



**IMT Atlantique**

Bretagne-Pays de la Loire  
École Mines-Télécom

**IOT PANORAMA**

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ALEXANDER PELOV**

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1500 B.C.

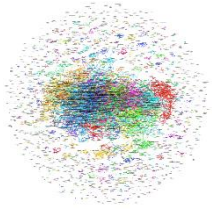


Culture!

Images by Gerd Altmann from Pixabay







RDF

XML ≈ JSON

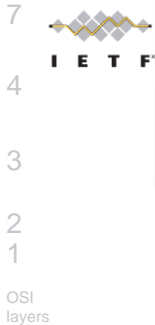
HTTP App

TCP – UDP

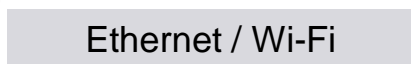
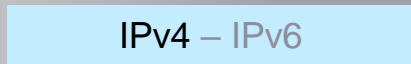
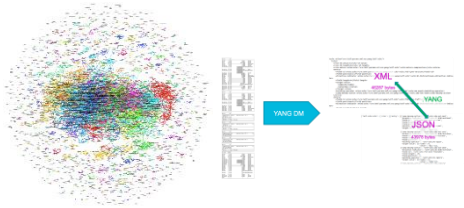
IPv4 – IPv6

Ethernet / Wi-Fi

Throughput : Gbit/s  
MTU : ~1000 Bytes



