



SECURING THE IOT CLOUD

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IOT BRINGS TREMENDOUS OPPORTUNITY



- Insight through monitoring
- Evolving capabilities through software updates
- Control of Product Functions
- Personalized User Experience
- Predictive Diagnostics



BUT ... IOT SECURITY IS IN THE HEADLINES



Android malware inserting irremovable trojan adware into 20,000 apps including Facebook and WhatsApp

When downloaded, adware installs on the phone and can't be removed.



Tesla Model S hacked: Researchers discover six security flaws in popular electric car

Security researchers uncover flaws in Tesla Model S allowing them to remotely shut off the car's systems



Security researchers identify 1,600 Internet of Things devices just by flying a drone over Texas

Praetorian tracking all IoT devices in Austin, Texas running on ZigBee protocol, similar to the Shodan scanner.

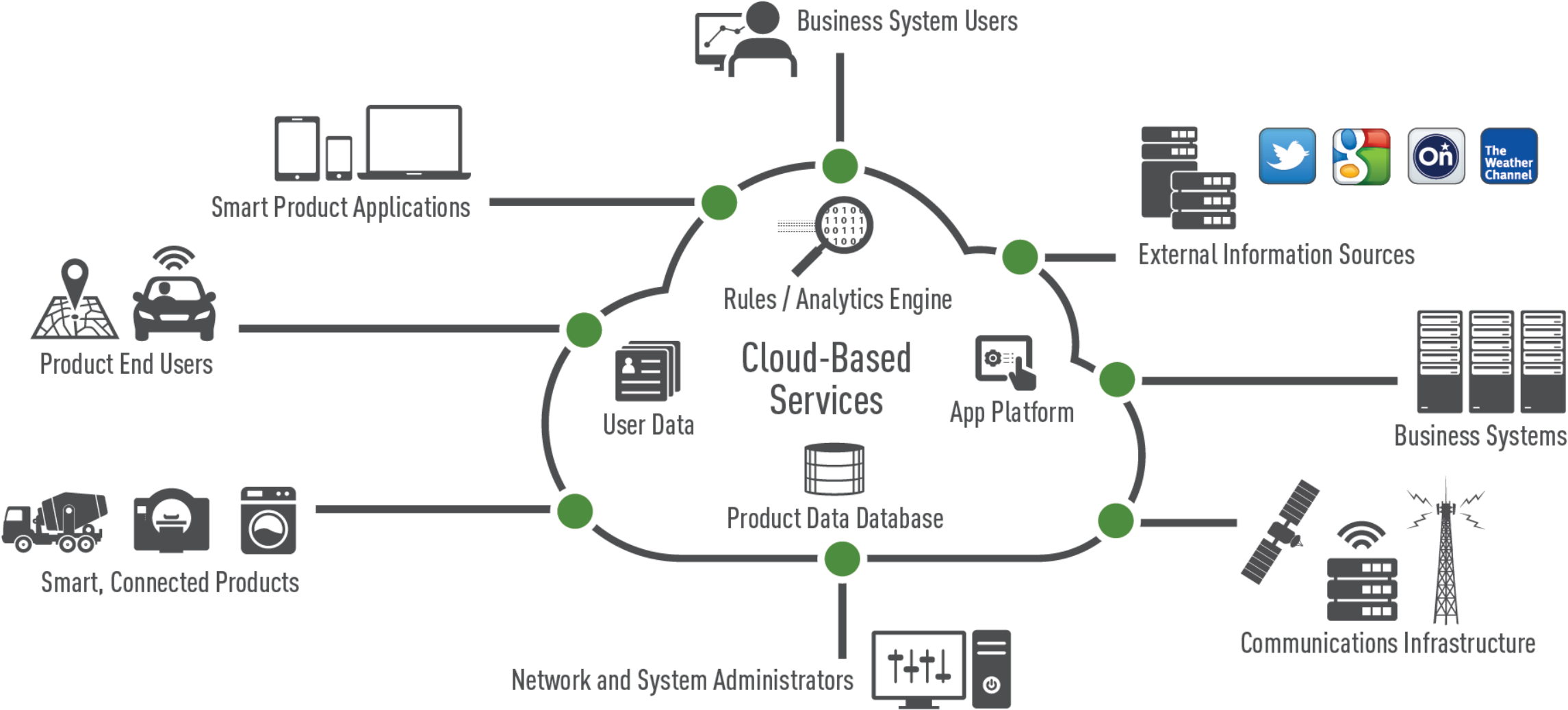
Sony Playstation Still Down After Cyberattack

