On the Relationship between PSAMP and IPFIX
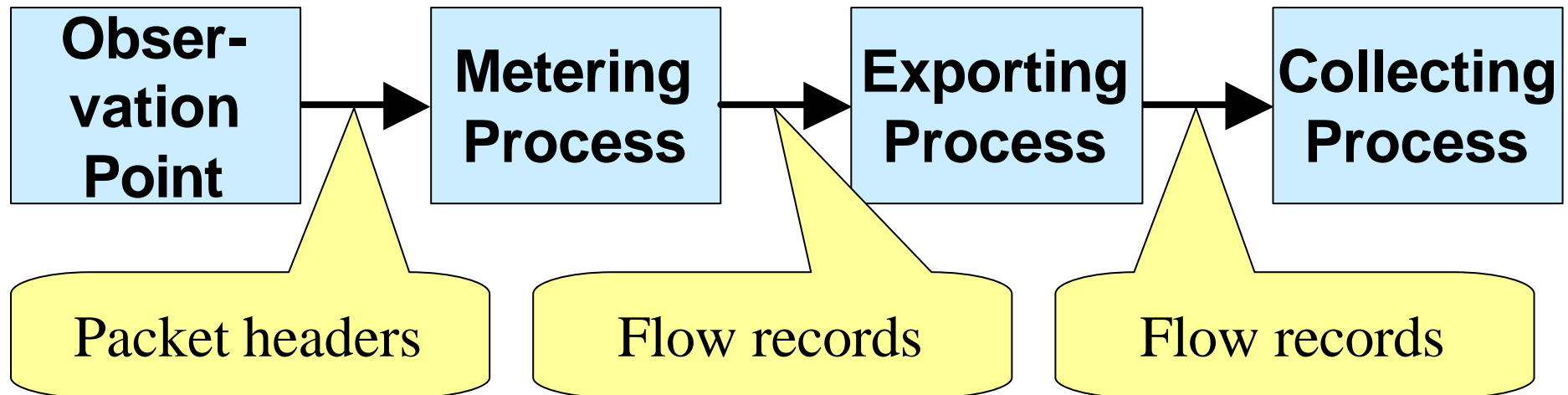
draft-quittek-psamp-ipfix-01.txt

Benoit Claise, Cisco Systems

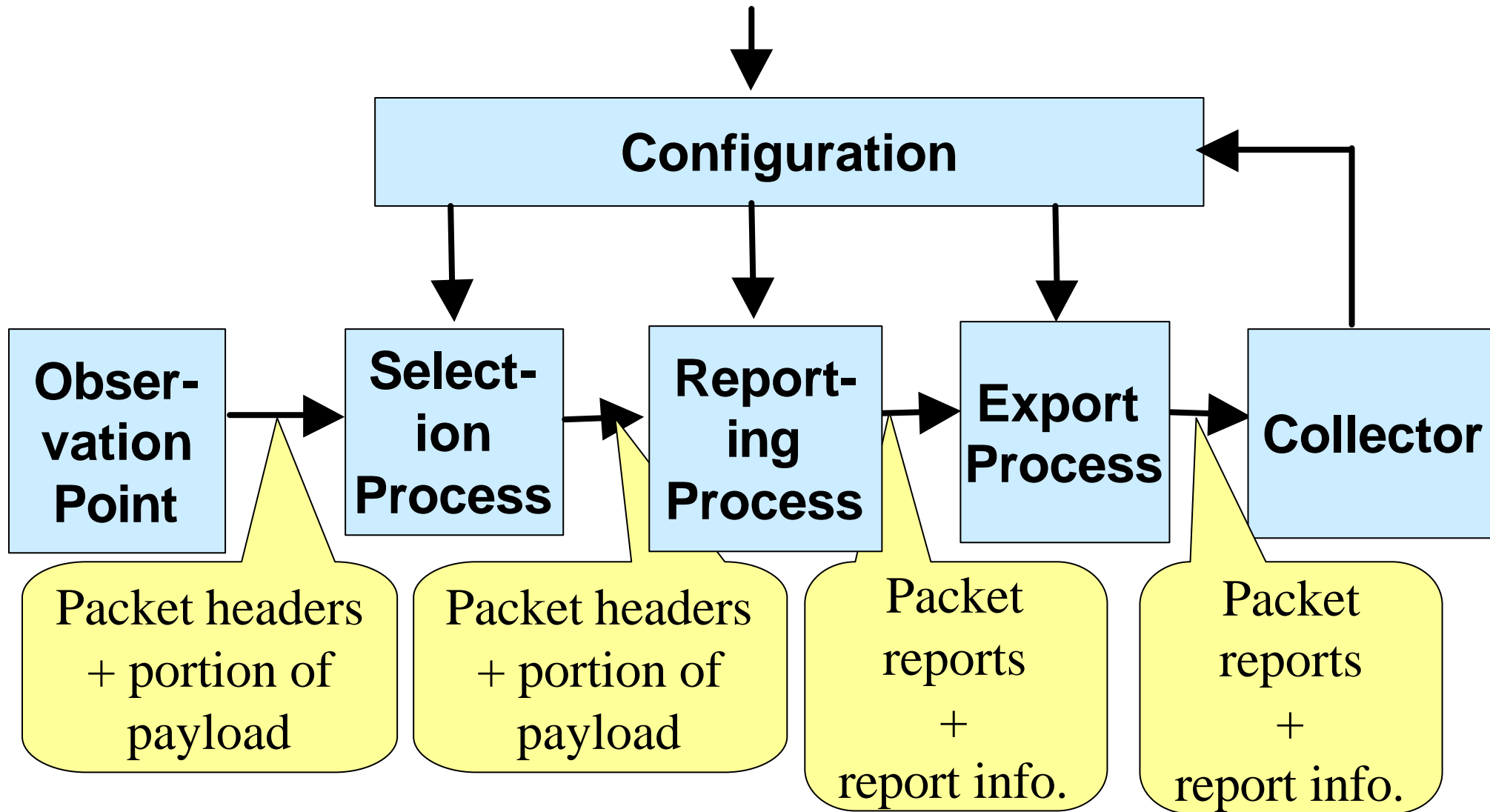Juergen Quittek, NEC Europe ltd.