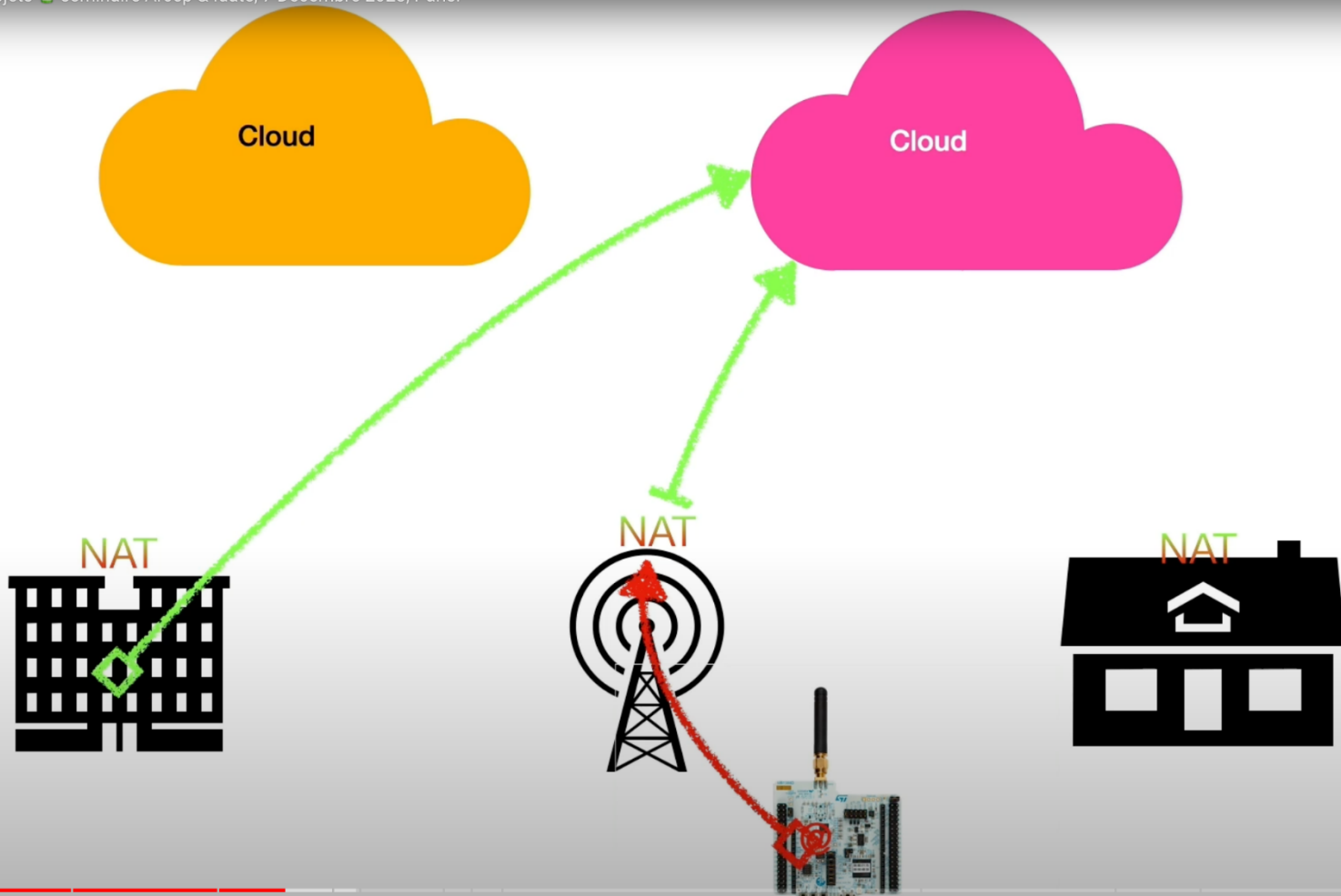
## Information Management

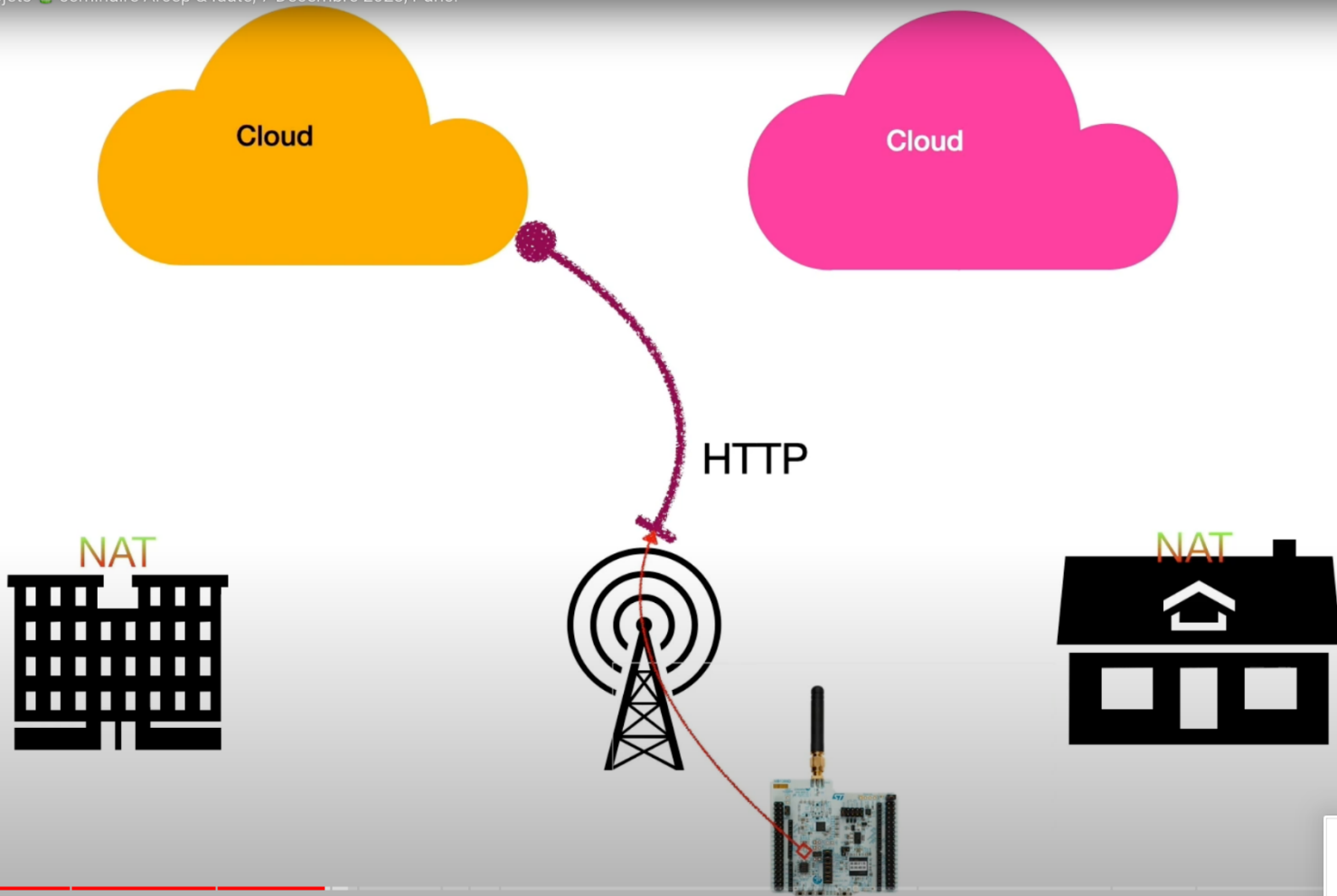


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layers

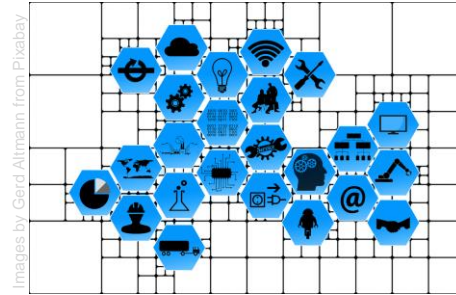
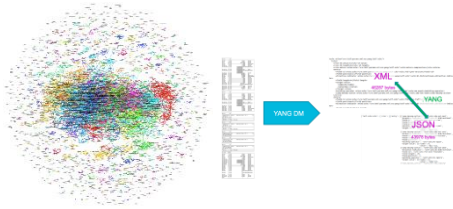
Throughput : Gbit/s  
MTU : ~1000 Bytes