Reuters

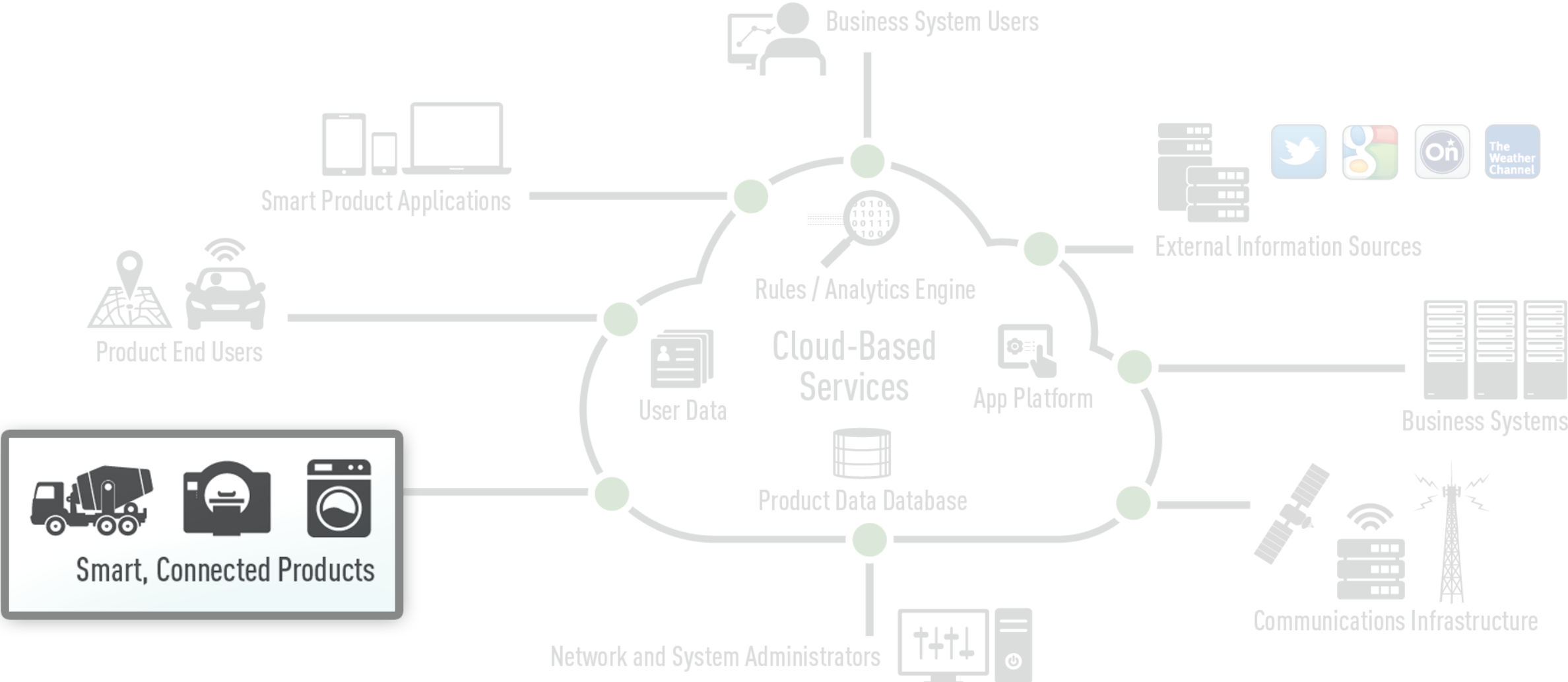
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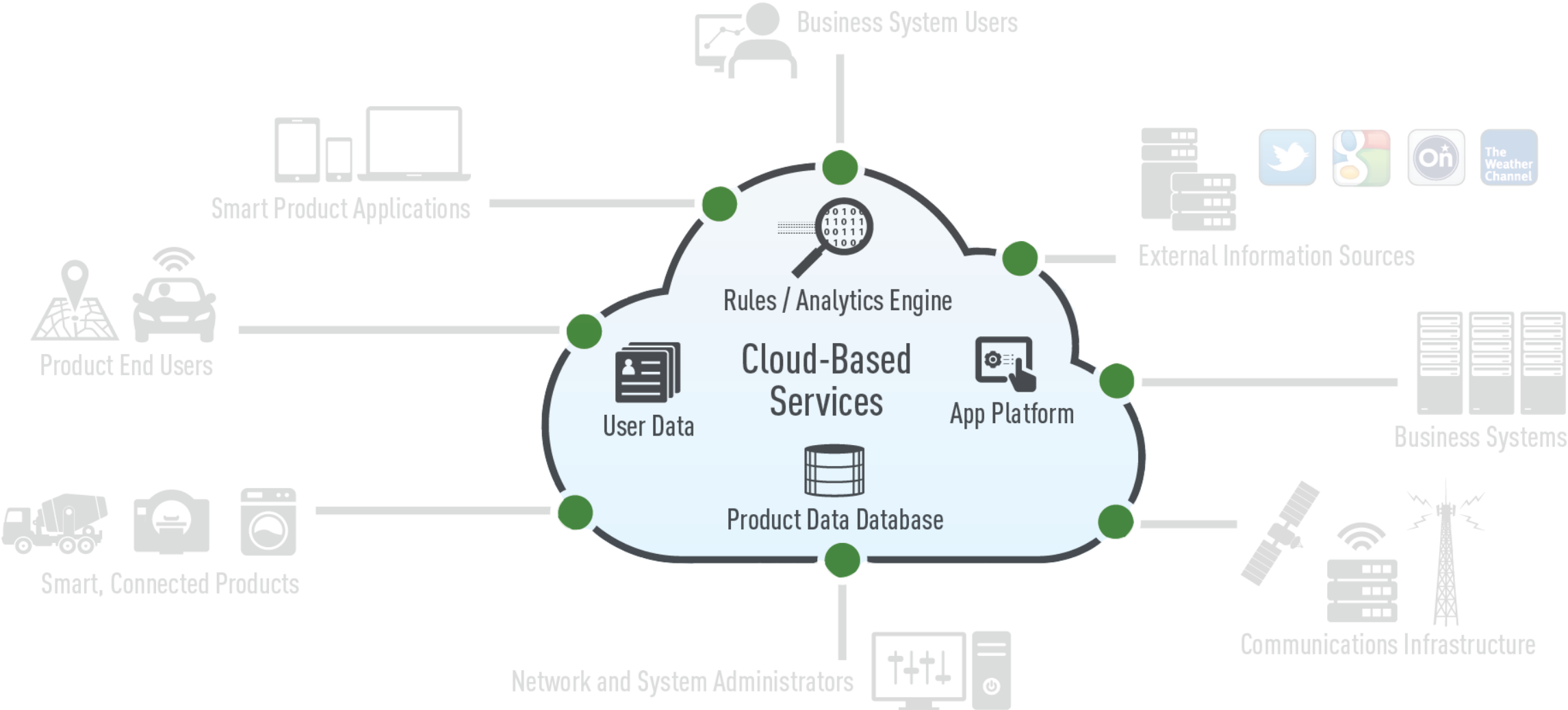
COMPONENTS OF AN IOT SOLUTION



