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A Model of Tactical Battle Rhythm

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Definition of Battle Rhythm

Joint Battle Rhythm: The timing and scheduled presentation of situation reports, briefings, formal collaborative sessions, and other required actions during planning and execution.

"Deployment Planning Using Collaboration," A Handbook Supporting Collaborative Planning. JFCOM, JDPO, 2002

Tactical Battle Rhythm: ***"***The U.S. Marine Corps MAGTF Staff Planning Program (MSTP) defines battle rhythm as the 'process where the commander and his staff synchronize the daily operating tempo within the planning, decision, execution and assessment (PDE&A) cycle to allow the commander to make timely decisions…' Some of the planning and operating cycles that influence the battle rhythm of the command include intelligence collection, targeting, air tasking orders (ATO), reconnaissance tasking, and the bomb battle damage assessment collection cycles. This battle rhythm is the commander's battle rhythm. It is his 'plan of the day.

'" *Marine Corps Gazette, Vol 8, February 200, pp 34-36*

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Successful Battle Rhythm

- Successful battle rhythm implies the synergism of procedures, processes, technologies, individual activities and collective actions at warfighter, staff level, command node, and unit levels in order to facilitate military operations.
- Increasing reliance on collaborative technologies will lead to successful management of tactical battle rhythm

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Tactical Battle Rhythm

- TBR begins with the commander's *planned* battle rhythm which is transposed into an *execution* battle rhythm
- This transition is enabled and enhanced by the judicious use of synchronous and asynchronous collaboration technologies, enabling timely feedback leading to appropriate battle responses.

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Collaboration Tools

- *The asynchronous tools* represented by e-mail, discussion groups, file sharing, news servers and similar software products which provide the basis for persistent virtual workspaces.
- *The synchronous tools* where interaction between people and specialized hardware and software facilitates handling data and representing information. Person-to-person communication is supported by the ability to share, modify and collaboratively create data and information at the same time. These are dominated by video/audio teleconferencing, instant messaging, and chatrooms.
- Collaborative technologies provide either the coalescing function, and/or forcing function; it provides the unique, timely venue for continual recalibration of tactical activities across a distributed battlefield