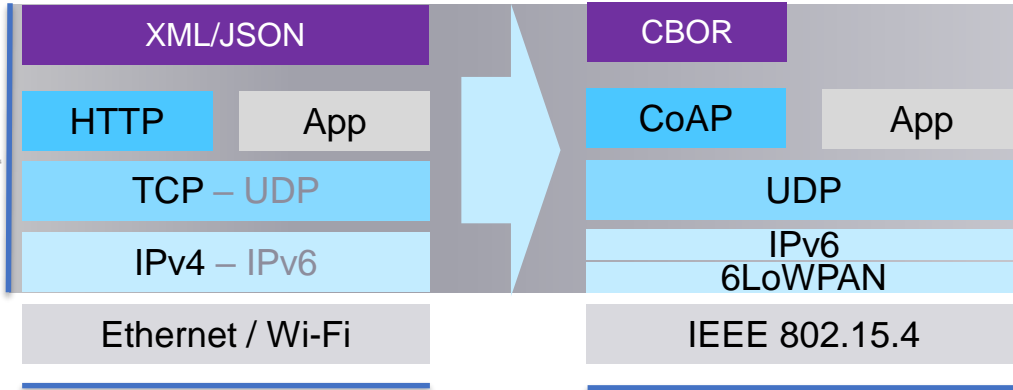
## Information Management



Images by Cerd Altmann from Pixabay

**RDF**      **YANG**

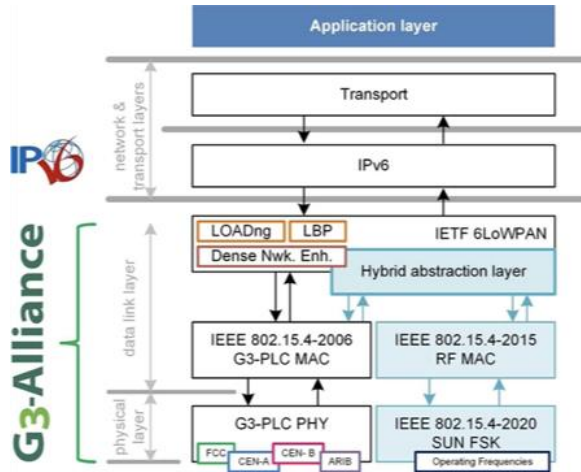
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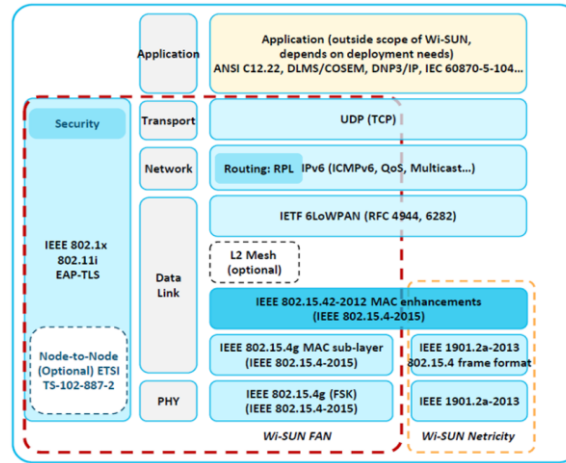
Throughput : Gbit/s  
MTU : ~1000 Bytes

