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Accelerating Land Release

Mine Detection Dog SMART System

INNOVATION

FROM
ANOTHER
POINT OF VIEW

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Swiss **M**ine **A**ction **R**eduction **T**ool

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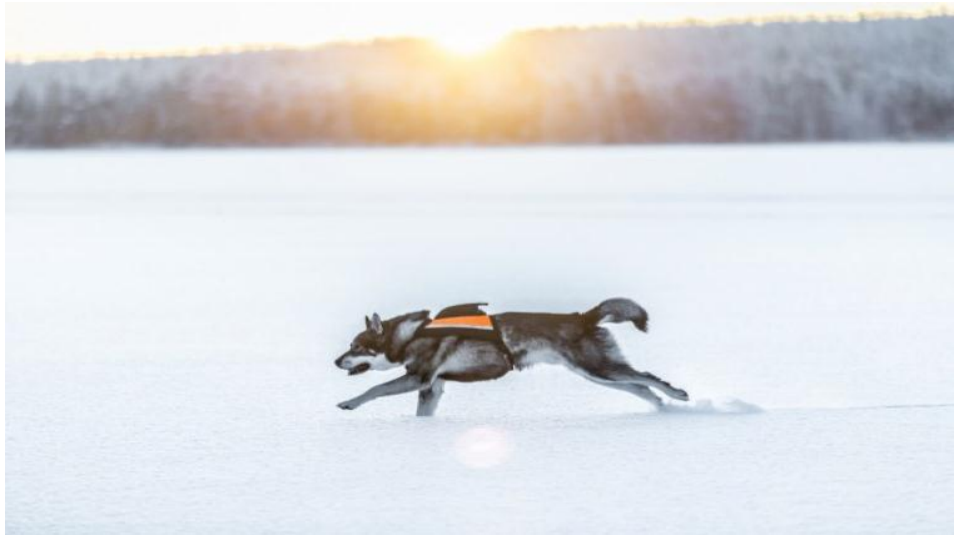
The Problem

- Excessive use of clearance resources in areas that may not contain landmines and/or ERW
- Average contamination density between 4-16 items per hectare
- Tens of millions of dollars have been invested in survey since 2009. At large, the global survey efforts did not yield any conclusive data and could have been applied differently
- Up to 300 years to complete with a continued excessive use of clearance assets

Mine Detection Dogs

- Declining use of dogs due to inefficiency and lack of confidence
- MDD have only been used marginally in technical survey
- Deployment-constraints, including the requirement for prior vegetation cutting, limited search depth by the MDD due to stringent requirements for straight search lanes, two dogs over the same area and the provision of safe access for handlers

The Solution



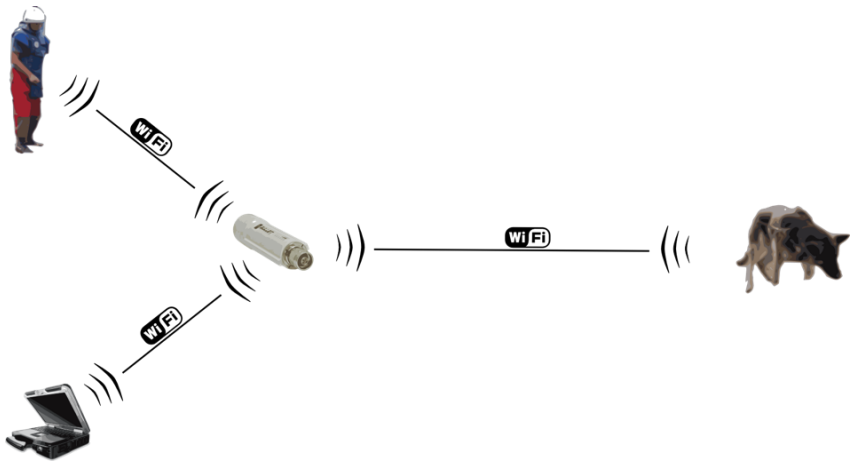
- The idea of free running dogs originates from the hunting concept in Sweden where dogs are used. The Swedish hunting areas are usually 100-300 hectares per hunting team

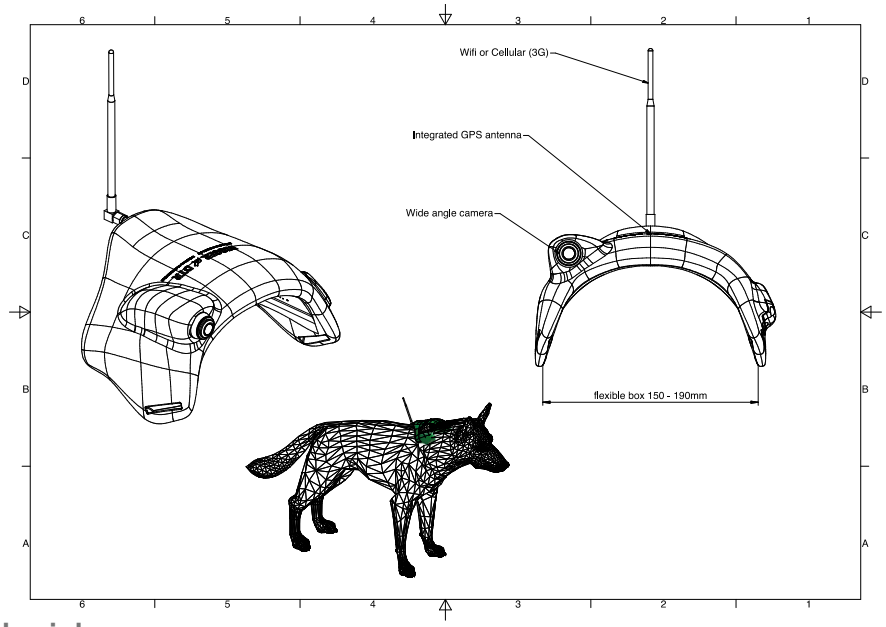
- Hunting dogs are equipped with a GPS collar so that the handler can monitor the dog on a device

