



# DVB-S2 GSE

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IAPC - ATV Technical Goup

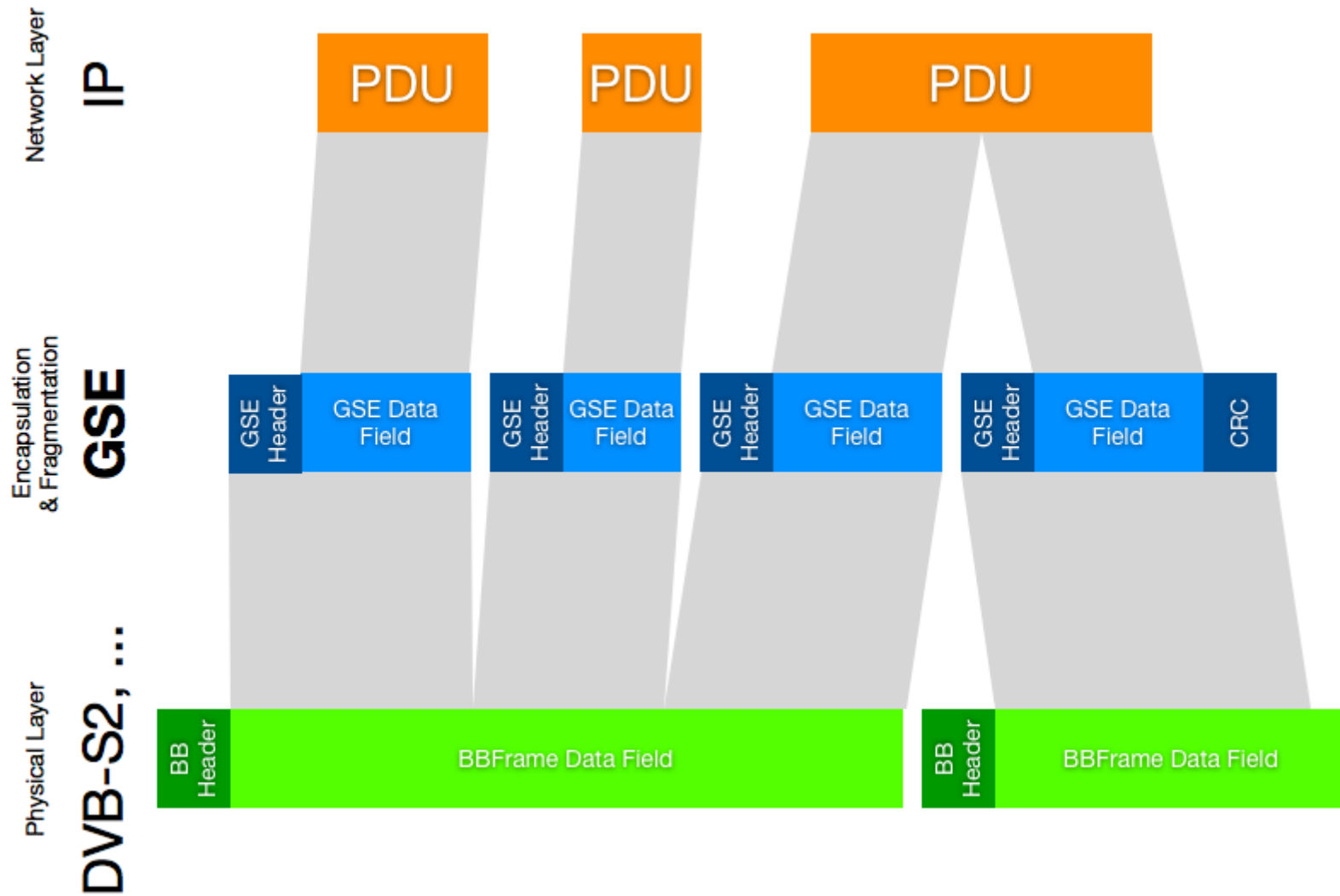
# Reminder

- DVB-S
  - a unique data format, the MPEG Transport Stream
- DVB-S2
  - a flexible input stream adapter suitable for streams of various formats
  - a powerful FEC system based on LDPC (Low-Density Parity Check) codes concatenated with BCH codes, allowing Quasi-Error-Free operation at about 0,7 dB to 1 dB from the Shannon limit
  - a wide range of code rates (from 1/4 up to 9/10); 4 constellations, ranging in spectrum efficiency from 2 bit/s/Hz to 5 bit/s/Hz (QPSK, 8PSK, 16APSK, 32APSK)
  - a set of three spectrum shapes with roll-off factors 0,35, 0,25 and 0,20
  - Adaptive Coding and Modulation (ACM) functionality, optimizing channel coding and modulation on a frame-by-frame basis