Throughput : 100 Kbit/s  
MTU : ~100 Bytes

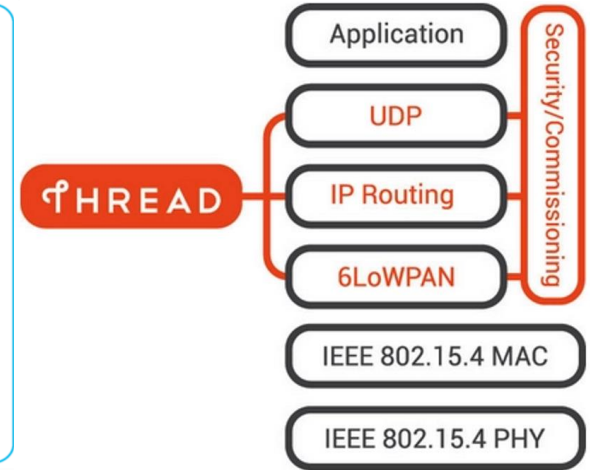
OSI layers



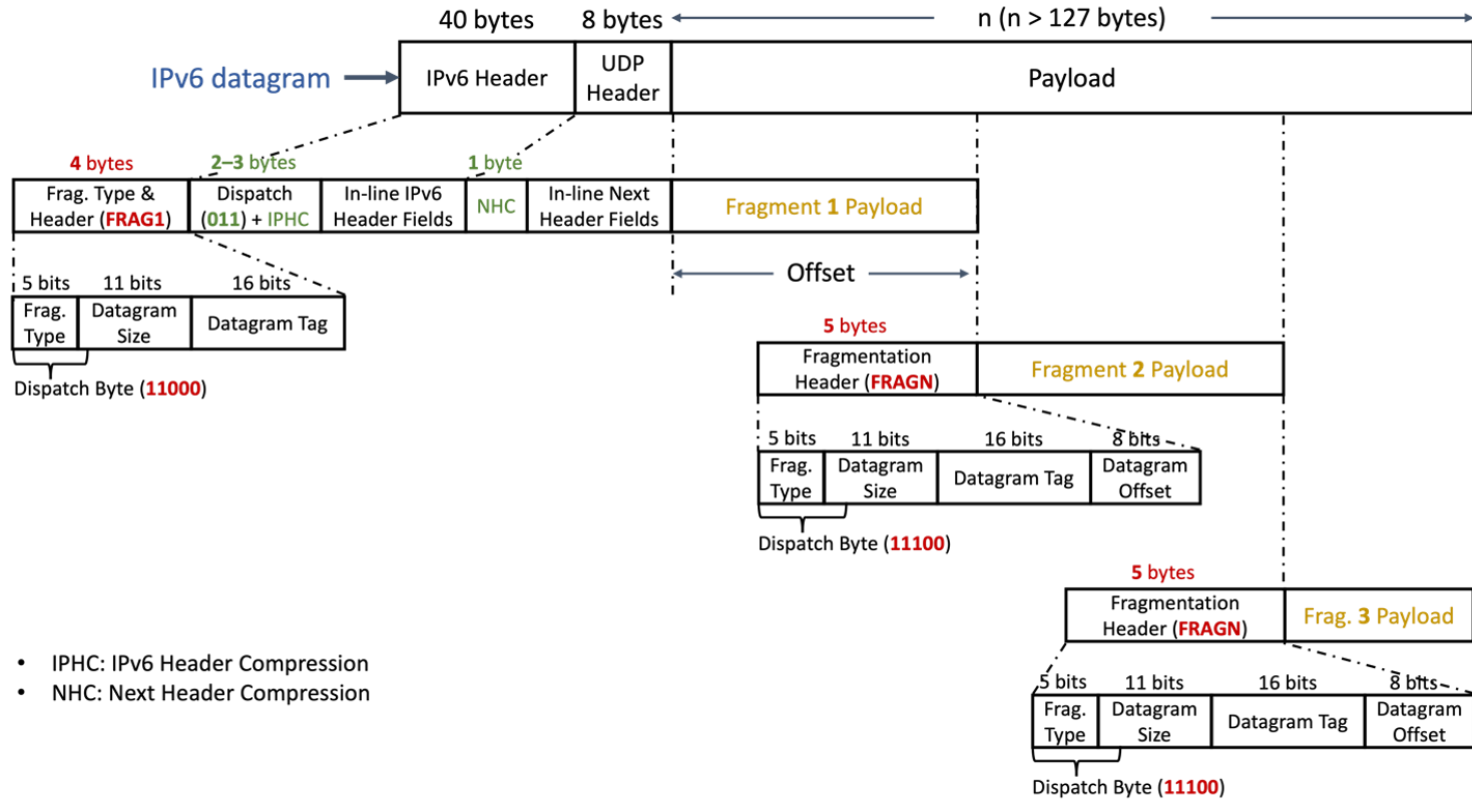
**G3-PLC**



**Wi-SUN**



**THREAD**



- IPHC: IPv6 Header Compression
- NHC: Next Header Compression

## ▶ Outline of the MOOC:

- Week 1: MAC Layer: **IEEE Std 802.15.4 CSMA/CA & TSCH**
- Week 2: **6TiSCH** Adaptation Layer
- Week 3: **IPv6 & 6LoWPAN** Adaptation Layer
- Week 4: Routing Layer: **RPL**

**coursera**

## ▶ Educational Team:

- Georgios Z. Papadopoulos
- Nicolas Montavont
- Géraldine Texier
- Remous-Aris Koutsiamanis

## ▶ Interviews from the industrial community:

- Pascal Thubert, Cisco Systems**
- Thomas Watteyne, Analog Devices, Falco**
- Rémi Dubaele, ENEDIS**

