TomTom Orbis Maps: Open Standards, Enterprise Precision

Harnessing the power of open data with the precision of proprietary sources for accurate, fresher and interoperable maps

Introduction

Today's map-making landscape presents two main approaches: proprietary, and open data.

Proprietary maps

Proprietary maps, like TomTom MultiNet (Genesis) Maps, Google Maps, and HERE Maps, deliver high-quality, curated data sourced from satellites, real-time sensors, proprietary sources and user input. These maps, developed by individual companies, remain closed-source, which limits customization, collaboration, and innovation. Users are dependent on the provider to implement new features, and these maps' closed data models reduce interoperability with other systems, narrowing their broader application potential.

Open data maps

Open data maps, sourced from community and corporate contributors, provide a flexible and cost-effective mapping solution. OpenStreetMap (OSM) exemplifies this, with its community-driven updates that offer local insights and rapid changes. OSM's "self-healing" model, where contributors identify and correct errors, often in their own backyard, helps maintain content accuracy. However, the decentralized approach can lead to inconsistencies in data definitions, and the limited automation of data intake may hinder update frequency in less active areas, making OSM less compatible with machine learning and AI-based methods for generating and updating map data. These issues are not unique to OSM, as governments and organizations release more geospatial data, conflation and integration challenges persist due to variations in data formats, licensing, and the need for manual validation.

Both approaches have unique strengths, but they generally operate independently, making interoperability difficult. Differing data standards, licensing issues, and technical limitations complicate the integration of data from multiple sources, leading to duplicated efforts in creating, integrating, and managing map data. To address these challenges, an approach is needed that connects proprietary and open data to enable seamless interoperability.

