

## **IBTTA Emerging Technologies Committee (2022)**

### **2022 Proposed Working Groups and Meeting Formats**

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#### **Background**

The Emerging Technologies Committee (ETC) was formed in 2019 to:

- Investigate, analyze technology-related issues, topics and trends
- Scan/inform membership about new, emerging technologies
- Recommend topics to the IBTTA Board of Directors for further exploration

To achieve these goals, the ETC does the following:

- Annually scans the membership for topics of interest through interviews and surveys
- Establishes working groups (sub-committees) based upon interview and survey results
- Collaborates with other IBTTA committees
- Coordinates efforts between various working groups
- Develops a series of deliverables (white papers, webinars, hands-on laboratory, technical standards and templates)
- Develops opportunities for agencies to collaborate, pilot new technologies

#### 2019 – 2021 Working Groups

Over the past three years, the ETC has transitioned from laying a base foundation on several topics through a series of white papers to developing more technical white papers, a hands-on laboratory for blockchain enthusiasts and a series of technical standards for the integration of third-party fleet providers. Specifically, the various working groups have produced the following:

##### 2019

- Big data – How to start defining a big data/business intelligence program, assessing an agency's 'readiness,' and examples of big data in use.
- Connected and autonomous vehicles (CAV) – Explored possible implications for the toll industry, why agencies should get involved now and how they could become involved.
- Drones – Discussed considerations in launching a program, case studies, regulations, and provided links to establishing/maintaining a successful drone program.
- Innovation – Examined the drivers of innovation within the changing mobility landscape and strategies for furthering innovation capacity within an agency, provided case studies on how various toll agencies handle innovation, and created the inaugural emerging technologies matrix identifying topics of interest obtained through an IBTTA membership survey.
- Tolling and Customer Management – Explored when, why and how agencies can leverage third-party toll account issuance and customer service providers, including considerations for legal, technical and customer service requirements.

## 2020

- Blockchain – Established a hands-on laboratory, started development of “Blockchain 101” material in Articulate360, and conducted online events with experts both within and outside the toll industry.
- Big data – Defined a potential roadmap for agencies to structure data and begin to integrate a big data architecture, provided case studies and a roadmap for piloting big data strategies and applications.
- Connected, autonomous, shared and electric (CASE) vehicles – Explored potential impacts from CASE vehicles on tolling systems.
- Innovation – Presented strategies on how to build innovation capacity within an agency and updated the emerging technologies matrix identifying topics of interest through an IBTTA membership survey.
- Tolling and Customer Management – Developed a standardized technical interface control document (ICD), established baseline for standardized customer service requirements, and developed a standardized contract template for third-party toll account issuance and customer service providers.

## 2021

- Blockchain – Continued development of potential use cases within the laboratory and conducted a joint webinar with the Young Professionals Council.
- Big data – Developed an approach framework for conducting pilot projects in 2022, and identified tools to use for data extraction, data management and analysis.
- CASE vehicles – Continued discussions regarding the impacts of CASE technologies on the toll industry.
- Innovation – Performed an assessment on the “state of the practice” of innovation and emerging technologies and updated the emerging technologies matrix with topics of interest identified through an IBTTA membership survey.
- Tolling and Customer Management – Developed a procurement template for agencies to consider procuring third-party toll account issuance and customer service providers, and developed a paper outlining potential impacts of road user charging on tolling, customers and payments.

### **Proposed 2022 Working Groups**

The results of the Innovation Working Group’s interviews and membership survey on 2022 topics of interest are shown in the matrix below. Based upon the input received, the nine items marked in blue in the chart below are the working group’s recommendation for further study.

		Technology	2020	2025	2030	2035	2040
Tolling	App	MaaS			NC		
	App	Road User Charge		5 Years Sooner	NC		
	App	Third Party Tolling / Integrated Toll Module		NC			
	App/T	GPS Toll			NC		
	App/T	National Interoperability (New)		NC			
	App	Advanced Customer Service Systems (New)	New				
	App/T	Automated Occupancy Detection		NC			
Vehicles	App/T	Electric Vehicles Infrastructure	NC		NC		
	App/T	Connected Vehicles: 4G LTE / CV2X			5 Years Later		
	App/T	Automated Vehicles: Limited (Level 2-3)			5 Years Later		
	App/T	Automated Vehicles: High Automation (Level 4-5)				NC	
	App/T	Unmanned/ Automated Vehicles: Aerial Freight	New				
	App/T	Unmanned Automated Vehicles: Aerial Mobility				NC	
System Data	T	Sensing and Detection / Internet of Things		NC			
	T	Artificial Intelligence (AI)/ Machine Learning		NC			
	T	Data and Analytics		NC			
	T	Blockchain/ Distribute Ledger Technology		NC			
	App	Digital Asset Management/ Modeling (New)	New				
Systems Operations	App	Advanced Traffic Information and Management			NC		
	APP/T	Drones: Aerial (Accident/ Infrastructure Inspections)	New				
	App	Transportation System Management & Operation (TSMO)			NC		
	App	Integrated Corridor Management				NC	
	App	Automatic Vehicle Dedicated Lanes				NC	
Communication Systems	App	Communications Infrastructure Asset Management		NC			
	T	Cellular V2X (CV2X)		NC			
	T	5th Generation Cellular (5G) Mobility Applications		NC			
	T	4th Generation Cellular (4G LTE)			NC		
	T	DSRC (Wireless LAN V2X): United States		NC			
	T	DSRC (Wireless LAN V2X): Europe / Asia	NC				

