tfz Medical
Cluster Insights

«„Security by Design“ - sicher vernetzte Medizinprodukte entlang des gesamten Product-Lifecycle»

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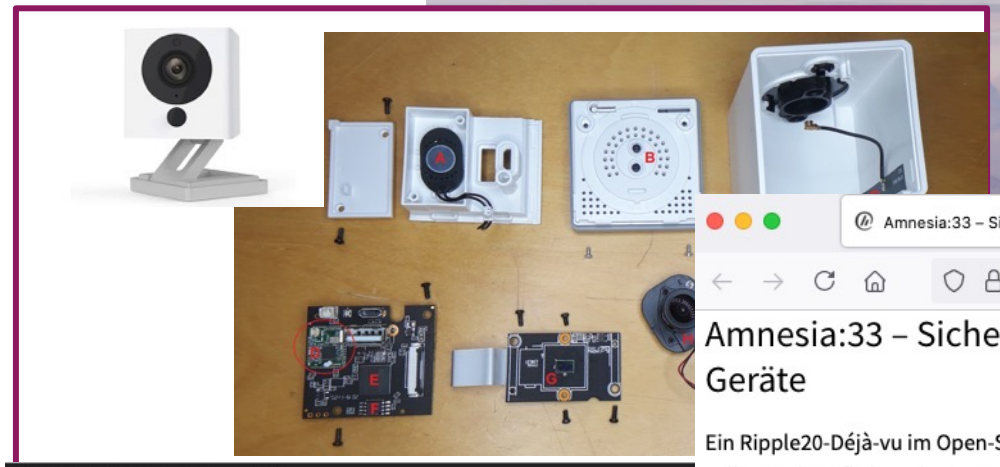
Teaser

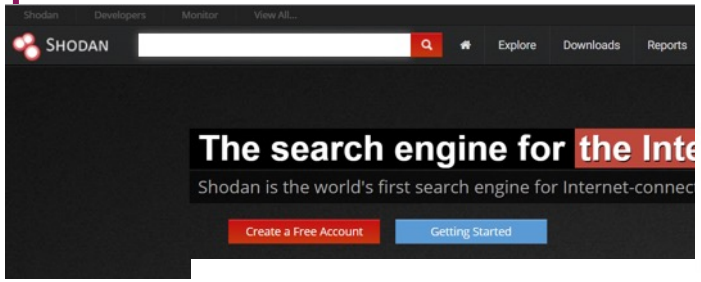
Wie auch in anderen Branchen gibt es auch in der Medizintechnikbranche eine starke Zunahme der Vernetzung von Geräten.

Den vielen Chancen dieser Vernetzung stehen die ständigen Cyber-Gefahren gegenüber. Bei Kontrolle von Herzschrittmachern per App beispielsweise, kann eine Sicherheitslücke sehr schnell Lebensbedrohung für den Patienten- und grossen Reputationsschaden inkl. wirtschaftlichen Konsequenzen für den Hersteller bedeuten.

Wie wird eine nachhaltige Security über den gesamten Product-Lifecycle sichergestellt? Muss über die regulatorischen Anforderungen von MDR oder FDA hinaus Security-Aufwand betrieben werden? Wie kann mit der hohen Komplexität der Daten, die verschiedensten Anspruchsgruppen gehören, zielgerichtet im Bereich Security umgegangen werden.



Prepared content:
Good examples of application of IoT security principles in medical field



"Cheat Sheets"

OWASP IoT Top 10

https://www.owasp.org/index.php/OWASP_Internet_of_Things_Project

(Bild: NicoElNino/Shutterstock.com)

