ISIC
INTERNATIONAL SOCIETY FOR INTELLIGENT CONSTRUCTION

Introduction to ISIC

By

ISIC Executive Committee

IS-IC.ORG

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INTERNATIONAL SOCIETY FOR INTELLIGENT CONSTRUCTION

IICTG

International Intelligent Construction Technologies Group IICTG

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IICTG Founders Circa. 2016

Dr. George K. Chang
Transtec Group, USA

Prof. Antonio G. Correia
U. of Minho,Portugal

Prof. Soheil Nazarian
UTEP, USA

Prof. Guanghui Xu
SW Jiaotong U., China

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IICTG

International Intelligent
Construction Technologies Group

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INTERNATIONAL SOCIETY FOR INTELLIGENT CONSTRUCTION

April 2019

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INTERNATIONAL SOCIETY FOR INTELLIGENT CONSTRUCTION

The International Society for Intelligent Construction (ISIC) is **a source for knowledge and information on intelligent construction technologies for public agencies, contractors, consultants, academia, and other relevant industries.**

Objectives

ISIC
INTERNATIONAL SOCIETY FOR INTELLIGENT CONSTRUCTION

- Exchange ideas and information in an informal setting,
- Provide a forum for the practitioners of ICT from agencies, contractors, academic, vendors, and consultants,
- Provide a forum for discussion of research and development,
- Focus on the latest initiatives in the Society's areas of interest,
- Provide education and training in the areas of concentration,
- Provide technical assistance and reviews on regional and international standards and specifications,
- Provide an ICT journal to promote advancements on science and technologies of ICT, and
- Create and maintain a network of personal and professional relationships.

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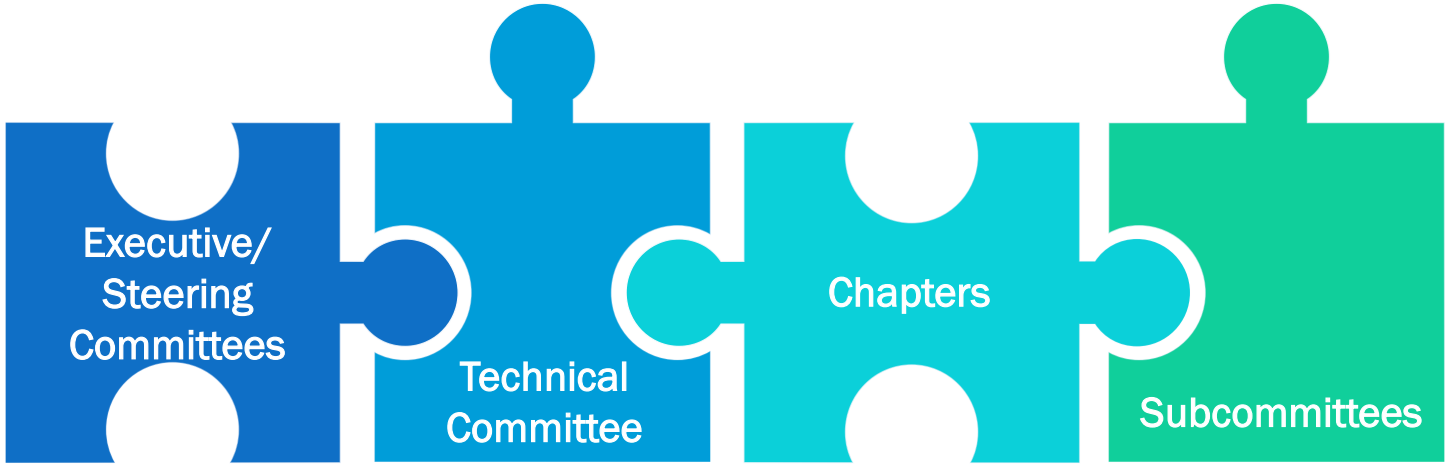
Intelligent Construction Technologies (ICT)

All Modes of Transportation Infrastructure

ISIC Committees

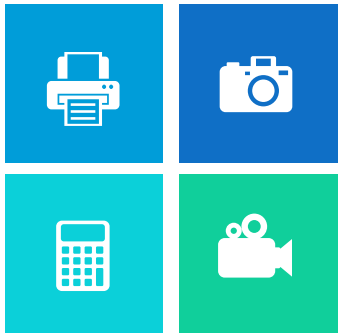
- Executive Committee (4)
- Steering Committee (12)
- Technical Committee (29/40)

ISIC Structure



Executive/Steering Committees
Provide visions and directions.

Technical Committee
Provide technical expertise.



Chapters
Extend to local regions.

Subcommittees
Handle specific administrative, educational and technical functions.

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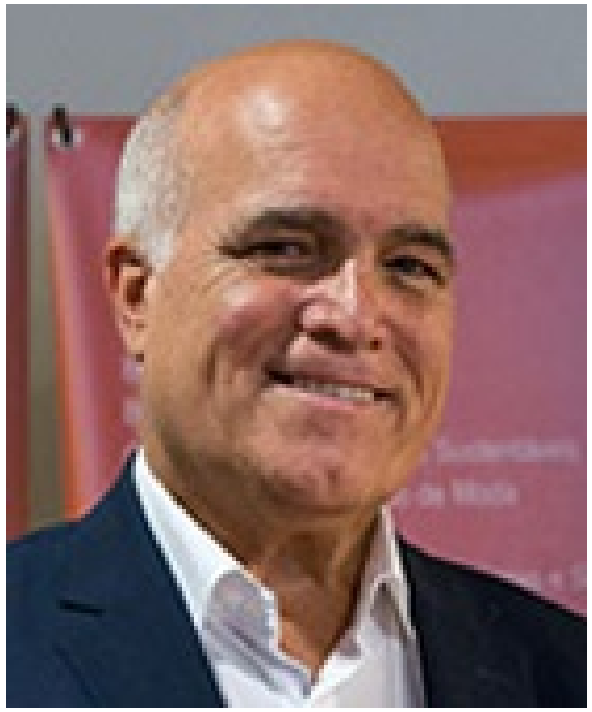

ISIC Executive Committee

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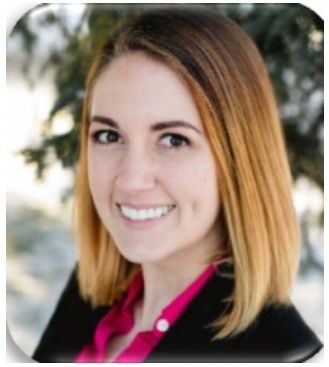
ISIC Steering Committee

ISIC

ISIC Technical committee



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ISIC Technical committee

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Task Groups Under ISIC Secretariat

- Task Group A – Administration and Finance
- Task Group B – Meeting Programs
- Task Group C – Sponsorship and Industry Participation
- Task Group D – Communication
- Task Group E – Membership process and approval
- Task Group F – ISIC Journal and other publication

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ISIC Subcommittees

- SC1 Perception and Control
- SC2 Dana Analysis and Management
- SC3 Artificial Intelligence (AI) and Engineering
- SC4 Integration and Innovation
- SC5 Green and Safety
- SC6 Education and Training

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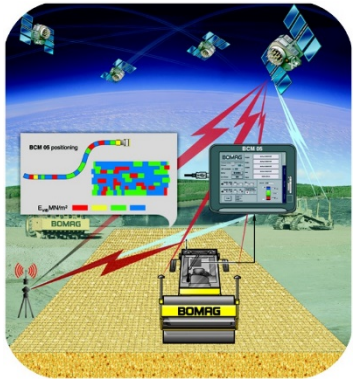
SC1 Perception and Control

All technologies related to data acquisition and controls, including

- sensing technologies,
- data collection technologies (e.g., GNNS, LiDAR , Unmanned Aerial Systems (UAS)),
- Internet,
- monitoring technologies (e.g., materials, paving, and intelligent compaction),
- Automated Machine Control (AMC),
- Automated Machine Guidance (AMG), and
- Autonomous Control Machinery (ACM), etc.



