISK-008
ASM-007	Phase I operation on de-identified or OPM FWD proxy data does not require a formal ATO.	Critical	A — Program	TNA ASM-007 (differs from PRD ASM-007)	DLA Legal; DLA GTPOC	At contract award — before Phase I begins	RISK-001; RISK-016
ASM-008	DoD PKI / CAC infrastructure is accessible for	High	A — Program	TNA ASM-008	SOL; DLA GTPOC	Phase I contract award	RISK-004

ID	Statement (abbreviated)	Criticality	Group	Source	Owner	Validation Timing	Related Risk(s)
	integration in the Phase I demonstration environment.						
ASM-009	Technology selection for all 12 ALICE logical service components is deferred to Phase I technical design without constraining the architecture.	Medium	B — Technical	SDP-ART-03 (Component Catalog, introduction)	SOL Lead Architect	Phase I Month 1 — technology selection decisions	None direct
ASM-010	Phase II DLA SBIR award ceiling is approximately $1,000,000, consistent with peer DLA SBIR topics in the same solicitation.	Medium	B — Technical	PRD ASM-007 (not carried into TNA); source: DLA SBIR program norms	SOL Program Manager	Phase II contract award	RISK-008 (Phase II scope planning)
ASM-011	The LC-12 root-of-trust bootstrap mechanism — the initial secret that secures the secrets management service itself — is designable and testable within Phase I security architecture scope.	High	B — Technical	SDP-ART-03 (LC-12 security considerations)	SOL Security Lead	Phase I Month 2 — security architecture documentation	RISK-012
ASM-012	The alert delivery mechanism for IF-13 (threshold crossing events) can be specified as a configurable parameter in LC-10 and fully designed before Phase II interface design begins.	Medium	B — Technical	SDP-ART-05 (IF-13 open questions)	SOL Lead Architect; DLA GTPOC	Phase I Month 2	None direct
ASM-013	DAMA-DMBOK 2.0 (2024 Maintenance Revision) remains the operational data governance reference through Phase II design; DAMA-DMBOK 3.0	Medium	C — Regulatory and Standards	SDP-ART-01 (RL-26)	SOL Data Steward	Monitor throughout Phase I and Phase II	None direct

ID	Statement (abbreviated)	Criticality	Group	Source	Owner	Validation Timing	Related Risk(s)
	will not be consolidated as a replacement before Phase II design completion.						
ASM-014	NIST SP 800-188 (Synthetic Data Guidance) remains in draft status and non-authoritative through the end of Phase I; the formal Privacy Impact Assessment process is the correct governance mechanism for the synthetic layer classification determination.	High	C — Regulatory and Standards	SDP-ART-01 (RL-24, RL-37); SDP-ART-04 (DE-08)	SOL Privacy Officer	Monitor NIST CSRC throughout Phase I	RISK-010
ASM-015	A role ontology specification — defining the single-point-of-failure detection algorithm and criticality rating assignment method — can be produced through SME interviews and organizational process documentation within Phase I Month 1–2 scope.	High	D — Pre-Phase I Design Artifacts	SDP-ART-04 (DE-02 inferred design task)	SOL Lead Architect; DLA GTPOC (SME access)	Phase I Month 2 — specification document completed	RISK-003 (ontology construction dependency)
ASM-016	The de-identification specification — defining the field removal list, tokenization method, aggregation approach, and date field quasi-identifier handling — can be jointly approved by the DLA Privacy Officer and SOL Privacy Officer before any DLA-sourced data flows to the ALICE environment.	Critical	D — Pre-Phase I Design Artifacts	SDP-ART-04 (DE-03, DE-05 inferred design tasks)	SOL Privacy Officer; DLA Privacy Officer	Phase I Month 1 — before any DLA data delivery	RISK-016

3. Assumption Detail Records

Group A — Program and Stakeholder Assumptions

These eight assumptions are carried from TNA Section 24 and PRD Section 23. Where the TNA and PRD differ in numbering or framing, the differences are documented. All eight are program execution assumptions dependent on DLA or SOL organizational actions that must be confirmed before or at Phase I contract award or kickoff.

Note on PRD versus TNA ASM-007: The PRD assigns ASM-007 to the Phase II award ceiling assumption (~$1,000,000). The TNA reassigns ASM-007 to the Phase I ATO exemption assumption and adds ASM-008 for CAC integration. This register preserves the TNA numbering for ASM-001 through ASM-008 (consistent with all prior SDP artifacts) and captures the PRD ASM-007 Phase II ceiling assumption as ASM-010 in Group B.

ASM-001: DLA will designate a Government Technical Point of Contact within 30 days of contract award, with authority to facilitate subject matter expert access and data sharing agreement initiation.

