Intelligence Everywhere. For the Internet of Everything.

La tecnologia LTE e le Reti Mission Critical

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GSMA GLOMO AWARDS
THE GLOBAL MOBILE AWARDS
WINNER 2016

Athonet serves the new mobile “edge” markets

Athonet is at the confluence of three major trends

- New market demand including Industry 4.0, Connected Vehicles, Smart Cities & Smart/Micro Grids, Public Safety that traditional networks cannot serve
- Softwarisation and cloudification allows communication service providers and end-users to leapfrog legacy solutions with dramatic simplicity, agility and affordability
- Regulatory and technology shifts that are facilitating Industrial/Enterprise LTE (e.g CBRS in U.S., LSA , 1.9 Ghz in Japan, MulteFire, 5G)

Requires a new network paradigm to serve and manage a federation of distributed networks

INDUSTRIAL/ENTERPRISE LTE

CONNECTED VEHICLES & SMART CITIES

GOVERNMENT & PUBLIC SAFETY

The Software is the Network.

Mobile Core Networks that are rapid to deploy
Simple to manage – IT-Friendly
Leading edge reliable performance
Pushes intelligence & content to network edge
Enhances existing network investment
Enables vast new markets

Autonomous Cars & Drones
Digital Enterprise
Digital Divide
SmartCities
Public Safety
IIoT
Industry 4.0
Smartgrids

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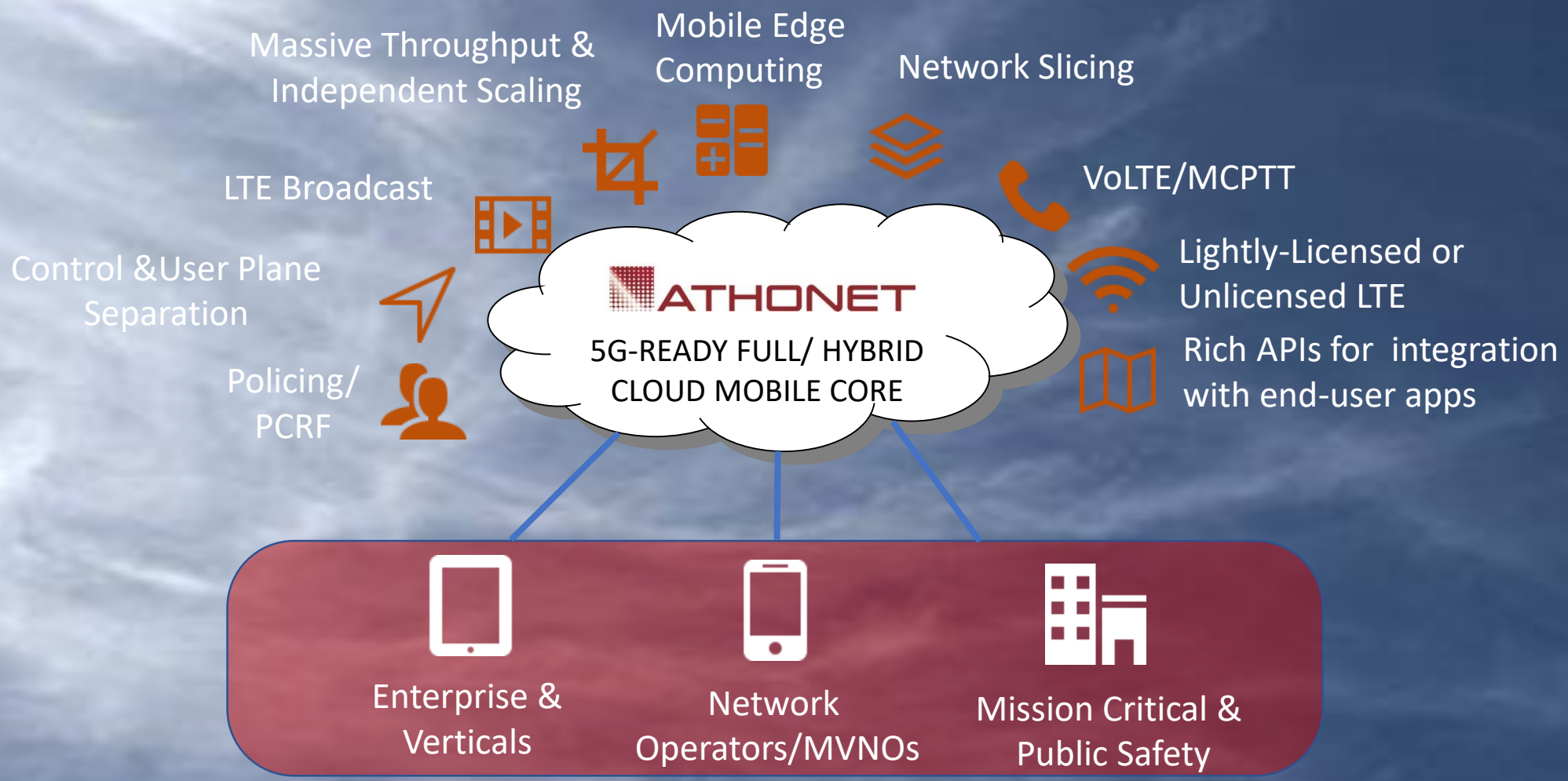
Award-winning 5G-Ready mobile core