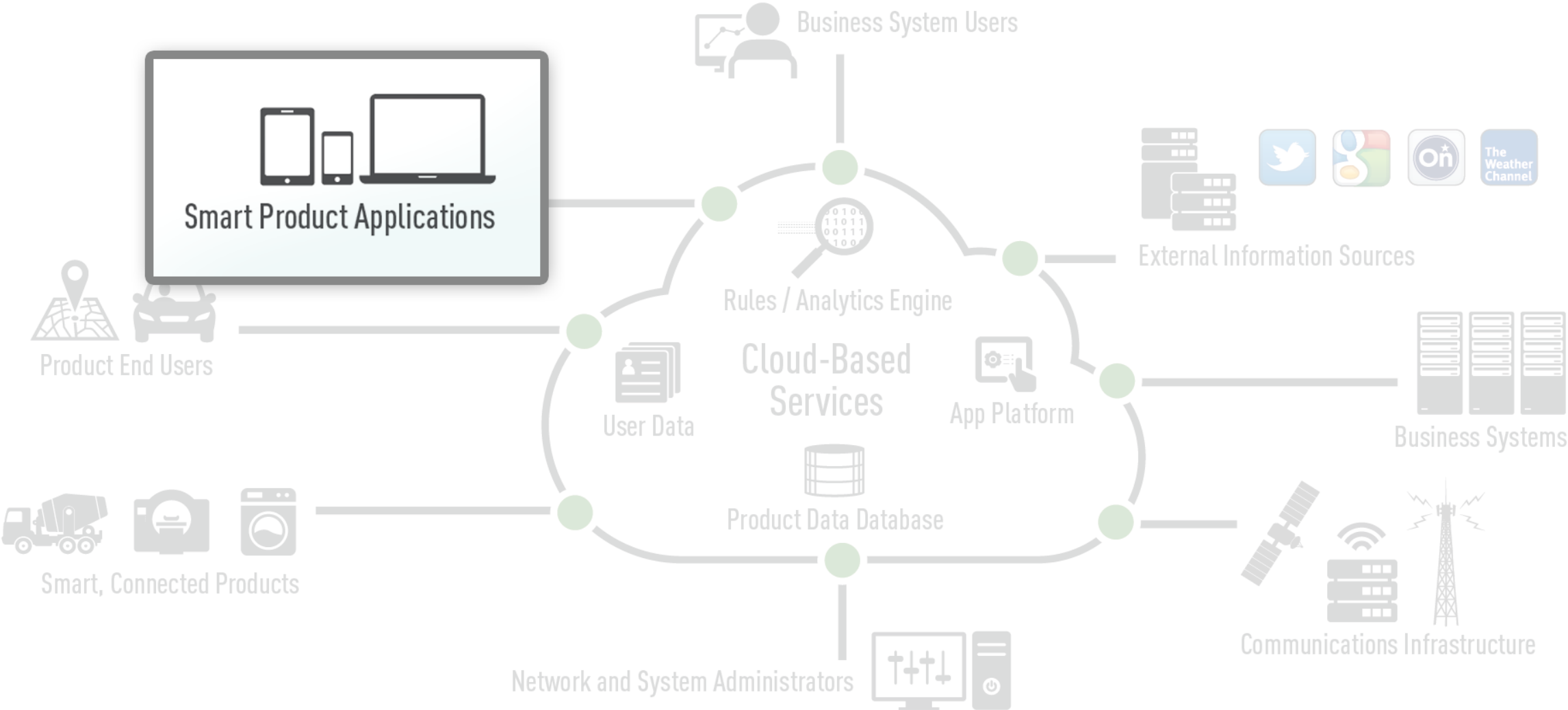
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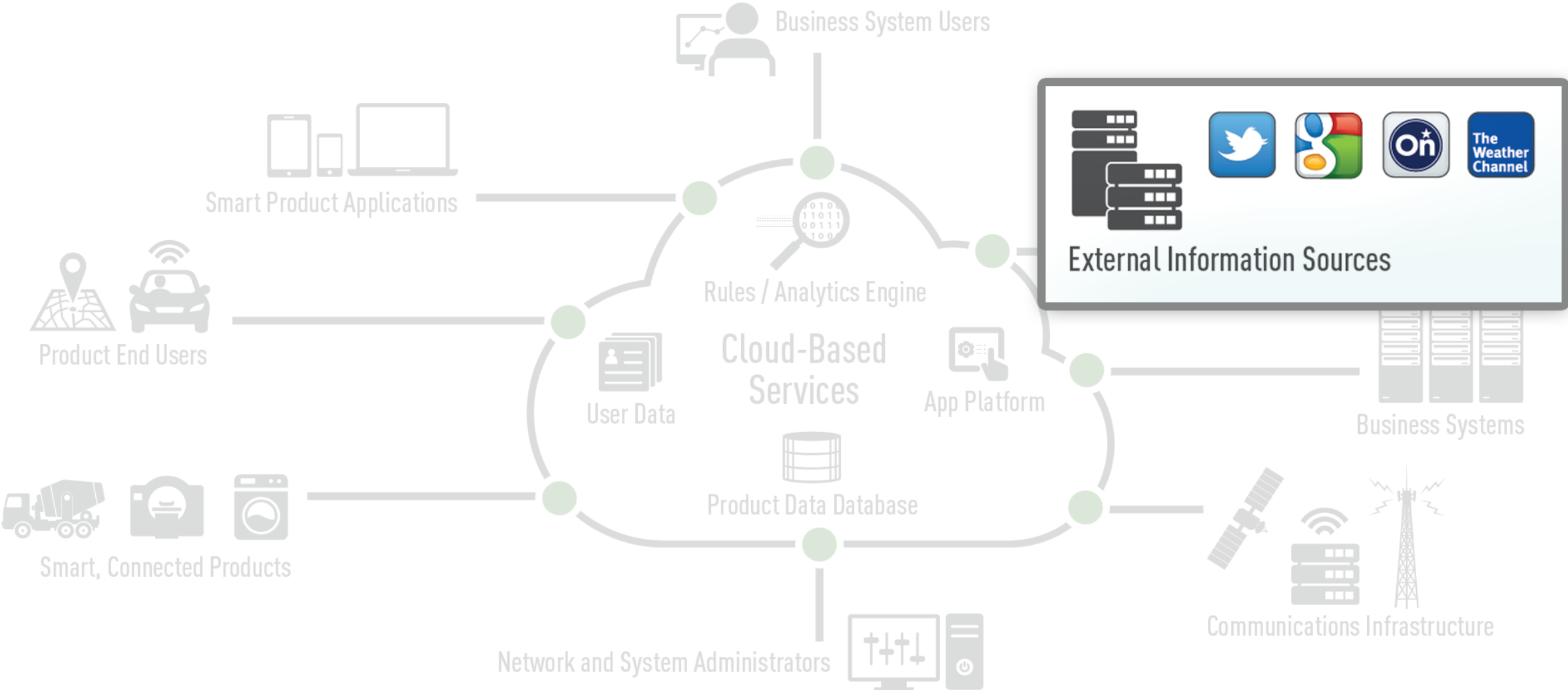
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