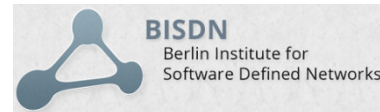




RINA: Virtual networks as a natural consequence of a complete network architecture

Dimitri Staessens, Eduard Grasa,
The PRISTINE consortium



PRISTINE Objectives

- Design and implement the innovative internals of the RINA architecture that include the **programmable functions** for:
 - **security** of content and application processes,
 - supporting **QoS and congestion control** in aggregated levels, providing **protection and resilience**, facilitating more **efficient topological routing**
 - **multi-layer management** for handling configuration, performance and security.
- **Demonstrate** the applicability and benefits of this approach and its built-in functions in **three use-cases**
 - **datacenter, distributed cloud, carrier network**

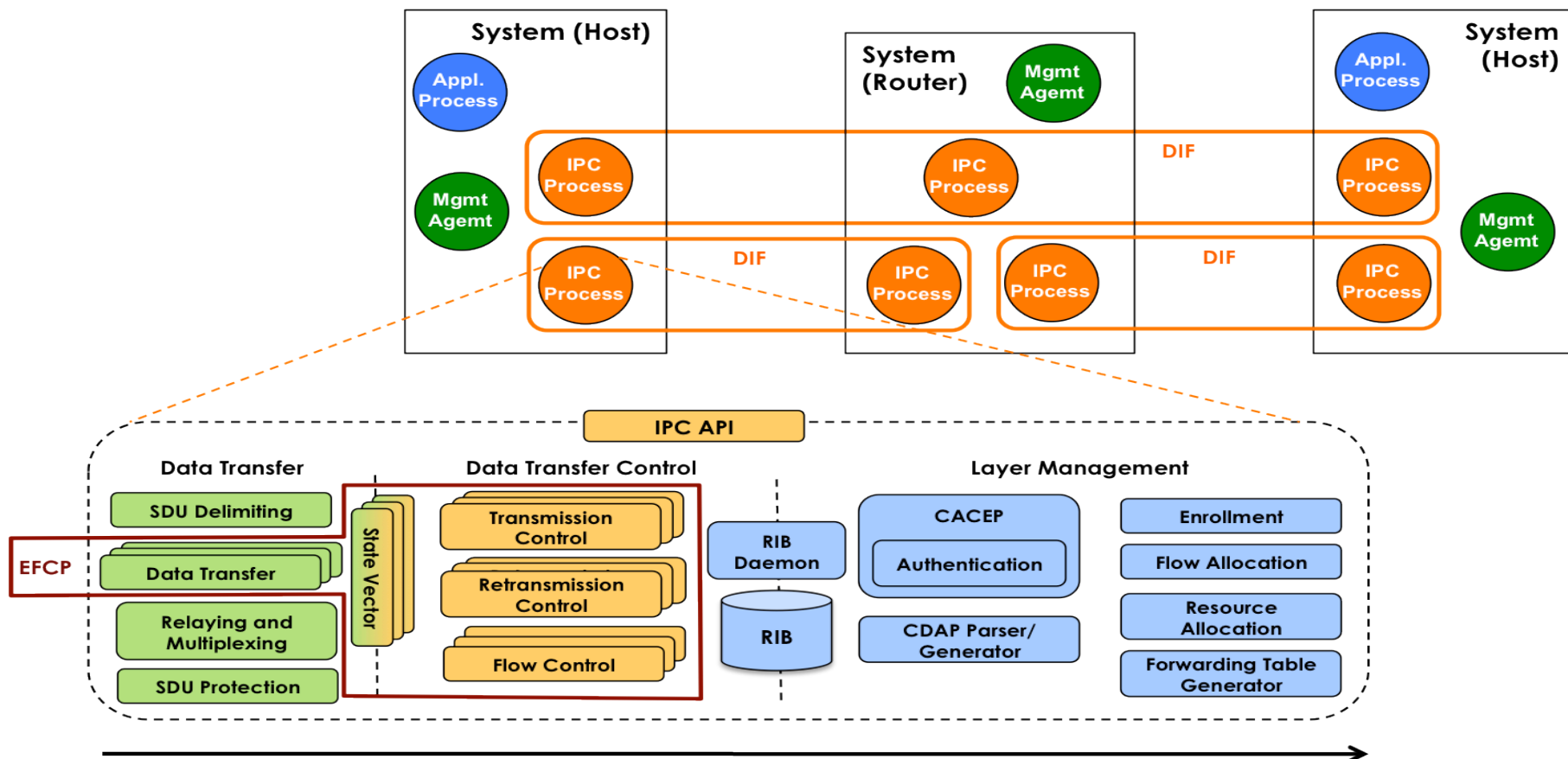
The IPC API

Networking is IPC... – Bob Metcalfe
...and IPC only – John Day

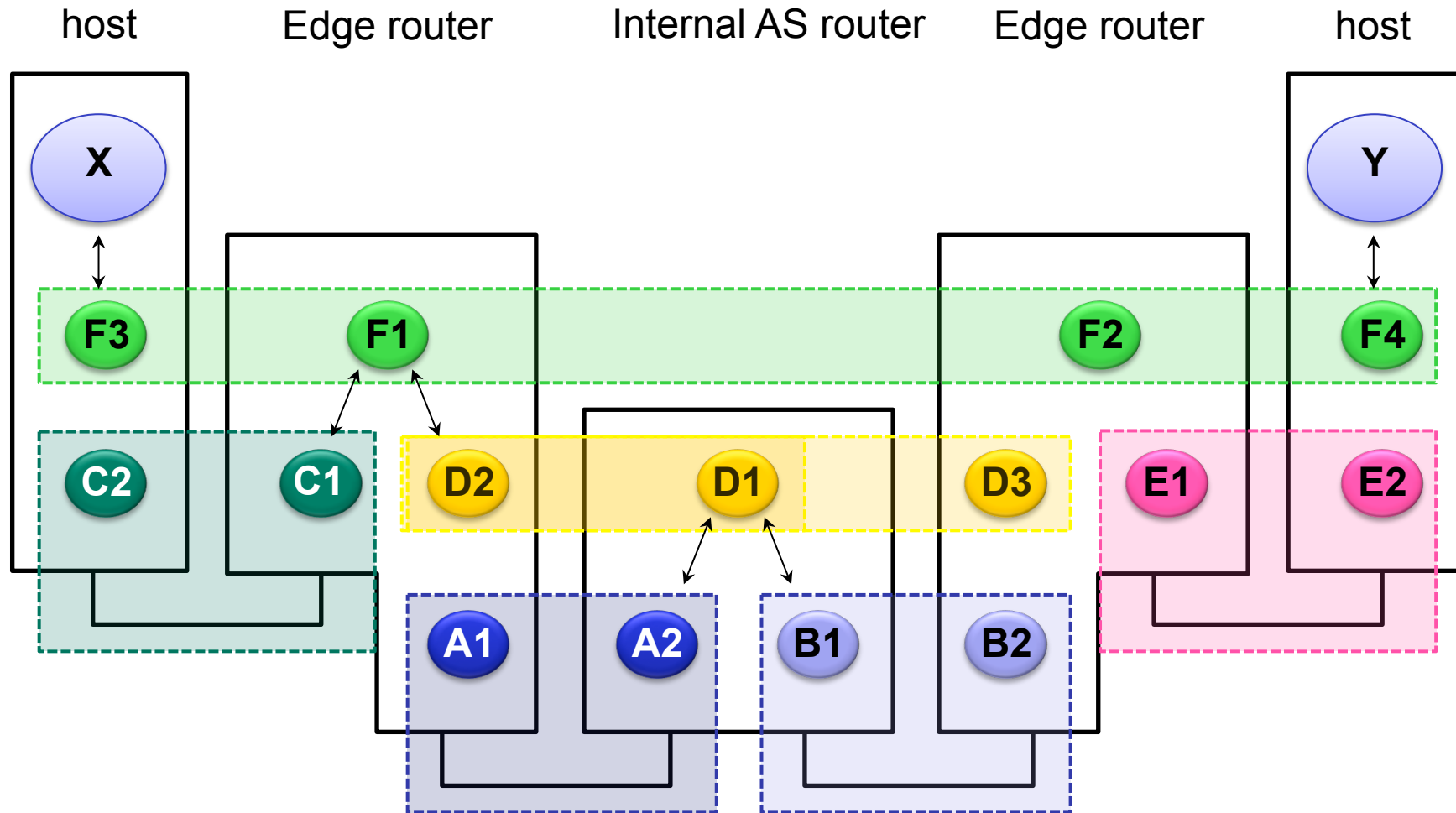
- *portId* ***_allocateFlow***(*destAppName*, *List<QoSParams>*)
- *void* ***_deallocate***(*portId*)
- *void* ***_write***(*portId*, *sdu*)
- *sdu* ***_read***(*portId*)
- *void* ***_registerApp***(*appName*, *List<difName>*)
- *void* ***_unregisterApp***(*appName*, *List<difName>*)