Criticality: High	Status: Open — pending validation	Artifact: SDP-ART-08

Basis	PRD ASM-001; standard SBIR program management practice; DoD SBIR program structure requires GTPOC designation at contract award.
Impact if False	Phase I ontology construction timeline is compressed: SME review sessions cannot be scheduled without a GTPOC who has authority to provide access. Data sharing agreement initiation is delayed: the GTPOC is the primary point of escalation to the DLA CDO for DUA coordination. Phase I acceptance and Phase II coordination is at risk without a designated government point of contact.
Validation Method	GTPOC designation letter or contract modification received at or before contract award. GTPOC contact information, authority scope, and availability confirmed at Phase I kickoff meeting.
Action if False	Escalate immediately to the DLA Contracting Officer. Document the impact on Phase I schedule in a formal program risk event log entry. Request GTPOC designation as a contract modification condition.
Related Risks	RISK-001 (DUA not executed — GTPOC is the execution facilitator).
Related Requirements	PRD ASM-001; OQ-002 (GTPOC DUA authority).
Owner	DLA Contracting Officer (designation authority); SOL Program Manager (confirmation tracking).
Validation Timing	At contract award.

ASM-002: A de-identified DCPDS data extract is obtainable under a Memorandum of Understanding within 60 days of contract award, or the OPM Federal Workforce Data dataset will serve as a functional Phase I proxy.

Criticality: High	Status: Open — pending validation	Artifact: SDP-ART-08

Basis	PRD ASM-002; DCPAS standard data sharing practice; DoD Data Decrees (January 2026) establish CDAO-facilitated data access as an authorization

	pathway.
Impact if False	Primary: OPM FWD proxy dataset is activated. Phase I synthetic model trained on federal workforce patterns rather than DLA-specific patterns, reducing DLA-specific fidelity of Phase I results. Secondary: If both DLA data (MOU delayed beyond 60 days) and OPM FWD proxy (INT-05 schema not ready) are unavailable, Phase I ingestion is blocked. RISK-017 addresses this compounding scenario. Phase II funding justification is weaker if Phase I cannot demonstrate DLA-specific organizational fidelity.
Validation Method	MOU executed and de-identified DCPDS data extract received within 60 days of contract award. If not received within 60 days, proxy activation confirmed and proxy flag applied to all Phase I outputs.
Action if False (MOU delayed beyond 60 days)	Activate OPM FWD proxy path immediately. Document proxy activation in Phase I performance plan. Confirm with DLA GTPOC whether proxy-based Phase I results are acceptable for deliverable evaluation (OQ-010 / RISK-018). Continue pursuing MOU execution in parallel.
Related Risks	RISK-001 (DUA execution); RISK-017 (OPM FWD proxy schema readiness); RISK-018 (acceptance standard for proxy-based validation).
Related Requirements	REQ-F-001; REQ-F-005; ASM-002; OQ-002; DEP-001.
Related ADRs	ADR-006 (Phase-Gated Security Posture — proxy operation is architecturally supported in Phase I).
Owner	DLA GTPOC (MOU coordination); DLA CDO (DUA authority); SOL Program Manager (tracking and proxy activation).
Validation Timing	Phase I Month 2 (60-day threshold). OPM FWD proxy readiness validated Phase I Month 1 independent of MOU status.

ASM-003: The Phase I pilot sub-component contains at minimum 300 authorized positions.		
Criticality: Critical	**Status: Open — pending validation**	**Artifact:** SDP-ART-08

Basis	PRD ASM-003; statistical requirement for generative model training — populations below 300 positions produce training corpora insufficient for the differential privacy noise injection at epsilon ≤ 1.0 to leave adequate signal for high-fidelity synthetic generation.
Impact if False	Synthetic population fidelity may fall below the 5% distributional deviation threshold (REQ-F-016). RISK-003 documents this failure mode. Phase I deliverable acceptance criterion not met if fidelity validation fails. Mitigation options: (a) augment with OPM FWD proxy data; (b) combine the pilot sub-component with an adjacent sub-function to increase position count; (c) negotiate with DLA GTPOC to accept proxy-augmented results for Phase I. Phase II funding case is weakened if Phase I cannot demonstrate fidelity at the acceptance threshold.
Validation Method	Pilot sub-component position count confirmed from DCPDS query or DLA HR staffing report at Phase I kickoff. Count confirmed before synthetic engine development begins.
Action if False	If position count is below 300: immediately confirm augmentation strategy with DLA GTPOC and document the approach in the Phase I performance

	plan. Do not begin synthetic engine development without either a confirmed count ≥ 300 or an agreed augmentation strategy.
Related Risks	RISK-003 (fidelity threshold failure); RISK-007 (membership inference risk increases with small populations).
Related Requirements	REQ-F-015; REQ-F-016; REQ-F-017; PRD Section 12.2 (MVP success criteria).
Owner	DLA GTPOC (pilot sub-component selection and position count confirmation).
Validation Timing	Phase I kickoff — this is the first data point needed after GTPOC designation.

ASM-004: The DCHRMS migration does not reach the Phase I pilot sub-component during the 6-month performance period.

