The background of the slide is a satellite map showing a city and its surrounding landscape. The city is in the center, with a grid of streets and buildings. The surrounding area is a mix of green fields and brown, hilly terrain. A river or stream is visible on the right side of the map.

# Cyber risks in the **satellite** industry

# ***Kitchener woman follows car's GPS directions into Lake Huron, swims to shore***

BY MICHELLE MCQUIGGE, THE CANADIAN PRESS

POSTED MAY 13, 2016 12:28 PM EDT LAST UPDATED MAY 13, 2016 AT 7:03 PM EDT

LOCAL

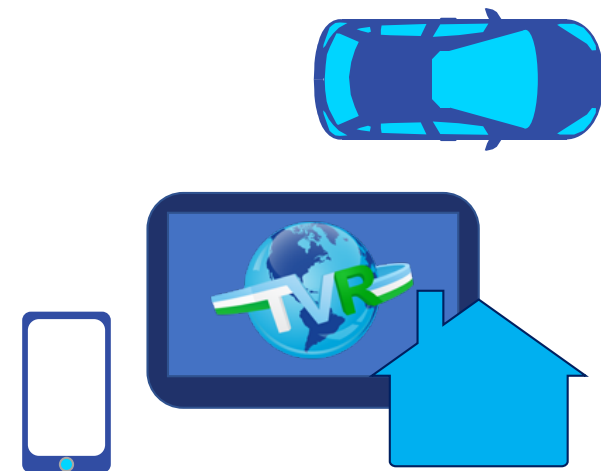


Photo by Andrea Vince/Tobermory Press, via Facebook (Inland Seas, Kayaking the Great Lakes)

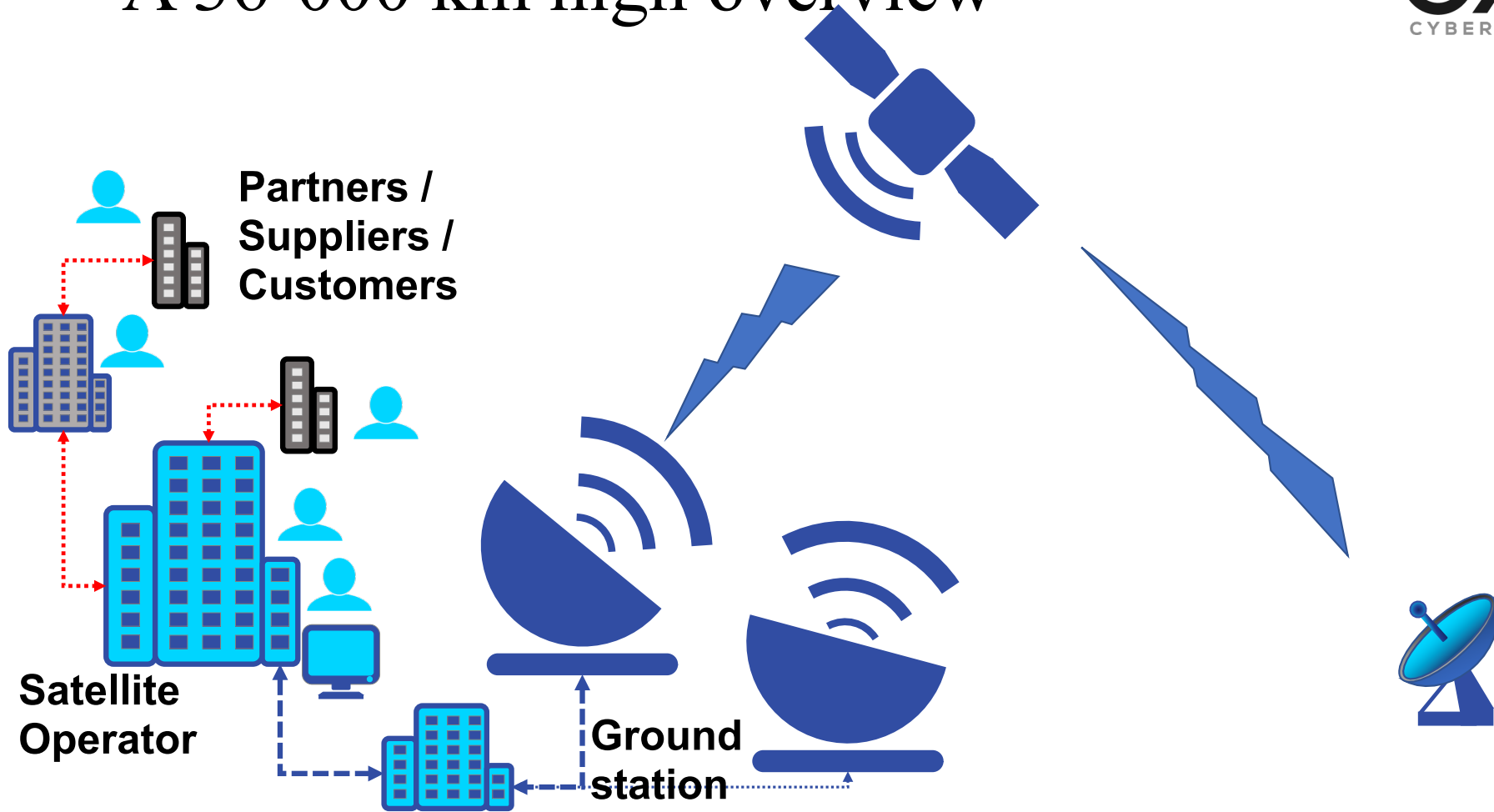


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# A critical infrastructure for many sectors