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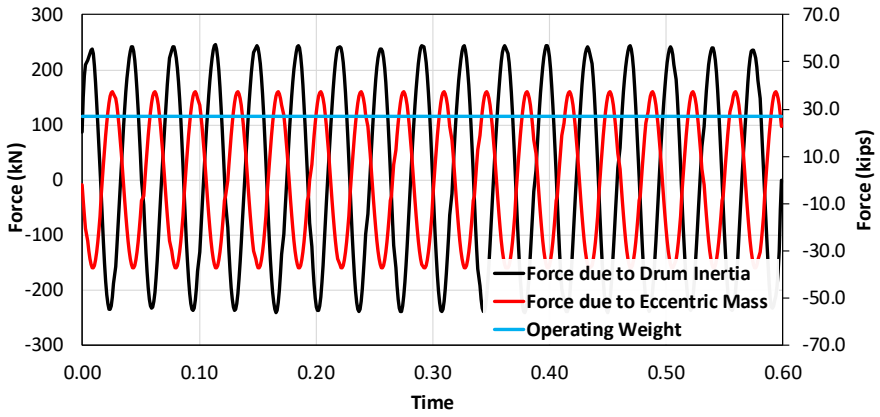
SC2 Data Analysis and Management

All technologies related to data analysis and management, including:

- data science (e.g., Big Data, data communication protocols and standards),
- signal analysis,
- Cloud computing, and
- digital information platforms, etc.



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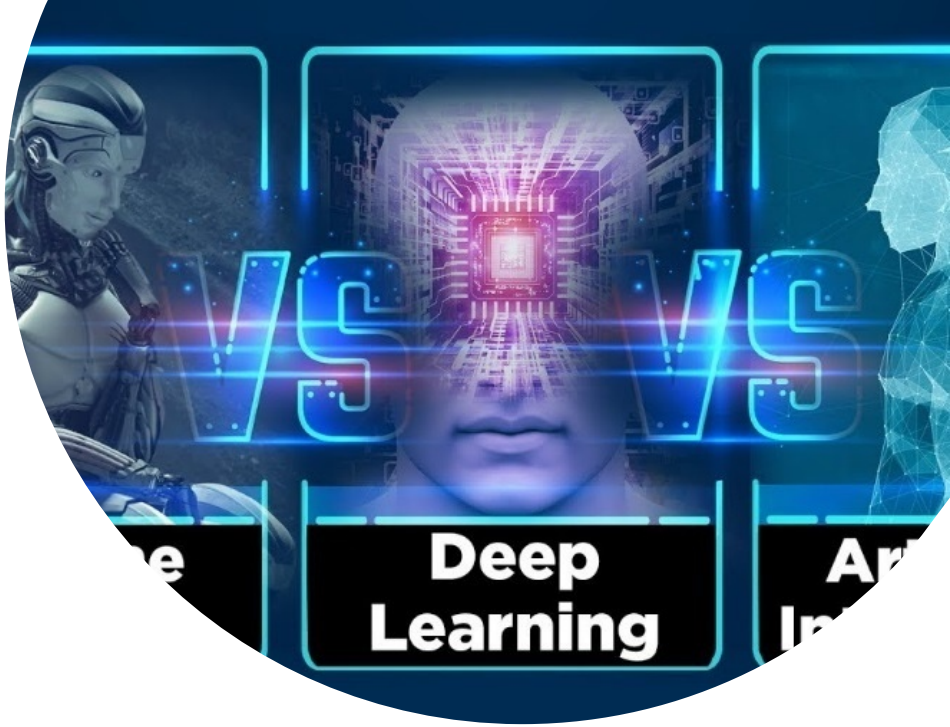
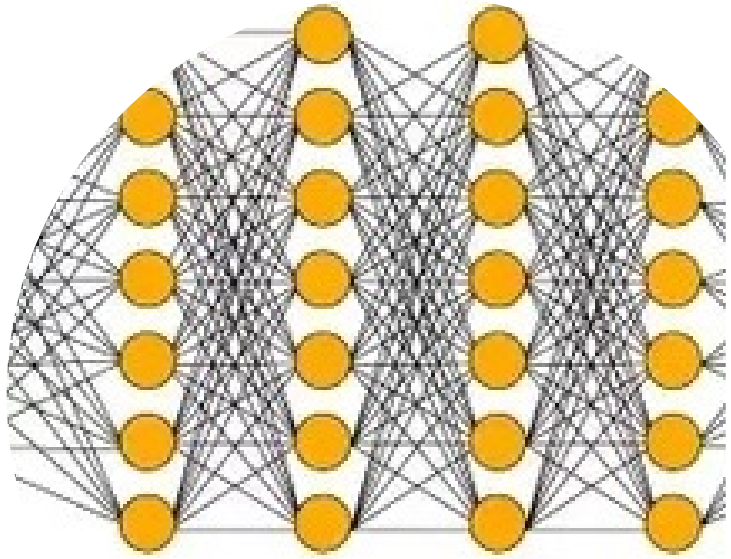
SC3 Artificial Intelligence (AI) and Engineering

Application of AI on construction, including:

intelligent algorithms, computing and methodologies (e.g.,

- engineering expert systems,
- neural network,
- machine learning, etc.)





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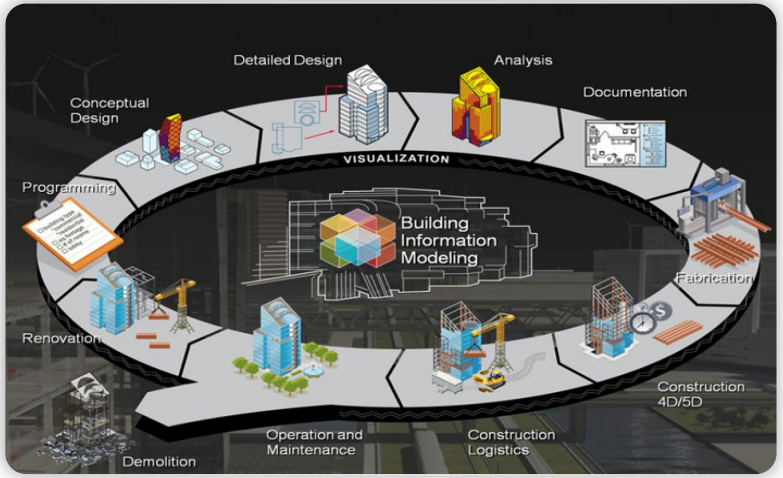
SC4 Integration and Innovation



Application with fundamental theories and integrated technologies during design, construction, and rehabilitation/maintenance stages, e.g.,

- stress analysis,
- augmented reality technologies (BIM, VR/AR, 3D visualization),
- interaction between construction machinery and constructed media,
- risks forecast/evaluation,
- management and decision-making, etc.

