Full-Spectrum Cyber Effects

name redacted
Head of JTRIG

name redacted
SD Effects Lead

SIGINT Development as an enabler for GCHQ's "Effects" mission

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Effects

Destroy | Deny | Degrade | Disrupt | Deceive | Protect

Computer Network Attack (CNA)
Computer Network Information Operations (CNIO)
Disruption

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Effects in GCHQ

- Definition: having an impact in the real world
- Key deliverers: JTRIG and CNE
- Now major part of business – 5% of Operations
- Across all target types
- Continuous innovation of new tools and techniques

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CNIO

Computer Network Information Operations

- Propaganda
- Deception
- Mass messaging
- Pushing stories
- Alias development
- Psychology

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Disruption / CNA

- Masquerades
- Spoofing
- Denial of service
  - Phones
  - Emails
  - Computers
  - Faxes



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Call
"bombing"

Hotel
Attack

Maritime
Cyber

Critical Infrastructure

Individual/Enterprise
Low Impact

EFFECTS

Country wide
High impact

WiFi DoS

Email/SMS Spoofing

PSYOP
(social networks /phone/ email)

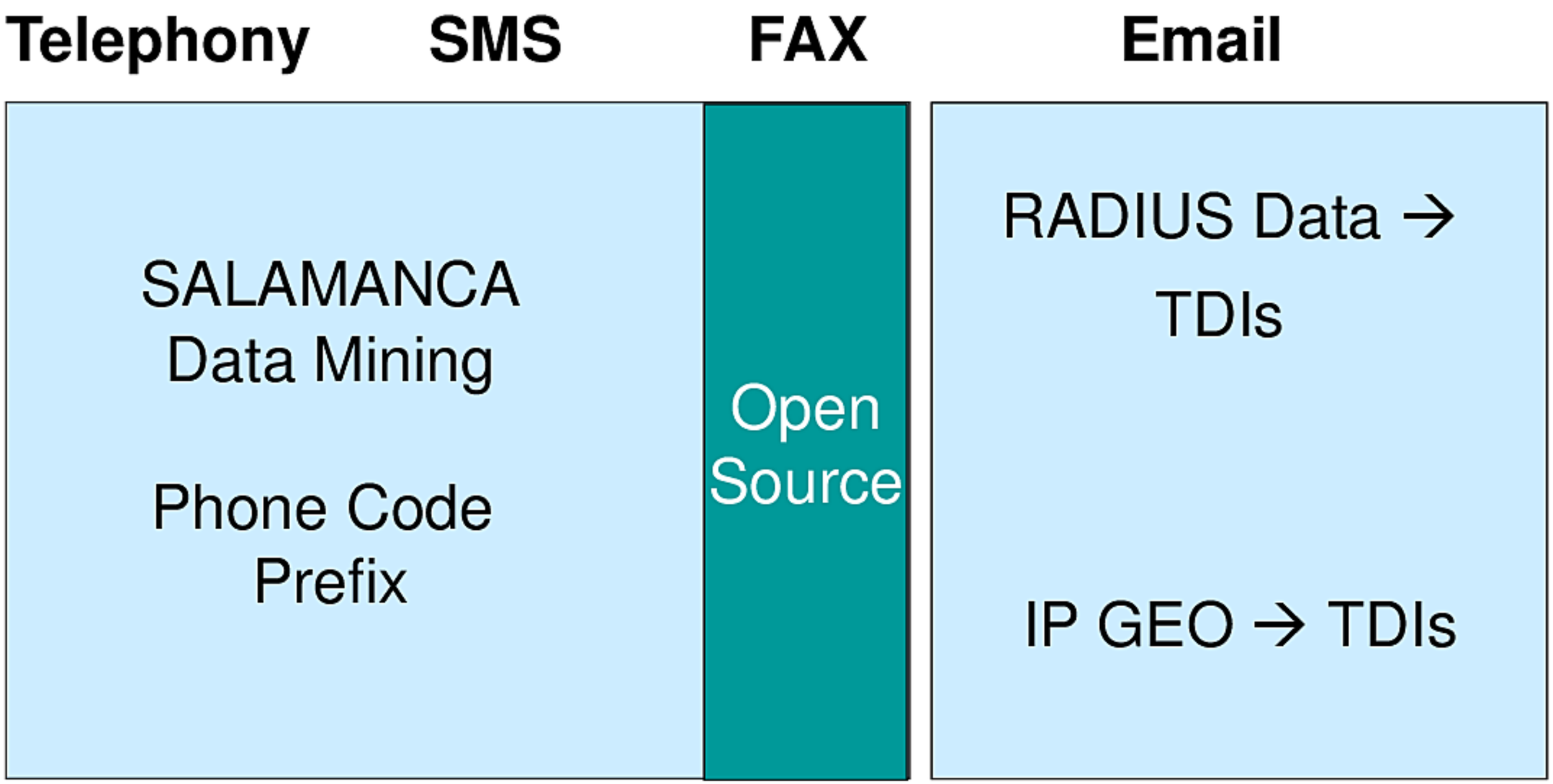
Internet Routing

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Information Operations

INFINITE CURVATURE/MOUNTAIN SLOPE

Sending messages across the full spectrum of communications



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ROYAL CONCIERGE

A SIGINT driven hotel reservation tip-off service

From: reservations@expensivehotel.com
To: new-target@mod.gov.xx

"Thank you for reserving……"



ROYAL CONCIERGE exploits these messages and sends out daily alerts to analysts working on governmental hard targets

What hotel are they visiting?
Is it SIGINT friendly?

An enabler for effects – can we influence the hotel choice? Can we cancel their visit?

We can use this as an enabler for HUMINT and Close Access Technical Operations

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Information Operations: The Social Web









Deliver messages and multimedia content across Web 2.0

Crafting messaging campaigns to go ‘viral’

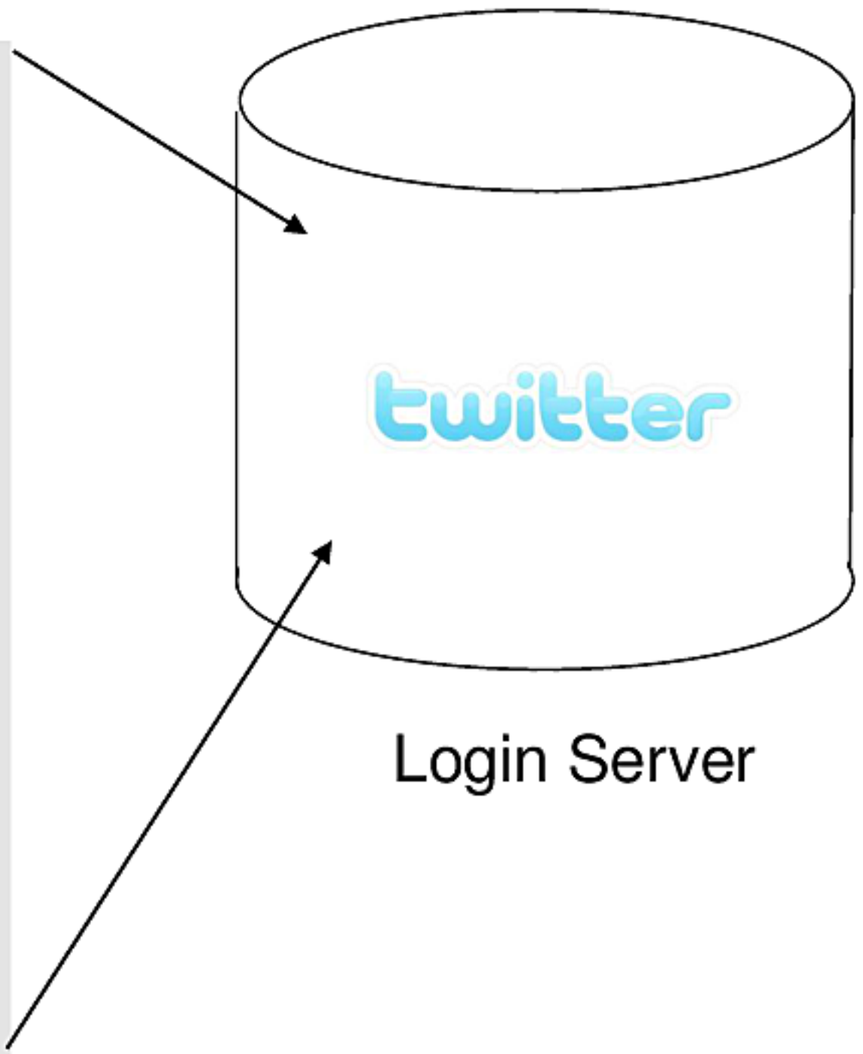
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CNIO

