Joint Training Simulation and Analysis Center – Civil Protection

1. IEMS
2. Pilot
3. EU TACOM configuration
4. JTSAC-CP in IPP-BAS
5. Tactical Training Center – Montana
6. Contributing partners
7. Lessons learned from EU TACOM SEE-2006
Related and Support Projects

XI'2003
- Methodology for declaring emergency situation

2004
- Green paper (white paper) on Civil Protection / Civil Security
- Field C2 Modules for emergency management

2005
- Integration of Emergency Management Systems
- Computer Assisted Exercises for EM
- Methodology for Assessment of the Critical Infrastructure

2006
- CAX EU-TACOM SEE-2006
- US TDA IEMS Feasibility Study by Winbourne & Costas
  sponsored by MoSPDA

2007
- Joint Training Simulation and Analysis Center – Civil Protection (JTSAC–CP)
- IEMS – Plovdiv Pilot Project Winbourne & Costas
- National Exercise “Protection–07”

NATO SfP981149 / 982063
Regional borders and Regional Centers are for illustration only.
Conceptual End State Configuration of IEMS

**National Emergency Operation Center**

- **IEMS** - Integrated Emergency Management System
- **IEWS** - Integrated Early Warning System
- **Fusion Center**
  - Decision Support Systems

**Regional Emergency Operation Centers**

- **JTSAC-CP** — Joint Training Simulation and Analysis Center on Civil Protection
- **Tact. Training** — Tactical Training Center
- **SDL** — Systems Development Laboratory

**112 Emergency Communications Center**

**Mobile Units**

- **IEWS** — Integrated Early Warning System
- **IEMS** — Integrated Emergency Management System
- **EM EOC** — Emergency Management Operations Center
- **112** — Emergency Communications Center
Plovdiv Pilot – Option One

Objective—Test technology between Sofia CPA National Emergency Command Center and Plovdiv CPA-Governor’s Regional Emergency Command Center to Mobile Field Units and First Responders

Regional EOC-Plovdiv

Voice, Data, Video

Mobile Command Vehicle
Objective—Test technology between Sofia CPA National Emergency Command Center and Plovdiv CPA-Governor’s Regional Emergency Command Center to Mobile Field Units and First Responders
FEOC – DEOC – NEOC – EU/NATO/OCHA/countries

- Field EOC
- OSOCC
- District EOC
- National Emergency Operations Center
- MIC
- EADRCC
- OCHA
- Other International
Scenario (Nikolay Pavlov)

- Plovdiv
- Vratza
- Montana
- Sofia (IPP, CP GD, SitCens)
- Brussels (MIC)
Operational Architecture (Valentin Stoyanov)

1. Directors of the CAX (three ministers and EU)
2. Control / Analysis team (CP GD, ministries)
3. Participants (CP GD, ministries, districts)
4. Observers
5. Visitors
6. Journalists
7. Research team
8. Support team
Elements for the scenario

- Environment to protect
- Emergency Situation
- Cause of Emergency Situation
- Effect of Cause
- Tasks of Involvement
- Procedures of Involvement
- Capabilities for Involvement
- Forces for Capability
- Equipment for Capability
Joint Training Simulation and Analysis Center – Sofia (demonstration during EU TACOM SEE)

- Planning / management and lessons learned
- White Cell – Simulation Center
- Emergency Operations Center (training)
  - Operation cell
  - Comms cell
  - Analytical cell
  - Computer center
- Support Cells – Briefing, Press center, VIP hall
- Logistics
  Financed through EU TACOM SEE-2006/NSC
# JTSAC – basement level

<table>
<thead>
<tr>
<th>NEOC</th>
<th>Medical Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations Center</td>
<td>Ivo Ivanov, Electron Progress</td>
</tr>
<tr>
<td>Analytical Center</td>
<td>Tzvetomir Tzachev, IMI-BAS</td>
</tr>
<tr>
<td>Communications</td>
<td>Alexander Tzankov, Telesys, SM</td>
</tr>
<tr>
<td>Computer Center</td>
<td>Kiril Chorbadjiski</td>
</tr>
</tbody>
</table>
JTSAC – 1st flour

