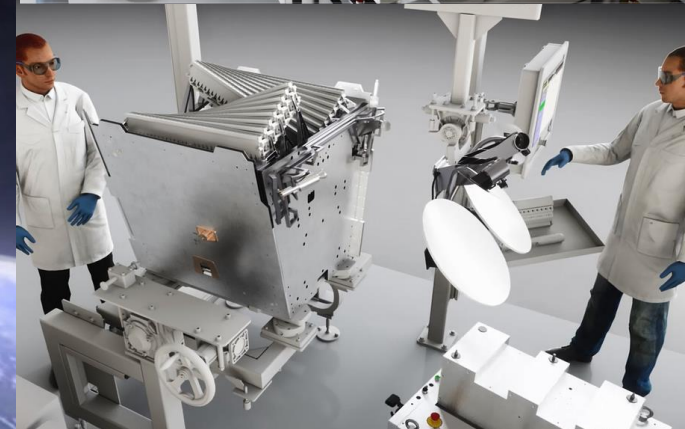


OneWeb Satellites

Chris Winslett,
Director of Programs, OneWeb Satellites
June 2019

OneWeb Satellites All Rights Reserved. Not subject to Export Control

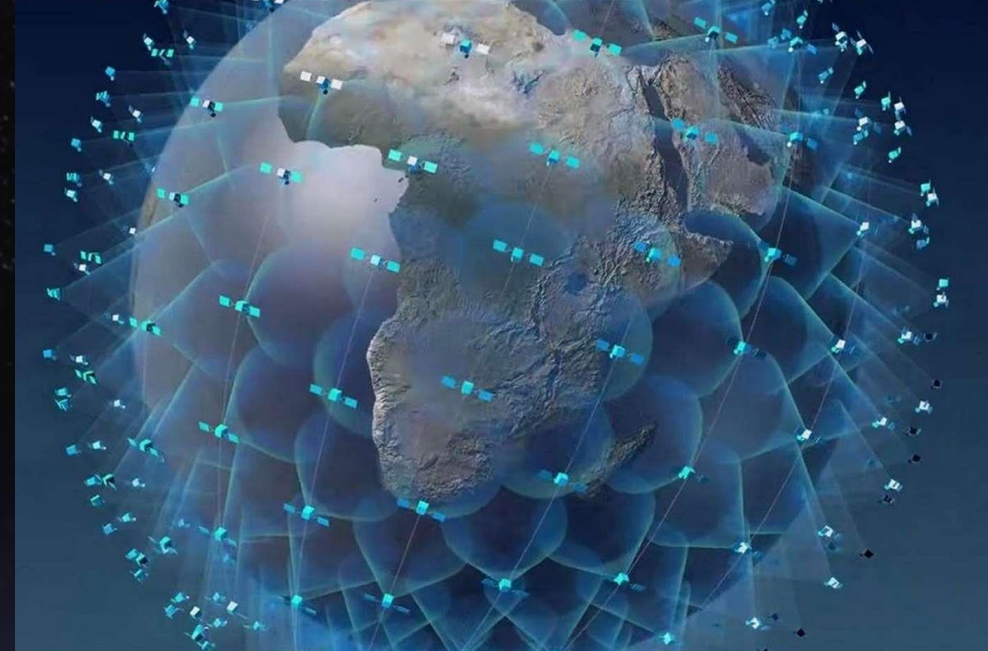


ONEWEB and ONEWEB-SATELLITES ARE
BUILDING THE WORLD'S LARGEST

CONSTELLATION OF SATELLITES

Making affordable Internet access possible everywhere.

<https://www.youtube.com/watch?v=4hu65as2iak&feature=youtu.be>



WE'RE ON A MISSION TO CONNECT

EVERY SCHOOL ON EARTH

So that everyone has the same opportunities to learn, create, discover, and share information.



EXPANDING IN-FLIGHT CONNECTIVITY, ENABLING LOW LATENCY

BROADBAND AT 30,000 FT

Providing business, commercial, and military customers with airtime services



A high-speed train, likely a Shinkansen, is captured in motion as it crosses a large, modern cable-stayed bridge. The bridge's massive steel arch and supporting cables are prominent. Below the bridge, a multi-lane highway with a few cars is visible, set against a backdrop of lush green hills and some residential buildings. The overall scene conveys a sense of speed and infrastructure.

