Building an Enterprise chain of trust from the device to the cloud

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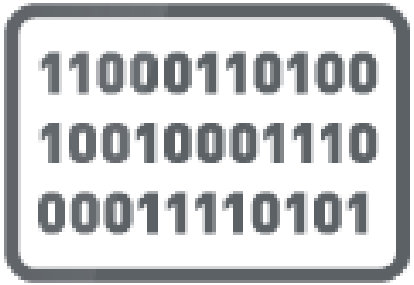
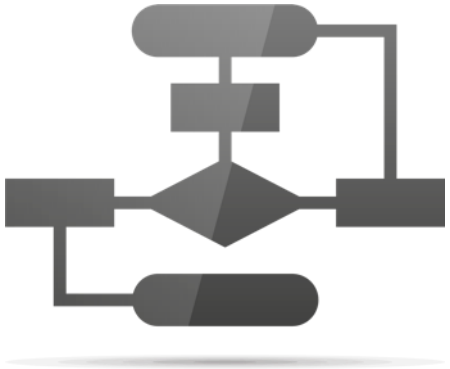
security to be free

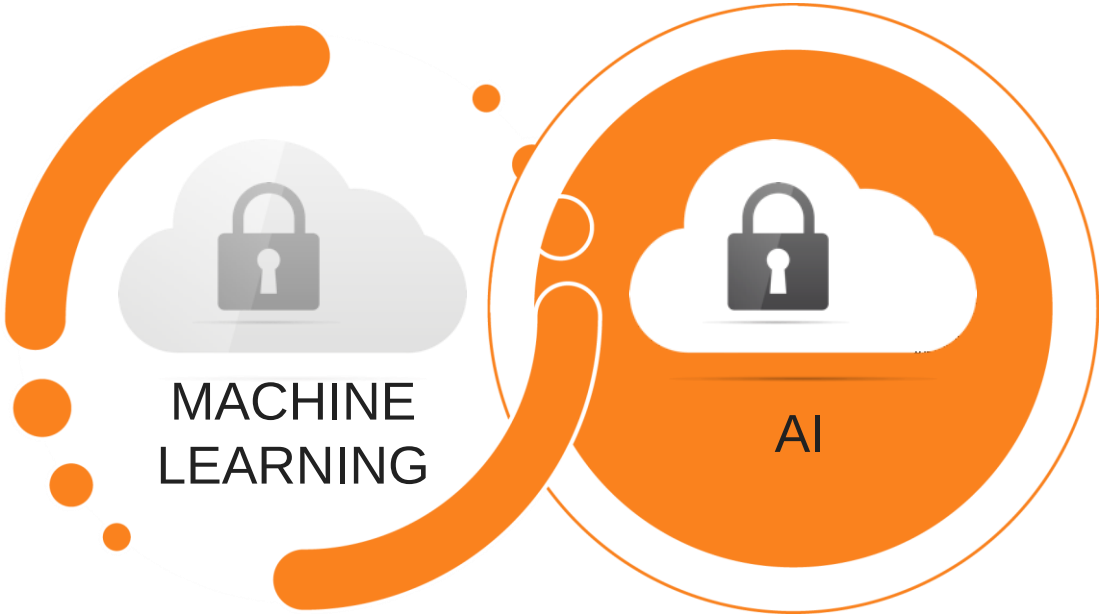
Insights are the new oil of 5G