Overture Maps Foundation

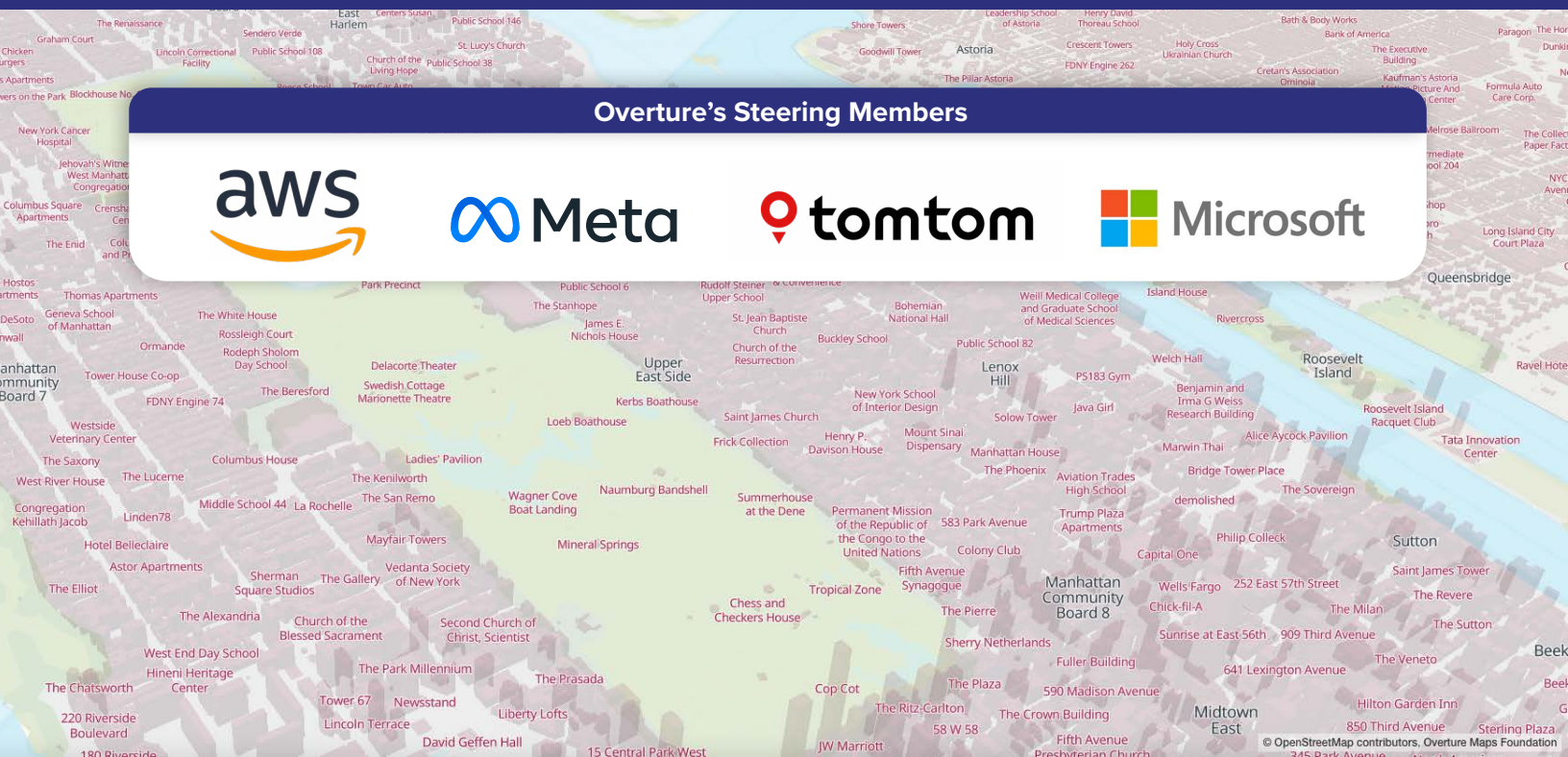
The Overture Maps Foundation, founded by TomTom, Microsoft, Meta, and Amazon Web Services (AWS), addresses key challenges in the mapping industry by creating a collaborative, open data map that provides unified, interoperable map data that serves as a foundational layer, ready to be enriched with proprietary content. By reducing duplicated efforts, Overture allows organizations to focus on differentiation and enhancing their map applications rather than building data from scratch while fostering cooperation among map data producers. Moreover, its open approach prevents organizations from being locked into a single-vendor platform, offering greater flexibility. Learn more about how Overture tackles open data challenges in this Linux Foundation blog.

Overture organizes data into six core themes—Transportation, Places, Buildings, Divisions, Addresses, and Base—structured with standardized formats and schemas to streamline data exchange and integration. Overture's datasets focus on core, foundational content, and are designed to be enhanced through conflation with application-specific data. For example, within the Places theme, users can augment Overture's data with missing attributes (like addresses or phone numbers) and merge them with the other Overture datasets creating a more comprehensive final map data for applications like Search.

A key feature of Overture is the Geospatial Entity Reference System (GERS), which assigns unique IDs to critical geospatial entities within its themes. This provides long-term stability and ensures consistent references across datasets, streamlining the process of data conflation and integration. For example, learn how Esri used GERS to integrate FEMA's USA Structures data with Overture's Buildings theme, enhancing their GIS capabilities. By adopting GERS as an open data interoperability standard, vendors can perform conflation on their side and provide an easy linking to their data through GERS.

In less than two years, Overture has rapidly evolved into an expanding ecosystem, featuring more than 30 contributing members from diverse sectors, including automotive, GIS and spatial analytics, augmented reality, and logistics. This unprecedented growth extends beyond datasets to include tools that foster seamless compatibility within the ecosystem. As Overture evolves, the ecosystem built on Overture is set to surpass any proprietary map ecosystem, redefining open data interoperability standards across the mapping industry.

