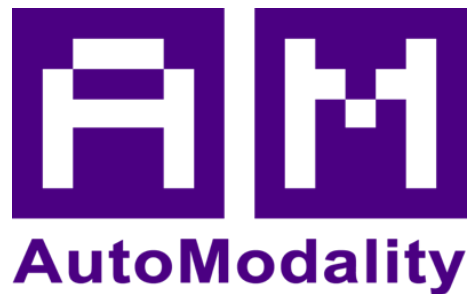




Putting the Unmanned Back in Unmanned Vehicles™



***Autonomous Robotic Inspection on
Critical Infrastructure
WiSEE Conference
Ottawa 2019
Aaron Singer – CEO – Automodality, Inc.***

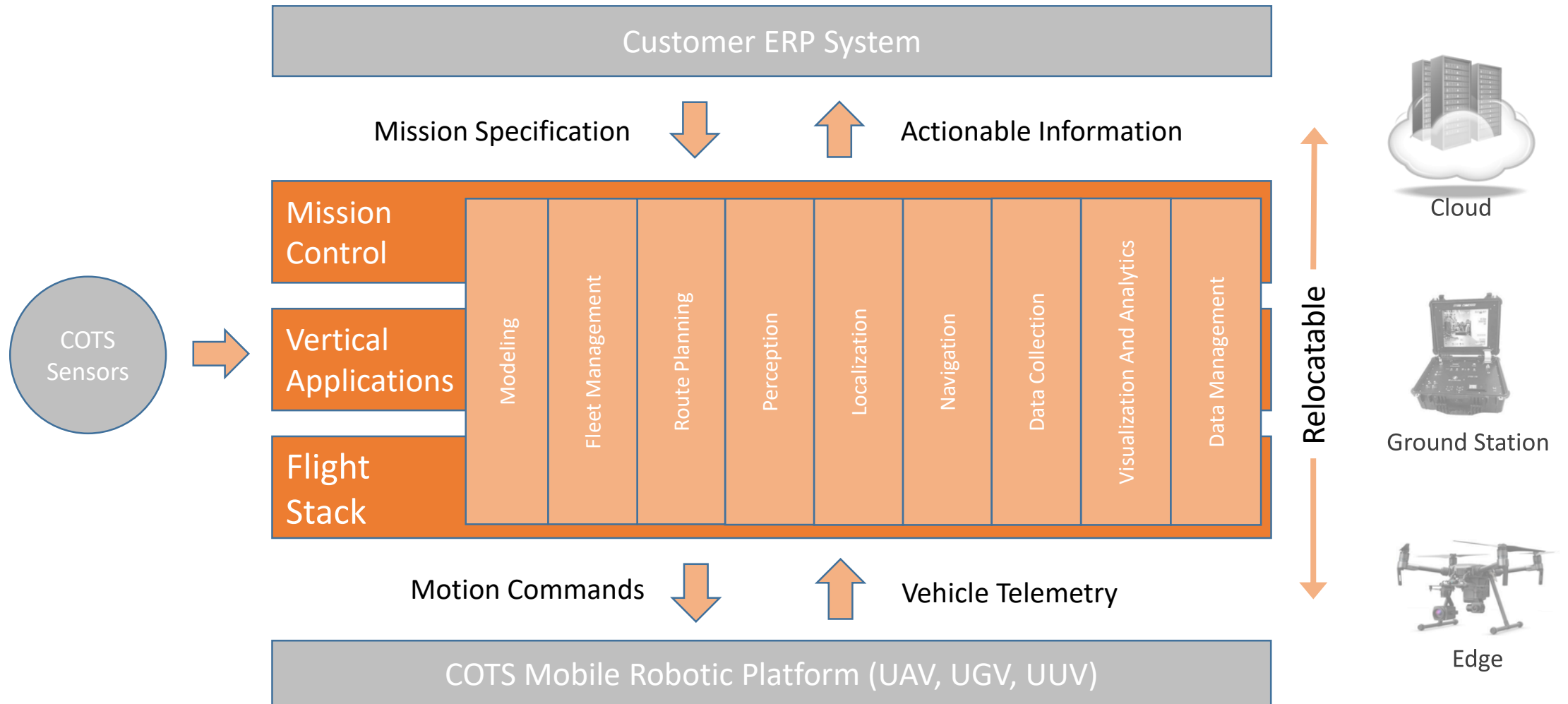


Perceptive Navigation[®] = **2 : 1 : 0**

- We can get inside, under, in between, UP CLOSE!
- Precisely navigate and collect data
- **Fully autonomous** GPS/RF-denied
- **One-button** mission operation
- AI & machine-learning
- Platform-agnostic
- Patented



Autonomous Mobile Robotic Operating Suite (AMROS™)



Enterprise Customers



UAVs in Industrial Inspection

- Industrial Asset Inspection is Costly
 - Capital equipment
 - Labor
 - Insurance
- And dangerous
 - Accidents
 - Injuries
 - Liability
- And time-intensive
 - Manual process
 - Assets closed during inspection
 - Data takes time to become actionable



UAVs in Industrial Inspection

- Advanced sensing for perception
 - Stereo-cameras
 - Structural IR
 - LIDAR
- Artificial intelligence for recognition
 - Asset-relative features
 - Defect & anomaly detection
- Perceptive navigation for actionable data
 - Precision localization using AI
 - Machine-learning for asset-relative navigation
 - Fully-autonomous capability





AUTOMODALITY INSPECTION WORKFLOW

Confidential

UAVs in Industrial Inspection

- UAVs being used to inspect many industrial assets in multiple industry verticals
 - Transportation (Bridges, railways, tunnels)
 - Construction (hi-rise exteriors, sites)
 - Energy (oil platforms, pipelines)
 - Electricity (substations, power-lines)
 - Aerospace (aircraft, manufacturing)
 - Warehousing
 - Communications
 - Mining

From Earth to Space

- Moving from bridge inspection to satellite inspection is not such a giant leap



EVAs Expensive & Risky

- Extra-Vehicular Activity in space requires vast resources & risk to astronauts
 - Cost space suit - \$2 million
 - Carrying cargo to ISS - \$80,000/kg
 - Weight space suit – 140 kg
 - \$11.2 million transport fee
 - Cost to get AN astronaut to ISS - \$81 million
 - # of astronauts/EVA - 2
 - Support services/EVA - \$1.5 million/astronaut
 - Oxygen, nitrogen fuel, CO2 scrubbing, etc.
- TOTAL COST 1 EVA - \$191.5 MILLION





USVs in Space Inspection

- Technologies like AMROS & Perceptive Navigation adapted for space
 - Ported to small cubesats
 - Replace expensive, risky EVAs
 - Fully autonomous
 - Low-cost
 - Advanced sensing
 - Actionable data
 - Repeatable



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