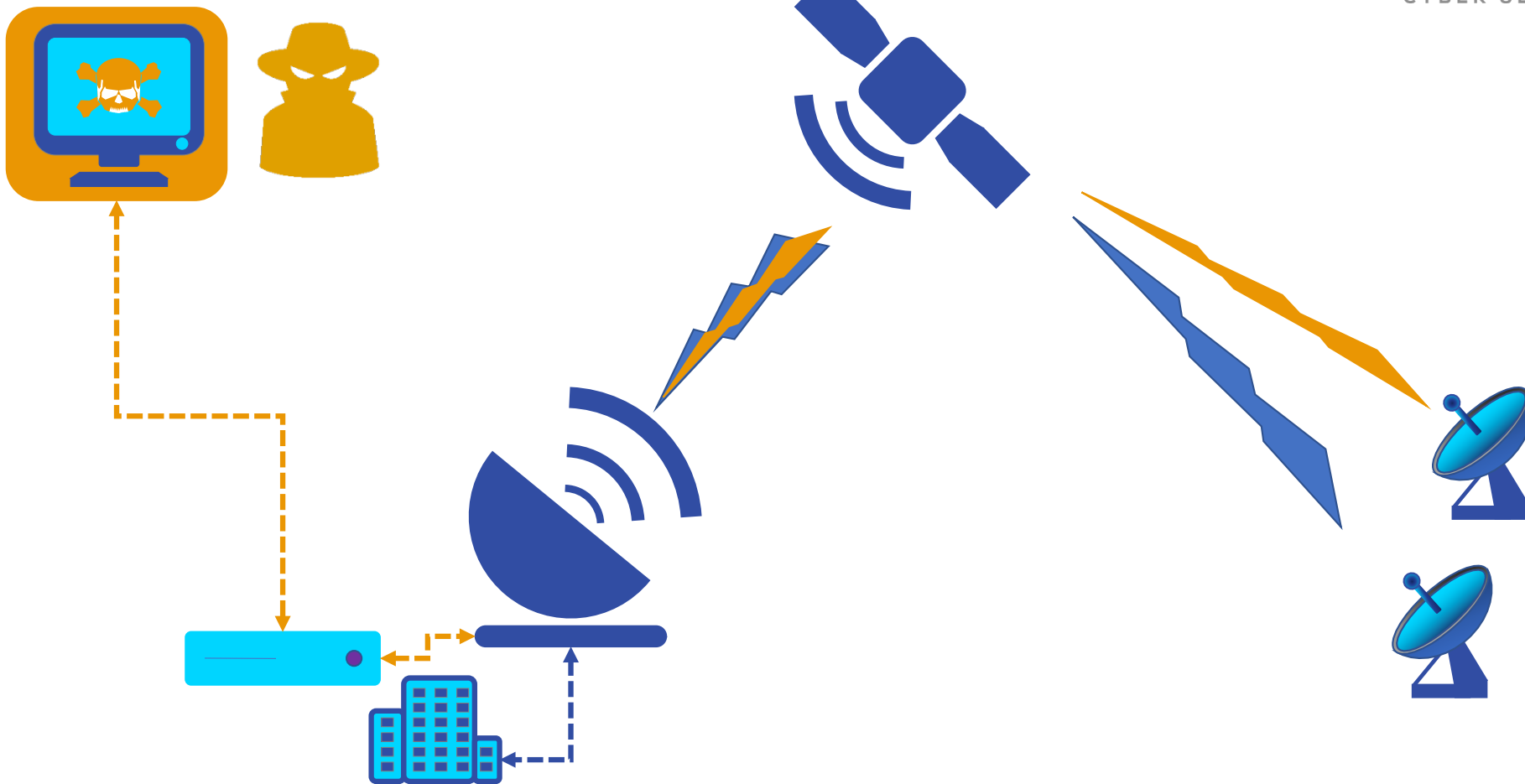


# A 36'000 km high overview

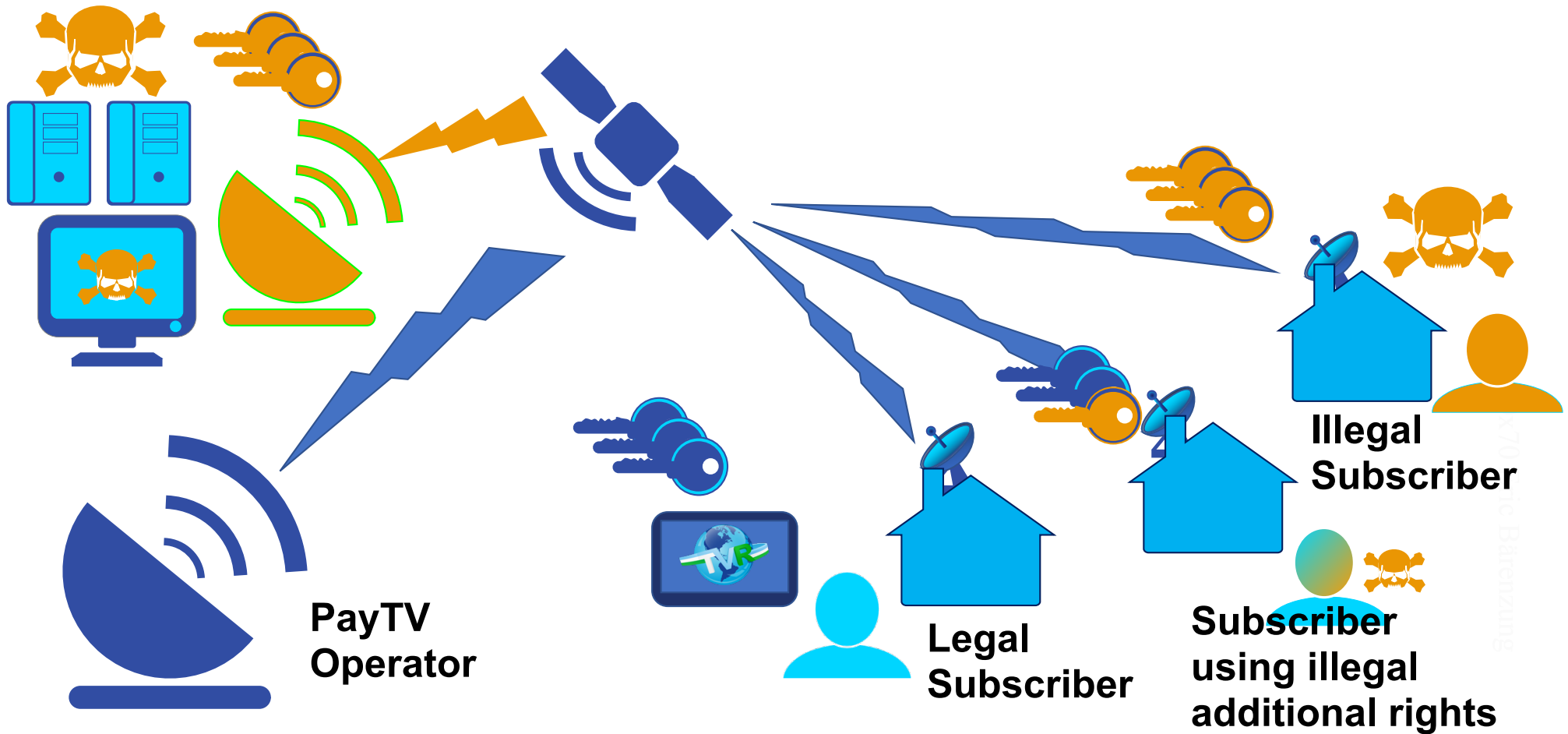


# Main threats

# Fraudulent usage

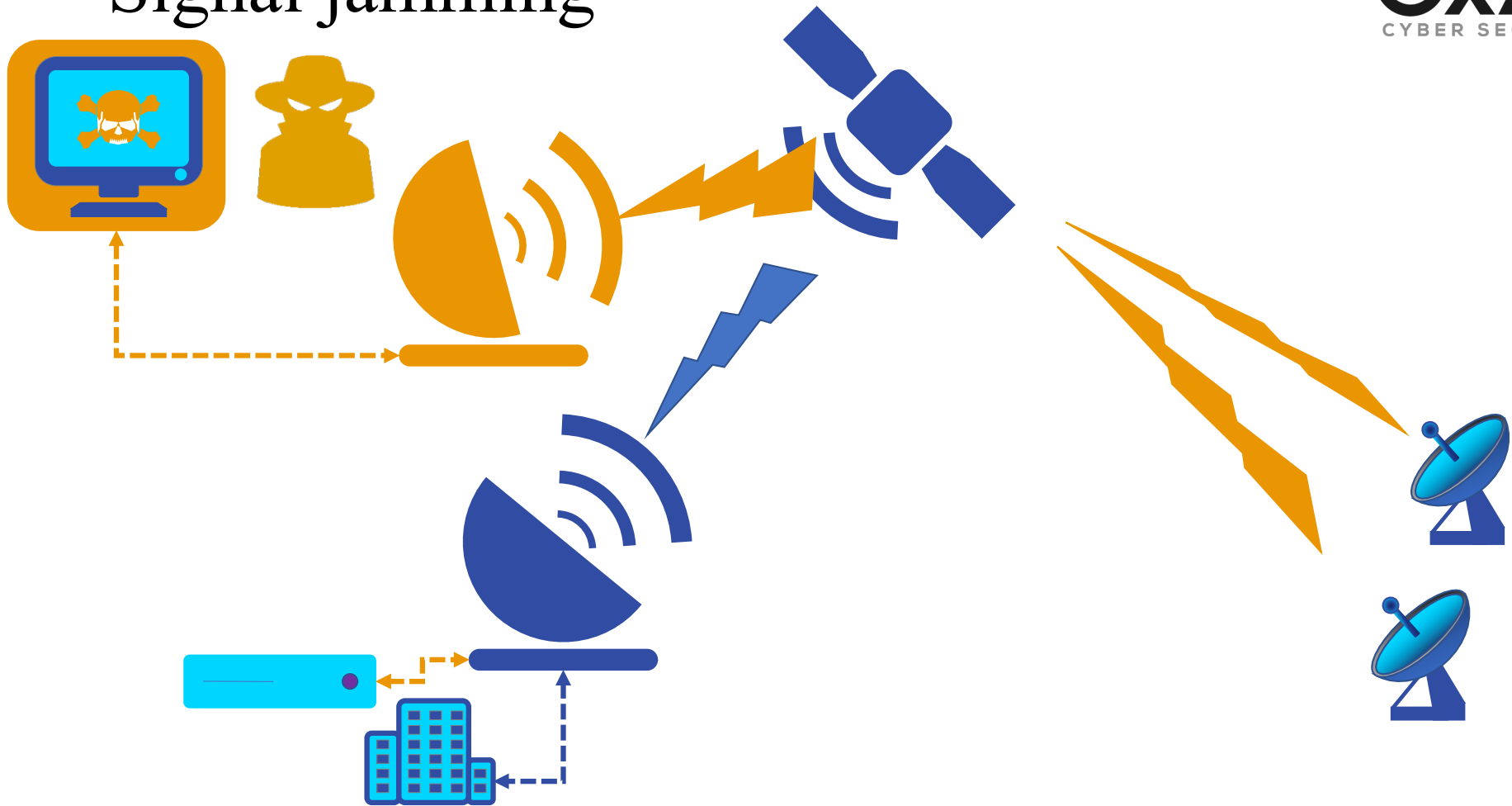


# Pay TV and Satellite Key Sharing



© 2014 Ox70 Cyber Security

# Signal jamming





# Signal jamming

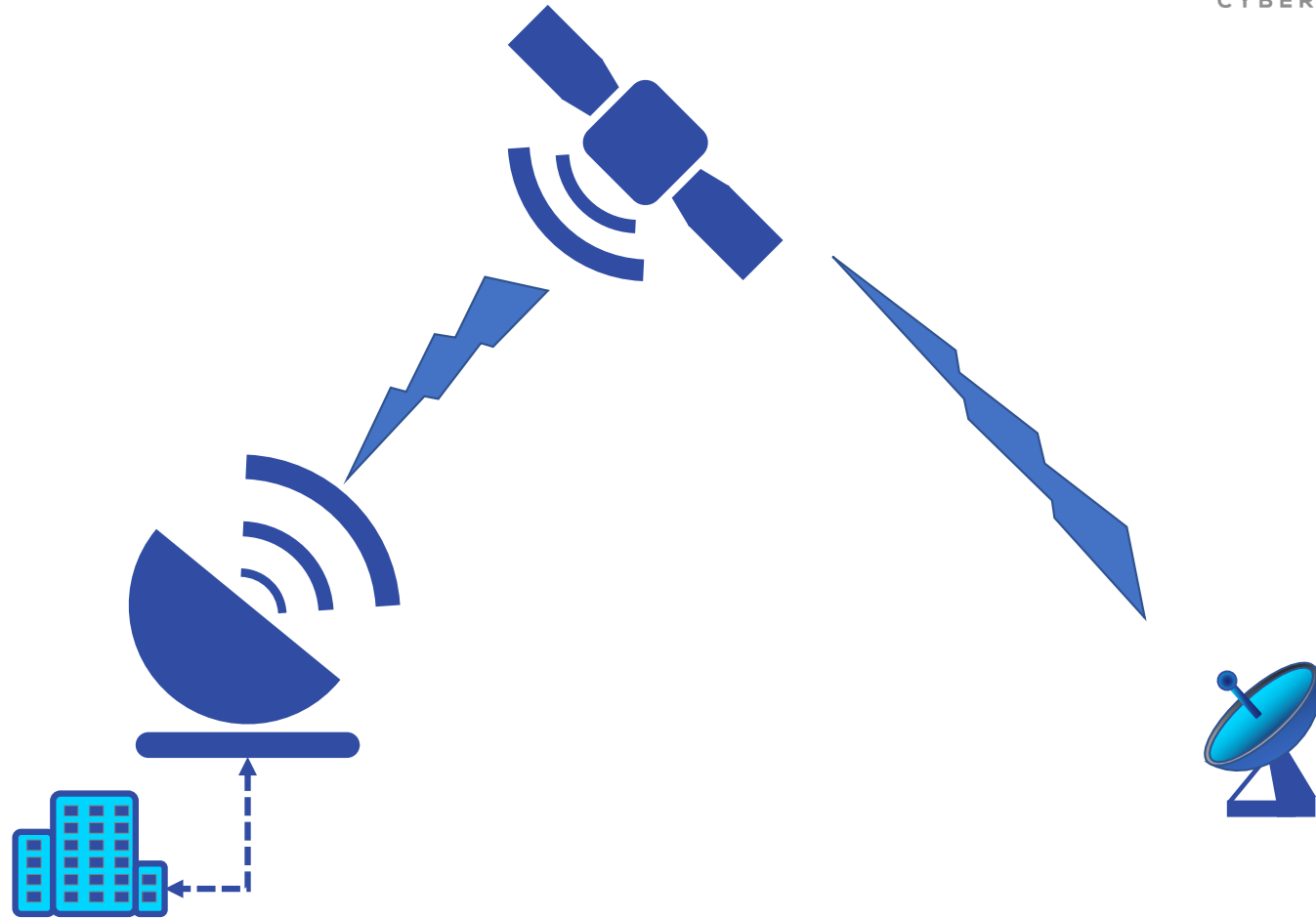


**PRESS RELEASE** published on 22 Oct 2012 • Department / Unit **Director General's Office**

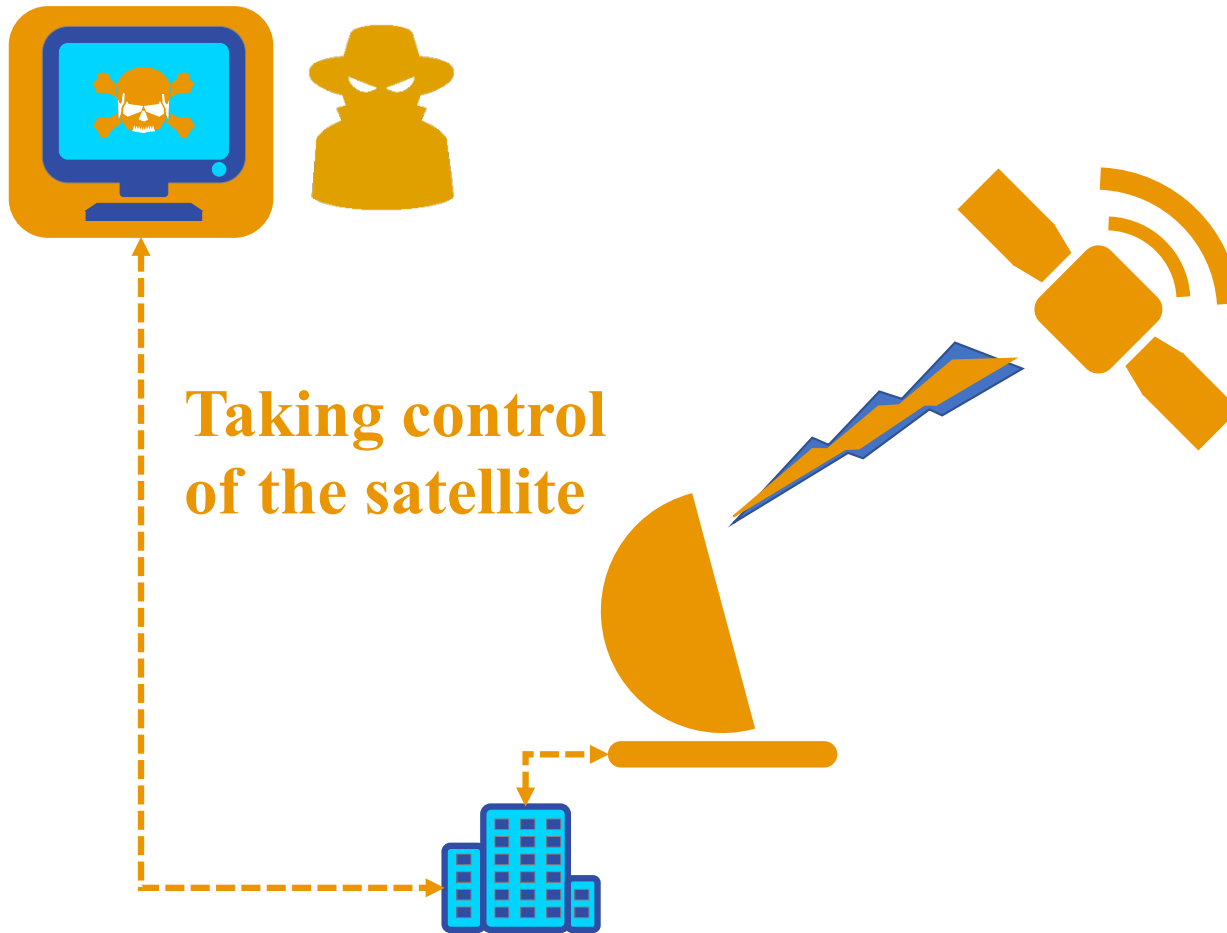
## **EBU DEPLORES MIDDLE EAST SATELLITE JAMMING**

The European Broadcasting Union (EBU) has described recent interruptions to news delivered by satellite into parts of the Middle East as “an attack on media independence.”