Insights = 

+ 

THE MORE DATA, THE BETTER ALGORITHMS,
THE MORE INSIGHTS

INSIGHTS IMPROVE INSIGHTS



MULTI-ACCESS EDGE AND VIRTUAL CORE

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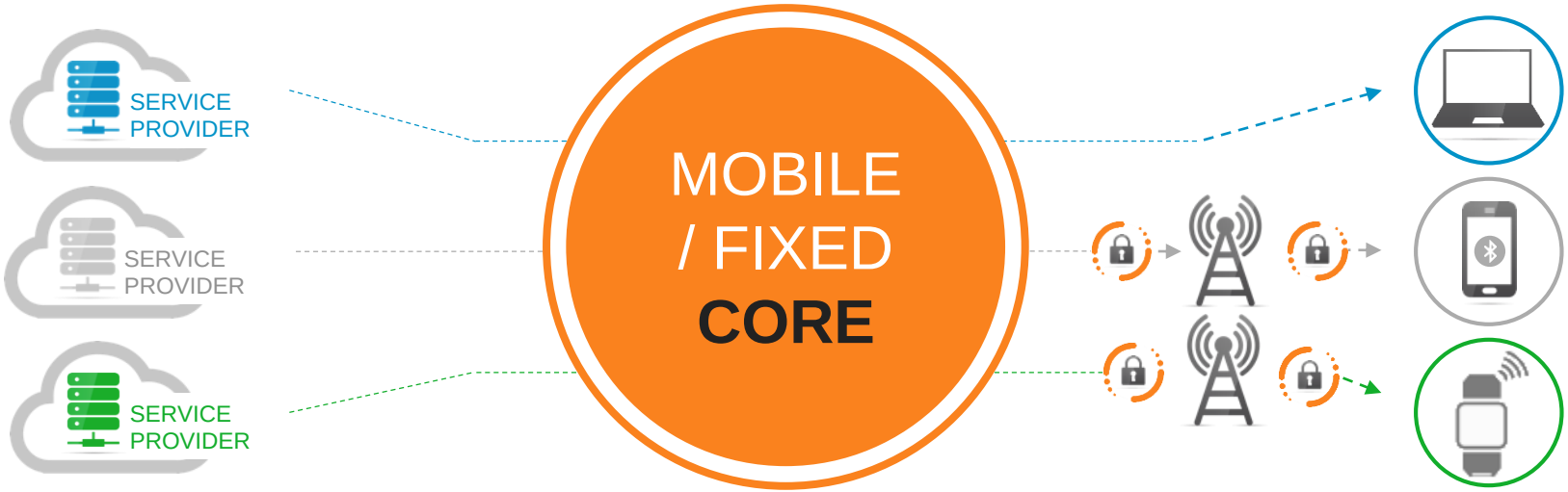
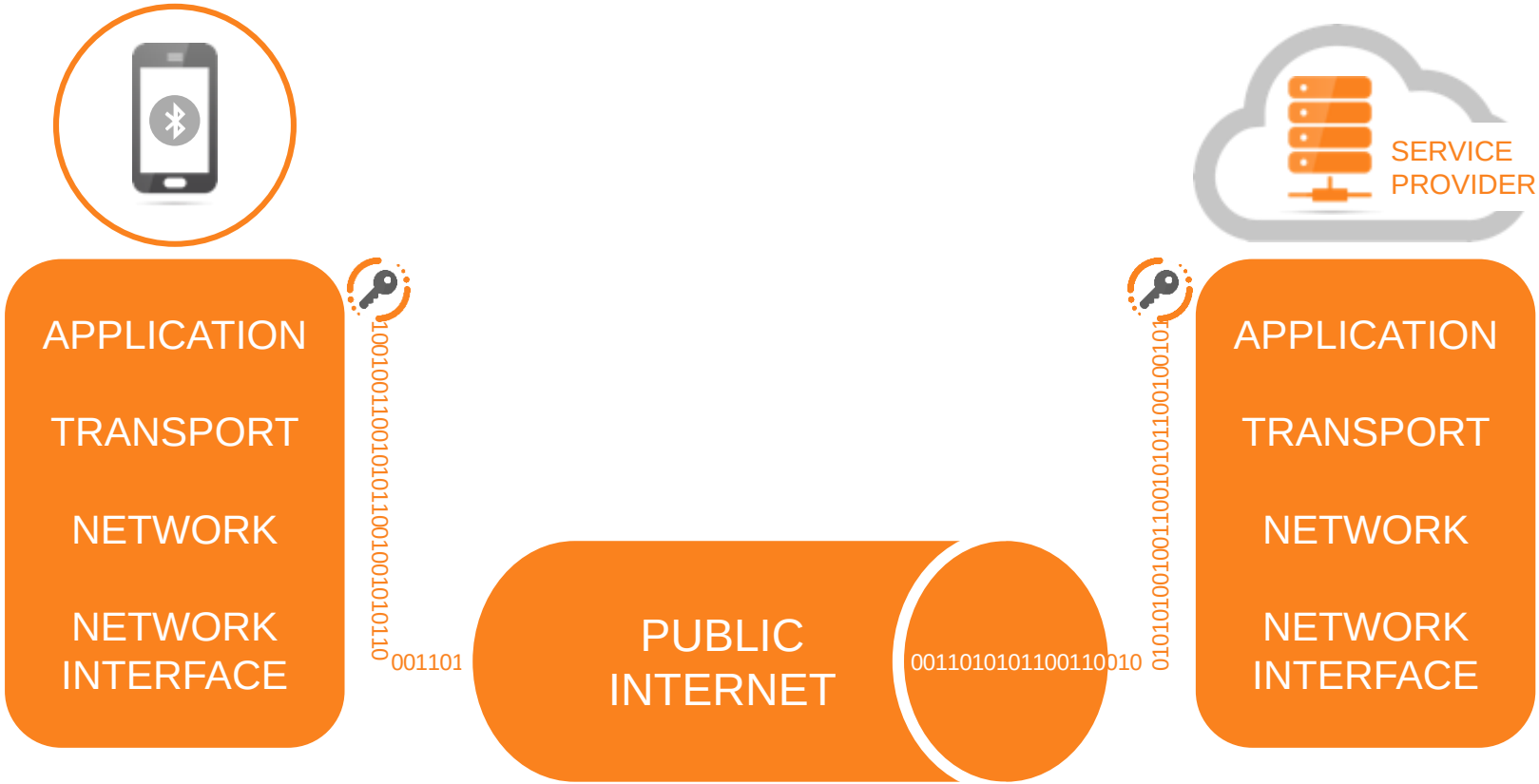
Today's Public Network Model

