

Improvised Explosive Devices



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Improvised Explosive Devices (IEDs)

Improvised Explosive Devices

Composed of unknown elements

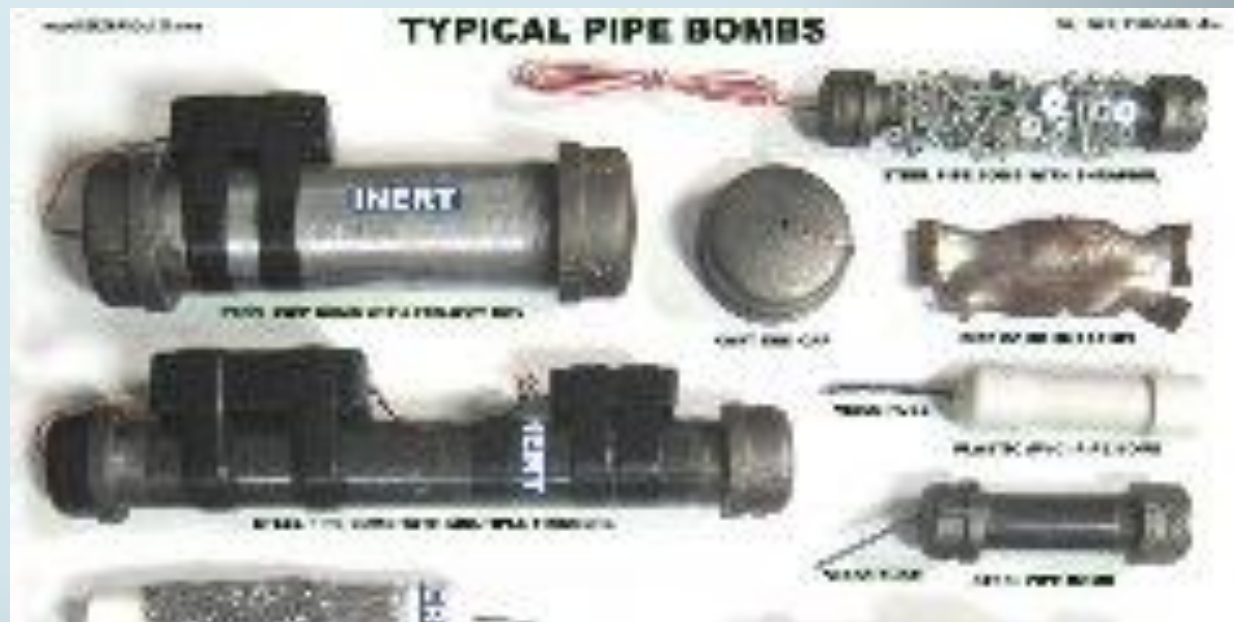


Improvised Explosive Devices (IEDs)

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Composed of unknown elements

Range in form



Improvised Explosive Devices (IEDs)

Improvised Explosive Devices

Composed of unknown elements

Range in form

Range in size



Improvised Explosive Devices (IEDs)

