Use Cases for In-Network Computing

https://www.ietf.org/archive/id/draft-irtf-coinrg-use-cases-03.txt

I. Kunze, K. Wehrle, D. Trossen, M.J. Montpetit, X. de Foy, D. Griffin, M. Rio

COIN RG @ IETF 116, Mar. 2023

Purpose of this draft

COIN Charter, Scope #2:

“Research on use case driven requirements analysis: [..] Identify potential benefits to these networks from in-network functionality [..]”

- **This draft**
  - Collection of *use cases*
  - Structured for *providing insights* into benefits, research questions, and opportunities for COIN
- **Goal**
  - Provide input for scope #2

Use Case Structure

Current Status

- **Use case descriptions aligned based on (new) taxonomy**
- **Draft finished from authors' point of view**
- **Next step: RGLC**

Terminology for In-Network Computing

https://www.ietf.org/archive/id/draft-irtf-coinrg-coin-terminology-00.txt

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Purpose of this draft

- **Collect COIN-related terminology**
  - Terminology needed for the use case draft
  - I-D.draft-kutscher-coinrg-dir-02 expired

- **Moved from use case draft to a dedicated document**

- **Questions to RG**
  - Who can take over managing the document?
  - Goal for this document?
    - Living collection of terminology?
  - Scope of this terminology?
  - Changes? Additions?

COIN RG Terminology

Programmable Network Devices (PNDs): network devices, such as network interface cards and switches, which are programmable, e.g., using P4 or other languages.

(COIN) Execution Environment: a class of target environments for function execution, for example, a JVM-based execution environment that can run functions represented in JVM byte code

COIN System: the PNDs (and end systems) and their execution environments, together with the communication resources interconnecting them, operated by a single provider or through interactions between multiple providers that jointly offer COIN capabilities

COIN Capability: a feature enabled through the joint processing of computation and communication resources in the network

(COIN) Program: a monolithic functionality that is provided according to the specification for said program and which may be requested by a user. A composite service can be built by orchestrating a combination of monolithic COIN programs.

(COIN) Program Instance: one running instance of a program

COIN Experience: a new user experience brought about through the utilization of COIN capabilities

Use Case Analysis for In-Network Computing

https://www.ietf.org/archive/id/draft-irtf-coinrg-use-case-analysis-00.txt

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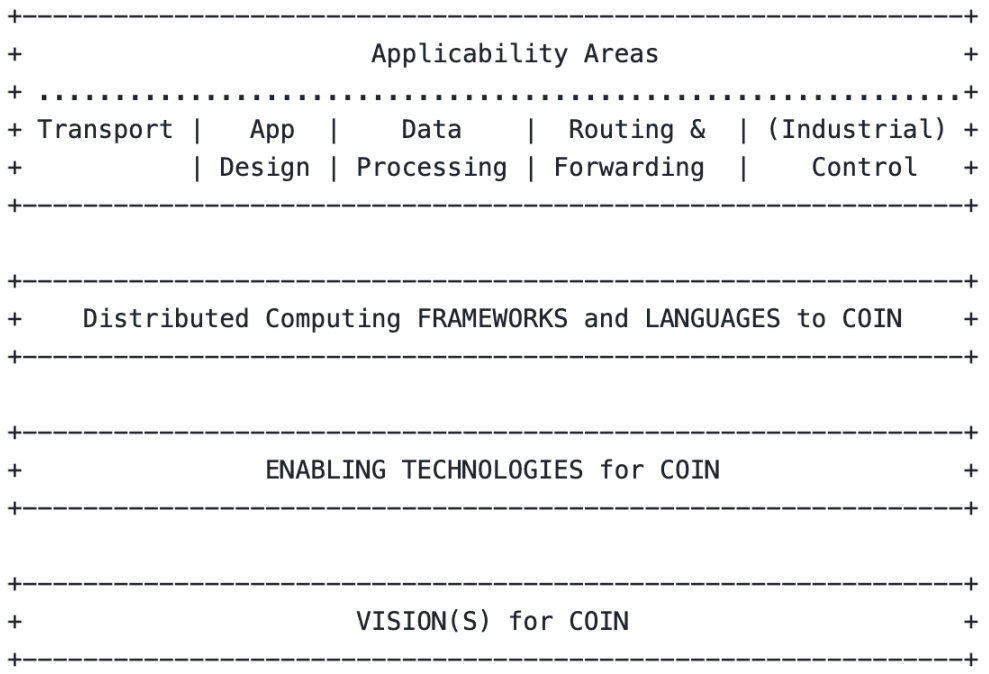
Purpose of this draft

- **draft-irtf-coinrg-use-cases-03.txt provides use case descriptions**

- **This draft**
  - Analyze opportunities, research questions and requirements to identify commonalities
  - Provide general research directions for COIN

- **Current status**
  - Started with research questions
    - Deeper analysis still to do
  - Missing
    - Opportunities
    - Requirements



Questions to RG

- **Who can take over managing the document?**

- **Who is interested in contributing / doing the analyses?**