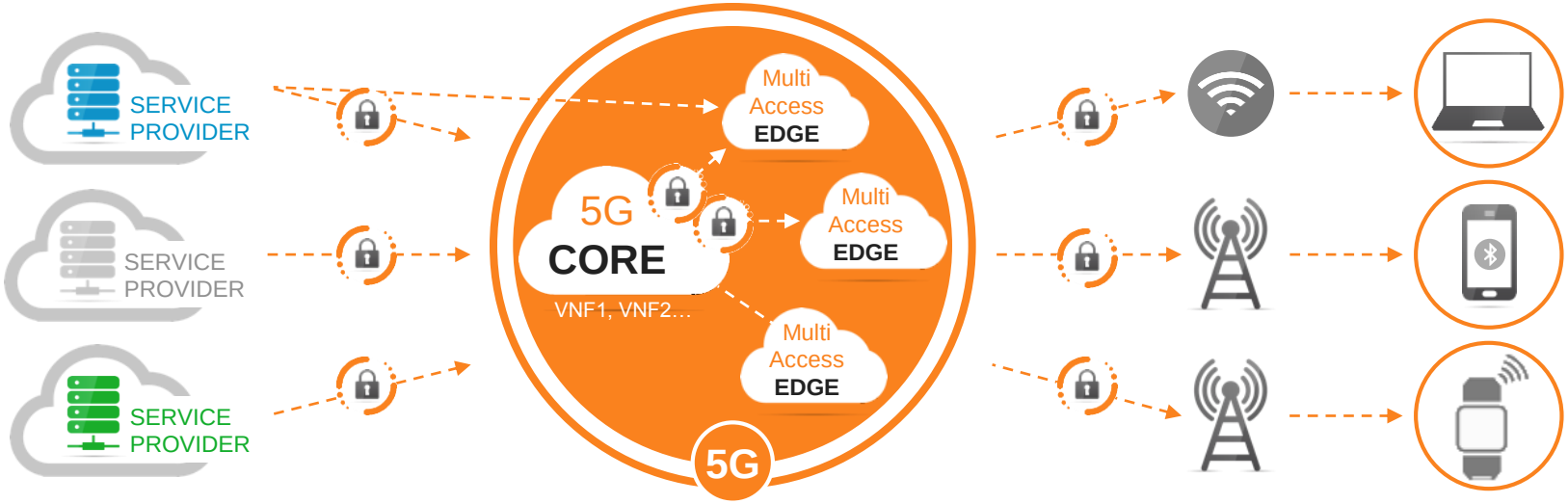


No control over bandwidth, latency, availability, reliability
Limited control over security, best available path
"Take what the CSP offers", all traffic treated equally

Today's TCP/IP based Confidentiality & Integrity Protection

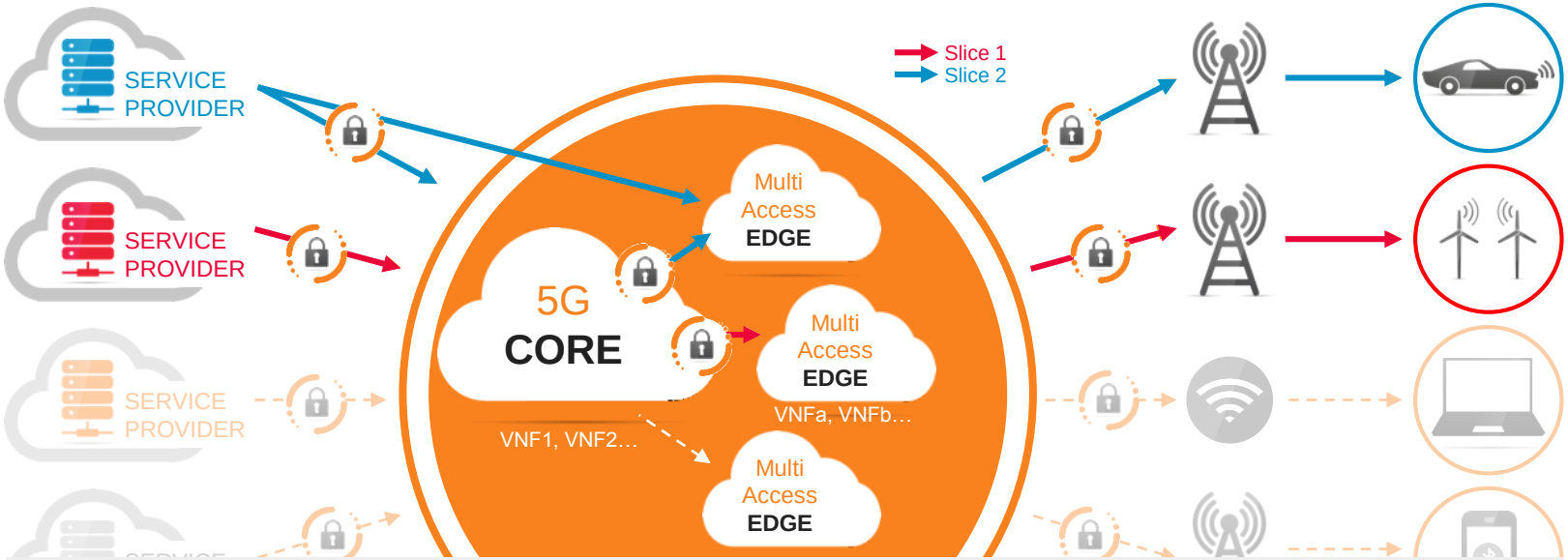


Mobile security chain: key architectural elements in 5G



Public networks will continue to improve, treating all traffic equally (hopefully!).
They will continue to provide open IP connectivity providing a very generic type of internet access, not linked to any given content or service. These services will continue to be marketed & sold directly by Connectivity Service Providers to end-customers.