SC5 Green and Safety

- Conservation of natural resources, environmentally friendly technologies.
- Application of automated sensing/safety technologies on construction and operation, and
- forewarns of all kinds of disasters and recovery, etc.

SC6 Education and Training

Promote globally intelligent technologies. including textbooks, technical training and so on.

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ISIC Membership

- Free and Open to Public
- Privilege to access member-only contents
- Apply on IS-IC.org

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Academic Partners

SIC

Industry Partners

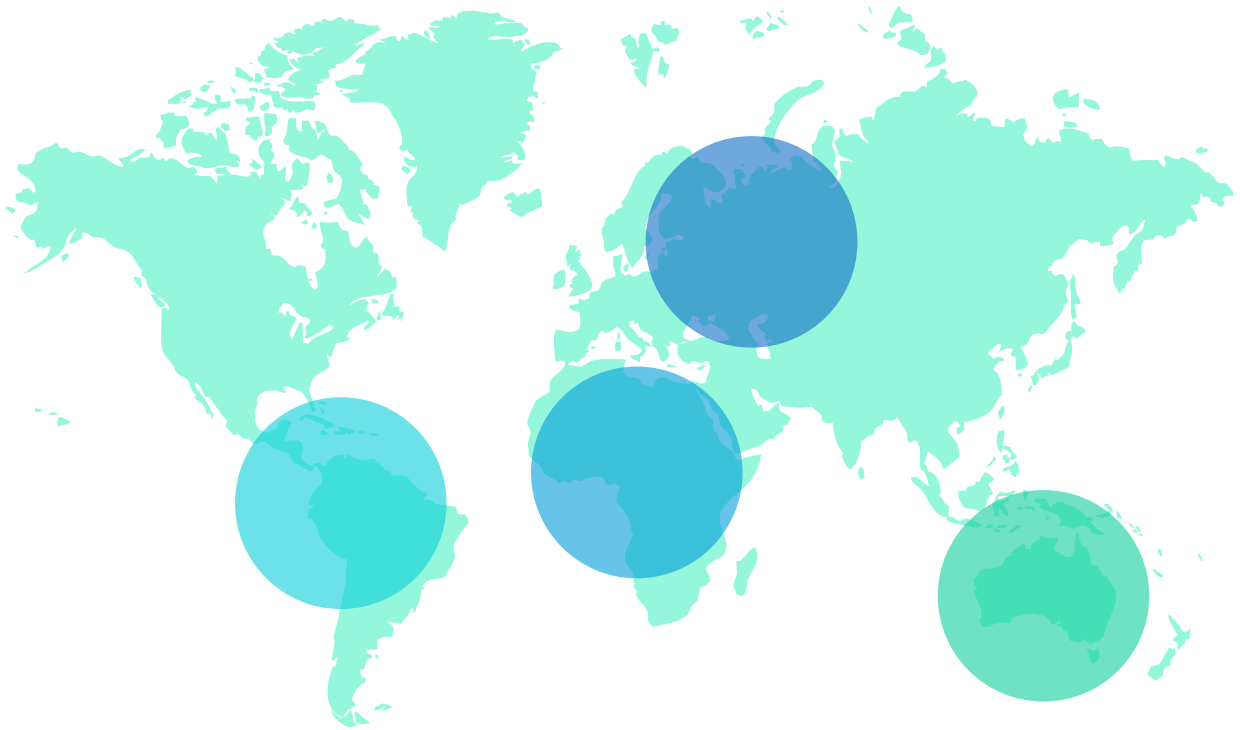
ISIC assists on international and national standards

ISO Standards

EU COST Standards

Central-South America/Africa

PAN Pacific/Australia



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ISIC Journal - ICT for Infrastructure

A Book Series - ICT for Transportation Infrastructures

7 Books in English (Springer) and Chinese (CRPC) in 2021

1. Introduction to Intelligent Construction Technology of Transportation Infrastructure
2. The Basis of Perception Terminals: Information Technology in Engineering
3. The Basis of Perception Methods: One-dimensional Dynamics and Applications in Engineering
4. The Basis of Machine Analysis and Decision-Making: Into Machine Learning
5. A Weapon for Engineering Quality: Perception and Data
6. Executive Assistant: Control Technology in Engineering
7. Pioneer of Intelligent Construction: Intelligent Compaction

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ISIC Webinars

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ISIC Webinar

BIM for Pavements

July 2020

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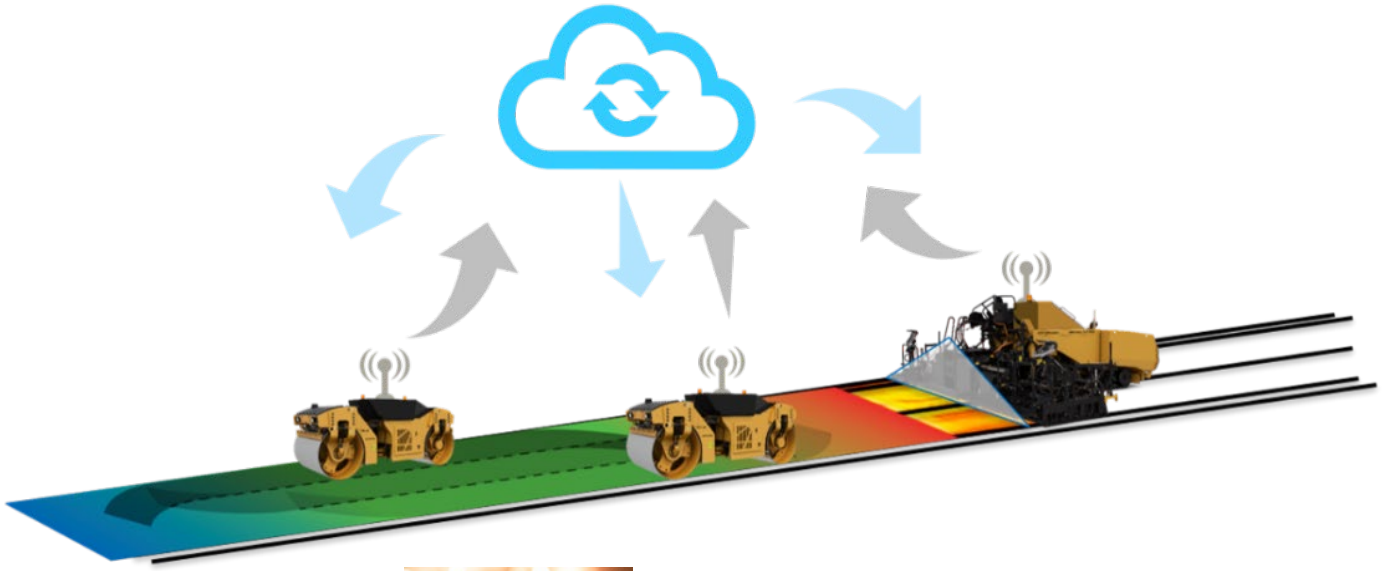
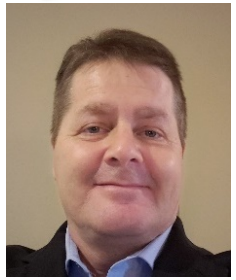
ISIC Webinar