# Generic Stream Encapsulation (GSE)

- DVB-S2 GSE
  - provides means to carry packet oriented protocols such as IP on top of uni-directional physical layers such as DVB-S2, DVB-T2 and DVB-C2.
- additional features
  - support for multi-protocol encapsulation  
IPv4, IPv6, MPEG, ATM, Ethernet, 802.1pQ VLANs, etc.
  - a mechanism for fragmenting IP datagrams or other network layer packets over Base Band frames to support ACM/VCM
  - Support of several addressing modes  
6-byte MAC address including multicast and unicast, a MAC address-less mode

# Generic Stream Encapsulation (GSE)

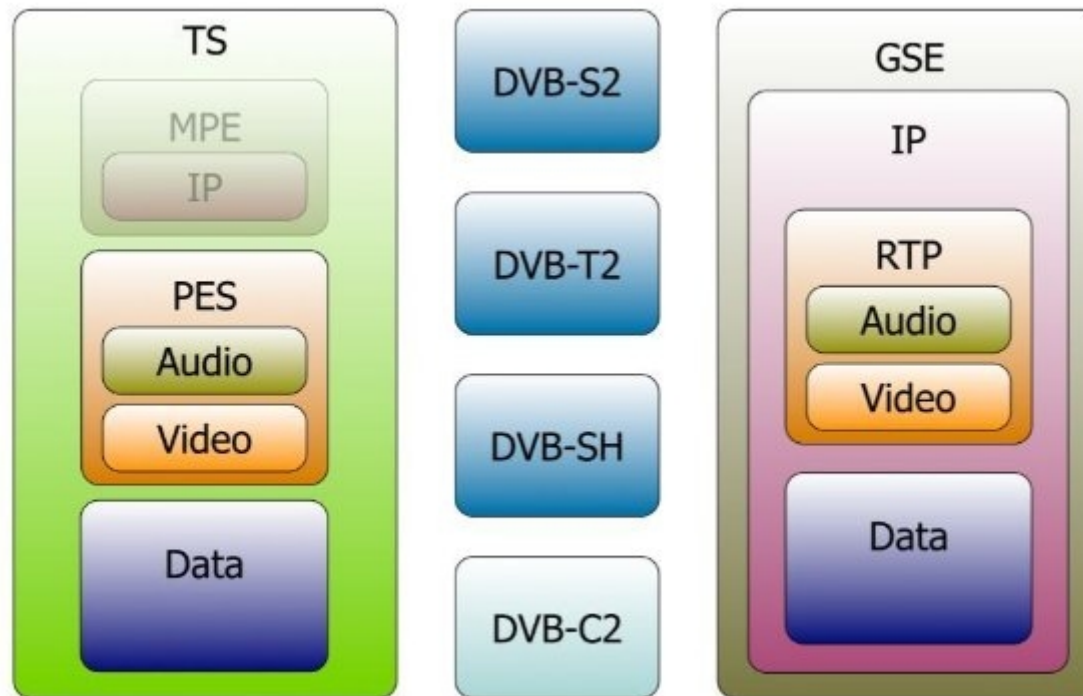


PDU Protocol Data Unit

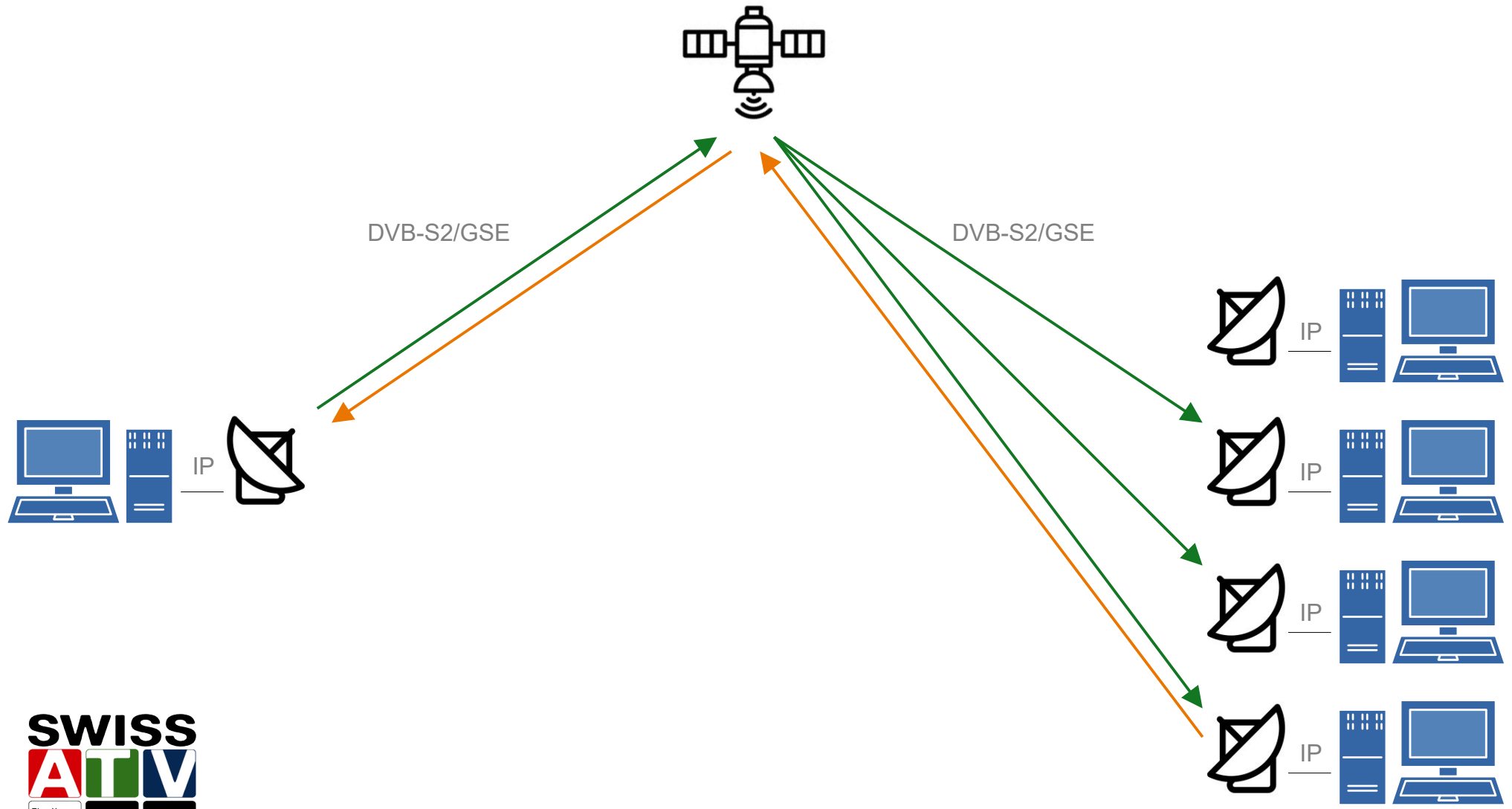


# GSE – a new area for ham to explore

- Complementing the MPEG-2 Transport Stream



# GSE – a new area for ham to explore



# GSE – a new area for ham to explore

- Where to start and learn
  - **gr-dvbgse** (GNU Radio)  
an OOT module developed by Ron W6RZ  
<https://github.com/drmpeg/gr-dvbgse>
  - **using GSE and DVB-S2 for IP traffic**  
a post from Daniel EA4GPZ how to setup a DVB-S2 GSE one-way link using the GNU Radio out-of-tree module gr-dvbgse and an SDR for transmission, MiniTiouner, Longmynd and some software written by him  
<https://destevez.net/2022/11/using-gse-and-dvb-s2-for-ip-traffic/>
  - **leandvb** (github work branch)  
a DVB-S/S2 SDR software decoder that can output BBframes  