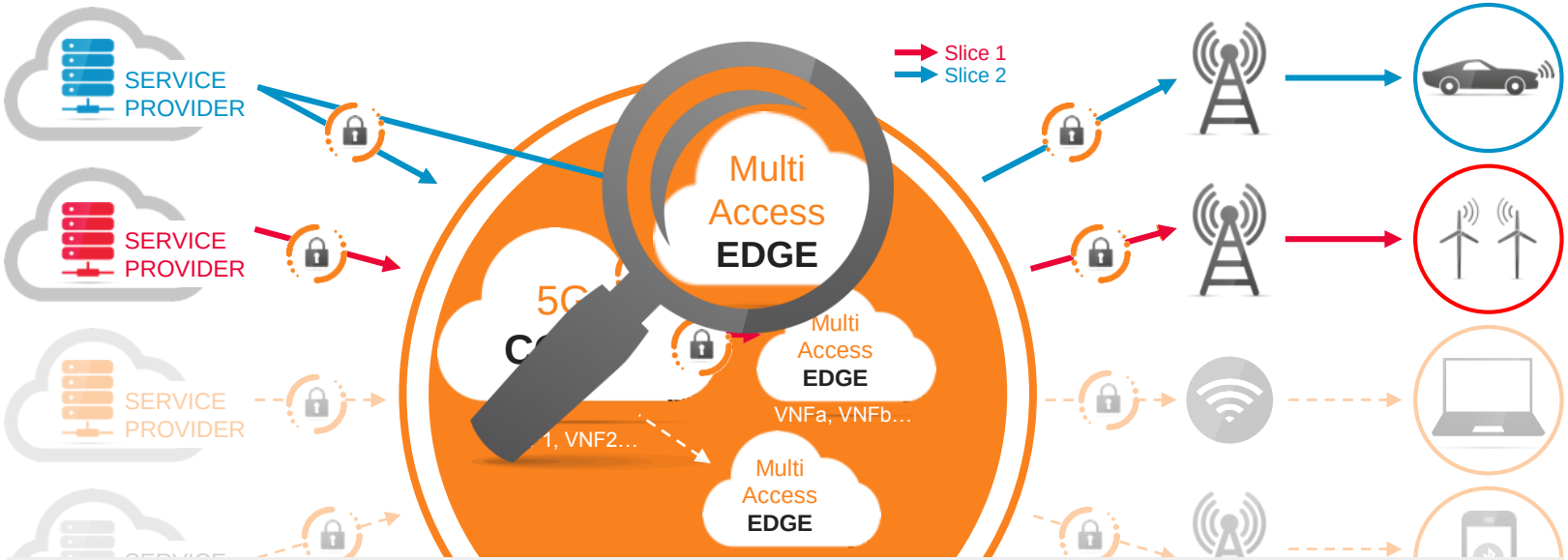
Mobile security chain: key architectural elements in 5G



Private network “slices” conforming to agreed-upon SLAs are based upon distributed clouds, hosting applications directly in the fabric of the network together with virtual network functions providing connectivity.

The connectivity offered by these slices is typically invisible to an end-customer as it’s bundled with the cost of the service.