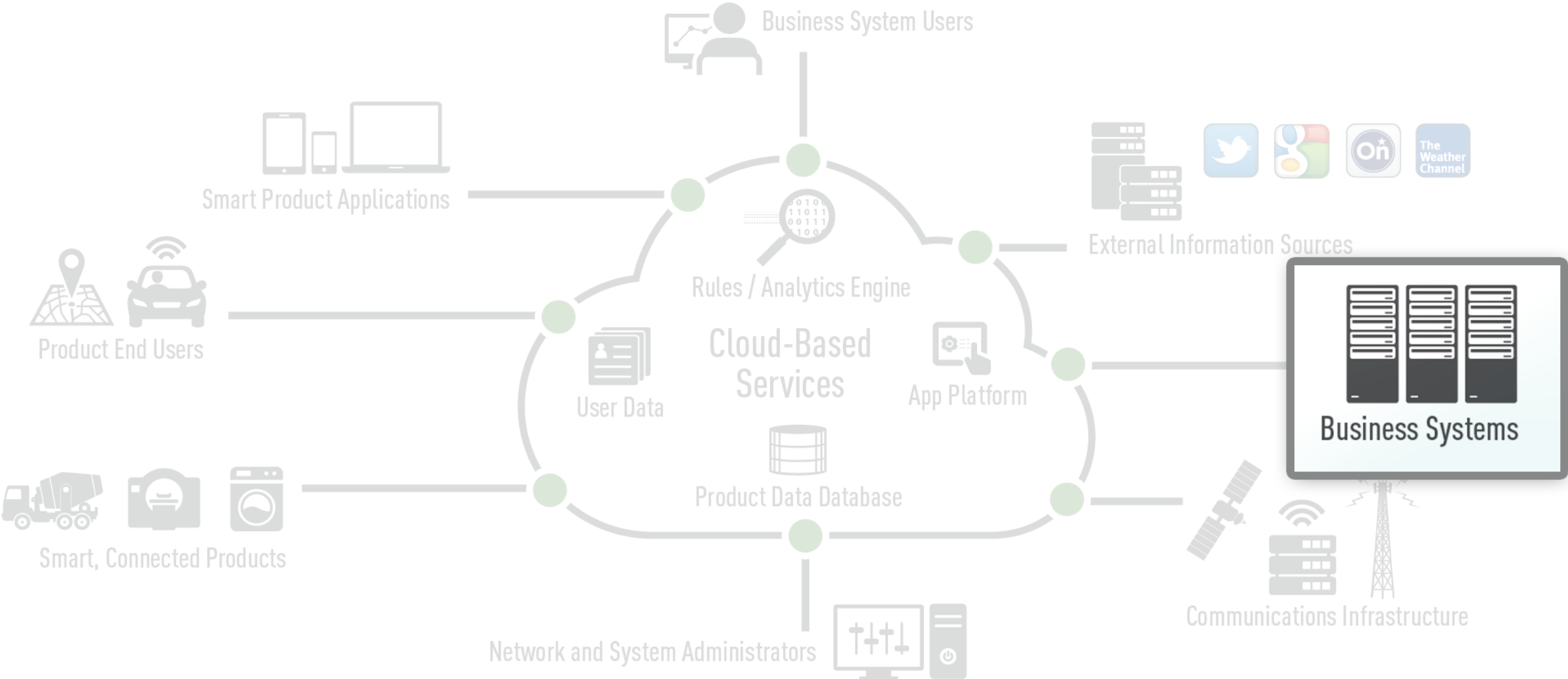
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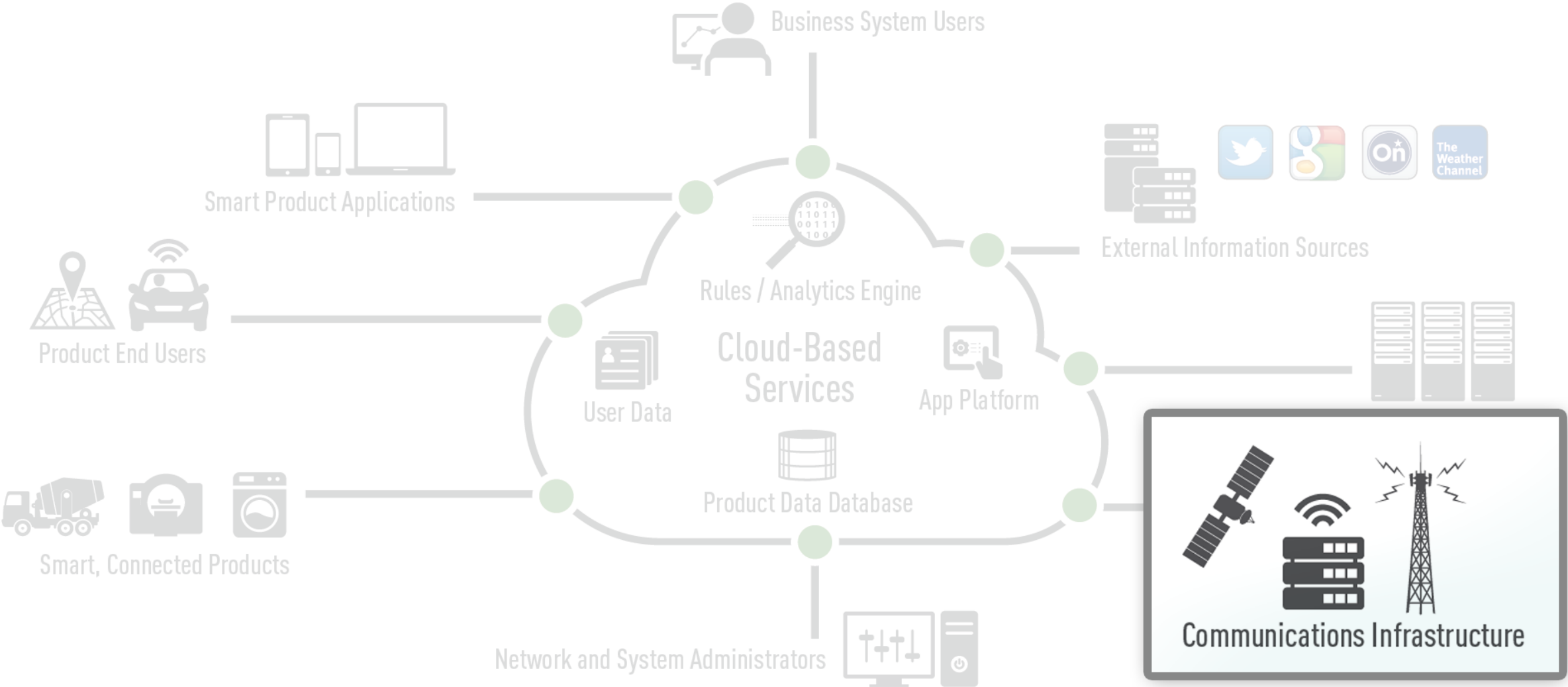
