Supporting IP Multicast with QoS in ATM Networks

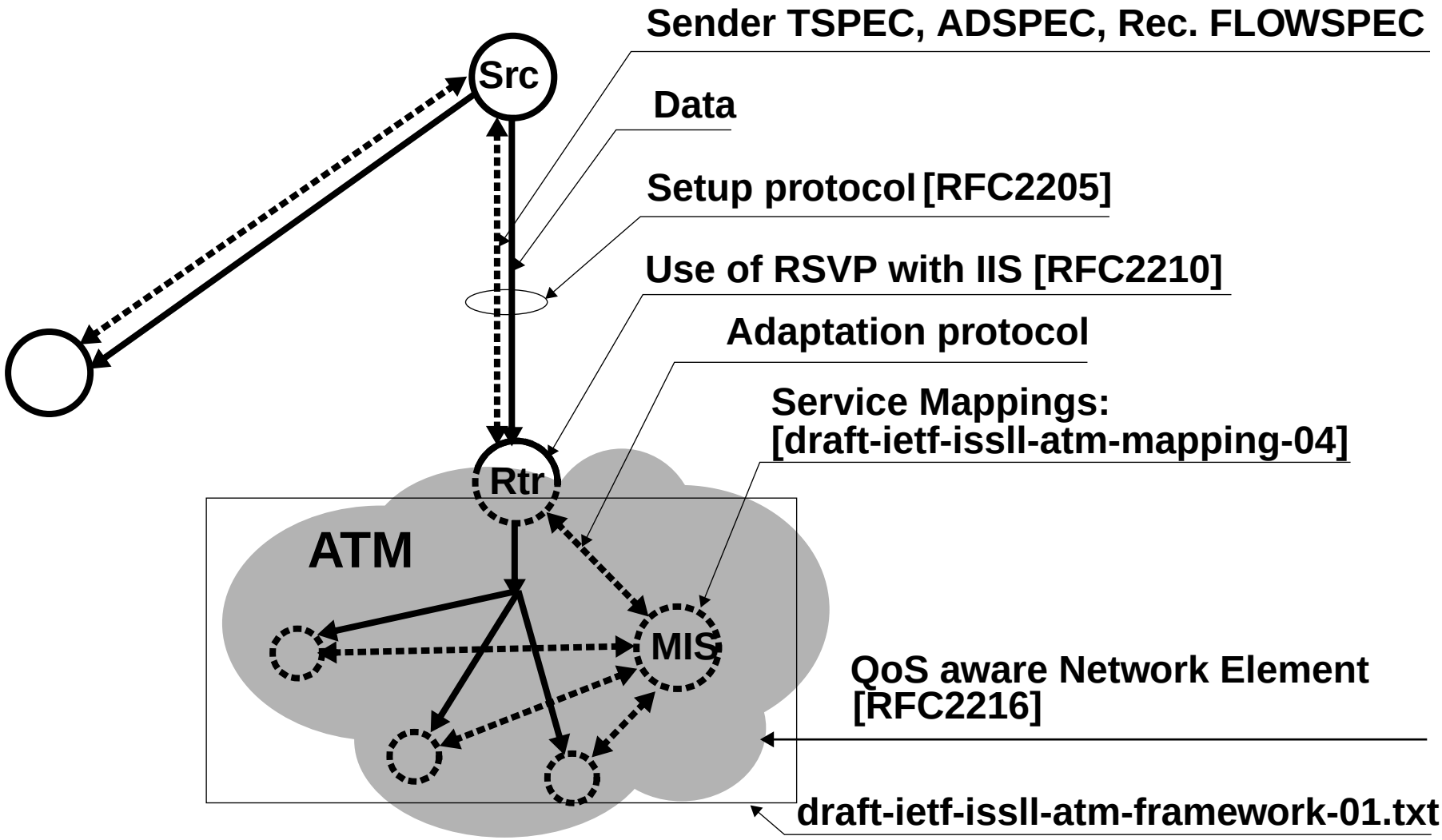
Implementation report

M. Smirnov
GMD FOKUS
smirnow@fokus.gmd.de

The Outline

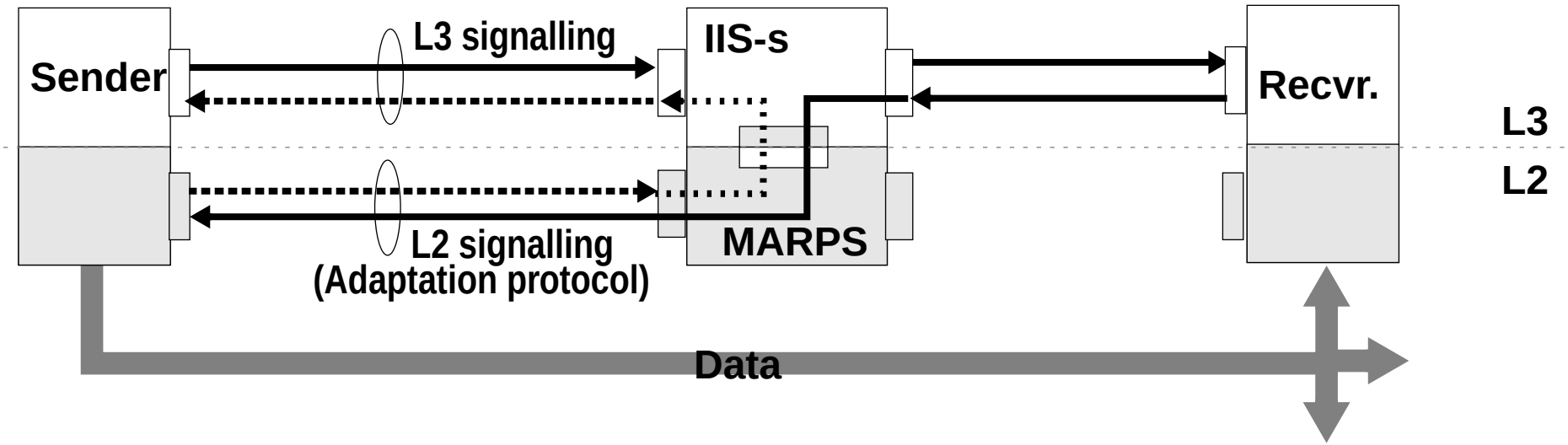
- QoS by e.g. IntServ over ATM;
- Multicast Integration Server (MIS) in general;
- MIS: Practical View;
- EARTH implementation as a lightweight MARS;
- Future Work