Mobile security chain: key architectural elements in 5G



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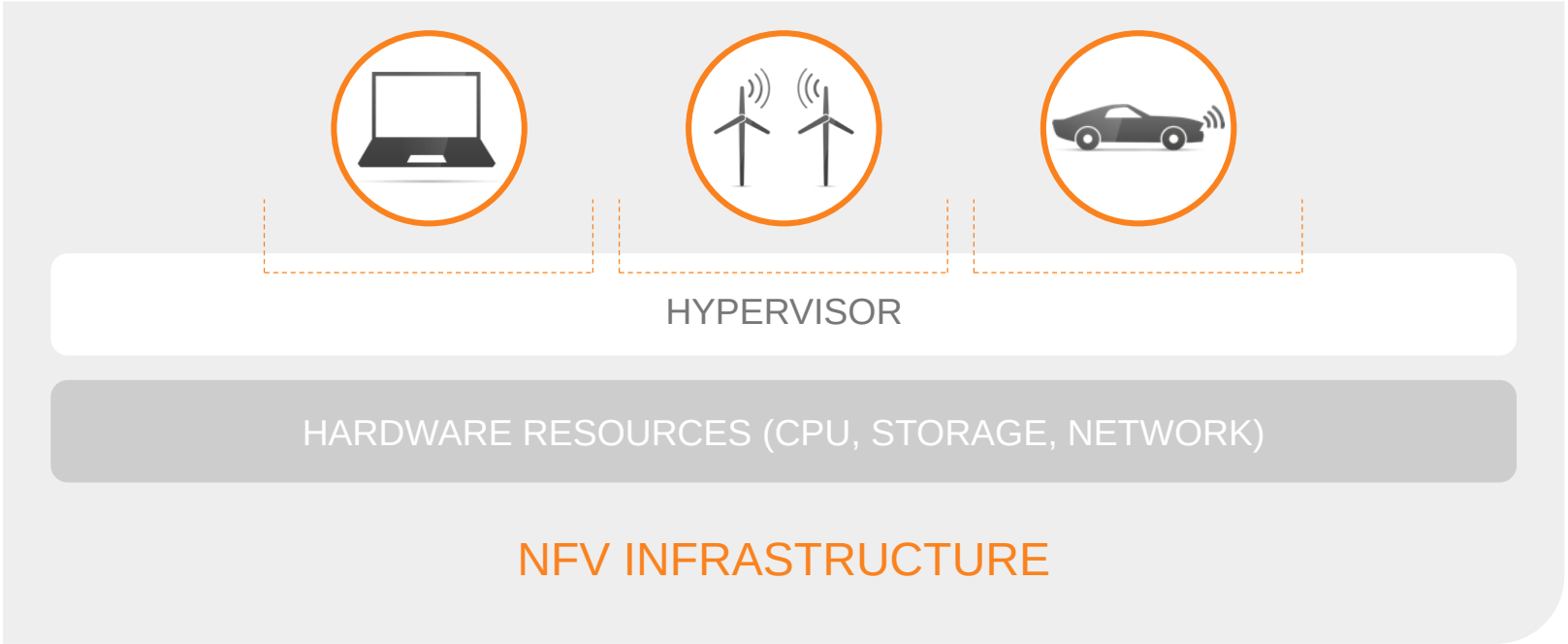
Protection of Applications & VNFs