- Drawing from the experience using a free running dog searching for a moose in a big area isn't that different than searching for a mine in a suspected hazardous area

- GICHD initiated the development project with DIGGER and NPA in 2014 with the support of CMAA and CMAC in Cambodia.

SMART Components





- Dog harness that includes gps, radio and video camera
- Dog handler monitors his free running dog on a smartphone and can communicate via the radio
- The system also offers live feed video, mainly to act as a QA component ensuring that the dog is searching i.e. nose is on the ground
- All communication/ exchange of data is managed via a computer acting as a server over a Wi-Fi hotspot

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Project Findings 2014-2015

- Vegetation does not limit the dogs operability and explosive detection ability
- Some vegetation actually enhances the explosive odor
- Operational distance up to 100m from handler in medium vegetation
- Average TS output up to 4 hectare per day, TS systematic approach 25%
- Accuracy in TS does not require cm precision and battery time can be reduced
- No confidence issues since the product is not “cleared area” but system rather provides a defined “starting point” for further investigation
- Harness should be as light as possible for the dog, preferably between 300-500 grams

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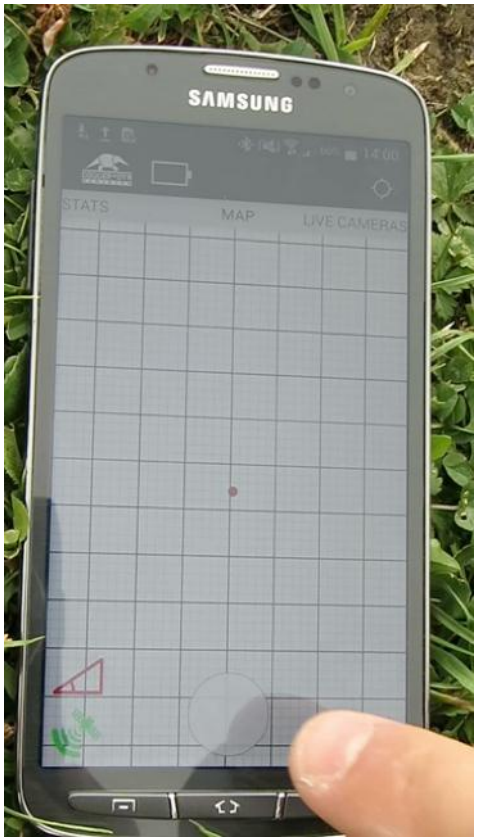
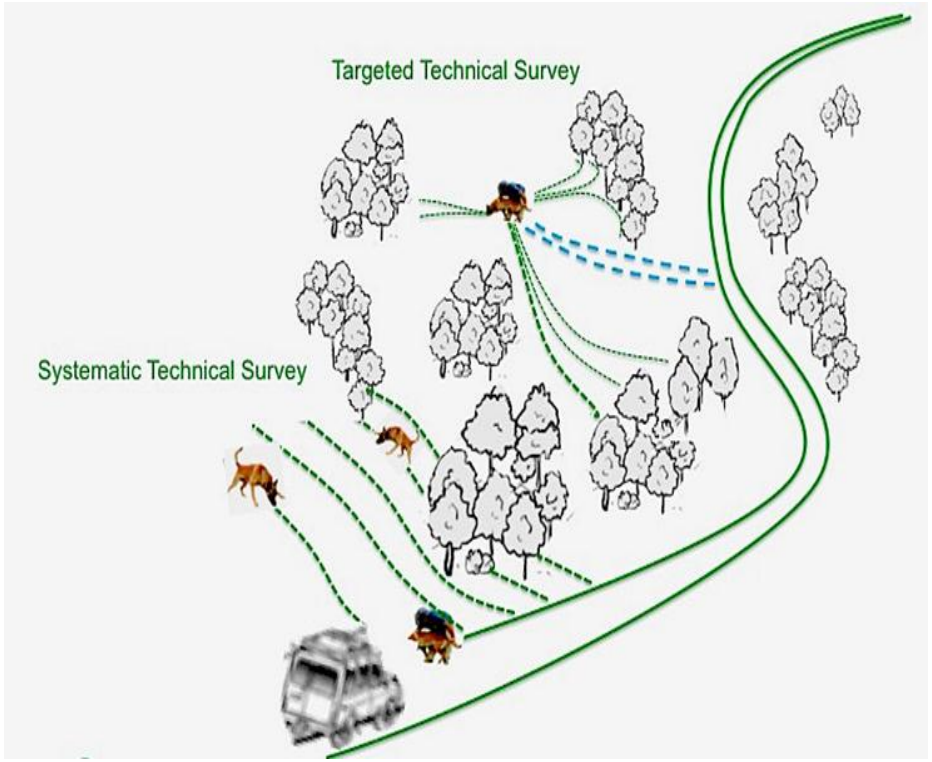
Prototype 2014 vs. Prototype 2015

