



IFREACT

[Improved First Responder Ensembles
Against CBRN Terrorism]

www.ifreact.eu

Aim

- Developing an advanced protective ensemble that will enhance the chemical, biological and radiological protection of European first responders in a CBRN crisis.
- terrorist attacks + non-intentional incidents



Who are we?

- IFREACT is a consortium of CBRN manufacturers, subject-matter experts and end-users from all over Europe

CBRNe
WORLD



SAMU



ASTRIUM BLÜCHER[®]
AN EADS COMPANY
Innovation since 1214



Current PPE - Far from ideal

As stated in the European Security Research Innovation Forum (ESRIF) final report of December 2009, Personal Protective Equipment (PPE) is:

- Heavy and bulky
- A physiological burden that interferes with the operational duties of first responders.
- There is a concern that current PPE is not standardised or universal.



Goals of IFREACT

- To develop a PPE system that:
 - addresses the real protection needs of conventional users;
 - provides adequate protection while keeping the burden of the system as low as possible;
 - includes solutions for respiratory protection and hand and foot protection;
 - allows end-users to best select the PPE system needed for the mission and the expected threat via digital selection tool.

PPE Selection Tool

- A software tool that will allow responders and procurement officers to select the optimal equipment for the performance of their tasks based on:
 - Real Threat Scenario Analyses
 - User Requirements
 - Concepts of Use
- Both Standard and Advanced version will distinguish between:

General requirements:

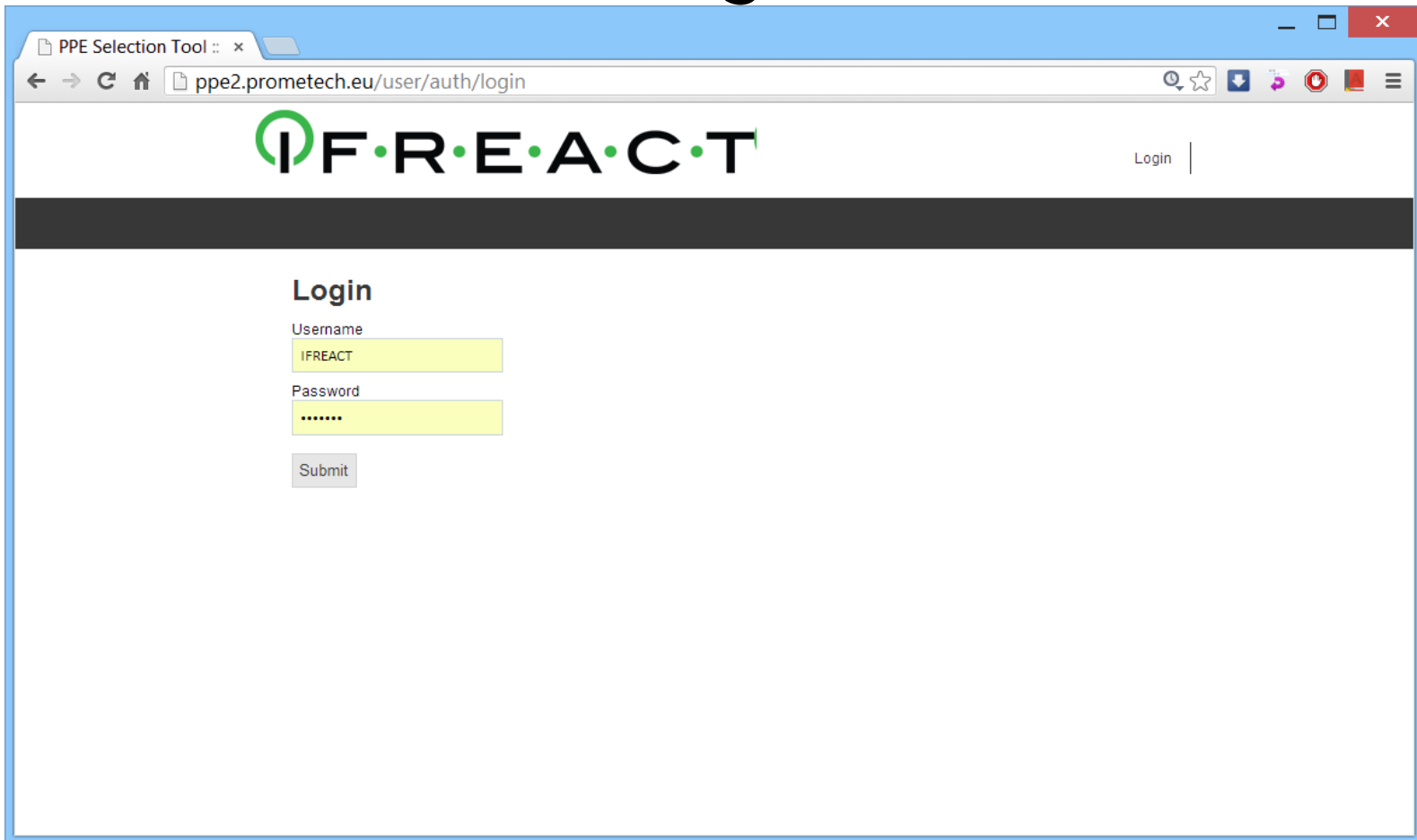
- Manual dexterity
- General dexterity
- Hearing and speech requirements
- Vision requirements
- Physiological burden control requirements