Internet IntServ over ATM



smirnow@fokus.gmd.de

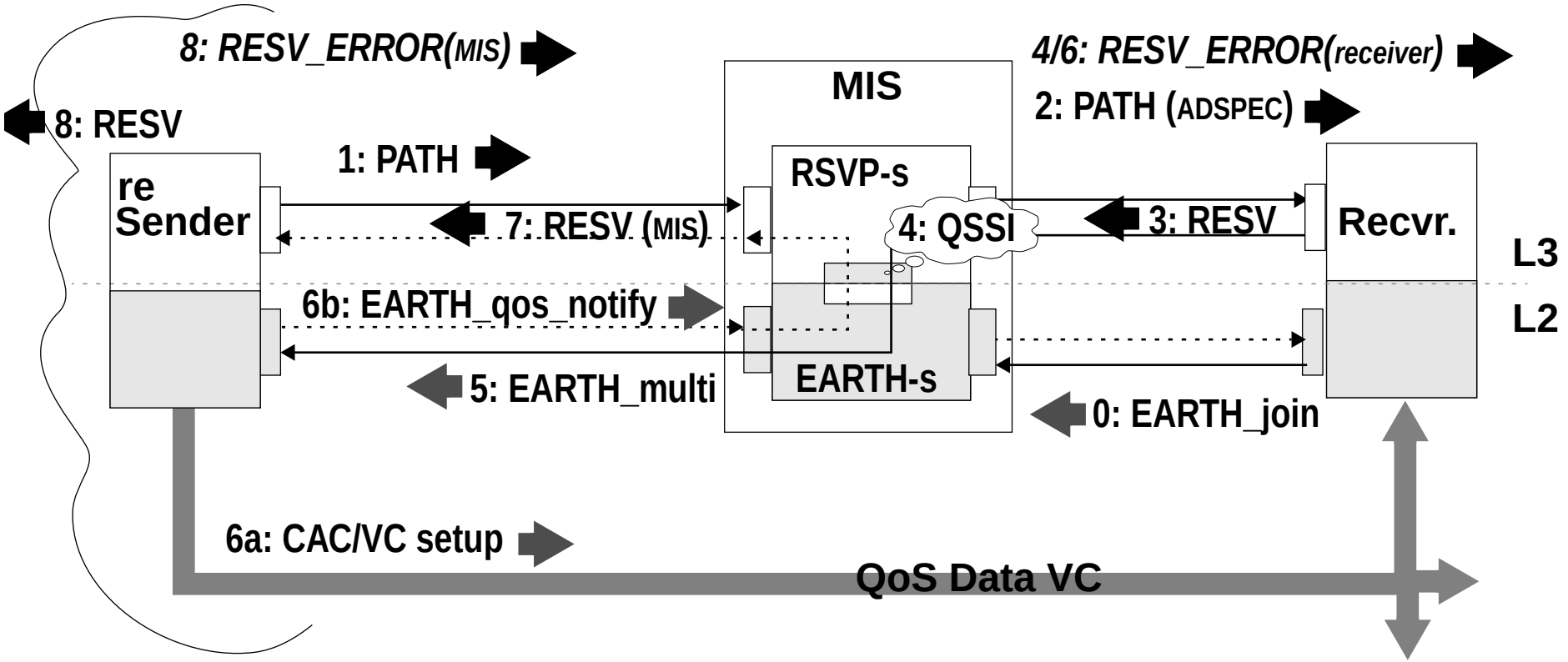
MIS: Generic View



- ***IntServ Server*** **is co-located with** ***Layer-2_QoS_aware Multicast ARP server*** **(single point of interworking between layers).**
- **Joint operation of Layer 2 and Layer 3 with a strict functional separation, no changes to protocol semantics in both layers;**