Twitter TDI Development

Need SIGINT coverage across protocols,
Not necessarily consistent with *target* SIGDEV priorities

_twitter_sess=BAh7DjoTcGFzc3dvcmRfdG9rZW4iLWFhMGI3ZDk0OTliNTJkOWQzMzMyYTc2%250AOTkyNjM0Y2ZmM2Y5NDNjYmQ6DGNzcmZfaWQiJTZmYjRhNTk5ZDVkMjlkMmFh%250AN2U4ZDczOWM2ZWFmNDc5IidzaG93X2Rpc2Nvdmvyb3JpbGl0eV9mb3Jfc29s%250Ab19vbmx5MDoVaW5fbmV3X3VzZXJfZmxvdzA6EXRyYW5zX3Byb21wdDA6CXVz%250AZXJpBAPZMAEiCmZsYXNoSUM6J0FjdGlvbkNvbnRyb2xsZXI6OkZsYXNoOjpG%250AbGFzaEhhc2h7AAY6CkB1c2VkewA6B2lkIiVhZDRlOGM2NmM0ZjRkM2U2NGI5%250AZGZmMGJmOGVjZDg0MjoPY3JlYXRlZF9hdGwrCGWCJS4nAQ%253D%253D--a3894361aa489c2cd51ff326358c92f2e4d39cd8;



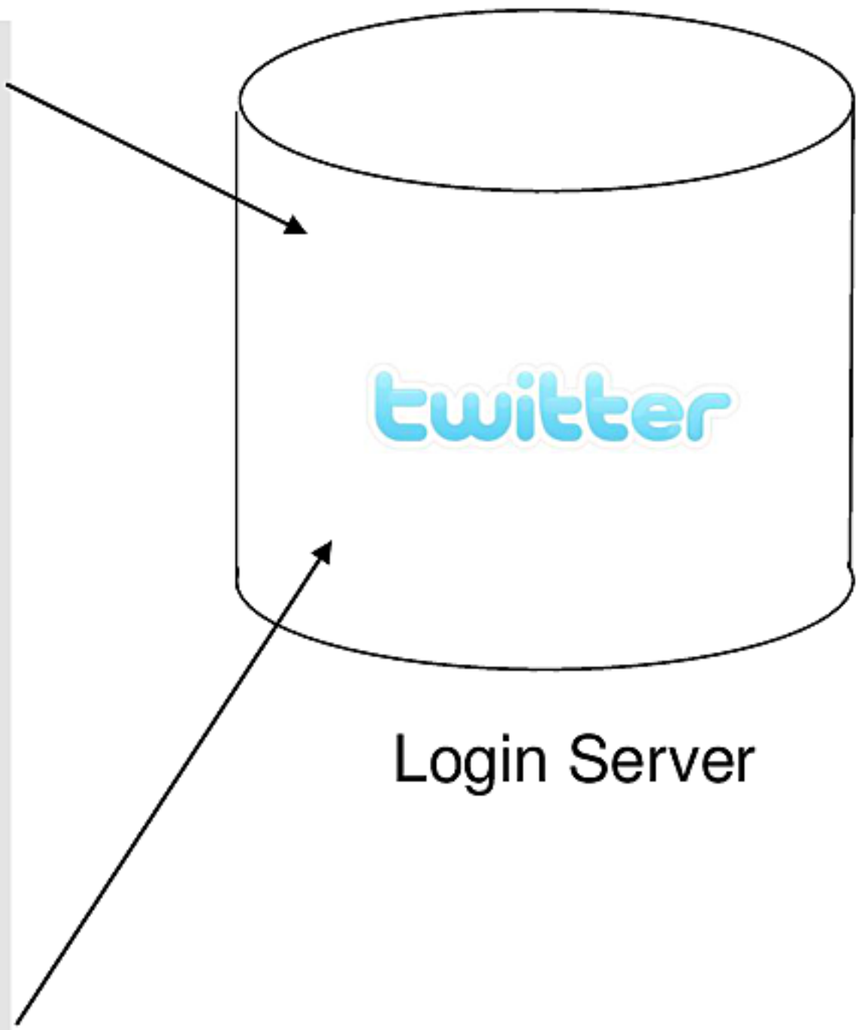
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CNIO