# In a ideal Operations mode



# Baikonour, we have a problem

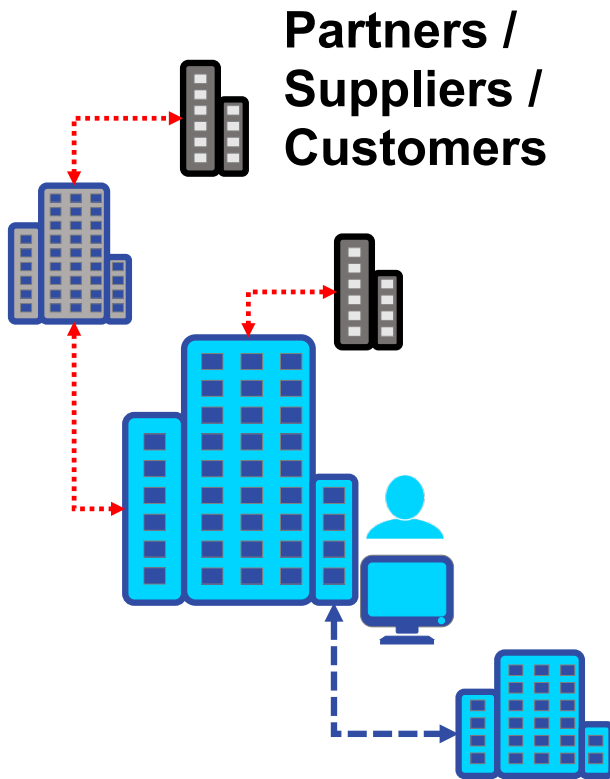




To resume

Protecting and monitoring signal  
integrity is key!

Then, as for any company...



Partners /  
Suppliers /  
Customers



Phishing



BYOD

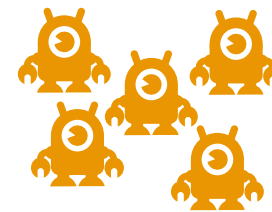
Bring Your Own Device



Malware



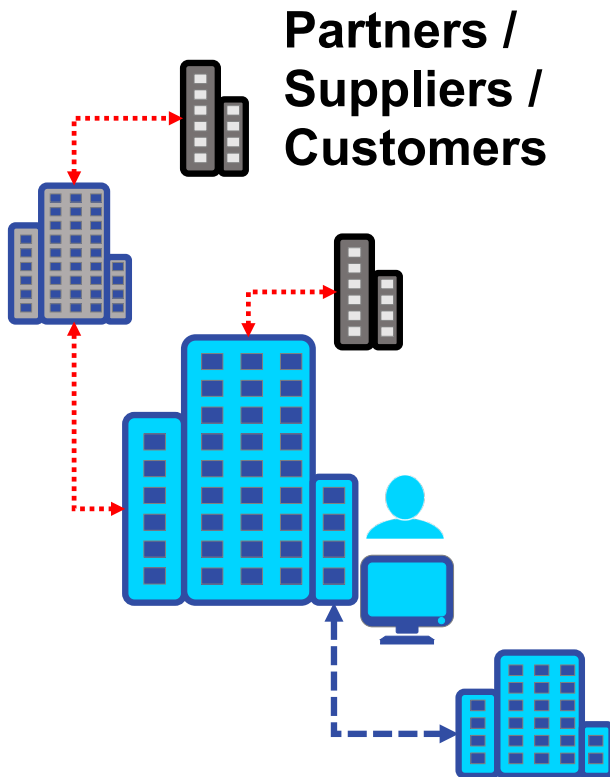
Ransomware



DDoS

Distributed Denial  
Of Services

... but with special interests



## Espionage

including

- Office reconnaissance
  - IP mapping
- Social Engineering
  - Etc.



## APT (Advanced Persistent Threat)



# Why hacking?

Only few of the potential reasons

Just for fun?!



Sean Caffrey

UK citizen – 25 years old