Check Point

Personnel Center  
Rumyana Deleva

Control and Lessons Learnt Center  
Valentin Stoyanov

Simulation Center  
Nikolay Tomov  
Klaus Niemeyer
Simulation Cell IPP-116
JTSAC – 2nd flour

Press Center
Stayka Angelova

VIP Center
Iva Bachvarova

Refreshment Center

Briefing Center
Nikolay Pavlov

Management Center
Velizar Shalamanov
Stefan Hadjitodorov
Irena Nikolova

Admin / Fin Center
Ivanichka Maneva
Field Emergency Operations Center (Stoyan Avramov)

- Command Post module
- Comms module
- Video module
- Radar / GPS module
- Remote sensing module (air plane, UAV)

Demonstration in Krumovo airport – some of them financed through EU TACOM and NSC-CP/SCPPDA
C4 Module for Emergency Management
Joint Tactical Training Center – Montana
Mr. Penchev
(demonstration during EU TACOM SEE)

• Planning and management
• Training class rooms$
• Field training centers
  – Chemical plant
  – Hotel
  – Dam
  – …
  
  Financed through EU TACOM SEE and CPA
Joint Training Simulation and Analyses Center /JTSAC/

Key Components:
- Web-based Information System
- Software for Integrate Emergency Management Analyses
- SW for support of External/Field/Communications
- Antivirus Software
- National Laboratory in Computer Virology
- SW for support of Sensor Data processing
- Equipment delivery and building of Internal LAN and Communications
- GIS software delivery
- Equipment delivery for External LAN and Communications
- Architecture development, training, support
- SW for support of Hydrological Data
- SW for support of Meteorological Data
- SW for support of Seismological Data
- Alerting by SMS and e-mail
- Hydrological Data
- Travel & Consumables
- National Laboratory in Computer Virology

Participating Organizations:
- EU TACOM SEE-2006
- NATO SfP 981149
- Electron Progress AD (2)
- Electron Progress AD (3)
- Electron Progress AD (3)
- Smart Media Ltd.
- Space Research Institute
- Imbility Ltd.
- Institute of Mathematics and Informatics
- Institute of Geophysics
- TV-MET Ltd./IHM
- Meteorological Data
- Seismological Data
- Electron (4) Progress AD
- State Agency for Civil Protection / TeleSys Ltd.
- Institute for Parallel Processing
- National Laboratory in Computer Virology
- IEMS
- EU TACOM SEE
- Antivirus Software
- National Laboratory in Computer Virology
- SW for support of External/Field/Communications
- Software for Integrate Emergency Management Analyses
- Software for Lessons Learned Analyses
- Software for Modeling & Simulation
- Software for Support of MHS and IDS
- Web-based Information System
- SW for support of Sensor Data processing
- Architecture development, training, support
- Travel & Consumables
- EU TACOM SEE
- NATO SfP 981149
Nature of CAX and its role in EU TACOM SEE (KN)

- CAX / MAX Nature and specifics of TACOM scenario
- CAX concept for EU TACOM SEE-2006
- Comments on numerical assessments
- Comparison with experience in EU, NATO and EU countries (Germany for example)
Feedback - Questionnaires

- 49 feedbacks / 14 international
- 5 groups of questions – four “closed” and fifth – “open”
  - Organization of the exercise – 4
  - Scenario – 3
  - Exercise setup – 5
  - Technique - 6
  - 6 grade scale of assessment
- Separate questionnaire for developers
- Assessment / LL is integral part of the CAX life cycle (included in initial planning)
- Balance score card system for assessment and strategic management of the exercises and emergency management system at large
Distribution: Organization
Distribution: Scenario

![Bar chart showing distribution of scenario values.]

