



EXPERIENCE
INTUITION



GROWTH
TAKES
INTUITION

INVITATION TO EXPERIENCE INTUITION

The satellite industry is in the throes of a major shift. Today, the burning question is not how much the market will grow. It's how operators will capture that growth in a market that's being radically reshaped by new technologies, new players, and new expectations.

Intuition is ST Engineering iDirect's next-generation satellite ground system designed to meet the real operational and commercial challenges of the modern connectivity market.

This e-book offers a comprehensive look at the capabilities behind Intuition, the market forces driving its development, demo experiences that show Intuition in action, and what's possible when ground infrastructure is no longer a constraint—but a catalyst.

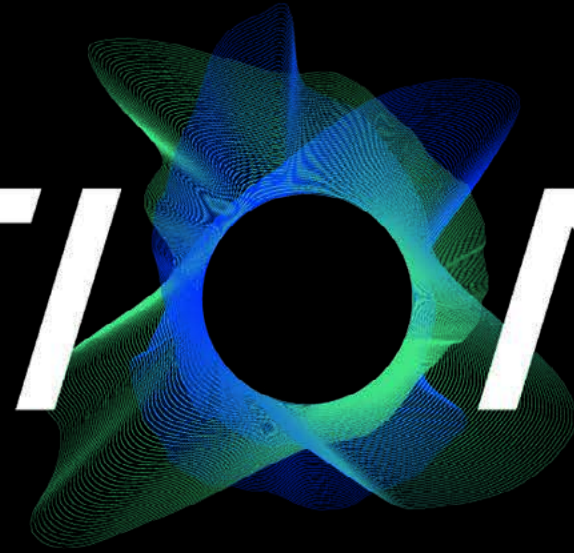
Please enjoy!

Sridhar Kuppanna
CEO, ST ENGINEERING IDIRECT



INTUITION

AT EVERY STEP



An advanced, secure satellite networking ground system based on a cloud-native, multi-orbit architecture that capitalizes on automation and the latest standards-based technologies, and unifies iDirect's industry-best capabilities.

Intuition core capabilities

Intuition core capabilities

Unifying iDirect's industry-best technologies with the latest innovations



CLOUD-NATIVE ARCHITECTURE

Scale services quickly and securely for the fastest return on investment



INTELLIGENT MULTI-ORBIT SUPPORT

Deliver tailored services for every application



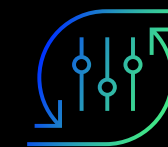
STANDARDS-BASED NETWORK CONVERGENCE

Efficiently integrate your satellite network into the global communications domain



AUTOMATION AND END-TO-END ORCHESTRATION

Leverage dynamic orchestration and automation for network operations



FLEXIBLE GO-TO-MARKET MODELS

Expand your customer base with the broadest range of business models

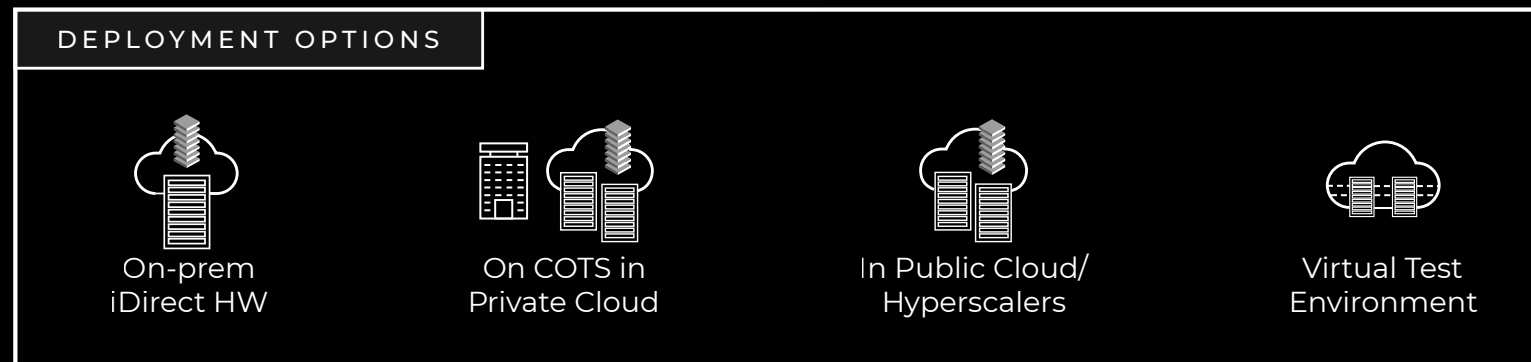
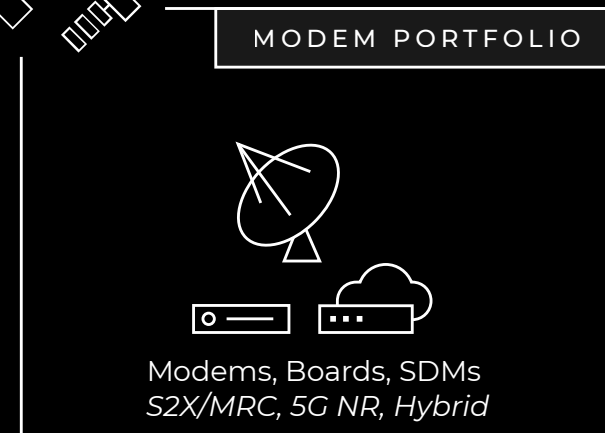
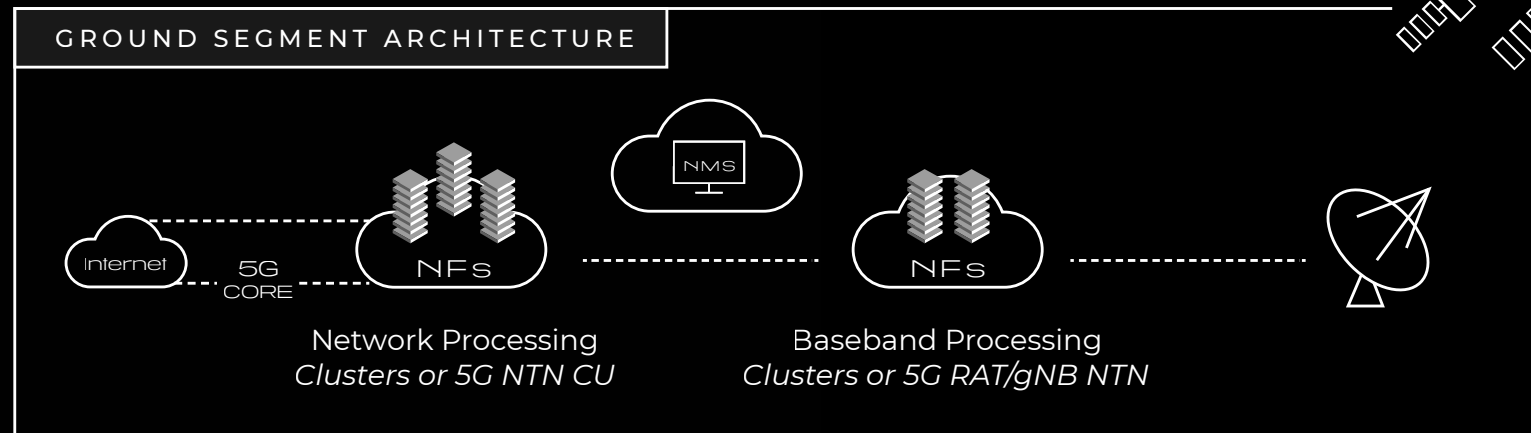
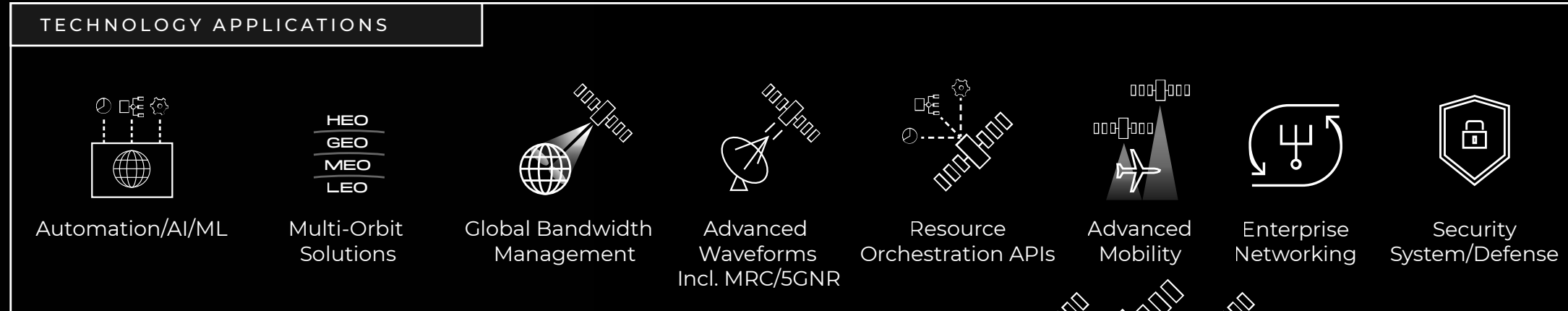


