



# CELTIC-NEXT Proposers Day

5<sup>th</sup> February 2019, London



## **Self-Healing Intelligent Engine for Layered Defence (SHIELD)**



Dr Robert Hercock, Chief Researcher, BT Labs  
[Robert.Hercock@bt.com](mailto:Robert.Hercock@bt.com)

# Teaser



*Enhanced security & resilience in future networks*

*Reduced operational costs and enhanced service to end-users*

*BT has extensive experience in advanced AI  
and Cyber security R&D*

# Organisation Profile



*BT is one of the world's leading communications services companies, serving the needs of customers in the UK and in more than 170 countries worldwide. Our main activities are the provision of fixed telephony lines and calls, broadband, mobile and TV products and services as well as managed networked IT services.*

*BT is the largest communications services provider, with around 10 million voice lines, around 7.3 million retail broadband customers, a TV base of 1 million customers and over 5 million wifi hotspots. We also provide network services to other licensed operators. For further details see <http://www.bt.com/>.*

# Proposal Introduction (1)



*This proposal will develop a novel AI driven architecture to enable a step-change in the security and resilience of complex virtual networks.*

*Current cyber security paradigms are failing in existing network systems and are not scalable in a future: 5G, SDN and IOT fabric network environment.*

*This proposal will conduct industrial research to develop novel machine learning algorithms and supporting architecture to enable fully self-healing and high resilience service capability in future networks.*

# Proposal Introduction (2)



*Create a distributed self-organising and healing cyber defence layer that spans any network.*

*Impact: enables secure operation in 5G and future IOT networks  
Three year programme, with live trials by 18 month stage.*