Weight: 2.7 kg
Accuracy: 50 cm (RTK / DGPS)
Operating Time: 8 hours

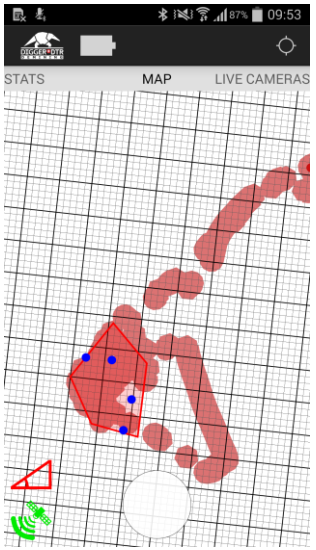
Weight: 0.5 kg
Accuracy: 5 m (GPS)
Operating Time: 4 hours

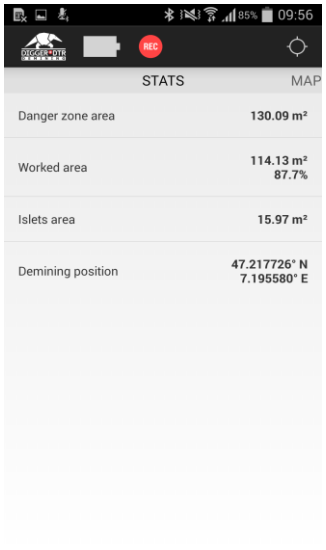
TS Approach with SMART viewed on a smart phone

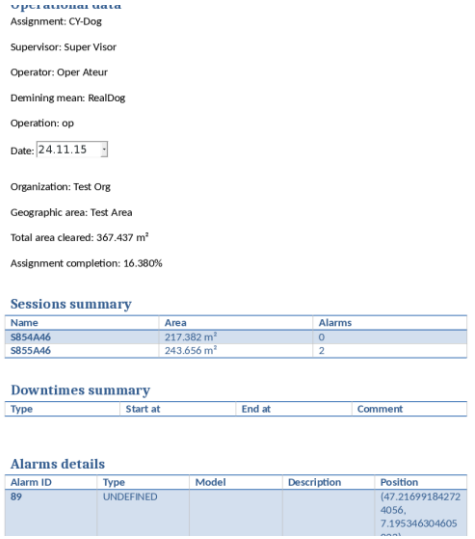




Technical Solution Offers Digital Records







Assignment: CY-Dog

Supervisor: Super Visor

Operator: Oper Ateur

Demining mean: RealDog

Operation: op

Date: 24.11.15

Organization: Test Org

Geographic area: Test Area

Total area cleared: 367.437 m²

Assignment completion: 16.380%

Sessions summary

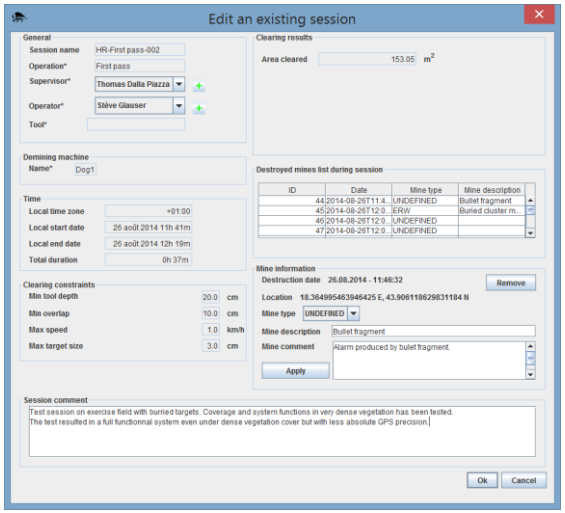
Name	Area	Alarms
S854A46	217.382 m²	0
S855A46	243.656 m²	2

Downtimes summary

Type	Start at	End at	Comment

Alarms details

Alarm ID	Type	Model	Description	Position
89	UNDEFINED			(47.21699184272 4056, 7.195346304605



Upon completion of the task all data recorded by the system can be used to generate a report – “Push and Send” instantly

What's Next 2016

- Production of 20 SMART systems have started
- The SMART systems will be donated to MDD organisations / operators after request
- World Without Mines will fund the SMART Systems
- DIGGER will build the SMART systems

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DIGGER DTR

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QUESTIONS?

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