Automation in Construction





Oct. 2020

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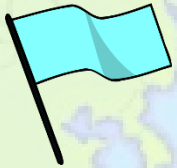
ISIC International Conferences



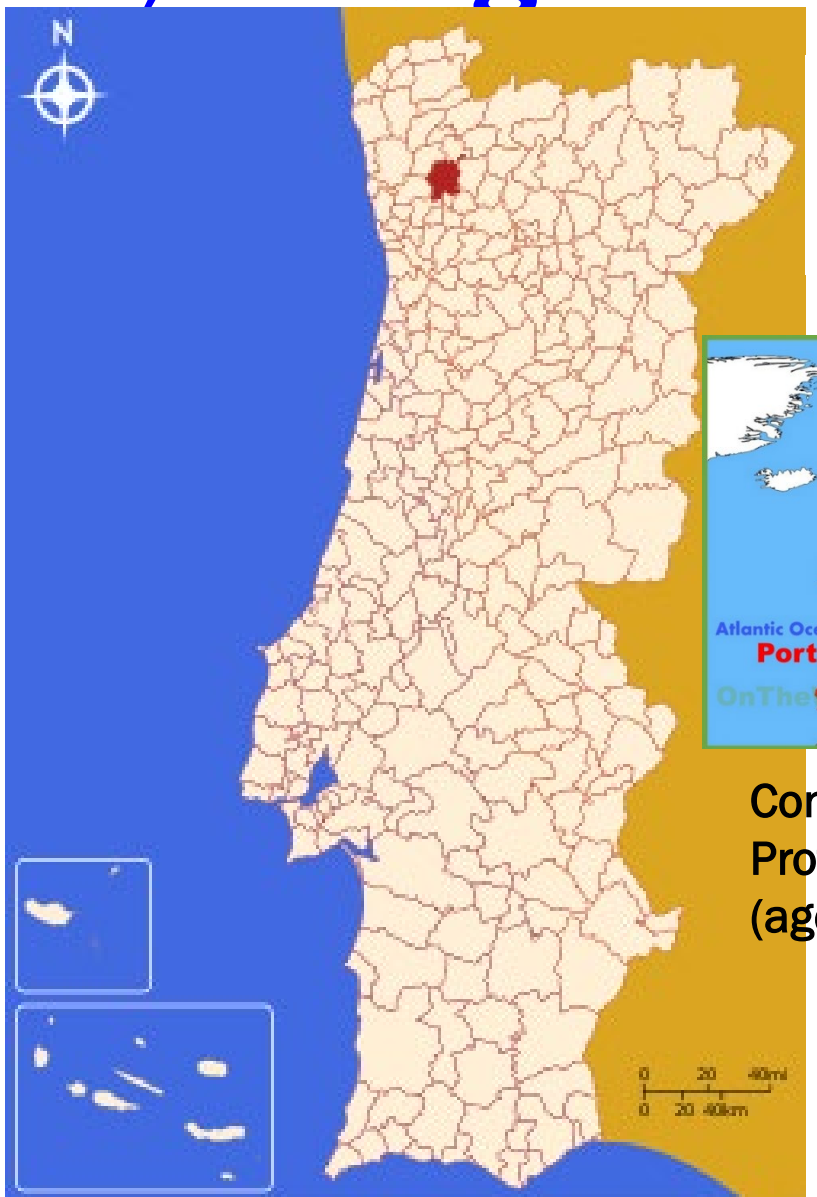
- 2016 – Inaugural Meeting (ICTG Conf. Portugal)
- 2017 – Minneapolis, MN, USA
- 2019 – Beijing, China
- 2022 – Guimaraes, Portugal
- 2024 – TBA, USA

2017 Conference – MN, USA

2019 Conference – Beijing, China

ISIC 2022, Guimarães, Portugal

Hosted by
Prof. Antonio Gomes Correia
University of Minho, Portugal



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Contact:
Prof. A. Gomes Correia
(agc@civil.uminho.pt)

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ISIC 2022 – Theme and Topics

Trends on Construction in the Post-Digital Era

- Additive Manufacturing and Construction
- Artificial Intelligence (AI) for Design and Built Environment
- Advanced and Edge computing
- Building Information Modelling (BIM)
- City Information Modeling (CIM) and Geographical Information Systems (GIS)
- Collaborative and Participative Design
- Construction Automation and Robotics
- Cyber-Physical Systems
- Data Science and Standards
- Design Concepts and Strategies
- Digital Fabrication Development and Implementation
- Environmental Protection
- Form Finding, Topology and Structural Morphology
- High Precision Survey and Mapping
- Improved Energy Efficient Building Operations
- Infrastructure Life-Cycle Management
- Intelligent Building Control Systems
- Intelligent Construction Sites
- Intelligent Maintenance Technologies
- Internet of Things (IoT) in Architecture and Construction
- Intelligent and Sustainable Environments
- Machine Automation
- Real-Time Construction Monitoring
- Smart Cities
- Simulation, Prediction and Evaluation
- Emerging Technologies

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Universidade do Minho

ISIC 2022

Trends on Construction in the Post-Digital Era

7-9 September 2022

Guimarães, Portugal

www.icisic2022.com

icisic2022@civil.uminho.pt

A MUST–ATTEND CONFERENCE
FOR INTELLIGENT CONSTRUCTION

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SAVE THE DATE

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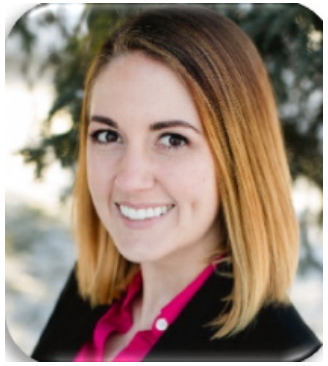
EU Chapter

Norwegian Sea
North Sea
Baltic Sea
Black Sea
Mediterranean Sea

North America Chapter



ISIC North America Chapter Plan

- Regular officers web meetings
- Support NRRA/FHWA on ICT Data QA (IC, PMTP, DPM, eTicketing/MDMS)
- Membership Drive
- ISIC NA Chapter Mini-Conference (in fall 2021?)

