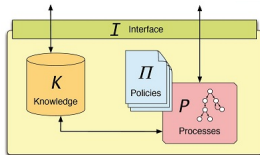This work package focus on the design of a Service Components Ensemble Language (SCEL) specifically designed to program autonomic components and their interaction while supporting formal reasoning on their behaviors. An autonomic component consists of:

   -   an interface publishing and making available structural and behavioral information about the component itself in the form of attributes,
   -   a knowledge repository managing both application data and awareness data, together with the specific handling mechanism,
   -   a tuple of policies regulating the interaction between the different internal parts of the component and the interaction of the component with the others, and
   -   a process together with a set of process definitions that can be dynamically activated.

SCEL is a language with programming abstractions for directly representing Knowledge, Behaviors and Aggregations according to Policies in order to naturally program SCEs, while dealing with interaction, self-awareness, context-awareness and adaptation. SCEL is equipped with a small set of basic constructs with solid semantic grounds so that logics, tools and methodologies can be developed for formal reasoning on systems behavior in order to establish qualitative and quantitative properties of both the individual components and the ensembles.

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