Annex X-1 (Non-Normative)

Handshake-Scoped Shared Context, Cooperative Memory, and Authenticity Assurance in BEAP™-Based Orchestration

X.1 Status and Scope

This annex is non-normative.
It describes an optional, conceptual extension to the BEAP™ (Bidirectional Email Automation Protocol) communication and orchestration model.

The mechanisms described herein are exploratory and not required for BEAP™ compliance. Nothing in this annex modifies, overrides, or extends any normative requirement defined in the core specification.

X.2 Motivation

BEAP™ is intentionally designed around capsule-local context transmission. Each capsule contains all information required for verification, policy evaluation, and deterministic execution. This design maximizes auditability, reproducibility, and stateless processing.

In long-lived cooperative relationships—both enterprise-to-enterprise (B2B) and business-to-consumer (B2C)—this strict per-capsule isolation can introduce avoidable friction. Repeated negotiation of identity data, documentation, or operational knowledge increases latency and cognitive load without improving security.

This annex explores a handshake-scoped cooperation model in which context, references, and observational memory are explicitly bound to a verified handshake for its lifetime. The goal is to reduce operational friction while preserving BEAP™'s core principles of determinism, policy primacy, and verifiability.

X.3 Handshake-Scoped Cooperation Model

X.3.1 Handshake as a Context Boundary

In this conceptual model, a BEAP™ handshake defines a bounded cooperation space shared between two parties. This space is:

- identity-bound,
- explicitly consented,
- cryptographically verifiable,
- and fully revocable.

The handshake therefore represents not only transport authorization but a temporary operational contract that governs which context, references, and observations may be shared.

X.3.2 Context and Memory Tiers

Multiple context and memory tiers may coexist within a handshake, each with a strictly defined role:

Tier-1: Capsule-Local Deterministic Context

- Mandatory and present in every capsule
- Fully self-contained and independently verifiable
- Sole authority for execution and automation decisions

Tier-2: Handshake-Scoped Shared Context

- Optional and explicitly scoped
- Non-sensitive and informational
- May include documentation, curated public references, terminology mappings, or attached knowledge bases
- Never required for protocol correctness or execution

Tier-3: Handshake-Scoped Sensitive / Critical Context

- Optional and purpose-bound
- Includes PII or business-critical attributes strictly required for support or operations
- Stored exclusively in encrypted qBEAP™ capsule segments

- Automatically embedded in every capsule exchanged under the handshake
- Explicitly revocable at any time

Handshake-Scoped Observational Memory

- Optional and advisory
- Derived from non-sensitive workflow observations
- Read-only by default
- Must never influence execution logic

All tiers are limited to the lifetime of the handshake and governed by explicit policy and consent.

X.4 Anchoring Sensitive and Business-Critical Data (Conceptual)

PII and other sensitive or business-critical data may be anchored directly to a handshake rather than renegotiated per interaction, where such data is strictly required for legitimate operational or support purposes.

Key properties include:

- explicit, prior consent by the data subject or authorized entity,
- cryptographic binding to the handshake identifier,
- storage exclusively within encrypted qBEAP™ capsule segments,
- automatic inclusion in subsequent capsules exchanged under the same handshake,
- immediate effect of revocation for all future interactions.

Sensitive data may be updated during an active handshake, provided that each update:

- requires explicit, final consent,
- results in a new cryptographically bound capsule state,
- does not silently overwrite prior versions,
- and remains audit-traceable and attributable.

The presence or update of sensitive handshake-scoped data does not alter BEAP™'s determinism model. All execution decisions remain governed exclusively by Tier-1 capsule-local context and PoAE™ policies.

X.5 Operational Effects

By anchoring context and consented data directly to a handshake, operational and support requests are context-complete from the outset. This applies equally to B2B and B2C relationships and eliminates repeated identity verification and data re-collection during ongoing interactions.

Routine or informational queries can be resolved deterministically within the shared handshake context. Only requests that inherently require human judgment or discretionary decision-making are escalated. This reduces operational noise, minimizes unnecessary back-and-forth, and prevents counterparties from being disturbed by automatable inquiries.