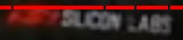




Pascal Thubert



David Le Goff





# INTERNET PROTOCOLS

## Information Management

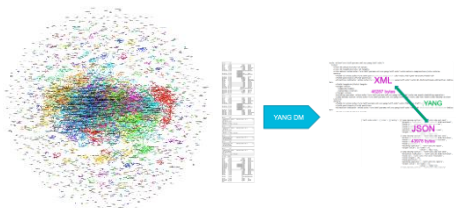
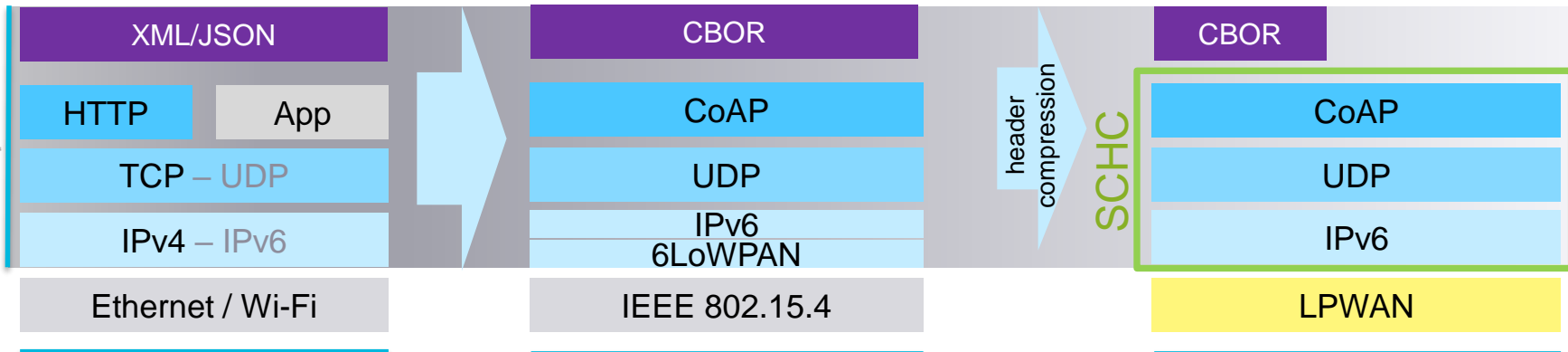


Image by jefferrb from Pixabay

RDF YANG

SenML TLV

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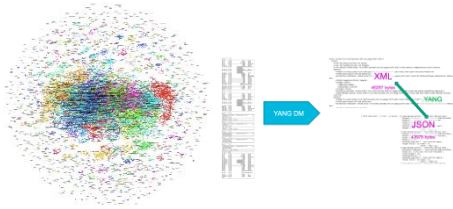
Throughput : Gbit/s  
MTU : ~1000 Bytes

Throughput : 100 Kbit/s  
MTU : ~100 Bytes

Throughput : < 10 Kbit/s  
MTU : ~10 Bytes

# Existing Vertical

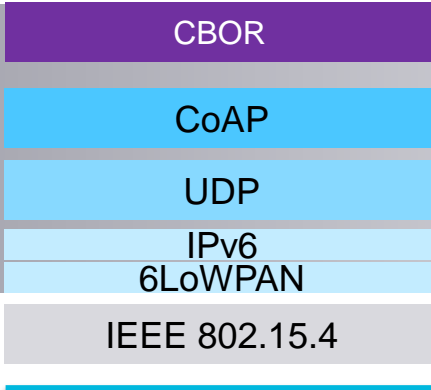
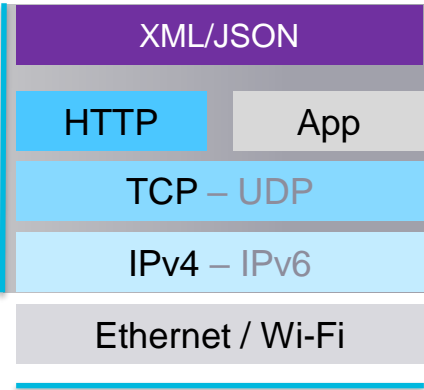
## Information Management



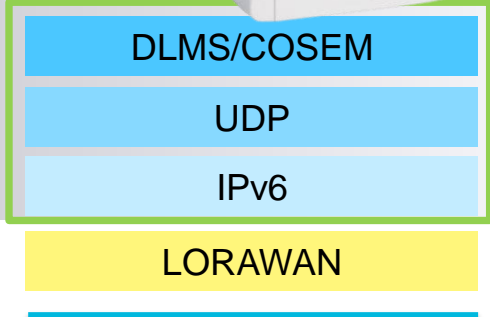
**RDF**      **YANG**

**SenML**      **TLV**

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header compression  
**SCHC**

