



Cambridge Centre for Risk Studies
Advisory Board Research Showcase – 29 January 2019

Risk Flash – Technology and Space: Cyber

Centre for
Risk Studies



**UNIVERSITY OF
CAMBRIDGE**
Judge Business School

Kelly Quantrill
Research Assistant
Cambridge Centre for Risk Studies



Technology and Space



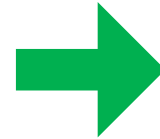
Cyber Attack



Increased



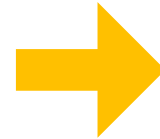
Nuclear Accident



Stable



Power Outage



Stable



Solar Storm



Slightly increased



Technology and Space Threat Updates



Nuclear
Accident

Nuclear risk is stable

- Some nuclear plants decommissioned and plans for further decommissioning
- New builds occurred last year
- Rising trend away from nuclear energy to renewables and due to a natural gas boom



Power
Outage

Power outage risk is stable

- Several notable outages in 2018 but not significantly different since previous assessment
- Notable outages of 2018
 - Complete power outage in Sudan coincided with televised address by President Omar al-Bashir
 - March Nor'easter took out power for ~1 to 2 million in US
 - March equipment failure caused a blackout for 10million+ in Brazil
 - Since Hurricane Maria hit Puerto Rico in Sept 2017 3.4 billion hours of electricity have been lost

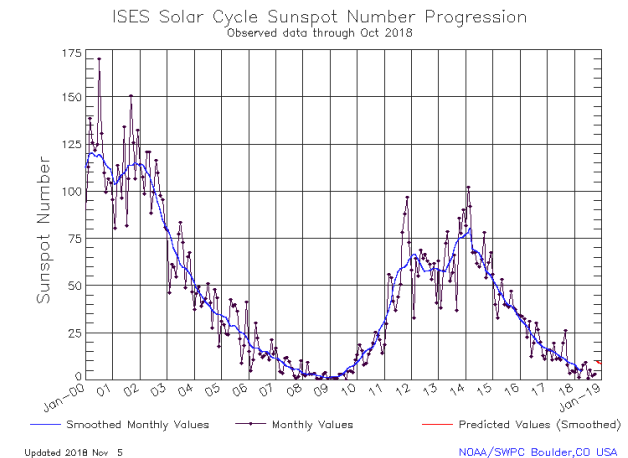


Solar
Storm

Solar Storm risk is increased slightly

- Expecting a solar minimum cycle
- Researchers have developed a new method of providing short-term forecast geomagnetic storms
- NASA launched the Parker Solar Probe

Sunspot Number Progression





Cyber Attack: A Growing Threat

The cyber threat continues to develop at a rapid pace. Cyber attack loss severities are increasing with several recent attacks showing the potential for **systemic impacts** with global reach.

