DBBC3 towards the BRAND EVN Receiver

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DBBC3: DIGITAL VLBI Backend
EVN / VGOS / EHT

DBBC3L (-8L8H) 2014 - today **VGOS full-compliant**

input: 8 x IF-4096 MHz (each in the range 0 - 15 GHz)

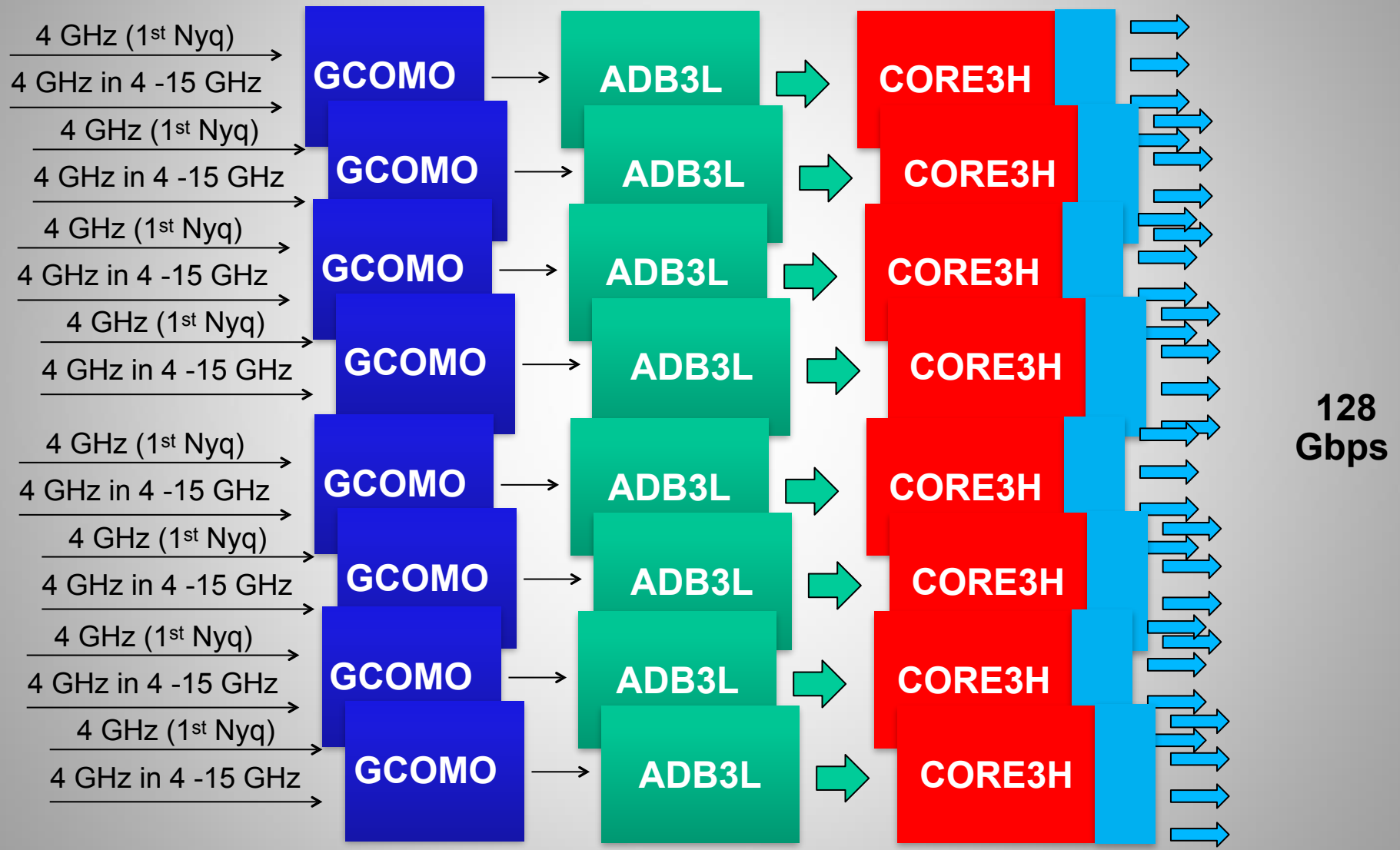
output: **DDC** 1-2-4-8-16-32-64-128 MHz

