Agenda

- D-BOX - The Project and its Stakeholders
- D-BOX - Value Proposition
- D-BOX - Description
- Conclusion
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D-BOX = Demining ToolBOX

- Answer to the Call for proposal FP 7- security 2011 topic FP7-SEC-2011.1.3-3 “Comprehensive toolbox for humanitarian clearing of large civil areas from anti-personal landmines and cluster munitions”
- Project duration : 36 months
- 21 European partners
- Start: > October 2012
D-BOX: What is it

D-BOX will develop and integrate innovative “easy to use” and low cost solutions that will be interfaced and integrated in a comprehensive and decentralized toolbox to provide Demining Stakeholders with the best tools, methods and procedures for:

- Mapping and Localisation (long distance) of Hazardous area
- Close In Detection (short distance)
- Intervention & Neutralisation
- Risk Management (assessment and reduction)
- Risk Assessment
- Protective Equipment
- Best Practices
- Procedures
- Human, Ethical, Legal and Cultural Factors
- Neutralization in a civil environment
- Information Management
- Training & Education
- Demining Stakeholders

Who will Benefit?

- Decision makers
  - Government, UNDP, UNMAS
- Experts
  - Technologies providers
- Coordinating the regional activities of the demining organizations
  - MAC or UNMAS
- Operational planning of operators & in field operators, training and education
- NGOs/military/commercial demining companies
- Local population
- National Mine Action Authorities

Funding organizations

Experts

Technologies providers

Local population

Medias, Citizens

National Mine Action Authorities - UNMAS
**When?**

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**D-BOX: Who will do the job?**

<table>
<thead>
<tr>
<th>Participant no.</th>
<th>Participant organisation name</th>
<th>Participant type</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (coordinator)</td>
<td>ASTRIUM (AST)</td>
<td>Industry</td>
<td>France</td>
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<tr>
<td>2</td>
<td>ASTRI POLSKA (APL)</td>
<td>Industry</td>
<td>Poland</td>
</tr>
<tr>
<td>3</td>
<td>BACTEC (BACTEC)</td>
<td>End-User</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>4</td>
<td>CBRNE limited (CBRNE)</td>
<td>SME</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>5</td>
<td>COMITE EUROPEEN DE NORMALISATION (CEN)</td>
<td>Private not for profit</td>
<td>Belgium</td>
</tr>
<tr>
<td>6</td>
<td>CNIT (CNI)</td>
<td>University</td>
<td>Italy</td>
</tr>
<tr>
<td>7</td>
<td>Delft University of Technology (DUT)</td>
<td>University</td>
<td>Netherlands</td>
</tr>
<tr>
<td>8</td>
<td>FOI (FOI)</td>
<td>Research Institute</td>
<td>Sweden</td>
</tr>
<tr>
<td>9</td>
<td>FRAUNHOFER (FhG-EMI, FhG IOSB, FhG ILT, FhG INT)</td>
<td>Research Institute</td>
<td>Germany</td>
</tr>
<tr>
<td>10</td>
<td>IB CONSULTANCY (IBC)</td>
<td>SME</td>
<td>Netherlands</td>
</tr>
<tr>
<td>11</td>
<td>INFOTERRA Ltd. (IT)</td>
<td>Industry</td>
<td>Greece</td>
</tr>
<tr>
<td>12</td>
<td>MORATEX (MOR)</td>
<td>Research Institute</td>
<td>Poland</td>
</tr>
<tr>
<td>13</td>
<td>RADIOLABS (RLS)</td>
<td>Research Institute</td>
<td>Italy</td>
</tr>
<tr>
<td>14</td>
<td>SELEX Sistemi Integrati Spa (SELEX)</td>
<td>Industry</td>
<td>Italy</td>
</tr>
<tr>
<td>15</td>
<td>SPOT INFOTERA HELLAS (SHH)</td>
<td>Industry</td>
<td>Greece</td>
</tr>
<tr>
<td>16</td>
<td>TELESPAZIO (TPZ)</td>
<td>Industry</td>
<td>Italy</td>
</tr>
<tr>
<td>17</td>
<td>TNO (TNO)</td>
<td>Research Institute</td>
<td>Netherlands</td>
</tr>
<tr>
<td>18</td>
<td>UNIVERSITY OF SURREY (SUR)</td>
<td>University</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>19</td>
<td>VTT (VTT)</td>
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<td>Finland</td>
</tr>
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<td>20</td>
<td>UNIVERSITY OF LEICESTER (ULEIC)</td>
<td>University</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>21</td>
<td>VTT (VTT)</td>
<td>Industry</td>
<td>Italy</td>
</tr>
</tbody>
</table>
Skills of the D-BOX Team

- **Mine clearance activities** (end users: BACTEC and research entities: FOI, TNO, DUT, VTT, Fraunhofer, MORATEX),
- **System integration** (Astrium, Selex),
- **GIS** (Spot Infotera Hellas, Astrium, Telespazio),
- **Tools and systems for mapping of hazard zone and detection of mines** including platforms, sensors, and data fusion (Selex, Fraunhofer, FOI, DUT, Radiolabs, Astri Polska, University of Surrey),
- **Decision tools and planning** (FOI, University of Surrey),
- **Explosive risk assessment** (Fraunhofer),
- **Protection** (MORATEX),
- **Education and training** (BACTEC, MORATEX),
- **Human sciences and legal framework** (CBRNE, CEN, and University of Surrey),
- **Dissemination** (IB Consultancy),
- **Large scale demonstrations** (Astri Polska & Selex).