Twitter TDI Development

Base64 + double encoded URL

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0000020   o   k   e   n   "   -   a   a   0   b   7   d   9   4   9   9
0000040   b   5   2   d   9   d   3   3   3   2   a   7   6   9   9   2
0000060   6   3   4   c   f   f   3   f   9   4   3   c   b   d   :  \f
0000100   c   s   r   f   _   i   d   "   %   6   f   b   4   a   5   9
0000120   9   d   5   d   2   9   d   2   a   a   7   e   8   d   7   3
0000140   9   c   6   e   a   f   4   7   9   "   '   s   h   o   w   _
0000160   d   i   s   c   o   v   e   r   a   b   i   l   i   t   y   _
0000200   f   o   r   _   s   o   l   o   _   o   n   l   y   0   :  025
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0000360   s   e   d   {  \0   :  007  i   d   "   %   a   d   4   e   8
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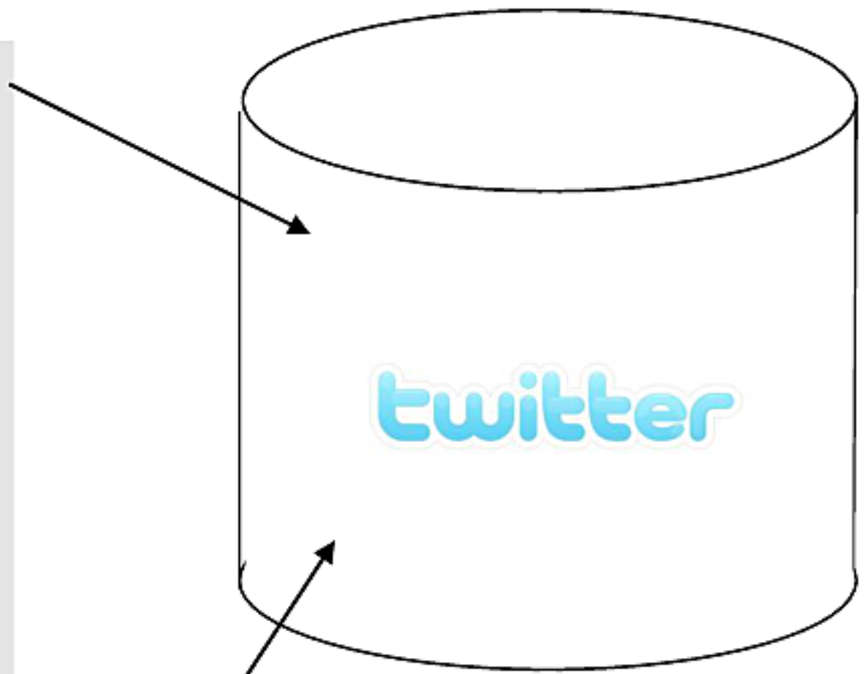
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CNIO

Twitter TDI Development

PPF application across 10G Environment

1272671024 **81.169.145.25** 128.242.240.20 6 55489 80 Login-twitter.com 31 **solo_only@twitter.com** TDI-Scope 4 User Route 13 81.169.145.25 HHFP-Hash 8 38 4646d4 User-Agent 52 Twitter Tools Geo-IP-Src 28 49.00;8.39;**KARLSRUHE;DE**;5MVV Geo-IP-Dst 33 39.0062;-77.4288;STERLING;U S;7LLM Event-security-label 6 10007F Stream-security-label 10 400023E0FF

