ISO/TC204: Business Plan, Market Overview, and Organizational Structure 2026

1.0 Summary

ISO/TC 204 addresses the global market for Intelligent Transport Systems (ITS). Its mission is to unify information, communication, and control systems for surface transportation in both urban and rural areas. This includes intermodal and multimodal aspects, as well as systems for traveller information, traffic management, public and commercial transport, emergency services, and other ITS-related services.

ITS aims to improve road safety, transport efficiency, and passenger comfort, while contributing significantly to energy and environmental conservation. By facilitating traffic flow and reducing traffic jams, ITS leverages communication technologies to connect people, infrastructure, and vehicles.

This document provides a comprehensive overview of standards, reference architectures, and key resources pertinent to Intelligent Transportation Systems (ITS) as shown in Figure 1. People, vehicles and infrastructure are linked for safety, environmental and comfort factors through Information Communications Technology (ICT) which may have central or distributed data systems. It also underscores the significant roles played by organizations such as ISO, CEN/TC 278, and the Society of Automotive Engineers in fostering global interoperability and the harmonization of standards. The importance of ISO TC204, its 13 working groups and their deliverables is highlighted, with particular emphasis on the support they offer toward international standards and the facilitation of market needs.

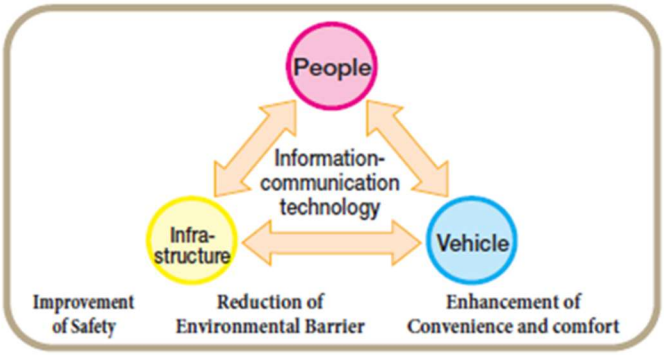

Figure 1 - Overview of ITS

Furthermore, the document addresses the evolving business environment within the ITS sector, which is influenced by a variety of regulatory, technical, political, and social factors. The inclusion of authoritative resource links and collaborative efforts demonstrates the adaptive and forward-looking nature of ITS standardization initiatives.

2.0 Introduction

ISO technical committees have adopted formal business planning as a critical element of a comprehensive review of organizational practices. This approach is designed to ensure that the ISO work program aligns with the evolving needs and trends of the business environment, as well as societal and regional regulatory requirements.

2.1 International Standardization and the Role of ISO

International standardization primarily aims to facilitate the global exchange of goods and services by eliminating technical barriers to trade. Three main bodies oversee the development and adoption of International Standards: ISO (International Organization for Standardization) for all sectors except Electrotechnical (IEC) and most Telecommunications Technologies (ITU). largely the responsibility of ITU (International Telecommunication Union).

ISO operates as a legal association with members comprising National Standards Bodies (NSBs) from approximately 160 countries, representing international social and economic interests. The organization is supported by a Central Secretariat in Geneva, Switzerland. The principal deliverable from ISO is the International Standard, which embodies global openness, transparency, consensus, and technical coherence. These principles are upheld through the work of ISO Technical Committees (ISO/TCs) and a public comment phase known as the ISO Technical Enquiry.

In addition to International Standards, ISO and its Technical Committees offer products such as ISO Technical Specifications (ISO/TS), ISO Publicly Available Specifications (ISO/PAS), and ISO Technical Reports (ISO/TR), which address market needs but represent lower levels of consensus. These products do not hold the same status as an International Standard. ISO also provides the International Workshop Agreement (IWA), developed in workshops with directly interested participants, which is distinct from an International Standard and serves to bridge the gap between consortia activities and formal standardization.

3.0 Business Environment of ISO/TC204

3.1 Description of the Business Environment

The business environment relevant to ISO/TC204 is shaped by a range of political, economic, technical, regulatory, legal, and social dynamics. These factors influence both the standards development process and the content of resulting standards within the industry sector, products, materials, disciplines, or practices under the scope of ISO/TC204. For TC204 scope, see: https://www.iso.org/contents/data/committee/05/47/54706.html.