Criticality: High	**Status:** Open — pending validation	**Artifact:** SDP-ART-08

Basis	PRD ASM-004; DCHRMS migration is in phased rollout across DoD components. The migration timeline for individual DLA activities is not publicly documented.
Impact if False	If DCHRMS migration reaches the pilot sub-component during Phase I, the LC-03 schema mapping for DCPDS may need to transition to DCHRMS schema mid-performance-period. If ADR-003 (LC-03 dual-schema abstraction layer) is properly implemented from Phase I Day 1, the impact is limited to a LC-03 schema configuration update rather than a system-wide redesign. If the abstraction layer is not implemented correctly from the start, the impact is a major unplanned scope change within the $100,000 Phase I ceiling.
Validation Method	DLA GTPOC confirms DCHRMS migration schedule for the pilot sub-component at Phase I kickoff. If migration is scheduled within Phase I, DCHRMS schema mapping is prioritized in LC-03 Month 1 design.
Action if False	If DCHRMS migration is imminent: (a) prioritize DCHRMS schema mapping in LC-03 over DCPDS mapping; (b) confirm with DLA GTPOC whether the Phase I data extract will be provided in DCPDS or DCHRMS format; (c) update the Phase I performance plan to reflect the changed integration scope.
Related Risks	RISK-002 (DCHRMS migration timing).
Related Requirements	REQ-INT-001; ADR-003; DEP-007.
Owner	DLA GTPOC (migration schedule information); SOL Lead Architect (LC-03 design response).
Validation Timing	Phase I kickoff — DCHRMS migration schedule for pilot sub-component must be the first technical question addressed.

ASM-005: Open-source or commercially licensed ABM frameworks are available without DoD-prohibitive license restrictions.

Criticality: High	Status: Open — pending validation	Artifact: SDP-ART-08

Basis	PRD ASM-005; established open-source ABM frameworks (Mesa for Python, AnyLogic Community Edition, and others) are widely used in government and academic research settings without license restrictions.
Impact if False	ABM framework requiring a commercial license with DoD-prohibitive restrictions would require selection of an alternative framework. If no acceptable framework is available, LC-06 (Simulation Engine) must be developed from scratch using custom simulation logic, adding significant Phase I development scope and cost. Phase I budget impact: if commercial license is required, cost must come from within the $100,000 Phase I ceiling or requires a modified budget allocation.
Validation Method	Legal review of candidate ABM framework licenses completed before Phase I Month 2. Primary candidate: Mesa (Apache 2.0 license — open-source, government-permissible). Secondary candidates documented with license review results.
Action if False	If primary candidate (Mesa) has restrictions: evaluate secondary open-source alternatives. If no open-source option is acceptable: obtain legal review of commercial license terms before expenditure. Document selection rationale and license compliance in Phase I design documentation.
Related Risks	RISK-005 (simulation execution time — framework performance also relevant to framework selection).
Related Requirements	REQ-F-010; CON-011; DEP-006.
Owner	SOL Legal counsel (license review); SOL Lead Architect (framework evaluation).
Validation Timing	Phase I Month 2 — license review must be completed before LC-06 implementation begins.

ASM-006: DLA's existing RMF ATO portfolio includes inheritable common service controls applicable to ALICE for at least infrastructure and authentication domains.

Criticality: Medium	Status: Open — pending validation	Artifact: SDP-ART-08

Basis	PRD ASM-006; common practice for DoD SBIR programs operating within or adjacent to existing authorized DoD infrastructure to leverage control inheritance packages for common services.
Impact if False	Full 287-control Moderate baseline implementation without any inheritance increases Phase II RMF effort and cost substantially. Phase II ATO timeline may extend beyond the planned schedule if no inheritance is available. ATO preparation costs may require supplemental Phase II funding beyond the estimated ceiling.
Validation Method	DLA ISSO reviews existing DLA RMF ATO portfolio and identifies any control inheritance packages applicable to ALICE based on the hosting model selected (OQ-004). Review must be initiated after hosting model decision.

Action if False	Document the full 287-control implementation requirement in Phase II planning. Adjust Phase II schedule to account for extended RMF assessment scope. Review with DLA AO whether any phased authorization approach is available.
Related Risks	RISK-008 (Phase II hosting model — inheritance availability depends on hosting model).
Related Requirements	REQ-NF-007; OQ-005.
Owner	DLA ISSO (ATO portfolio review); DLA GTPOC (coordination with ISSO).
Validation Timing	Phase I Month 3 — after hosting model decision (OQ-004) establishes the deployment context within which inheritance applies.

ASM-007: Phase I operation on de-identified or OPM FWD proxy data does not require a formal RMF Authority to Operate.

