Intelligent Reasoning on External Events for Network Management

Positioning, Challenges, and Framework

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External Events

- Triviality: **Network behavior is the result of user activity**.
    - More users = More traffic.

- **User activity** has a direct dependency on **events** that occur <u>outside the boundaries of the networks they use</u>.
    - A video becomes trendy =>
      The load of the network that hosts the video increases, but also the load of any network with users watching the video.
    - A natural incident occurs (e.g. heavy rainfall, earthquake) =>
      Users try to contact their relatives and the load of a telephony network increases.

- **Conclusion**: There is a **causality** relation between **events** occurring in the <u>real and digital world</u> and the behaviour of the network (aka. The Internet).

Required: Common Understanding

- **AI** components require common concepts and a language to **understand** to each other.

- The "**intent**" structure is perfect for this task:
  - It can be the **exchange format** for the language used by AI components.

- External events, performance measurements, and management actions must be **formulated as intents**:
  - They must be **semantically characterized** on an extensible **ontology**.

Required: AI Management Framework

- A **common "playground"** must be defined:
  - Supporting **multi-provider** AI components and solutions.

- A **workflow** connects NTF and IBN:
  - Map NTF concepts to the ontology and vice-versa.
  - Map actions to intents for IBN and vice-versa.

- Most existing/ongoing works **fit** within this workflow:
  - They should be integrated!

Required: AI Middleware

- **Middleware** components connect NTF and IBN:

    - They **analyze** the data (events, measurements) to find out required actions (intents).

    - Several **reasoners** can "live" there.

- **Common** (standard) interfaces are **required** for enabling **composition** of AI middleware / components.

Thanks for Your Attention

Questions?

– EOF –