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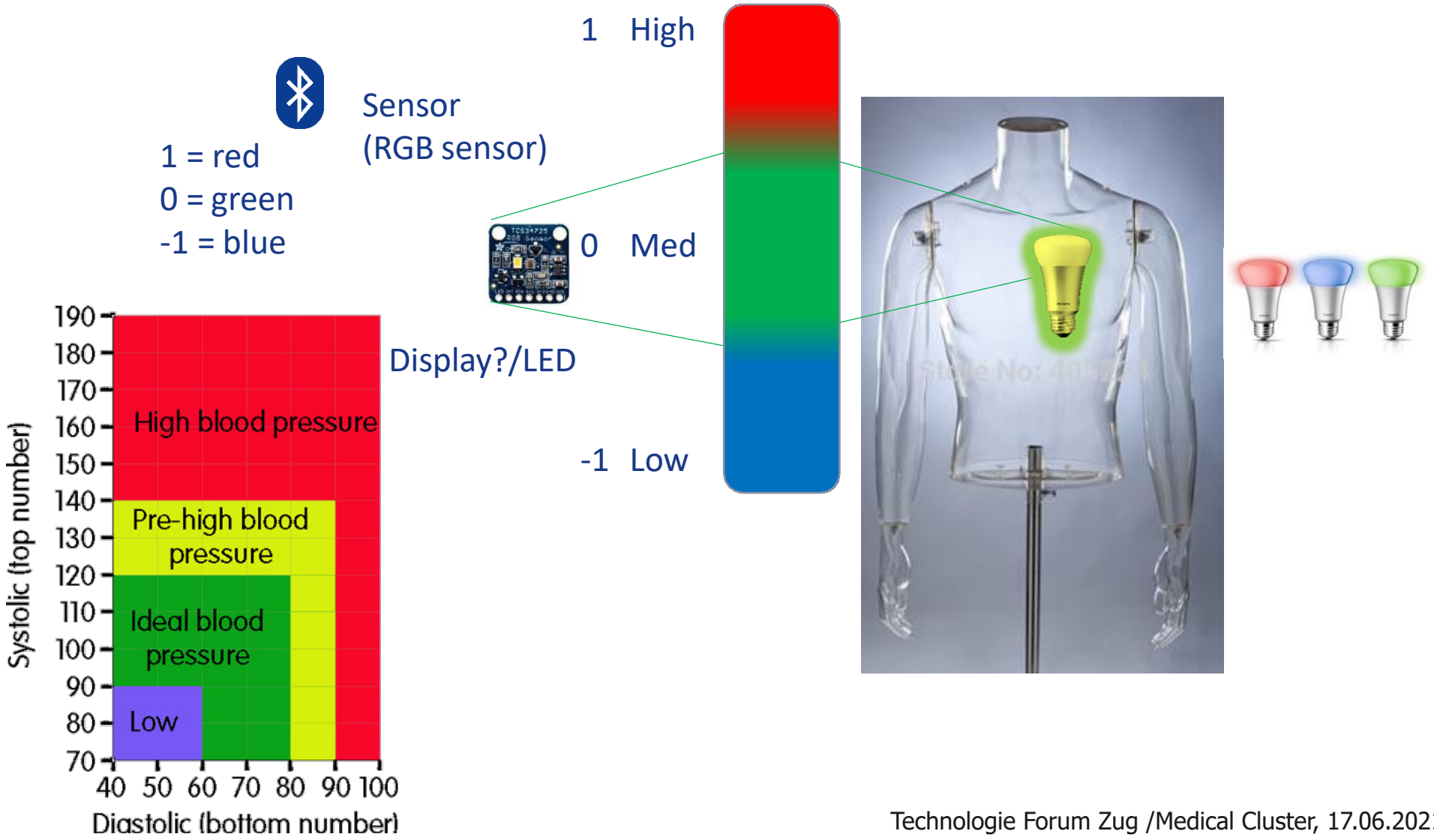
von Westernhagen