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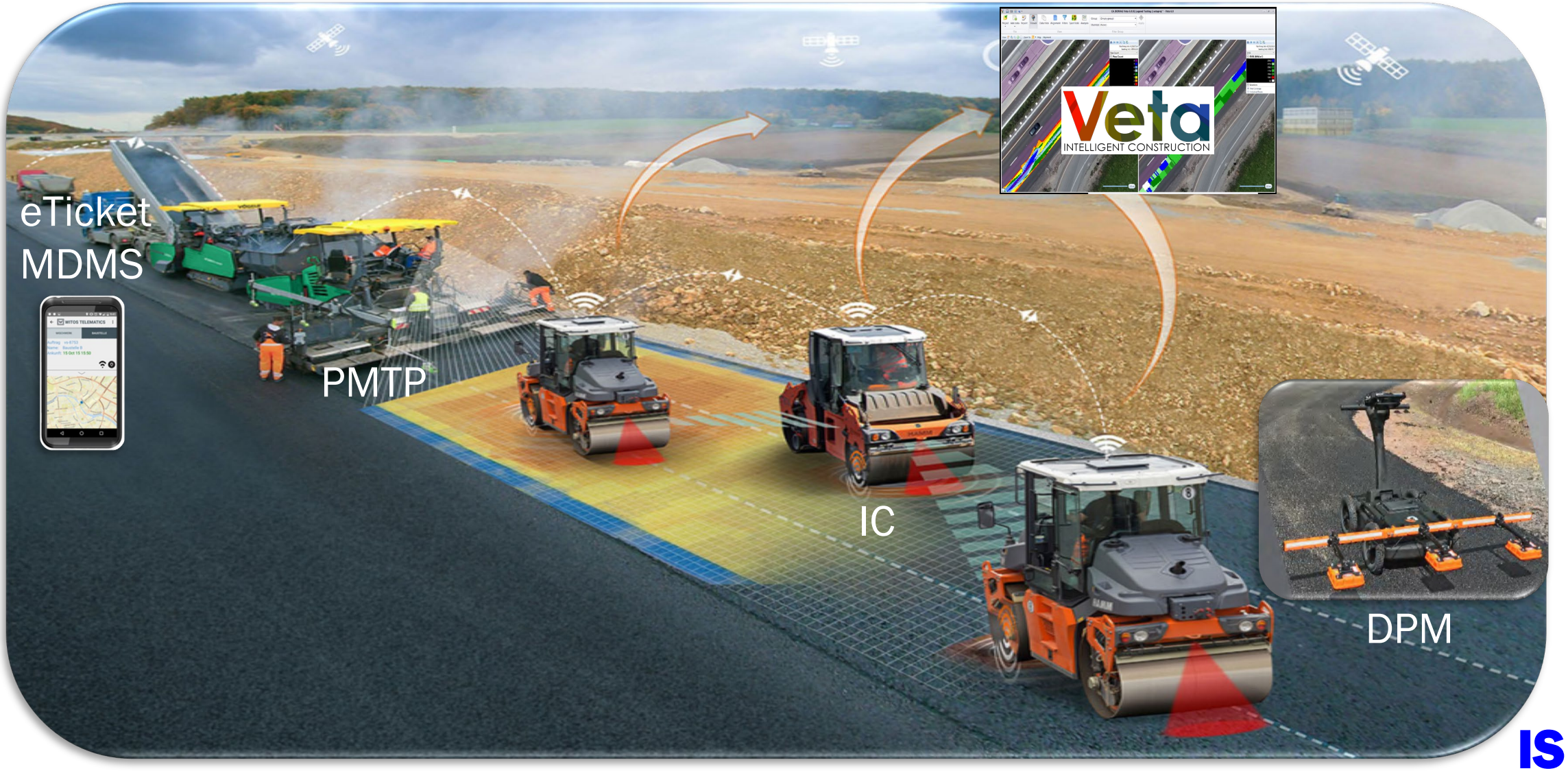
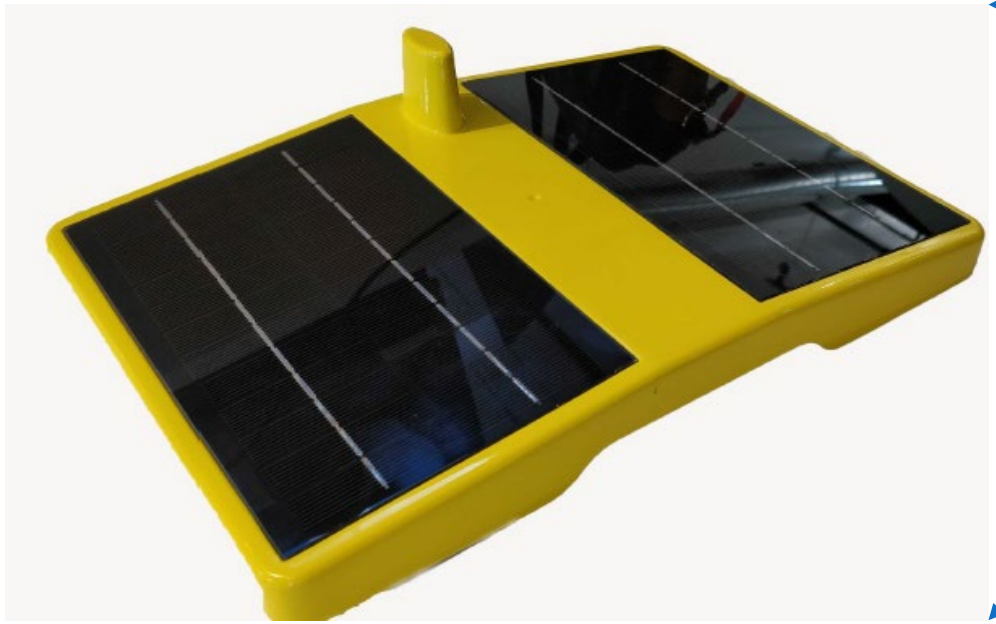
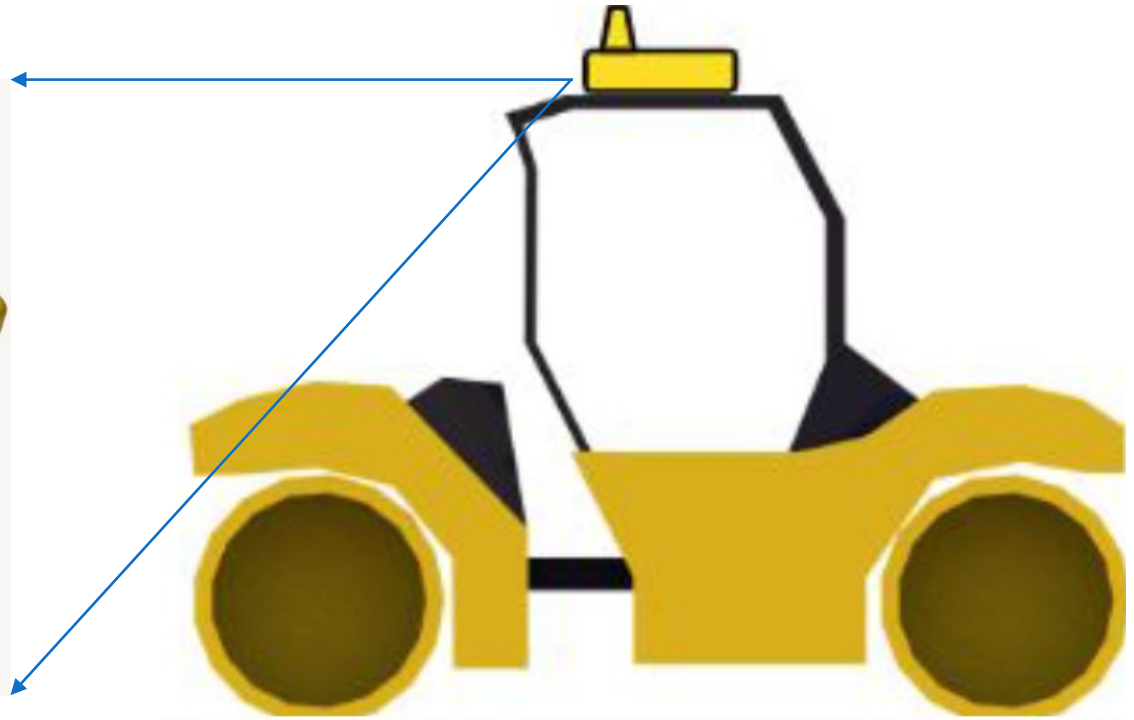
ICT Data QA