BRINGING HIGH SPEED, LOW LATENCY CONNECTIVITY TO **TRAINS AND PASSENGER VEHICLES**

Wherever and whenever it's needed.

ADVANCEMENTS IN LAUNCH TECHNOLOGY ENABLE

MULTIPLE SATELLITE LAUNCHES

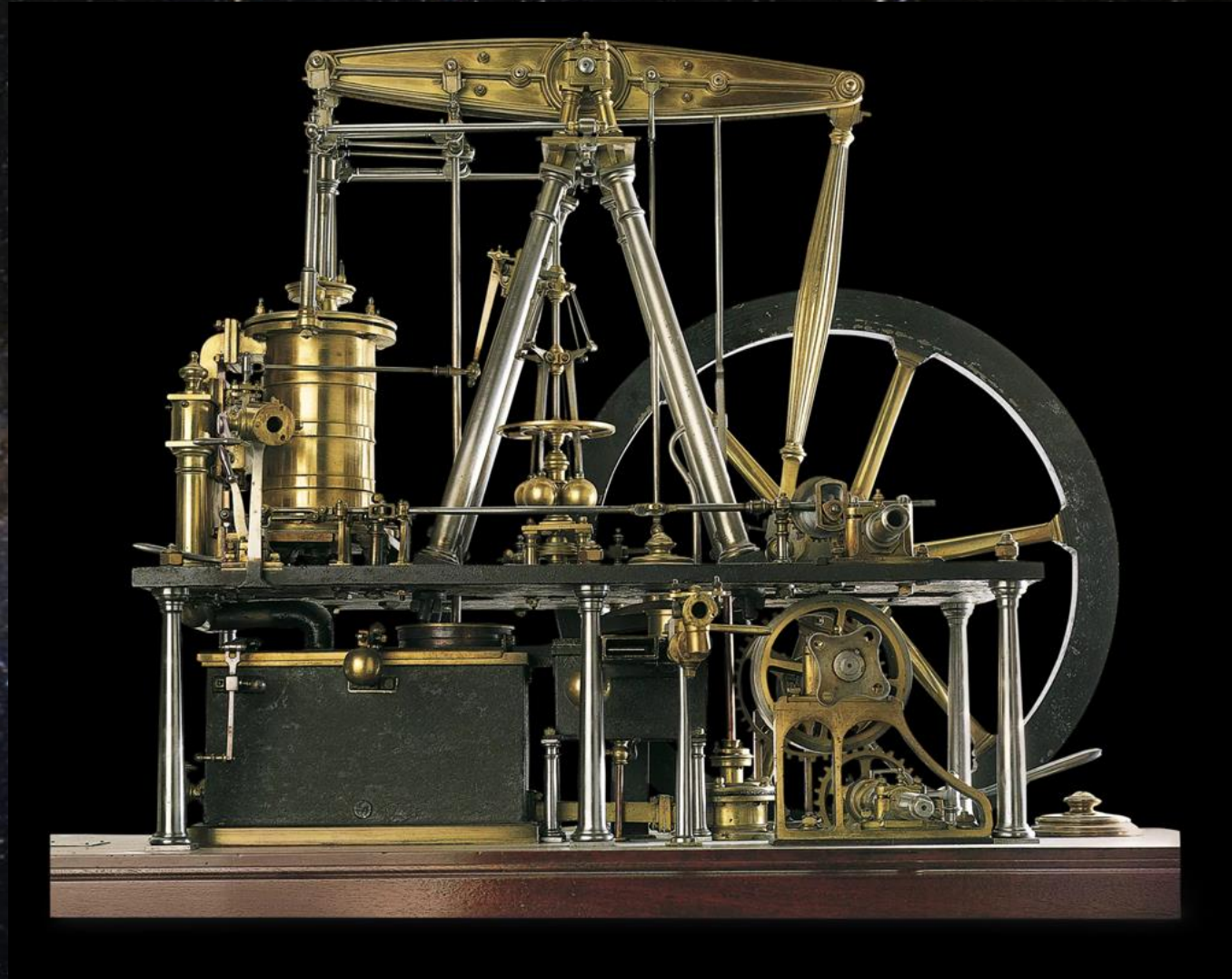
Dramatically reducing the costs, and allowing for up to 36 spacecraft, per launch.



