



DRONES AT WORK

AUSTRALIAN INDUSTRY APPLICATIONS
FOR DRONE TECHNOLOGY

INDUSTRY APPLICATIONS FOR DRONES

- ✓ Agriculture Sector
- ✓ Airlines & Airports
- ✓ Asset Inspection
- ✓ Aviation
- ✓ Building Inspections
- ✓ Construction Industry
- ✓ Corporate Marketing
- ✓ Deliveries
- ✓ Education
- ✓ Energy
- ✓ Emergency Services
- ✓ Emergency Systems
- ✓ Entertainment
- ✓ Engineering
- ✓ Environment & Climate
- ✓ Urban Planning
- ✓ Government Sector



INDUSTRY APPLICATIONS FOR DRONES

- ✓ Manufacturing & Inventory Management
- ✓ Mapping
- ✓ Media Management
- ✓ Mining Operations
- ✓ Police & Security
- ✓ Real Estate
- ✓ Realistic Future
- ✓ Healthcare
- ✓ Hospitality
- ✓ Sales & Marketing
- ✓ Shipping
- ✓ Special Occasions
- ✓ Tourism Industry
- ✓ Videography & Photography
- ✓ Weather
- ✓ Sports Events



ECONOMIC IMPACT OF DRONES



MEDIUM UPTAKE SCENARIO

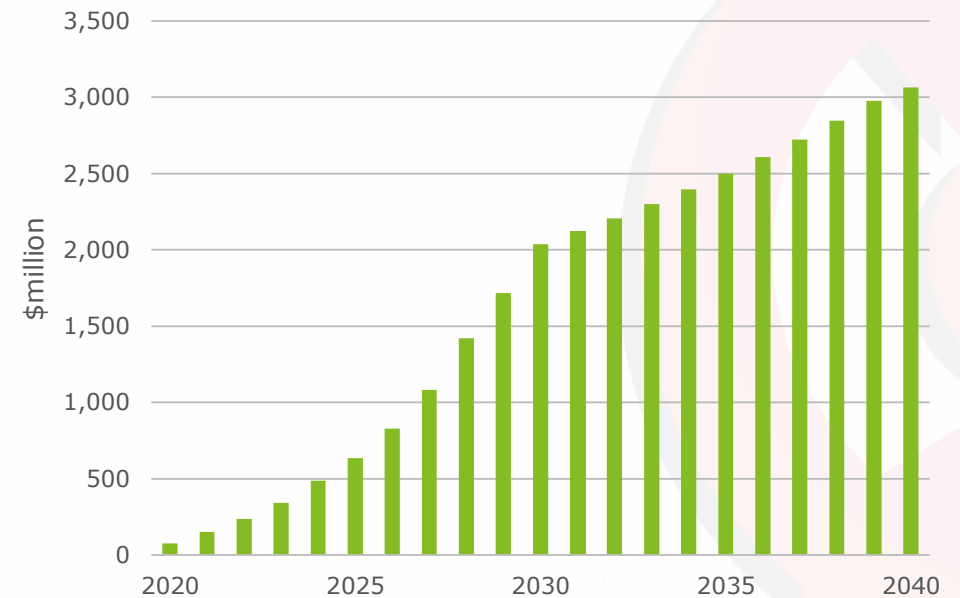
AUSTRALIAN REAL GDP
IS PREDICTED TO EXPAND
\$14.5b

Source: Economic Benefit Analysis of Drones in
Australia

Department of Infrastructure, Transport, Regional
Development and Communications

Deloitte Access Economics, 23 October 2020

Australian Economy Wide Impacts: 2020 to 2040
(Medium Uptake Scenario)