Source: modified from Wirtgen, GSSI

IC Pass Count Data QA with GPS Trackers





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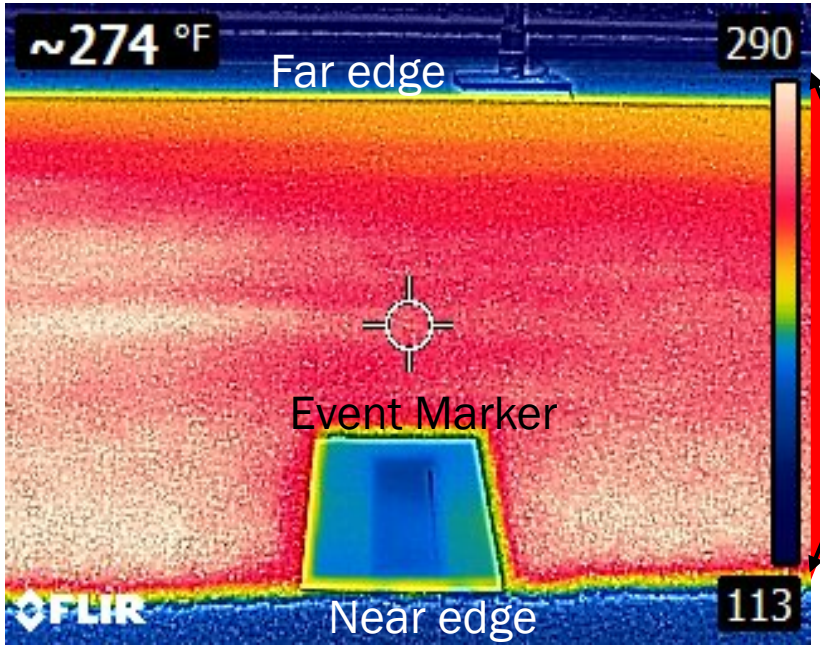
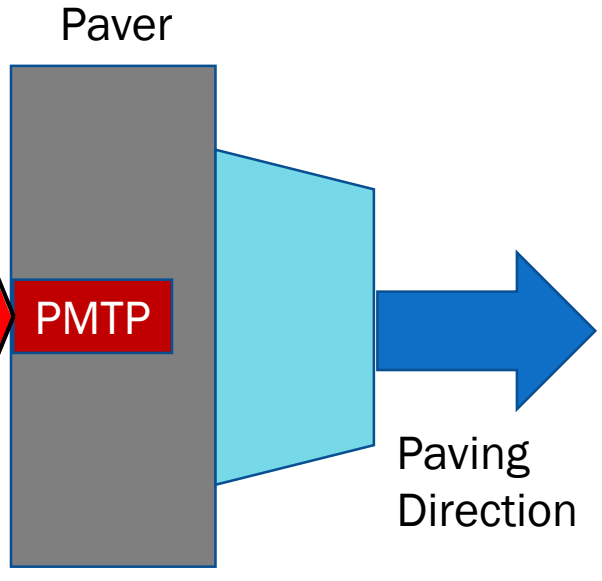
Source: modified from MoDOT & Propeller

PMTP Data QA with Thermal Camera

Field Photo



Thermal Image



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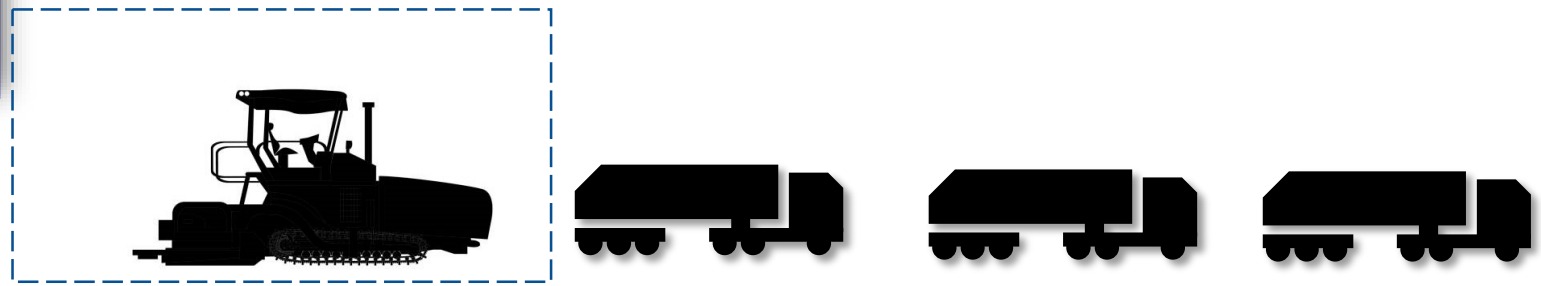
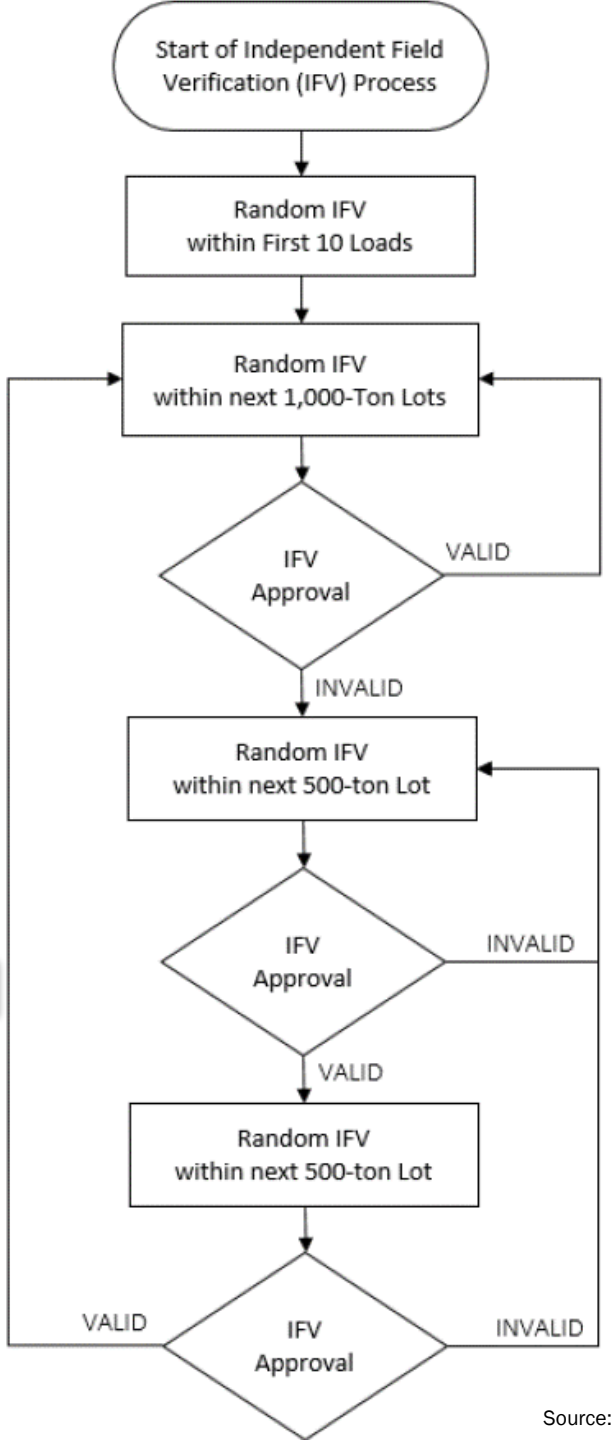
Source: modified from MoDOT