smirnow@fokus.gmd.de

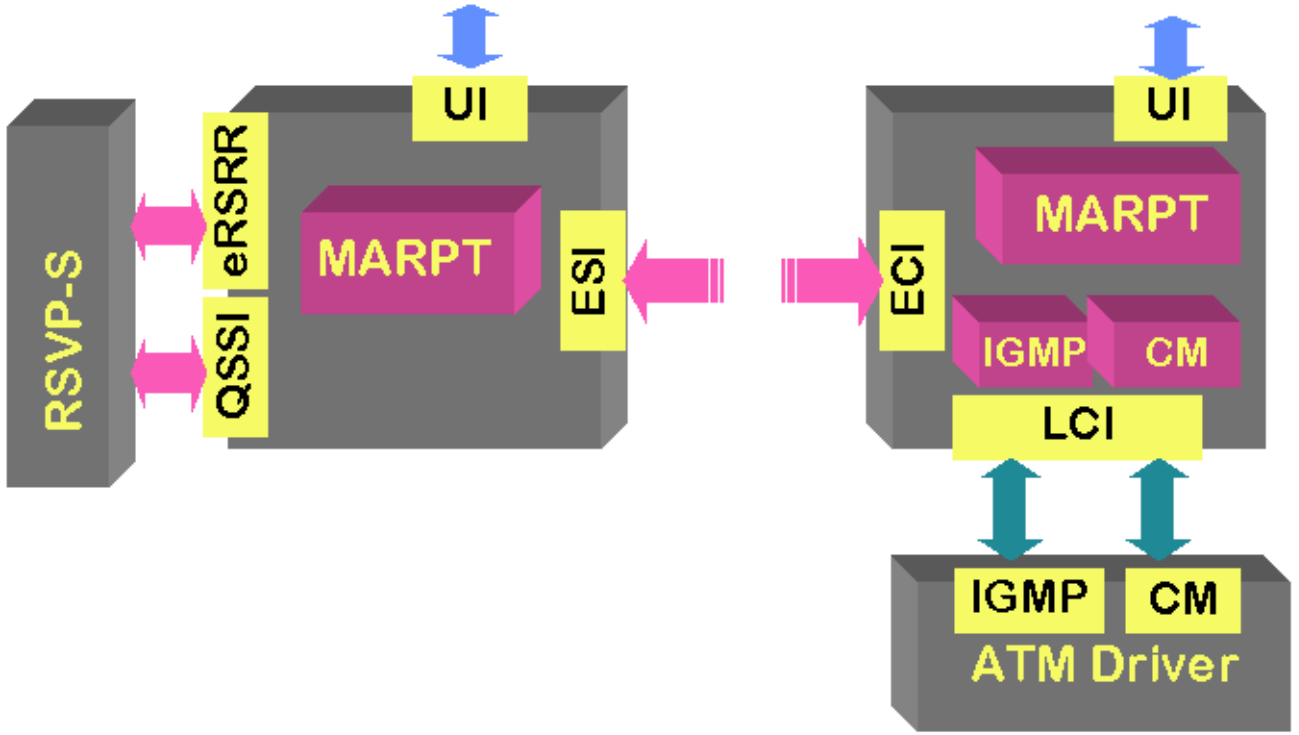
MIS: Practical View



- ***IntServ Server*** **is RSVP-server - conformant to RFC 2216, inevitable in IP over ATM [draft-ietf-issll-atm-framework-01];**
- ***Layer-2_QoS_aware Multicast ARP server*****: = EARTH server [draft-smirnov-ion-earth-02]**

smirnow@fokus.gmd.de

EARTH implementation



➠ *QSSI* - QoS Support Interface; ➠ *eRSRR* - EARTH Routing Support for Resource Reservation (option for RSVP as a QoS setup); ➠ *UI* - User Interface; ➠ *CM* - ATM Connection Management; ➠ *ESI, ECI* - EARTH server and client Interfaces, ➠ *LCI* - local client interface (to kernel components)

smirnow@fokus.gmd.de

Summary

- The architecture is open;
- MIS integrates layer2 and layer3 processing thus minimizing overhead;
- Remote capacity admission control (merging);
- ATM short-cuts are supported for multicast flows;
- No changes to RSVP semantics and no changes to Multicast ARP (if QoS and short-cuts aware) are needed;
- Quantized heterogeneity model is supported;
- 2 independent implementations exist

smirnow@fokus.gmd.de

Future work

- Interop experiments with MARS;
- Trials with AAA services (charging and accounting for IP multicast with QoS over ATM);
- Support for IP multicast to ADSL extensions to ATM cloud

smirnow@fokus.gmd.de