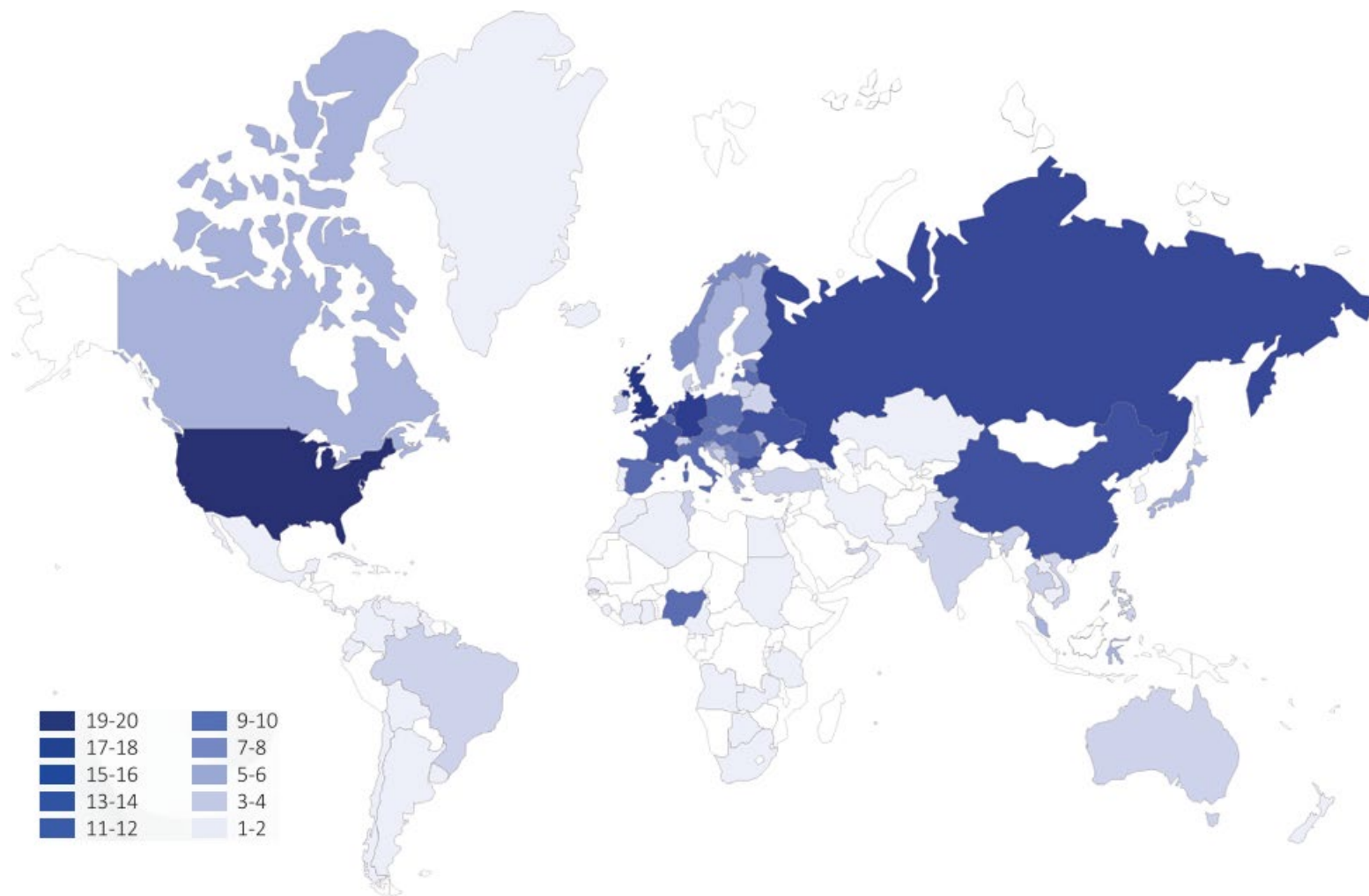
- The Internationalisation of Cyber Threat
- Increasing Size and Cost of Data Breaches
- Continued Disruption from DDoS Attacks
- Threat to Critical Infrastructure





The Internationalisation of Cyber Threat

Cyber losses are now being reported in almost **every country** of the industrialised world.



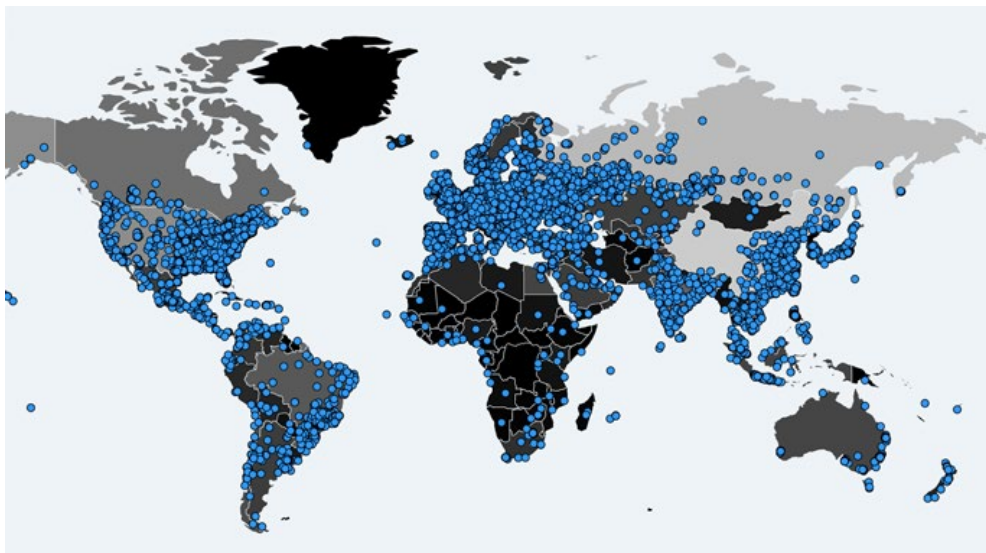


The Internationalisation of Cyber Crime

Cyber attacks have **no** regard for traditional country **boundaries**.