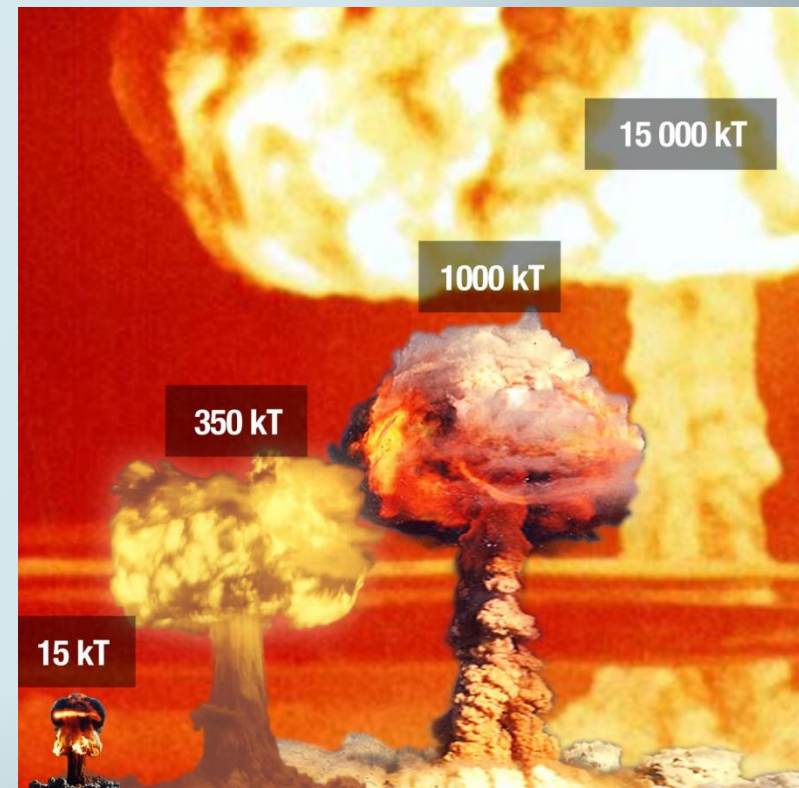
Improvised Explosive Devices

Composed of unknown elements

Range in form

Range in size

Range in power



Examples of IEDs



SODA CAN DEVICE
INERT TRAINING AID



CAN MAY VARY

FEATURES:

- SODA CAN PACKED WITH SIMULATED P.E.
- ELECTRIC BLASTING CAP
- ADDED SHRAPNEL

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Various Examples of Explosives