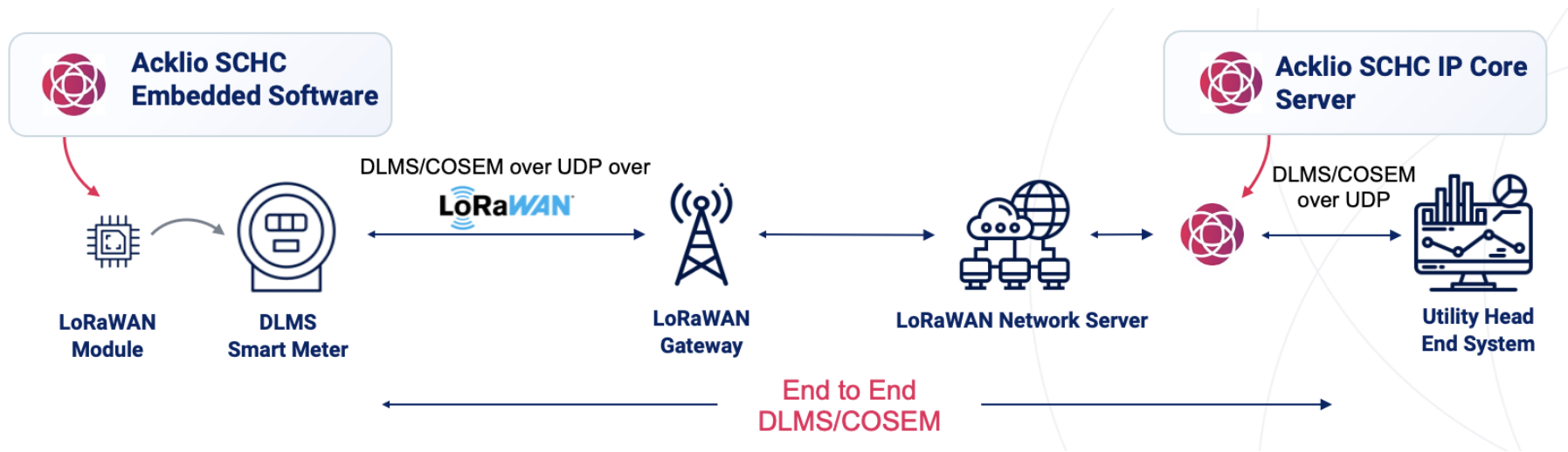


Throughput : Gbit/s  
MTU : ~1000 Bytes

Throughput : 100 Kbit/s  
MTU : ~100 Bytes

Throughput : < 10 Kbit/s  
MTU : ~10 Bytes

# SCHC SOLUTION OVERVIEW FOR ELECTRICITY METERING

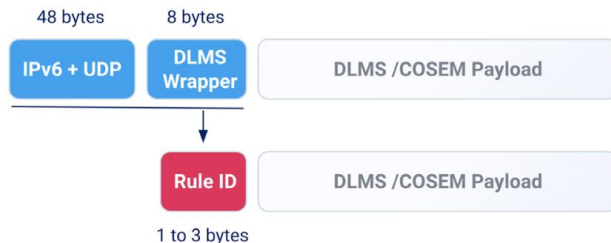


SCHC is integrated in a LoRaWAN AMI network through:

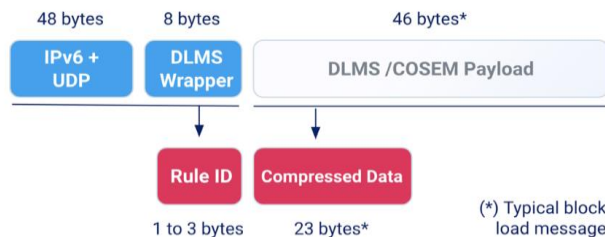
- **A SCHC software library embedded into the Smart Meter or its LoRaWAN communication module**
- **A SCHC IP Core Server positioned between a LoRaWAN Network Server and the Utility Head End System**

# SCHC VALUE PROPOSITION DEMONSTRATED

- SCHC provides a **compression ratio of 90%** for IPv6 headers over LoRaWAN.



- Applying compression to DLMS/COSEM payload Acklio SCHC achieves a **75% compression rate on the whole IPv6/UDP/DLMS packet**.



