Status update
draft-clemm-nmrg-dist-intent-03
"Intent-Based Networking – Concepts and Overview"

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Status update

- Draft updated from rev -02 to rev -03

- Updates:
  - Filled in gaps with regards to Intent Lifecycle discussion
  - Described lifecycle in greater detail, including intent fulfillment and intent assurance functions and their interactions
  - Removed research challenges

Intent lifecycle
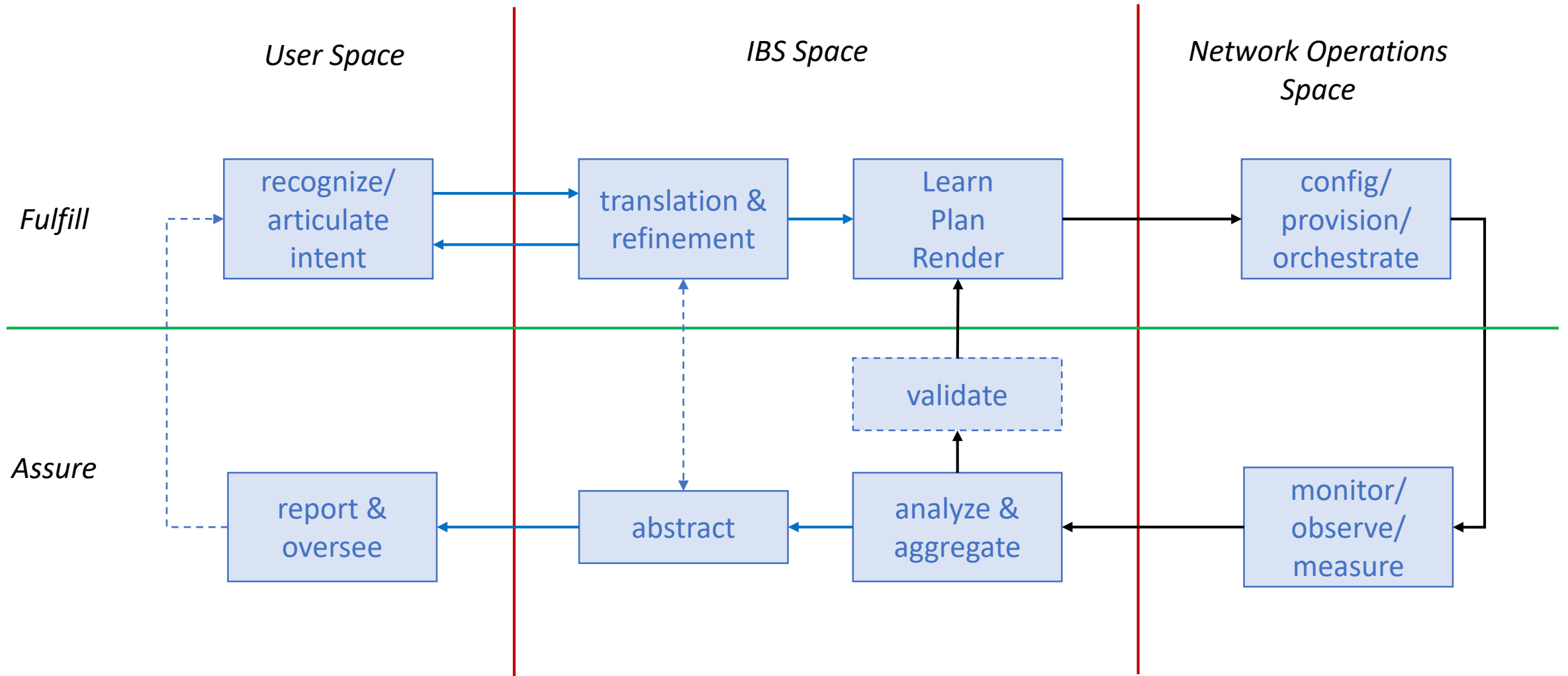
Document structure

Open Items – next steps

- Consolidation of intent lifecycle (currently two diagrams)
- Section 7 Edits – Intent-Based Networking Functionality
  - Editorial alignment needed with section 6 (lifecycle)
  - Probably move section 6 material into 7
- Distinction between Intent Categories and Intent Granularity
  - Add here or leave for Intent Classification document?
  - Operational intent (general operational goals)
  - Rule intent
    - excluded now - this is related to ECA and policies
    - As "intent washing" of concepts occurs, may be good to include for completeness reasons
  - Service intent (intent for services and service instances – compare RFC 8309)
  - Flow intent (intents for individual flows)
- Add brief discussion of security implications and challenges (Security Considerations)

Positioning within IBN workplan in NMRG charter

•Document the problem statement, design goals and challenges
Goal: describe the problem and solution spaces; identify the limits of current technologies and methods and derive the associated research challenges.

•**Document fundamental concepts, background, and terminology**
Goal: provide clarity and achieve a common understanding of the various concepts, definitions and terms of what constitutes an IBN system.

Main focus

•Develop a taxonomy and document suitable means to express intents
Goal: categorize the different forms of intents and define what constitutes a "well-formed" intent; describe how an intent can be expressed and what can be expressed using an intent with means such as information models, grammars, and languages.

Also touches on / refers to some aspects of these

•Design and specify a common architectural framework comprising requirements, functions and techniques to realize an archetypal IBN system; describe the lifecycle and theory of operations.
Goal: determine the elementary functional blocks of an IBN system, their interactions, inputs and outputs; propose different techniques applicable for the different functions.

Next steps

- Editorial updates (-04):
  - Section 7 edits (functionality), security considerations
  - We do not expect major additions and believe we are ready for decision on adoption decision
- Request adoption as NMRG work item

Thank you!

Intent concept clarifications

- Intent is outcome-oriented
  - "What outcomes does a network provider expect",
    not "how those outcomes are achieved"
  - Intent system, not user, responsible for translating desired outcomes into courses of actions, policies, algorithms.
- On the relationship to Policy
  - "Intent-based" relates to "policy-based" like "AI and machine-learning" relate to "Expert Systems"
    - Intent defined by desired outcomes, not how to achieve them (one way of which might be means of rules)
    - Policy defined by rules (e.g. Events/Conditions/Actions) and what to do under which circumstance

Principles

Starter set of principles defined, subject to further discussion:

- **Single source and single version of truth (SSoT/SVoT)**
  (Important to capture drift, ensure system convergence)

- **One touch but not one shot**
  (It may take iterations and interactions to arrive at desired intent, resolve ambiguities, avoid unintended consequences)

- **Autonomy and oversight**
  (System conducts tasks on its own; users are given the necessary tools to retain an understanding of current state and what is happening)

- **Learning**
  (System is able to assess effectiveness of its own actions and improve in order to optimize outcomes and adapt to dynamic conditions and changing context)

- **Explainability**
  (System is able explain its actions and reason about their effectiveness)

- **Abstraction**
  (Users do not need to be concerned with how intent is mapped into lower-level artefacts)