

uMove Mobility Insights

Service Definition Document

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1. Service Overview

What is uMove Mobility Insights?

uMove Mobility Insights harnesses the power of GDPR-compliant mobile GPS data and AI to deliver unprecedented insights into how people actually move through your Authority, City and Region. Built on UrbanTide's uSmart data platform, it provides comprehensive six-dimensional movement intelligence for transport planning and investment decisions.

Understanding origin-destination patterns, mode choice, routes, journey purpose, and traveller demographics enables evidence-based decisions to drive modal shift, reduce emissions, and build climate-resilient transport systems.

uMove Mobility Insights is designed to support decision-making and analysis.

About UrbanTide

UrbanTide was formed from the team that bid, planned, and delivered Innovate UK's £24m Future Cities Demonstrator for Glasgow. There, we implemented the £7.2m OPEN Glasgow programme, which explored the value of new technologies, opened up city data, and delivered solutions for a range of urban challenges.

UrbanTide is an Edinburgh-based AI and data analytics company specialising in sustainability solutions through intelligent data platforms. With expertise in transport, energy, and urban analytics, UrbanTide serves major public sector clients and believes in making communities smart by focusing on the integration of people, data and technology.

UrbanTide is ISO 27001, ISO 9001, and Cyber Essentials Plus certified, demonstrating commitment to information security, quality management, and cyber resilience.

Target Users

- Local Authorities, Transport planning, highways, and active travel teams
- Regional Transport Partnerships
- Combined Authorities and City Region Partnerships
- Transport Scotland, Transport for Wales, DfI Northern Ireland
- Active Travel England and equivalent bodies
- Behaviour Change Organisations
- Transport Operators
- Urban Planners and Planning Consultancies
- Grant Applicants requiring evidence-based business cases
- Academic and Research Institutions

Proven Track Record

uMove and the underlying uSmart platform have been successfully deployed across multiple UK transport authorities and organisations:

- Transport Scotland: Regional mobility analytics and active travel monitoring
- Cycling Scotland: National Open Data Portal for all-mode transport data
- SEStran, HITRANS, SPT: Regional Transport Partnership investment dashboards
- Walk Wheel Cycle Trust (formerly Sustrans): Travel safety dashboards
- Venice Municipality (Italy): International deployment for urban mobility

- Love to Ride: Private sector behaviour change partnership

2. Key Features and Capabilities

Six Dimensions of Movement Intelligence

uMove Mobility Insights provides complete journey understanding through six integrated data dimensions:

- **Origin & Destination:** Understand where people are travelling from and to across your region
- **Mode Choice:** AI distinguishes walking, cycling, bus, rail, and car journeys with 85%+ accuracy
- **Route Selection:** See actual paths taken; identify barriers and detours
- **Journey Purpose:** Commute, education, leisure, shopping - understand why people travel
- **Demographics:** Socio-economic patterns inform equitable infrastructure investment
- **Temporal Patterns:** Peak times, seasonal variations, right-size investments

AI-Powered Transport Intelligence

uMove Mobility Insights processes GDPR-compliant anonymised GPS data from mobile devices to extract comprehensive mobility intelligence. Our proprietary machine learning algorithms, validated through DfT-funded R&D programmes, analyse movement patterns to determine:

- Travel mode (car, bus, rail, cycle, walking, other) with 85%+ accuracy
- Origin-Destination to 1m² spatial precision aggregated using the H3 hierarchical system
- Complete route geometry showing actual paths taken between Origin-Destination
- Journey purpose through pattern recognition of origin and destinations
- Temporal characteristics (departure/arrival times to one-minute accuracy)
- Demographic attributes, including income and deprivation indices for equity analysis

High Spatial Precision

Origin-destination pairs are captured at 1m² spatial accuracy and can be aggregated to higher hierarchical levels (15m, 100m, 740m, etc.) using the H3 hierarchical hexagonal grid system. Data can also be attributed to postcode sectors, transport zones, small area geographies, or other custom geographies as defined by the customer.