3.2 Intelligent Transportation Systems (ITS) Market Overview

ITS constitutes a global market featuring producers aiming for worldwide sales and buyers seeking products and services from diverse vendors. While some ITS products cater to specific local markets or require compliance with regional regulations and social constraints, many are designed for use in passenger vehicles, buses, ferries, trains, and commercial vehicles that are manufactured and sold globally. The capacity for suppliers to produce and distribute consistent products internationally is a major driver of market growth.

ITS products, particularly those enabled by communications technology, serve travelers seeking consistent access to ITS services, regardless of location. Key considerations include

consistency of operation, secure wireless interfaces, and user interfaces, with safety remaining a core concern.

3.3 Primary Market Targets for ITS

- Builders and operators of roadway, public transport, rail, and ferry infrastructure, predominantly from the public sector but with growing private sector involvement, particularly in toll road operations.
- Vehicle manufacturers integrating ITS technologies into vehicles.
- Commercial fleet operators use ITS for managing vehicles, loads, and routes.
- End users who consume ITS products and services.
- Transportation regulators and enforcement agencies.
- Data providers, spanning commercial entities and government sectors, supplying data across national access points to support ITS standards.

3.4 Major ITS Stakeholders

- National, regional, and sub-national transport agencies and ministries.
- Industry, trade associations, financial and insurance sectors.
- Vehicle and telematics manufacturers and suppliers.
- Consumer, public transport, and automotive electronics manufacturers.
- Telecommunication companies.
- Public transport and roadway infrastructure system developers, software, and database developers.
- Transport fleet operators (passenger and/or freight).
- Universities, research institutions, and consultancies.

These markets are interconnected. For example, vehicle manufacturers select technologies they anticipate will appeal to their customers. Success in technology adoption depends on the collaboration of stakeholders and end users within an effective ecosystem.

Additionally, manufacturers of in-vehicle devices and suppliers of ITS information services are themselves customers for ITS products. For instance, route guidance product manufacturers purchase GNSS units, sensors, and displays for use in their offerings.

Public sector agencies have been the largest initial investors in ITS infrastructure, but commercial opportunities are increasingly emerging as viable products and services become available. Over the next 25 years, the private sector market is expected to grow fourfold compared to the public sector.

TC 204 is positioned to facilitate effective interfacing and operation of ITS solutions within this diverse marketplace. A marketing plan is being developed alongside the business plan, with strategies for information gathering and distribution—such as through the GitHub website—being refined.

3.5 Quantitative Indicators of the Business Environment

The ITS business environment generates considerable and growing revenues, encompassing advanced traffic management systems (ATMS), traveler information systems (ATIS), public transportation systems (APTS), transportation pricing systems (ATPS), collision avoidance and driving automation systems, and commercial vehicle operations (ITS-CVO). The European Union's 2010/40/EU directive and related regulations mandate these services, supported by referenced ITS standards.

Modern ITS systems use sensor arrays to generate and share extensive data—including vehicle speed, braking, emissions, location, diagnostics, and imagery—with vehicles and infrastructure. This data enables decision makers to manage transportation operations with greater precision. The potential for vehicle-to-infrastructure and vehicle-to-vehicle data communication is substantial, with onboard systems providing safety messages, work zone information, and alerts about vulnerable road users. These systems also deliver information to drivers and passengers about route options, amenities, and parking availability.

When integrated with smart city infrastructure, ITS helps first responders reach incident scenes more quickly, reroutes traffic during emergencies or maintenance, and improves overall response and operational efficiency. (Source: https://www.wsp.com/en-us/insights/2024-intelligent-transport-systems)

According to Fortune Business Insights, the global ITS market was valued at USD 26.18 billion in 2023 and is projected to grow to USD 66.64 billion by 2032, with a Compound Annual Growth Rate (CAGR) of 11.3% from 2024 to 2032.
(Source: https://www.fortunebusinessinsights.com/intelligent-transportation-system-market-102065)

Road traffic congestion remains a worldwide problem, undermining economic productivity due to infrastructure limitations relative to vehicle growth. Nations are adopting ITS strategies—such as electronic toll collection, pedestrian safety systems, automated signals, vehicle automation, and wireless devices—to reduce congestion and enhance safety.