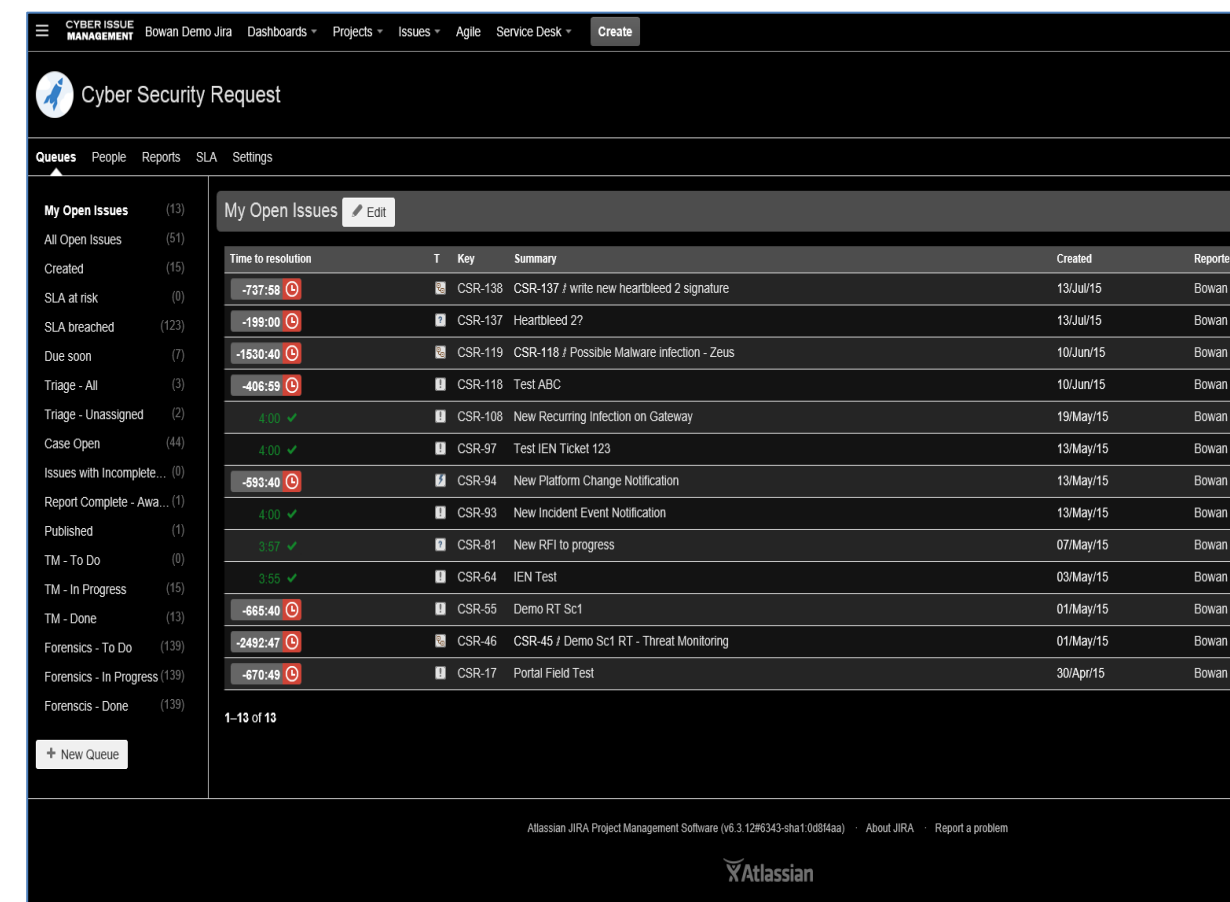
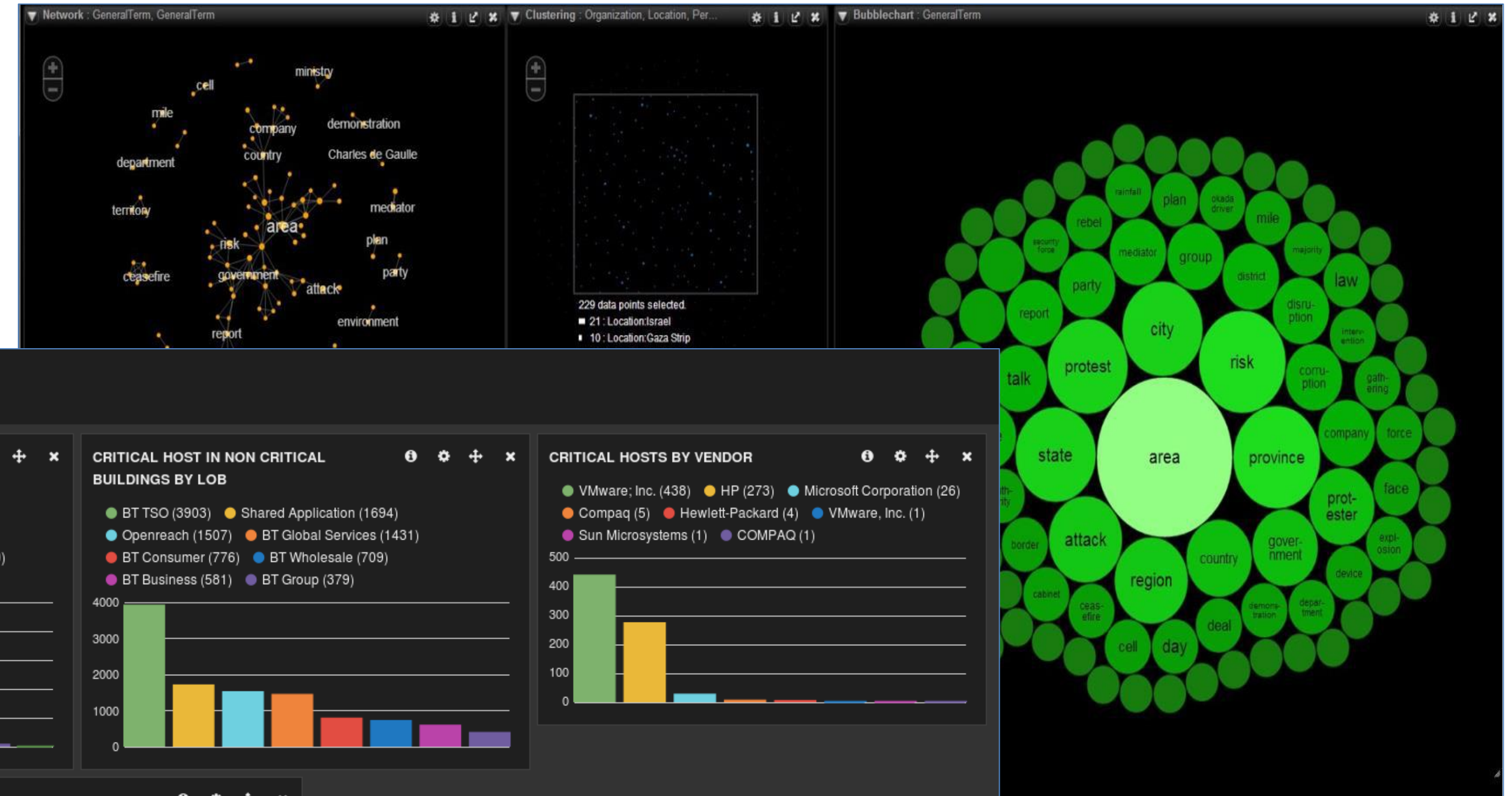
# Partners



*Expertise: 5G & IOT network simulation and design,  
or AI experience in distributed networks,  
Deep learning and Agent-based systems*