<https://github.com/pabr/leansdr/blob/master/src/leansdr/generic.h>
  - **DVB-S2 Demod GUI**  
by Marcel Kröner, a DVB-S/S2 SDR software decoder that can output BBframes  
[http://v.1337team.tk/dvb-s\\_gui\\_amsat.zip](http://v.1337team.tk/dvb-s_gui_amsat.zip)
  - **Special Longmynd “GSE” version for RX and Pluto firmware for TX**  
in development by Evariste F5OEO

# References

The screenshot shows the homepage of swissATV.ch. The header features the logo 'swissATV.ch' with the tagline 'groupe technique ATV de l'IAPC'. A navigation menu includes 'Home', 'News', 'Activités', 'Hardware', 'Académie', and 'Labs'. A search bar and a 'Font Size' control are also present. Below the header, a secondary navigation bar offers categories like 'All', 'News', 'Labs', 'Tests', 'Hardware', 'Software', and 'Académie', along with sorting options: 'Default', 'Title', 'Date', and 'Random'. The main content area displays four article cards:

- A-Tech 2014 Automne**: 2014-10-22 09:50:46. Image shows a group of people at a workshop.
- DATV-Express DVB-T 1 MHz**: 2014-10-13 11:10:14. Image shows a green PCB.
- H264 DigiThin**: 2014-10-01 17:23:43. Image shows a yellow PCB.
- DVB-T2, le standard pour...**: 2014-08-15 12:30:06. Image shows a tablet displaying 'i-TAB DTV'.

Below these cards is a 'Hardware' section with five featured items, each with a 'Read More' button:

- SR-Systems
- MK808 Digitale
- BATC DTX1
- AGAF
- Hides USB DVB-T



Good hack !