Athonet's Edge Micro-core

- Software optimized to run on COTS and virtualized platforms – EPC + IMS for VoLTE
- Same software runs in small devices, can bring great efficiency to the cloud edge with potentially thousands of installation to be in cheap HW
- Small scale deployment on off the shelf Intel Atom platform allows to run EPC with performances that reaches over 1,5K TPS (over 100 attach procedures completed in 1 second) and line rate throughput
- Efficiency in small devices means great efficiency and HW saving on larger deployments
- The same software is used commercially to support millions of users, 100s of Gbps of throughput and 100s of thousands of TPS

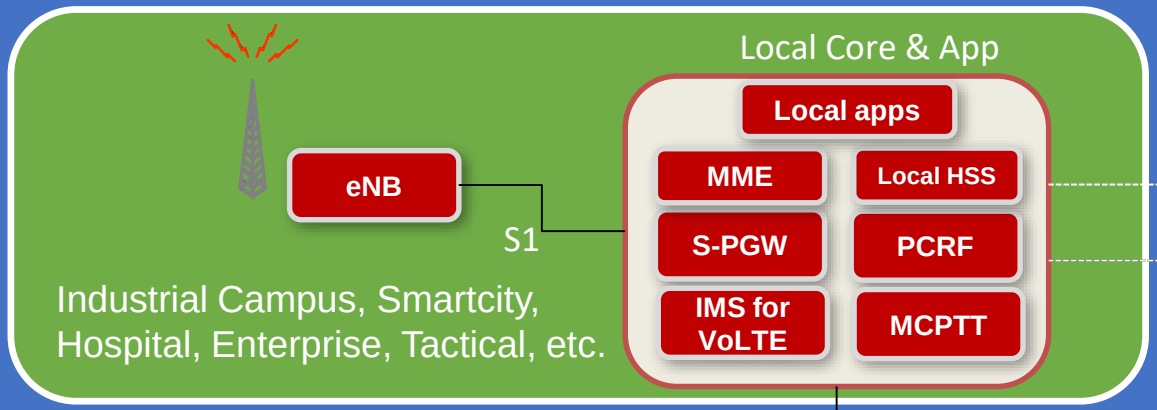
RELIABLE EDGE NETWORKS

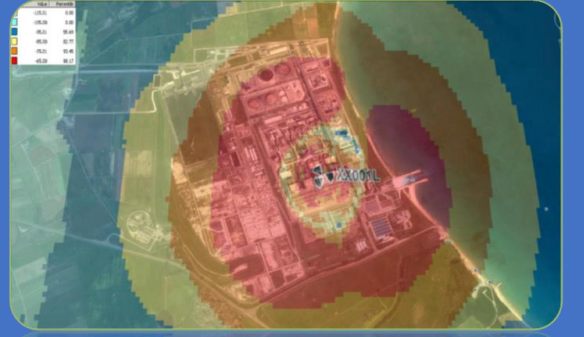
Needs for Dedicated LTE Networks

- Need for low-latency – industrial real-time control, safety-at-work, utilities etc.
- Need for “local” bandwidth hungry services e.g. video, multimedia, robots etc.
- Need for “secure”, reliable and resilience communications with assured SLA
- Need for visibility/control on the network and Private LTE Bubble federation
- Need for local offload data & signalling, QoS, eliminating backhaul bottlenecks
- Need for local subscriber database (HSS) for always-on mission-critical communications
- Need for local VoLTE/VoIP, PTT/MCPTT services or other apps to reduce backhauling traffic
- Need for future proof, 3GPP, cost effective solutions fully interoperable with MNO nets









Transportable LTE Network based on Macro Cell

- Dedicated reliable coverage (single or multi-site)
- User profiling: guaranteed access, bandwidth, priority
- PriMo Cube coverage: up to 12 Km of radius
- PriMo Cube users: up to 1000's simultaneous connections
- Group Call and Push-To-Talk capabilities
- Strong security, simple to manage: SIM card based
- Mobility Gateway routes all the local traffic locally and optimizes backbone use (via fiber, satellite, DSL, MW)
- Mobility and meshing funtionalities
- Rapid deployment and IT-friendly management

Portable LTE Network based on Small Cell

LTE Bundle Kit: full network in a portable case for tactical and rapid deployment mission-critical applications