Ripple20

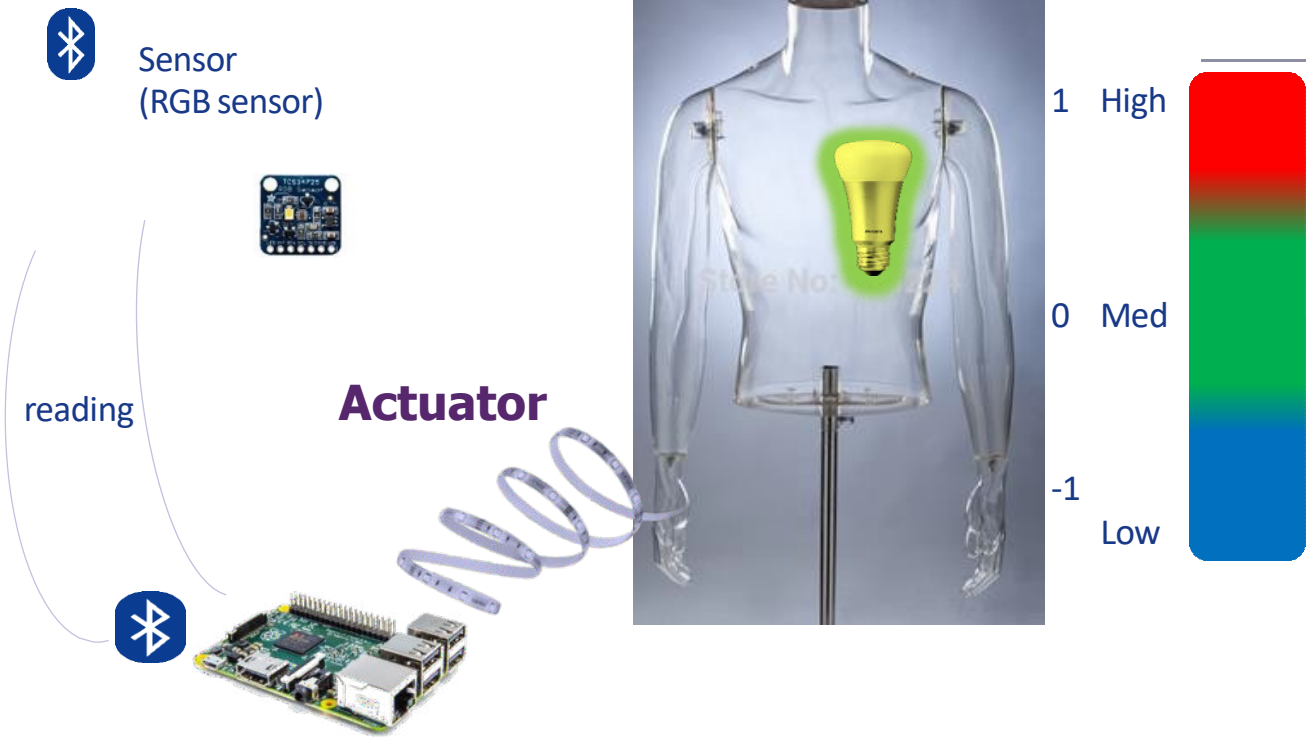
Let's look at an example



OST

Interconnectivity & Decision Making

1 = red
0 = green
-1 = blue



Based on reading, we want to increase or decrease value to get optimal state