OVERTURE MAPS FOUNDATION



TomTom Orbis Maps

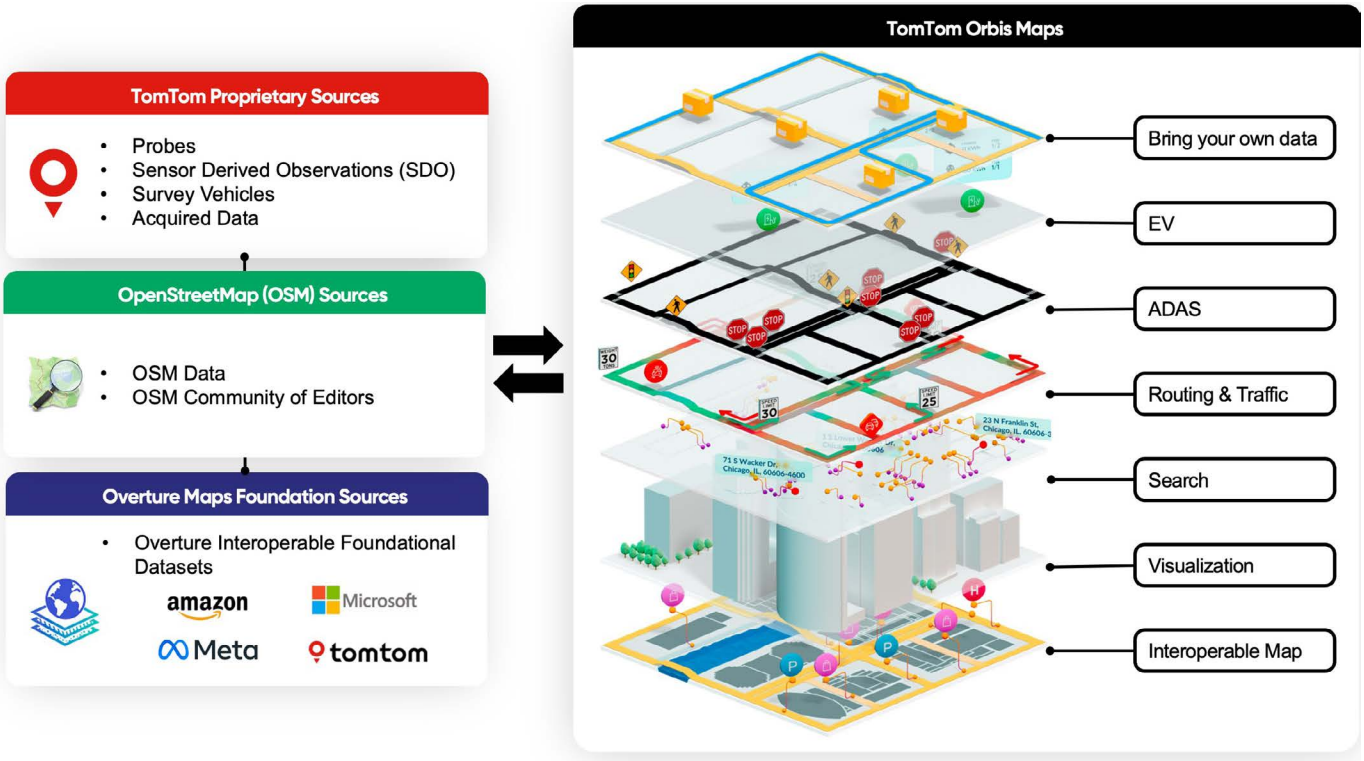
TomTom Orbis Maps offers a hybrid solution that integrates open and proprietary data, standing out by ingesting open data, while enriching this integration with TomTom's extensive set of proprietary data—developed over decades of experience within the mapping industry—unlocking the full potential of both open and proprietary data for enhanced accuracy, customization, and commercial use.

By ingesting Overture's datasets and incorporating GERS as the interoperability standard, Orbis creates an interoperable map layer that seamlessly connects to a variety of open and proprietary geospatial datasets.

