

Facilitating Sense Making for Situational Awareness

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Air Force MOIE (Continuing)



Problem

- **Operators gain awareness of the current situation by monitoring chat rooms.**
 - Activity in the chat rooms gives viewpoints on the current situation.
 - Often many chat rooms at a time must be monitored.
- **An operator must not miss anything important.**
 - No time for breaks
 - No allowance for inattention

Background



Chat exploitation needs vary across DoD enterprises

- **Alerts** on “interesting” events in chat may be required for tactical operations
- **Summaries** of events in chat may be required at command levels

- Increasing use of Internet chat in military settings
 - Air Operations Center
 - Airborne platforms (e.g., AWACS, JSTARS)
- Common for operators to monitor multiple chat rooms for
 - Tactical information
 - Team awareness and coordination

Objective

- Alert operator of events of interest via “chat alerts”
 - i.e., a tailored list of alerts of events that the operator has said he/she doesn’t want to miss
- Development of a software system to support the dimensions of chat exploitation in DoD enterprises
 - Time – Real-time vs. retrospective
 - Focus – “What’s being said” vs. “Who’s saying it”
 - Granularity – Individual entities and events vs. summary of activity

Activities

- **Refine Alembic event extraction models for chat**
 - Develop models for a variety of chat room types
 - Combine information from utterances about the same event to form a richer event description
- **Develop algorithms to relate instances of similar entity/event classes in different chat rooms**
 - Provide awareness of the same event being described from different chat room perspectives
- **Extend FY06 MOIE chat exploitation tool (ChET)**
 - Allow database queries for retrospective analysis
 - Create algorithms/graphics for chat summarization

Highlight

Two chat utterances in the "Playroom" chat room referring to the same electronics intelligence (ELINT) activity

MITRE's Alembic Information Extraction System



Extracted entities and events

Visual alert

XML file

[03:27] <SIG_MAN> AI Capone spoonrest is active at 0325Z

.
. .
. .

[03:31] <SIG_MAN> AI Capone spoonrest at 422812N 0711647W 1.3 x 0.2 164.4

Alembic's model for ELINT class data extracts ELINT entities from each utterance and links them using **event extraction**

```
<chatalert room="PlayRoom" type="Alembic" profile="Chris" number="78">
<entities>
<entity granularity="event">
<elint>
<state name="active" time="03:25:00">
<location lat="0.0" lon="0.0" benum="" mgrs="" name="">
<ellipseerror min="0.0" maj="0.0" orientation="0.0"/>
</location>
</state>
<location lat="42.47" lon="-71.2797" benum="" mgrs="" name="AI Capone">
<ellipseerror min="0.2" maj="1.3" orientation="164.4"/>
</location>
</elint>
<keys>
<chatmessagekey channel="PlayRoom" time="03:27:00" date="20070115" user="SIG_MAN" messageid="325"/>
<chatmessagekey channel="PlayRoom" time="03:31:00" date="20070115" user="SIG_MAN" messageid="349"/>
</keys>
</entity>
```