Criticality: Critical	**Status: Open — pending validation**	**Artifact:** SDP-ART-08

Basis	ADR-006 (Phase-Gated Security Posture); federal guidance distinguishes research and feasibility work from production CUI processing. PRD and CONOPS do not state that ATO is required for Phase I. Operating on de-identified data or publicly available proxy data within a controlled development and demonstration environment is the basis for this assumption.
Note on PRD vs. TNA Numbering	The PRD assigns ASM-007 to the Phase II award ceiling assumption (~$1,000,000). The TNA renumbers this assumption as ASM-007 covering Phase I ATO exemption. This register preserves the TNA numbering. The Phase II ceiling assumption is captured as ASM-010.
Impact if False	If DLA legal counsel determines that Phase I operation on de-identified data in SOL's non-federal environment requires an ATO, Phase I is not achievable within the $100,000 budget and 6-month timeline. This is the highest-consequence assumption failure in the register. If false, the entire SBIR program structure requires renegotiation. Mitigation: if ATO is required for Phase I, the only viable path is to operate entirely on publicly available OPM FWD data (no DLA-specific data at all), which avoids the ATO requirement entirely but eliminates DLA-specific fidelity validation.
Validation Method	DLA legal counsel and DLA GTPOC confirm in writing at Phase I kickoff that the proposed Phase I data handling approach (de-identified DLA extracts or OPM FWD proxy only) does not require an ATO under DoD policy. Written confirmation required before any DLA data is received.
Action if False	Immediately convene SOL leadership and DLA GTPOC to evaluate options: (a) restrict Phase I entirely to OPM FWD public data (eliminates ATO requirement but reduces fidelity validation quality); (b) pursue an emergency expedited authorization pathway with DLA; (c) renegotiate Phase I scope and timeline with DLA Contracting Officer.
Related Risks	RISK-001 (data handling approach affects DUA scope); RISK-016 (de-identification specification precondition).
Related Requirements	REQ-NF-009; CON-003; CON-004; ADR-006.
Owner	DLA Legal counsel (authority determination); DLA GTPOC (escalation and

	confirmation); SOL Program Manager (confirmation tracking).
Validation Timing	At contract award — before Phase I begins. This confirmation must not be deferred.

ASM-008: DoD PKI / CAC authentication infrastructure is accessible for integration in the Phase I demonstration environment.		
Criticality: High	**Status: Open — pending validation**	**Artifact:** SDP-ART-08

Basis	PRD Section 12.2 (required Phase I security controls include CAC or equivalent); DoDI 8520.02 mandates CAC for DoD systems; the ALICE target user population authenticates via CAC in their standard DoD environment.
Impact if False	Phase I demonstration cannot satisfy REQ-SEC-001 (CAC as required authentication mechanism). An alternative multi-factor authentication mechanism must be implemented as an interim Phase I substitute. Phase I security acceptance evidence will document a gap against DoDI 8520.02 requirements, which must be noted in the Phase I technical report and resolved in Phase II. Phase II requires CAC integration regardless of Phase I outcome; deferral adds Phase II design scope.
Validation Method	Technical feasibility assessment of DoD PKI integration in SOL's Phase I environment completed at contract award. Confirmed in writing with DLA GTPOC before Phase I Month 1 security architecture design begins.
Action if False	Implement alternative MFA (software-based or hardware token equivalent) as an interim measure. Document the gap against DoDI 8520.02 in the Phase I technical report. Include CAC integration in Phase II design scope. Confirm with DLA GTPOC whether alternative MFA is acceptable for Phase I deliverable acceptance.
Related Risks	RISK-004 (CAC not available in Phase I); RISK-013 (token scope specification — token format depends on which auth mechanism is implemented).
Related Requirements	REQ-SEC-001; ADR-004; DEP-003.
Owner	SOL Security Lead (technical feasibility); DLA GTPOC (acceptance standard for interim MFA if needed).
Validation Timing	At contract award — before security architecture design begins.

Group B — Technical and Design Assumptions

These four assumptions cover technical design commitments made across the SDP artifact series that are not explicitly stated in the PRD or TNA as assumptions but carry the same uncertainty and impact profile.

ASM-009: Technology selection for all 12 ALICE logical service components is deferred to Phase I technical design without constraining the architecture's capability or compliance profile.		
Criticality: Medium	**Status: Open — pending validation**	**Artifact:** SDP-ART-08

Basis	SDP-ART-03 (Component Catalog introduction); TNA v1.0 technology neutrality commitment; ADR-001 (Modular Service-Oriented Architecture — components defined as capability classes, not technology prescriptions).
Impact if False	If any technology choice made in Phase I proves architecturally incompatible with a compliance requirement (e.g., a chosen database technology does not support the encryption requirements of REQ-SEC-007), the component must be redesigned mid-Phase I. If a technology choice constrains future scalability or portability contrary to the architecture principles, it may create Phase II technical debt.
Validation Method	Technology selection decisions for each component are documented with an explicit compliance mapping confirming they satisfy all associated architecture requirements before implementation begins. Technology selection review included in Phase I design documentation.
Action if False	If a selected technology creates an architectural constraint: document the constraint and evaluate whether it can be resolved through configuration or wrapper design before changing the technology selection. If resolution is not feasible, select an alternative technology.
Related Requirements	ADR-001; REQ-NF-014 (standard data exchange formats — constrains some technology choices at integration boundaries).
Owner	SOL Lead Architect (technology selection governance).
Validation Timing	Phase I Month 1 — technology selection decisions should be documented as part of the Phase I technical design package.

ASM-010: Phase II DLA SBIR award ceiling is approximately $1,000,000, consistent with peer DLA SBIR topics in the same solicitation.

