



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

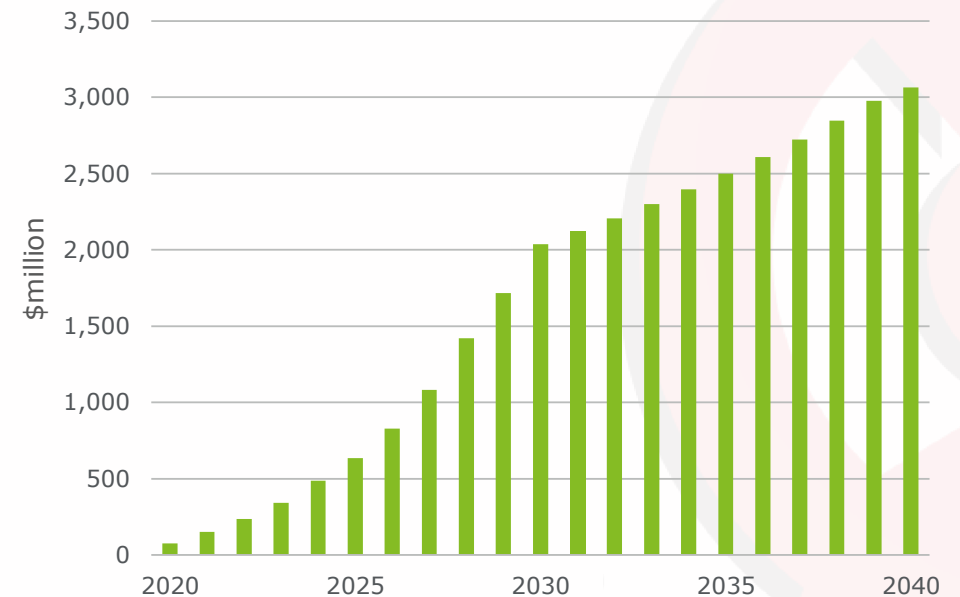
**AUSTRALIAN REAL GDP
IS PREDICTED TO EXPAND
\$14.5b**

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



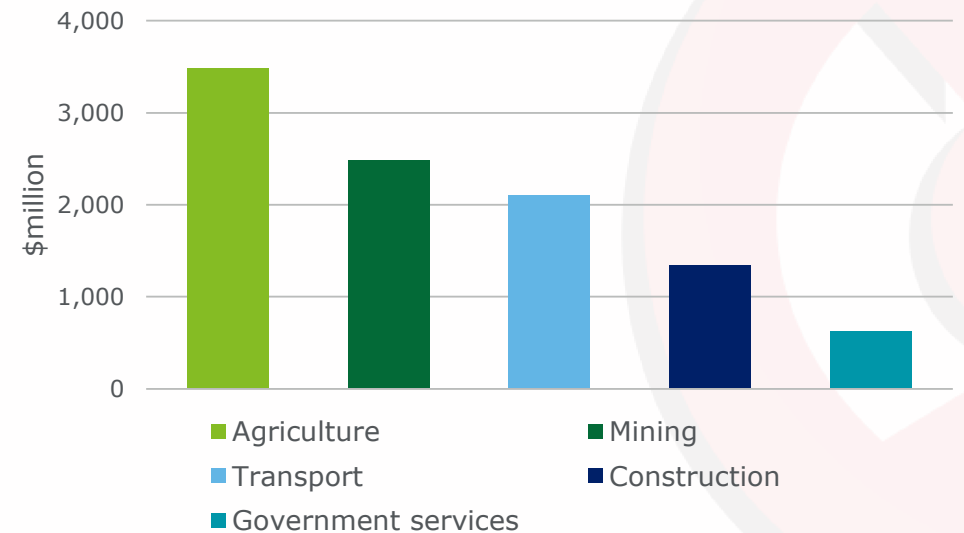
**DIRECT COST SAVINGS AT
7% REAL DISCOUNT RATE
\$9.3B**

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)**



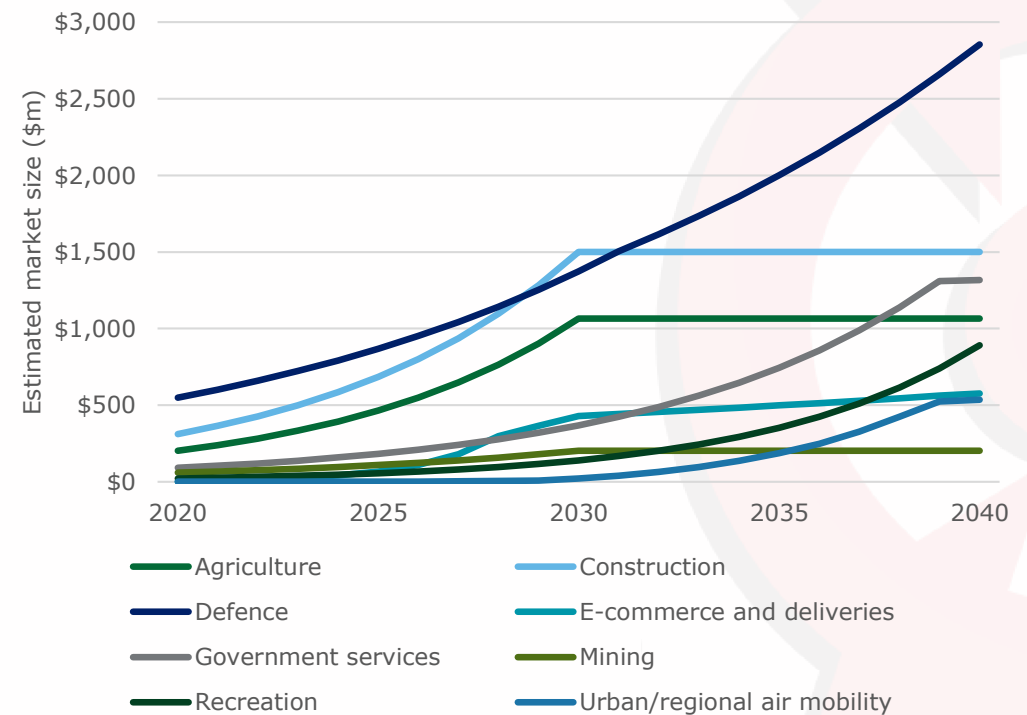
DRONE INDUSTRY MARKET SIZE

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

A person's hands are holding a tablet that displays various agricultural data visualizations, including bar charts and circular progress indicators. The background shows a vast agricultural field with rows of crops under a blue sky with scattered clouds. A small drone is visible flying in the distance. A red semi-transparent box on the right side of the image contains the title and a list of applications.

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