SECURITY AT THE CORE

Protect your network from evolving threats

Intuition ground system

Intuition ground system

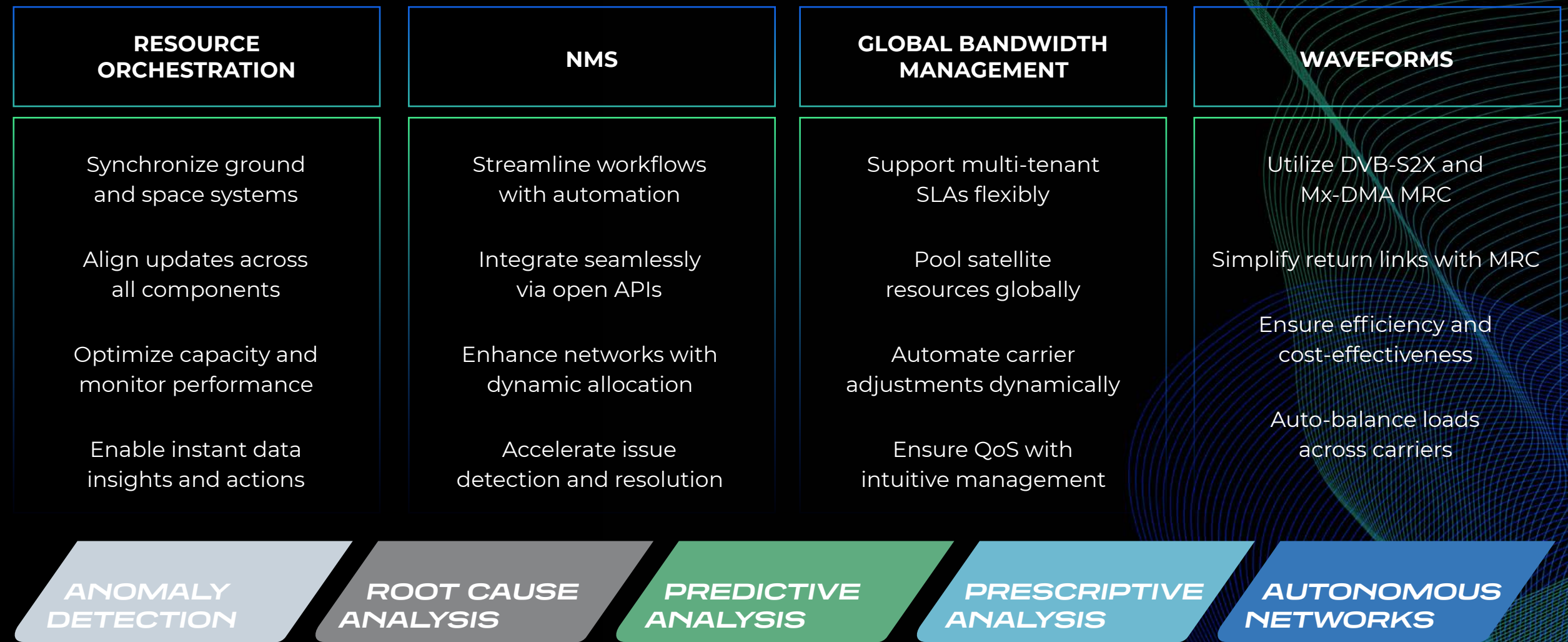


MULTI-SERVICE

Technology applications

Automation/AI

Revolutionize network control with end-to-end automation and AI/ML-powered applications