D-BOX Project: how it works (1)
D-BOX Project: how it works (2)

D-BOX is a R&T project

- D-BOX is a Research & Technology project...
- ... which addresses the demining priorities...
- ... and will benefit all the stakeholders of the demining value chain.
- Our success factor: your support.
D-BOX priorities = DEMINING priorities

- The D-BOX concept comes from an investigation of the DEMINING priorities.

<table>
<thead>
<tr>
<th>End users Priorities</th>
<th>D-BOX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very significant benefits (10% or more)</td>
<td></td>
</tr>
<tr>
<td>Close-in detection,</td>
<td>yes</td>
</tr>
<tr>
<td>Determine outer edge of mined areas.</td>
<td>yes</td>
</tr>
<tr>
<td>Significant benefits (5 to 10%)</td>
<td></td>
</tr>
<tr>
<td>Locate hazardous areas,</td>
<td>yes</td>
</tr>
<tr>
<td>Determine the impact of hazardous areas,</td>
<td>yes</td>
</tr>
<tr>
<td>Personal protective measures,</td>
<td>yes</td>
</tr>
<tr>
<td>Information management,</td>
<td>yes</td>
</tr>
<tr>
<td>Vegetation clearance.</td>
<td>Possible</td>
</tr>
<tr>
<td>Determine clearance depth</td>
<td>yes</td>
</tr>
<tr>
<td>Clearance verification (post-clearance quality control)</td>
<td>yes</td>
</tr>
<tr>
<td>Recognizable benefits (0 to 5%)</td>
<td></td>
</tr>
<tr>
<td>Render safe mines and UXO,</td>
<td>yes</td>
</tr>
<tr>
<td>Project management tool,</td>
<td>yes</td>
</tr>
<tr>
<td>Hazardous area marking</td>
<td>yes</td>
</tr>
</tbody>
</table>
DEMINING priorities

Main idea: To propose simple, pragmatic and cheap tools

- Demining tools will be operated by local population and non military organizations in a civil environment (close to population, wide areas, in a soil reuse perspective)
  - Very easy to use → 3 buttons rule.
  - Training of demining teams, education of population.

- Cost effectiveness – increase of efficiency
  - A reduction of false alarm rate for detection
  - Hazard zone should be well identified
  - Capability to demine Large areas (few km² instead of a corridor)
  - Low cost of tools (no expensive and high technological solution)

What D-BOX propose (1)

Improvement or development of new tools
- Close detection by biosensors, network of sensors, risk assessment tools, new dog training method, information fusion tools

the final toolbox will include
- Technologies such as mapping and localizing landmines and cluster munitions,
- Human and ethical recommendations and guidelines,
- Techniques and procedures for mine and cluster munitions neutralization,
- Civil and deminer protection,
- Education and training for all stakeholders
What D-BOX propose (2)

Mission Preparation, Mission Deployment
- Risk assessment tools, Risk Modeling tools, and Protection Equipment.
- Support to operations of the demining tools by local people and non-military organizations in a civil environment.

Usability, Deployability, Maintainability
- Usability in terms of deployability …
- … maintenance use by civil, training level of the operator, …
- … cultural differences, language-barriers and educational levels …
  - Training for demining teams.
  - Education of the population in the areas of operations.

What D-BOX Propose (3)

Combined usages of the tools (e.g., Web Service, Smartphone with specific applications)
- Low Cost tools.
- Adaptability to different Users.
  - Specific HMI accounting roles, culture, environment.
- Adaptability to different steps of the demining process.
- Scalable, adaptable to different stakeholder needs.
  - Low cost versions for NGO.
  - Simplified versions for local populations.
  - Decision Aids for Decision Makers.
  - Control Panel for Operating Actors.
What D-BOX Propose (4)

- To benefit from the past and on-going activities (EUDEM, ITEP, Joint Research Centre studies, UNMAS, GICHD...),
- To be fully complementary to on-going activities through the partners already involved in,
- To avoid duplication of efforts with studies like the ESA study on “space assets for demining”

A Comprehensive and Decentralized toolbox

The same toolbox will be used all along the demining process, by all the stakeholders.

Information will be integrated, refined and shared at different levels and by different actors.