TomTom Orbis Transportation Network is identical to the Overture Transportation theme dataset, which TomTom provides as a Steering member of Overture and a key contributor to its Transportation task force. The Orbis Transportation Network consists of geometries that describe the infrastructure and conventions governing how people and objects move throughout the world. This includes features such as roads, trails, ferry routes, railroads, cycle paths, and pedestrian paths. This collaboration places TomTom at the forefront of transportation data standardization, ensuring that Orbis functions as an interoperable map solution.

Beyond Transportation, Orbis incorporates additional Overture data as one of the sources to enrich its content and expand its data pool with other data contributions. These sources include data from Meta and Microsoft (Places theme), Esri (Buildings theme), and other open datasets, such as Google Open Buildings, geoBoundaries, and OpenAddresses.
This multi-sourced, open data approach allows Orbis to evolve as a reliable, detailed global map compatible with other geospatial datasets.

Building on Overture's interoperable standard, Orbis uses OSM's community-driven data and Overture datasets alongside its own proprietary resources—including satellite imagery, Sensor Derived Observations (SDO), probe data, survey vehicle insights, community contributions, and local acquisitions—to create a highly accurate and versatile global map. TomTom Orbis Maps also supports the integration of customized data within its platform, allowing businesses to tailor the map to their specific needs. This brings the best of open and proprietary data together enabling Orbis to adapt to diverse commercial applications, from automotive navigation, driving automation and ride-hailing to logistics and complex routing algorithms, leveraging the flexibility of open data with the precision and reliability of proprietary information.



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Why choose Orbis over OSM and Overture?

Overture focuses on standardization and collaboration, OSM is flexible and community-driven, and Orbis leverages both while integrating the strengths of proprietary data for accurate, tailored commercial use.

	Orbis	OpenStreetMap	Overture
Coverage	Globally consistent map with leading quality and assured freshness in key countries	Global, but with inconsistent data formats, standards and feature completeness especially in less populated or less developed areas	Global coverage with emphasis on foundational dataset for data conflation and association
Quality	High quality with rigorous validation processes, vandalism protection, source intake, production and content quality checks	Quality varies; maintained by community contributions with varying levels of accuracy	Validation checks to detect map errors, and vandalism to ensure that map data can be used in production systems
Update Frequency	In the future near real-time, based on proprietary data and community input	Variable, depends on community activity in each region	Monthly updates
Customization	Highly customizable, integrates proprietary and open data and offers custom data (Bring-Your-Own-Data)	Customizable through open, and changeable tags on community edits	No customization, focused on standardized data for data interoperability
Support	Comprehensive commercial support	Limited, relies on community forums and volunteers.	No support
Core Strengths	Hybrid approach with leading quality, freshness, data interoperability, and adaptability	Local insights and rapid updates, global community-driven map	Interoperability and standardization for easy data integration
Data Source	Hybrid (Proprietary + Open Data + Custom data)	Community-contributed open data	Open Data collaborative foundation, unified foundational datasets
Data Structure	Integrated proprietary data and OSM data, customizable	Decentralized, community-driven, open data	Structured with standardized themes and unified data schema
Interoperability	High, adopts Overture's standard Global Reference Entity System (GERS) IDs, and OSM identifiers (IDs) for seamless integration	Limited, varying data formats and data inconsistencies	High, designed for data exchange across platforms
Licensing	Commercial and ODbL combined (depends on the features, source, and country)	Open data (ODbL)	Open data with CDLA Permissive 2.0, ODbL, and other permissive open licenses depending on the dataset
Focus	Providing scalable, efficient, and accurate maps for diverse commercial uses	Offering free mapping data for personal and limited commercial use	Collaborative, standardized foundational dataset for interoperability
Collaboration	Collaborative model with Overture, leveraging multiple data sources	Community-driven, relies on volunteer contributions	Strong collaboration between tech companies and open-source contributors
Open-Source Tools Compatibility	Fully compatible	Fully compatible	Limited compatibility