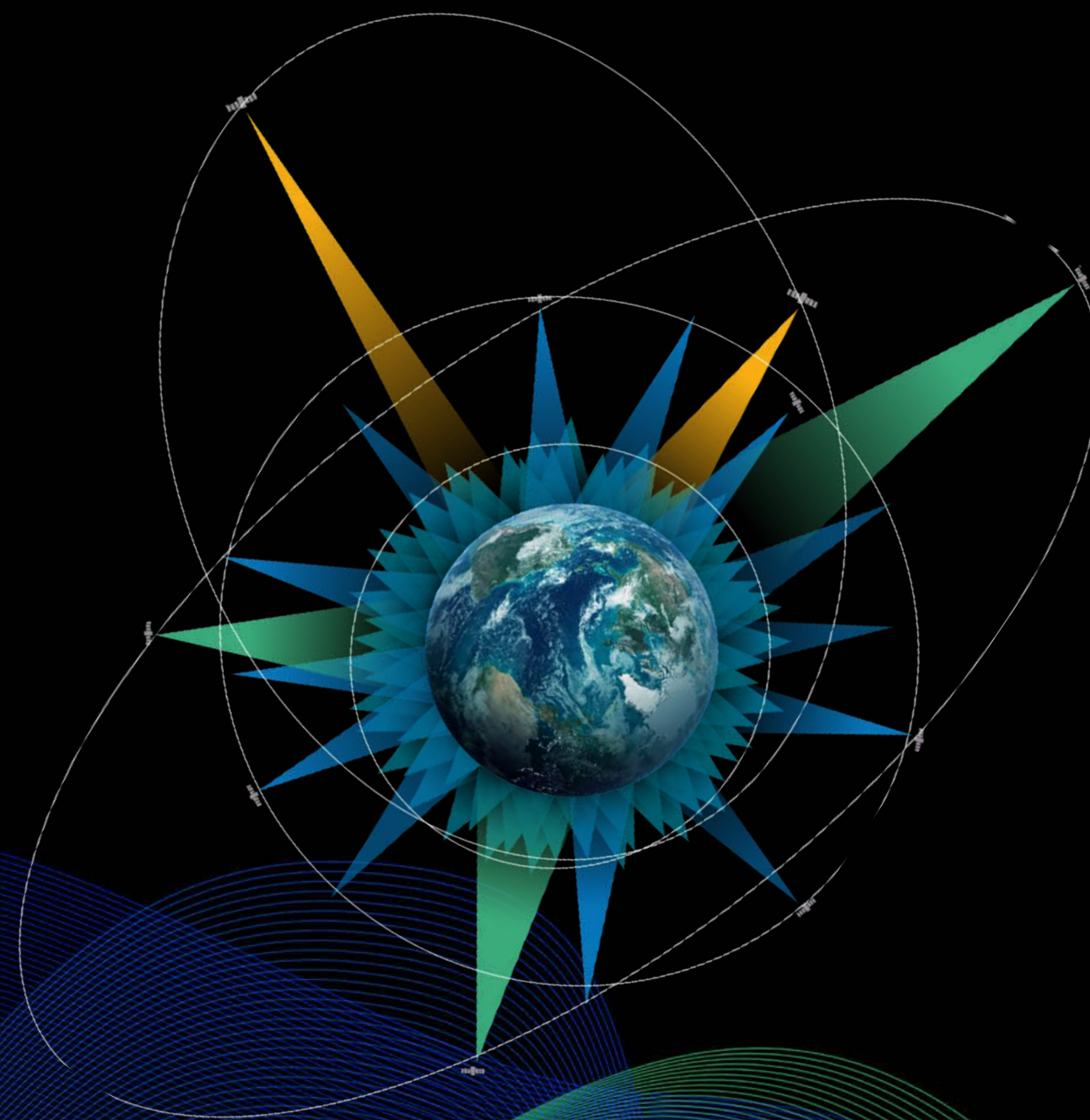
Multi-orbit solutions

NGSO TRACKING NOW LIVE ON ORBIT

- Industry's first multi-orbit switching tested on orbit
- Fast tracking convergence for higher performance switching across orbits
- Real-time location, velocity to keep hubs and terminals in sync
- No manual correction as remote terminals track and acquire to satellites automatically

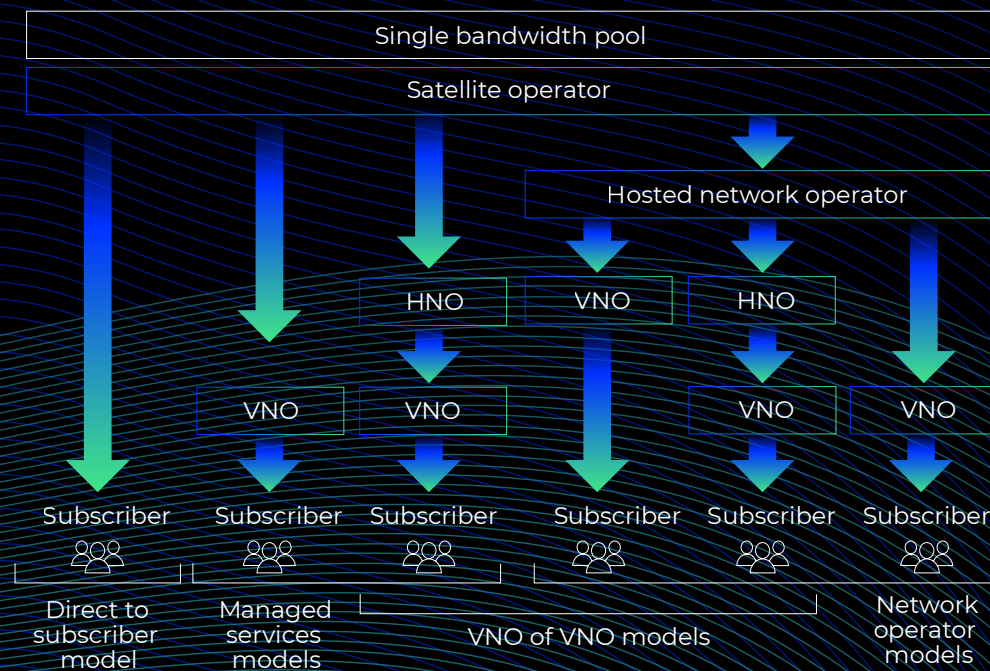
MULTI-NETWORK TRAFFIC MANAGEMENT

- Combine GEO with lower cost NGSOs or wireless
- Failover measures for mobile applications
- Stream duplication and intelligent bandwidth for traffic steering
- Automatic failover to selected or available link