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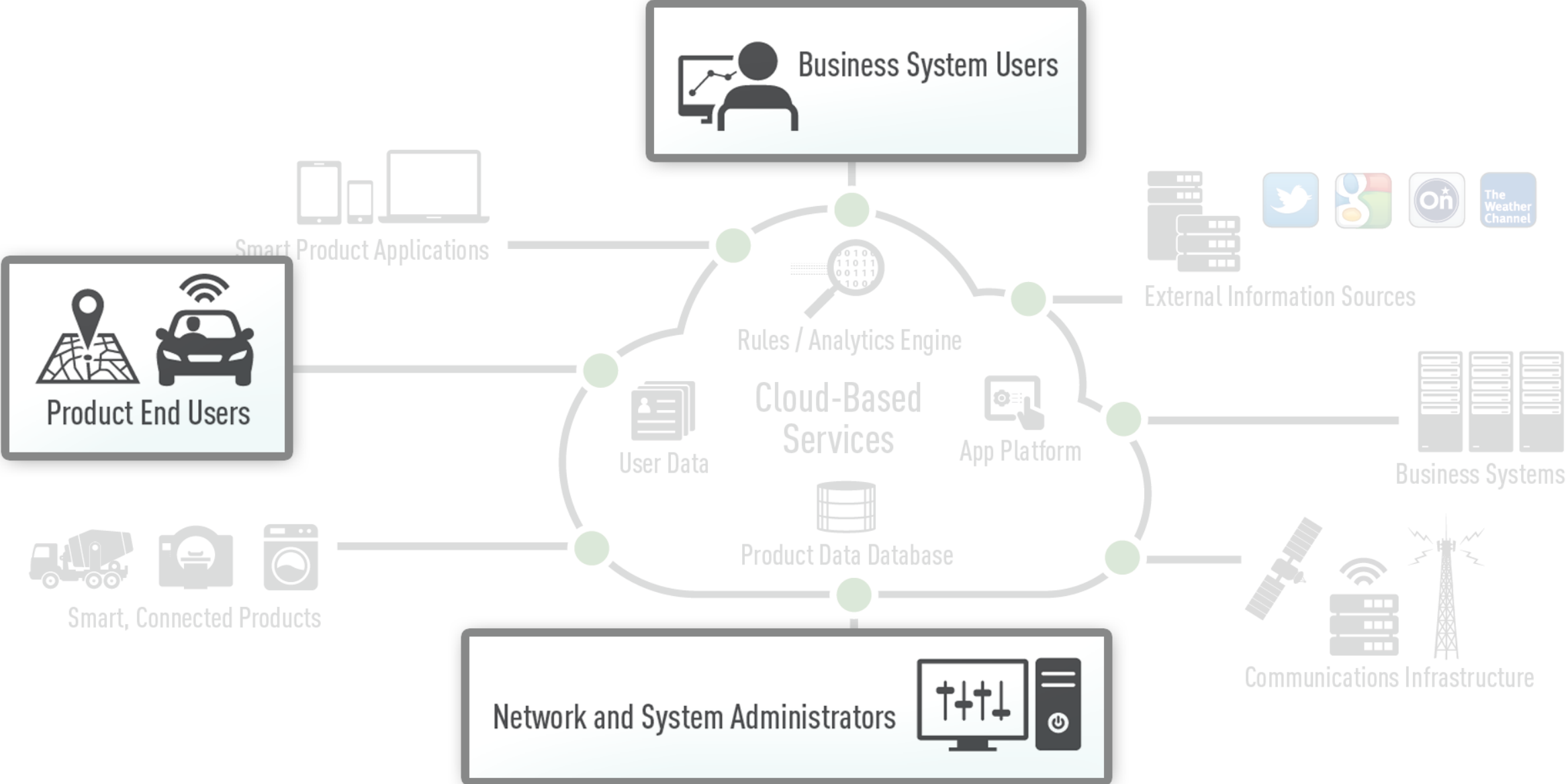
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RISK ASSESSMENT