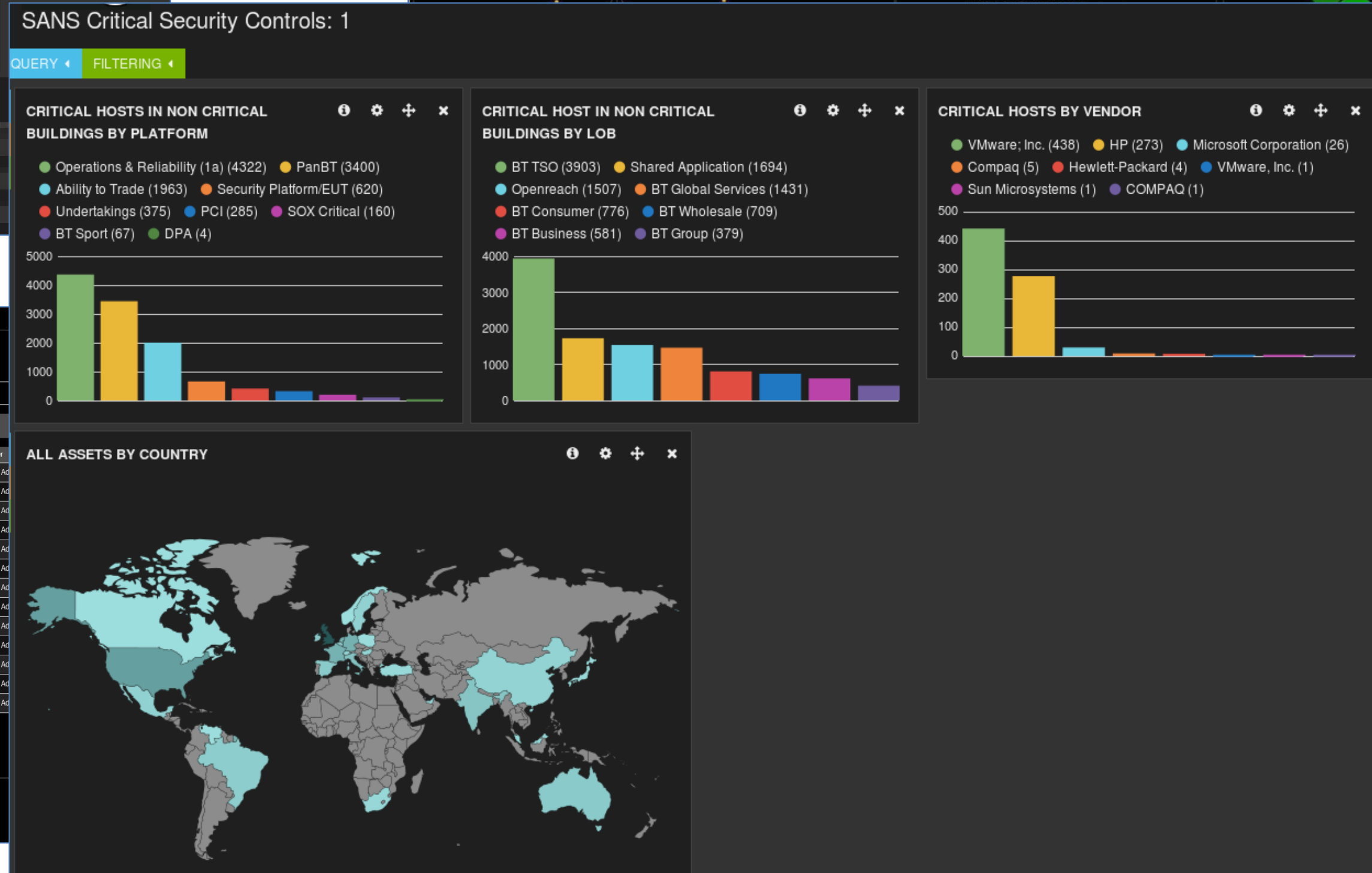
*Partners: 1 academic, 2 SME or Enterprise*

# AI Driven Visualisation



Atlassian JIRA Project Management Software (v6.3.0) interface showing a 'Cyber Security Request' dashboard. The main view is a table of 'My Open Issues' with columns for Time to resolution, Key, Summary, Created, and Reporter.

Time to resolution	Key	Summary	Created	Reporter
-737:58	CSR-138	CSR-137 / write new heartbeat 2 signature	13/Jun/15	Bowan Ad
-199:00	CSR-137	Heartbleed 2?	13/Jun/15	Bowan Ad
-1530:40	CSR-119	CSR-118 / Possible Malware infection - Zeus	10/Jun/15	Bowan Ad
-496:59	CSR-118	Test ABC	10/Jun/15	Bowan Ad
2:05	CSR-108	New Recurring infection on Gateway	13/May/15	Bowan Ad
4:05	CSR-97	Test IEN Ticket 123	13/May/15	Bowan Ad
-652:40	CSR-94	New Platform Change Notification	13/May/15	Bowan Ad
2:05	CSR-93	New Incident Event Notification	13/May/15	Bowan Ad
3:52	CSR-81	New RFI to progress	07/May/15	Bowan Ad
3:58	CSR-64	IEV Test	03/May/15	Bowan Ad
-693:40	CSR-55	Demo RT Sc1	01/May/15	Bowan Ad
-5492:47	CSR-45	CSR-45 / Demo Sc1 RT - Threat Monitoring	01/May/15	Bowan Ad
-470:49	CSR-17	Partial Field Test	30/Apr/15	Bowan Ad



# Contact Info



**For more information and for interest to participate please contact:**

Dr Robert Herccock  
Robert.Herccock@bt.com  
07445250920  
BL Labs, MLB5, PP10,  
Ipswich, UK, IP53RE



**Presentation available via:**

[www.tiny.cc/proposalidea](http://www.tiny.cc/proposalidea)