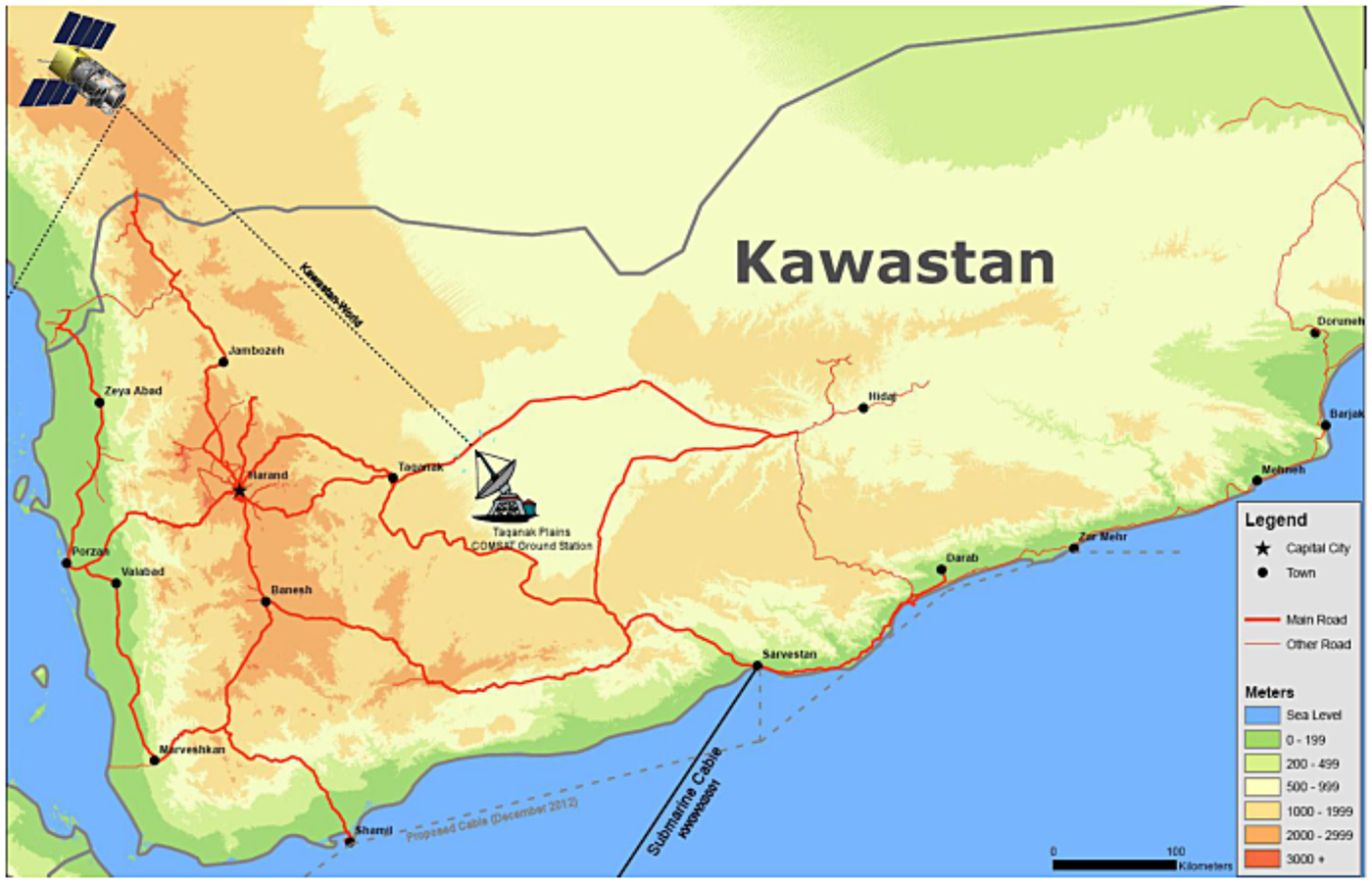


Millions of events per day feeding BLACKHOLE

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CNIO

Twitter TDI Development



Given a country:

Who are the top Twitter Users?

Or given a user:

