Knowledge Exchange in Autonomic Networks
draft-ciavaglia-anima-knowledge-00

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(remote presentation)

Context

"Il faut savoir pour comprendre et comprendre pour agir." *--Unknown*

… or in the scope of autonomic networks:

- Ability to **exchange information** among nodes to **understand context**, **make decisions**, and then **take appropriate actions**. *--Credits: John S.*

Why is it important…?

- Because discovery is not enough
  - One can only discover something that already exists.
  - Autonomic systems **learn new knowledge from their environment**, via computation and inference.
  - Their **knowledge bases grow, information is validated and invalidated**.

- Cooperation relies on / emerges from information exchange
  - A traffic forecasting AF can provide its knowledge to a resource allocation AF, enabling it to better perform.
  - This requires the capacity to **advertize capabilities**, **measured and produced information**, as well as ability to "**connect**" **relevant AFs**.

→**Vital to share knowledge in an <u>interoperable</u> fashion.**

→**Information shall be "codified" by some means: dictionary, ontology, information model…**

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- Provides a **unified interface** to enable an interoperable **management of information flows** among autonomic functions by insuring the use of **common mechanisms**.

- The protocol **negotiate** and automatically **adapt** to the **communication** and information **capabilities**, requirements and constraints of the participating entities.

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Discussion

- The draft provides details on a realization of such functionality (specs and prototype).
- Knowledge exchange and management is vast, and connect to other areas of investigation
  - Monitoring, measurement plane / mechanisms
  - (Machine) Learning capabilities, Analytics
  - Information management, distribution (and optimization)
  - ...
- Serve as a basis for further study and discussion