- ❑ Use cases: government, tactical
- ❑ Rugget case to transport
- ❑ LTE small cell integrated (5+5 Watt)
- ❑ Coverage of 1000's of meters
- ❑ Users: up to 400 active communications
- ❑ Quick deployable 7 mts must
- ❑ Voice, data and video communications
- ❑ Stand-alone or connected via any backhaul (e.g. satcoms)
- ❑ Compatible with standard phones, tablets, dongles

Portable LTE Network in a Rucksack based on Small Cell

PriMo Rucksack: full network in a portable case for tactical and rapid deployment mission-critical applications

- ❑ Use cases: government, tactical
- ❑ Rucksack setup
- ❑ LTE small cell integrated (5+5 Watt)
- ❑ Coverage of 1000's of meters
- ❑ Users: up to 400 active communications
- ❑ Batteries for up to 6 hours of autonomies
- ❑ Voice, data and video communications
- ❑ Stand-alone or connected via any backhaul (e.g. satcoms)
- ❑ Compatible with standard phones, tablets, dongles

Compact Portable LTE Network based on Pico Cell

Full network in a portable case for tactical and rapid deployment mission-critical applications

- ❑ Use cases: government, tactical
- ❑ Case or rucksack setup
- ❑ UMTS or LTE small cell fully integrated
- ❑ Coverage of several 100’s of meters
- ❑ Users: up to 100 active communications
- ❑ Voice, data and video communications
- ❑ Stand-alone or connected via any backhaul (e.g. satcoms)
- ❑ Compatible with standard phones, tablets, dongles

We help our partners to make it happens…

Over 100 deployments world-wide

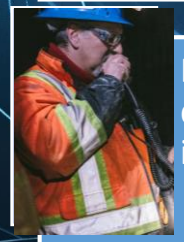
World's First LTE Commercial Smartgrid / One of the world's largest IoT deployments for Enel (2011)

World's First LTE commercial deployment for disaster relief – Italian Earthquake (2012)

Early LTE rural networks in USA (2014) and now CBRS

Malawi's first LTE network (2015)

World's first commercial LTE MVNO for public safety – Government of Finland 2015



Dedicated LTE and VoLTE deployment in the deepest mine in the world (2018)

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Interop BEST OF SHOW AWARD 2016

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Mining 2018 – LaRonde Canada, Deepest Mine in Americas