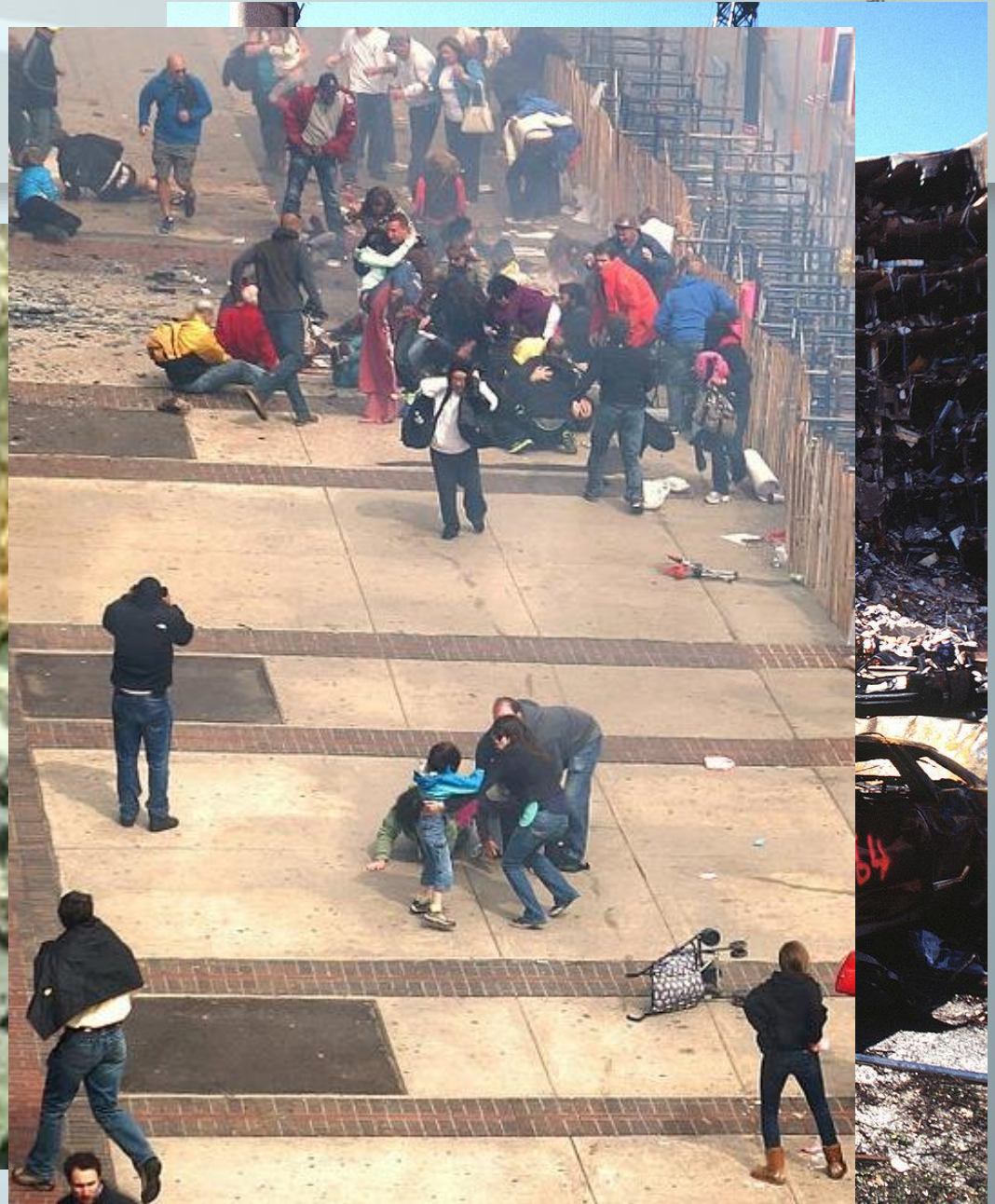


Effects of IEDs

Chernobyl Accident – Ukra

Oklahoma City Bombing –

Boston Marathon Bombing





Effects of IEDs

Boston Marathon Bombing – 2013

Marine Corp Race Pipe Bomb – Sept 2016

Manhattan Dumpster Bomb – Sept 2016





Boston Marathon Bombing



BREAKING NEWS

NEW VIDEO OF BOSTON BOMBING AT MOMENT OF BLAST



4:34 PM PT

ERIN BURNETT