1st Industrial Revolution Steam Power

Velocity, scope, Impact

Steam Power



2nd Industrial Revolution

Electric Power / Mass Production

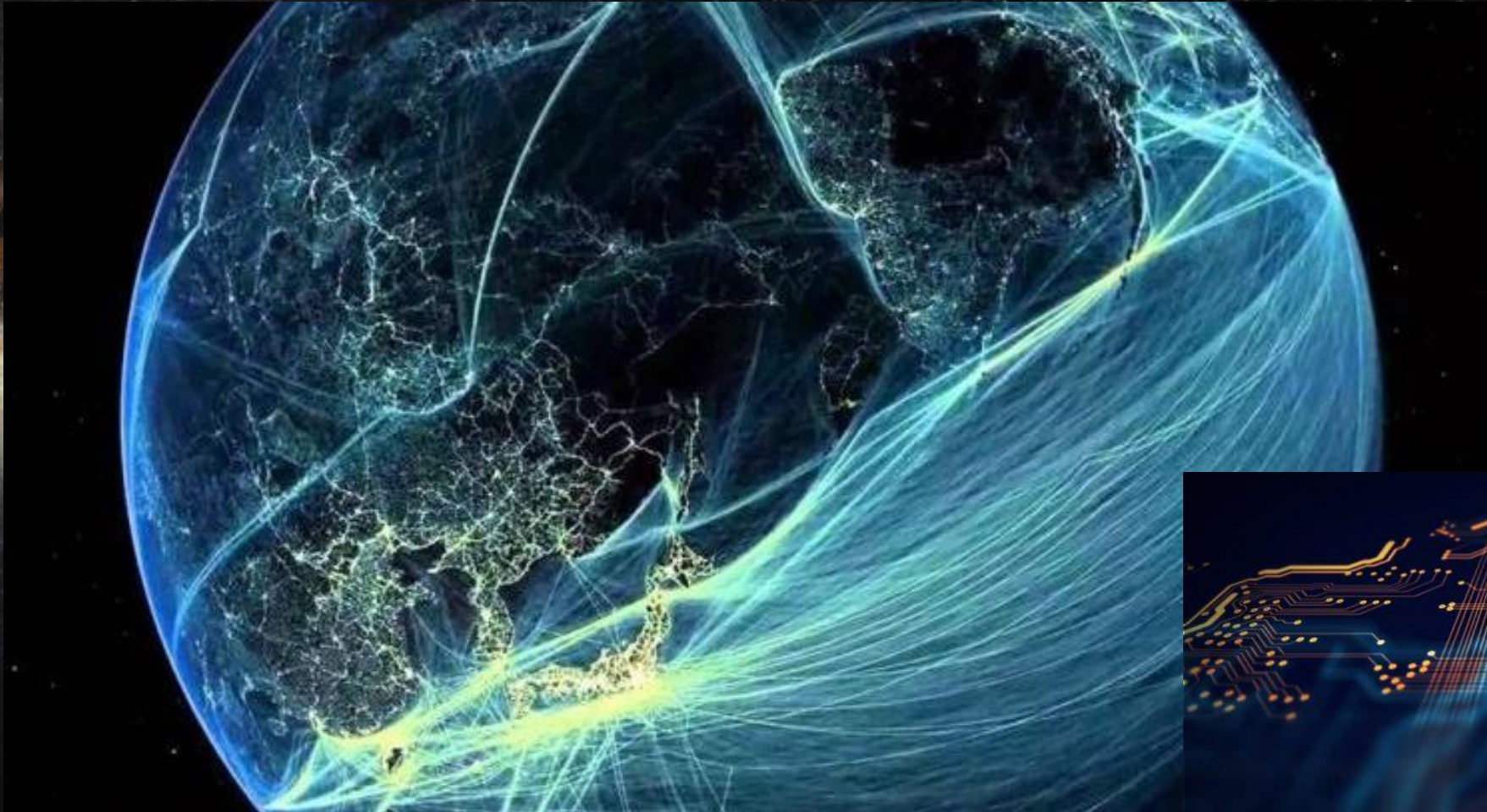
Velocity, scope, Impact



3rd Industrial Revolution

Electronics & Information Technology

Velocity, scope, Impact



We are now entering the 4th Industrial Revolution

Velocity, scope, Impact

Fusion of physical, digital and biological

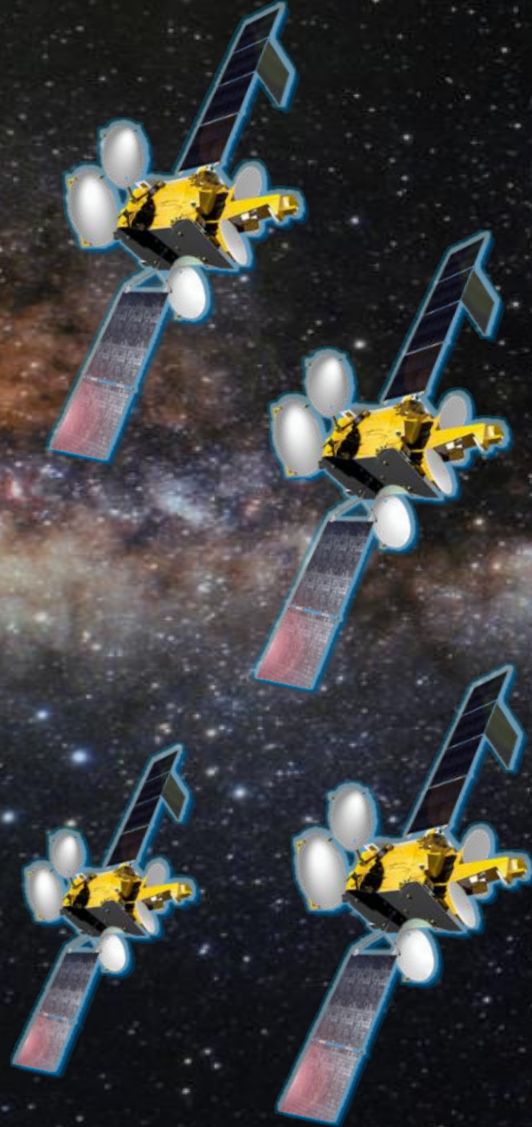


How does this impact the Satellite Manufacturing?



<https://www.youtube.com/watch?v=elO1lWaUblE>

Space Industry Today



**Prototype
production**

**High recurring
cost**

**Constellations
of 4**

**Assembly
Duration
3 -6 months**

**Production
Capacity
4-6 / year**



OneWeb Satellites



**Serial
Production
(650 units)**

**Low recurring
cost**

**Constellations
>650**

**Assembly
Duration
<2weeks**

**Production
Capacity
2 to 4 / day**

Disruptive approach for design and production

- Design-to cost
- Design to manufacture
- New test approaches