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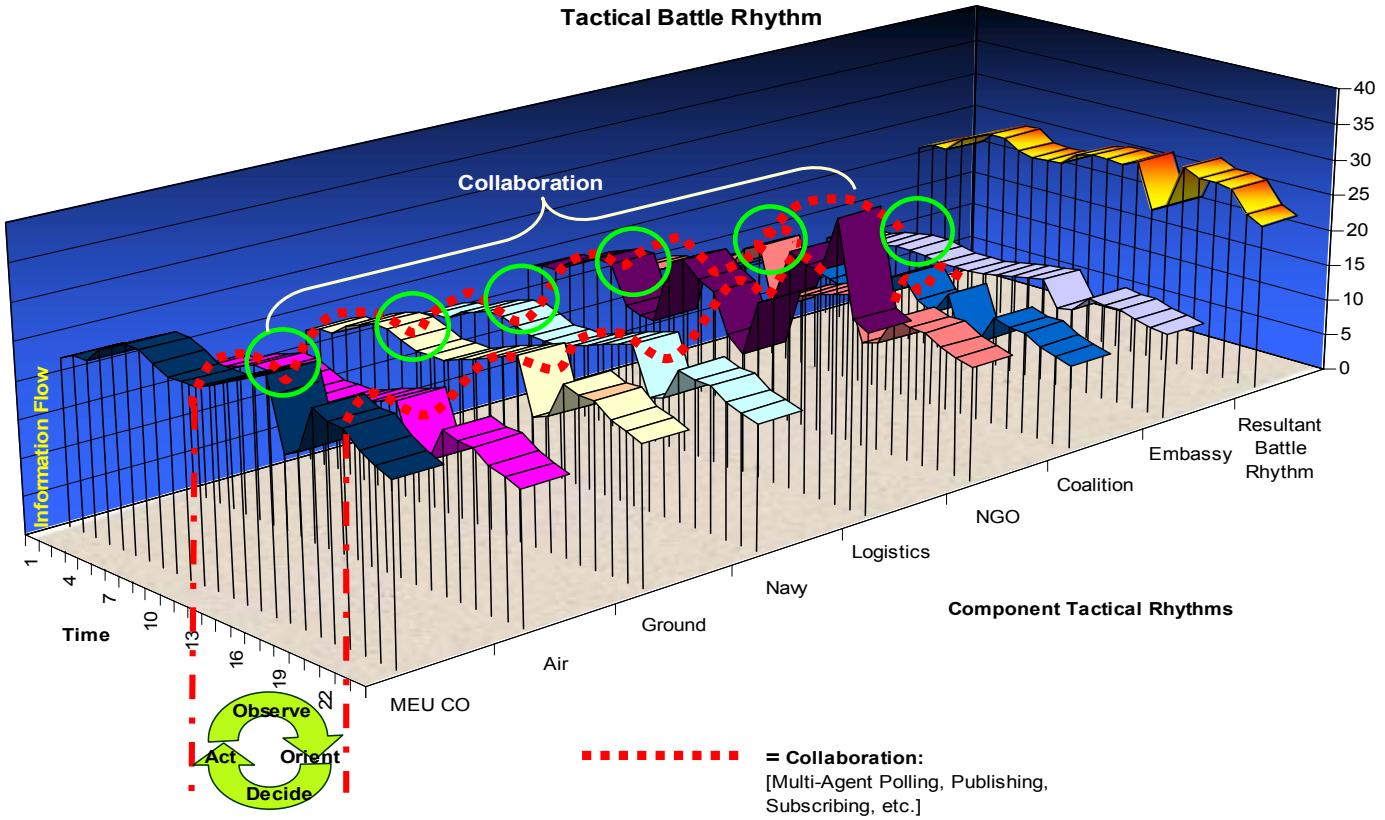
Model of Tactical Battle Rhythm

A Notional Tactical Battle Rhvthm as a Waveform Construct



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Collaborative Events

- The synchronization moments or collaborative events are moments in time where information is exchanged between grid entities. The mechanisms that comprise the synchronization structure are poll, publish, alarm, and subscribe
  - *Polling*
  - *Publishing*
  - *Alarming*
  - *Subscribe*

Collaborative Computing Architectures

- Client/server applications
- Peer-to-peer (P2P) applications
-
- Hybrid applications