Manhattan Dumpster Bomb



IED Neutralization





Challenges IED Neutralization

Back Splatter

Collateral Damage

Safety for proximate people and EDU personnel

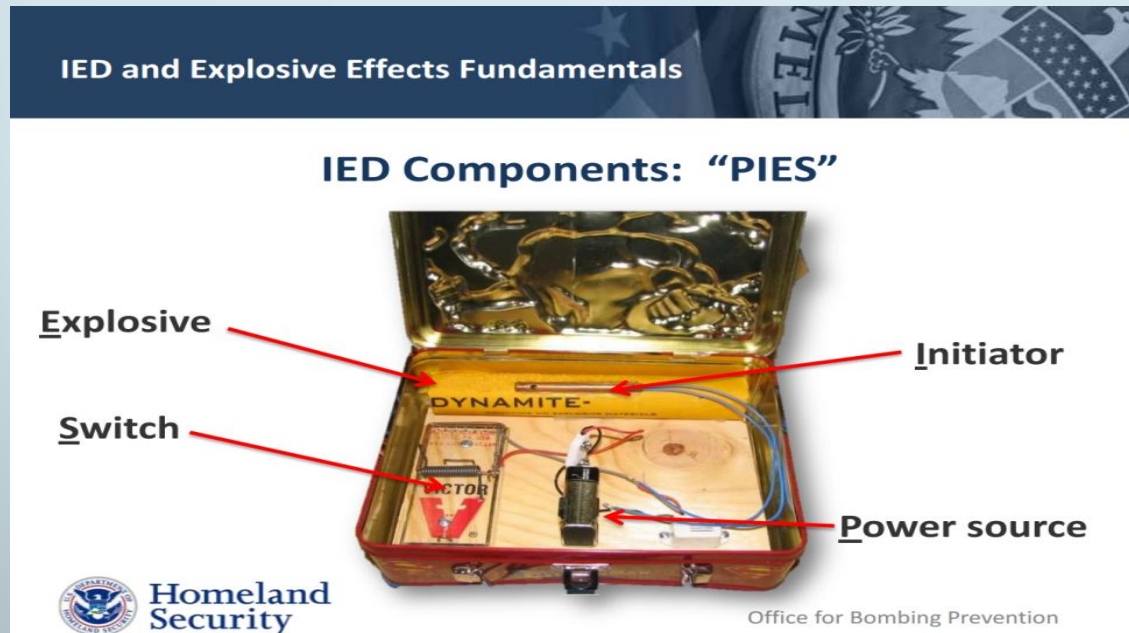
Explosive Disposal Units (EDU)



Explosive Disposal Units (EDU)

Safely neutralize IED

Identifying key IED components of interest



What are currently used by EDU teams?

