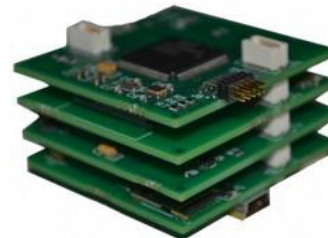# Autonomy – System benefits

Presented by Andras Gyorffy
President & CTO

Who we are:

Mechatroniq Systems Inc. designs and builds Remotely Operated and Autonomous Unmanned Vehicles, Ground Control Stations and subsystems.

Autonomous System

"ability of integrated sensing, perceiving, analyzing, communicating, planning, decision-making, and acting/executing, to achieve its goals as assigned by its human operator."

(NIST)

Basic requirements:

- Execute tasks without human intervention
- Environment perception
- Self monitoring
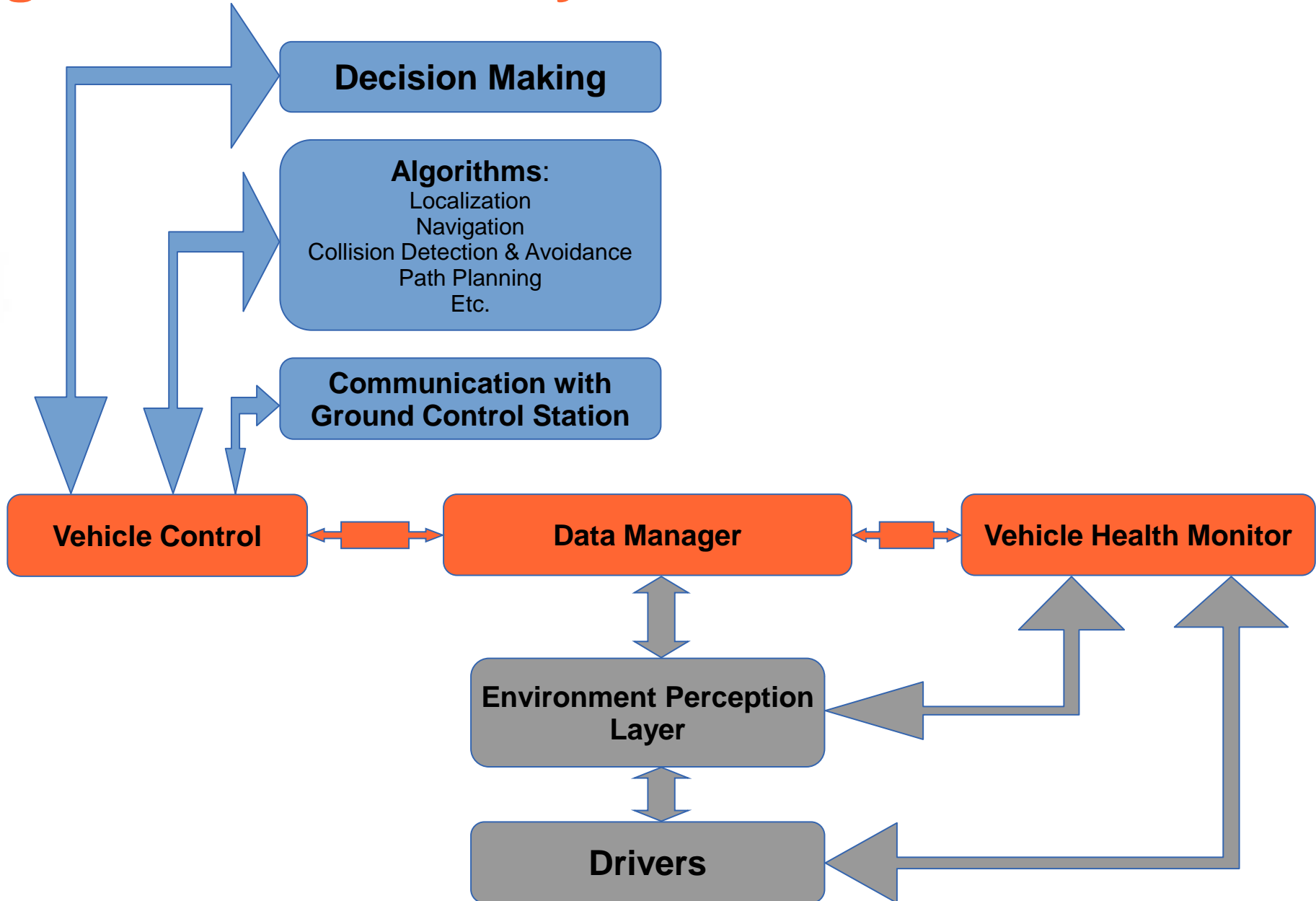
Autonomy Levels for Unmanned Systems

1. Teleoperated
2. Supervised
3. Task Level
4. Fully Autonomous

(ALFUS - NIST)

Build process:

- Functionality and constraint description/definition
- Common System architecture
- Modeling & Simulation
- Development
- Testing

High Level Taxomomy:

MECHATRONIQ UNMANNED SYSTEMS

Decision Making

Algorithms:
Localization
Navigation
Collision Detection & Avoidance
Path Planning
Etc.

Communication with Ground Control Station

Vehicle Control ⟷ **Data Manager** ⟷ **Vehicle Health Monitor**

Environment Perception Layer

Drivers

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System Benefits:

- Individual components are capable of performing independently the intended operations
- Scalability
- Improved collaboration with other platforms
- Reduced bandwidth requirement for datalinks
- Timely decision making
- Operational Flexibility
- Better integration in Engineered environments
- Cheaper & Faster then Human driven methods
- Reduced operator training time

"Only the Paranoid Survive"

Andrew S. Grove (1996)

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