D-BOX will provide interfaces adapted to different users, keeping into account, role(s), culture, and environment(s)
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D-BOX main services & support (1)

Information Management & Knowledge Management:

- **E-Commerce Catalogue of Tools and Methods:**
  - Content Management System allowing to select the best set of demining tools and methodologies for the specific operational context/environment.

- **Support to decision / mission set up:**
  - Localization and reduction of hazardous areas.
  - Ethical, Cultural, Legal Guidelines
  - Resource Planning and Allocation.
  - Exercise Simulations and Trainings.
    - Risk Training
    - Training Kits

D-BOX main services & support (2)

- **Positioning and Localization:**
  - hazard zone reduction by Space assets
  - hazard zone reduction by Aerial assets (e.g. drones)
  - hazard zone reduction by human information
  - **Information elaboration and data fusion.**

- **Close In Detection:**
  - GPR & Acoustic sensor protection
  - GPR 3D imaging Detection Operators Training
  - stand off Laser Biosensor sensors / data fusion
  - Sensors network
D-BOX main services & support (3)

- **Neutralization:**
  - Neutralization consolidated database
  - Disposal link and complement database
  - Laser neutralization

- **Risk Assessment:**
  - Error prevention methodology for tools and techniques
  - PPE test methodology

- **Doctrine/Operations/Psychology/Social:**
  - Human Behavior, Cultural and Ethical Factors
  - CEN Workshop Agreement
  - Interoperability and Web Standards

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**Information Management System (1)**

The hearth of D-BOX will be an Information Management System able to integrate and to merge different type of information and to present this information to the user in the most appropriate way.
Information Management Systems (2)

- This D-BOX will gather information from several sources:
  - Existing On-Line data bases, from existing communities.
  - On-line catalogues of on the shelf demining tools.
  - Equipment embedded or connected to D-BOX.
  - D-BOX Users.

- Users may feed D-BOX in several ways:
  - NGO, observers, population feed D-BOX with information collected locally, from archive etc. This information is then elaborated by D-BOX and made available to relevant actors (e.g. decision makers, governments, demining departments).

  - Demining Teams, may refine on site the information provided by D-BOX by close-in detection.

Decentralized toolbox concept

The toolbox will be modular and upgradable, its deployment will be adapted to each situation and users. Various toolboxes with different complexity and completion will be used in different places by different users.

A specific NGO/Organization, for instance, with limited capabilities and budget may use only a basic Toolbox configuration with a few specific tools embedded, and links to selected externally available tools.

Population may use D-BOX on smartphones.

Demining Squad may have D-BOX running on PDA.
D-BOX Interfaces

- **Users** based on Web Front End adapted to the different user’s roles, culture, languages.

- **Suppliers**, standardized interfaces open to integrate further tools from non-participating suppliers

- **External tools** or **links to external tools** referenced and interfaced. Examples could be:
  - External Sensors
  - Satellite Mapping Services
  - Neutralization systems.
  - …

- A portable version of D-BOX will also be available for demining operations.

- This version will be synchronized with the main D-BOX before and after the operations.

**User Interface**

- E-Commerce Like
- Content Management Systems
- Geographic Information Services

**Supplier Interface**

- We need the support of Technology Providers to define a common standard to interface D-BOX.

- This standard shall allow D-BOX select the set of tools best fitting with the operative conditions.
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Summary of D-BOX Advantages

<table>
<thead>
<tr>
<th>Low Cost</th>
<th>Not Complex</th>
<th>Operational benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Technos (e-commerce)</td>
<td>Search engine and GIS like interfaces</td>
<td>Take into account the various situations / environments</td>
</tr>
<tr>
<td>Low cost tools on the field</td>
<td>Integrating basic functions (Smartphones with geo, Com, Loc, terrain capture capabilities) to be given to the NGO</td>
<td>Ease the training and the mission preparation to optimize the operations</td>
</tr>
<tr>
<td></td>
<td>Updating the Toolbox is simple</td>
<td>Do a better job with existing means (help to choose the right tool, help to combine the various tools for better performances)</td>
</tr>
<tr>
<td></td>
<td>Easy infrastructure deployment (for basic Services)</td>
<td>New tools more efficient</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ease and optimize the work done on the field</td>
</tr>
</tbody>
</table>
D-BOX will be the online one stop shop for Demining

- Existing Policies and Rules
- Existing procedures in different countries
- GIS to understand the situation
- GIS to visualize updated information
- Data bases of events reported on GIS
- Typical scenarios
- Simulation of new scenarios
- Selection of De mining procedures
- Education kits
- Training kits
- Maps of mine areas
- Catalogue of existing and possible tools
- Tools availability
- Specific D-Box tools

D-Box, fed by the users, will be the common mine intelligence data base for this community.

Thank you very much for your attention!
Contact point – Program Manager

Astrium Space Transportation
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bruno.esmiller@astrium.eads.net