- Information Security is all about managing risk
- Traditional information system risks still exist
- The World of IoT brings new risks that need to be considered:



Public Safety



Business Disruption



Product Liability



Compliance/Regulatory Risk

DEFINING COMMON THREATS

Many information system threats exist on the internet

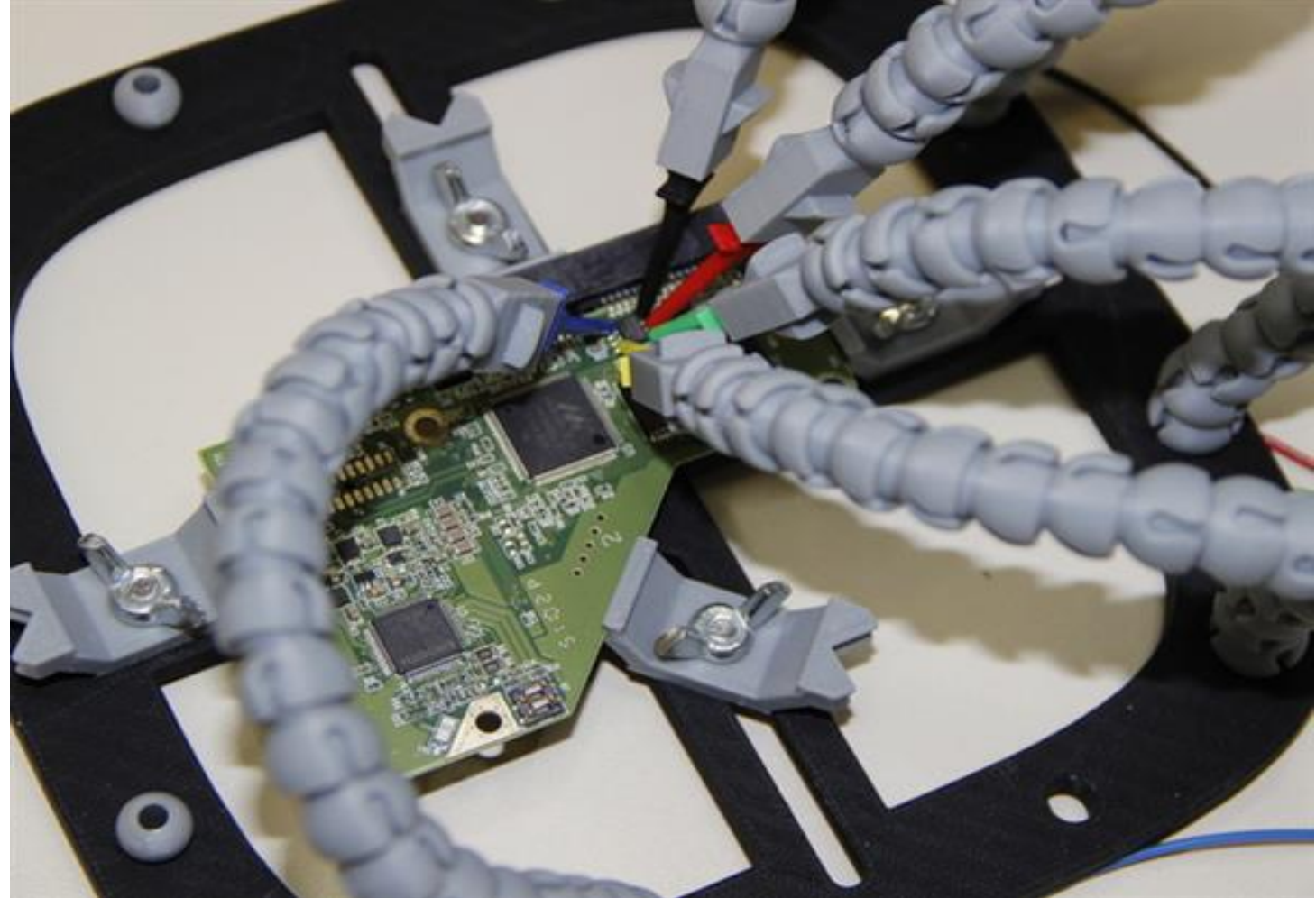
- Denial of Service
- “Man in the Middle” Attacks
- Malware
- Application-based Attacks



EXPANDED VULNERABILITY

The IoT has additional vulnerabilities often not found in traditional IT systems

- Devices in Uncontrolled Environments
- Device Spoofing
- Off the Shelf H/W & S/W Components
- Cloud Deployment

