



**SAP
Innovation
Awards 2019**

SAP Innovation Awards 2019 Entry Pitch Deck

Whiteflag – using blockchain to save lives

Capgemini / The Dutch Ministry of Defence

THE BEST RUN



Whiteflag – using blockchain to save lives

Capgemini / The Dutch Ministry of Defence



“Quote”

“...Just imagine the possibilities. It means this protocol will not only increase our situational awareness, but support more aid in the field, and most importantly: save lives...”

Lieutenant Admiral
Rob Bauer, Chief of Defence
Source:

https://puc.overheid.nl/mrt/doc/PUC_207557_11/1/

Challenge

Save lives in disaster and conflict areas around the globe by preventing lack of information.

Solution

Whiteflag provides a reliable means for both combatant and neutral parties in conflict and disaster zones to digitally communicate pre-defined signs and signals using blockchain technology. This can be used to create shared situational awareness beyond conflicts.

Outcome

The signs and signals can be securely communicated using a decentralized protocol, the Whiteflag protocol, that describes a trusted messaging network for disaster & conflict areas.

Through greater situational awareness lives can be saved.

A shared initiative between Commercial, Military and Humanitarian organizations.

Enabling digital communication between opposing forces in a armed conflict through a neutral blockchain network.



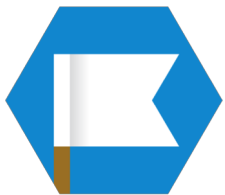
Partner Information

Capgemini / The Dutch Ministry of Defence Co-founders of Whiteflag



“...In 2017 we organized an Emerging Technology session for the Future Force conference. One of the topics was blockchain. We wanted to show something but had no suitable demo. Discussions with the Royal Dutch AirForce in Capgemini’s Applied Innovation Exchange triggered the idea; what if we would store the Whiteflag and/or Redcross signals in the blockchain? So nobody could claim that they could not have known...”

Jasper Koeleman, Account Manager Defence at Capgemini





Business Challenge & Objectives

How could we use blockchain technology:

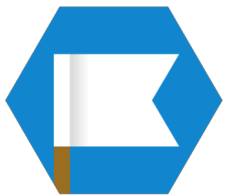
- To create a trusted environment for all stakeholders of a conflict.
- Considering parties are opposing forces or neutral parties in the conflict.
- Where no single entity has the power to alter messages.
- In a permissionless and decentralized, geopolitically neutral system

Create the Whiteflag protocol – an open source standard

Create an API to enable others to use the protocol.

Create an example implementation to be able to validate and test the protocol using SAP Cloud Platform

Utilize the strengths and the eco-system of the partners, Capgemini, SAP and Ministry of Defence to scale up the initiative.





Project / Use Case Details

The main goal of the project was to define the Whiteflag Protocol which seeks to provide a reliable means for both combatant and neutral parties in conflict zones to digitally communicate pre-defined signs and signals using blockchain technology. These signs and signals can also be used to communicate information about natural and man-made disasters, thus creating shared situational awareness.

To sum up the Whiteflag protocol is:

- ... an open & free technical standard
- ... for a communications protocol
- ... between computers
- ... based on blockchain technology
- ... to share information about entities & events in conflict & disaster zones

Details of the protocol can be found here: <https://github.com/WhiteflagProtocol/whiteflag-standard>

Besides the protocol the secondary goal was a software prototype to be able to validate the protocol by a dedicated team of professionals and by external stakeholders. The software prototype was created through an agile and co-innovation process of multiple months where also the SAP Netherlands Mobile Innovation Lab was utilized. The software prototype consisted of a SAP HANA based frontend SAPUI5 application with a nodejs based api layer which implemented the Whiteflag protocol and acted as the abstraction layer of the blockchain implementation.

In November 2018 the first simulation test was organized with 25 participants of different government / non-government and charity organizations to validate the operational usefulness of the protocol using the software prototype running on the SAP Cloud Platform. It utilized the following services:

- 29 Subaccounts across the globe (NEO and Cloud Foundry)
- 14 Deployments of 2 frontend SAPUI5 (HTML5) web applications
- 14 HANA databases for frontend application backend and as datastore for the nodejs api layer
- 20 Application runtimes for the nodejs api layer
- 14 Virtual Machines to host ethereum nodes





Benefits and Outcomes

Business / Social

Provides a standardized communication protocol geared for conflict areas and disaster areas.

A neutral protocol which can be used by (conflicting) parties.

Broad use case coverage. In the simulation test the participating organizations saw for example a strong case for registering protected sites, critical infrastructure and danger zones as this would be useful for transparency, accountability and historical liability.