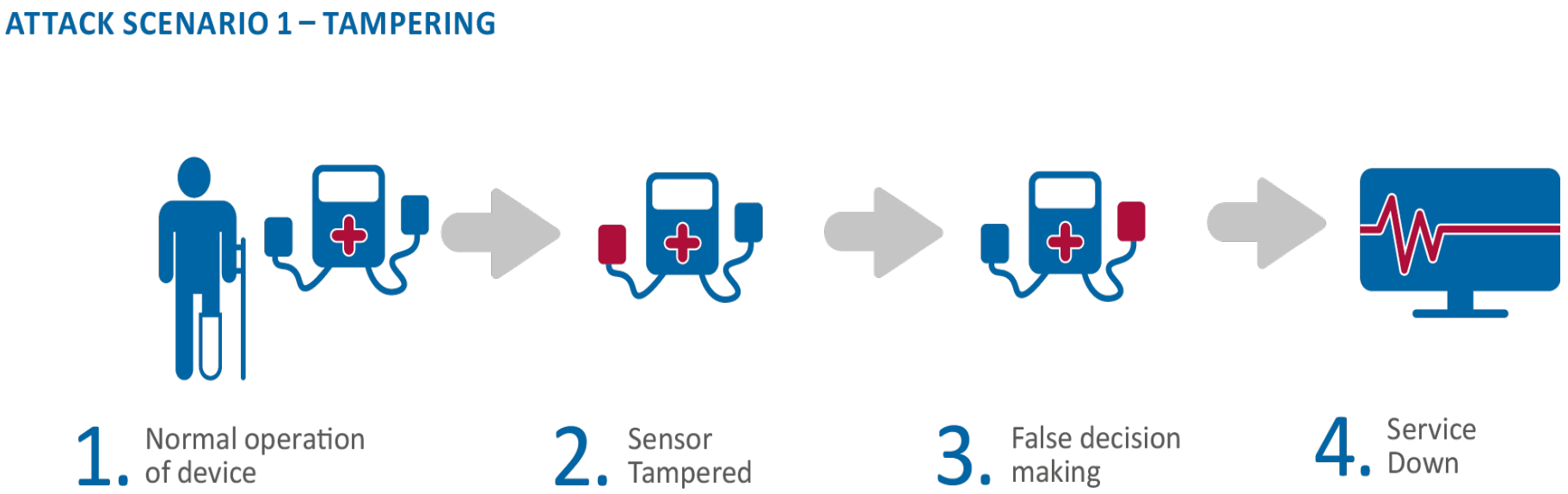
If(red)
add blue

If(green)
do nothing

If(blue)
add red

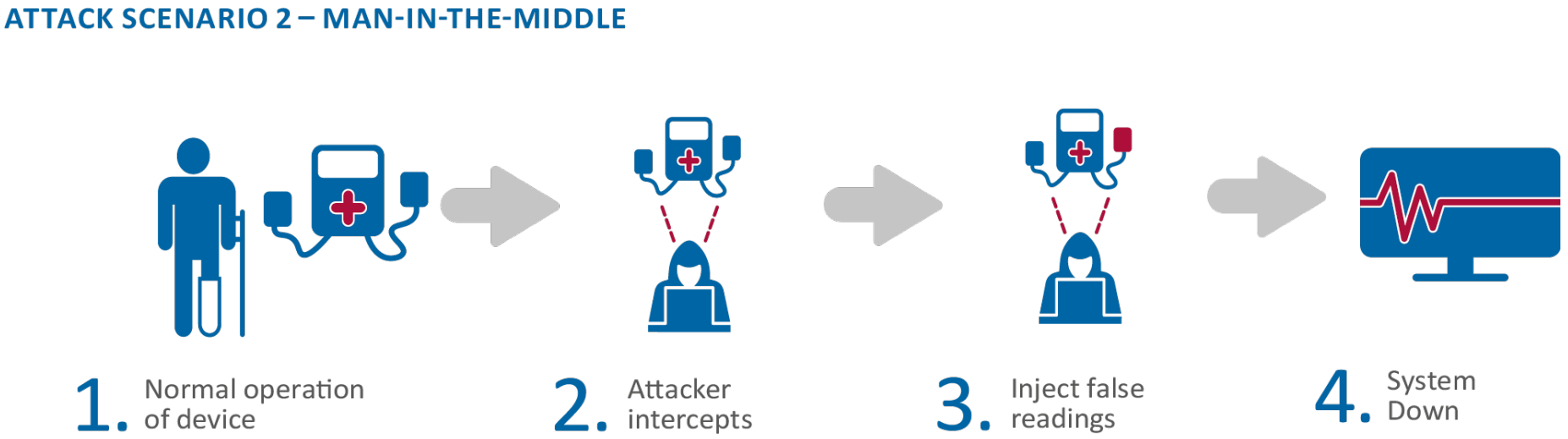
Scenario 1: Sensor Tampering (Blood Pressure Measurement)