- **Requirement:** Replace legacy voice, dispatch and WiFi with dedicated LTE coverage in Zone 5 of LaRonde, Agnico Eagle's Flagship Mine in Quebec at 3 kilometer depth
- **Problem:** Underground mining is a challenging environment. WiFi and PMR lead to complexity with restricted coverage limiting operations
- **Solution:** Athonet provided a fully virtualized edge core solution and distributed antenna system that allowed, amongst others:
  - Complete mobile Intranet (data, voice, video) on standard tablets, smartphones and dongles
  - Massive IoT for sensor-based applications
  - Very low latency access to sensors, video cameras on remote machinery and vehicles
  - Integration with safety-at-work applications, Collison awareness systems
  - Medical personnel to triage via video while patient is still 3 km underground and improve response times and outcomes
  - Air quality, water, gas, fatigue detection
  - Asset and human tracking

Rapid deployable LTE Network for Army - 2016

- Complete LTE, IMS and PTT network
- Solution fully outdoor pole-mounted based on compact rugged server and 5+5 Watt small cell
- Complete data, video, voice solution
- Crypto communications
- Connection with helicopter flying at 200 km/h
- HD real time video images from drones
- Voice and video communications between people on-field
- Work-force management from control room

LTE Network in the Sky -2017

- **Requirement:** Instant network coverage for emergency, disaster, search & rescue or roving events to allow voice, video and data between local and remote teams

- **Problem:** Local network may be non-existent, incapacitated or not able to provide QoS due to congestion. Band network backhaul may be unreliable or non-existent and local operations must continue with applications running locally.

- **Solution:** Athonet's deployed a full mobile edge core on a drone together with IMS, HSS and off-shelf small cell so that independent local communications could continue effectively with or without backhaul. Backhaul capability can be added to standalone operations via UE modem connected to satellite or other available sources. Drone can be kept powered via tethered power source for longer term use

Smart Ambulance – 2017

- **Requirement: Highly reliable, high bandwidth and continuos connectivity into ambulances to provide remote diagnostics and triage**
- **Problem:** Rural/isolated communities have poor access to major healthcare centres. Extended time period between ambulance call out and hospital treatment results in adverse clinical outcomes
- **Solution:** Athonet deployed a high availability dedicated LTE network to allow high bandwidth connectivity to ambulances in digital divide areas. This allowed quicker and improved triage, diagnosis and treatment at the incident.
- **Smart ambulance with 4G router on board supporting:**
  - External camera to get real time outdoor imagines
  - Internal camera to get real time indoor imagines
  - Transmitting in real time monitoring parameters of the patient
  - Real time streaming of Echography
  - Smart Glasses to provide close imagines of the patient and operative indication to the paramedic

Smartgrid – 2014 – Power Plant Comms

- **Requirement** – Dedicated LTE coverage of one of Europe's largest power plants with complex coverage needs with high SLA for resilience, control, low latency, mobility, security and fully integrated with utility-ICT infrastructure and Enterprise-PBX

- **Problem** – WiFi and alternatives could not provide satisfactory coverage in an environment with metallic structures, shifting storage domes, mobility. LTE Macro networks could not offer required SLA and coverage.

- **Solution** – Athonet provided a fully virtualized edge core solution that allowed:
  - Complete mobile Intranet (data, voice, video) on standard tablets, smartphones and dongles
  - Very low latency access to sensors, video cameras and LAN
  - Integration with safety-at-work applications for power plant and building site personnel
  - Fully integrated with utility ICT infrastructure & Enterprise-PBX
  - Affordable with IT-Friendly management

Full LTE solution for Navy - 2017

- **Requirement:** Private and secure indoor and outdoor LTE solution on naval vessels used for voice, video, data and m2m communications
- **Problem:** Requires localized core network and IMS with advanced functionality that can be easily managed by IT personnel. Needed to support advanced QoS feature set
- **Solution:** Athonet mobile edge core deployed:
  - Complete data, video and voice solution
  - Complete redundant configuration, dual band, for mission critical communications
  - Wide outdoor umbrella coverage to support communications with other ships part of the convoy or tactical, monitoring, humanitarian and drones missions

