



# EDGE ROBOTICS, LLC

## IRIS

All-weather  
Network Accessible  
Video surveillance  
Robotics platform  
Application development platform

# IRIS DESIGN CONCEPT

- IRIS platform
  - Physical attributes
    - Height: 13” (not including antenna), length: 24”, width 18.5”
    - Weight ~28 lbs with batteries
    - 4+ hours of run time on a single charge (depending on conditions)
  - All weather operation
    - Design goal of zero dust or water intrusion (not IP certified)
    - Electronic deck seal via rubber O-rings, and rubber washers
    - Stainless steel hardware
    - Rubber boots protect constant velocity joints
  - Rugged chassis components
    - Anodized 6061 aluminum (no plastic parts)
    - Drive shafts are case harden
    - Tuned suspension system with stainless steel shock springs
    - Stainless steel hardware

# IRIS DESIGN CONCEPT

- IRIS platform
  - Complete Turn Key System
    - Novices to experts can command the robot via the Windows™ GUI
    - All platform sensors integrated into network accessible interfaces (API callable)
    - Integrated charging system for ease of recharging both batteries concurrently from a single power supply
    - Intuitive Graphical User Interface (GUI) running on a Windows 7 Laptop/Tablet
      - Touch screen controls allow for Pan/Tilt/Zoom on the live image
      - Touch screen controls operate the steering and speed controllers
      - GPS graph function to observe path of robot in the field
    - Field configurable and accessible
      - Network configuration (robot can be an access point or client)
      - Network protocols; HTTP, FTP, SSH, TELNET, NFS, SAMBA, VNC
      - Custom protocols; GPS, Serial Sensor Bus (SSB), Video Server
    - Optional Backpack for field transport
    - Optional Pelican Case for vehicle transport

# IRIS DESIGN CONCEPT

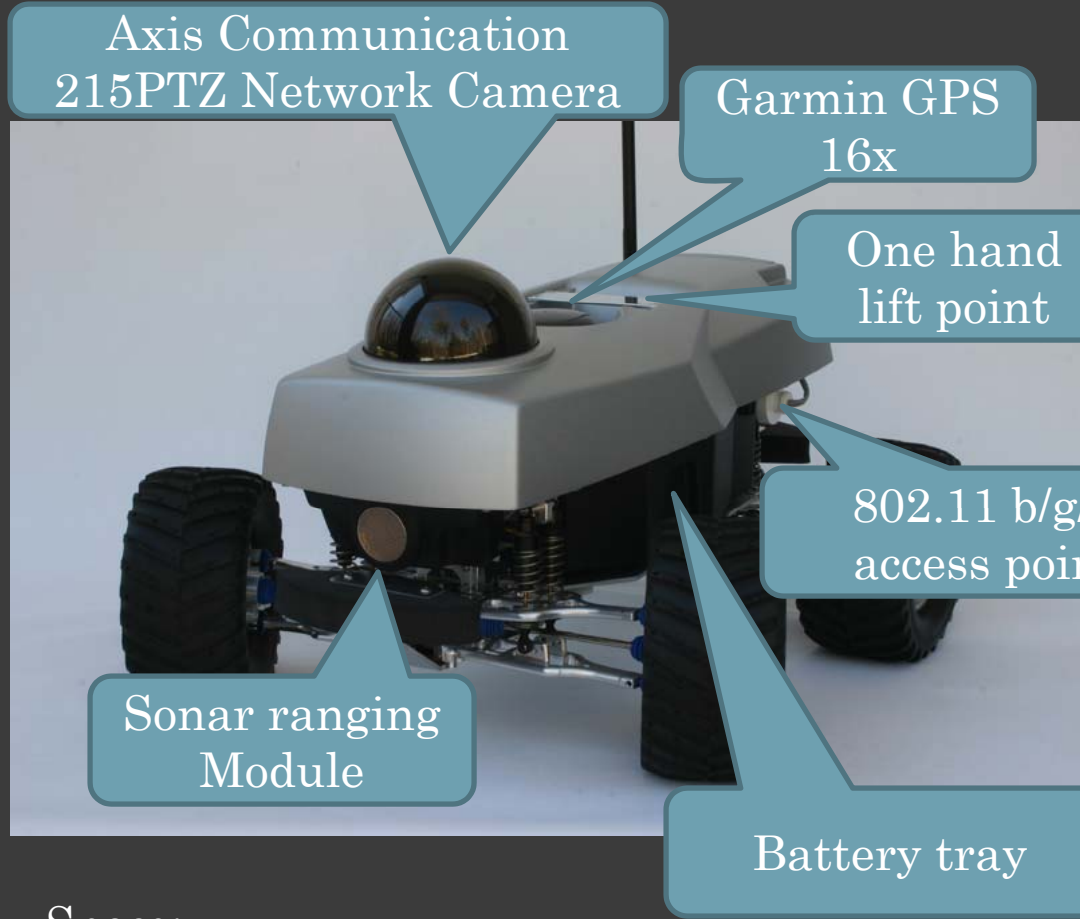
- IRIS platform
  - On-board computer
    - On-board PC based computer , Intel Atom Z530 1.6GHz, dual core processor
    - 32 Gb solid state drive
    - External VGA, and 2 USB interfaces for easy access and connection to keyboard and mouse
  - World class components
    - Axis Communication 215PTZ network camera
      - 704x480 pixel image
      - Stream motion JPEG or MPEG-4
      - Web browser accessible
    - Garmin 16x GPS 1Hz update rate
    - 802.11b/g/n 150Mbps peak throughput
      - High gain antenna 9 dbi