Motivation for Discussing Relationship

- Goals
  - avoid duplication of work
  - increase mutual benefits between the WGs
  - harmonize standards to be developed by the WGs

- Issues
  - potential overlap of activities
  - potential mutual complements
  - common issues that should be harmonized

- Start/Continue the discussion

IPFIX Architecture

Obser- vation Point	→	Metering Process	→	Exporting Process	→	Collecting Process

Packet headers

Flow records

Flow records

PSAMP Architecture

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                              │            Configuration             │◄──┐
                              └──────────────────────────────────────┘   │
                                  │           │            │             │
                                  ▼           ▼            ▼             │
┌──────────┐   ┌──────────┐   ┌──────────┐   ┌──────────┐   ┌──────────┐
│ Obser-   │──▶│ Select-  │──▶│ Report-  │──▶│ Export   │──▶│Collector │
│ vation   │   │ ion      │   │ ing      │   │ Process  │   │          │
│ Point    │   │ Process  │   │ Process  │   │          │   │          │
└──────────┘   └──────────┘   └──────────┘   └──────────┘   └──────────┘
```

| Packet headers + portion of payload | Packet headers + portion of payload | Packet reports + report info. | Packet reports + report info. |

Architecture Difference #1: Configuration

- An explicit goal of the PSAMP Working Group to define ways of configuring the packet selection, sampling and exporting processes. A MIB is defined in charter.

- For IPFIX, configuration of metering process and exporting process is mentioned in the requirements document, but there are no plans yet for standardizing IPFIX configuration.

Architecture Difference #2: Flow Notion

- IPFIX generates and exports flow records containing information per flow

- PSAMP generates and exports information per packet
  - No notion of flows in PSAMP, packet fragments
  - But charter and draft-ietf-psamp-framework-02.txt speak of exporting some extra attributes:
    - source/destination interfaces,
    - input sequence number
    - etc…

Architecture Difference #3:
Transport Protocol Requirements