A Hypervisor provides some level of isolation

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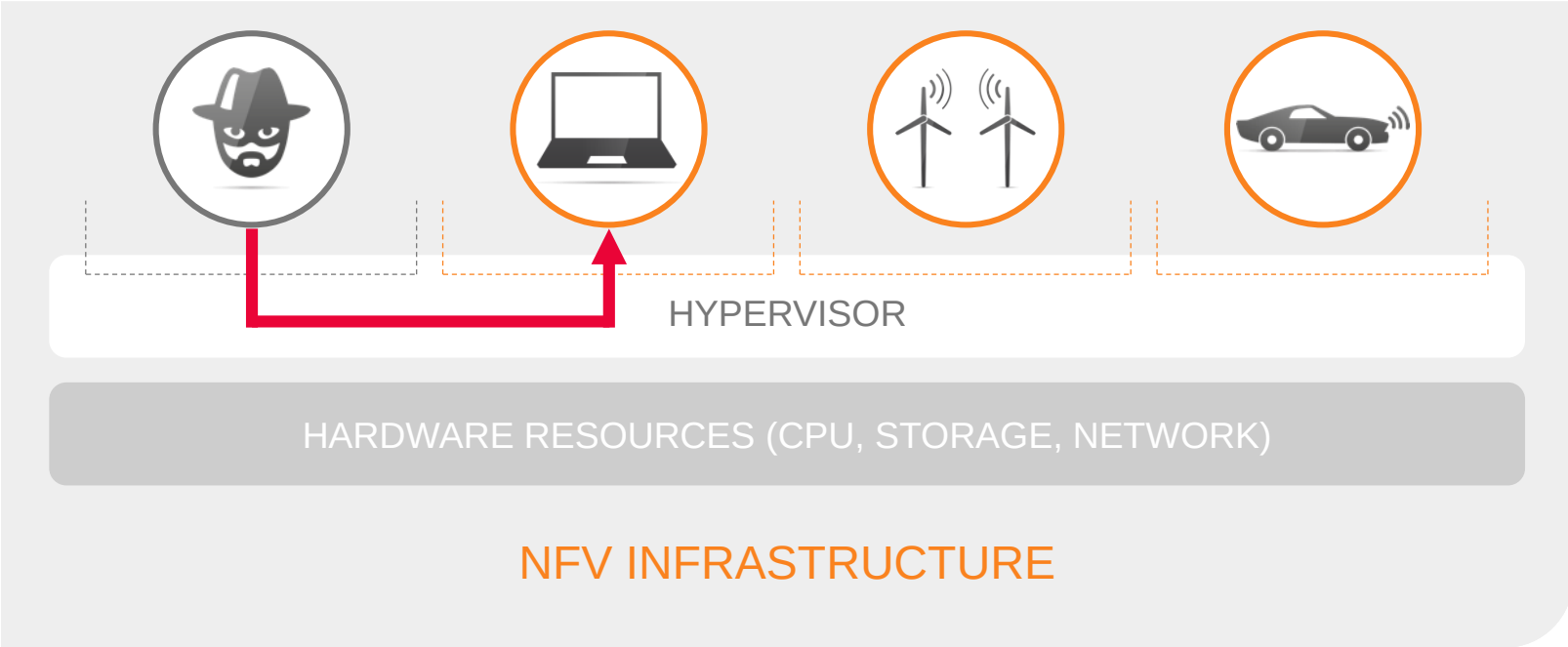
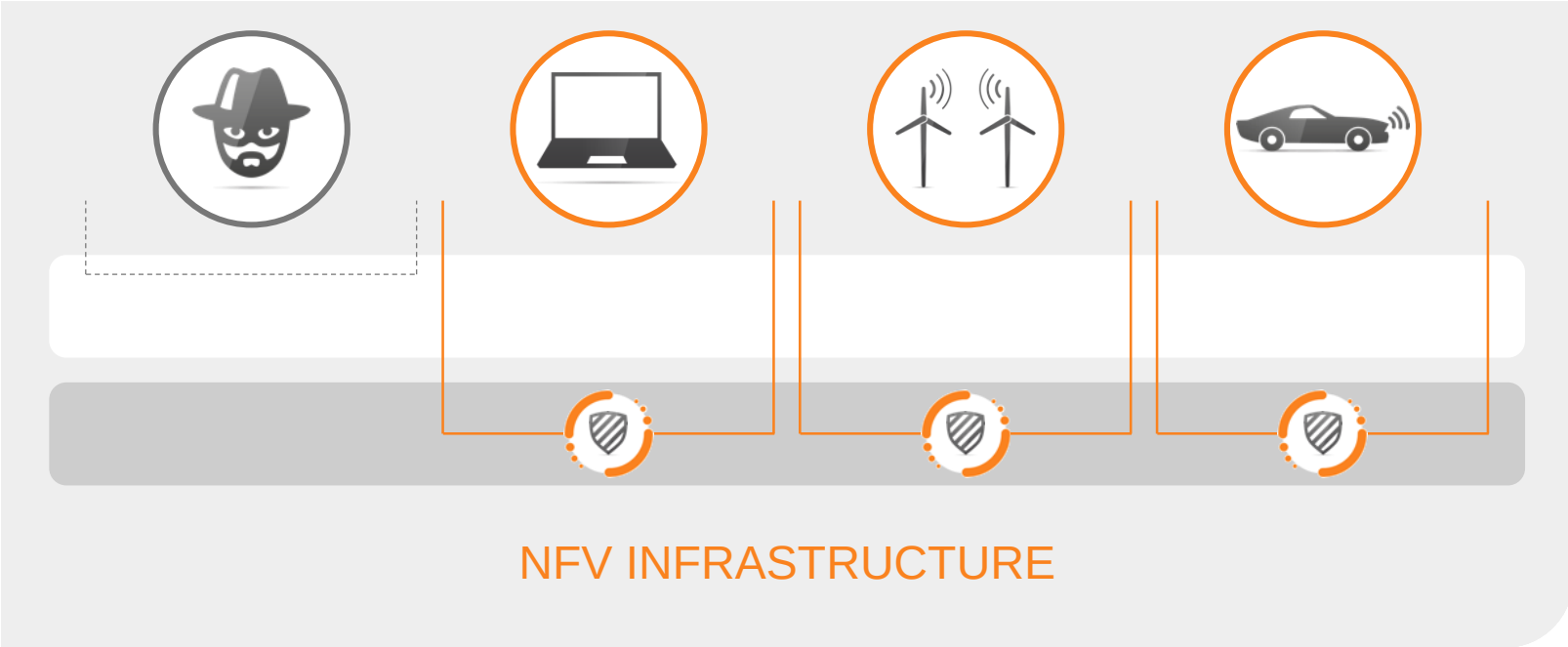
Protection of Applications & VNFs