# IRIS DESIGN CONCEPT

- IRIS platform
  - Developers Platform
    - Linux Ubuntu Desktop OS
    - Multiple editors (nano, vi, emacs) and shells (bash, csh, tcsh,...)
    - Multiple programming languages; C, C++, Perl, PHP, Python
    - Ability to install additional packages
    - Network protocols; HTTP, FTP, SSH, TELNET, NFS, SAMBA, VNC
    - Users can develop advanced algorithms for navigation or image processing.
    - All platform sensors are accessible via network or TCP/IP API
      - Documentation included with platform

# IRIS DESIGN CONCEPT

- IRIS platform
  - Let us tour IRIS



- IMG\_3654.jpg
  - Axis Communication network camera Model #: 215PTZ
  - Web (HTTP) accessible
  - Or Edge Robotics Graphical User Interface
- Sonar module capable of sensing objects from 12cm to 11 meters
  - 15 degree aperture
  - Auto repeat at 4Hz
- Garmin GPS 16x
  - One hand lift point for ease of movement
- 2; 10Ah LiPo batteries with protection PCB, not removable
  - Integrated charging system

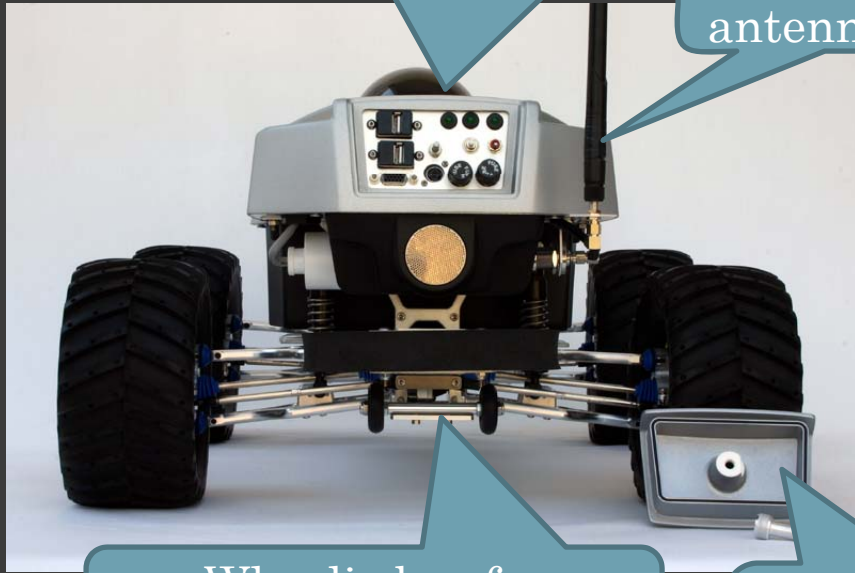
Specs:

- Height 13", Length 24", Width 18.5"
- Weight ~28 lbs (with batteries)
- Top speed varies with motors  
7.5-12.5 MPH