Criticality: Medium	**Status:** Open — pending validation	**Artifact:** SDP-ART-08

Basis	PRD ASM-007 (not carried into TNA with this content); DLA SBIR program norms for Phase II awards in the same solicitation cycle; peer DLA SBIR Phase II topics referenced in the PRD.
Note	The PRD assigns ASM-007 to this assumption. The TNA renumbers ASM-007 to cover Phase I ATO exemption. This register captures this assumption at ASM-010 to maintain consistency with TNA numbering across all SDP artifacts while preserving the PRD's programmatic assumption.
Impact if False	If the Phase II award ceiling is materially lower than $1,000,000, Phase II scope must be reduced. Enterprise-scale ontology, live API integrations, and full RMF ATO may not be achievable within a lower ceiling. If the Phase II ceiling is higher, it creates additional scope and timeline flexibility without a negative program impact.
Validation Method	Phase II award ceiling confirmed at Phase II contract award negotiation. Phase I technical report and Phase II proposal should be designed to demonstrate value within the ~$1,000,000 scope envelope while identifying descope options if the ceiling is lower.
Action if False	If Phase II ceiling is confirmed lower than expected: prepare a prioritized scope reduction plan identifying which Phase II capabilities can be deferred to Phase III without eliminating the core operational value proposition. Enterprise-scale ontology and live API integration are the highest-cost Phase II elements.

Related Risks	RISK-008 (hosting model — hosting costs are a significant Phase II variable).
Related Requirements	PRD ASM-007; PRD Section 11.1 (Phase II scope elements).
Owner	SOL Program Manager (Phase II proposal development); DLA Contracting Officer (award ceiling determination).
Validation Timing	Phase II contract award.

ASM-011: The LC-12 root-of-trust bootstrap mechanism — the initial credential that secures the secrets management service itself — is designable and testable within Phase I security architecture scope and budget.

Criticality: High	**Status:** Open — pending validation	**Artifact:** SDP-ART-08

Basis	SDP-ART-03 (LC-12 security considerations, inferred design task); standard secrets management design challenge — every secrets management system requires a root credential that is itself not stored in the secrets management system.
Impact if False	If the bootstrap mechanism cannot be designed within Phase I scope, LC-12 cannot be fully implemented, which cascades to every service that depends on LC-12 for credentials. If the bootstrap mechanism is insecure, the entire credential management system is compromised — LC-12 is the highest-value attack target in the ALICE architecture. This is a design and engineering challenge, not a policy or stakeholder decision. The assumption is that SOL's security team has the capability to produce a sound bootstrap design.
Validation Method	LC-12 bootstrap mechanism documented in the Phase I security architecture specification, reviewed by SOL Security Lead, and tested in the Phase I development environment before the Phase I demonstration.
Action if False	If bootstrap mechanism design reveals security weaknesses: engage an independent security reviewer before finalizing the design. Consider leveraging an existing government-authorized secrets management service (hosted by the government-authorized cloud environment) rather than implementing a custom LC-12, if a suitable service is available in the target deployment environment.
Related Risks	RISK-012 (LC-12 credential rotation — bootstrap mechanism design also affects rotation architecture).
Related Requirements	REQ-SEC-008; ADR-004.
Owner	SOL Security Lead.
Validation Timing	Phase I Month 2 — security architecture specification including LC-12 bootstrap design.

ASM-012: The alert delivery mechanism for IF-13 (threshold crossing event notifications) can be specified as a configurable capability — in-system notification, email notification, or both — and fully designed before Phase II interface design.

Criticality: Medium	Status: Open — pending validation	Artifact: SDP-ART-08

Basis	SDP-ART-05 (IF-13 open questions); ADR-010 (Configuration Over Customization — alert delivery mechanism is a configurable parameter in LC-10); REQ-F-022 (alert generation required); REQ-UX-003 (alert delivery on next login required).
Impact if False	If the alert delivery mechanism cannot be agreed upon before Phase II design, the IF-13 interface specification cannot be finalized. The mechanism choice (in-system vs. email) affects the LC-07 interface design, the LC-11 observability integration, and potentially the network security configuration for outbound alert delivery.
Validation Method	Alert delivery mechanism specified in LC-10 configuration design documentation before Phase II interface design begins. Confirmed with DLA GTPOC at Phase I completion or Phase II kickoff.
Action if False	Design IF-13 to support both in-system and email delivery by default, with the mechanism selectable through LC-10 configuration. This eliminates the assumption by building in configurability from the outset.
Related Requirements	REQ-F-022; REQ-UX-003; ADR-010.
Owner	SOL Lead Architect; DLA GTPOC (operational preference for alert delivery).
Validation Timing	Phase I completion — before Phase II interface design.

Group C — Regulatory and Standards Assumptions

These two assumptions address external standards and regulatory guidance that affect the ALICE architecture but are outside the control of either SOL or DLA. Both assumptions carry implementation implications that would require architecture revision if the assumptions prove false.