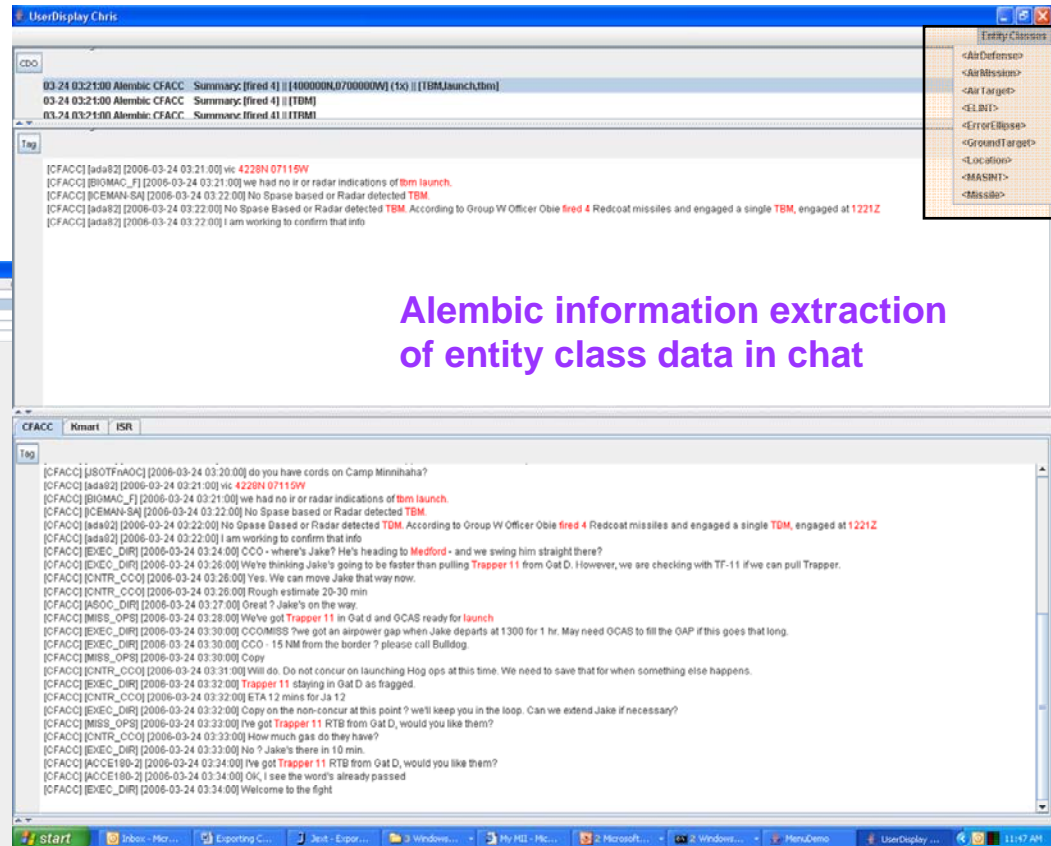
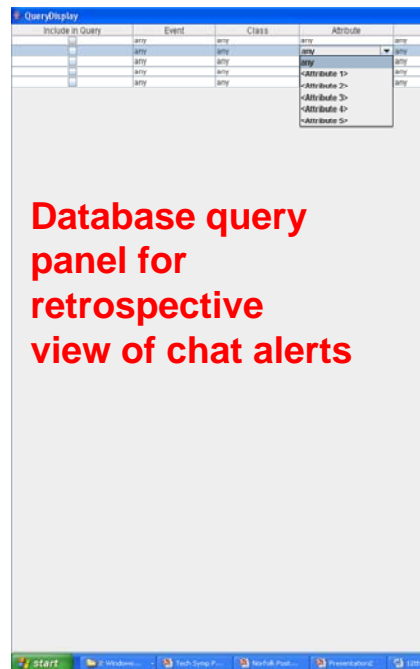
MITRE

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Demonstration

User display for viewing user-defined chat “alerts”

Database query panel for retrospective view of chat alerts

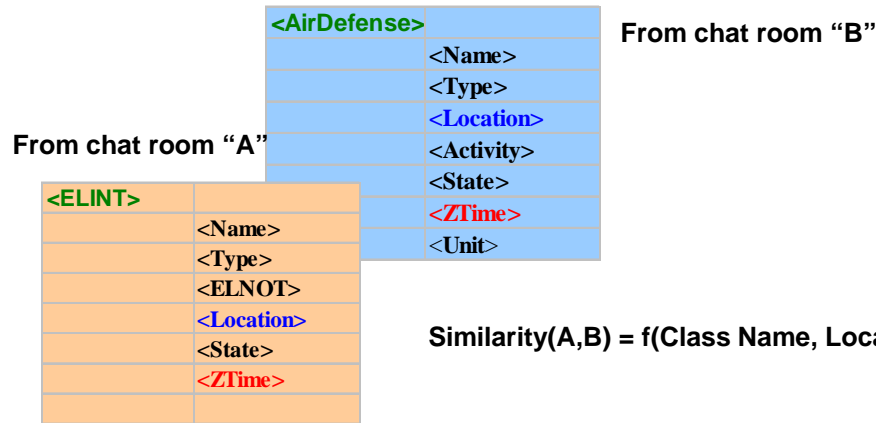


Alembic information extraction of entity class data in chat

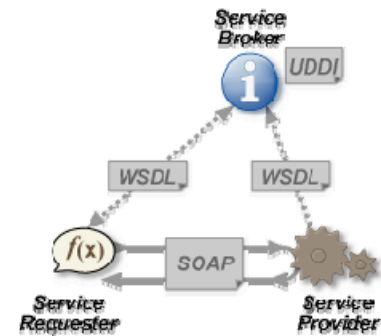
Impacts

- **Fills immediate needs of military users of chat**
 - More efficient situational awareness across chat rooms
 - Analysis tools for the operator
- **Provides chat indexing and archiving capability**
- **Adds to the literature on**
 - Information extraction in dialogue
 - Cross-document identification of discussions of the same event

Future Plans



Correlate similar extracted entities and events across different chat rooms



* http://en.wikipedia.org/wiki/Web_service

Provide chat information extraction products via a Web service