From the selection of components, production of equipment and satellite assembly, integration and testing.



- State-of-the-art integration of proven:
 - Equipment
 - Inspection methods
 - Test equipment and
 - Automated data acquisition systems

support end-to-end integration and test activities.

Revolution in space design and manufacturing

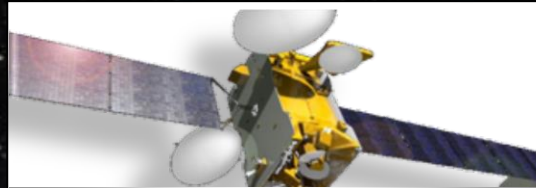
- Unprecedented production rate of up to 15 satellites per week, unprecedented number of hardware, e.g.:
 - 1800 star trackers
 - 15,000 power amplifiers
 - 550,000 inserts
- Unique aspect of scale: mass production at low satellite cost means Design for Manufacture mindset
 - Modular satellite design to shorten production lead time
 - Economy of scale and continuous learning for supplied hardware
 - New approach for production and test processes



Leveraging Industry leading heritage, to achieve our vision



Space product AIT knowledge and experience



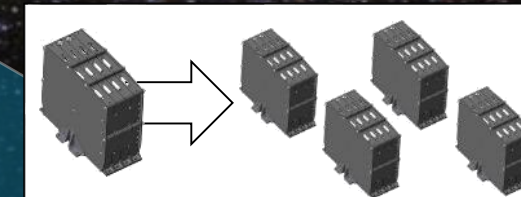
Space reliability methods applied to Design to Manufacture (D2M)