INDUSTRY IMPACT OF DRONES



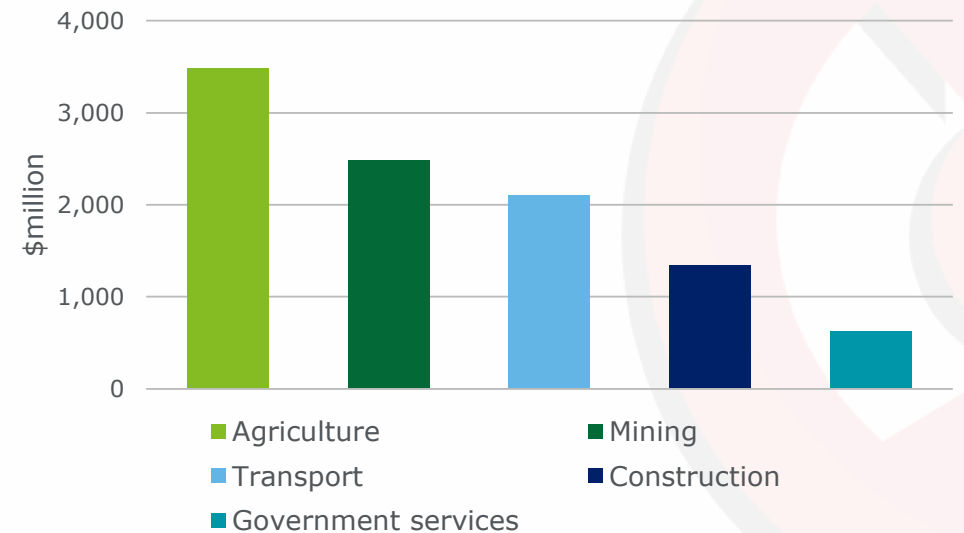
**DIRECT COST SAVINGS AT
7% REAL DISCOUNT RATE
\$9.3B**

Source: Economic Benefit Analysis of Drones in
Australia

Department of Infrastructure, Transport, Regional
Development and Communications

Deloitte Access Economics, 23 October 2020

**Australian Industry Impacts: 2020 to 2040
(Medium Uptake Scenario)**



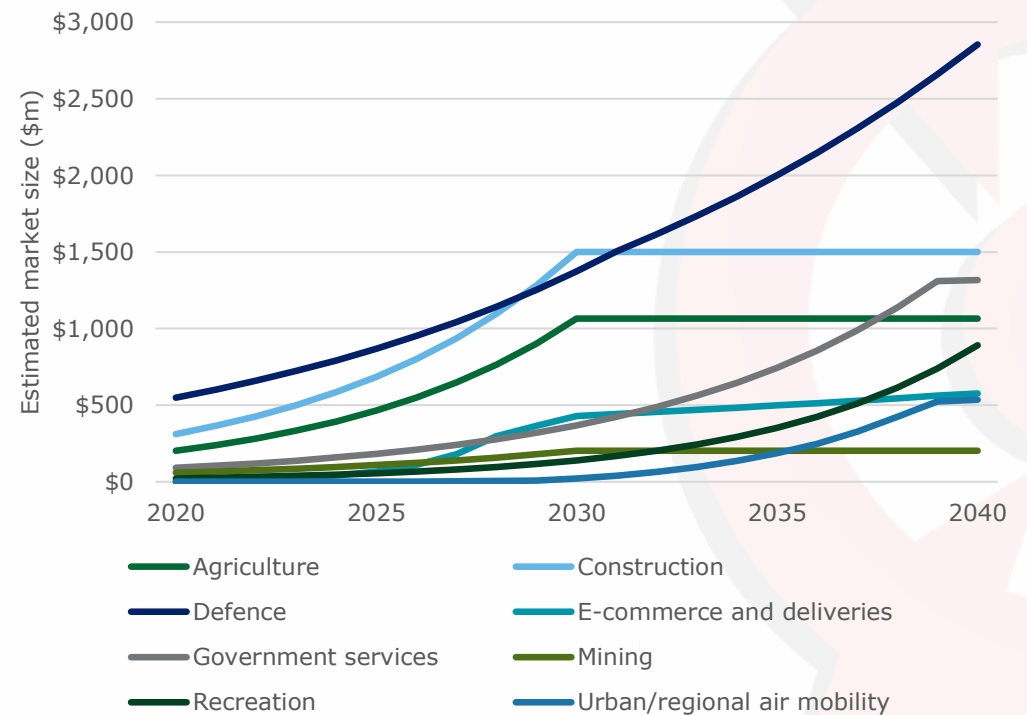
DRONE INDUSTRY MARKET SIZE

Source: Economic Benefit Analysis of Drones in
Australia

Department of Infrastructure, Transport, Regional
Development and Communications

Deloitte Access Economics, 23 October 2020

**Australian Est. Market Size
by Compelling Use Cases: 2020 to 2040
(Medium Uptake Scenario)**



INDUSTRY PENETRATION AND SIZE

Source: Economic Benefit Analysis of Drones in
Australia

Department of Infrastructure, Transport, Regional
Development and Communications

Deloitte Access Economics, 23 October 2020

Summary Finding of Compelling Use Cases Including Market Analysis (Medium Uptake Scenario)