MDMS Data QA

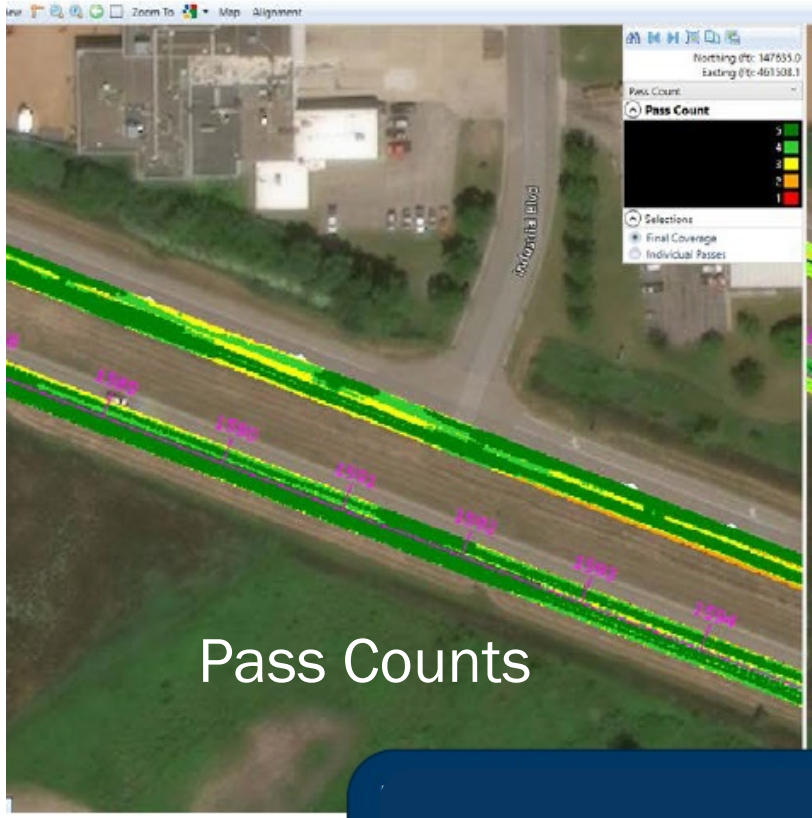
Independent Field Verification (IFV)

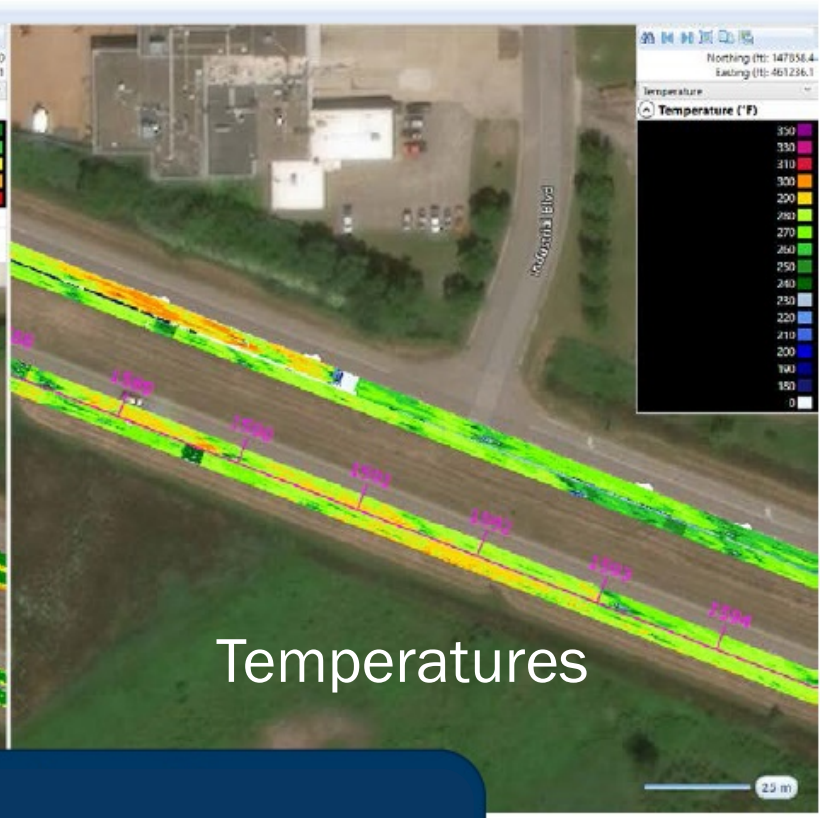


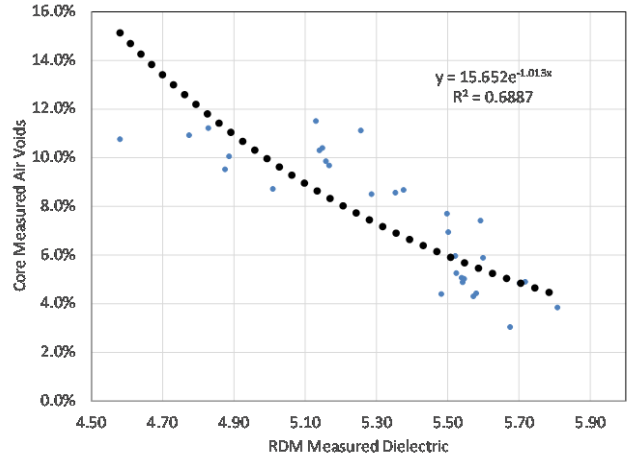


Source: modified from Embacher (2020)