Global bandwidth management

Ideal for mobility, multi-orbit, and dynamically changing environments



GO-TO MARKET MODEL CHOICE

Multi-tenant, multi-level to support flexible requirements for all use cases

From best-effort to CIR-based SLAs

UNIVERSAL DESIGN

Combine multiple satellite resources into a single or multiple regional or global pools

No need for per-carrier QoS setup or continual adjustment

SYSTEM-WIDE ALLOCATION

Account for all available carriers at any instance

Manage MIR/CIR commitments across the system

Automatic allocation based on fluctuating demand

CONTINUOUS OPTIMIZATION

Without complex external intervention

Accommodate more terminals in the network

Maximize SLA fulfilment

More efficient use of resources

SERVICE MANAGEMENT AND CONTROL

Eliminate beam-based QoS silos

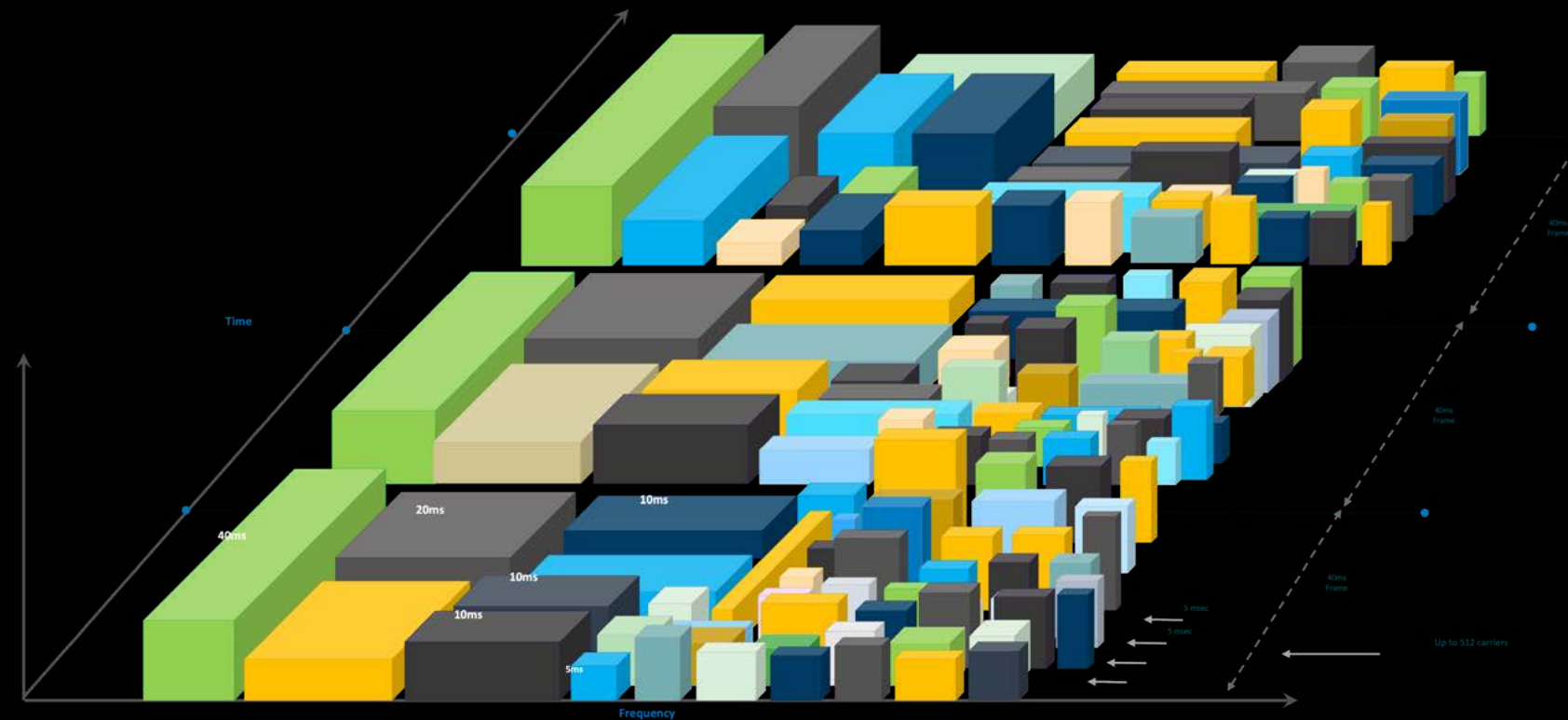
Global QoS enforcement

Service area shaping

Granular control with Intuition NMS

Waveforms

Mx-DMA MRC is the most advanced, self-organizing return waveform for every application in shared capacity



SCPC-LIKE EFFICIENCY

Intelligent, real-time bandwidth allocation up to 100 Msps

SERVICE AGILITY

Multi-service platform manages complex traffic demands and Quality of Experience

APPLICATION AND NETWORK SCALABILITY

A single network to support thousands of terminals for the widest mix of requirements

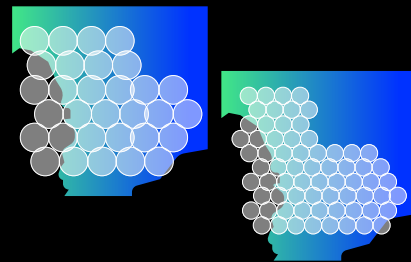
PERFORMANCE

300 Mbps of throughput on the return channel

Resource orchestration

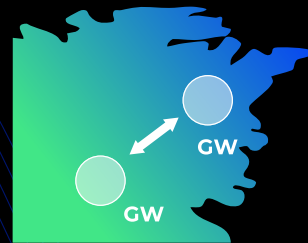
Dynamically reconfigure beam maps and bandwidth

STATIC USE CASES



BEAM MAPS, BANDWIDTH RECONFIGURATION

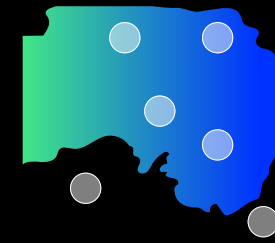
- Maximize sellable capacity to fulfill services demand
- Reconfiguration of geographical or localized areas
- Develop spot beam patterns, frequency, band and carrier plans



KA/Q/V GW DIVERSITY AND BACK-UP

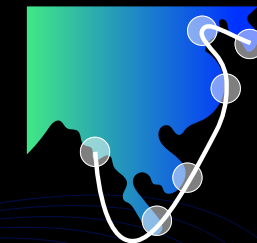
- Rain fade diversity schemes
- 1+1 GW switchover and smart diversity
- Backup GW switching