| Use cases | TAM | Market penetration – 2040 (%) | Est. market size – 2040 \$m |
|---|--|-------------------------------|-----------------------------|
| Urban / regional air mobility | Airport taxi trips | Airport taxi passengers | 1.5% to 25% \$285m |
| | Point-to-point trips | Other taxi trips | 0.1% to 3% \$234m |
| | Regional air mobility | Short route domestic aviation | 0.1% to 3% \$74m |
| E-commerce and deliveries | Express parcel deliveries | Express parcels | 13% to 22% \$223m |
| | Food deliveries | Food deliveries | 53% to 75% \$264m |
| | Regional and remote pathology deliveries | Pathology tests | 4% to 9% \$88m |
| Agriculture, forestry and fishing (AFF) | AFF businesses | 27% to 67% | \$1,066m |
| Construction (Con.) | Con. businesses | 41% to 75% | \$1,501m |
| Mining (Min.) | Min. businesses | 41% to 75% | \$202m |
| Government services | Government spend | 17% to 67% | \$1,316m |
| Defence | Defence spend on surveillance | 75% to 95% | \$2,855m |
| Recreational | Population | 2.5% to 40% | \$891m |

AGRICULTURE SECTOR

- ✓ Plant Type, Count, Health & Height
- ✓ Infrared Sensing
- ✓ Fertilizer Spraying
- ✓ Crop ID
- ✓ Yield Monitoring
- ✓ Pest & Weed Control
- ✓ Stock Herding
- ✓ Feral Animal Monitoring
- ✓ Land Use
- ✓ Leaf Area Index
- ✓ Soil Type & Moisture
- ✓ Growth Stage
- ✓ Nitrogen Deficiencies
- ✓ Detasseling
- ✓ Soil Classification
- ✓ Spectral Imaging

ASSET INSPECTIONS

- ✓ Solar Panels & Arrays
- ✓ Mobile Phone Towers
- ✓ Wind Turbines
- ✓ Roofs
- ✓ Power-lines
- ✓ Conveyors
- ✓ Radio Towers
- ✓ Dam Walls
- ✓ Bridges
- ✓ Offshore Rigs
- ✓ Pipes
- ✓ NERC ROW Monitoring
- ✓ Asset Verification





AVIATION INDUSTRY

- ✓ Asset & Plant Inspections
- ✓ Property Valuations
- ✓ Building Inspections
- ✓ Rooftop Inspection
- ✓ Solar Panel Inspection
- ✓ Roof Leakage Detection
- ✓ Property Restoration
- ✓ Property Maintenance
- ✓ Insurance Assessment
- ✓ Claims Adjustment
- ✓ Maintenance Surveys

BUILDING INSPECTIONS

- ✓ Asset & Plant Inspections
- ✓ Property Valuations
- ✓ Building Inspections
- ✓ Rooftop Inspection
- ✓ Solar Panel Inspection
- ✓ Roof Leakage Detection
- ✓ Property Restoration
- ✓ Property Maintenance
- ✓ Insurance Assessment
- ✓ Claims Adjustment
- ✓ Maintenance Surveys
- ✓ Progress Monitoring & Reporting
- ✓ Photogrammetry 3D Models
- ✓ Pre-works Inspection





CONSTRUCTION INDUSTRY

- ✓ Project Planning
- ✓ Liability Assessment
- ✓ 3D Scanning & Mapping
- ✓ BIM Creation
- ✓ Digital Terrain Mapping
- ✓ Sub-divisions
- ✓ Surveying
- ✓ Project Management
- ✓ Virtual View
- ✓ Site Documentation
- ✓ Construction Progress Monitoring
- ✓ Asset Inspections
- ✓ Construction Marketing

CORPORATE MARKETING

- ✓ Marketing
- ✓ Sports
- ✓ Events
- ✓ Conventions
- ✓ Floating Advertising
- ✓ Trade Shows
- ✓ Product Launches
- ✓ Window Cleaning
- ✓ Mobile Advertising
- ✓ Virtual Tours