- Ranks, usernames and email addresses of more than 800 users
- 30'000 satellite phones

<http://www.nationalcrimeagency.gov.uk/news/1111-hacker-stole-satellite-data-from-us-department-of-defense>



# Or « dreaming » to be a spy.



## 1. SPY GAMES

2 hours ago

US engineer enamored with spy dramas gets 5 years for trying to sell secrets to Foreign secret service agent



49 years old

Information sold for 3'500 USD



PHOTO ILLUSTRATION BY KELLY CAMINERO/ THE DAILY BEAST

<http://www.thedailybeast.com/wannabe-russian-spy-sentenced-to-five-years-in-prison>

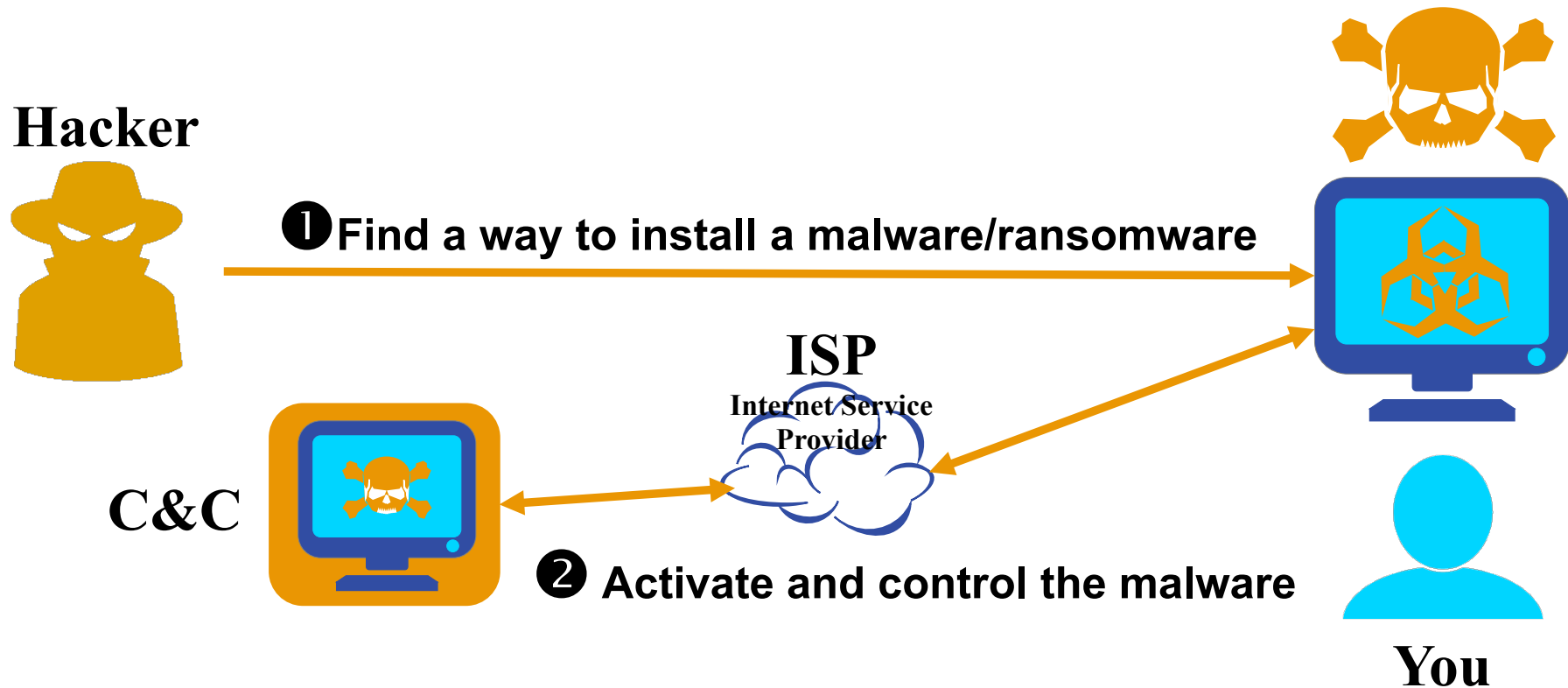
More info on:  
<https://www.justice.gov/opa/pr/defense-contractor-employee-arrested-selling-satellite-secrets-undercover-agent-posing>