DYNAMIC USE CASES



ON-DEMAND ORCHESTRATED BEAM / SERVICES ACTIVATION

- Resource activation at the target location
- Expand serviceable footprint without dedicated beam grid coverage
- Provide ad hoc tailored service



ADVANCED MOBILITY DYNAMIC RESOURCE ALLOCATION

- Spot beam utilized to follow mobility platforms
- Update resource allocation in the beam grid
- Fulfill traffic demand

Advanced mobility networks



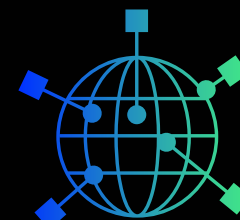
NGSO OPERATIONS

Tracking and networking to support new multi-orbit operations



ADVANCED BEAM SWITCHING

Optimized beam selection for the most seamless connectivity



BANDWIDTH & QOS OPTIMIZATION

Network-wide allocation, universal configuration, and continuous optimization



SATELLITE NETWORK RESOURCE ORCHESTRATION

Enabled through partnerships and technology for dynamic control



MAP INNOVATIONS

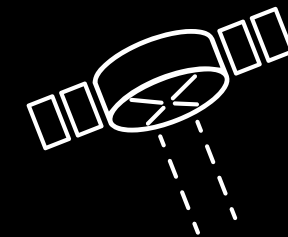
Optimal for software-defined satellites and NGSOs

Advanced mobility use cases

HEO
GEO
MEO
LEO

MULTI-ORBIT NETWORKS

Global and regional satellite network operators need to hybridize their capacity to differentiate their offerings



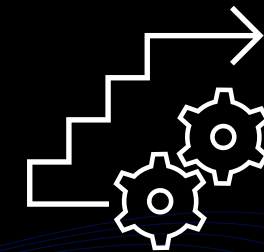
LEGACY & NEXT-GEN SATELLITES

As new satellites add complexity, network operators need to switch between these and older assets



COMMERCIAL & GOVERNMENT SYSTEMS

Set and manage domains to adhere to regulations or policies not required for commercial network traffic



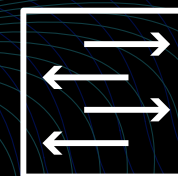
CONSOLIDATION SCENARIOS SYSTEMS

Operators in the process of consolidation need to enable switching between disparate networks



NATIONAL, REGIONAL DOMAINS

Define country, regional or global satellite network domains



MIGRATION TO INTUITION

While deploying Intuition, switch between networks and pool bandwidth on current and new platforms

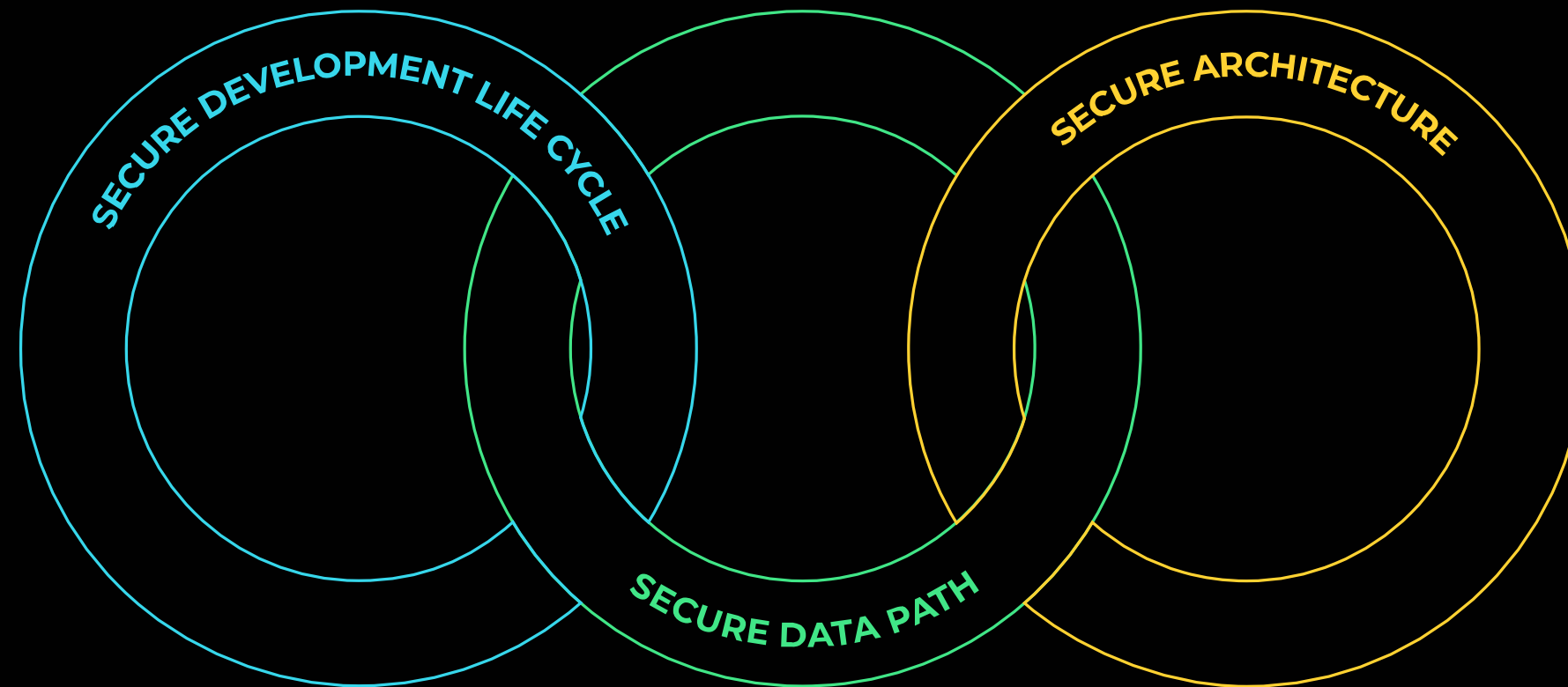
Intuition security

Secure-by-design approach embedding security throughout from coding to deployment

KEY BENEFITS

- Ensures a reliable and resilient ground system
- Provides secure operations
- Results in continuous improvement and protection
- Instills customer confidence