DELIVERIES

- ✓ Medical Supplies
- ✓ Medication
- ✓ Groceries
- ✓ Parcel Post
- ✓ Mail
- ✓ Farm Direct Produce
- ✓ Take-away Meals
- ✓ Convenience Stores
- ✓ Beverages
- ✓ Restaurant Deliveries

EDUCATION

- ✓ University Studies
- ✓ Aeronautical Studies
- ✓ Software Development
- ✓ Industrial Engineering
- ✓ Robotics Engineering
- ✓ 3D Printing
- ✓ Pilot Training
- ✓ Industry Application Training
- ✓ Photography
- ✓ Surveying
- ✓ Software Analytics
- ✓ Augmented Analysis
- ✓ Coding
- ✓ Algorithm Development
- ✓ Machine Learning
- ✓ Deep Learning





ENERGY

- ✓ Infrastructure & Compliance Inspection
- ✓ Contaminated & Hazardous Areas
- ✓ Leakages & Spread Detection
- ✓ Energy Exploration
- ✓ Buildings & Transmission Efficiency Mapping

EMERGENCY SERVICES

- ✓ Search & Rescue
- ✓ PFDs Delivery
- ✓ Thermo Sensing
- ✓ Natural Disasters
- ✓ First Aid Delivery
- ✓ Equipment Delivery
- ✓ Drone Ambulance
- ✓ Hazmat
- ✓ Arsonist Detection
- ✓ Surf Lifesaving
- ✓ Rapid Response





ENTERTAINMENT

- ✓ Music Festivals
- ✓ Concerts
- ✓ Videos
- ✓ Movies
- ✓ Celebrity Awards
- ✓ Light Shows
- ✓ Acrobatics
- ✓ 3D Gaming
- ✓ Drone Puppeteers
- ✓ Drone Racing
- ✓ Drone Combat
- ✓ Floating Projection Screens

ENGINEERING

- ✓ Civil Design Mapping
- ✓ Asset Monitoring
- ✓ Photogrammetry Services
- ✓ Measurements (Lidar Services)
- ✓ Digital Elevation Modeling
- ✓ 3D Feature Generation
- ✓ Thermographic Imaging
- ✓ Lidar Services



ENVIRONMENT & CLIMATE

- ✓ Land Cover Mapping
- ✓ Carbon Capping
- ✓ Renewable Energy
- ✓ Dumping Monitoring
- ✓ Waterway Monitoring
- ✓ Ice Flow Monitoring
- ✓ Wildlife Conservation
- ✓ Conservation Drones
- ✓ Wildlife Counts
- ✓ Animal Mapping
- ✓ Marine Biology
- ✓ Land Erosion
- ✓ Sample Collection
- ✓ Ecosystem Research
- ✓ Artificial Earthworms
- ✓ Artificial Bees



GOVERNMENT SECTOR

- ✓ Law Enforcement
- ✓ Local, State & Federal Governments
- ✓ Search & Rescue
- ✓ Disaster Planning
- ✓ Public Safety
- ✓ Event Management
- ✓ Weed Reduction
- ✓ Working at Heights
- ✓ Asset Management
- ✓ Pest Control
- ✓ Waste Collection & Removal





HEALTHCARE

- ✓ Medication & Prescription Delivery
- ✓ Blood Donation Delivery
- ✓ Lab Sample Collection & Delivery
- ✓ Vaccine Storage & Delivery
- ✓ Organ Transport
- ✓ Ambulance Drone

HOSPITALITY

- ✓ Food Delivery
- ✓ Convenience Store Delivery
- ✓ Grocery Delivery
- ✓ Food & Beverage Service
- ✓ Drone Waiter



A yellow drone is shown in flight, carrying a cardboard box. The drone is positioned in the upper right quadrant of the image. The background is a blurred industrial setting, likely a factory or warehouse, with blue structural elements and a concrete floor. The text is overlaid on a dark red rectangular background on the left side of the image.