3.6 Key Industry Developments

- Technological Advancements: Rapid progress in AI, big data, machine learning, and IoT is expanding ITS capabilities, enabling real-time data processing and automated decision-making. However, these advancements require standardized data understanding.
- Connectivity and Communication: Advanced communication networks improve connectivity among vehicles, infrastructure, and devices, enhancing efficiency and safety.
- Sustainability and Environmental Concerns: There is growing emphasis on eco-friendly ITS solutions to reduce carbon emissions and congestion.
- Urbanization and Smart Cities: The integration of services and infrastructure through technology in smart cities is accelerating ITS adoption to improve mobility and quality of life.
- Safety and Security: Enhanced safety features, driver assistance, emergency response automation, and cybersecurity are central to ITS development.
- Efficiency Factors: ITS technologies use connectivity to optimize transportation, collecting data from diverse sources to improve operations.
- Regulatory and Policy Support: Support from governments and regulatory bodies through standards, policies, and funding is enabling smoother adoption of ITS technologies.
- User Demand and Expectations: User expectations for convenience and safety are driving the creation of sophisticated, user-friendly ITS solutions.

4.0 Benefits Expected from ISO/TC204's Work

ITS delivers significant social, political, and economic benefits, chiefly by improving safety and reducing crash frequency and severity. Standards are essential in enabling the global dissemination and safe, consistent use of ITS technologies.

4.1 Benefits for Customers

- Provision of real-time information to travelers, reducing congestion, travel time, and improving safety and convenience.
- Lower costs for computing and communications technology are making advanced ITS accessible to more consumers and businesses.
- Access to big data and methodologies that help users derive meaningful insights.
- Greater interoperability among ITS solutions facilitates easier data exchange and system compatibility across vendors and platforms.

4.2 Technological Changes and Product Innovations

Advances in hardware have enabled software to add new capabilities and flexibility to transport-related devices, whether in-vehicle, between vehicles, or among vehicles, traveler devices, and infrastructure. Innovations include dynamic cruise control, lane tracking, blind spot detection, emergency braking, collision warnings, stability control, tire monitoring, adaptive headlights, heads-up displays, and autonomous driving.

4.3 Social Changes

Population growth and urbanization are increasing travel distances and times, exacerbating congestion and altering commuting patterns. ITS offers solutions to reduce unnecessary travel, improve efficiency, and relieve infrastructure strain, enhancing return on investment. The rise of communications-enabled vehicles is influencing both work and leisure activities.

4.4 Political Changes

In developing regions, the introduction of ITS and internet-based technologies can accelerate facility deployment and provide alternatives to traditional infrastructure. ITS allows countries to bypass legacy issues and advance more quickly along the technology curve. Applications in access control, road pricing, law enforcement, and environmental management enable fairer, more reliable regulation and harmonization.

5.0 Representation and Participation in ISO/TC204

ISO/TC204 includes both Participating (P-member) and Observer (O-member) countries, primarily represented by transport agencies and ministries from member nations as listed on https://www.iso.org/committee/54706.html?view=participation. At present, there are 35 P-member nations and 26 O-member nations, with more than 600 international experts contributing across 13 Working Groups, one Joint Working Group, and 5 Advisory Groups as shown in Figure 2.

