

Elements of Future COP Patterns

Applying Net-Centric Principles



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Reflects the personal opinion of the author and not a Lockheed
Martin position*

The Common Operational Picture (COP)

- *Is anything but common (or single)*
- *Is not a “picture” in the literal sense of the word*
- *Has implicit and fuzzy operational scope*
- *Depicts a perspective of operational space beyond that justified by raw sensor inputs*
- *Increasingly requires social and “human terrain” perspectives*
- *Needs to recognize multiplicity and diversity in COPs*

Consistency and convergence is the goal, rather than commonality

Why COP Patterns?



- ***Because a single COP architecture is not feasible***
 - ***Too many diverse force element “owners”***
 - ***Too many different perspectives, scopes, and information representation needs***
 - ***A COP has to work in (and with) a larger enterprise context – and many such contexts***
- ***Patterns are architecture fragments***
 - ***Partially decoupled from specific operational and enterprise contexts – i.e. abstractions***
 - ***And therefore applicable in a broader set of operational and enterprise contexts***

Net-Centricity



- *Is about achieving operational objectives via interaction with others over a network*
- *Facilitated by open protocols and broad accessibility*
- *Entails a “business model” and/or a “social relationship” among the “others”*
- *Brings diverse perspectives, frames of reference, and operational scope/purpose together*
 - *Suggests a need for explicit representation of same*

Net-Centric Principles



- **Explicitness**
 - *An entity should make all information about itself explicit*
- **Symmetry/Reciprocal Behaviors**
 - *Relations and entities should exhibit symmetric characteristics and behaviors*
- **Dynamism**
 - *Entities should support dynamic behaviors*
- **Globalism**
 - *There should be no a priori bounds on the scope of operational applicability*
- **Omnipresent/Ubiquitous Accessibility**
 - *Entities should have access to resources (i.e., each other) at any time and any where*

Net-Centric Principles



- **Entity Primacy**
 - *Entities have identity distinct from the contexts in which they participate*
- **Relationship Management**
 - *Relations among entities should be explicitly represented and provide for negotiation, creation, change, and termination*
- **Scale-free**
 - *The scale of the enterprise or system context should not have an impact on operational functionality*
- **Pragmatism**
 - *The ability to improve operational effectiveness is paramount*

COP Pattern Elements



- ***The COP as an incomplete, focused, model of reality***
 - *Multiple realities: CPX, field exercises, training, planning, rehearsal, after action analysis*
 - *Multiple operational/functional contexts: ops, intel, logistics, COA development, replanning, deployment, etc.*
 - *Coupling to contexts/realities should be explicit*
- ***The COP as a consistent (vice) common model***
 - *Adaptive, tailorable, user context-relevant /sensitive*
 - *“common” mode as an option (visual display slaving/sync)*
- ***The COP as collaborative***
 - *Support for collaborative (i.e., limited sets of users) contexts*
 - *Users as sources of COP model data values (not just sensors, systems of record), explicit attribution*
 - *Controlled release to larger user set of selected COP entities and entity attributes*

COP Pattern Elements



- ***The COP as a dynamic order of battle model***
 - ***Not “track” focused; named operational entity focused***
 - ***“track data” updates position/status info on COP model entities***
 - ***Unidentified entities the exception rather than the rule***
 - ***Future/past dimensionality – not just “current” picture***
 - ***Supports rapid/continuous replanning, after action review***
 - ***Supports coupling to other “phases” of operations (mobilization, sourcing, deployment, RSOI, Recovery, etc.)***
 - ***Not just current operations***
 - ***Supports coupling to the global situation***
 - ***No hard “theater of operations” boundaries***
 - ***Smooth “zooming out” and interoperation with adjacent theaters and inbound/outbound assets/resources (as seen by each theater perspective)***

COP Pattern Elements



- ***The COP as a dynamic order of battle model***
 - ***Supports multiple force hierarchies and time horizons***
 - ***Tactical, operational, strategic***
 - ***Task forces vice garrison force structures***
 - ***Supports quantitative capability representation of force elements***
 - ***Including capability composition/dependency models***
 - ***Supports current logistics/OA status of force elements***
- ***The COP as a representation of operational context***
 - ***Include “commander’s intent”***
 - ***Purpose/objective of friendly assets***
 - ***Assessment of neutral and opposing entities in context of intent and objectives of friendly forces***
 - ***“Plan” data overlays against “actual” view data values***

Collaborative COP Elements



- *Geo-referenced whiteboarding*
- *Application level collaboration (shared entity data values, possibly associated with individual users – “dueling banjos”, shopping with a friend)*
- *Chat (voice and text), video chat, video conferencing*
- *Dynamic user engagement (presence awareness, IM, entity value linking to users)*
- *Collaboration session management cues and services*
- *Social domain conceptual element representation (e.g., emoticons, opinions/remarks, favorites, etc.), both at the network level (device independent) and the local rendering/visualization level (may be device-dependent)*

Summary



- ***Net-Centricity is achieving operational results by working with others***
- ***A single COP usable by everyone is not possible***
- ***Net-Centric Patterns are key to achieving interoperability among COPs***
- ***Net-Centric Principles guide pattern elements***
- ***COP Pattern Elements***
 - ***The COP as an incomplete model of reality***
 - ***The COP as a consistent, vice common, model***
 - ***The COP as collaborative and human-based***
 - ***The COP as a dynamic order of battle***
 - ***The COP as a representation of operational context***
 - ***The COP as having selectable operational scope***

Questions?



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