Complete Route Geometry

Route geometry records the actual paths taken between origins and destinations at equivalent precision. Unlike traditional traffic counts that only measure point volumes, uMove Mobility Insights captures actual routes taken, revealing which corridors carry the highest flows and how people actually navigate the network.

Comprehensive Temporal Coverage

Data is available with one-minute timestamp accuracy, enabling analysis of hourly, daily, weekly, and seasonal travel patterns. Continuous longitudinal coverage from April 2019

onwards provides pre-COVID baseline (2019), pandemic-impact analysis (2020-2021), recovery patterns (2022-2024), and current baseline with monthly updates.

Full UK and Ireland Coverage

Comprehensive coverage encompasses all road classifications across the United Kingdom and Ireland, extending beyond administrative boundaries. This captures both external-to-internal and through-traffic movements, enabling cross-boundary journey analysis and regional corridor studies.

3. Service Benefits

Climate Resilience

Identify short car journeys ripe for conversion to active travel. Model demand shifts and scenarios to build adaptation strategies. Calculate current modes, routes, and areas to establish baselines for progress tracking toward decarbonisation goals.

Cost Efficiency

Focus limited budgets on high-ROI corridors. Eliminate wasteful scatter-gun approaches with evidence-based targeting. Data-driven prioritisation ensures infrastructure investment delivers maximum benefit, avoiding costly interventions in low-demand areas.

Improved Accessibility

Reveal underserved communities and demographic barriers. Ensure equitable investment in infrastructure across all groups. Demographic overlays on OD flows support equity impact assessments and ensure that transport investments benefit all communities fairly.

System Resilience

Understand how disruptions affect travel patterns. Design redundant routes and climate-proof critical corridors. Historical data enables analysis of network response to incidents, weather events, and planned interventions.

Superior to Traditional Counts

Traditional traffic counts provide snapshots at key locations but have fundamental limitations: limited temporal coverage, no origin-destination intelligence, point-in-time only, and weather/incident sensitivity. uMove Mobility Insights delivers significantly more comprehensive baseline data with regular monthly updates, eliminating these constraints.

Origin-Destination Intelligence

Understand where journeys start and end, not just volumes at counting points. Complete origin-destination matrices show where trips entering/leaving your geographic area of interest start and end, enabling catchment analysis, corridor prioritisation, and strategic network planning.

Historical Context

Longitudinal surveys provide pre-COVID baseline (2019), pandemic-impact analysis (2020-2021), recovery patterns (2022-2024), and latest baseline with monthly updates.

Essential for understanding the new normal in transport demand and tracking long-term trends.

No Hardware Required

Eliminates costly infrastructure deployment and sensor maintenance. Data is available immediately without procurement, installation, or ongoing hardware management. No complex, costly and resource-intensive hardware required.

Weather-Independent

Unlike manual surveys or temporary counters, data quality is unaffected by weather conditions. Avoids skewed results due to unusual survey-day conditions, ensuring representative samples.

Evidence-Based Decision Making

Build evidence-based cases that secure funding. Robust data supports grants, planning submissions, and data-driven recommendations. Clear evidence base strengthens business cases and improves stakeholder confidence.

4. Use Cases

Monitoring and Evaluation

Truly understand how the network currently operates and actively monitor and evaluate recent interventions, enabling better future planning and proof of positive, efficient investment:

- **Baseline Mapping:** Calculate current modes, routes, and areas; identify congestion hotspots
- **Opportunity Identification:** Short car trips with conversion potential, high-impact corridors
- **Scenario Modelling:** Model impact of different modal shift scenarios
- **Intervention Planning:** Design packages with greatest impact, prioritise by cost-effectiveness
- **Progress Monitoring:** Track actual modal shift vs targets with historic comparisons

Targeted Travel Impact

Determine the best interventions to drive change and improve network-wide efficiency:

- Identify high-volume short car trip corridors with conversion potential
- Analyse current cycling routes and barriers
- Demographic and equity analysis ensuring infrastructure benefits all groups
- Temporal planning for right-sizing infrastructure
- Evidence-based prioritisation of cycling corridors

Integrated Transport Optimisation and Route Planning

Address transport network challenges from reduced investment and increased private car usage:

- **Demand Analysis:** Map where people actually want to travel; identify underserved OD pairs
- **Temporal Optimisation:** Right frequency at right time
- **Performance Benchmarking:** Compare modal share across corridors
- **Demographics & Accessibility:** Ensure service coverage for all communities
- **New Route & Service Design:** Design based on unmet demand, optimise interchange locations

5. Data Validation and Methodology

Data Innovation

Our distinctive data insight solution was developed through extensive research and development within UrbanTide, supported by the Department for Transport's Research and Innovation Funding. During this process, we collaborated with the University of Edinburgh to tackle poor-quality mode data extraction from mobile data.

The methodology has been validated through: DfT Innovation Partnership, peer-reviewed methodology development, validation against established transport data sources, alignment with DfT's Transport Analysis Guidance (TAG) principles, and academic validation with the University of Edinburgh.

National Calibration

- AI models trained on extensive ground-truth datasets
- Regular recalibration against National Travel Survey data
- Mode share validation at regional and local authority level
- Demographic weighting to correct for sample bias

Local Validation Using DfT Traffic Counts

We systematically validate and factor vehicle flow data against the Department for Transport's official traffic count database:

- **Data Source:** DfT traffic counts for the most recent published year
- **Coverage:** All permanent and manual count sites within your area
- **Process:** Extract DfT locations, compare volumes, calculate local adjustment factors, apply spatially varying factors, document discrepancies

Validation Reporting

uMove Mobility Insights subscription includes:

- Annual Validation Report documenting factoring methodology and DfT count comparison
- Methodology Updates notification of any changes to algorithms
- Customer Feedback Loop to improve accuracy

6. Data Security and GDPR Compliance

Privacy by Design, Compliant by Default

uMove Mobility Insights takes data protection seriously with a multi-layered approach ensuring individual privacy while delivering powerful planning insights.

Stage 1: GDPR Compliance at Source

- Raw GPS data collected only from users who have provided consent
- Data partners audited for GDPR compliance
- Legal basis for processing clearly established (legitimate interest for transport planning)

Stage 2: Anonymisation Process

UrbanTide applies rigorous anonymisation before any data enters the platform:

- **Identifier Removal:** All unique device identifiers and personally identifiable information stripped
- **Spatial Aggregation:** Individual GPS traces aggregated to origin/destination zones with anonymisation of 5 or greater
- **Temporal Aggregation:** Individual trip timestamps grouped into time periods
- **Minimum Threshold Rules:** No data reported for areas/times with fewer than five trips
- **Statistical Disclosure Control:** K-anonymity techniques ensure no individual can be re-identified
- **Noise Injection:** Statistical noise added to low-count cells for additional protection

Stage 3: DPIA Documentation

We provide comprehensive Data Protection Impact Assessment (DPIA) documentation tailored to your organisation, including transparency materials for public engagement.

Technical Security Measures

- **Encryption:** AES-256 at rest, TLS 1.3 in transit
- **Access Controls:** Multi-factor authentication, role-based permissions
- **Audit Logging:** Complete trail of data access and exports
- **Infrastructure:** EU/UK-based cloud hosting (data residency compliance)
- **Certifications:** ISO 27001, ISO 9001, Cyber Essentials Plus

7. User Roles and Access Control

uMove Mobility Insights is delivered through the uSmart platform, which provides comprehensive role-based access control to ensure secure data governance.