ASM-013: DAMA-DMBOK 2.0 (2024 Maintenance Revision) remains the operational data governance reference for ALICE through Phase II design completion; DAMA-DMBOK 3.0 will not be consolidated as a replacement before Phase II design is complete.

Criticality: Medium	Status: Open — pending validation	Artifact: SDP-ART-08

Basis	SDP-ART-01 (RL-26); DAMA International confirmed DAMA-DMBOK 3.0 is in active development as of July 2026 but had not published a consolidated replacement as of that date.
Impact if False	If DAMA-DMBOK 3.0 is finalized and published before Phase II design is complete, the data governance architecture in TNA Section 17 and SDP-ART-04 may require review against the new standard. The functional impact would likely be minimal — DAMA-DMBOK 3.0 is expected to be an evolution of, not a departure from, DAMA-DMBOK 2.0. A standards revision would not change the fundamental data governance architecture; it may affect the specific role definitions or process documentation cited in governance artifacts.
Validation Method	Monitor DAMA International publication announcements throughout Phase I and Phase II. If DAMA-DMBOK 3.0 is published before Phase II design completion, assess alignment of existing ALICE data governance

	architecture against the new edition.
Action if False	If DAMA-DMBOK 3.0 is published before Phase II design completion: conduct a targeted gap analysis between the ALICE data governance architecture (SDP-ART-04 Sections 4 and 6) and DAMA-DMBOK 3.0. Update governance documentation if material differences exist. Architectural elements are unlikely to require changes.
Related Requirements	TNA Section 17 (Governance and Compliance Architecture); SDP-ART-04 (Data Catalog, Data Governance Rules).
Owner	SOL Data Steward (standards monitoring).
Validation Timing	Ongoing throughout Phase I and Phase II.

ASM-014: NIST SP 800-188 (Synthetic Data Guidance) remains in draft status and non-authoritative through the end of Phase I; the formal Privacy Impact Assessment process governed by DLA and the DLA CDO is the correct and sufficient governance mechanism for the synthetic population classification determination.

Criticality: High	**Status:** Open — pending validation	**Artifact:** SDP-ART-08

Basis	SDP-ART-01 (RL-24, RL-37); IAPP (November 2024) confirmed SP 800-188 was in draft and that federal guidance did not formally authorize differential privacy as an automatic classification reduction mechanism. ADR-007 establishes CUI-by-default as the conservative posture.
Impact if False (SP 800-188 finalized during Phase I)	If SP 800-188 is finalized before Phase II design, it may provide formal federal standards for synthetic data generation, validation, and classification that supersede the conservative CUI-by-default posture of ADR-007. If SP 800-188 formally authorizes a specific differential privacy epsilon threshold as sufficient for classification reduction, the PIA process may be simplified or its conclusions may be predetermined. The architecture would not require changes; the PIA documentation would reference SP 800-188 as the authoritative standard rather than treating classification as open.
Validation Method	Monitor NIST CSRC publication announcements for SP 800-188 finalization. If finalized before Phase II design, review its content against the ALICE synthetic data generation architecture and update the PIA framework accordingly.
Action if False	If SP 800-188 is finalized: (a) obtain the document and assess whether it provides definitive guidance on the classification of differential-privacy-protected synthetic data derived from federal personnel records; (b) brief DLA CDO and DLA Privacy Officer on the implications for the ALICE PIA; (c) update SDP-ART-04 (DE-08 entity record) and SDP-ART-09 (OQ-006 disposition) to reflect the finalized guidance.
Related Risks	RISK-010 (synthetic data classification ambiguity).
Related Requirements	ADR-007; REQ-COMP-004; OQ-006; DE-08 classification.
Owner	SOL Privacy Officer (standards monitoring and PIA coordination).
Validation Timing	Ongoing throughout Phase I. OQ-006 resolution depends on SP 800-188 status.

Group D — Pre-Phase I Design Artifact Assumptions

These two assumptions address design artifacts that must be completed as preconditions for Phase I program execution but that are themselves products of the Phase I program. Their completion is a program dependency, not an external unknown; the assumptions are that the work is feasible within the Phase I timeline and resource constraints.

ASM-015: A role ontology specification — defining the single-point-of-failure detection algorithm and criticality rating assignment method — can be produced through SME interviews and organizational process documentation review within Phase I Months 1 and 2.