2D X-Ray Technology

X-Ray Scanner

X-Ray Back-plates

X-Ray Viewer

X-Ray Back-plate Feeder



Limitations of X-Ray Technology

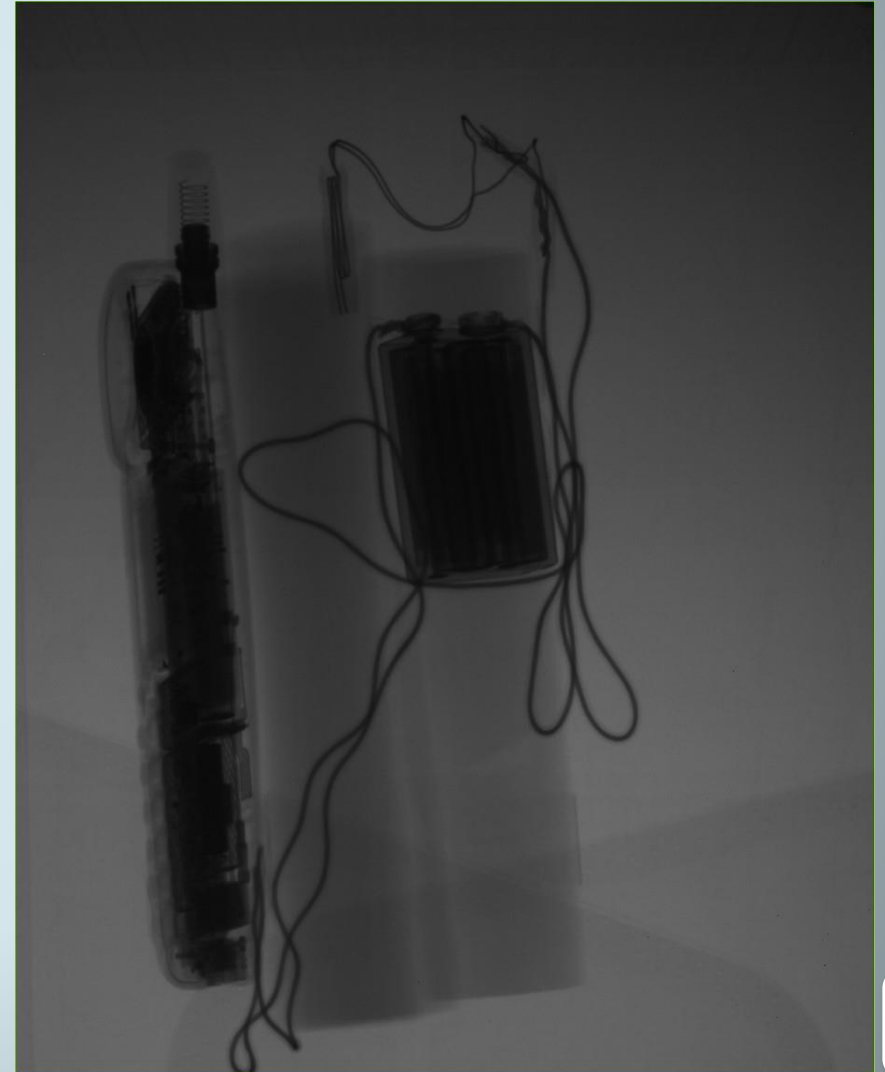
Manually tuning the penetration pulses

Proper positioning of back-plate

Constantly replacing film and bulb

Disproportionate

Occlusions



What are they looking for in an IED?