The Recursive Internet

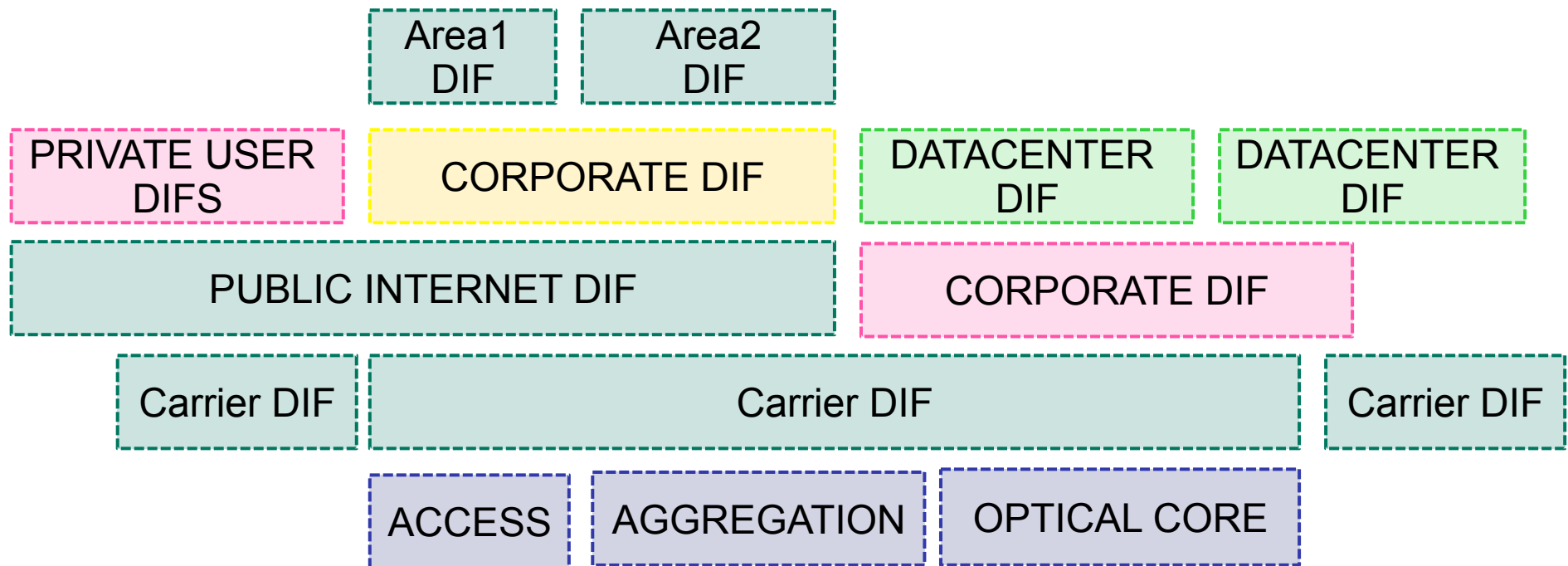
Networking is IPC... – Bob Metcalfe
 ...and IPC only – John Day



Bootstrapping a RINA network



A Virtual Network in RINA is just an overlay DIF



Virtual Networks?