Criticality: High	Status: Open — pending validation	Artifact: SDP-ART-08

Basis	SDP-ART-04 (DE-02 inferred design task); the role ontology specification is identified as a required Phase I design artifact not explicitly defined in the PRD. It must exist before LC-04 ontology construction begins.
Impact if False	Without a role ontology specification, LC-04 (Organizational Ontology Service) cannot correctly construct the dependency graph or assign criticality ratings. If the specification cannot be completed within Phase I Months 1–2, the LC-04 implementation timeline is compressed, risking Phase I schedule. If SME access is not available (related to ASM-001), the specification cannot be validated, reducing its reliability for backtesting and simulation.
Validation Method	Role ontology specification document completed, reviewed by DLA subject matter experts, and accepted by DLA GTPOC before LC-04 implementation begins. The specification is a Phase I deliverable checkpoint, not a secondary artifact.
Action if False	If SME access is delayed (ASM-001 impact): begin specification development using available organizational process documentation and DLA organizational charts; schedule SME validation sessions as soon as GTPOC facilitates access. If specification cannot be completed within the timeline, compress LC-04 implementation scope to the minimum required for Phase I MVP rather than delaying all ontology work.
Related Risks	RISK-003 (fidelity — ontology quality affects simulation accuracy); RISK-001 (GTPOC access dependency for SME validation).
Related Requirements	REQ-F-007; REQ-F-008; DE-02 (Role entity).
Owner	SOL Lead Architect (specification authorship); DLA GTPOC (SME access facilitation); DLA subject matter experts (validation).
Validation Timing	Phase I Month 2 — specification completed and SME-validated before LC-04 implementation begins.

ASM-016: The de-identification specification — defining the field removal list, tokenization method, aggregation approach, and date field quasi-identifier handling for DCPDS and DLA TMS data — can be jointly approved by the DLA Privacy Officer and SOL Privacy Officer before any DLA-sourced data flows to the ALICE environment.

Criticality: Critical	Status: Open — pending validation	Artifact: SDP-ART-08

Basis	SDP-ART-04 (DE-03, DE-05 inferred design tasks); 5 U.S.C. § 552a (Privacy Act of 1974) — de-identification is the primary mechanism by which ALICE resolves the Privacy Act constraint at the ingestion boundary. The specification must exist and be approved before any DCPDS or DLA TMS data is received.
Impact if False	If the specification is not completed and approved before DLA data delivery: either (a) DLA data delivery must be blocked until the specification is approved, delaying Phase I ingestion; or (b) data is received without an approved specification, creating a risk that de-identification is incomplete, which would constitute a Privacy Act violation if any identifying field reaches the Processed Zone. The second scenario (data received without approved specification) is the higher-risk outcome. The de-identification specification is a program start condition, not a design artifact that can be completed in parallel with data receipt. This is the assumption most tightly coupled to RISK-016 (the highest-consequence privacy risk in the register).
Validation Method	De-identification specification document completed, reviewed by SOL Privacy Officer, and jointly approved by DLA Privacy Officer before any MOU is executed or any DLA data extract is received. Approval documented in writing.
Action if False	If specification cannot be approved before data delivery: delay DLA data delivery until approval is obtained. Activate OPM FWD proxy path (ASM-002 fallback) in the interim. Do not receive DLA data without an approved specification under any circumstances.
Related Risks	RISK-016 (de-identification specification not completed before data delivery — this assumption is the direct programmatic statement of that risk's precondition).
Related Requirements	5 U.S.C. § 552a; REQ-NF-008; REQ-COMP-001; REQ-F-006; AP-1 (Privacy as Architectural Invariant); ADR-002; DE-03; DE-05.
Owner	SOL Privacy Officer (specification authorship); DLA Privacy Officer (approval authority); DLA GTPOC (coordination facilitator).
Validation Timing	Phase I Month 1 — before any DLA data exchange begins. This is the highest-priority pre-Phase I artifact.

4. Assumption Dependency Map

The following assumptions have direct dependencies on one another. If a foundational assumption fails, dependent assumptions may be invalidated or require re-evaluation.

Assumption	Depends On	Dependency Description
ASM-002 (DCPDS extract within 60 days)	ASM-001 (GTPOC designated); ASM-007 (Phase I ATO exemption); ASM-016 (de-identification	A GTPOC must exist to facilitate MOU coordination (ASM-001). The ATO exemption must be confirmed before any DLA data is received (ASM-007). The de-identification specification must be approved before DLA data delivery can occur (ASM-016). All three must be satisfied before ASM-002 can be validated.

Assumption	Depends On	Dependency Description
	specification approved)	
ASM-003 (300+ positions)	ASM-001 (GTPOC designated)	Pilot sub-component selection and position count confirmation requires a GTPOC with authority to provide this information.
ASM-004 (DCHRMS migration timing)	ASM-001 (GTPOC)	DCHRMS migration schedule for the pilot sub-component can only be obtained from DLA, via the GTPOC.
ASM-007 (Phase I ATO exemption)	None	Independent; requires DLA legal counsel confirmation. Must be confirmed first, before ASM-002 (data delivery) can proceed.
ASM-008 (CAC availability)	None	Independent technical feasibility assessment. Should be pursued in parallel with ASM-007 confirmation.
ASM-011 (LC-12 bootstrap)	ASM-009 (technology selection deferred)	The bootstrap mechanism design is part of the LC-12 technology selection and security architecture. It cannot be fully specified until technology selection for LC-12 is made.
ASM-015 (role ontology specification)	ASM-001 (GTPOC); ASM-003 (position count)	SME access (via GTPOC) is required for ontology validation. The specification scope depends on knowing the pilot sub-component position count (ASM-003).
ASM-016 (de-identification specification)	ASM-001 (GTPOC for DLA Privacy Officer access); ASM-007 (ATO exemption confirms scope)	DLA Privacy Officer engagement requires GTPOC coordination. The specification scope is partly determined by whether Phase I uses DLA data or OPM FWD proxy (which depends on ASM-007 and ASM-002).