Key IED Components

Main explosive charge

Method of detonation

Power source

Possibly Shrapnel

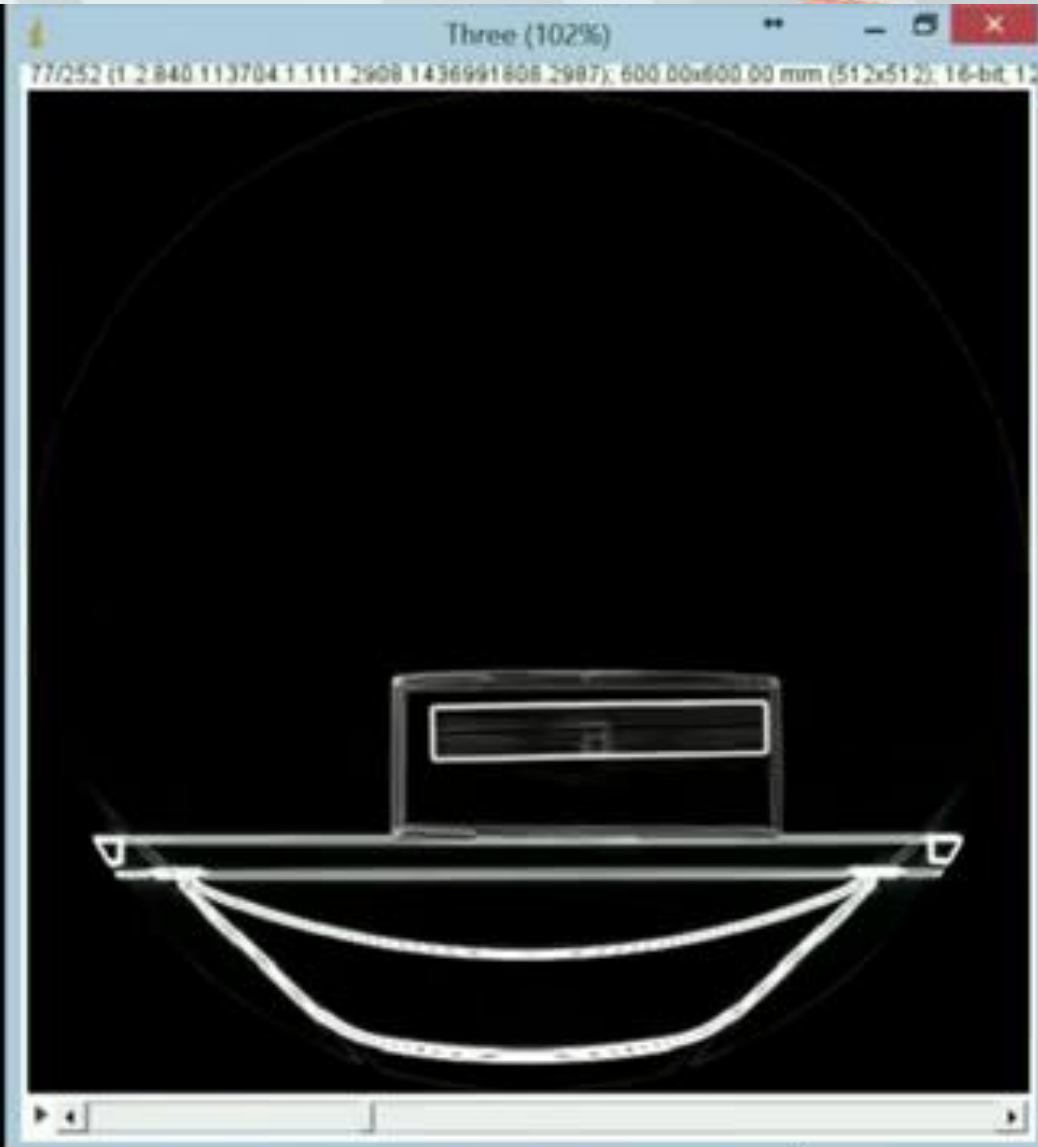




Successful IED Neutralization



Medical Imaging Tech for IED Neutralization



Serious Gaming for IED Neutralization



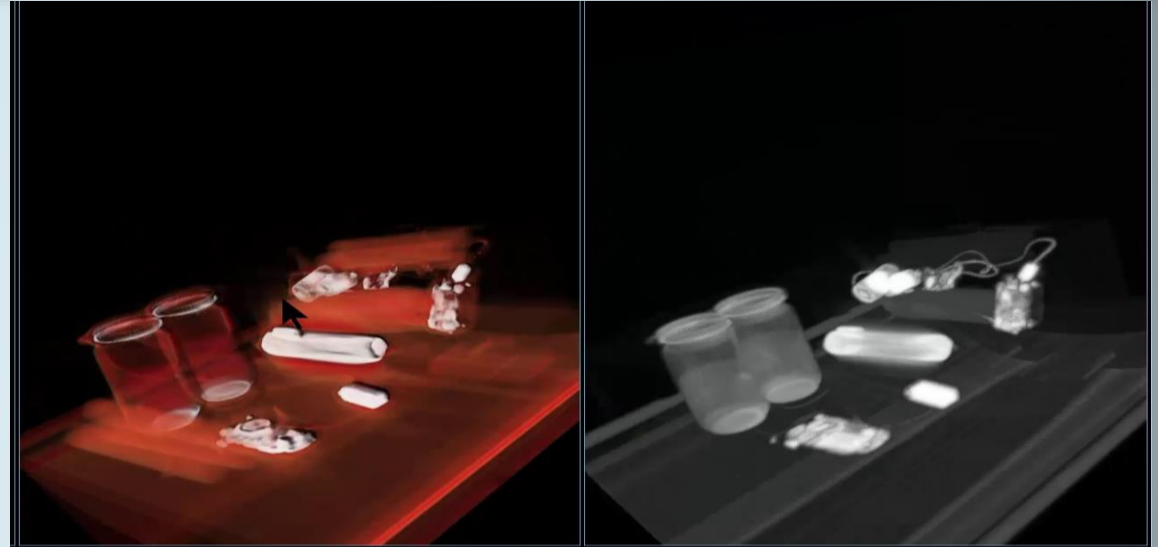
What can we use the reasoning from the game for?

EDU neutralization training

Archiving IED incidents

EDU planning in distant future

Using the game-based reasoning to perform precise targeting of key IED components



Affiliations

USAR and CBRNe Response Team (UCRT)

Ontario Provincial Police (OPP)