Transport (L4)
Network (L3)
Data Link (L2)
Physical (L1)

The simple model

TCP(L4)
IP(L3)
IEEE 802.3 (L2)
VXLAN(L2)
UDP (L4)
IP (L3)
IP (L3)
IEEE 802.3 (L2)
MPLS (L2.5)
IEEE 802.1q (L2)
IEEE 802.1ah (L2)
10GBASE-ER (L1)

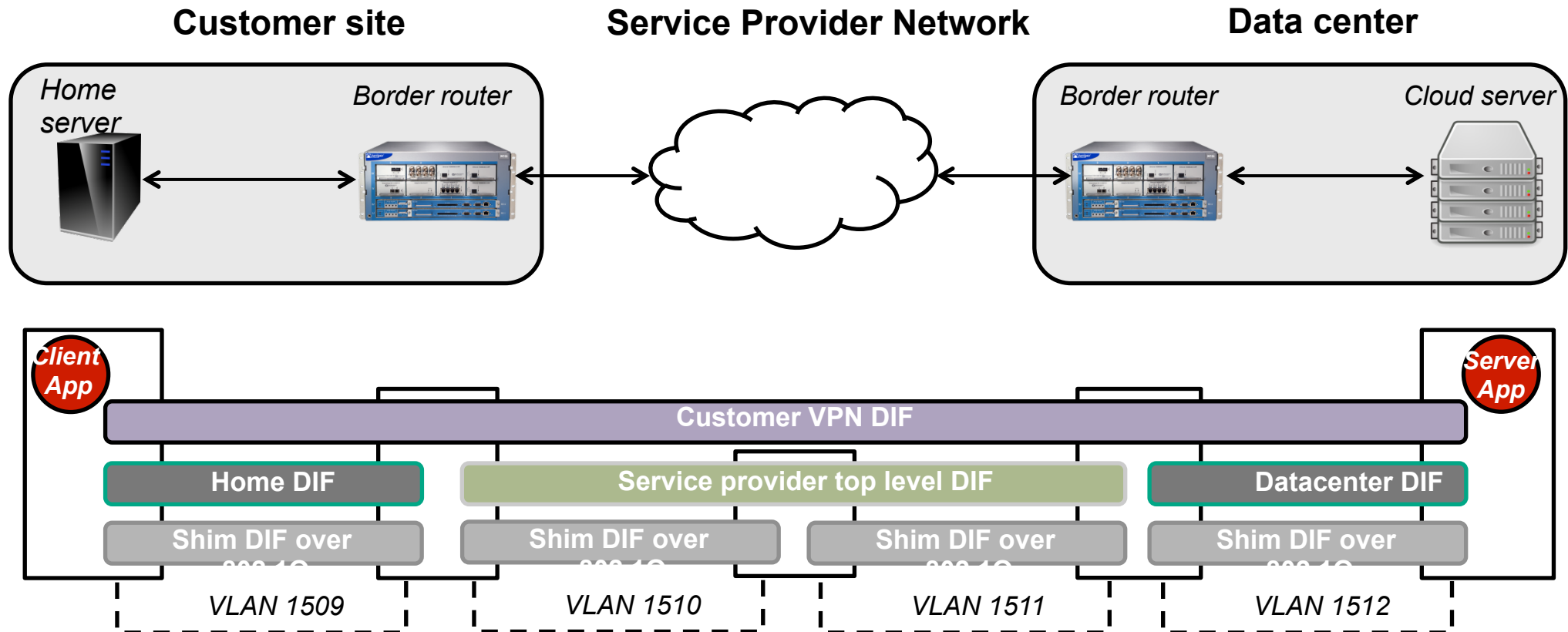
The complex reality
(just an example)

DIF (IPC)
...
DIF (IPC)
Shim DIF (IPC to PHY)

RINA

Integrated VDC-Unified Connectivity

Demo of the RINA stack under development by the IRATI project



Programmable VPNs communicating application instances

Customizable VPN: addressing, routing, data transfer, resource allocation, security

VPN API allows **allocation of flows with concrete characteristics** (loss, delay, etc)

- **Same building block used for all layers** (VPN, home network, datacentre, ISP)

<Thank you!>



Further information can be found here.

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www www.ict-pristine.eu

For more information on RINA,
visit the IRATI booth!