Business critical Large Enterprise solutions

Deployed Client

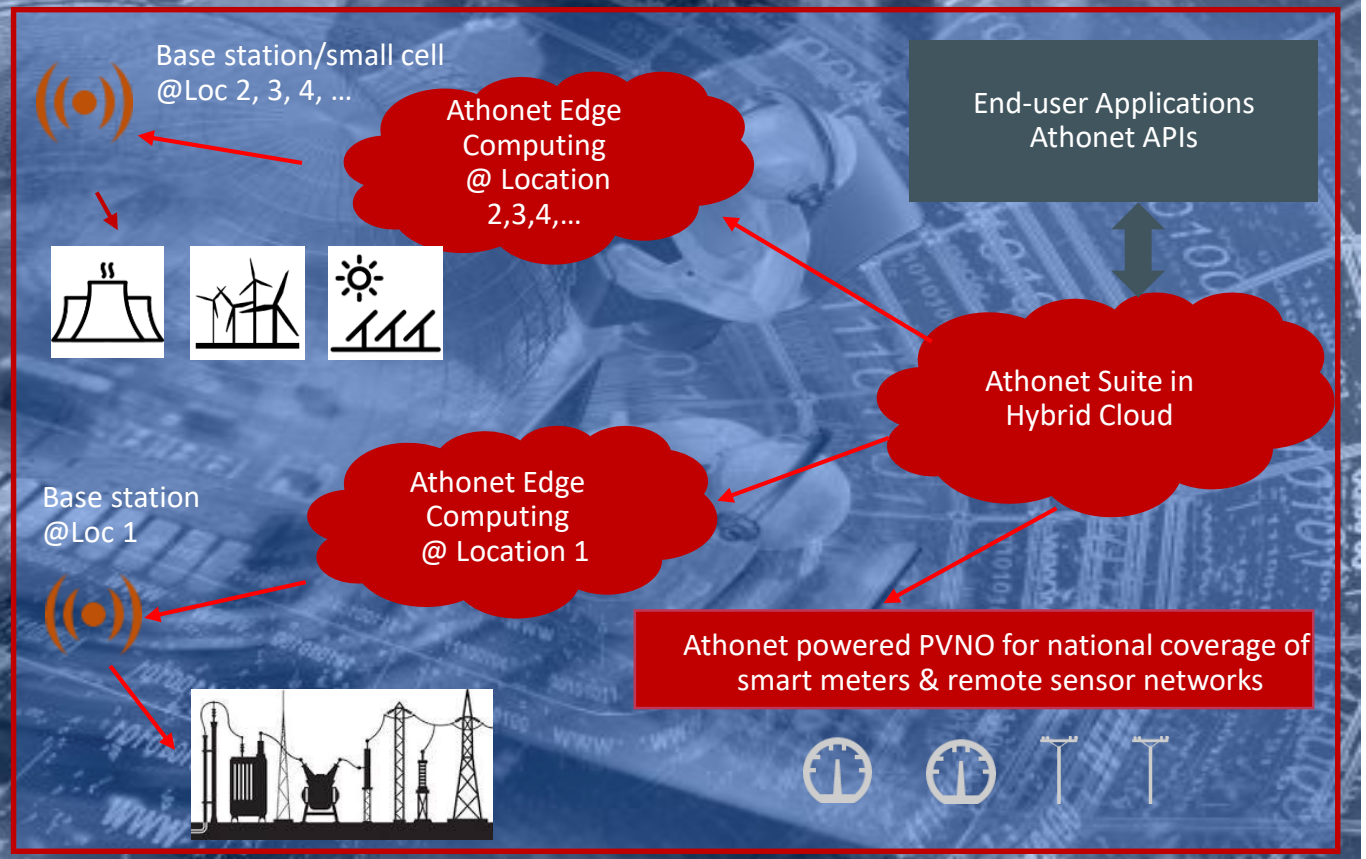
Enel

Global Electricity Utility

- Unique service: National coverage (Hybrid Private MVNO) plus dedicated coverage in specific sites
- Critical Comms coverage in power plants, wind & solar farms, production & transmission infrastructure
- Low latency coverage of sub-stations and switchgear

