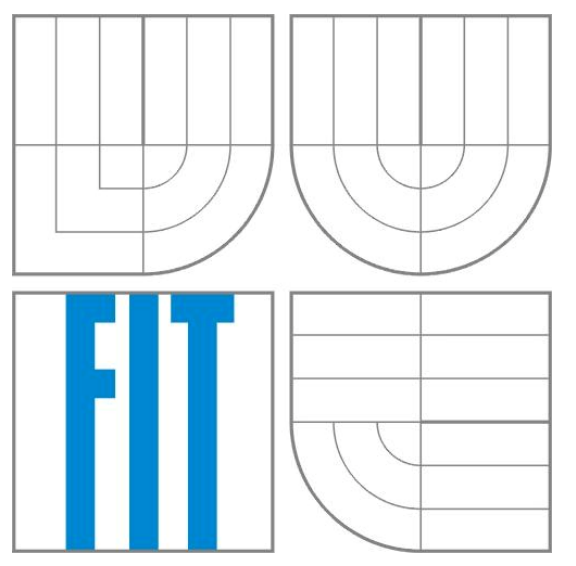# RINA Simulator: Creating Distributed Applications in RINA Architecture

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Pristine

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Excel @FIT

This work is focused on application approach in RINA, on its design and implementation in RINA Simulator (RINASim). The work is carried out within research project PRISTINE within which the RINASim is developed. The contribution of this work is to extend the functionality of the simulator by a programming interface and structure for creating distributed applications. We also present simple design of Application Programming Interface (API).

Motivation

RINASim is powerful simulator of RINA . But it provided only limited options of creating applications.

Main goals:
- Add missing modules to Application Process (AP) that is part of DAF
- Design and implement API in each module
- Incorporate Application Connection Establishment phase (CACE) and Enrollment phase to AP

RINASim Repository

Design

RINA uses single repeating layer called Distributed IPC Facility (DIF) for networking. The top layer, application layer called Distributed Application Facility (DAF) contains APs and uses services of a DIF.

