Intent Translation Engine for Intent-Based Networking
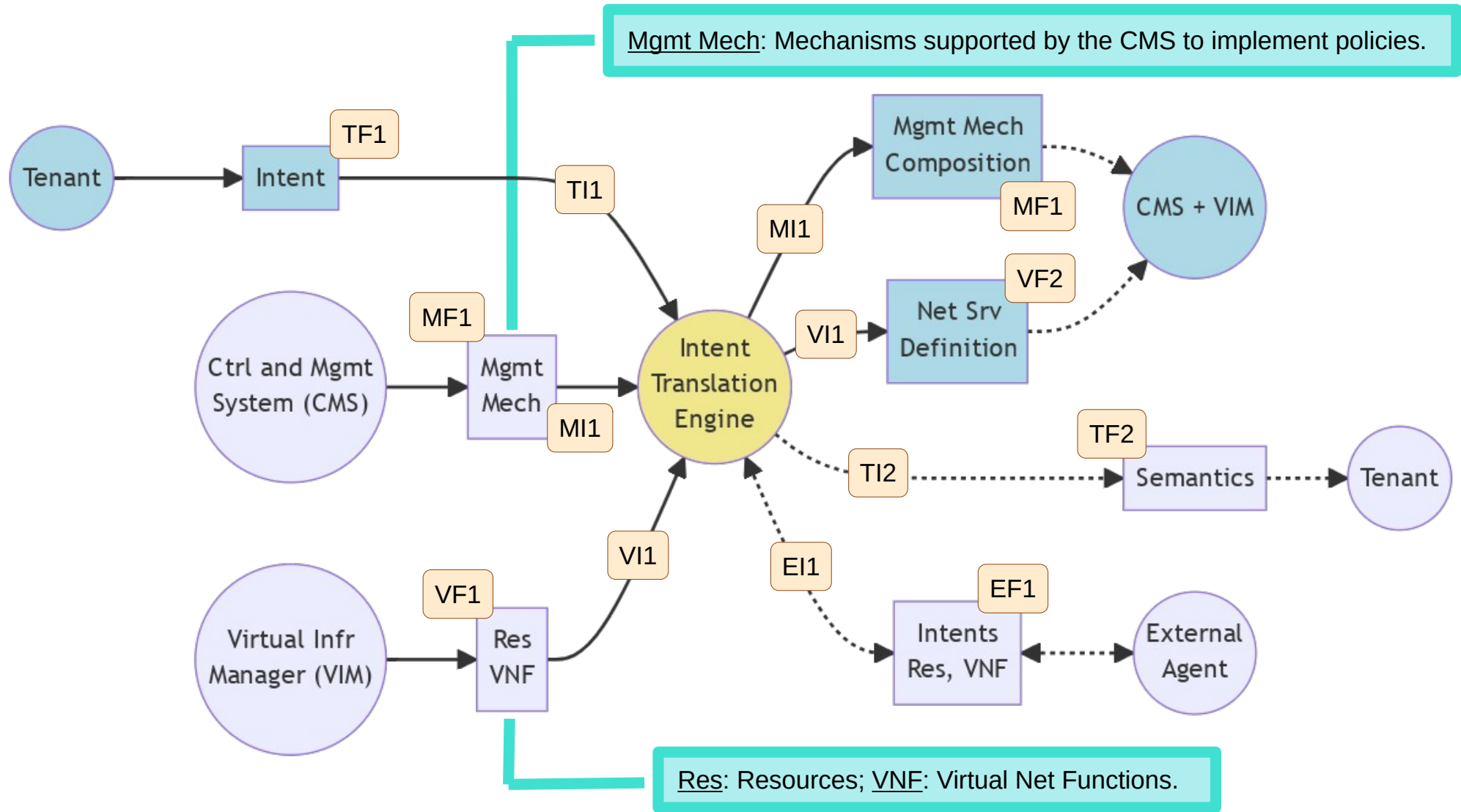
Required Specifications

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Interaction Overview

Required Specifications (I)

- Interface for interaction between tenants and the ITE:
  - TF1: Schema—RDF ontology and YANG model—that must be used to format intents introduced in the ITE.
  - TI1: Schema—RDF ontology and YANG model—that must be used by a tenant or other external entity to format and transmit an intent to the ITE.
  - TF2: Schema—RDF ontology and YANG model—that must be used to format declarations of intent semantics—namely, the set of concepts, relations, and ontologies that can be present in an intent.
  - TI2: Schema—RDF ontology and YANG model—that must be used by an ITE to publish—via NETCONF and others—the intent semantics it supports. Particularly, the set of concepts, relations, and ontologies that can be used by tenants to define input intents.
  - Minimum set of semantics that must be supported by any ITE.

Required Specifications (II)

- <u>Transmission of information about management mechanisms</u>:
  - MF1: Schema—RDF ontology and YANG model—that must be used by a management system to format declarations of management mechanisms and by an ITE to format their compositions.
  - MI1: Schema—RDF ontology and YANG model—that must be used by a management system to publish—via NETCONF and others—the management mechanisms it provides for being composed to implement policies and network services.
  - Minimum set of management mechanisms that must be provided by a management system for proper intent support.

Required Specifications (III)

- <u>Transmission of information about infrastructure resources and VNFs</u>:
  - VF1: Schema—RDF ontology and YANG model—that must be used to format declarations of network resources and virtual network functions (VNFs).
  - VI1: Schema—RDF ontology and YANG model—that must be used by a VIM to publish—via NETCONF and others—the network resources and virtual network functions (VNFs) it provides.
  - VF2: Schema—RDF ontology and YANG model—that must be used to format NSDs.
  - Minimum set of network resources and VNFs that must be provided by a VIM for proper intent support.

- <u>Transmission of information about intents and resources and VNFs</u>:
  - EF1: Schema—RDF ontology and YANG model—that must be used to format declarations of networkintents, network resources, and virtual network functions (VNFs).
  - EI1: Schema—RDF ontology and YANG model—that must be used by an ITE allow external agents to provide network intents and retrieve information about available resources and and virtual network functions (VNFs).

Required Specifications (V)

- <u>Implementation guide</u>:
  - Abstract algorithm that allows an ITE to obtain a set of network service definitions and the composition of management mechanisms that implements the required policies from a set of inputs.
  - The inputs are:
    a) The intent provided by the tenant or some external agent.
    b) Set of management mechanisms – retrieved from some management system available.
    c) Set of VNFs and network resources – retrieved from some VIM.
  - The abstract algorithm helps obtaining validated network service definitions and management mechanism compositions which are valid for the available instantiation infrastructure.

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