- X-axis: Categories (1 to 6)
- Y-axis: Probability (0 to 0.7)
- Categories 1 and 2 have low probability values.
- Categories 3, 4, and 6 have moderate probability values.
- Category 5 has a significantly higher probability value.
Distribution: Setup
Distribution: Technique
General observations

- No difficulties with CAX, very positive attitude, readiness to participate in future CAX
- CAX are very useful for improving coordination capacity between ministries and local authorities
- More CAX are needed (cost analysis for feasibility)
- Scenario is an area of required improvement with great value
- Specialized questionnaires are needed for different categories: DISTAFF, participants, support, journalists
Specific observations and recommendations on operational issues - I

- Long term cooperation between users and analytical model developers is recommended.
- Longer time for joint work between participants and approval of the scenario by all of the involved institutions.
- To continue training of personnel down to municipality level.
- Better coordination between state institutions and private companies in the area of information, forecast.
- More focus on scenario development and pre-exercise training of the participants.
- In the information flow to focus on events – not description of the situation.
- Scenario needs to be more realistic with models to support its development.
Specific observations and recommendations on operational issues - II

• More materials are needed for the CAX and scenario with details on scenario and architecture
• Focus on cooperation between central and local authorities is needed
• Public information analysis and population understanding of the situation was positive and needs further investigation
• Better coordination with MoSPDA on providing data for the analytical models is required
• Integration – fusion of information and periodic briefing to participants is needed
• Better coordination between simulation center and participants will improve the performance
• In advance definition of the functions and tasks of the participants is required
Specific observations and recommendations on operational issues - III

- Some ministries – agencies are missed (MoT, AoNR)
- Improved synchronization of display of messages – reports from different ministries is required
- Focus in the scenario on the strategic level according to legislation is preferable
- Specific data base from all the involved institutions is needed during the preparation of the CAX, documenting of all the comms during the exercise and distribution of these data to all the institutions after the exercise.
- Introduction of standard EU/NATO cycle of work in NCMC
- Very well selected scenario, CAX is most functional and effective way to train us in CP area
- Better information on CBRN resources of EU countries is needed
- It is better to combine the practical field exercise with CAX (Sofia – Montana)
Specific observations and recommendations on operational issues - IV

- Synchronization of information from ministries and scenario script is important
- More feedback from the field is needed
- More clear role of the authorities is required
- Scenario to have more educational focus and alternatives
- Preserving defined schedule for messages during the exercise in order to keep more stable environment for the participants.
- Better balance between the “speed” of events and the speed of emergency management reactions is needed
- “Unexpected elements” elements are needed for better use of CAX – in best case unexpected events coming from the field
- More analytical data are needed together with precise reports from the field
- “Real” incidents with operational forces for more realism and interaction in real time
Specific observations and recommendations on technical issues - I

- More diverse comms system
- Special focus on comms – Internet is not enough
- Comms with LEMA to be improved
- TV sets to be used to follow info flow on different TV programs
- Special focus on information assurance and other aspects of security
- Real NCMC is needed with working places (comp. and comms) for every ministry is required
- Acquisition of Google Earth license and improvement of MHS and generation of messages
- Establishing of permanent training center for CM by MoSPDA and other ministries
Specific observations and recommendations on technical issues - II

- Better computers are needed
- Improvement of communications and working environment is needed
- Real modeling and simulation is required with presentation in GIS on the main screen
- VTC is not at the required level of quality
- In every ministry CM team is required to work in real time with real VTC with NCMC
- Use the opportunity to test latest technologies
- Conditioners are needed and better ventilation in the working environment
- More space for this number of people and equipment is needed
General observations from the development team

- More detailed specification of the tasks for the team is needed
- More detailed specification for the structure of the network and software is required
- Precise system for control of the contracts in support of CAX environment is required
- More cooperation between operational and technical staff in planning / running / assessment of the exercise is needed
... and more specific lessons and recommendations from the members of the CAX team

1. LL on Scenario development and Operational architecture - NP
2. LL on System and Technical Architecture - GP
3. LL on Software Architecture - ZM
4. LL on Communications and information fusion including Information / Knowledge Management - NT
5. LL on Organization of JTSAC and Public Information - IN
Scenario development and Operational Architecture (NP)

1. Main events
2. Main participants
3. Modeling of the scenario (SCIP)
4. Main messages – simulation
5. Main messages – reaction of the participants
6. Operational Architecture
7. Message Flow
System and Technical Architecture (GP)