OCT 512 - 1024 - 2048 MHz

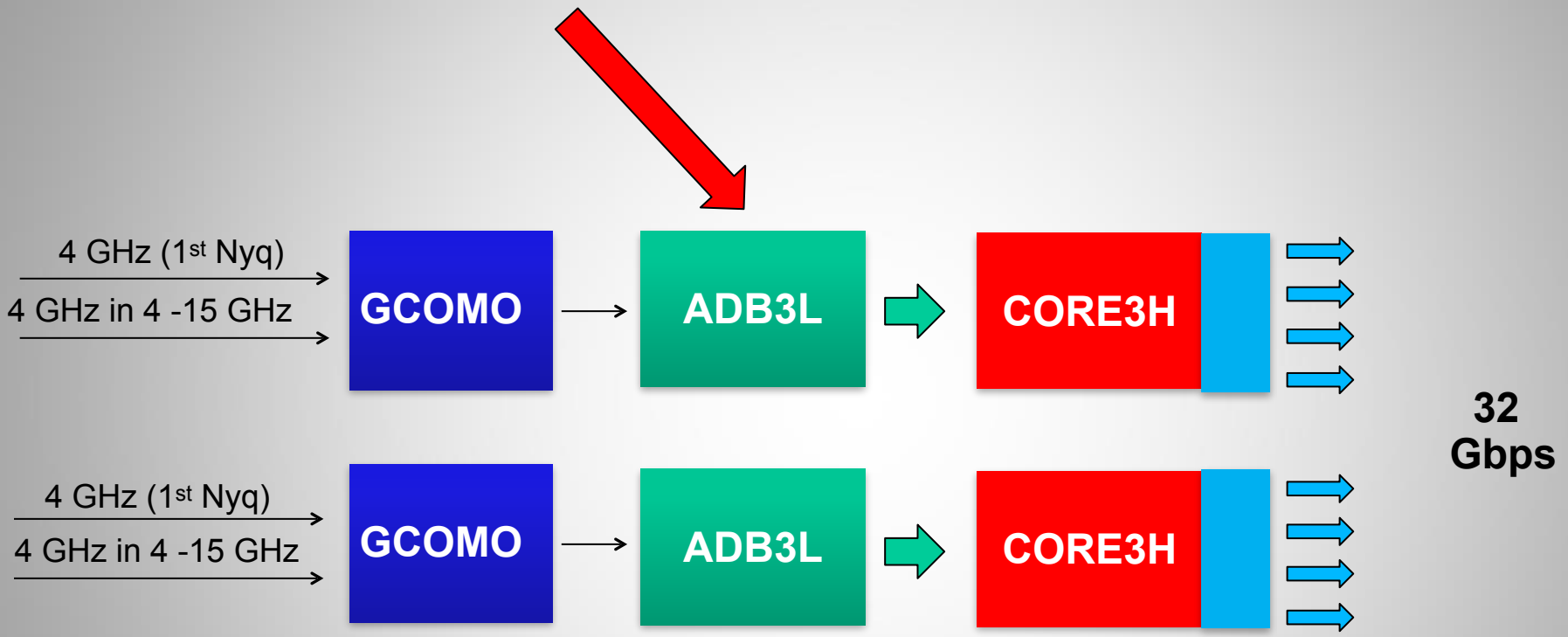
DSC 4096 MHz

Output data rate: 16/32/64/128 Gbps

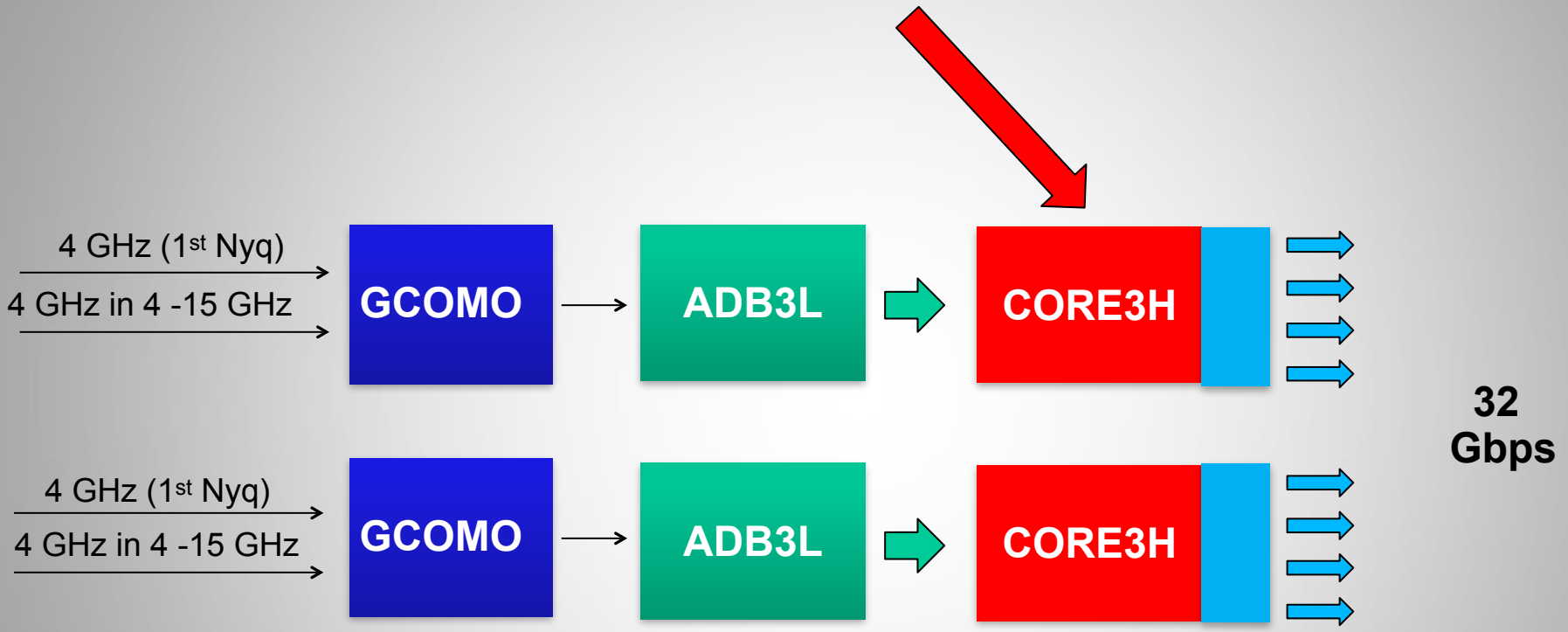
DBBC3L-8L8H VGOS Architecture



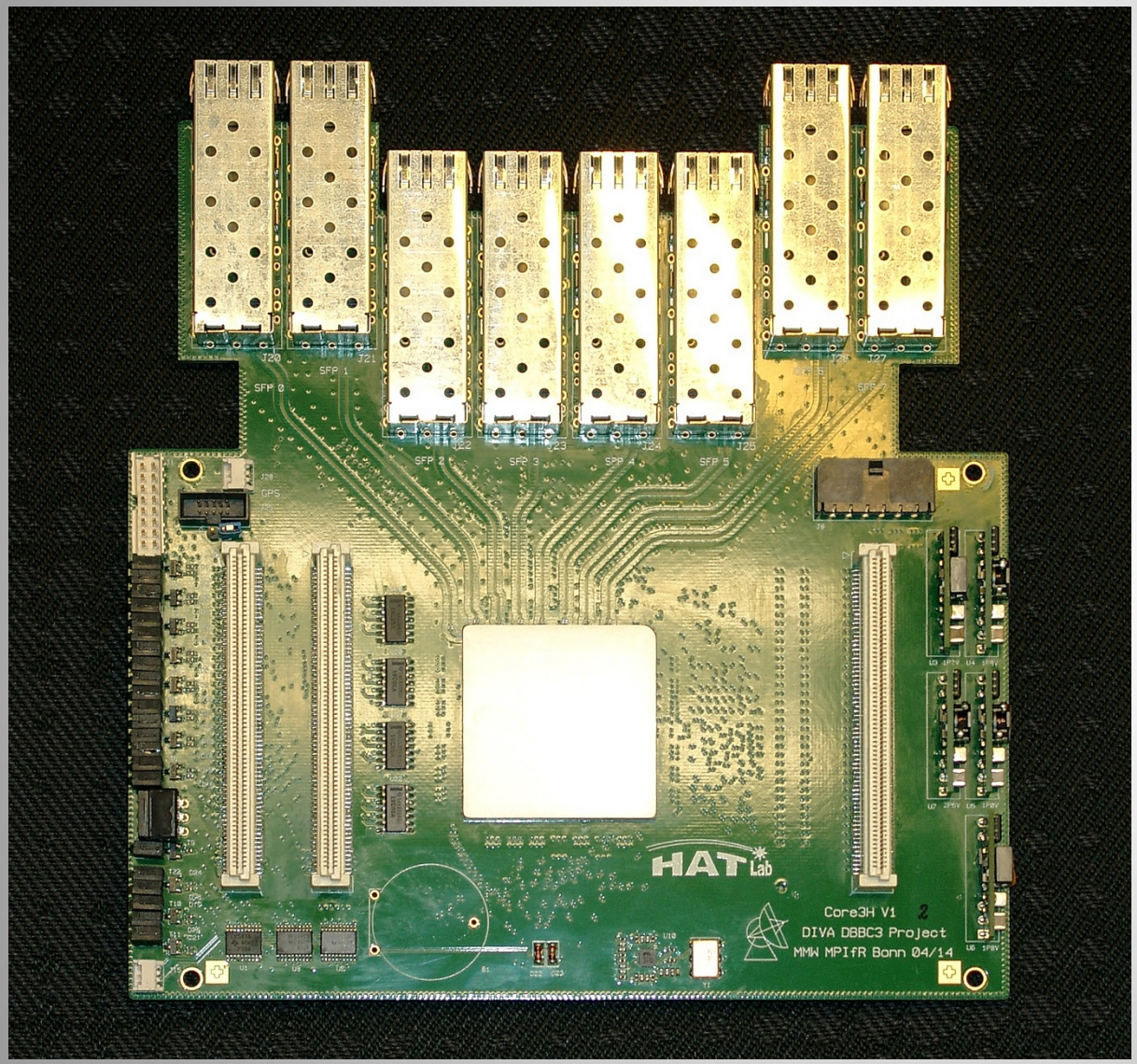