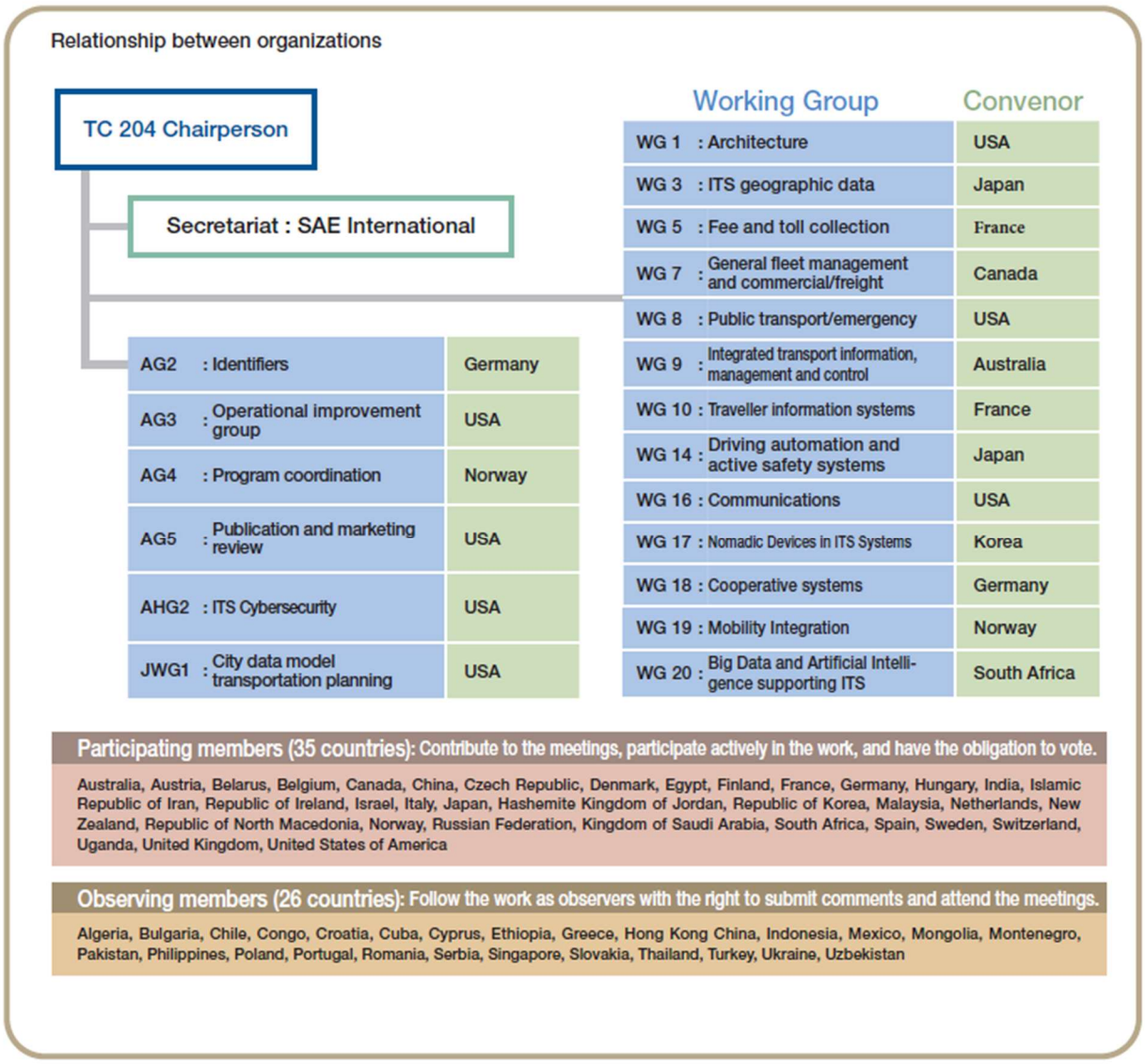

Figure 2 - Structure of ISO/TC 204 Intelligent Transport Systems

6.0 Objectives and Strategies of ISO/TC204

6.1 Defined Objectives

ISO/TC204 is responsible for creating and promoting international standards within its scope. This includes system-level management of international ITS standardization and setting agendas across ISO in the ITS domain. The committee focuses on subjects that span the interface between vehicles and their environments, reflecting the growing integration of sensors, communications, and external system links in vehicles.

Specific objectives include developing standards for:

- Architecture, taxonomy, terminology, and technology frameworks for ITS.

- Interchangeability and interoperability of location-related databases and consistent referencing.
- Automatic vehicle and equipment identification and related applications.
- Secure and interoperable transactions for multi-operator services.
- Facilitating movement of people and freight across borders and transport modes.
- Commercial in-vehicle information exchange with various onboard equipment types.
- Freight handling through intermodal connections.
- Message sets and protocols for connecting traffic management centers and field equipment.
- Reference Data Models for information exchange between applications.
- Protocols for delivering travel-related information from gathering to dissemination facilities.
- Driver assistance and automation systems responding to vehicle environments.
- Wireless communication protocols for various ITS services.
- Operating characteristics and human-machine interfaces for non-self-contained ITS systems in road vehicles.
- ITS services using nomadic devices and vehicle interfaces.
- Integration of vehicle-to-vehicle, vehicle-to-infrastructure, and infrastructure-to-infrastructure communications.

6.2 Strategies for Achievement

ISO/TC204 maintains liaisons with related ISO committees and external organizations, such as ISO/TC 22 (Road Vehicles), ISO/TC 104 (Freight Containers) ISO/TC 211 (Geographic Information Systems), ISO/TC 307 (Blockchain), TC315 (Agriculture Logistics), and TC344 (Innovative Logistics). The TC also has a close liaison with CEN/TC 278 (ITS) to the point that many of the working groups meet jointly and, where appropriate, there are joint deliverables. TC204 also engages in other relationships with ETSI (TC ITS), ITU, IEEE, SAE, and other organizations with shared interest in ITS. These relationships can be seen in Figure 3 below.