• Main subsystems in JTSAC
  – Management Cell
  – Briefing Cell
  – White cell / Simulation cell
  – Operations cell
  – Comms cell
  – Computer cell
  – Analytical cell
  – Admin and Security cell
  – Ministries’ centers
  – District centers
  – Field centers

• Main technologies used
• Integration and management
Software Architecture (ZM)

1. MHS
2. IDS / GIS
3. WIS
4. DSS
5. M&S
6. Monitoring
7. Early warning
8. Notification
9. Information Assurance
10. Comms
11. Video surveillance
Communications and information fusion including Information / Knowledge Management (NT)

- Internet / telephone / mobile phones
- VTC
- Collective screens
- Collection / documentation of information
- Web service
Organization of JTSAC and Public Information (IN)

1. CAX Planning
2. CAX organizational structure
3. CAX Budgeting
4. CAX Contracting
5. JTSAC personnel structure
6. CAX Reporting
7. CAX Assessment
Role of CAX in the development of IEMS

- CAX is addressing operational procedures, documents and provides very good environment for development, testing and documenting the operational architecture of IEMS on National / International, District and Field level.

- JTSAC provides environment to demonstrate and test main elements of the system architecture:
  - Monitoring and early warning
  - Notification
  - Fusion, modeling and simulation, decision making support
  - Information management and reporting
  - Different types of communication
  - Display for collective use

- JTSAC elements provide opportunity for technology demonstration, including alternatives and assessment in semi – real environment.

- EU TACOM SEE – 2006 support for IEMS Feasibility Study is very valuable.
CPX/CAX – Field exercise

- Integration of CPX/CAX with FX provides real “picture” from the field
- “Tactical tempo” push for operational scenario is key for realistic training
- Full scale exercise is best test for IEMS architecture
- International participation in CAX and FX is best test bed for multilingual emergency management concept experimentation
JTSAC as part of IEMS

- Training is critical for effectiveness of IEMS
- JTSAC provides best environment for training
- Tactical training of rescue teams has to be synchronized with operational training of the operational bodies
- JTSAC (CPX/CAX) and Tactical Training Center (FX) are part of the IEMS even before IEMS existence
Conclusions …

1. Plan in advance next exercise – at least one year cycle is needed to have good scenario / architecture, building adequate environment, training of participants, pre-exercise test, real CAX with field elements and analysis

2. Set up different teams with clear responsibilities and budget

3. Standardize equipment and software combined with formal training and certification of participants

4. Document better way the exercise

5. Take more seriously security aspects of the CAX

6. Improve the realism with insertion more “episodes” from the field and other real time sources – media, monitoring and early warning systems

7. Assessment team and media / public attitude analysis is critical for success
... and next steps

1. Document JTSAC
   1. Structure and organization / costing
   2. Contracting out
   3. Network
   4. Software
   5. Information
   6. Methodology
   7. Assessment

2. Final Report in November to guarantee reusability of JTSAC

3. Planning of “Protection 2007”
4. Involvement of educational institutions in Planning and LL
5. Involvement of other ministries in scenario / exercise
6. Regional dimension – SEE, WBSA
7. EU / NATO exercise program integration
Recommendations for PROTECTION 2007

• Start planning in October’06 for exercise in September’07
• Standardize planning procedure and coordinate with other CM/EM related exercises
• Focus on CPX CAX on National / District level with international dimension from the region, EU, UN, NATO
• Use mobile C2 modules and recorded video from FX this year for “real input from the field”.
• Standardize assessment procedure
Demonstrator requirements

- JTSAC architecture
- Demo – where, when, what, who, how, (one or many) and LL from EU TACOM SEE-2006, …;
- CITMO-2007,8…
- Recom for SG 98 - end of Jan’07
BGR involvement

- Scenario development (SCC - CP)
- Comms (interation and info fusion) – patchwork interoperability
- M&S Architecture (M&S – C2) – web info system / DB using proxy technology
- Implementation Plan (MS-Project, Budget, BSc)