Protection requirements:

- Respiratory vapour protection
- Respiratory particle protection
- Dermal liquid and vapour protection

Tool Overview

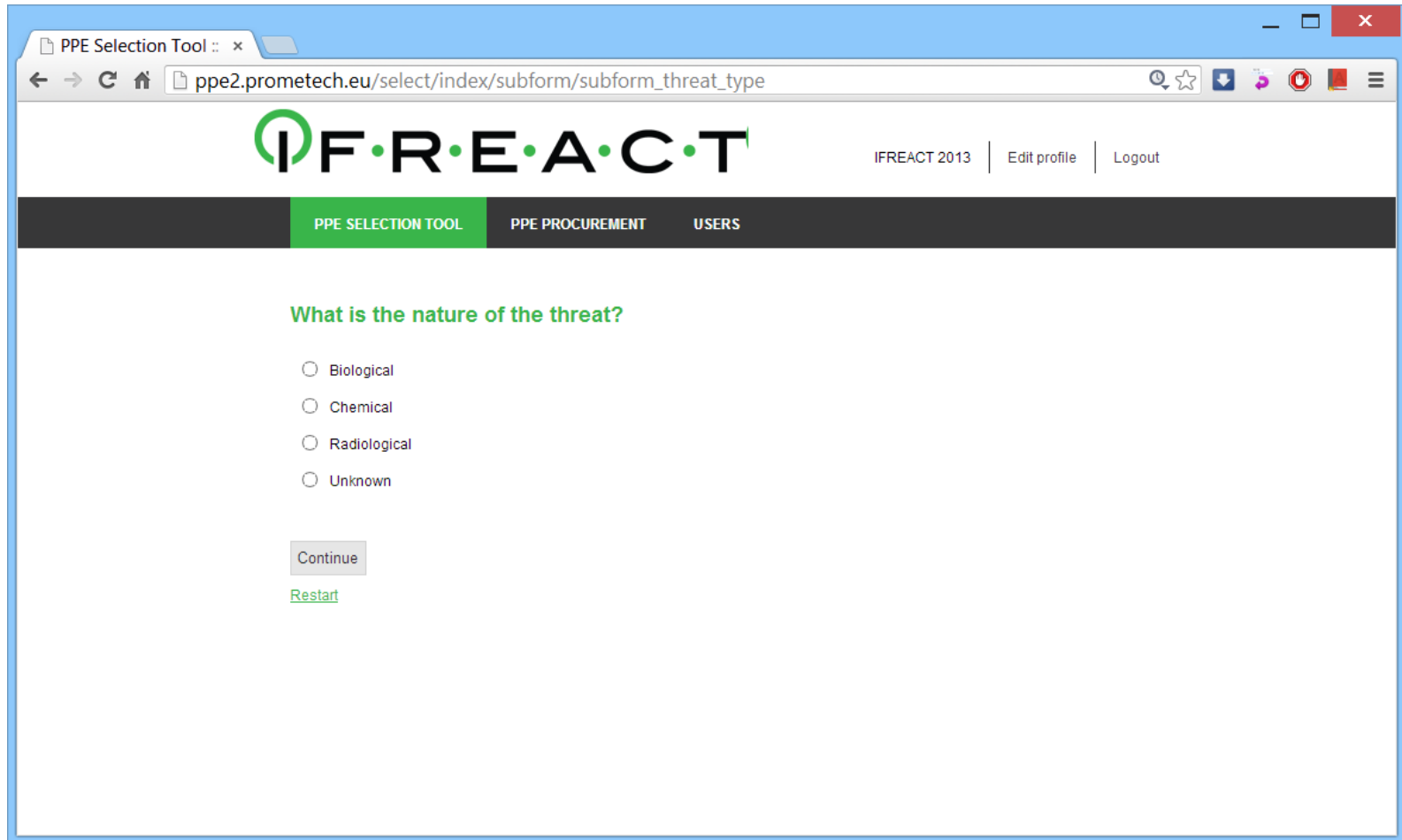
- Accessing the tool -



The screenshot shows a web browser window with the address bar displaying "ppe2.prometech.eu/user/auth/login". The page features the IFREACT logo at the top left and a "Login" link at the top right. Below the logo is a dark horizontal bar. The main content area is titled "Login" and contains a form with the following fields:

- Username:** A text input field containing the value "IFREACT".
- Password:** A password input field containing six dots ".....".
- Submit:** A button labeled "Submit".

- Using the selection tool -



The screenshot shows a web browser window with the URL `ppe2.promotech.eu/select/index/subform/subform_threat_type`. The page features the IFREACT logo and navigation links for 'IFREACT 2013', 'Edit profile', and 'Logout'. A dark navigation bar contains three menu items: 'PPE SELECTION TOOL' (highlighted in green), 'PPE PROCUREMENT', and 'USERS'. The main content area displays the question 'What is the nature of the threat?' with four radio button options: 'Biological', 'Chemical', 'Radiological', and 'Unknown'. Below the options is a 'Continue' button and a 'Restart' link.

PPE Selection Tool :: x

← → ↻ 🏠 ppe2.promotech.eu/select/index/subform/subform_threat_type

IFREACT IFREACT 2013 | Edit profile | Logout

PPE SELECTION TOOL PPE PROCUREMENT USERS

What is the nature of the threat?