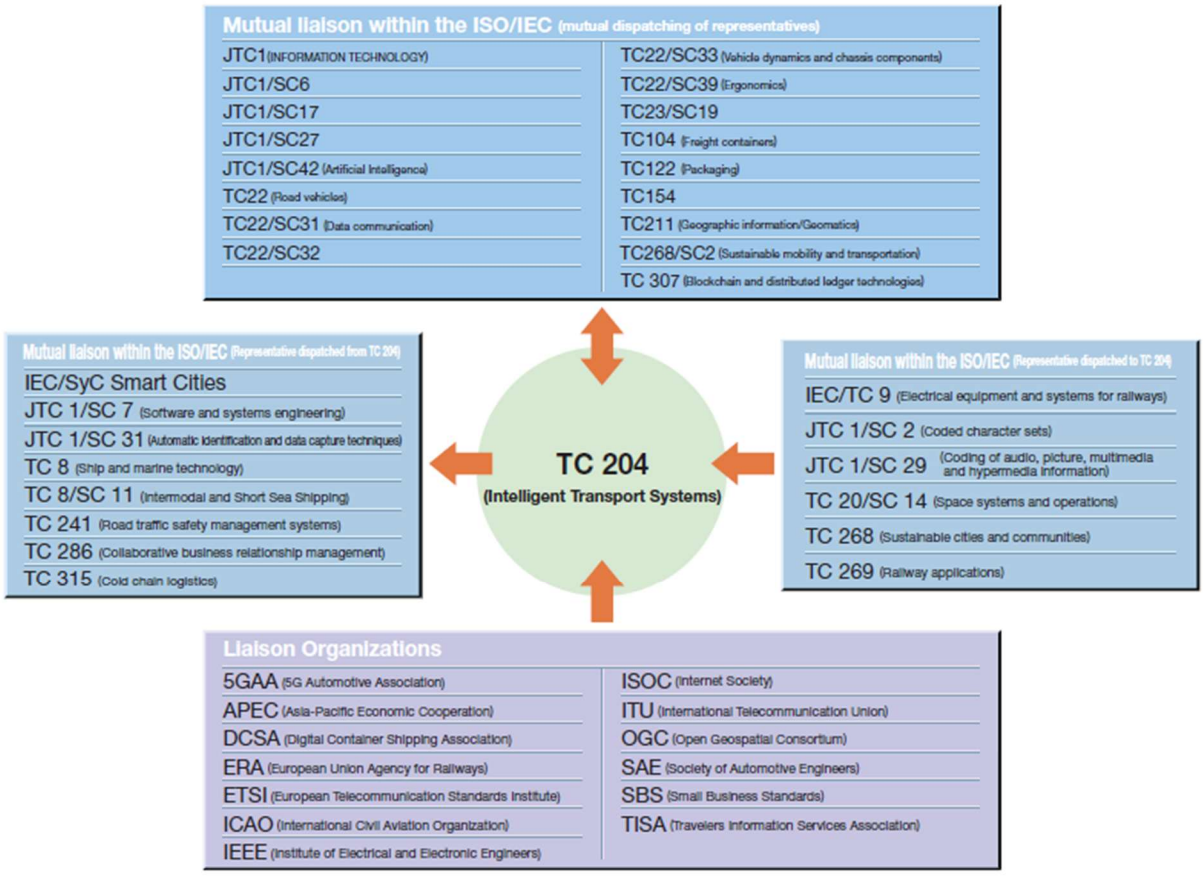

Figure 3 - Relationships between ISO/TC 204, ISO/IEC TCs and other ITS standardization organizations

The committee's Strategic Planning Group guides activities in alignment with market needs and trends, aiding efficient management of plenary meetings. Regular reviews of the work program ensure alignment with priorities, and use of electronic document development and remote conferencing technologies accelerates progress while minimizing travel.

Working Groups may be reorganised to allocate resources to areas of highest priority and ensure transparency, with input from appropriate liaisons. The use of ISO Fast Track mechanisms is encouraged where suitable.

Advisory Groups have been established to improve committee operations, focusing on identifiers, operational improvements, program coordination, publication, and marketing. Harmonized terminology and machine-readable content are being progressively adopted to support rapid application of standards.