Civil Aircraft serial production expertise



Serial production heritage



Automotive experience applied to electronics manufacturing, testing

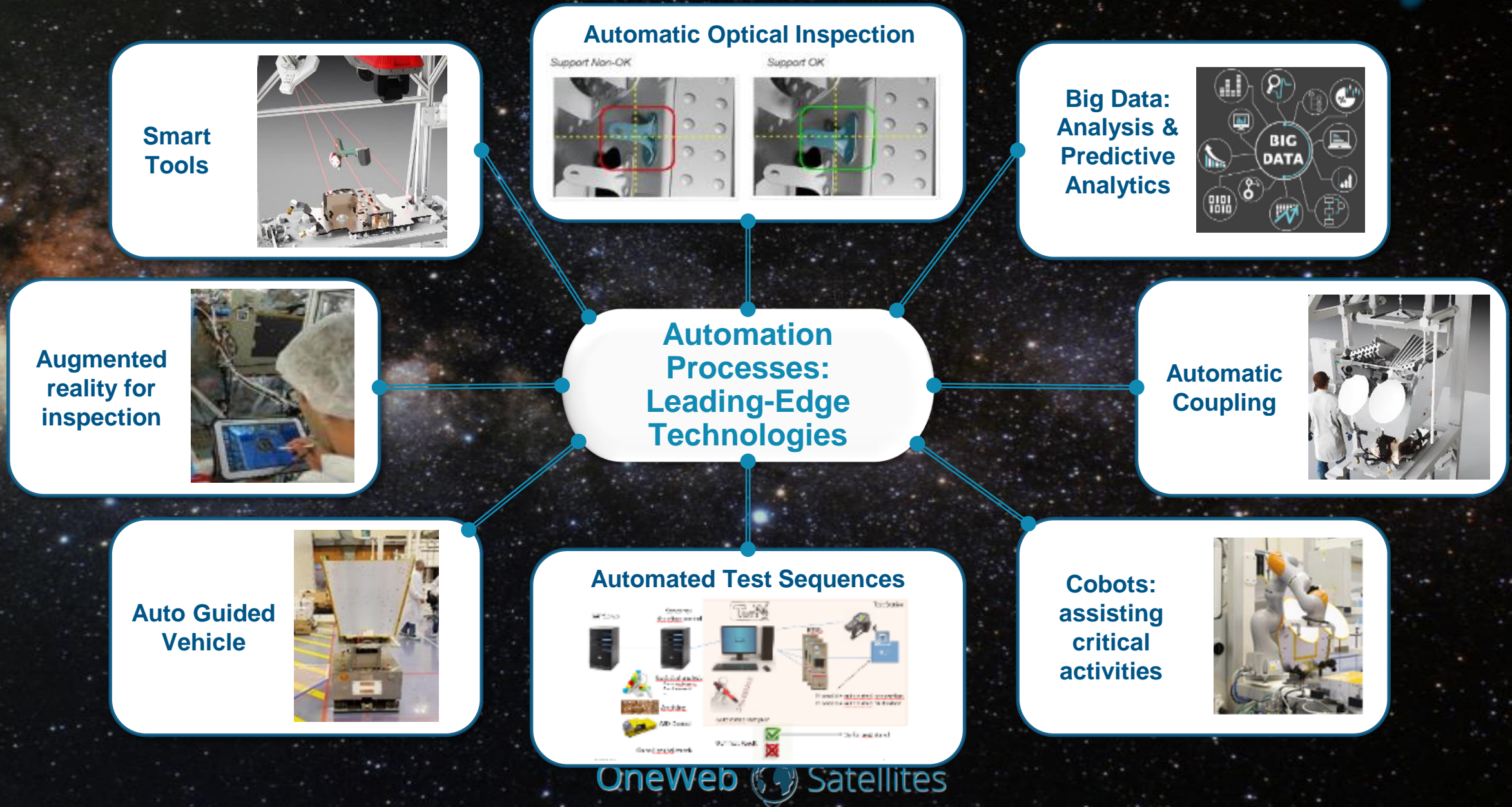
OneWeb  Satellites

Best in class industrial approach: integration of supply chain, design, manufacturing



OneWeb  Satellites

Smart Automation to ensure industrial efficiency



Thank you