X.6 Observational Memory and Annotations (Conceptual)

Handshake-scoped observational memory may capture non-sensitive execution summaries such as recurring errors, escalation frequency, or workflow smoothness.

Derived annotations or documentation suggestions are strictly advisory:

- non-authoritative,
- traceable to their originating context,
- and prohibited from altering execution logic.

Annotations may be hidden by default to reduce cognitive load and revealed only through explicit, policy-controlled actions.

X.7 Application to Voice and Telephony-Based Support (Conceptual)

The handshake-scoped cooperation model is not limited to text-based or asynchronous communication. It may also be applied to live voice and telephony-based support scenarios.

In such configurations, a WR Desk™ orchestrator operates locally in the background on a hardware-attested environment, such as a smartphone or computer participating in the call. The orchestrator verifies and maintains the handshake during the call and cryptographically associates call metadata (e.g. call session identifiers or device state) with the active handshake.

While the voice channel remains the primary human communication medium, the handshake establishes a parallel, secure context channel through which consented data, shared knowledge, and operational context may be exchanged without interrupting the call flow.

X.8 Authenticity and Fraud Mitigation Considerations

By anchoring support interactions to a locally running, hardware-attested orchestrator, authenticity is established independently of the voice channel itself. Identity verification no longer relies on audible characteristics or caller-provided information alone.

This approach mitigates impersonation risks inherent to voice-only authentication, including fraudulent scenarios enabled by synthetic or cloned voices. Authenticity is derived from cryptographic handshake verification and device attestation rather than auditory trust.

The voice channel remains non-authoritative. All contextual exchange and automation support continues to be governed by BEAP™, qBEAP™, and PoAE™ principles.

X.9 Security, Privacy, and Determinism Principles

Throughout this annex, the following principles apply:

- all shared context is explicitly consented,

- all contributions are individually revocable,
- no hidden accumulation of conversational state occurs,
- no probabilistic behavior influences execution,
- and all automation remains policy-governed and reproducible.

The handshake-scoped cooperation space exists to support human operators, not to replace formal controls or introduce autonomous behavior.

X.10 Non-Goals

This annex does not propose:

- autonomous cross-organizational agents,
- uncontrolled learning systems,
- opaque or emergent behavior,
- safety-critical automation without oversight,
- or any relaxation of capsule-local determinism.

X.11 Conclusion

This annex demonstrates how BEAP™ handshakes may carry intrinsic operational value beyond transport authorization by enabling explicitly scoped shared context, cooperative observability, and authenticated interaction channels.

By preserving determinism, policy primacy, and verifiability while introducing optional handshake-level enrichment, organizations can achieve deeper operational cooperation across digital and voice-based channels without compromising security, auditability, or control. Operational support becomes context-aware and deterministic at the point of execution—without hidden state, implicit trust, or autonomous decision-making.