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Rear Panel

WiFi  
antenna 9dbi



Wheelie bar for  
stability protection

Rear panel cover  
Rubber gasket  
seal



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On-board Computer LED

Serial Sensor Bus Ready  
LED

On-board computer  
switch

Power On LED

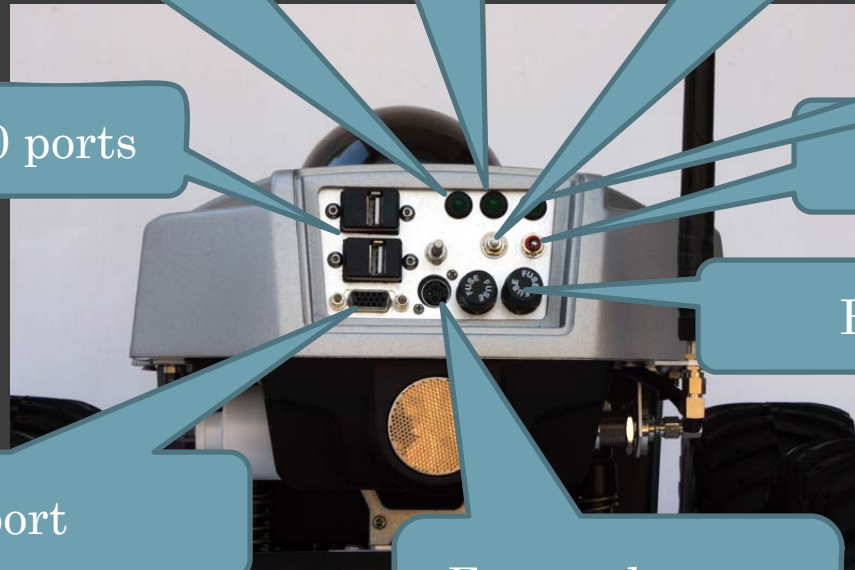
2 USB 2.0 ports

Power On switch

Fused battery

VGA port

External power  
supply port



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Water/dust camera dome seal

Water/dust tight body

Water/dust proof Sonar housing

Foam bumpers  
Front and Rear

4WD  
4 wheel independent suspension  
Tuned suspension system



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802.11n access point

Sonar module Rear



Stainless steel springs

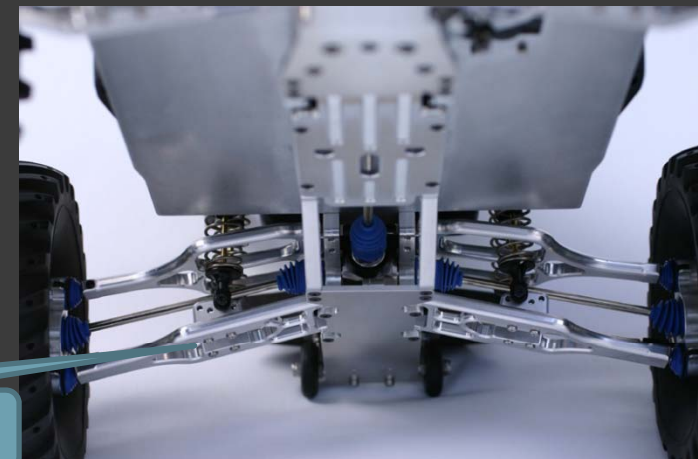
Stainless steel hardware

Rubber CV boots

Case hardened shafts

Aluminum 6061 chassis

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Sensor processors and host communication interface

H-Bridge

Power management

Camera

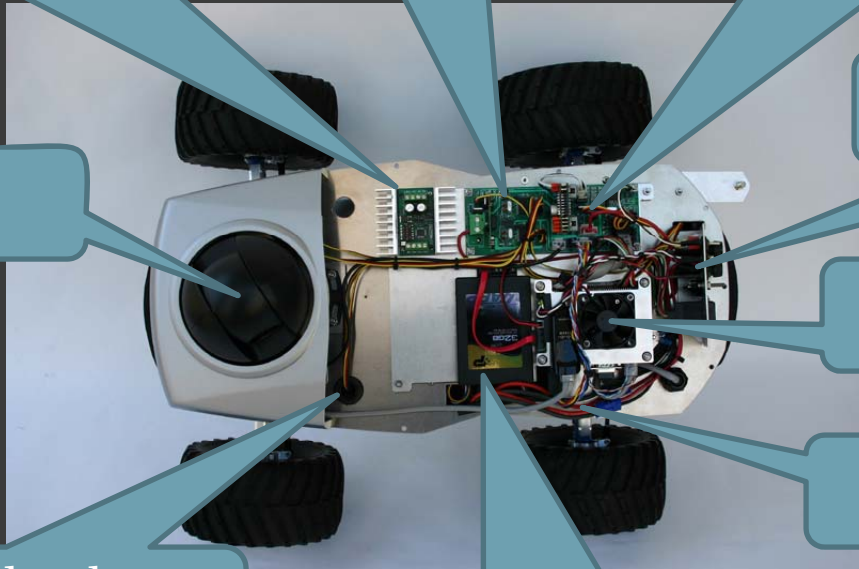
Rear Panel

On-board computer

NEMA Gland, wire ports

Battery connectors

Solid State Drive 32Gb



Video Image 704x480  
touch sensitive for pan/tilt  
and zoom

- 1.bmp
- Edge Robotics GUI

Sonar module display

Camera  
Looking over rear

Motion touchpad  
Fwd/Rev  
steering

Cam controls  
Pan 360  
Tilt 180  
Motion speed  
Manual focus

GPS sensor display

SSB alarm notification

SSB odometer sensor