INTUITION



FEATURES

SECURE DEVELOPMENT LIFE CYCLE

- Industry standards & regulations
- Comprehensive DevSecOps

SECURE DATA PATH

- AES encryption
- Dynamic key exchange

SECURE ARCHITECTURE

- OWASP and NIST frameworks
- AAA, RBAC, SSO, and MFA

Architecture

Cloud-native architecture

Offering unmatched flexibility, scalability, and resilience for satellite networks



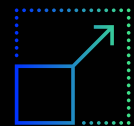
FLEXIBILITY WITH MODULAR ARCHITECTURE

Containerized microservices design supports independent updates, reducing risks and streamlining operations



DYNAMIC WORKLOAD MANAGEMENT

Kubernetes-style orchestration dynamically allocates resources across servers for optimal performance



REAL-TIME SCALABILITY AND CENTRALIZED DESIGN

Scales capacity in real time across centralized data centers reducing hardware footprints by up to 70%



RESILIENCE WITH SELF-HEALING AUTOMATION

AI/ML-driven automation redistributes workloads and resolves issues during failures for uninterrupted service

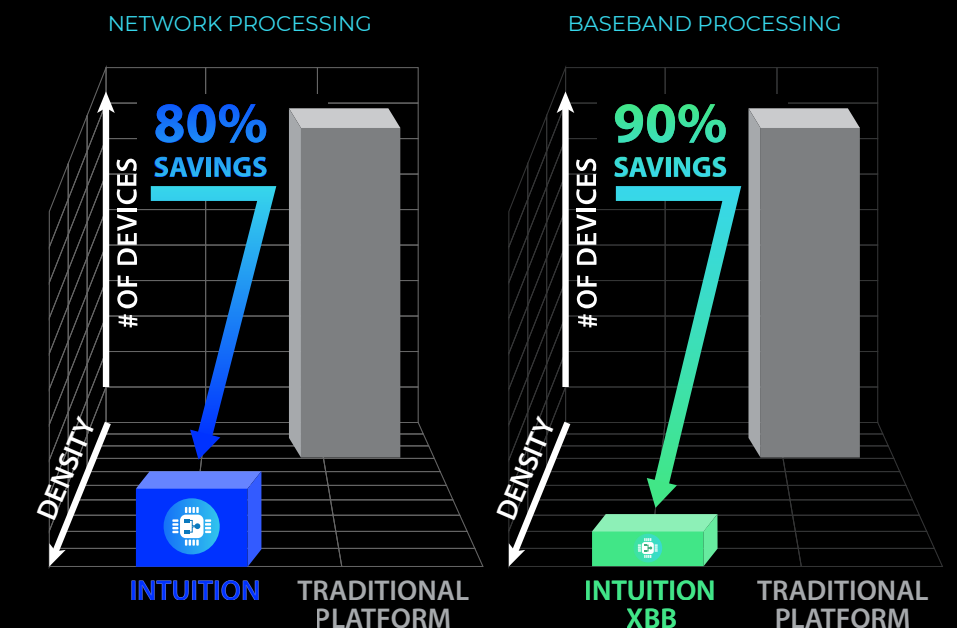


EMBEDDED SECURITY

The system integrates proactive security measures to safeguard satellite operations against emerging threats

USE CASE

LARGE SCALE DEPLOYMENT



Intuition Network Management

Streamline network management and unlock the full potential of satellite communications

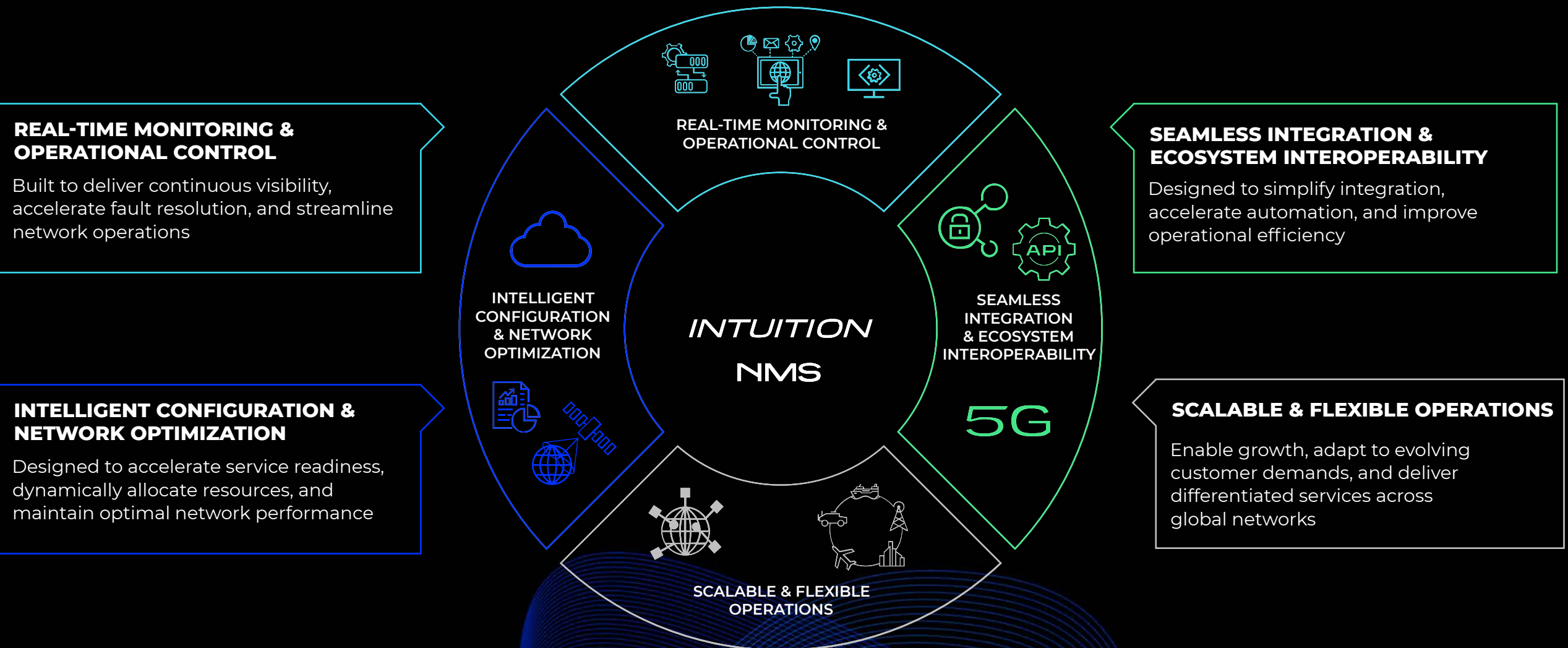


KEY DIFFERENTIATORS

- Built on a cloud-native, microservices-based architecture
- Achieves very high network scale
- Offers flexible deployment options