AP contains modules:
- Application Entity (AE) is responsible for communication between APs in DAF
- RIB Daemon manages manipulation of objects in Resource Information Base (RIB)
- Enrollment module is one of management tasks within DAF and it controls CACE and Enrollment phase (e.g., creation of sufficient shared state of two APs in DAF)
- Management AE is special AE, it is used for communication between APs by Enrollment module and RIB Daemon
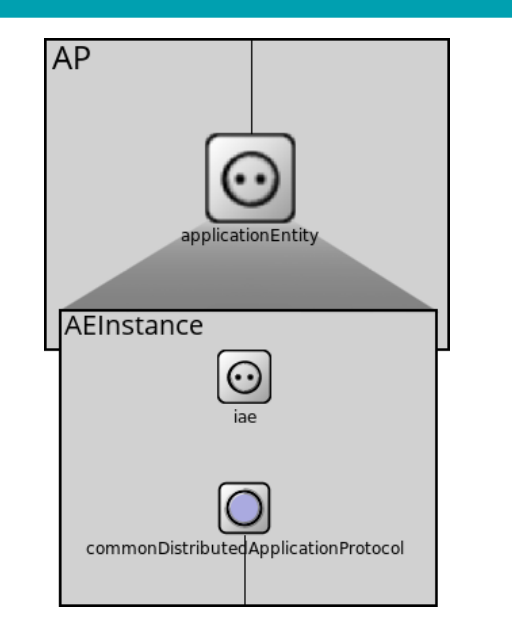
Each module must have API that is used by other modules to communication between them. AP and AE should be programmable.
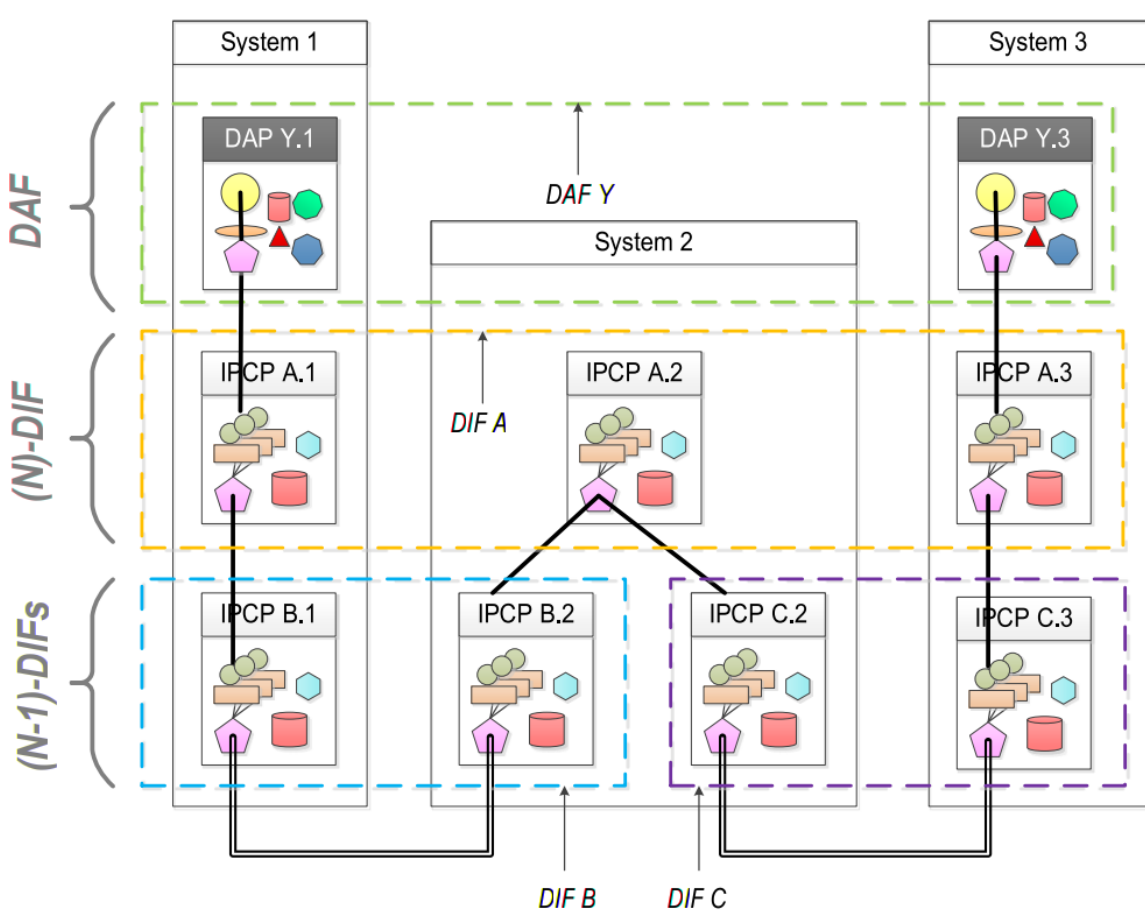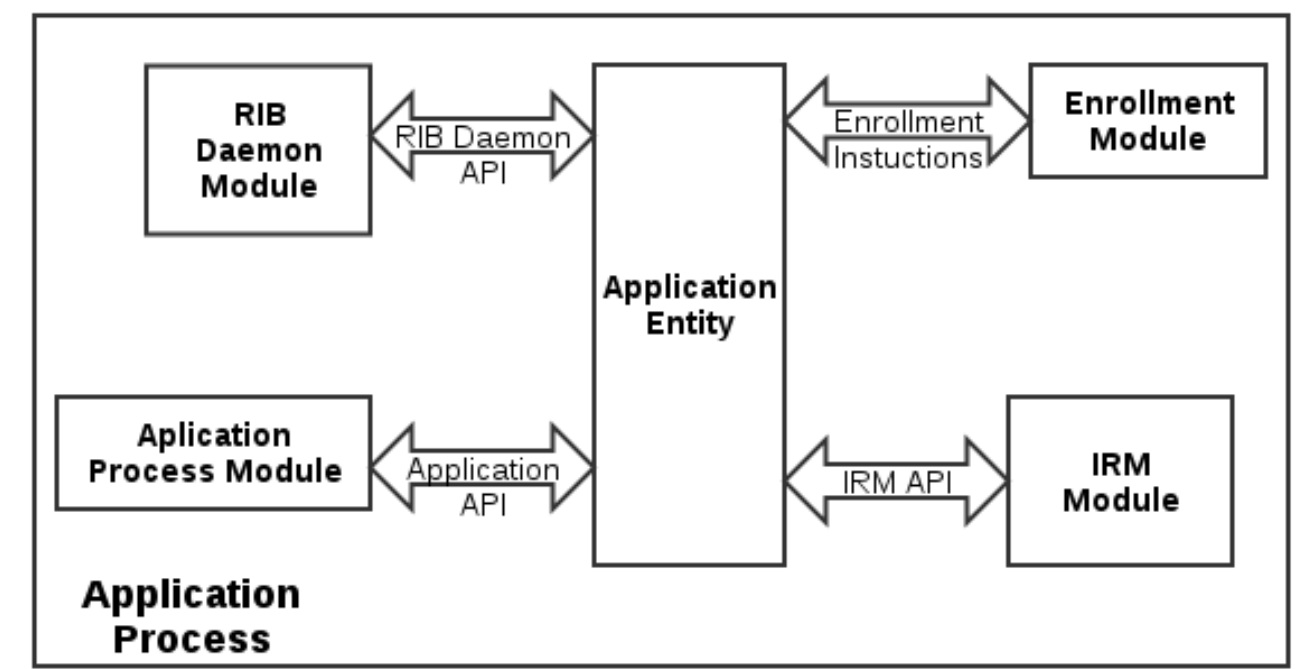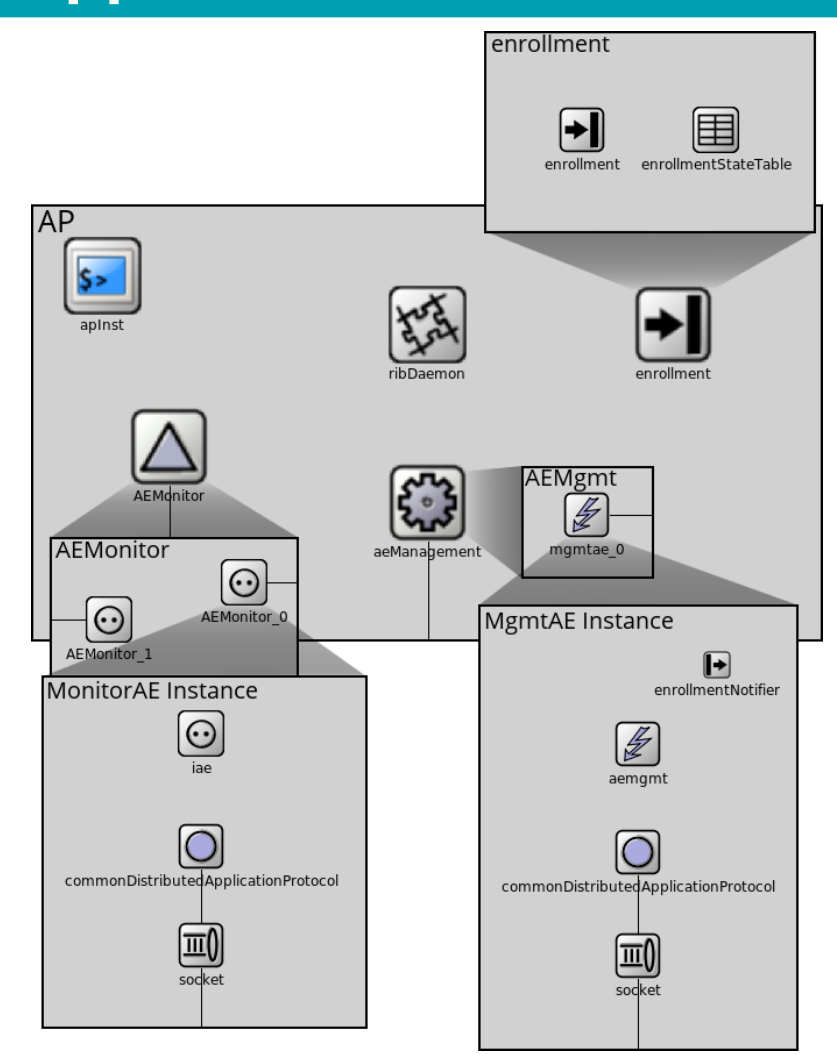

Application Process
- is not just only simple traffic generator!

Contribution
- Current Application Process has been extended with other modules
- Implementation of API in each module
- Reaction in each module for API call from other modules in form of callback functions
- Dynamic creation of AE and IAE modules
- CACE and Enrollment in DAF

Distribution of object using RIB Daemons policies need to be done as future work

Future Work
- Extend RIB Daemon of policies intended to manage distribution of objects in RIB database
- Create more useful Application Entities

Reference
[1] Vladimír Veselý. A new dawn of naming, addressing and routing on the internet, 2016.