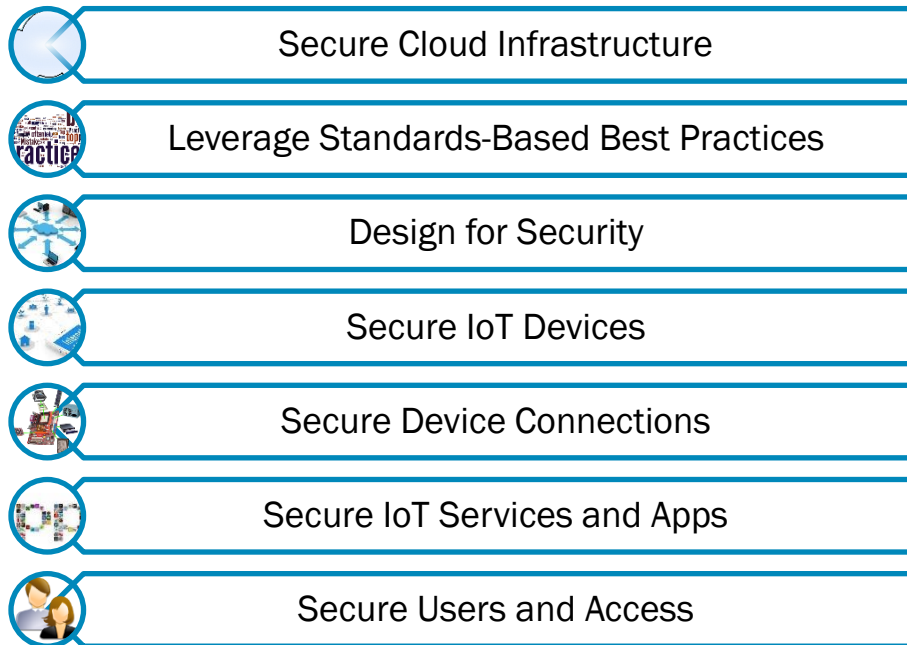


DEALING WITH THE EXPANDED RISK



Expanded threat landscape requires upfront security design

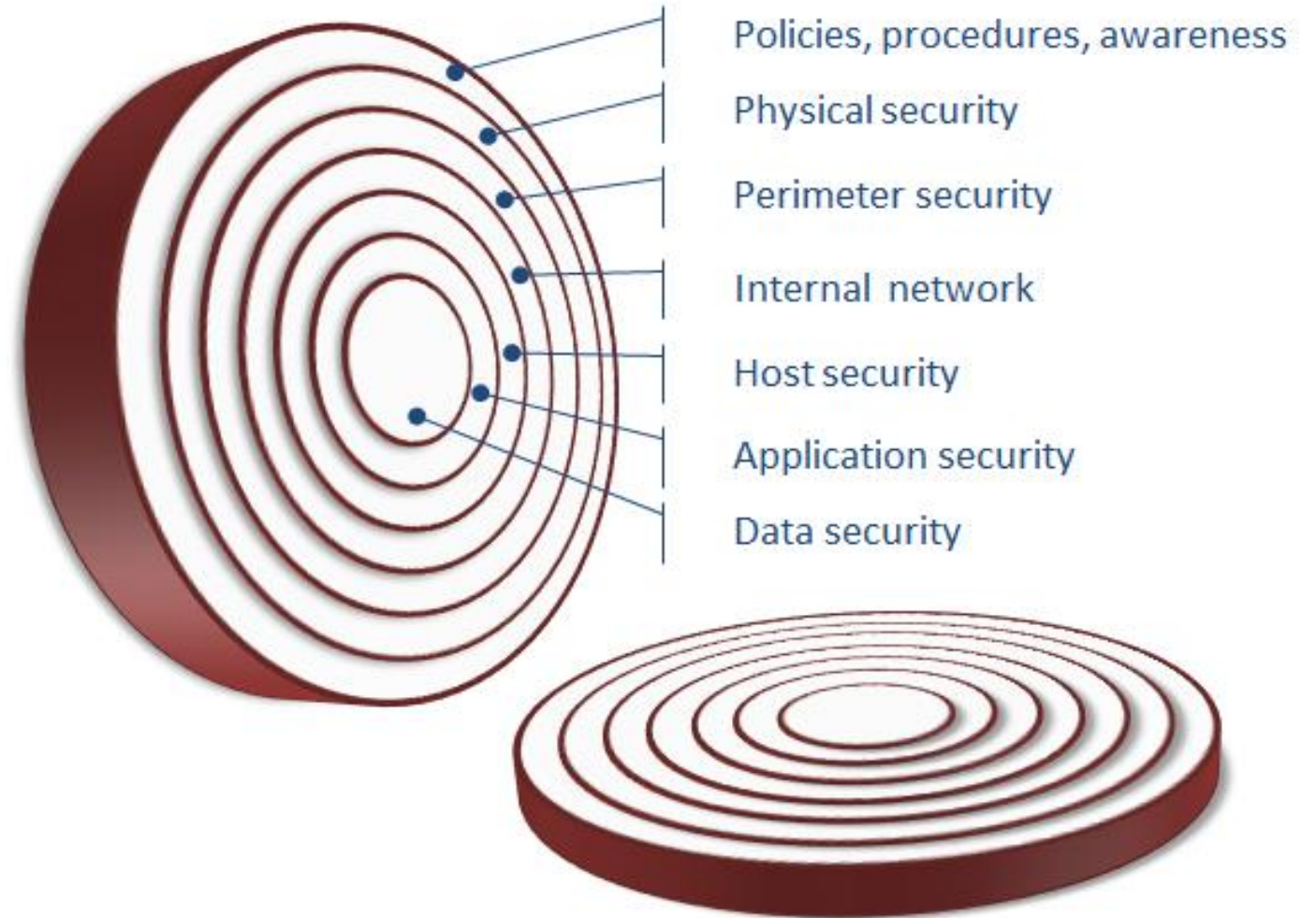
- One size does not fit all
- These 7 steps represent an evolving framework for IoT system security



1. SECURE CLOUD INFRASTRUCTURE

Nothing new – but critically important

- Use Layered Security with “Defense in Depth”
- Ensure use of Strong Encryption
- Prepare Incident Response
- Avoid Single Points of Failure
- Obtain 3rd Party Assessments



2. LEVERAGE STANDARDS-BASED BEST PRACTICES

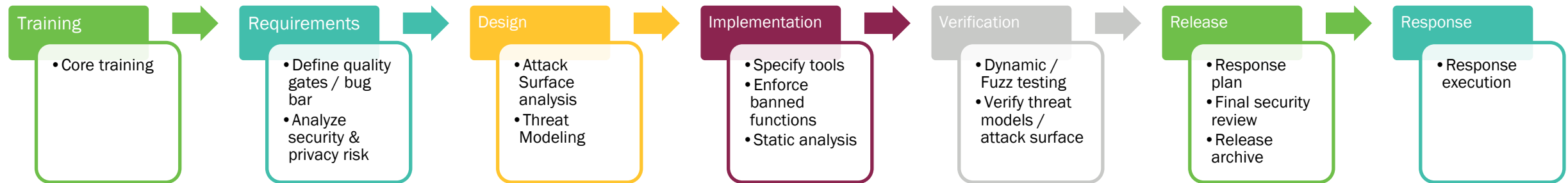
Don't re-invent the wheel

- Utilize Industry Standards and Best Practices



3. DESIGN FOR SECURITY

- Start with a Risk Assessment specific to the system
- Security must be designed into the system
 - Not built at the end of the project by the IT Department
- Allocate time and budget
 - Security-focused Activities
 - Security Capabilities