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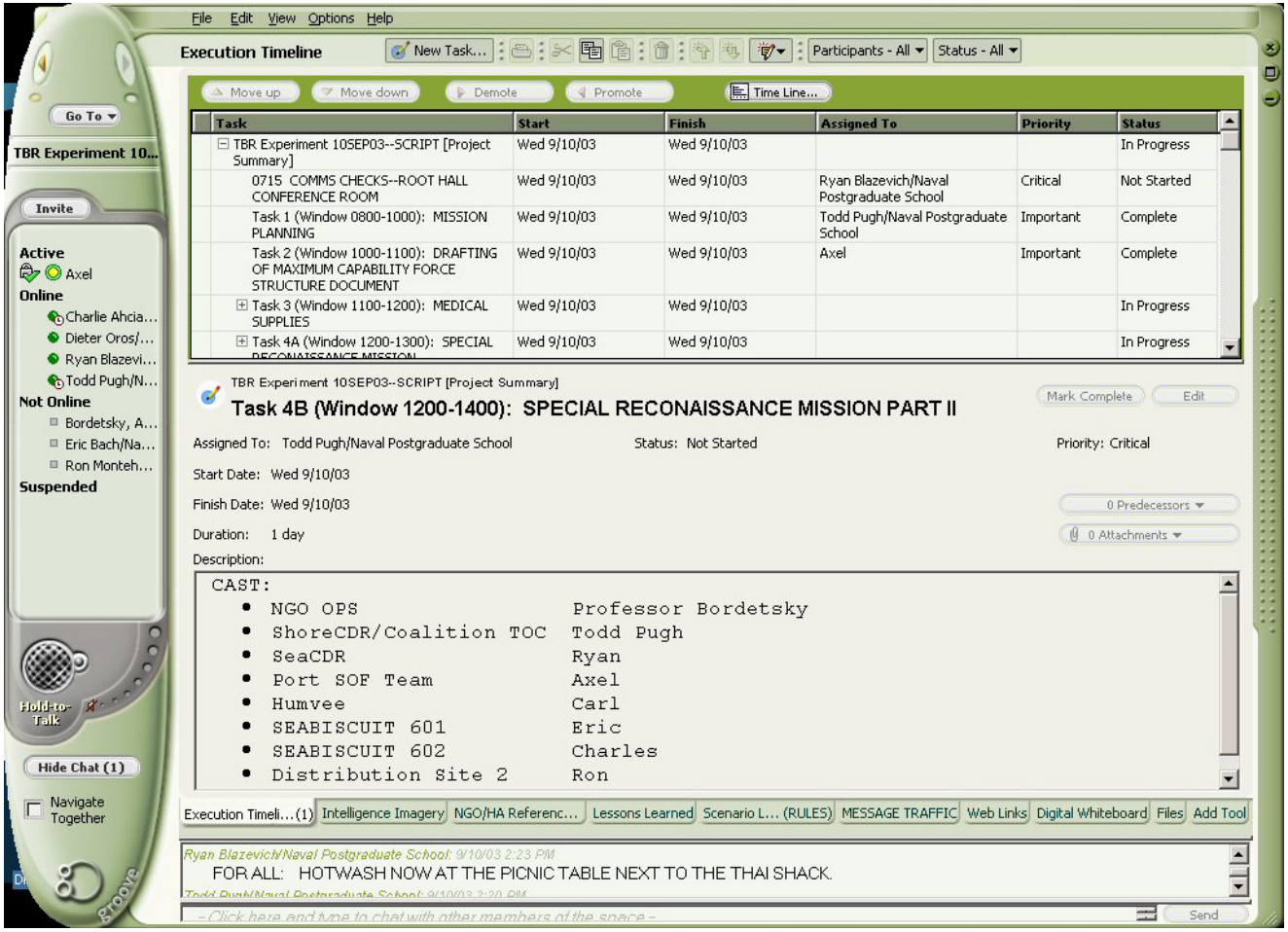
Groove P2P collaborative user interface the participants used during the Tactical Battle Rhythm experiment