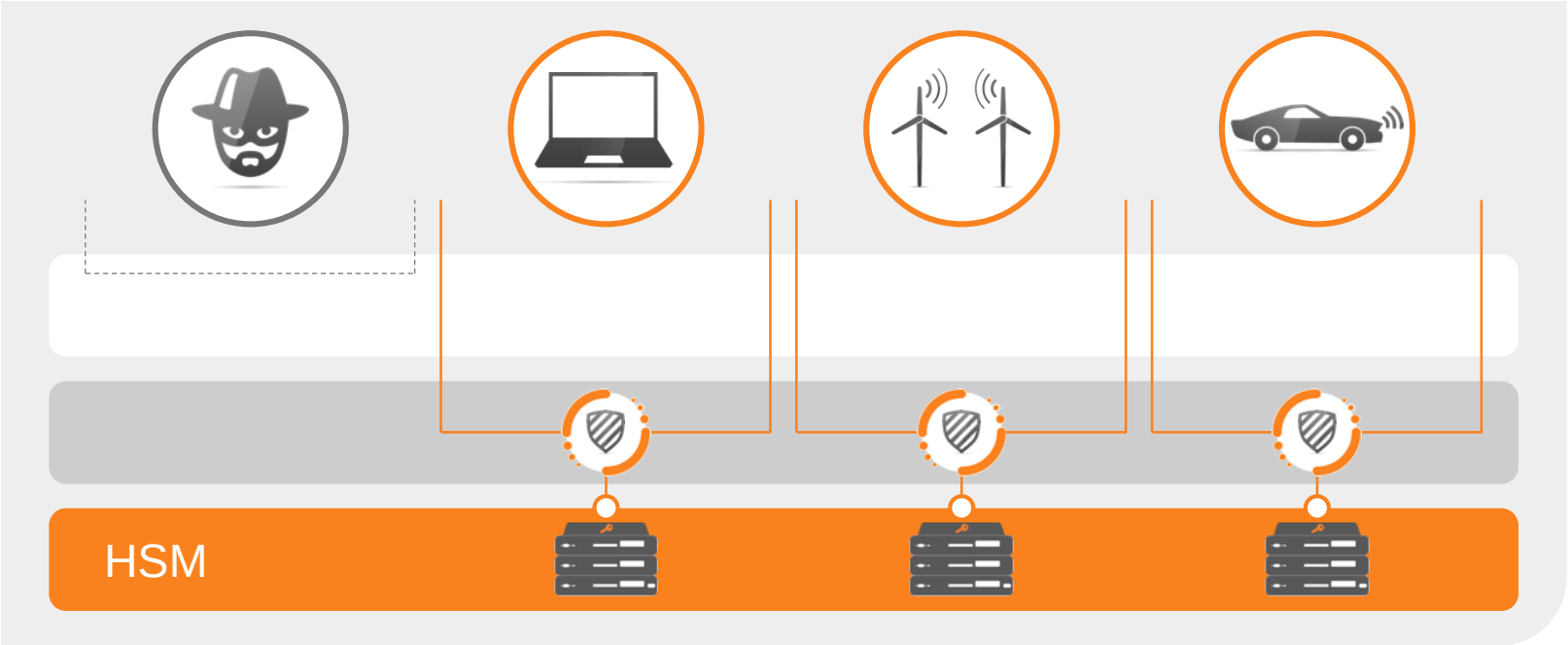
Malicious code could be implemented to hack through the walls

Protection of Applications & VNFs



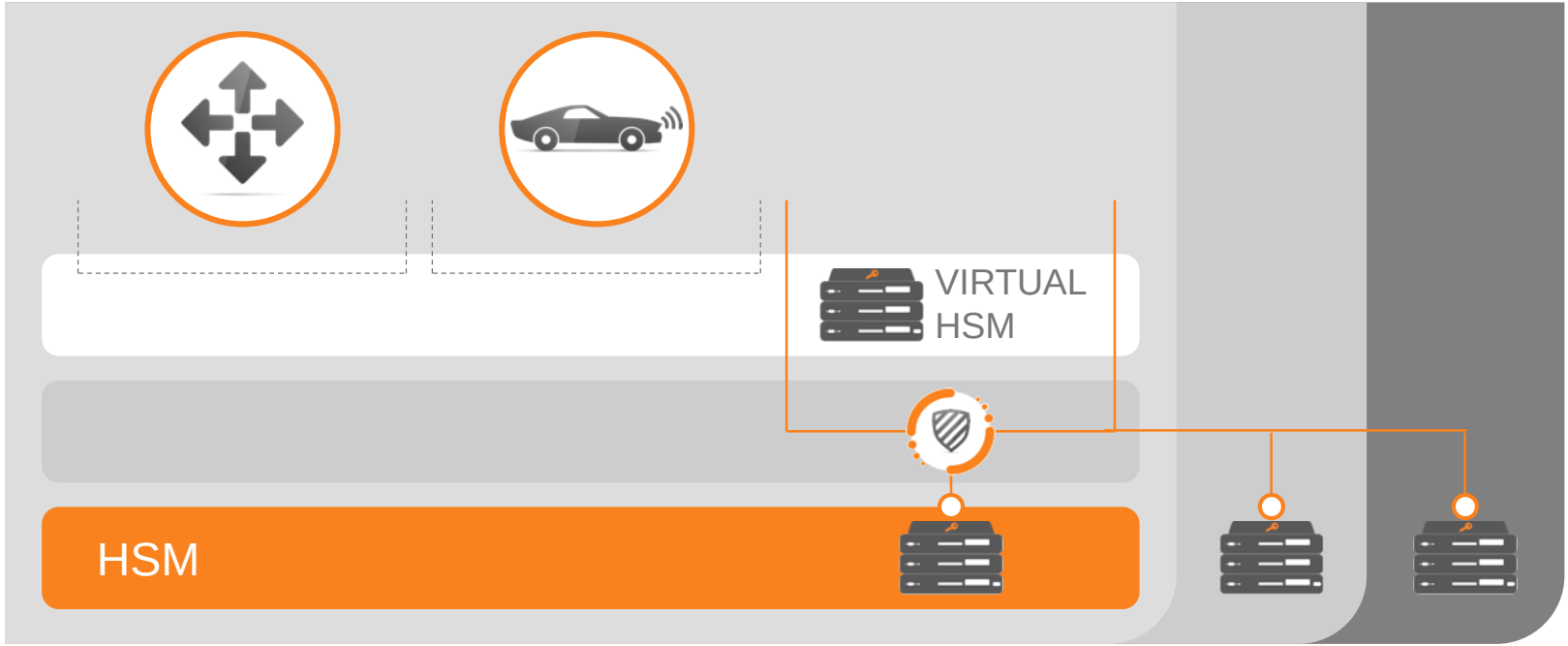
Secure enclaves (“HMEE”) in the CPU increase isolation between the VNFs