Role	Description and Permissions
Viewer	Read-only access to assigned dashboards and datasets. Can view visualisations and export permitted data.
Analyst and Data Provider	All Viewer permissions plus ability to create custom views, apply filters, and generate reports within assigned geographic areas. Update existing datasets within a group (data only)
Project Manager and Data Publisher	All Analyst permissions plus the ability to manage project workspaces, configure dashboards, and invite team members. Manage datasets within a group (create, update, publish, delete)
Organisation Admin	Full administrative control over the organisation's uMove instance, including user management, access configuration, and data governance settings and create new groups

Access permissions can be configured by role, organisation, project, or geographic area, enabling secure collaboration while maintaining full control over data access.

8. Platform Tiers

Annual subscription with tiered user access. All tiers include full platform functionality and monthly data refresh.

Tier	Users	Support	Best For
Starter	Up to 5	Email support, self-service training materials	Small transport teams, focused projects, single-purpose analysis
Professional	Up to 15	Priority support, quarterly training webinars, dedicated customer success manager	Multi-disciplinary access, LTP development
Enterprise	Unlimited	4-hour response, annual on-site training, quarterly business reviews, product roadmap input	Combined authorities, multi-council partnerships, model integration

Geographic Coverage Options

Halo Coverage: Analysis of trips originating, passing through, or terminating within your boundary. Best for local authorities focused on internal movement patterns.

All Trip Generators: Complete UK-wide origin-destination intelligence showing where residents travel to and where visitors come from. Best for regional strategies, major employment centres, and LTP evidence bases.

Historical Data Options

- Standard: 12 months rolling (included) - current baseline plus seasonal variation
- 24 months: Year-on-year trend analysis, post-COVID recovery tracking
- 36+ months: Pre-pandemic baseline comparison for Treasury Green Book appraisals

9. Technical Requirements

Access Requirements

uMove Mobility Insights is accessed via modern web browser with no client-side software installation required.

- Modern web browser (Chrome, Firefox, Safari, Edge - latest two major versions)
- Internet connection (minimum 2Mbps recommended for optimal performance)
- JavaScript enabled
- Screen resolution 1280x720 minimum (1920x1080 recommended for data visualisation)

Authentication

The platform supports multiple authentication methods:

- **Username and Password:** Strict password policy requiring a minimum 8 characters with uppercase, lowercase, digits, and special characters

- **Multi-Factor Authentication (MFA):** Mandatory for administrators; configurable for all users
- Integration with customer identity providers (Azure AD, Google Workspace, Okta) available

API Access

Programmatic access is available via RESTful API for integration with external systems:

- RESTful API with JSON responses
- Authentication via AWS Cognito client credentials with API key and secret
- Rate limiting applied per API key
- Comprehensive API documentation provided
- API access uplift available for model integration or dashboard feeds

Data Export Formats

Data can be exported in multiple formats for use in reports, business cases, and GIS systems:

- CSV (tabular data)
- GeoJSON (spatial data)
- Shapefile (GIS integration)
- JSON (API responses)
- PDF (reports and visualisations)

10. Service Levels and Availability

Availability

Target service availability: 99.5% measured monthly, excluding planned maintenance windows.

Performance Thresholds

Metric	Target
Dashboard page load	< 3 seconds (95th percentile)
Data query response	< 10 seconds (standard queries)
API response time	< 2 seconds (95th percentile)
Data export generation	< 60 seconds (standard exports)
Data refresh	Monthly (standard), more frequent available

Issue Response Times

Priority	Definition	Response Time
P1 - Critical	Service unavailable or major functionality impaired	1 hour (business hours)

P2 - High	Significant functionality degraded	4 hours (business hours)
P3 - Medium	Minor functionality affected, workaround available	1 business day
P4 - Low	Cosmetic issues, enhancement requests	5 business days

11. Backup, Disaster Recovery and Business Continuity

Recovery Objectives

- Recovery Time Objective (RTO): 3 hours
- Recovery Point Objective (RPO): 3 hours

Backup Strategy

- Automated daily backups of all customer data and configurations
- Incremental backups every 3 hours
- Backups encrypted at rest using AES-256
- Backup retention: 30 days standard, configurable upon request
- Regular backup restoration testing