- IPFIX: "The protocol must run over an IETF approved congestion-aware transport protocol such as TCP or SCTP."

- PSAMP: notion of a congestion-avoidance mechanism via application layer heartbeat or throttling via a configuration parameter.
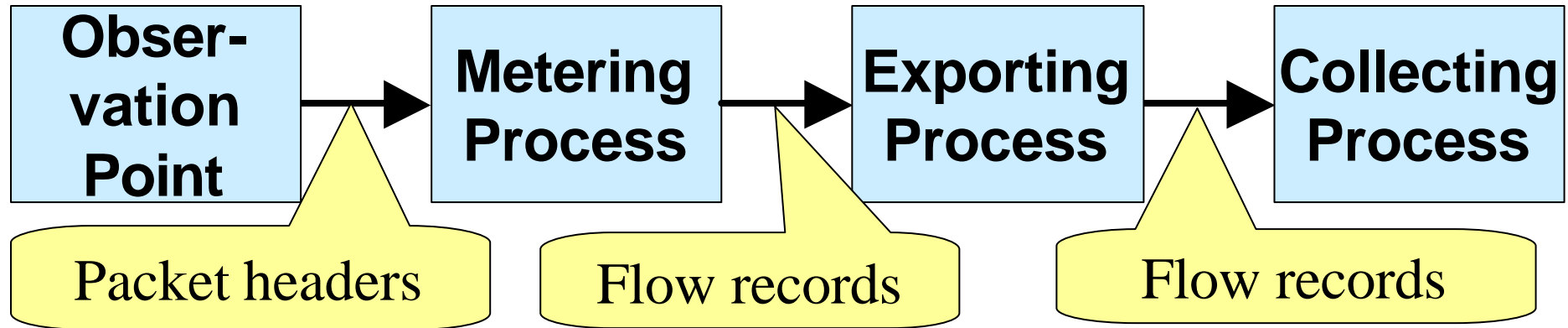
Conceptual Difference #1:

- Both IPFIX metering process and PSAMP selection process can select observed packets based on packet header content and packet treatment.

- But PSAMP selection process can compute some values out of the observed packet, i.e. a hash value.

- This hash value can be used as a selector by the selection process.
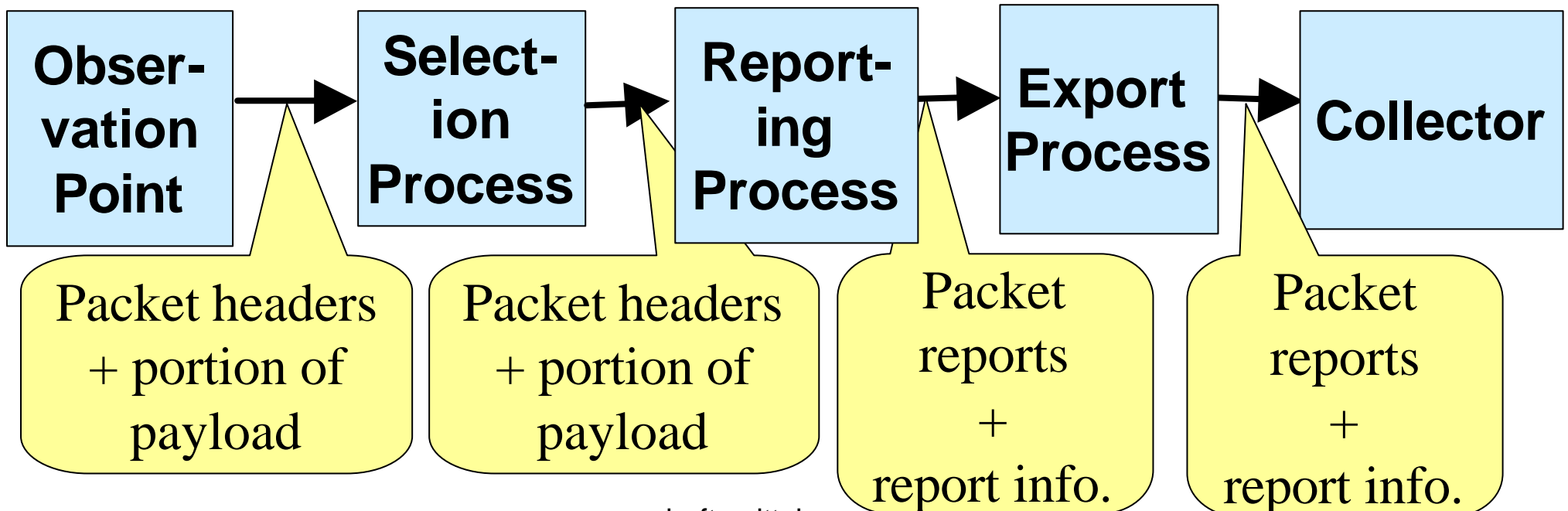
Conceptual Difference #2:

- PSAMP might report information about "subsequent bytes of the packet and encapsulation headers if present"

- While IPFIX concentrates on reporting information on the IP packet header only.

- As a consequence, some privacy issues with PSAMP

- Can't have a fixed length packet fragment!

Harmonization: Terminology

IPFIX

| Obser-vation Point | → | Metering Process | → | Exporting Process | → | Collecting Process |

Packet headers

Flow records

Flow records

PSAMP

| Obser-vation Point | → | Select-ion Process | → | Report-ing Process | → | Export Process | → | Collector |

Packet headers + portion of payload

Packet headers + portion of payload

Packet reports + report info.

Packet reports + report info.

Harmonization:
IPFIX as a PSAMP reporting protocol?
PSAMP as a IPFIX component?

| Obser-vation Point | → | PSAMP Selection Process | → | IPFIX Metering Process | → | IPFIX Export. Process | → | IPFIX Collect. Process |

Packet headers + portion of payload

filtering, sampling, hash based selection: packet headers + portion of payload

Packet report (*) + report info.

Packet reports (*) + report info.

(*) packet fragment = a flow of packet with just one data type

Harmonization:
IPFIX as a PSAMP reporting protocol?
PSAMP as a IPFIX component?

- Levels of possible re-use
  - information model
  - data model + protocol
- Investigate if IPFIX meets the PSAMP requirements for reporting,
- … not for configuration

Thank you for your attention !

Questions ?

Feedback ?