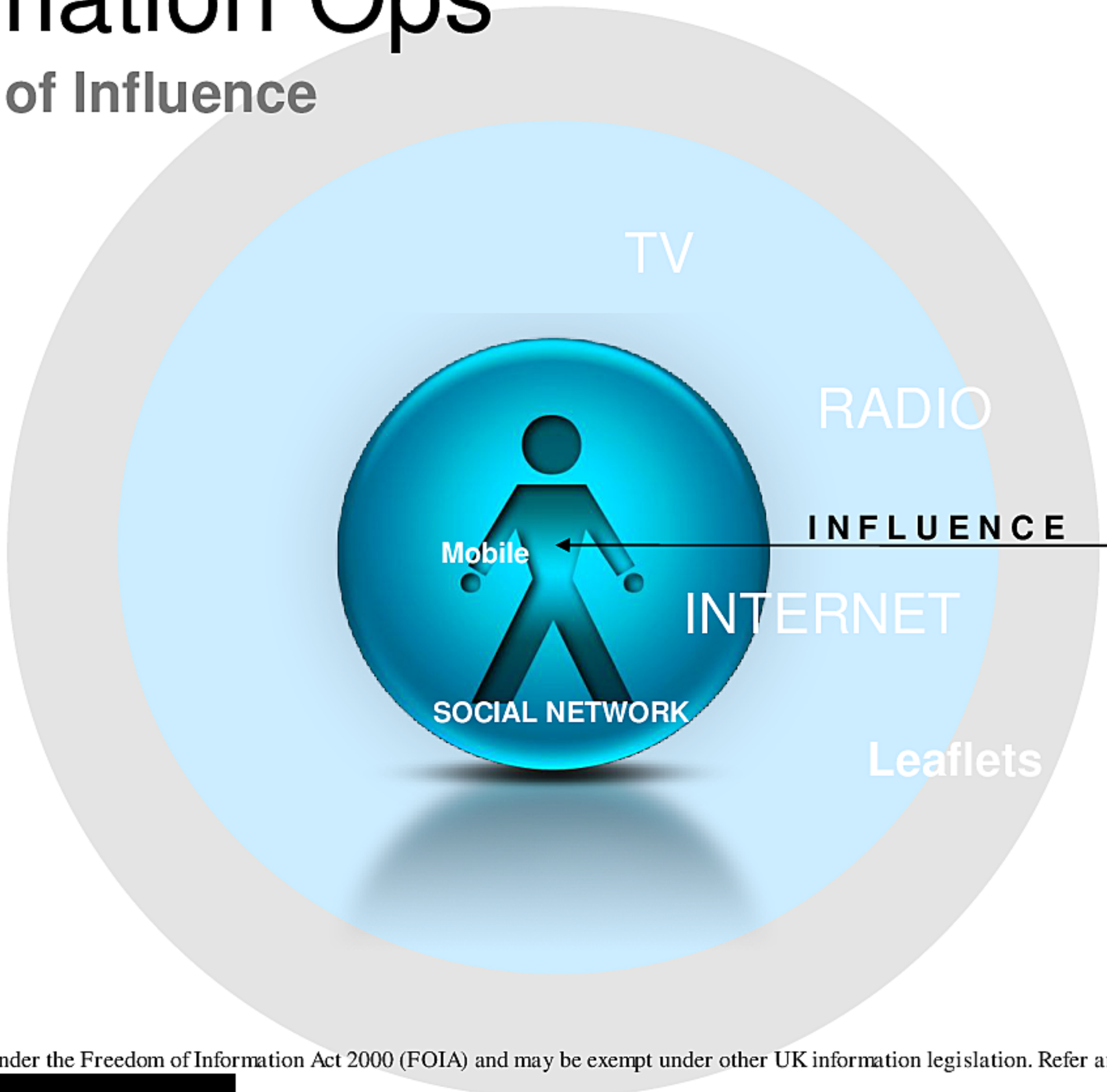
Are they really in Kawestan?

SIGDEV augments the IO process to aid targeting and takeup of message

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Information Ops

Spheres of Influence



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Mobile Information Ops



50 new mobile TDIs being Developed by end of 2010

Also - Target Geographical Identifiers (TGI)

We can shape CNIO against specific locations, users with a high degree of cognition

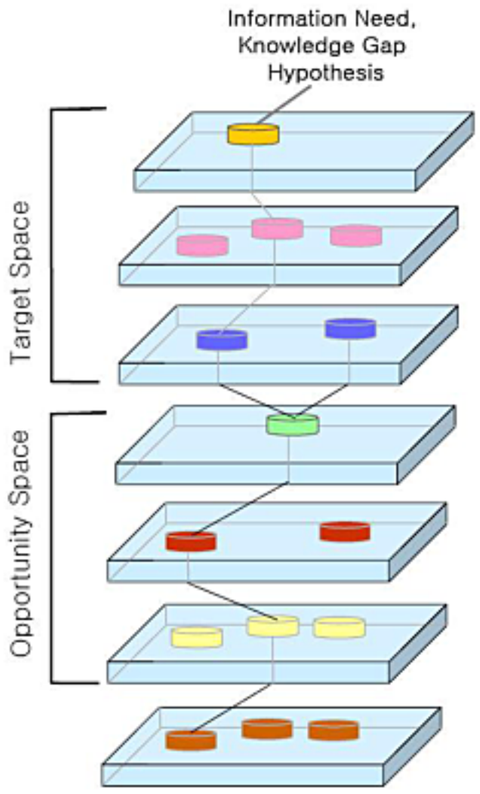
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CNA