MANUFACTURING & INVENTORY MANAGEMENT

- ✓ Manufacturing
- ✓ Assembly Lines Inspection
- ✓ Raw Materials Discovery
- ✓ Payload Delivery
- ✓ Equipment Transport
- ✓ Inventory Location
- ✓ Inventory Measurement
- ✓ Order Compilation & Inspection

MAPPING

- ✓ Land Cover Mapping
- ✓ Forestry Mapping
- ✓ Biomass
- ✓ Disease Detection
- ✓ Environmental Mapping
- ✓ Hydrology & Geological Mapping
- ✓ Water Management Support Mapping
- ✓ Wind Farm Mapping
- ✓ Solar Power Plant Mapping
- ✓ Transmission Line Mapping
- ✓ Emergency Response Mapping
- ✓ Disaster Site Monitoring & Mapping
- ✓ Hazard Mapping
- ✓ Archaeological Site Mapping
- ✓ Surveying
- ✓ Mining & Resources



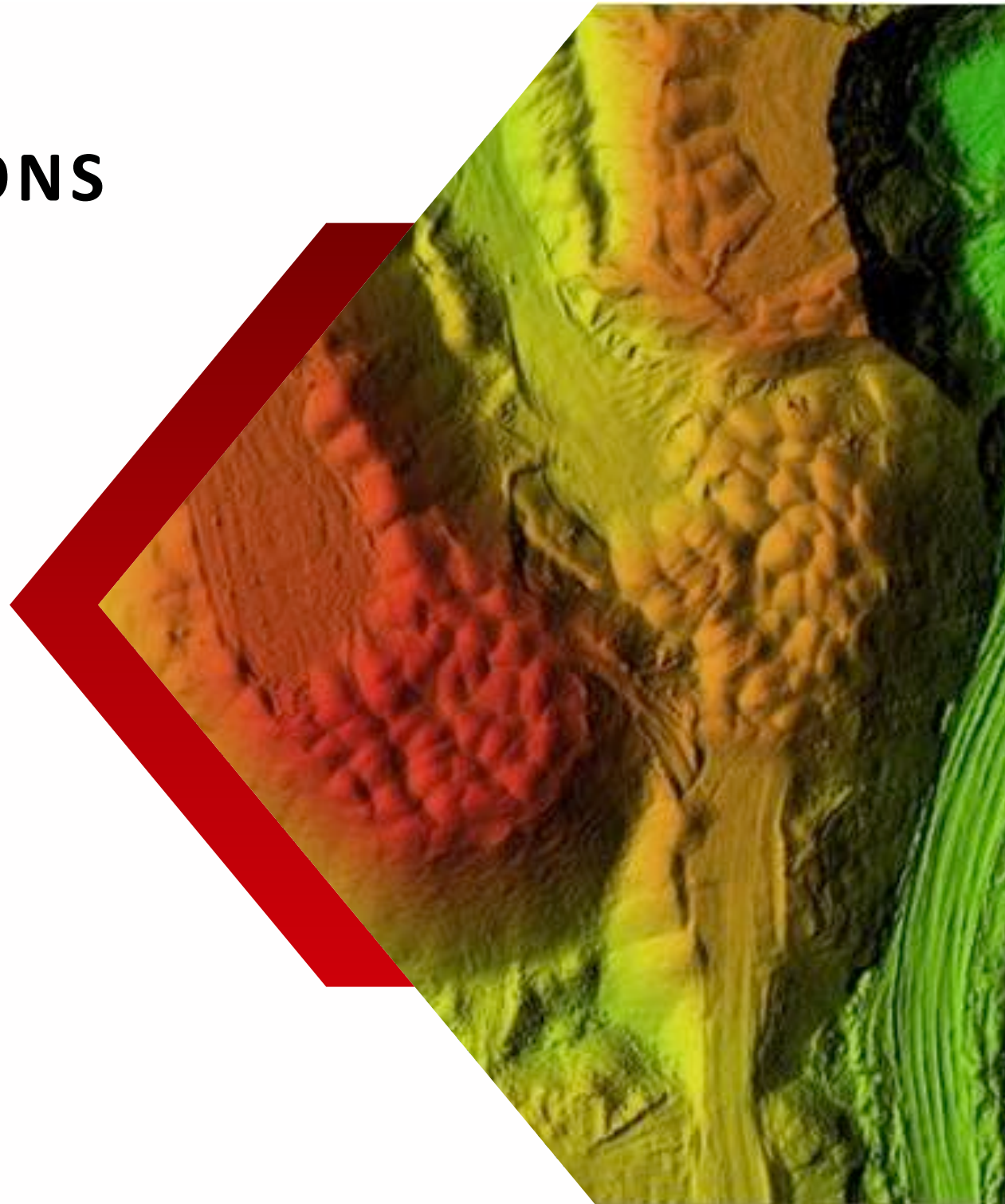


MEDIA MANAGEMENT

- ✓ Journalism
- ✓ News
- ✓ Advertising
- ✓ Marketing
- ✓ Television
- ✓ Weather
- ✓ Social Vlogs