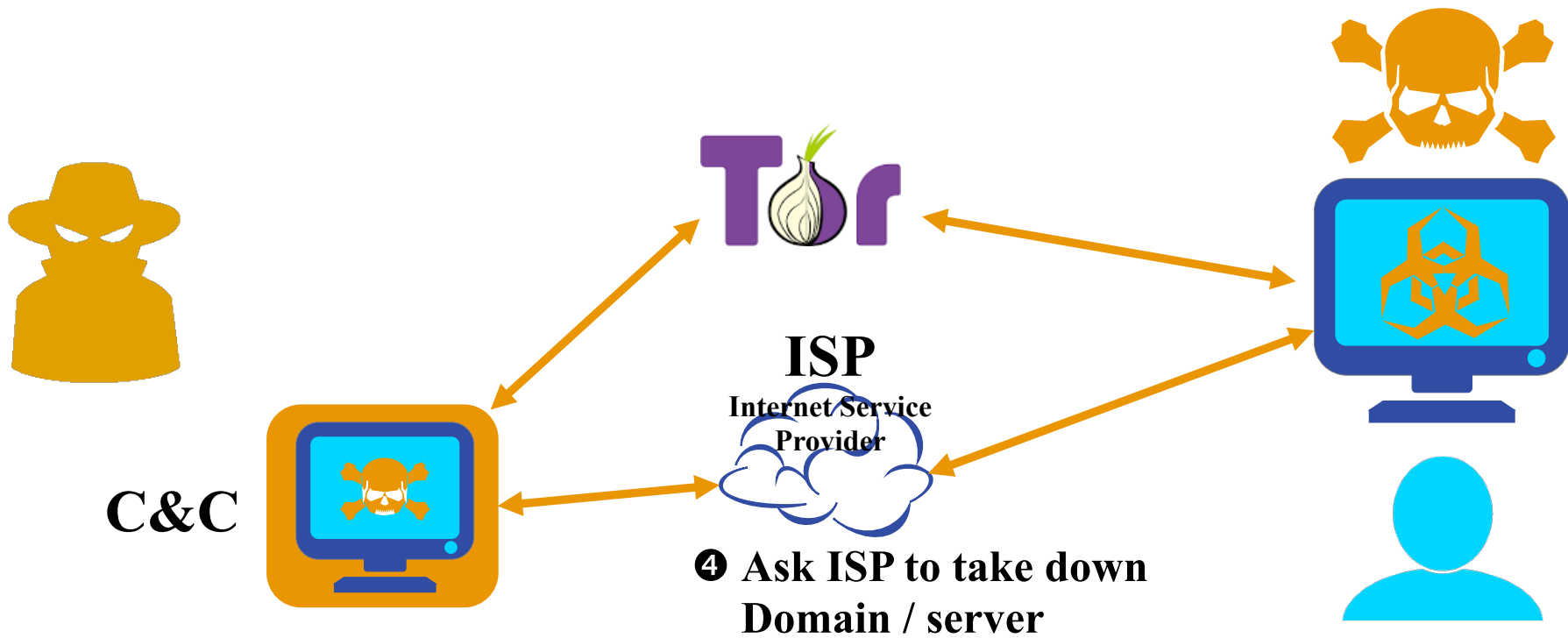


# Command and Control

# The standard way



« Easy » to stop  
(But you will have to do many times)



# Talking about Wannacry



## How DNS Helped Stop the "WannaCry" Ransomware Attack

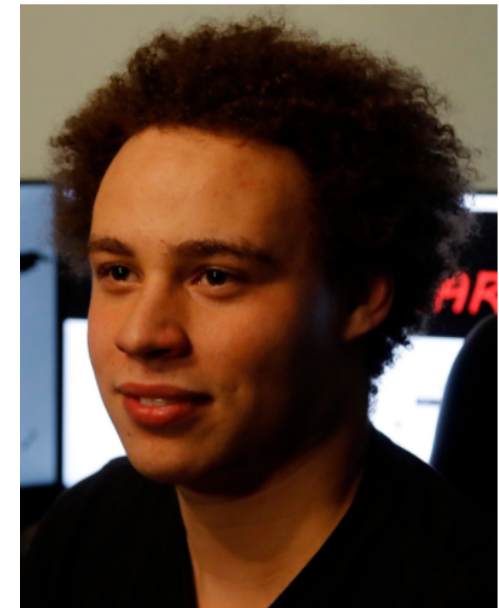
Source: <https://www.bluecatnetworks.com/blog/2017/05/17/dns-helped-stop-wannacry-ransomware-attack/>

More info on <https://www.malwaretech.com/2017/05/how-to-accidentally-stop-a-global-cyber-attacks.html>

🏠 > Technology

## WannaCry hero Marcus Hutchins could face 40 years in US prison

Source: <http://www.telegraph.co.uk/technology/2017/08/03/fbi-arrests-wannacry-hero-marcus-hutchins-las-vegas-reports/>