Biological

Chemical

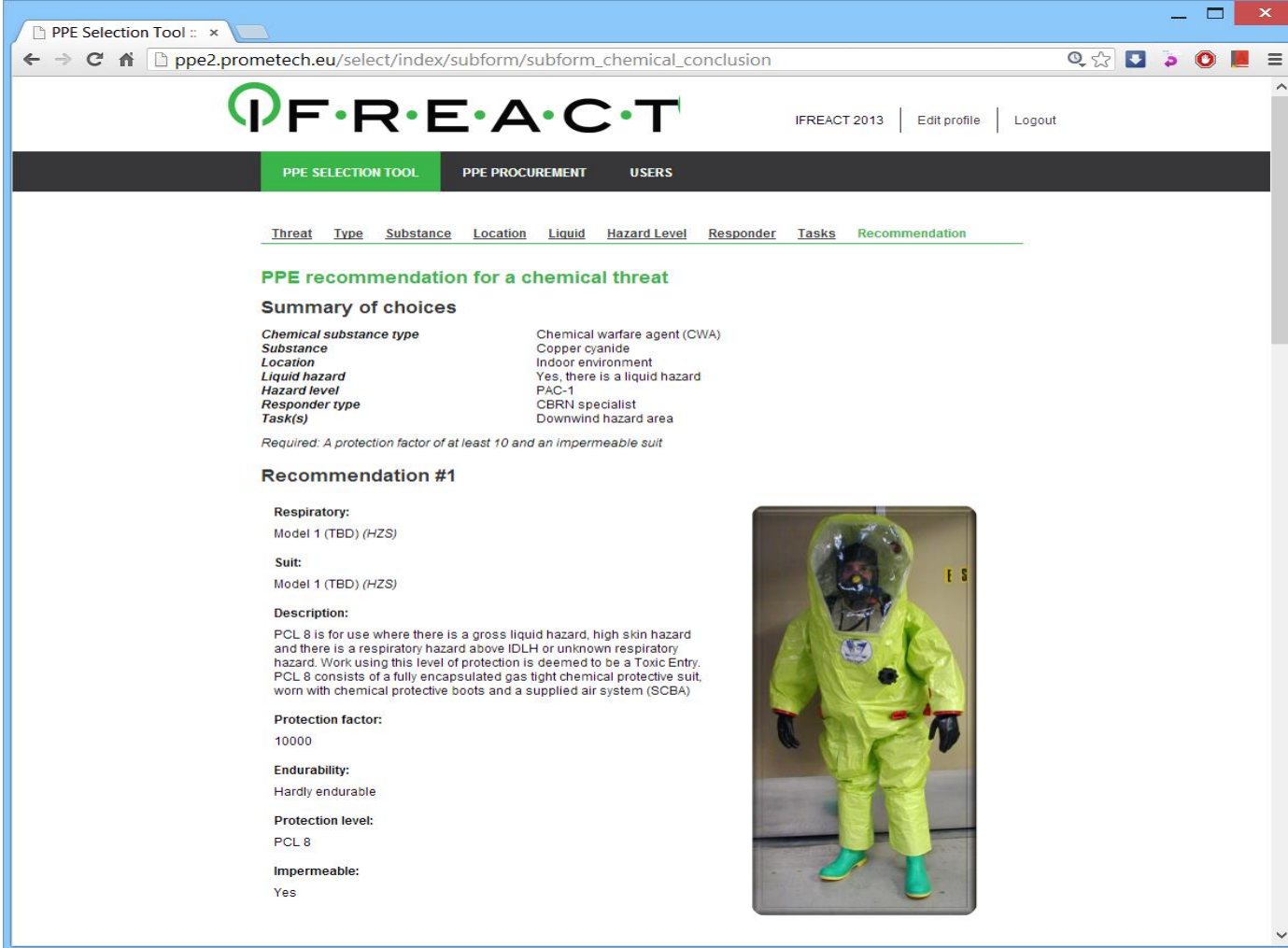
Radiological

Unknown

Continue

[Restart](#)

- Recommendations -



The screenshot shows a web browser window displaying the IFREACT PPE Selection Tool. The browser address bar shows the URL: `ppe2.prometech.eu/select/index/subform/subform_chemical_conclusion`. The IFREACT logo is at the top left, and navigation links for 'PPE SELECTION TOOL', 'PPE PROCUREMENT', and 'USERS' are at the top. A navigation menu includes 'Threat', 'Type', 'Substance', 'Location', 'Liquid', 'Hazard Level', 'Responder', 'Tasks', and 'Recommendation'. The main content area is titled 'PPE recommendation for a chemical threat' and includes a 'Summary of choices' table, a 'Required' note, and a 'Recommendation #1' section with detailed specifications and a photograph of a PCL 8 protective suit.

Threat	Type	Substance	Location	Liquid	Hazard Level	Responder	Tasks	Recommendation

PPE recommendation for a chemical threat

Summary of choices

Chemical substance type	Chemical warfare agent (CWA)
Substance	Copper cyanide
Location	Indoor environment
Liquid hazard	Yes, there is a liquid hazard
Hazard level	PAC-1
Responder type	CBRN specialist
Task(s)	Downwind hazard area

Required: A protection factor of at least 10 and an impermeable suit

Recommendation #1

Respiratory:
Model 1 (TBD) (HZS)

Suit:
Model 1 (TBD) (HZS)


Description:
PCL 8 is for use where there is a gross liquid hazard, high skin hazard and there is a respiratory hazard above IDLH or unknown respiratory hazard. Work using this level of protection is deemed to be a Toxic Entry. PCL 8 consists of a fully encapsulated gas tight chemical protective suit, worn with chemical protective boots and a supplied air system (SCBA).