Large Enterprises

Intelligence Everywhere



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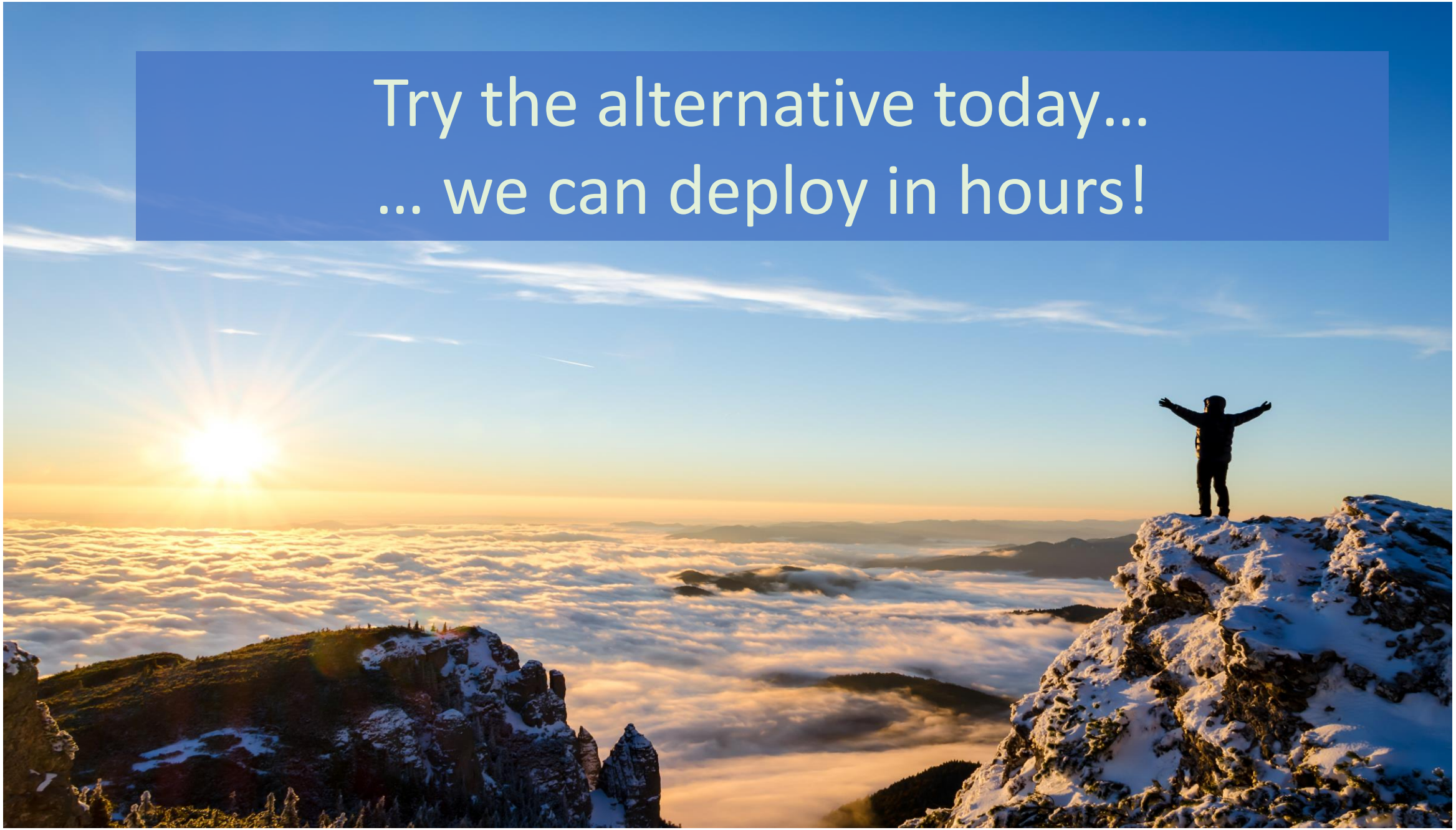
Try the alternative today…
… we can deploy in hours!



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