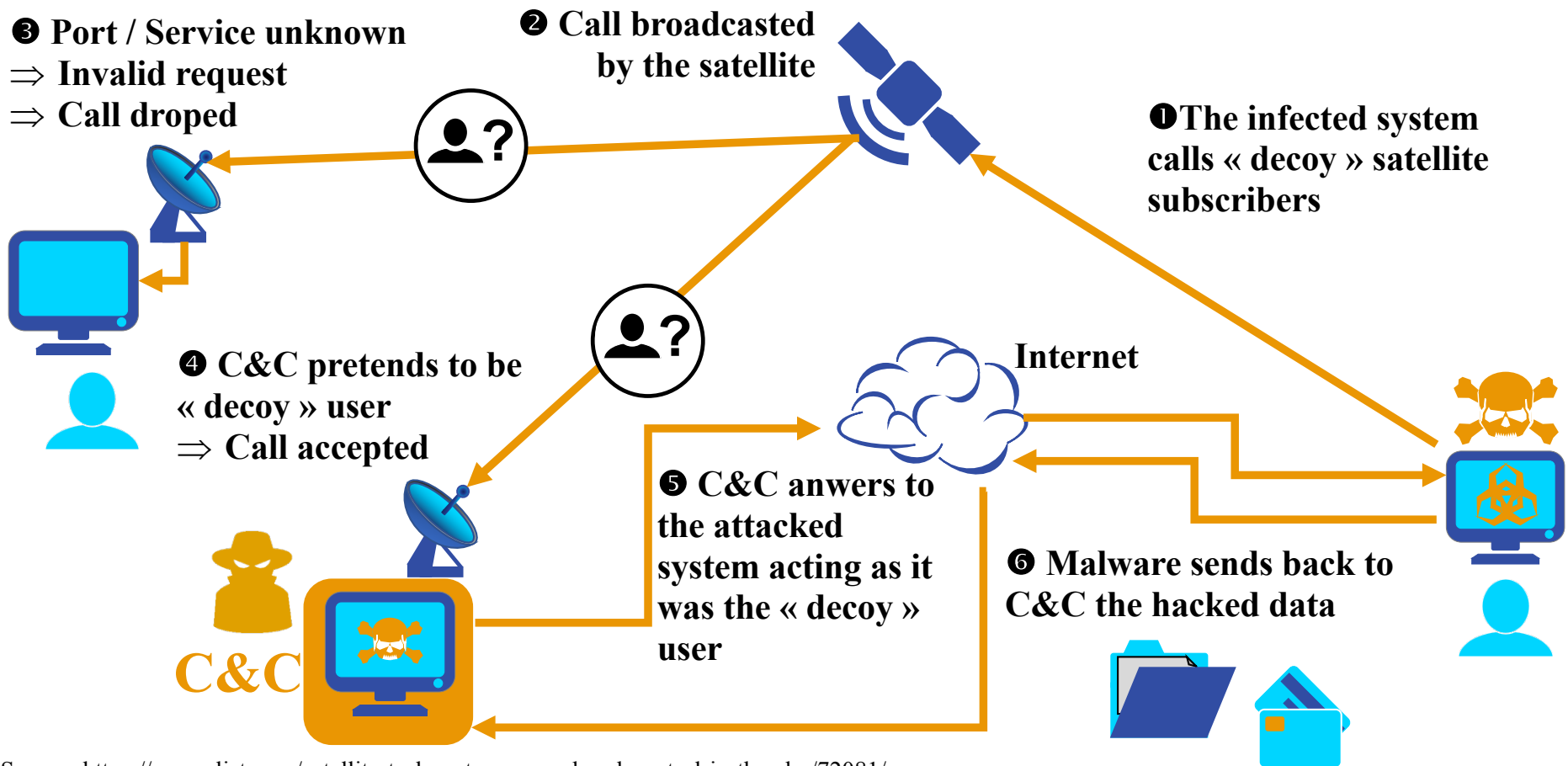


Marcus Hutchins



Kronos

# Using satellite transmission



Source: <https://securelist.com/satellite-turla-apt-command-and-control-in-the-sky/72081/>



# Cybersecurity: A business opportunity

# Satellite industry starting to offer cyber security services



## **inmarsat** Unveils Cybersecurity Service

By **MarEx** 2017-09-13 17:31:36

At London International Shipping Week, Inmarsat released its new Fleet Secure service, the industry's first fully-managed service to detect cyber vulnerabilities, respond to threats and protect ships from widespread cyberattack.

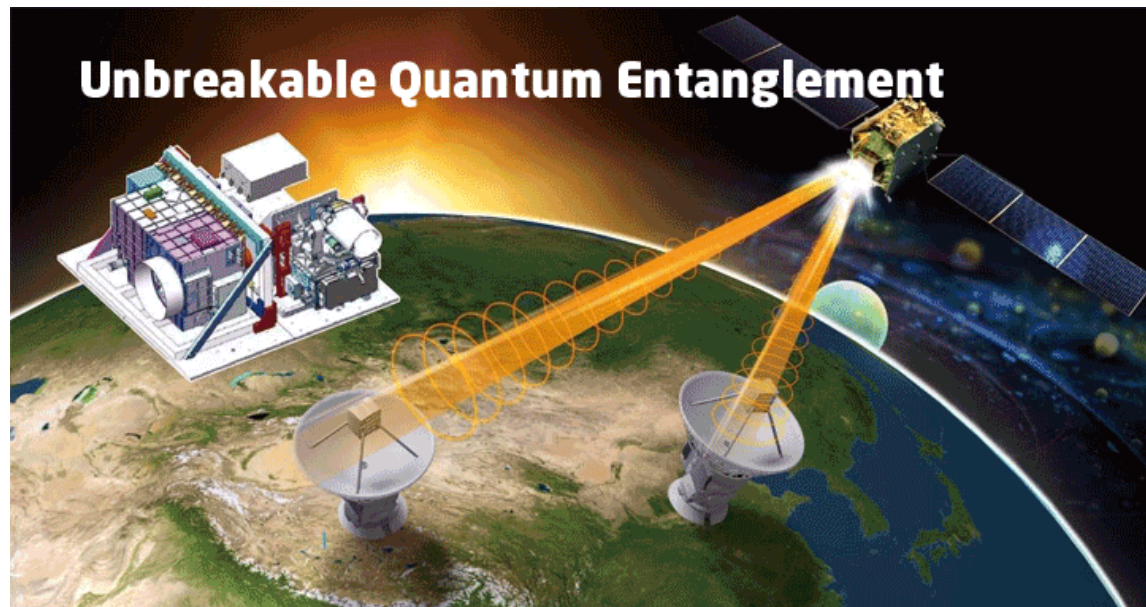
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<http://www.maritime-executive.com/article/inmarsat-unveils-cybersecurity-service>