Vulnerability Assessment Process Development

Enabling CNO For intelligence production teams, based on Target Templating methodology

Target Templating is a hypothesis-based, collaborative methodology for doing network analysis. By constructing a logical hypothesis from your knowledge gaps, a target thread is produced. The thread is based on the understanding of 6 "Layers" understanding the target domain and how it connects to the global network, and then understanding what opportunities can be exploited to gain access. Layer 7 captures the work flow, and what needs to be done to achieve the outcome. Target Templating provides that framework in order to break down a problem into the essential parts necessary to develop access and network knowledge. Visualisation of this knowledge at all layers is essential to spotting linkages both horizontally across the layers and vertically through them, so the use of a visualisation package during the NADP will be encouraged.



Layer 1: Target – An Entity such as a person or organisation.

Layer 2: Infrastructure - How the target connects to the global network

Layer 3: Technology - Understanding the technology the target uses to communicate

Layer 4: Vulnerabilities – Looking for vulnerabilities in the technologies

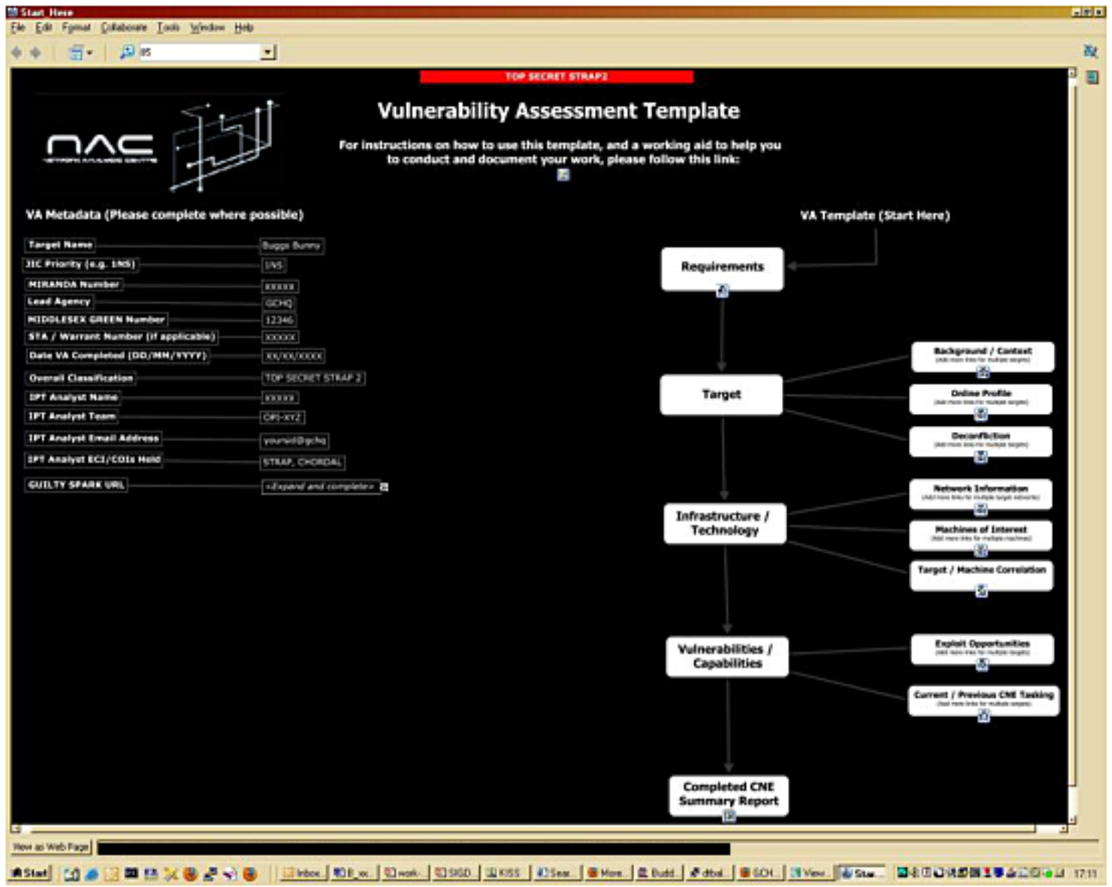
Layer 5: Capabilities - Can we exploit the vulnerabilities?