IT

Based and tested on available public blockchain technology.

Blockchain implementation agnostic.

Inherits the strength of the distributed and secure nature of blockchain.

Based on open standards and with an example implementation and API so that it can be easily adopted by interested parties.

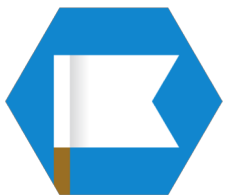
Human Empowerment

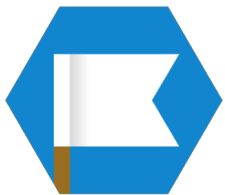
Provide increased situational awareness in conflict areas and disaster areas.

Open platform allowing it to be adopted by anyone.

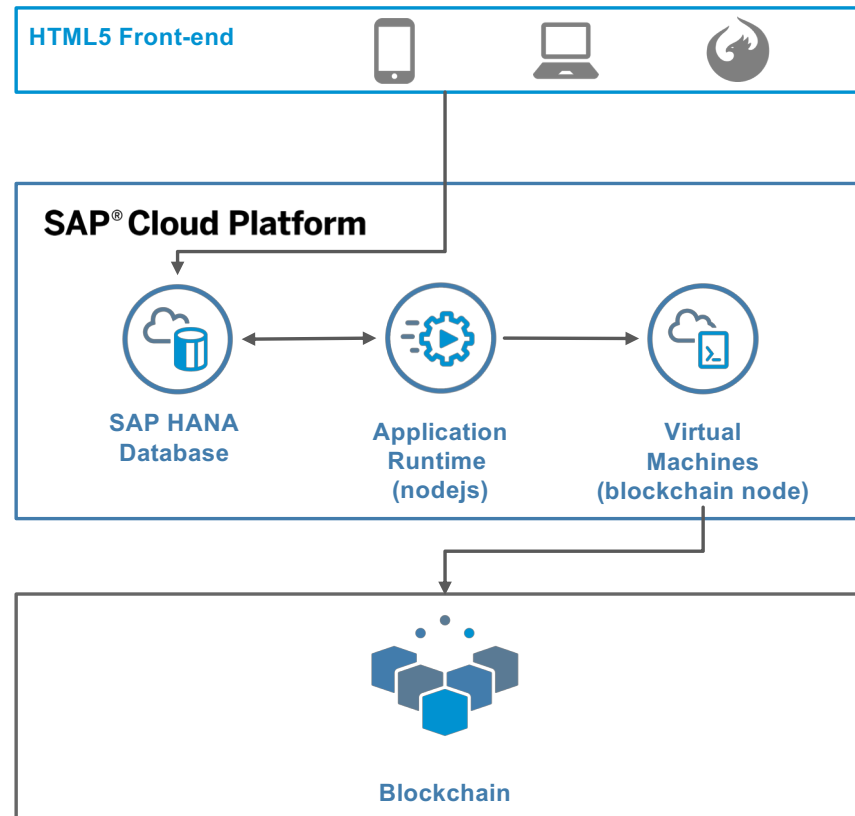
Information publicly available where this is required. For example locations protected under International Humanitarian Law.

Capabilities to send and receive secure information over the blockchain to trusted parties.





Architecture





Deployment

Date of Deployment or POC: 21 November 2018

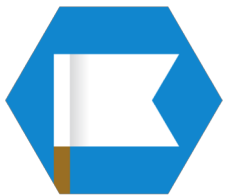
Number of live users: 25

SAP Technologies Used:

SAP Cloud Platform	PoC
SAP HANA	PoC
SAPUI5	PoC
SAP Cloud Platform Application Runtimes (Cloud Foundry)	PoC
SAP Cloud Platform Virtual Machines running Ethereum Node	Live

Server Processor: SAP Cloud Platform – Neo and Cloud Foundry

Linux Distribution: SAP Cloud Platform – Neo and Cloud Foundry





Emerging Technologies and Use Cases

The following Emerging Technologies and use-cases are part of the project and describe the contribution

	Technology or Use Case	Yes/No	Contribution to Project
1.	Machine Learning / Artificial Intelligence	No	
2.	IoT	No	
3.	3D printing	No	
4.	Blockchain	Yes	Enabler
5.	API Economy / Integrate the Intelligent Enterprise	Yes	
6.	Cloud Native / Event Based Architectures	Yes	Scale up using SAP App Store. Usage of both NEO and Cloud Foundry
7.	Extending the digital core with SAP CP / ABAP in SAP CP	No	
8.	SAP Leonardo Application (extending SAP application, using Industry Innovation Kits or result of Design Thinking workshop)	Yes	