Protection factor:
10000

Endurability:
Hardly endurable

Protection level:
PCL 8

Impermeable:
Yes



IFREACT will go beyond the state-of-the-art

For the 1st time, skin protection (suit) performance will be based on the assessment of:

- realistic CBRN incident scenarios;
- available human toxicology data regarding the involved agents and exposures;
- real life First Responder operational needs.

Expected outcome:

- adequate protection (re. threat & user needs),
- lowest possible burden on the wearer,
- simple to use, to maintain and to store,
- optimally compatible with other PPE used by the wearer,
- 'low lifecycle cost', incl. costs of acquisition, use, storage & maintenance,
- individually optimised to address specific user group needs (vapour protection, liquid protection, flame & fire retardancy)



IFREACT will go beyond the state-of-the-art

- **Overpressure hood**

- Innovation of the **respiratory protection** envisaged is the use of textile materials for which the construction will insure, in addition to the function of protection, also the functions of directing the air flow.
- Overpressure of clean air => very high protection factor. Cooling the head of the wearer. Demisting...
- Over pressure maintained by blower system worn on body

- **Gas mask**

- **Hood adapted onto the gas mask** : the principle consists in developing a textile hood to protect the head. This hood should fit with the gas mask. This equipment should be also compatible with a helmet.
- **Gas mask alone**: can be used with a blower or a canister and is compatible with a hood attached the suit.