# The future?

- Quantum computing
  - a « hack-proof » communication system



Source: <http://thehackernews.com/2017/08/quantum-satellite-data.html>



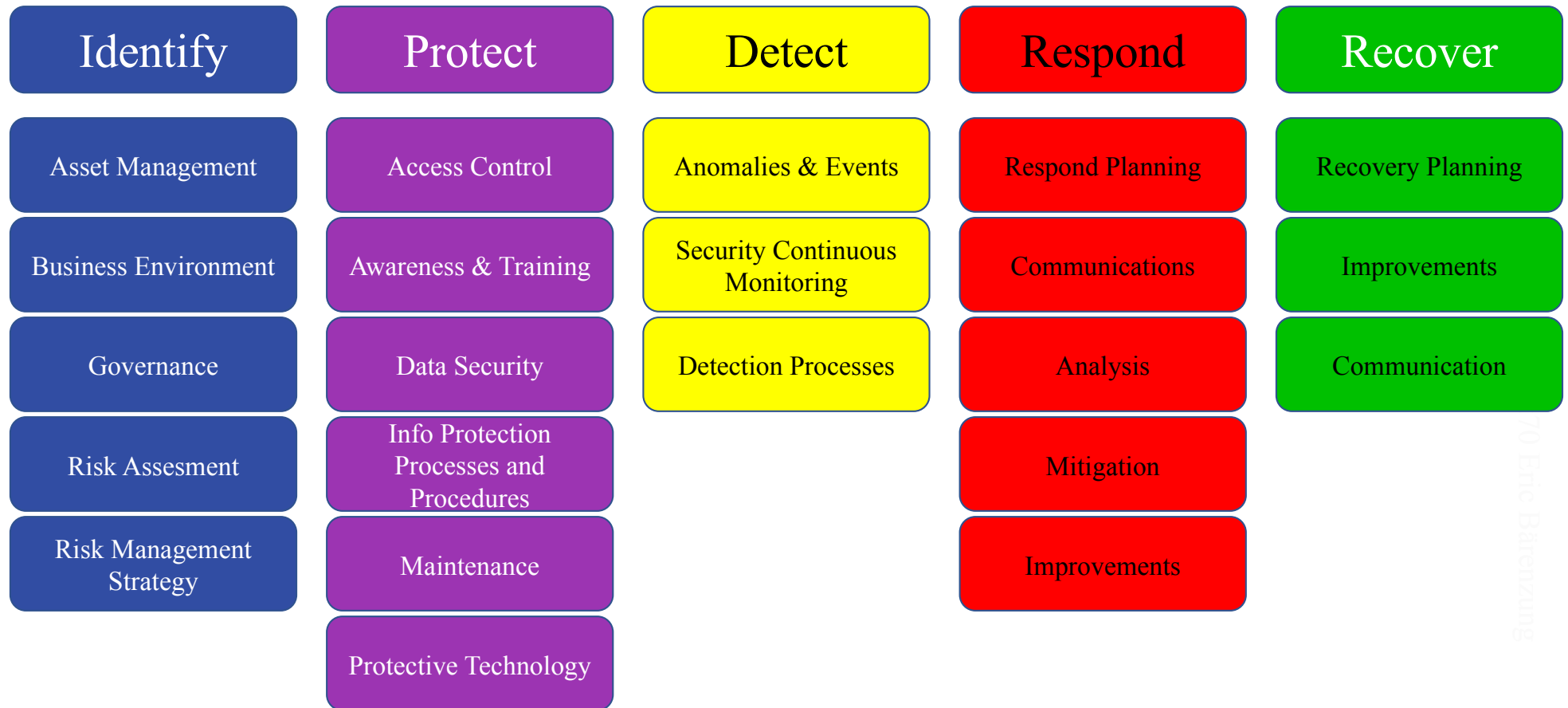
# NIST Framework

**National Institute of  
Standards and Technology**  
U.S. Department of Commerce

For Critical Infrastructure

<https://www.nist.gov>

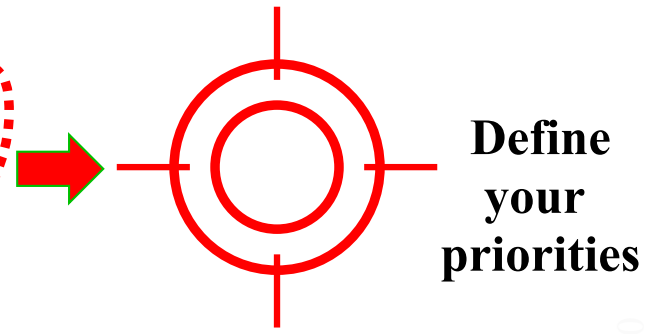
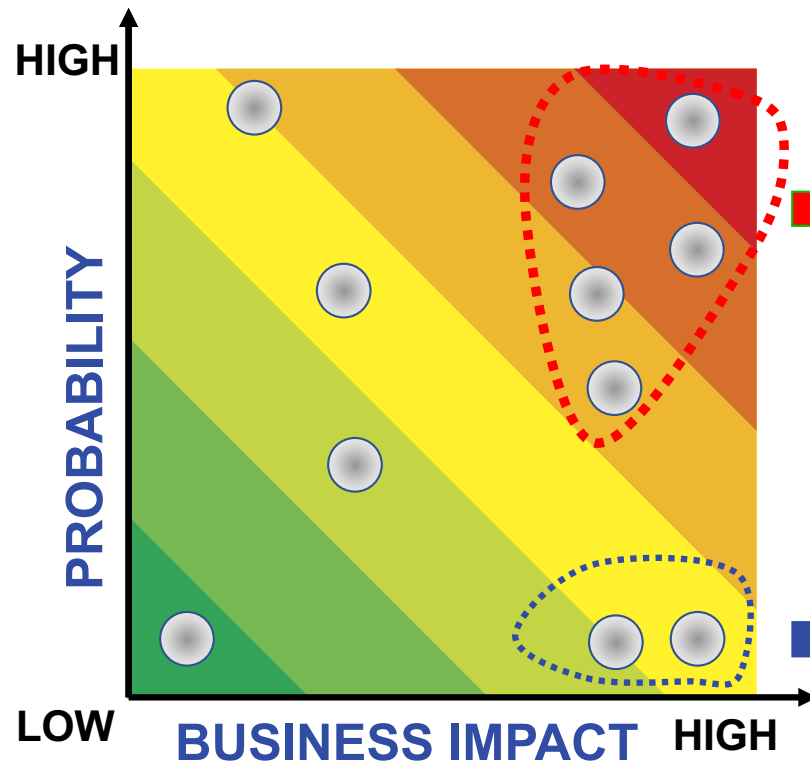
# NIST Cybersecurity Framework



# NIST Cybersecurity Framework

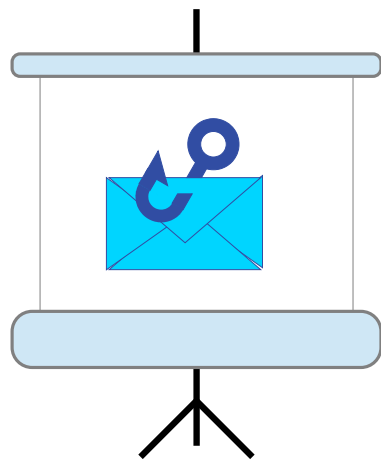


Risk Assessment

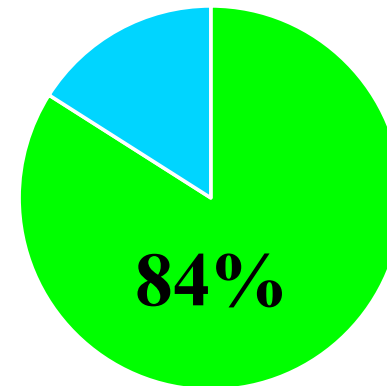


Think on Cyber Insurance

# NIST Cybersecurity Framework



Awareness & Training



**The  
X-Factor**

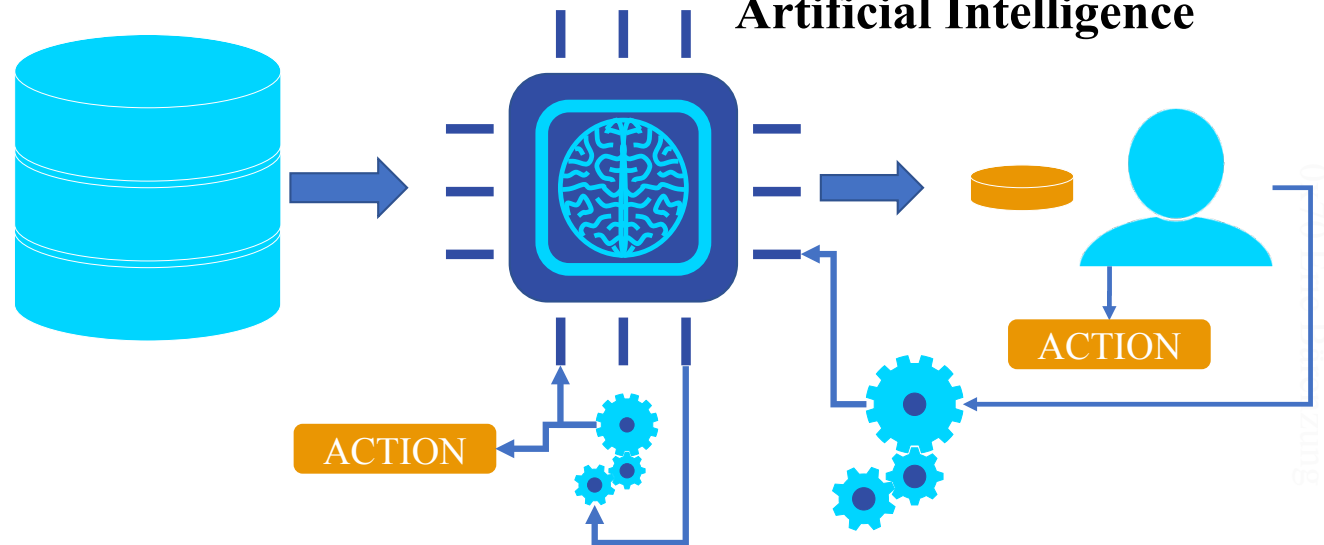
cyberattacks reported  
been due, at least in part,  
to human error (\*\*)