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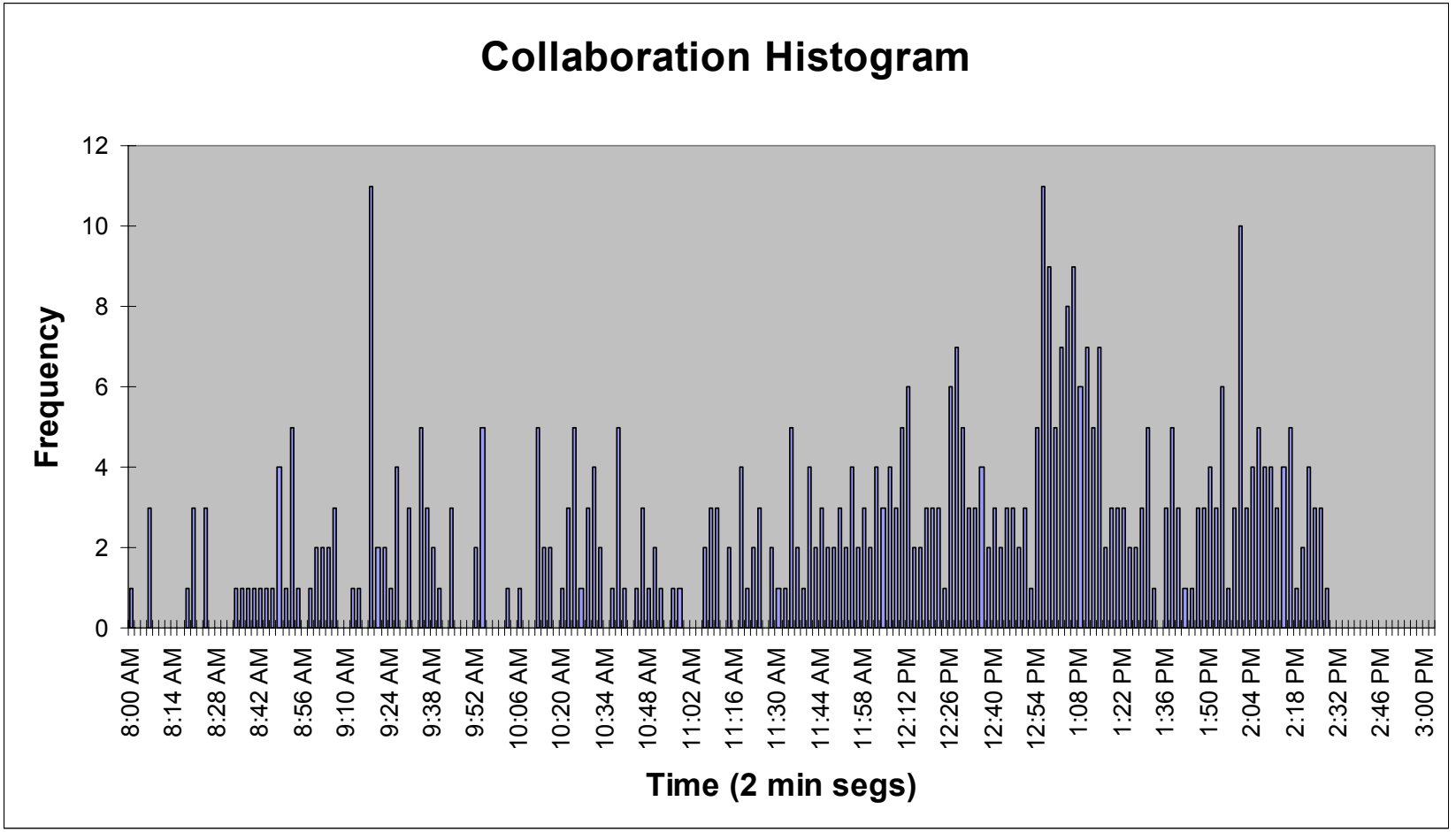
The rhythms inherent in multi-node operations



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Experimental Observations

- By overlaying the experiment timeline onto the distribution of the communication events, a definite pattern emerged with respect to complexity of the scenarios and collaboration.
- Within the experiment, during the period from 12:00 pm to 2:00 pm the most complex scenario was conducted. During this same period, there were 234 discrete communications.
- This comprised 49.4% of the total communications in a period that was just 30.9% of the total time. While there were more participants in the complex scenario, the spike in exchanges was significant.