DPM Data QA







Verification of Calibration Curves - DPM

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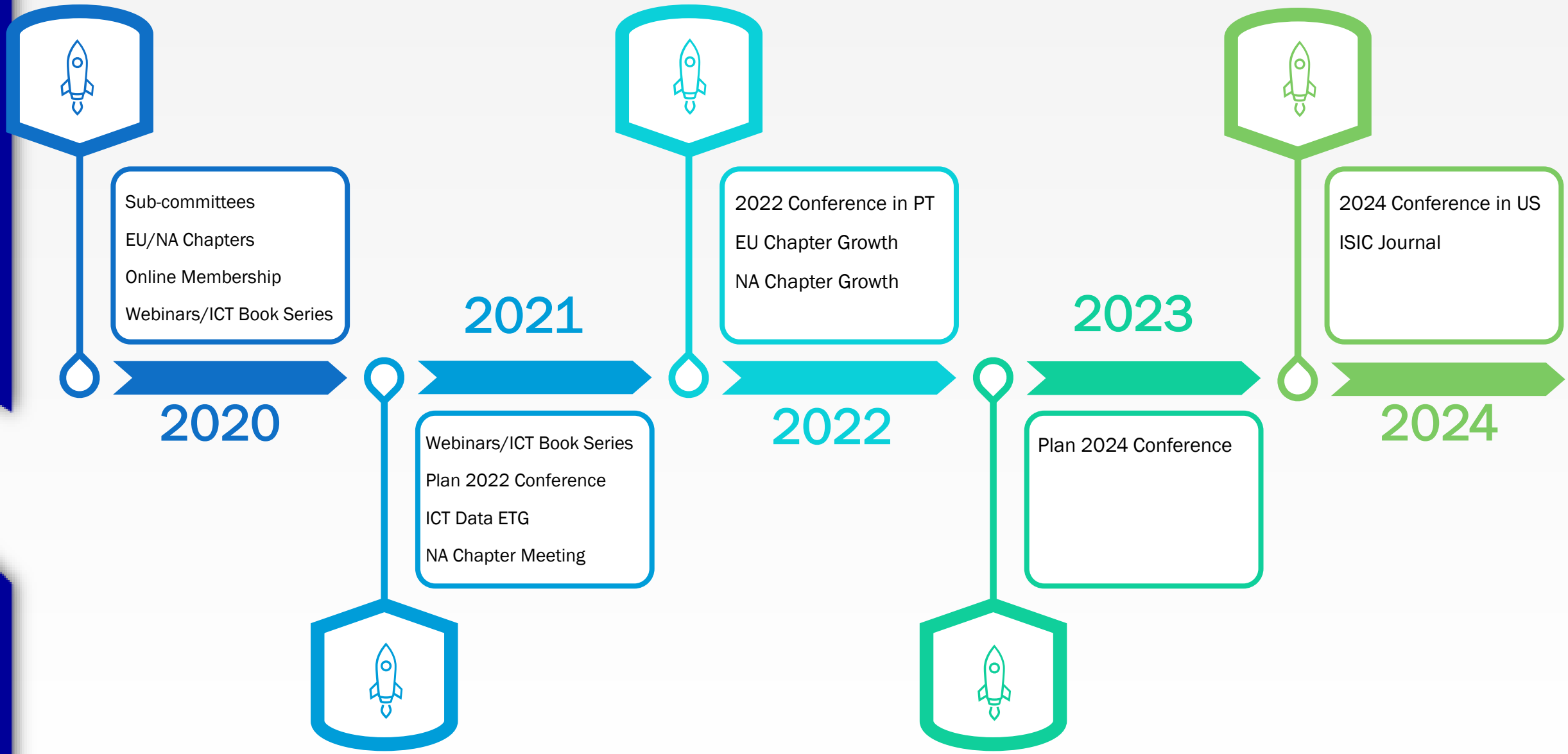
Source: modified from Embacher (2020), GSSI

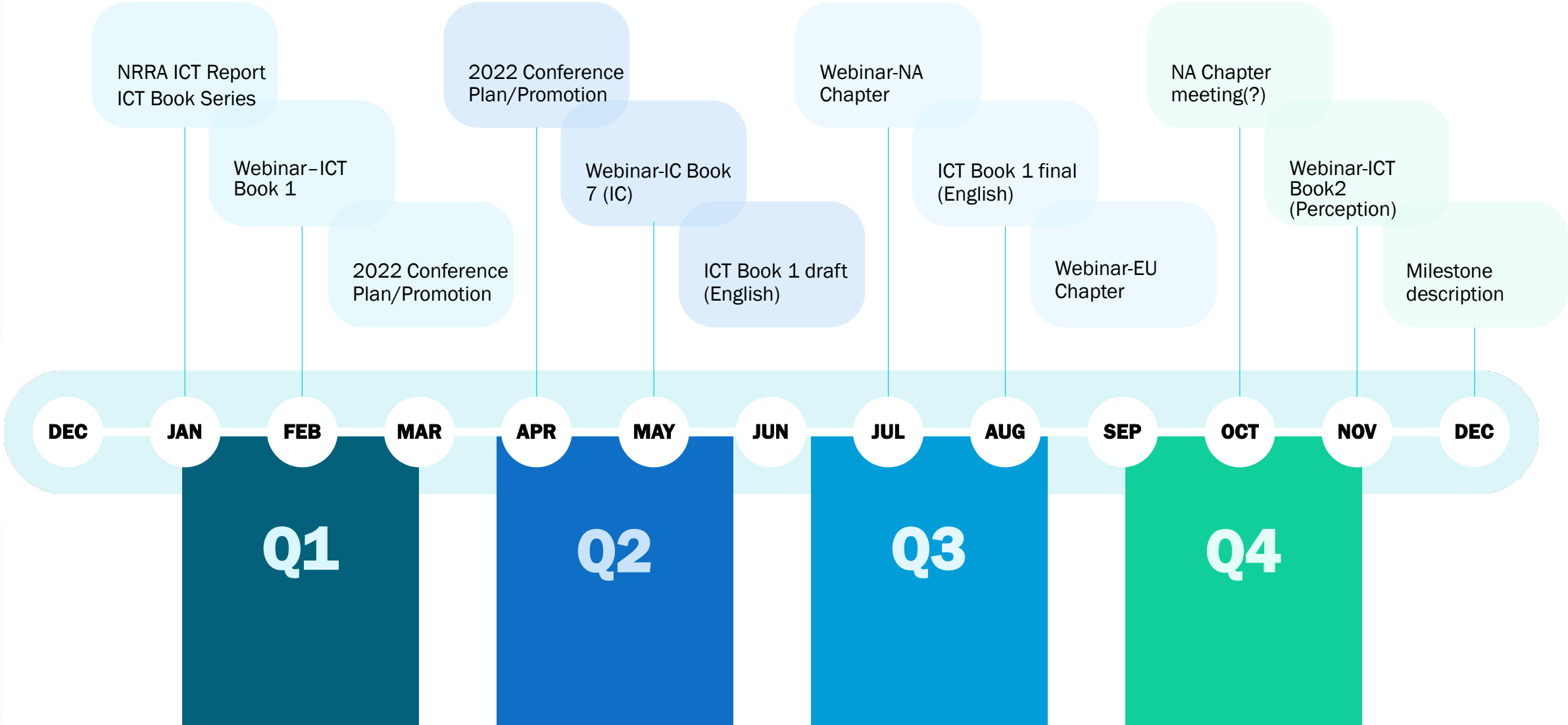
Future Growth & Development

- Growth Plan for ISIC
- Subcommittees in Specialized Fields
- Local Chapters
- ICT Standards
- ICT Journal
- Workshops/Webinars

ISIC 5-Year Plan Goals



ISIC 2021 Calendar



Questions?
Ideas?

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