Note: Blue font is recommended for further study or focused monitoring

NC = No Change    T = Enabling Technology    APP = Application

Emergence    Limited    Mainstream

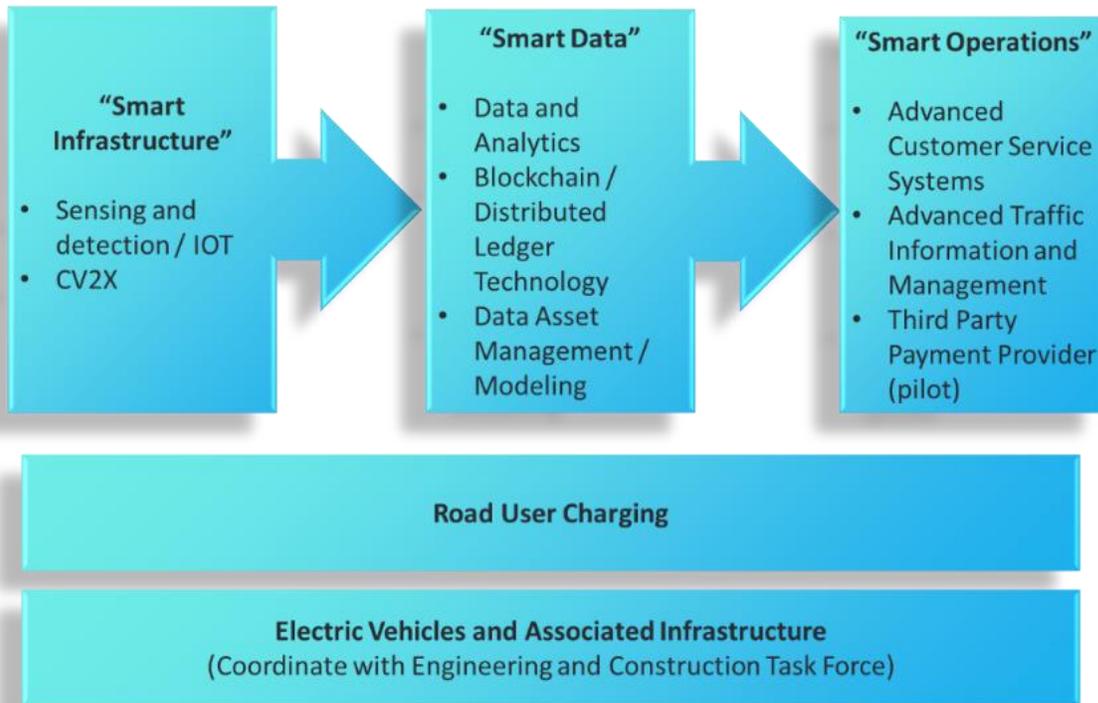
Obsolete    (Orange)

Based upon a review of the recommended topics, the following five proposed working groups are suggested for 2022:

- “Smart Infrastructure”
- “Smart Data”
- “Smart Operations”
- Road User Charging
- Electric Vehicles and Associated Infrastructure (coordinate with Engineering and Construction Task Force)

The first three working groups will capitalize on IBTTA’s tagline, “Tolling. Moving Smarter.” The “smart” nomenclature demonstrates the rapidly evolving fields of sensors, connected vehicles, internet of things, data analytics, data management, and the impacts of these items in decision making, operations and customer management. Road user charging is a focal point of IBTTA’s new strategic plan, and as such, represents its own focus group, which is anticipated to include representatives from disciplines outside of technology. The last focus group is a proposed joint venture with the Engineering and Construction Task Force to explore the impacts of electric vehicles to our operations, maintenance,

design and customer experience programs. The figure below graphically identifies how the nine recommended topics could be logically grouped into the five proposed working groups. Specific focus areas within the working groups will be based upon the recommendations from the volunteer members of each group.



### Proposed 2022 Emerging Technologies Committee Meetings

The working groups will continue to meet on a frequency determined by the chair of each group. The full committee will move from meeting quarterly to meeting every other month. Guest speakers will be invited to cover a range of topics and the working group chairs will rotate between committee meetings to provide a more in-depth discussion on their working group’s efforts.