4. SECURE IOT DEVICES

- Securing devices in uncontrolled environments is very difficult
 - Attackers will learn how the devices work
- Protect Data with Encryption
- Protect from Authentication Attacks
- Don't Rely on "Back Door" Administrative Accounts
- Monitor Devices



5. SECURE DEVICE CONNECTIONS



6. SECURE IOT SERVICES AND APPS



Protect from
internal &
external attack
vectors

Manage 3rd
Party access

Change
management

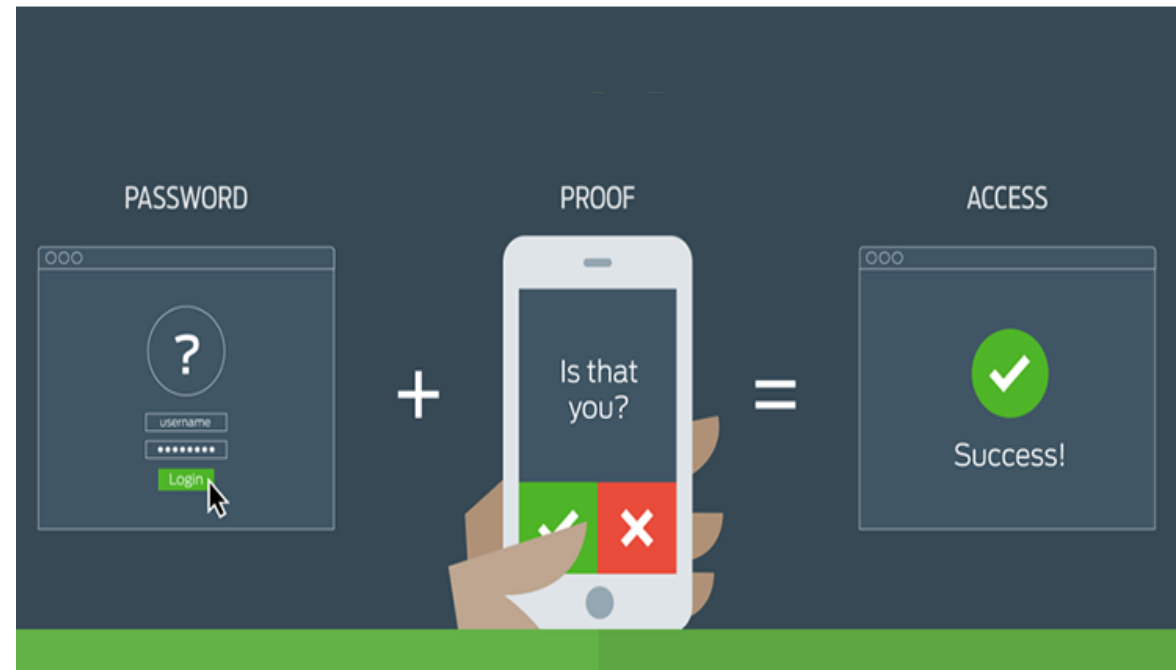
Log application
and
infrastructure
changes

Virus protection

Test for
vulnerabilities

7. SECURE USERS AND ACCESS

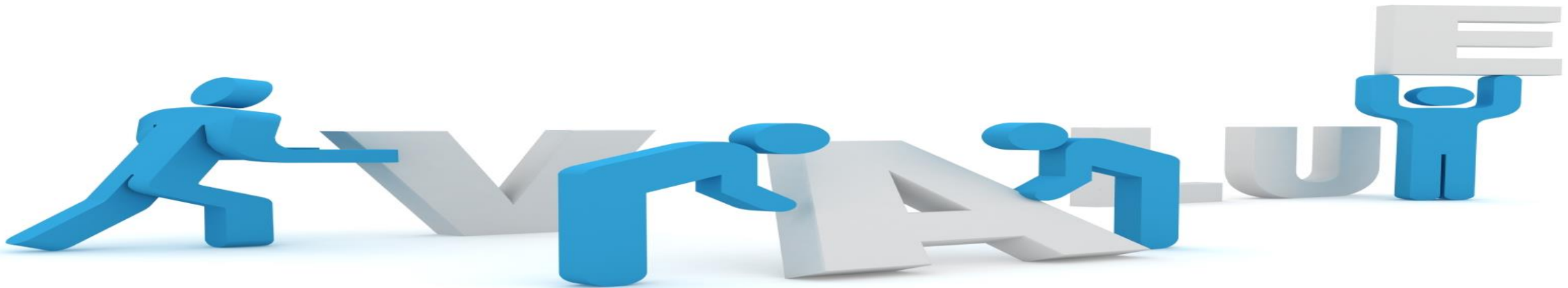
- Utilize granular role-based permissions
- Utilize strong passwords with timeouts for multiple failed logins
 - Guard against brute force attacks
- Encryption of connection critical
 - Passwords passed in plain text will be compromised
- Multi-Factor authentication
 - Something you know and something you have



SUMMARY



- This presentation is a starting point for dealing with Securing the IoT Cloud
- IoT applications can provide significant competitive advantage
- Expanded deployment landscape poses new and unique challenges
- Design for security upfront – Don't leave It as an afterthought
- Security is often viewed as a barrier to innovation
 - Security is a Key Enabler to unlocking the Value of IoT



QUESTIONS

The image features several colorful geometric shapes, including triangles and lines in shades of blue, green, yellow, and purple, scattered across the background. A large, multi-colored geometric shape is prominent on the right side. The text 'LIVE WORX 16' is centered, with 'LIVE' in a thin, outlined font and 'WORX 16' in a bold, solid black font. A small 'TM' trademark symbol is positioned to the right of the '16'.

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