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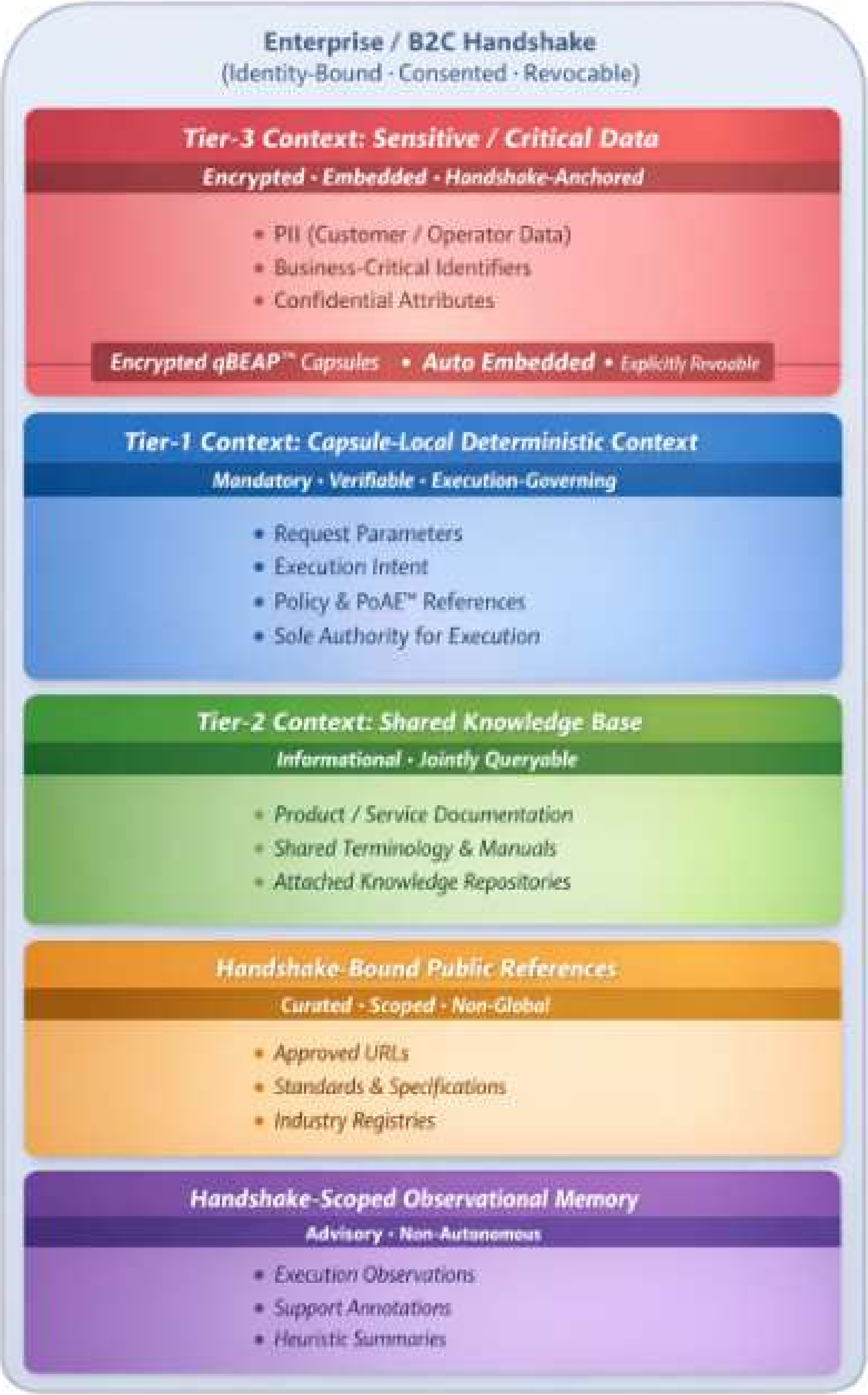

Enterprise / B2C Handshake

(Identity-Bound · Consented · Revocable)

Tier-3 Context: Sensitive / Critical Data

Encrypted · Embedded · Handshake-Anchored

- PII (Customer / Operator Data)
- Business-Critical Identifiers
- Confidential Attributes

Encrypted qBEAP™ Capsules • Auto Embedded • Explicitly Revocable

Tier-1 Context: Capsule-Local Deterministic Context

Mandatory · Verifiable · Execution-Governing

- Request Parameters
- Execution Intent
- Policy & PoAE™ References
- Sole Authority for Execution

Tier-2 Context: Shared Knowledge Base

Informational · Jointly Queryable

- *Product / Service Documentation*
- *Shared Terminology & Manuals*
- *Attached Knowledge Repositories*

Handshake-Bound Public References

Curated · Scoped · Non-Global

- *Approved URLs*
- *Standards & Specifications*
- *Industry Registries*

Handshake-Scoped Observational Memory

Advisory · Non-Autonomous

- *Execution Observations*
- *Support Annotations*
- *Heuristic Summaries*