# LORAWAN, ELIGIBLE FOR ELECTRICITY METERING IN BRAZIL

ABNT adopted DLMS/COSEM in its NBR 16969 standard

ABNT describes LoRaWAN as an eligible connectivity with SCHC



## SCHC

- RFC 8724
- RFC 9011
- LA TS 010 – 1.0.0
- DLMS blue book ed. 14

SMART METER

# Nimbus. Smarter than ever.

An unprecedented innovation in the industry to give you **the edge in performance, safety and sustainability**. Discover the new Italgas smart meter and step into the ecological transition.

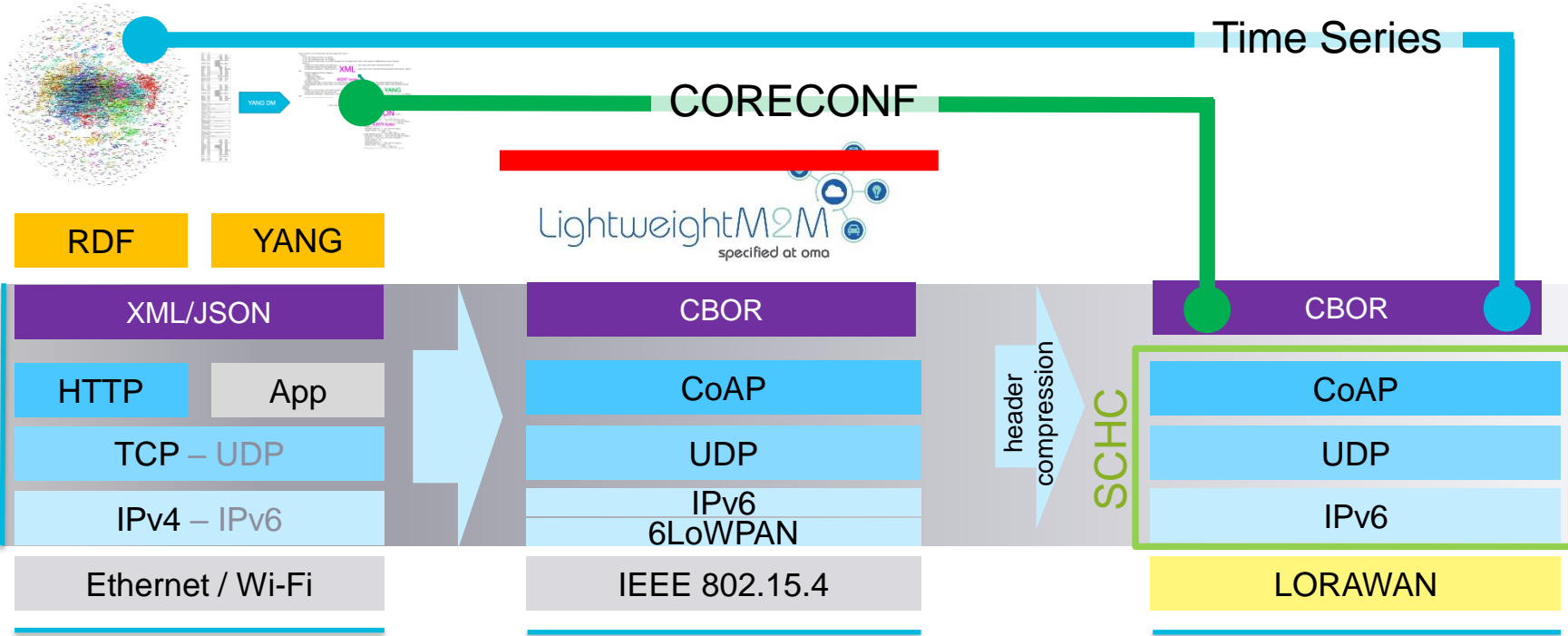


Paris, November 29, 2023 - Italgas unveiled today in Paris the world's most cutting-edge 'H2 ready' smart meter. This technological gem enables Italgas networks to efficiently accommodate, distribute, and measure various types of gases, including blending among them.

# OCIF RESEARCH TOPIC

## Information Management

## Time Series



Throughput : Gbit/s  
MTU : ~1000 Bytes

Throughput : 100 Kbit/s  
MTU : ~100 Bytes

Throughput : < 10 Kbit/s  
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