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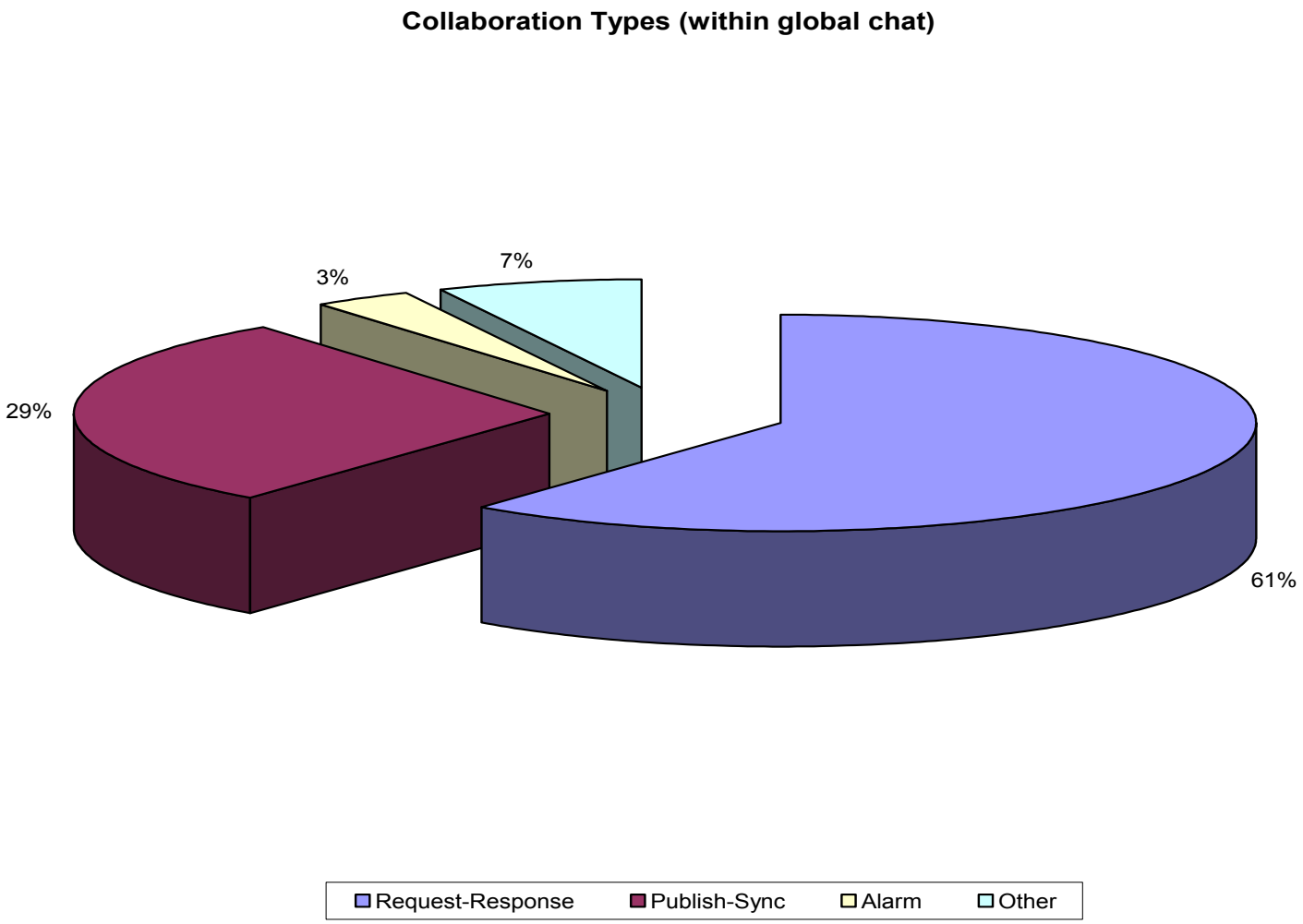
Collaboration chat rhythm: 313 discrete chat posts in the 388 minutes of the experiment.



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Experimental Observations

- The request-response category was primarily composed of queries for tasking, direction, and clarification, and the associated answers to those queries.
- The publish-synchronization category included general announcements and situation reports that sought to promote widespread situational awareness without prior prompting.
- The alarm category was made up of broadcasts that were similar to the publish-synchronization items, but with high importance and possible immediate, major impact on overall operations.

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Conclusion

- This model of TBR will provide a starting point for research on the effectiveness of distributed collaborative exchanges
- Provide a method for determining the optimal computing architecture for particular collaboration events