Protection of Applications & VNFs



A HSM tethered to the Enclave could increase the security level of the system for operations such as Key Generation or Mutual Auth. between functions

Protection of Applications & VNFs



A Virtual HSM can be tethered to real HSMs allowing for elasticity and scalability

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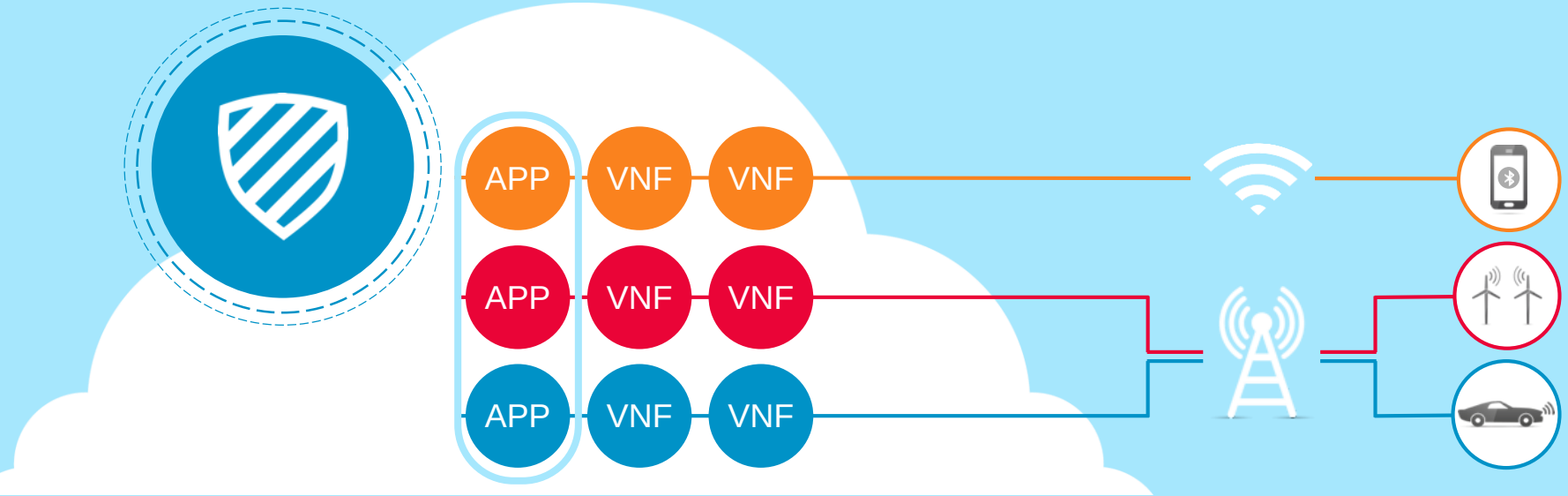
Segmenting Security Needs of Major 5G Use-Cases

Security Needs (MNO/SP)	Sub. Authentication Anti-DoS Confidentiality	Sub. Authentication Anti-DoS Authenticity ID/Privacy	Sub. Authentication Confidentiality+ ID/Privacy+ Integrity+ Anti-DoS Authenticity	Sub. Authentication Confidentiality++ ID/Privacy++ Integrity++ Device FW Integrity Anti-DoS Authenticity	Sub. Authentication Confidentiality+++ ID/Privacy+++ Integrity+++ Device FW Integrity Anti-DoS Authenticity
Credentials Protection	SOFTWARE IN TRUSTED ENCLAVE / SECURE ELEMENT				
Complimentary Core Security to reinforce	WALLED GARDEN / OUT-OF-BAND MGMT / TOKENISATION / A.R.M. / S.F.U.				
	1	2	3	4	5
	Basic Sensors	Broadband Modem Set-Top Box	Auto Info-tainment Industrial Basic Smart Wearable Retail (PoS) Laptop Smartphone/tablet	Auto Telematics Home Automation Industrial Critical Medical Wearable Metering/Critical Sensors Public Safety/1st Resp	Military Remote Surgery V2X

S.F.U.: Security Firmware Upgrade – A.R.M.: Active Risk Management

Apps at the edge individually consolidate useful data and send it to the core cloud or directly to the SP cloud



How do we exchange data between apps hosted in isolated network slices to improve our insights?

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To conclude…

Insights are the new oil and 5G will help to generate them and then leverage them, enabling digital transformation and disruptive business models. **Establish trust** between all elements collecting, processing and leveraging the data and insights.

End-to-end **ISOLATION** of the network slices is key to reassuring enterprises that hosting their data within a co-hosted telco/enterprise environment is secure.

Gemalto is focused on security at **the device, multi-access edge and the core** with an appropriate footprint per 5G segment meeting both Connectivity Service Provider and Industry/Enterprise requirements. We're working with the entire industry to continue to secure next generation mobile communications.

Thank you

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