Layer 6: Access - What assets do we have to collect the traffic?

Layer 7: Expectation, Planning, Delivery - How are we going to achieve the desired outcome?

For further information on Target Templating visit the GUILTY SPARK portal on GCWiki [redacted]

guiltyspark



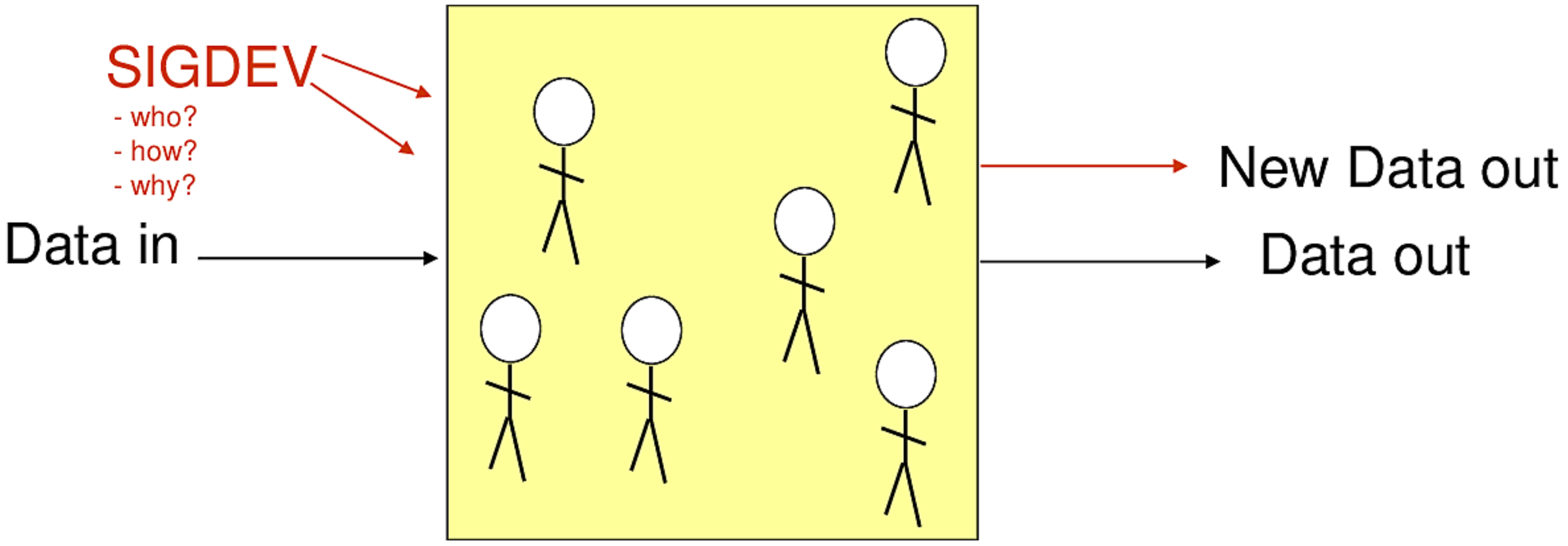
VA process delivered through NADP trained network analysts within each production team

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Human Systems Analysis

Foreign News Agencies:

- Credential Harvesting
- Employee Analysis



***Social* not technological solution**

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Future?

Formalising Tradecraft for Analysts:

"What SIGDEV needs to be done prior to starting an Effects operation?"



Joining up with 5 EYES where possible (cyber development)

BGP / MPLS network effects (HOTWIRE)

SIP and VoIP Effects – Denial of Service, Psychological Operations

Provide the defensive advice from the offensive perspective

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Questions?

[redacted]
Head of JTRIG
NSTS: [redacted]

[redacted]
SD Effects Lead
NSTS: [redacted]

Find me on TAPIOCA

names and phone numbers redacted

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