5. Assumption Validation Schedule

Timing	Assumptions to Validate	Responsible Party	Output
At contract award (before Phase I begins)	ASM-007 (Phase I ATO exemption — Critical); ASM-008 (CAC feasibility); ASM-001 (GTPOC designation)	DLA Legal (ASM-007); SOL Security Lead (ASM-008); DLA Contracting Officer (ASM-001)	Written confirmation of ASM-007; CAC feasibility assessment report; GTPOC designation letter.
Phase I kickoff meeting	ASM-003 (position count — Critical); ASM-004 (DCHRMS migration schedule); ASM-002 (DUA timeline confirmed)	DLA GTPOC (all three)	Kickoff meeting decision memorandum documenting: pilot sub-component position count, DCHRMS migration schedule, and DUA timeline.
Phase I	ASM-016 (de-	SOL Privacy	De-identification specification

Timing	Assumptions to Validate	Responsible Party	Output
Month 1	identification specification — Critical); ASM-009 (technology selection initiation)	Officer + DLA Privacy Officer (ASM-016); SOL Lead Architect (ASM-009)	approved in writing; Phase I technology selection documentation initiated.
Phase I Month 2	ASM-005 (ABM license); ASM-011 (LC-12 bootstrap); ASM-012 (alert delivery mechanism); ASM-015 (role ontology specification); ASM-002 (DUA confirmed or proxy activated)	SOL Legal (ASM-005); SOL Security Lead (ASM-011); SOL Architect (ASM-012, ASM-015); SOL PM (ASM-002)	ABM license review memo; LC-12 bootstrap design document; alert delivery mechanism decision; role ontology specification; DUA status confirmation.
Phase I Month 3	ASM-006 (RMF control inheritance — after hosting model decision)	DLA ISSO; DLA GTPOC	Control inheritance availability assessment.
Ongoing throughout Phase I and Phase II	ASM-013 (DAMA-DMBOK 3.0); ASM-014 (NIST SP 800-188)	SOL Data Steward (ASM-013); SOL Privacy Officer (ASM-014)	Standards monitoring log; update SDP artifacts if standards are finalized.
Phase II contract award	ASM-010 (Phase II award ceiling)	SOL Program Manager; DLA Contracting Officer	Phase II award amount confirmed; scope adjusted if ceiling differs from assumption.

6. Gate-8 Summary and Decision Required

What Was Created

Artifact 8 (Assumptions Register) provides complete governance records for all 16 ALICE assumptions in four groups. Group A (ASM-001 through ASM-008) consolidates the eight assumptions from TNA Section 24 and reconciles them against PRD Section 23, documenting the numbering difference for PRD ASM-007 (Phase II ceiling, captured as ASM-010) and TNA ASM-007 (Phase I ATO exemption). Group B (ASM-009 through ASM-012) formally captures four SDP-identified technical assumptions. Group C (ASM-013 through ASM-014) captures two regulatory and standards assumptions. Group D (ASM-015 through ASM-016) captures two pre-Phase I design artifact assumptions, both of which are program start conditions whose completion is as critical as any contractual deliverable.

Each record documents: assumption statement, basis, criticality, impact if false, validation method, action if false, related risks and requirements, owner, and validation timing. Section 4 documents the dependency relationships between assumptions. Section 5 organizes all assumptions into a validation schedule by Phase I execution timing.

Critical Assumptions Requiring Immediate Action

- **[Critical — ASM-007]** Phase I ATO exemption must be confirmed by DLA Legal counsel before Phase I begins. No DLA data should be received without this written confirmation.
- **[Critical — ASM-003]** Pilot sub-component position count must be confirmed at Phase I kickoff. If below 300, augmentation strategy must be documented before synthetic engine development begins.

- **[Critical — ASM-016]** De-identification specification must be completed and approved by both Privacy Officers before any DLA data flows to ALICE. This is the single highest-priority pre-Phase I design artifact.

Open Issues

- **[Medium]** ASM-010 (Phase II award ceiling ~$1,000,000) differs from the PRD's ASM-007 content because the TNA renumbered the PRD assumptions. The Phase II ceiling assumption has no parallel in the TNA. Stakeholders should confirm whether the ~$1,000,000 ceiling assumption is current and accurate for planning purposes.
- **[Medium]** ASM-013 (DAMA-DMBOK 3.0 status) and ASM-014 (NIST SP 800-188 status) require ongoing monitoring. These are passive assumptions requiring no action unless the underlying standards change.

Decision Required

Gate-8 Decision: Please approve Artifact 8 (Assumptions Register) to proceed to Artifact 9 (Open Questions Register), or provide specific revision instructions. If any assumption statement, basis, criticality rating, impact assessment, or owner assignment requires modification, please identify the assumption ID (ASM-XXX) and the specific change required. All ASM-XXX IDs introduced in this artifact will be carried forward into Artifact 9 and Artifact 11.