Resilience Architecture

- Multi-availability zone deployment within AWS Dublin region
- Automatic failover for critical components
- Database replication with automated promotion
- Content delivery network (CDN) for static assets
- Load balancing across multiple application instances

Business Continuity

UrbanTide maintains documented business continuity procedures including:

- Incident response procedures
- Communication protocols for service disruptions
- Regular disaster recovery testing
- Staff training and documentation

12. Hosting and Data Location

Infrastructure

uMove Mobility Insights is hosted on Amazon Web Services (AWS) infrastructure within the EU-West-1 (Dublin, Ireland) region. All data processing, storage, and backup occurs within this region.

Data Location Guarantees

- All customer data stored within EU/UK jurisdiction
- No data transfer outside EU-West-1 region without explicit customer consent
- UK-based cloud hosting with data residency compliance

Data Segregation

- Logical separation of customer data at database level
- Customer-specific encryption keys where required
- No cross-customer data access possible

AWS Compliance

AWS infrastructure maintains extensive compliance certifications including ISO 27001, SOC 2, and UK Government G-Cloud accreditation.

13. Onboarding and Training

Documentation

Comprehensive documentation is available via the UrbanTide knowledge base:

- Platform user guides
- API documentation
- Data dictionary and methodology guides
- FAQ documents addressing common questions
- Video tutorials and walkthroughs

Training Options

- Self-service training materials (all tiers)
- Quarterly training webinars (Professional and Enterprise tiers)
- Annual on-site training (Enterprise tier)
- Bespoke training sessions available on request

Onboarding Support

New customer onboarding includes:

- Account setup and user provisioning
- Geographic area configuration

- Initial data validation walkthrough
- Platform orientation session
- Dedicated customer success manager (Professional and Enterprise)

14. Support and Maintenance

Support Channels

- Email support: support@urbantide.com
- Support portal with ticket tracking
- Phone support (Enterprise tier)
- Dedicated customer success manager (Professional and Enterprise)

Support Hours

Standard support hours: Monday to Friday, 09:00-17:00 UK time, excluding UK public holidays.

Enterprise tier: Extended support and 4-hour response times during business hours.

Maintenance Approach

- Planned maintenance scheduled outside business hours where possible
- Minimum 5 business days notice for planned maintenance
- Emergency maintenance communicated as soon as practical
- Regular platform updates with new features and improvements

Customer Feedback

We value customer feedback:

- Quarterly business reviews (Enterprise tier)
- Product roadmap input (Enterprise tier)
- Customer community and knowledge base access
- Observations help improve accuracy and features

15. Data Export and Exit Arrangements

Data Export Methods

Customers can export their data at any time through:

- Self-service export via platform interface (CSV, GeoJSON, Shapefile)
- API access for programmatic data retrieval
- Bulk export request to support team

End of Contract Process

Upon contract termination:

- 30-day notice period to complete final data exports

- All customer data deleted within 30 days of contract end
- Written confirmation of data deletion provided
- No ongoing access fees during transition period

Data Portability

All data exports use standard, non-proprietary formats (CSV, GeoJSON, Shapefile) to ensure portability to alternative systems. No vendor lock-in through proprietary data formats.

Included vs Additional Costs

- Included: Self-service exports, API access, standard data formats
- Additional: Bespoke data extractions, professional services for complex migrations

16. Certifications and Compliance

Security Certifications

Certification	Description
ISO 27001	Information Security Management System certification
ISO 9001	Quality Management System certification
Cyber Essentials Plus	UK Government-backed cyber security certification with independent verification

Regulatory Compliance

- GDPR: Full compliance with UK and EU data protection regulations
- Data Protection Act 2018: Compliant with UK data protection law
- DfT TAG: Aligned with Department for Transport's Transport Analysis Guidance

Framework Availability

- G-Cloud 15
- Crown Commercial Service RM6094 Spark
- Crown Commercial Service RM6200 Artificial Intelligence

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