MINING OPERATIONS

- ✓ 3D Modelling
- ✓ Environmental Assessment
- ✓ Multi Spectral Imaging
- ✓ Rehabilitation Surveys
- ✓ Digital Terrain Mapping
- ✓ Digital Terrain Models
- ✓ Digital Elevation Models
- ✓ Stockpile Measurement
- ✓ Volumetric Analysis
- ✓ Pit Survey
- ✓ Digital Ortho-mosaic
- ✓ Oil Spill Tracking
- ✓ Pipeline Monitoring



POLICE & SECURITY

- ✓ Police Surveillance
- ✓ Border Patrol & Detection
- ✓ Coast Guard
- ✓ Anti-poaching
- ✓ Drug Enforcement
- ✓ Grow-op Detection
- ✓ Highway Patrol & Enforcement
- ✓ Military Uses
- ✓ Private Investigation
- ✓ Crowd Control
- ✓ Protective Swarms



REAL ESTATE

- ✓ Real Estate Photos & Video
- ✓ Real Estate Inspections
- ✓ Residential Real Estate Marketing
- ✓ Commercial Real Estate Marketing
- ✓ 360° Area Shots
- ✓ Infrared Analysis
- ✓ Property Tours
- ✓ Showcase Properties



SALES & MARKETING

- ✓ Boats
- ✓ Motorbikes
- ✓ Cars
- ✓ Aircrafts
- ✓ Advertising
- ✓ Floating Signage
- ✓ Drone Tours
- ✓ Visual Marketing
- ✓ Promotional Item Delivery
- ✓ 3D Printing

SHIPPING

- ✓ Safety Inspections
- ✓ Compliance Inspections
- ✓ Detect & Identify Emission Infractions
- ✓ Navigational Aids
- ✓ Search & Rescue
- ✓ Autonomous Shipping
- ✓ Cargo Management
- ✓ Parts & Medical Deliveries
- ✓ Bio Security Inspections





SPECIAL OCCASIONS

- ✓ Weddings
- ✓ Proposals
- ✓ Engagements
- ✓ Birthdays
- ✓ Anniversaries
- ✓ Jamborees
- ✓ Funerals

SPORTS EVENTS

- ✓ Football
- ✓ Marathons
- ✓ Cycling
- ✓ Horse Racing
- ✓ Basketball
- ✓ Boxing
- ✓ Surfing
- ✓ Golf
- ✓ Sky Diving
- ✓ Fitness
- ✓ Bungee Jumping
- ✓ Officiating Assistance



TOURISM INDUSTRY

- ✓ Attractions
- ✓ Resorts
- ✓ Wildlife
- ✓ Parks
- ✓ Charter Hire
- ✓ Eco
- ✓ Fishing
- ✓ Whale Watching
- ✓ Remote Tours
- ✓ Landmark Visits



URBAN PLANNING

- ✓ Traffic Studies
- ✓ Population Studies
- ✓ Terrain Change Mapping
- ✓ Weather Change Mapping
- ✓ Water Change Mapping
- ✓ Resource Change Mapping
- ✓ Traffic Direction
- ✓ City Centre Redesign



An aerial photograph of the Golden Gate Bridge, showing its iconic orange-red towers and suspension cables. The bridge spans across a body of water, with hills visible in the background under a clear blue sky.

VIDEOGRAPHY & PHOTOGRAPHY

- ✓ Home Movies
- ✓ Children's Sporting Events
- ✓ Promotional Videos
- ✓ 360° Panoramas
- ✓ Landmark Flyby
- ✓ Sports Event Coverage
- ✓ Live Event Coverage
- ✓ Traffic Reporting
- ✓ Aerial Cinematography
- ✓ Documentaries & Expeditions

WEATHER

- ✓ Follow Weather Patterns
- ✓ Document Severe Weather
- ✓ Predict Severe Weather
- ✓ Severe Weather Warnings
- ✓ Inhospitable Location
Data Gathering





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