We modify the values read by sensors or their threshold values and settings



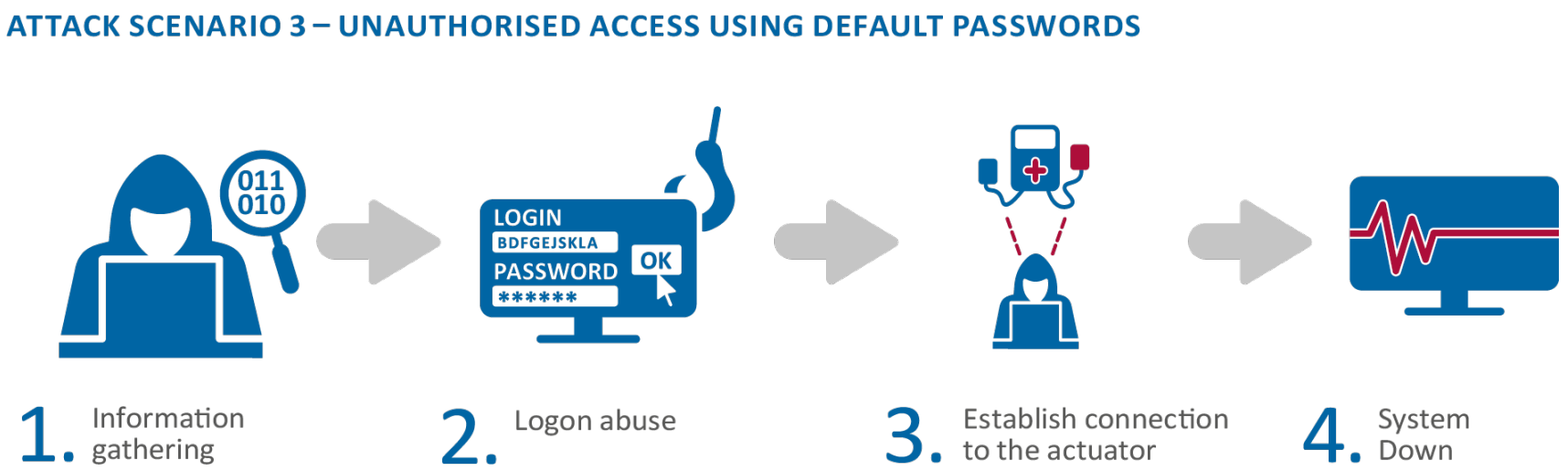
Scenario 2: Man-in-the-Middle

We modify the values intercepted from the man in the middle



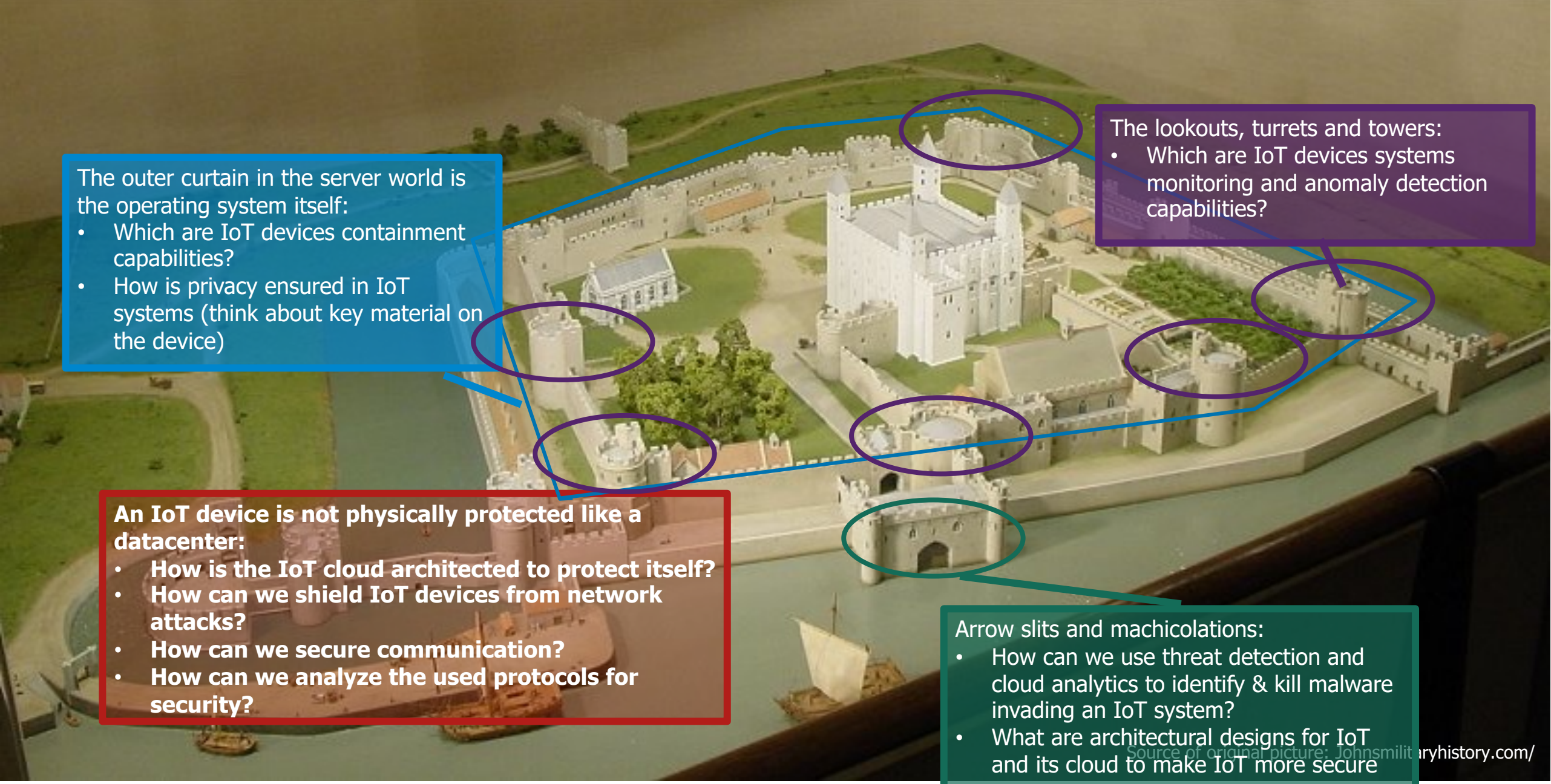
Scenario 3: Unauthorised access (device not disclosed)

We modify normal settings of the device



OWASP IoT Top 10 (2018) Revisited

1. **Weak, guessable, or hardcoded passwords**
2. **Insecure network services**
3. Insecure ecosystem interfaces
4. Lack of secure update mechanism
5. **Use of insecure or outdated components**
6. Insufficient privacy protection
7. Insecure data transfer and storage
8. Lack of device management
9. **Insecure default settings**
10. Lack of physical hardening


The outer curtain in the server world is the operating system itself:
• Which are IoT devices containment capabilities?
• How is privacy ensured in IoT systems (think about key material on the device)
The lookouts, turrets and towers:
• Which are IoT devices systems monitoring and anomaly detection capabilities?
An IoT device is not physically protected like a datacenter:
• How is the IoT cloud architected to protect itself?
• How can we shield IoT devices from network attacks?
• How can we secure communication?
• How can we analyze the used protocols for security?
Arrow slits and machicolations:
• How can we use threat detection and cloud analytics to identify & kill malware invading an IoT system?
• What are architectural designs for IoT and its cloud to make IoT more secure
Source of original picture: Johnsmilitaryhistory.com/