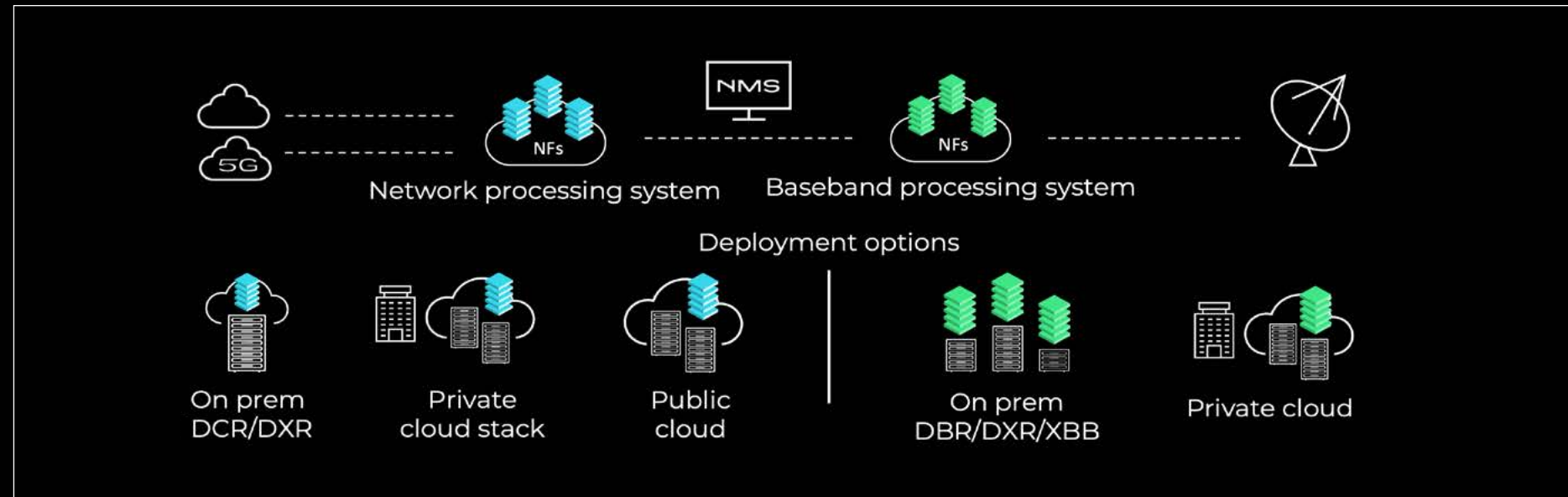
Cloud-native NMS

Enables operators to streamline reliable and secure operations, quickly detect and resolve issues, and provision services efficiently at scale



Network and baseband processing

Scalable cloud-native software functions with various deployment options ensuring robust and efficient performance



Networking: Layer 2/3 processing, acceleration, QoS, mobility control

Baseband: Modulation and demodulation in the most efficient waveforms DVB-S2X and Mx-DMA MRC

CIDI framework: Kubernetes-driven virtualization orchestration of network functions

Deployment: On-premises with iDirect DIFI-enabled hardware, on COTS in private datacenter clouds, or in the public cloud

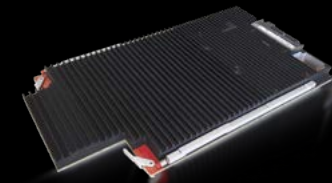
Intuition modem portfolio

The right modem for every market and application

A wide range of modem capabilities and form factors efficiently operating in single bandwidth-sharing networks

High availability and mobility focus, featuring dual radio interfaces for seamless handover

Next-gen software-defined, multi-waveform modems and edge-cloud deployment options



INT2000

MDM2010

IQ SERIES

MDM2510

MDM3315

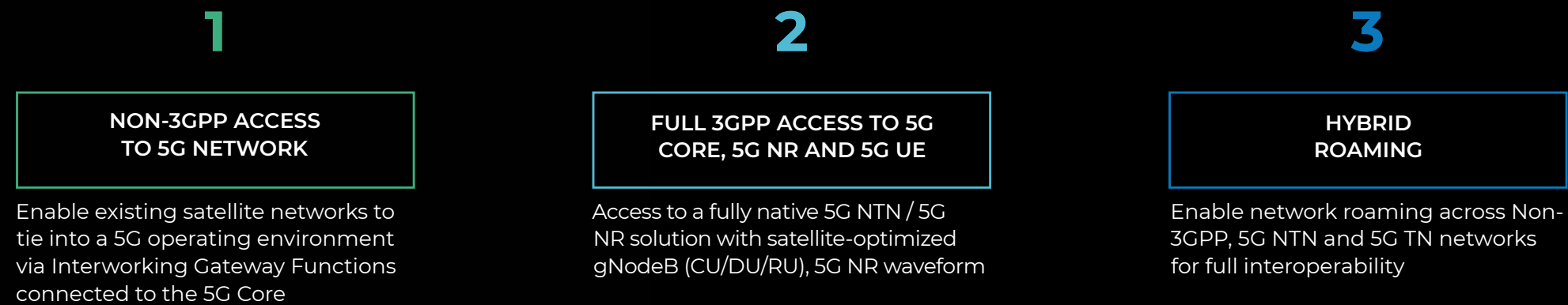
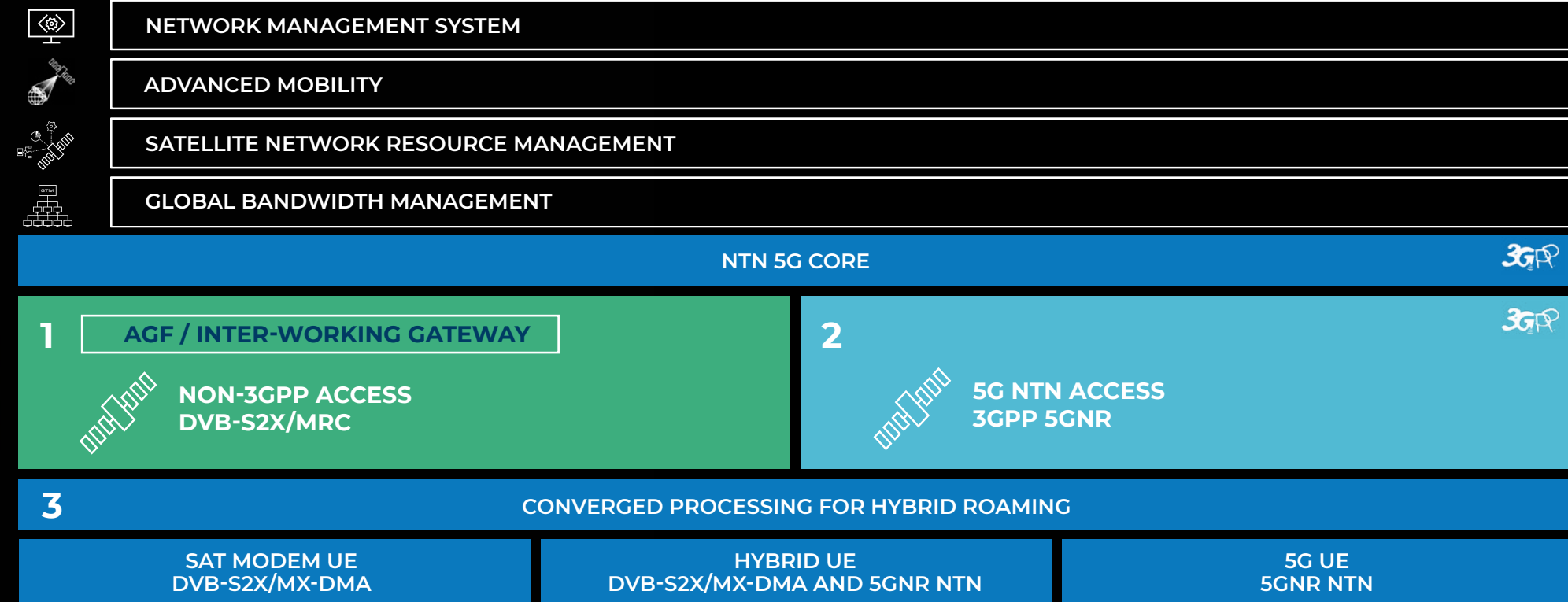
MDM5010

