



# IoT Edge Computing Challenges and Functions

<https://tools.ietf.org/html/draft-irtf-t2trg-iot-edge-01>

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# History of the Draft

- draft-hong-iot-edge-computing-01 (IETF 103)
  - Draft was presented along with two demo videos of use cases for IoT Edge computing (smart construction and real-time control system)
- draft-hong-iot-edge-computing-02 (IETF 104)
  - In a discussion on Edge and IoT in the T2TRG meeting, this draft was considered a possible starting point for a group document. New co-authors joined.
- draft-hong-t2trg-iot-edge-computing-00 (IETF 105)
  - Draft was integrated with *Survey and gap analysis*, a presentation made in T2TRG at IETF 100
- draft-hong-t2trg-iot-edge-computing-01 (IETF 106)
  - Focus changed from use case examples to Edge function analysis.
  - Draft changed from showing one Edge architecture to a range of models. Did not promote/preclude a particular model.
- draft-hong-t2trg-iot-edge-computing-02/3 (IETF 107)
  - Reorganized the draft
  - Extended the background section and the list of functions
- draft-hong-t2trg-iot-edge-computing-04/05 (IETF 108)
  - Addressed comments from Thomas, including improvements to IoT challenges and to the draft structure
  - Completed section 4 with additional text on distributed model, and developing research challenges associated with functions
  - Started the RG adoption process
- draft-irtf-t2trg-iot-edge-computing-00/01 (IETF 110)
  - Addressed comments from Marie-Jose and Carlos, including new use cases

# Updates Based on Reviews

1. Both reviewers recommended adding use cases
  - Smart Factory, Smart Agriculture, Self-Driving Car, AR/VR
2. Added text in the introduction about our focus on research topics rather than industry projects
  - Section 4.1 aims to represent the current state of IoT edge computing in industry, but does not dive into individual projects
3. Other comments on specific content were addressed (including an update of the description of in-network computation, data discovery)
4. Editorial comments were addressed

Review from Marie-Jose: <https://mailarchive.ietf.org/arch/msg/t2trg/Jz2ZeVWagceHSDjE9RaRb68Mc3c/>

Comment from Carlos: <https://mailarchive.ietf.org/arch/msg/t2trg/unlFKNpLHgRtCdm1amNaI2atyEU/>

# Quick Overview – and what was updated most recently

## 1. Introduction

## 2. Background

- IoT, cloud computing, edge computing, use cases

## 3. IoT Challenges Leading Towards Edge Computing

- Time sensitivity, uplink cost, resilience to intermittent connectivity, privacy and security
  - (Reasons that motivate the use of edge computing for IoT)

## 4. IoT Edge Computing Functions

- Overview of IoT edge computing today, general model, distributed model
- Functions/components, listing research challenges
  - OAM components: virtualization management, resource discovery and authentication, edge organization and federation
  - Functional components: external APIs, communication brokering, in-network computation, edge caching, other services
  - Application components: IoT end devices management, data management
- Simulation and emulation environments

## 5. Security Considerations

# Plans for the Draft

- To our knowledge, all outstanding comments are addressed, the draft is in a stable state
- The draft is now ready to be reviewed as a group draft, please feel free to provide feedback on the mailing list
- We can also reach out to other groups (COINRG, DINRG, ...)