IFREACT will go beyond the state-of-the-art

- **Bio-dosimeter**

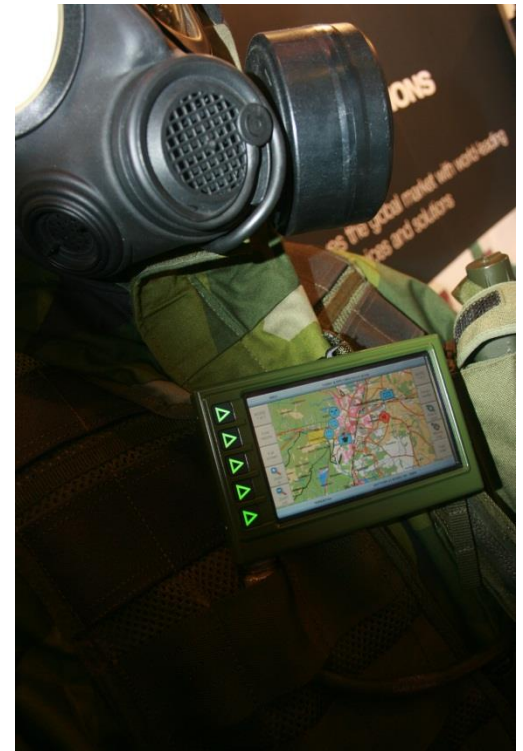
- Individual aerosol collectors integrated into clothing
- Small, portable and robust
- Gives access to the biological dose absorbed by the individual
- Periodic reading of these aerosol collectors can provide evidence of biological incidents

- **Head Up display (HUD)**

- Provides relevant and timely information required for the task
- The responder sees information on his environment, in his environment

- **Add-ons**

- Audio/voice communications
- GPS
- Miniaturized video cameras
- Physiological monitoring



What Next?

- testing and evaluating the existing PPE, in the laboratory and during exercises
- first prototypes
- integration of different components in one set of systems
- dissemination of project results

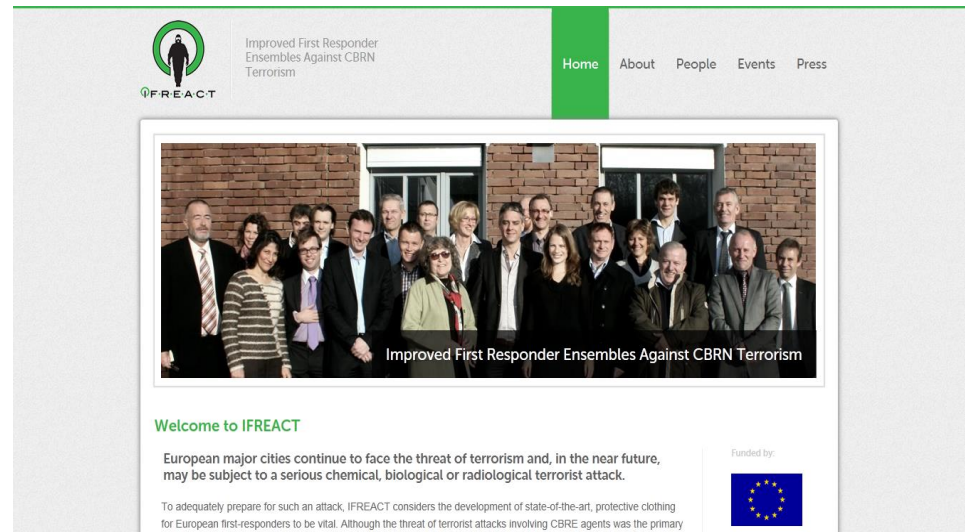
Workshops

- Paris
- Split
- Prague



Dissemination

- **Website - ifreact.eu**
- conferences, workshops, presentations
- **Brochure** - 4 page brochure - out
- 16 page brochure - June 2013
- 32 page brochure for December 2014
- **Magazines articles** – Interviews and articles in a wide variety of media – CBRNe World, The Parliament, Journal of Emergency Medicine, Wired etc...



Questions