IQ 800

450SDM

5G NTN

Enable 5G NTN capabilities on our multi-orbit, cloud-native Intuition ground system equipped with industry-best technologies

Intuition go-to-market options

GROWTH
TAKES
INTUITION

YOUR GO-TO-MARKET STRATEGY

Technology innovation is important to position satellite communications within the greater telecommunications ecosystem. Today, however, there is another burgeoning requirement being vocalized by satellite operators and service providers; our customers are seeking expanded go-to-market flexibility to face new and continuing commercial challenges.

From restrictive hardware and complex deployments to less risk and an accelerated path to revenue, our customers want to reduce operational learning curves and implement new technologies faster.

ST Engineering iDirect introduced Intuition Unbound to alleviate these challenges, creating opportunities for increased market access and allowing operators to confidently pursue new business goals.



INTUITION *unbound*



*Transform the way you
manage your ground network*

*Build on the latest technologies and
capabilities—without the complexity*

Intuition Unbound redefines how satellite operators and service providers approach ground segment technology, unlocking them from traditional infrastructure business models and driving the shift to consumption-focused solutions tailored to the operational demands of a fast-changing market.

YOUR GROWTH, DELIVERED AS A SERVICE

Unbound

Transform the way
you manage your
ground network



Consumption-based model designed
to ensure frictionless operations



Adaptable solution for streamlined network
management and enhanced business focus



Trusted ground system specialists for
network optimization and service assurance



Predictable consumption-based model enables
frictionless transitions to new services



Scalable architecture adapts to your evolving
network needs



Expand services with confidence, free from
the risks of up-front investment

Your journey to Intuition

Steps to network convergence

Leveraging standards to enable integration into global telco

5G

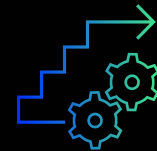
NETWORK-OF-NETWORKS
CONVERGENCE WITH 5G NTN

HEO
GEO
MEO
LEO

EVOLUTION TO NEXT-GENERATION
SATELLITE NETWORKS



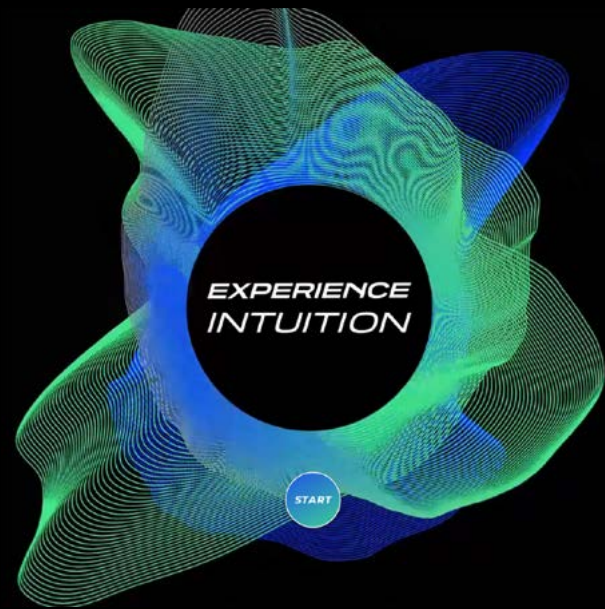
VIRTUALIZATION OF THE GROUND
SEGMENT IN HYBRID DEPLOYMENTS



BUILD ON TRUSTED INDUSTRY-BEST TECHNOLOGIES
AND A FOUNDATION OF COLLABORATION

Demos and proof-of-concepts

Contact your iDirect Sales Representative to EXPERIENCE INTUITION today!



GROWTH
TAKES
INTUITION

PAVING THE WAY TO SUCCESS

The satellite communications industry is at a critical turning point, and the message is clear: businesses that embrace change and act decisively will be better positioned to meet customer demands, capitalize on new opportunities, and stay ahead of the competition.

The market is moving fast, and there's no time to hesitate. As an industry, we must come together to innovate, collaborate, and succeed. By breaking down barriers and amplifying customer value, we can usher in a new era of satellite communications.

At iDirect, we're ready to lead this transformation with you, our partners. Together, we can accomplish far more than we ever could alone.

Here's to the exciting opportunities ahead.

INTUITION

INTUITION

AT EVERY STEP

 **ST Engineering**

 **iDIRECT**