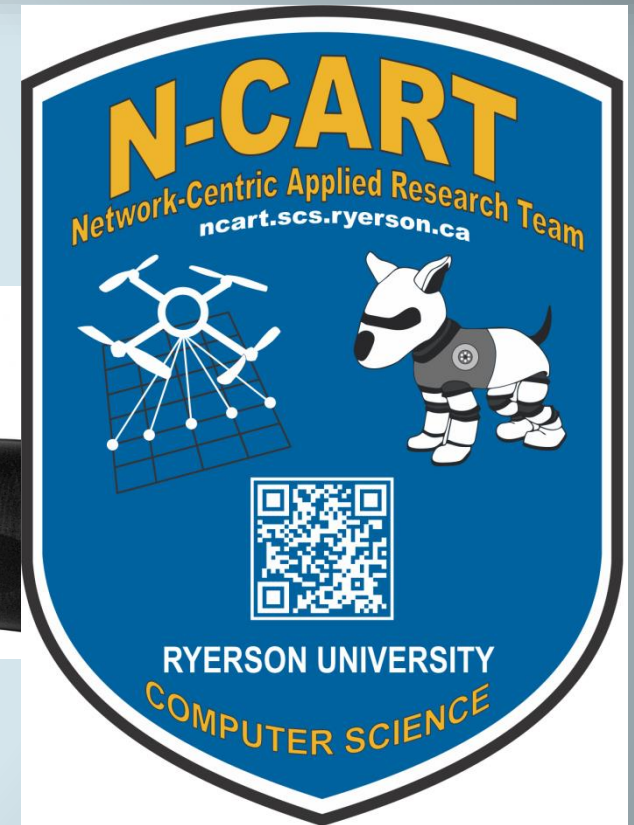
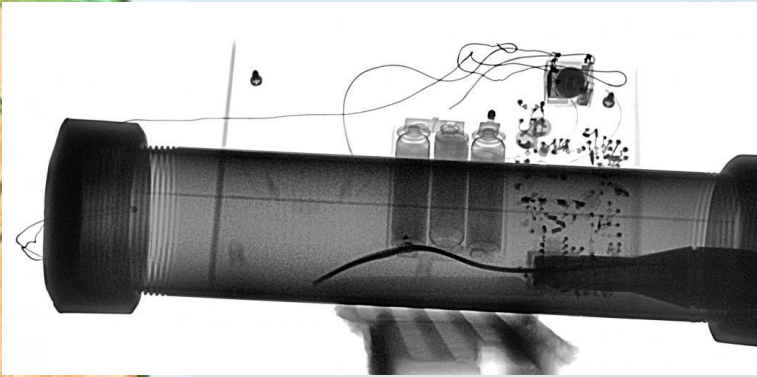
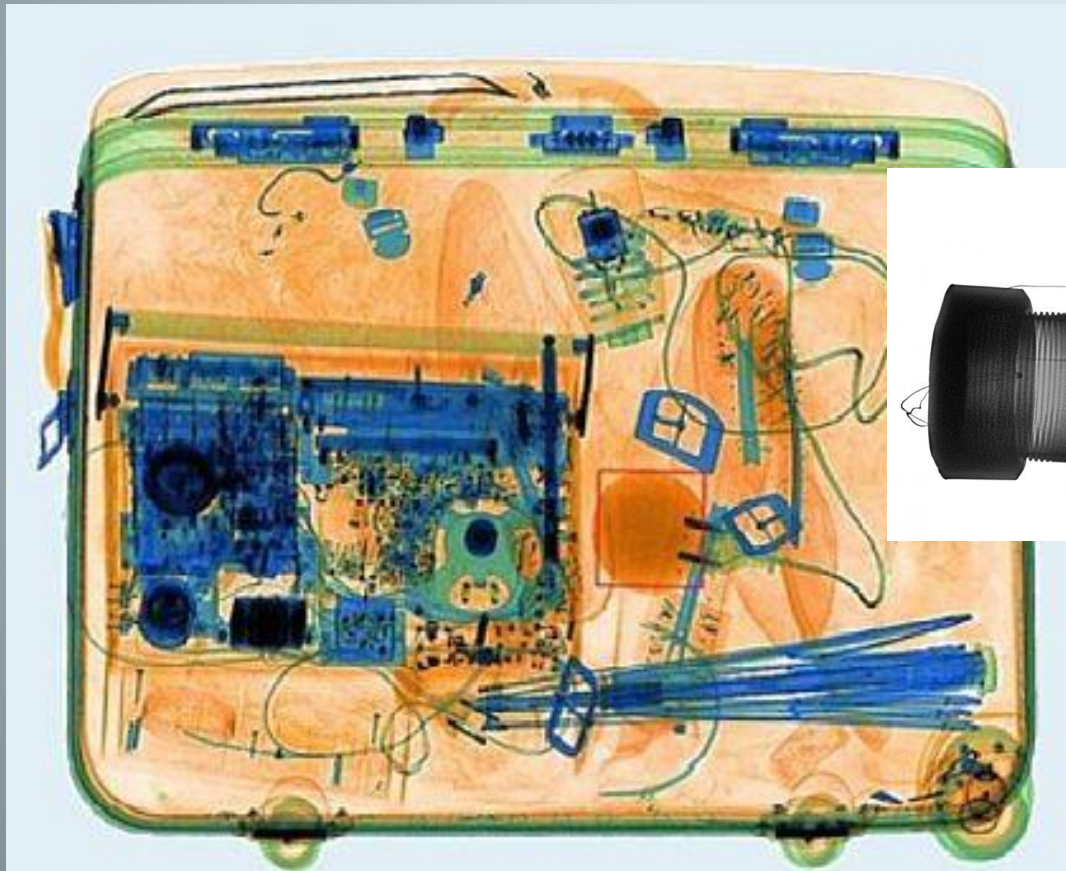
Sunnybrook Hospital

Proparms Ltd.

NSERC, CREATE ADERSIM



Thank you - Q & A



A decorative horizontal banner with a light blue and white background. On the left, there are two small blue icons: a leaf and a flower. On the right, there are some faint, stylized elements including a red rectangular shape and a black vertical line with some illegible text. The text "[Bonus Slides]" is centered in a dark brown font.

[Bonus Slides]