<https://securityintelligence.com/news/insider-threats-account-for-nearly-75-percent-of-security-breach-incidents/>  
(\*\*) <http://www.computerweekly.com/news/450425184/Security-professionals-name-top-causes-of-breaches>

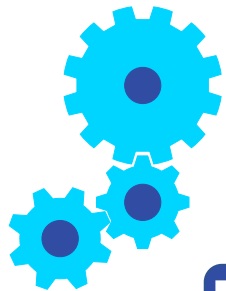
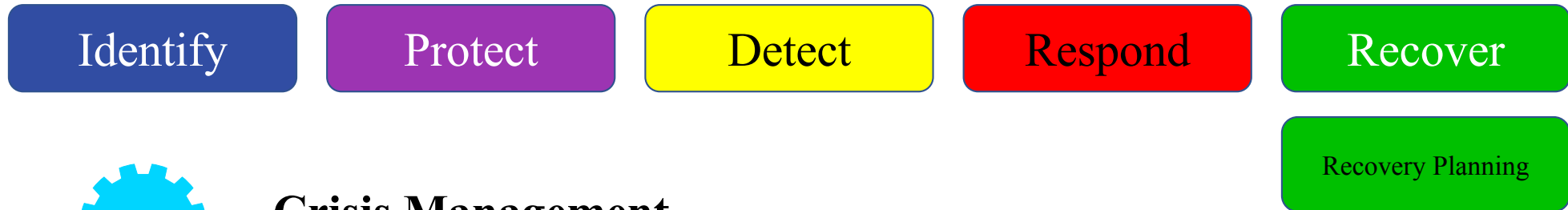
# NIST Cybersecurity Framework



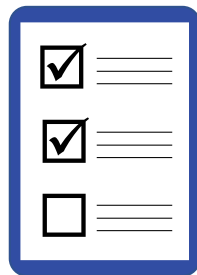
**The rise of  
Machine Learning &  
Artificial Intelligence**



# NIST Cybersecurity Framework



**Crisis Management  
requires  
PREPARATION and TRAINING**



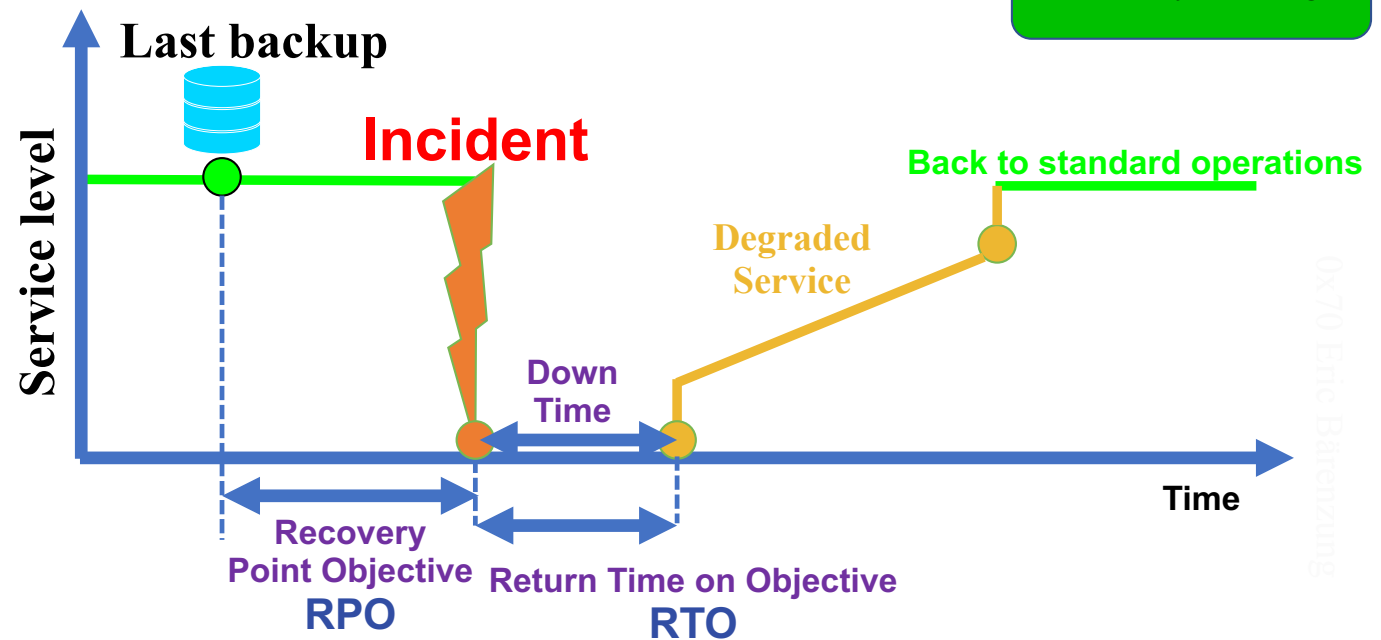
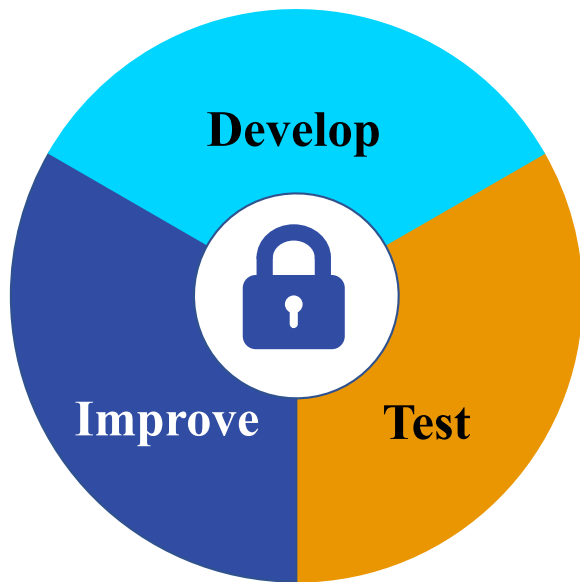
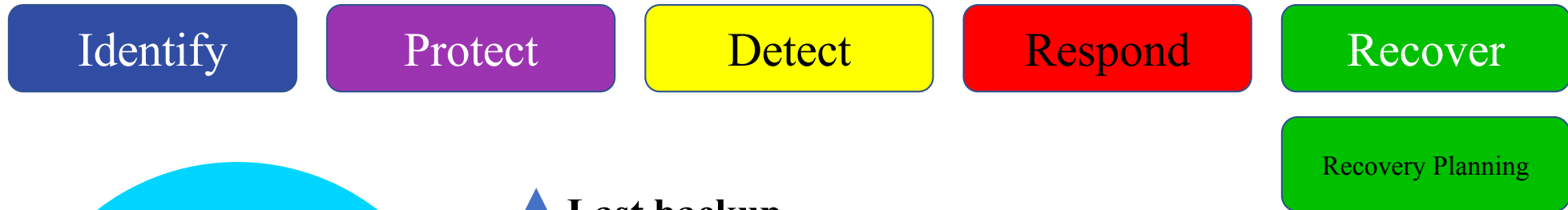
- ✓ Who?
- ✓ What?
- ✓ How?
- ✓ When?



✓ **Regional Cyber Drill**



# NIST Cybersecurity Framework



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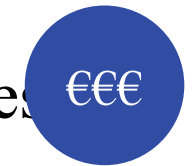
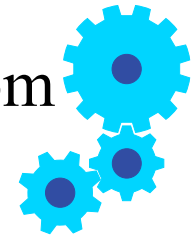


# To resume

Take aways

# 3 take aways

- Satellite industry is a sensitive target for hackers
- Start, if not done already, to
  - Evaluate your risks
  - Develop your strategy to protect your organization from cyber threats
- Cybersecurity is a business opportunity
  - To differentiate from your competitors
  - And also to bring you additional revenues opportunities





# Thanks for your attention

Eric Bärenzung

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