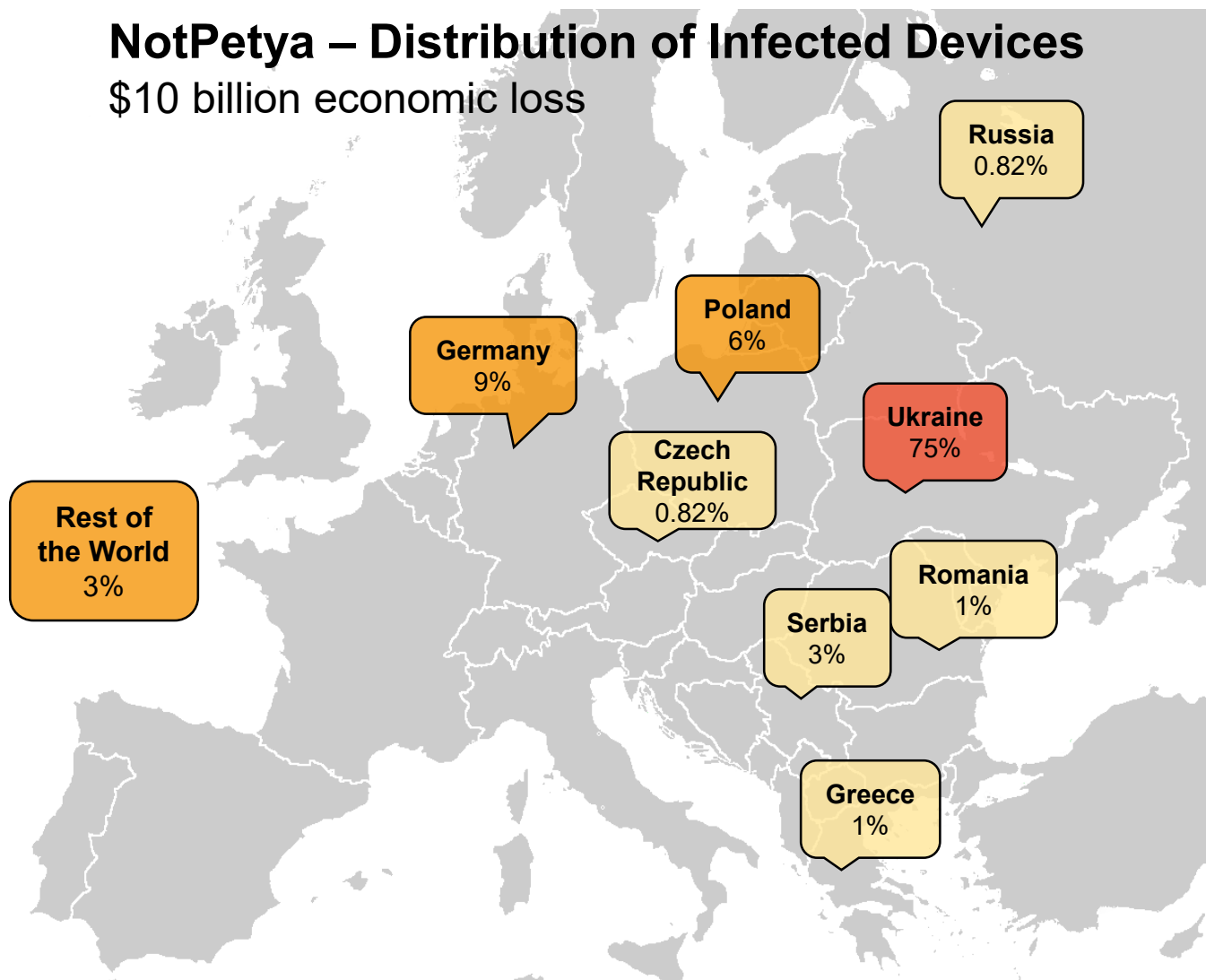
WannaCry

\$4 billion economic loss across 150 countries



NotPetya – Distribution of Infected Devices

\$10 billion economic loss





Data Breaches

Data breaches are growing in size and impact.
The largest data breach of 2018 was **1.1 Billion Records**.

Average cost per
lost stolen record:

\$148

Average total cost of
a data breach:

\$3.86 million

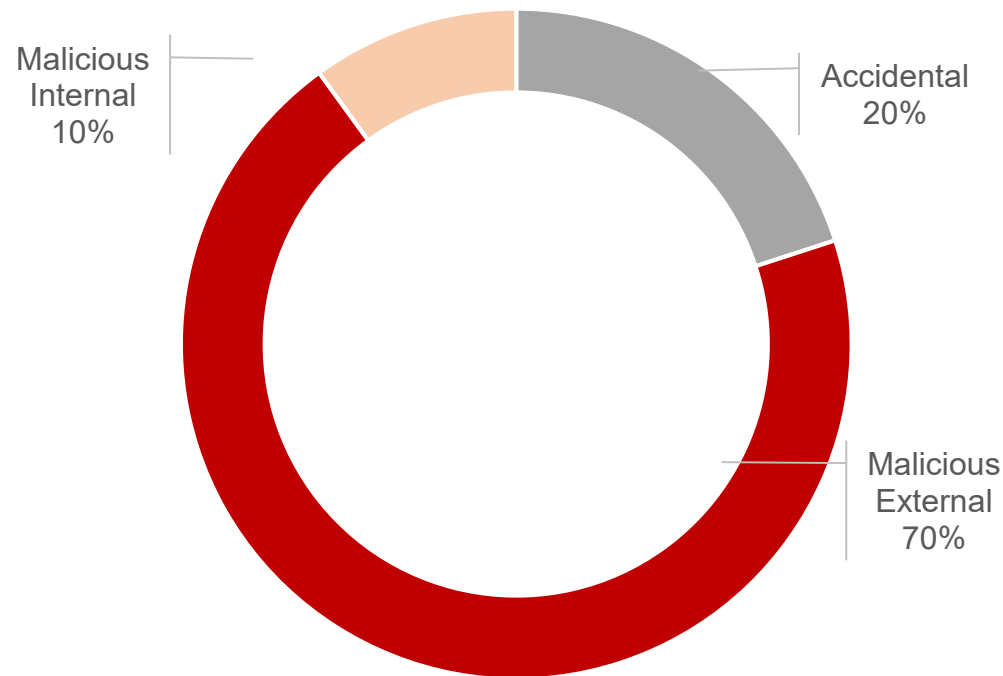
Average cost per
megabreach of
1 million records:

\$40 Million

Average cost per
megabreach of
50 million records:

\$350 Million

Source of Breach





DDoS Attacks

The frequency of DDoS attacks continues to increase year-on-year.
In 2018, DDoS attacks increased by **40%** as organisations faced an average of **8** attacks per day.

Organisations with DDoS attack
reputation and brand damage

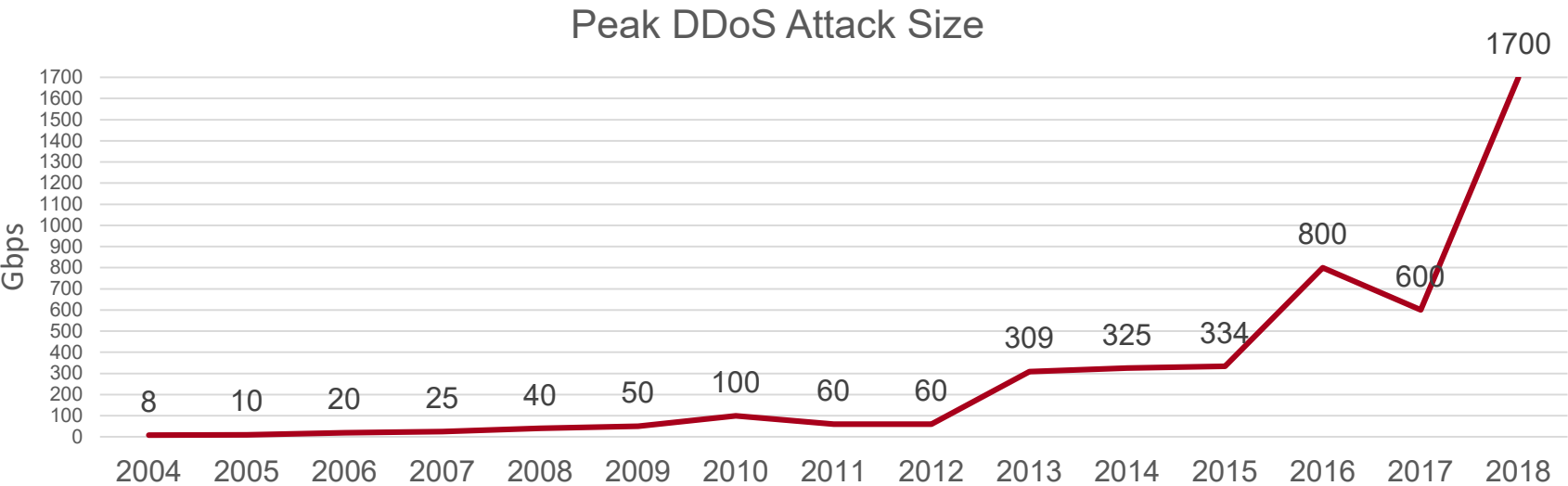
57%

Over half of victims reported a
financial impact ranging from

\$10,000 - \$100,000

Highest cost of DDoS for a
single attack

\$2.5 Million





Threat to Critical Infrastructure

The **greatest potential** for economic loss from cyber attacks is the threat to critical infrastructure.

Atlanta Cyber Attack – Ransomware

- More than **one third** Atlanta's **necessary programs** were knocked **offline** or partly disabled
- 30% of those affected apps were **"mission critical"**
- Courts Lost 10 years' worth of documents
- **\$2.6 Million spent** with another **\$9.5 Million expected**

Boeing Cyber Attack – Ransomware

- Two plants completely **shut down**
 - Planet 1: 24 hours
 - Planet 2: 96 hours
- Configuration files that controlled machines were **lost**
- Systems had to be **reinstalled** before production could restart



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