A thermal image of a residential building, likely a house, with a red overlay indicating heat signatures. The image shows the roof, windows, and surrounding landscape. The red overlay highlights areas of high temperature, such as the roof and windows, which are typical for thermal imaging used in energy audits and inspections.

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



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



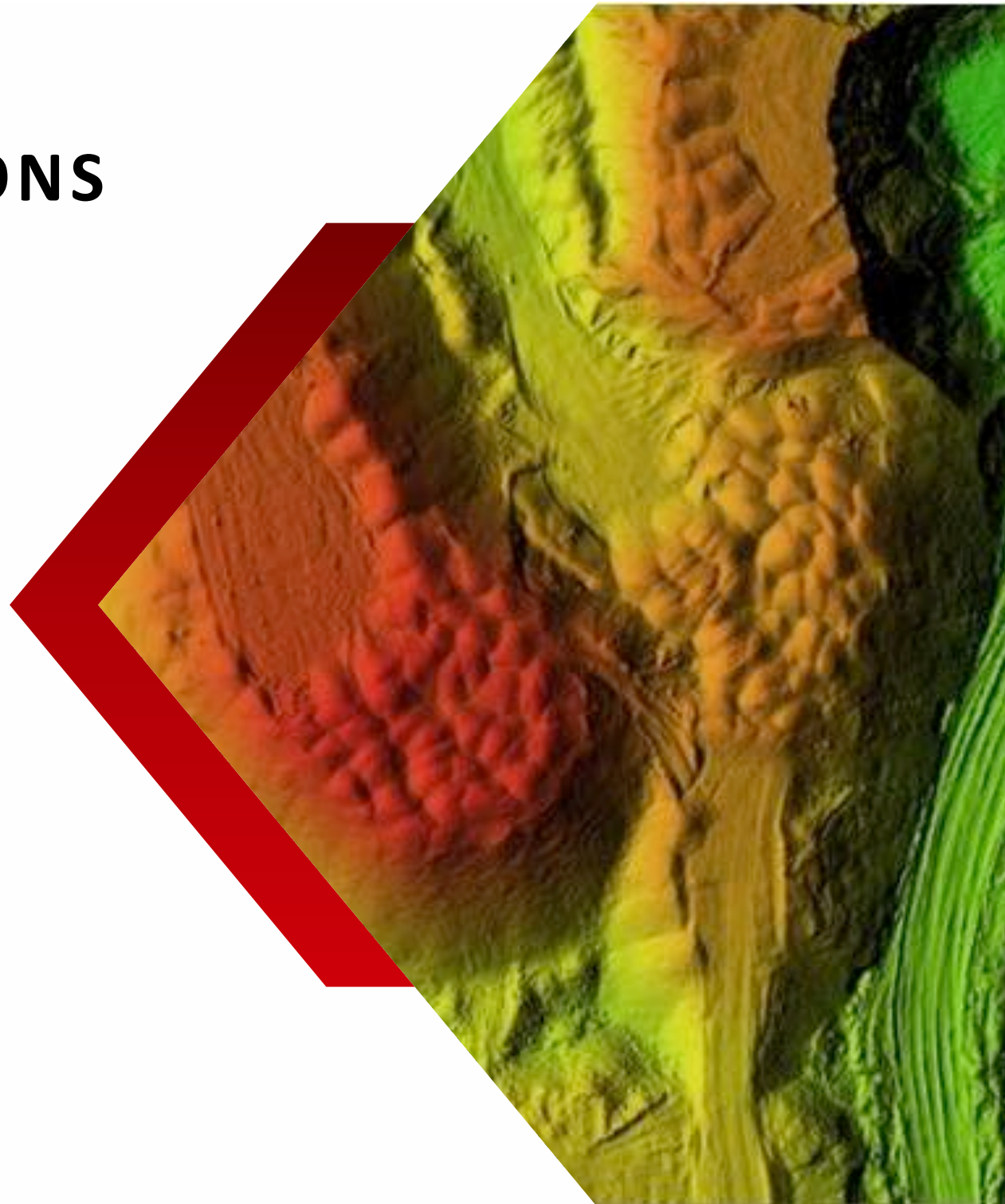


MEDIA MANAGEMENT

- ✓ 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



A large, ancient rock formation with a carved face, possibly a natural rock formation or a large statue. A man in a dark suit and a woman in a white dress are standing on a rocky path in front of the formation. The background is a dense forest of green trees.

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 red-orange steel structure, suspension cables, and the bridge deck spanning the water. The background features a clear blue sky and distant hills.

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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