Efforts are underway to develop a TC204 web page and a LinkedIn site to inform members and users about activities and products, encourage engagement, and facilitate marketing. The Czechian delegation is assisting in standard summary formatting for these platforms.

7.0 Factors Influencing Completion and Implementation of ISO/TC204 Work Programme

7.1 Competition from De Facto Standards and Industry Consortia

ITS sectors with strong IT and electronics dependence often favor de facto standards for their speed of development, despite less robustness. ISO/TC204 must demonstrate agility and effectiveness, producing high-quality standards that withstand market demands.

7.2 Maintaining Focus

ITS's interdisciplinary nature involves experts from multiple fields, with overlapping interests among standards bodies. ISO/TC204 must focus on system-level and crosscutting issues while collaborating with related standards developers to efficiently produce complementary standards and avoid overlap.

7.3 Availability of Experts

Securing expert participation is challenging, especially as many contributors have interests across disciplines. Industry "donor fatigue" presents risks, but collaboration and networking within working groups, alongside a user-friendly TC204 web page, may help improve participation.

7.4 Rapidly Changing Environment

ITS technology evolves rapidly, especially in ICT, requiring fast and responsive standards development. The disparity between infrastructure lifespan and ICT cycles poses challenges, addressed by TC204 through adaptive approaches.

Responsibilities are divided between public agencies and private companies, with changing views on the need for interoperability and centralized versus distributed systems.

7.5 Complex Relationships

ISO/TC204 must coordinate with other committees to avoid overlaps and gaps, particularly as new committees emerge. Collaboration maximizes cohesion and minimizes conflicting content for end users. The most recent creation of ISO/TC315 and ISO/TC344 requires a need for close coordination on smart city issues and supply chain logistics.

7.6 Outreach Activities

ITS offers developing countries opportunities to overcome transport and logistics challenges. ISO/TC204 welcomes participation from non-members and developing nations to broaden the audience and benefits of ISO standards, supported by outreach through TC204's web presence.

7.7 Standards in a Rapidly Changing Technical Environment

Developing and maintaining relevant standards for rapidly evolving computer systems requires a streamlined process compatible with engineering tools, reflecting global stakeholders, and ensuring standards and technical materials are accessible, including machine-readable formats.

8.0 Structure of ISO/TC204

8.1 Committee Structure

CEN TC278 played a foundational role in establishing TC204 in 1992. Working groups of international experts develop standards drafts, with group organization evolving over time. There are currently 13 active working groups, some with CEN TC278 counterparts.

International standardization involves liaisons with other TCs and bodies handling ITS-related technologies, including IEC, ITU, and recently added JTC1 and ISO committees focused on smart cities, sustainable communities, innovative logistics, and related fields. A Joint Working Group between TC22 and TC204 has been under development since 2023.

8.2 Current Domains of Interest

Details on domains of interest are available on the ISO website:
https://www.iso.org/contents/data/committee/05/47/54706.html

8.3 Projects and Publications

Information on working group activities, published standards, and standards under development is available at: https://en.jsae.or.jp/assoc/std/tc204/.

8.4 ISO/TC204 Online Presence

TC's ISO Web Page: https://www.iso.org/contents/data/committee/05/47/54706.html. Includes Secretariat, Committee Manager, Chair, Date of creation, Scope, Work Programme, Business Plans, Working Area, ISO Electronic Applications, Public Material, Cooperative ITS Guidelines, Gap Analysis, Recommendations, and Guide to ITS Standards.

Marketing Web Site: TC204 maintains a GitHub site for committee work and meeting management, updated regularly: https://iso-tc204.github.io/

Links to related resources such as the:

- Society of Automotive Engineers ITS Web Site (https://standardsworks.sae.org/standards-committees/iso-tc204-intelligent-transport-systems),
- ITS EU Web Site European Framework Architecture (https://frame-online.eu/),
- Architecture Reference for Cooperative and Intelligent Transportation (https://www.arc-it.net/),
- EU-ICIP Guide to ITS Standards (https://www.mobilityits.eu/)
- National Transportation Communications for ITS Protocol (https://www.ntcip.org/),
    - ensures interoperability among traffic control equipment and is widely used in smart cities and technology supply.

Comprehensive architectures (ARC-IT, FRAME) define objectives, while EU-ICIP provides guidance on current best practices. Collaboration with ISO/TC204 is ongoing to keep these resources updated.

Reference Information

Glossary of terms and abbreviations used in ISO/TC Business Plans

General information on the principles of ISO's technical work