DBBC3L-2L2H Architecture - Sampler



DBBC3L-2L2H Architecture - Processor

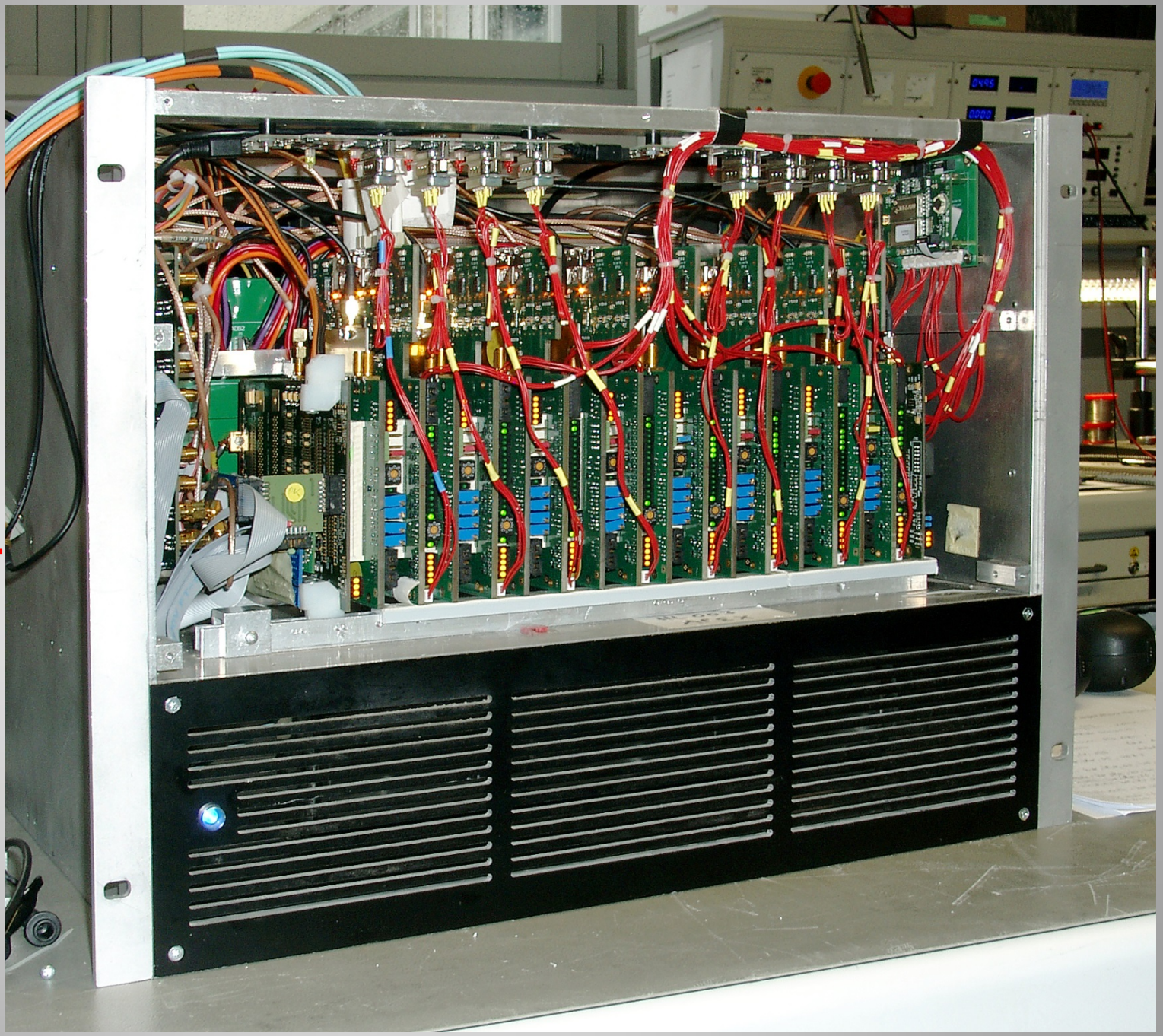


CORE3H



- Input bus: **HSI / HSI2** (128 bit differential)
- Input sampling representation: **10 bit**
- Max Input bandwidth : **4 GHz**
- Processing capability: **DSC, OCT, DDC**
- Max Output: **8 x 10GE SFP+**
- Network Input: **8 x 10GE SFP+**

VGOS
DBBC3L-8L8H



BRAND EVN PROJECT (see next talk)

Complete **BR**OAD_B**AND** VLBI receiver:

- Frequency range: 1.5 - 15.5 GHz (covering L-S-C-X-Ku bands)

- Development of a complete prototype as demonstrator for prime focus

- Research for secondary focus feed

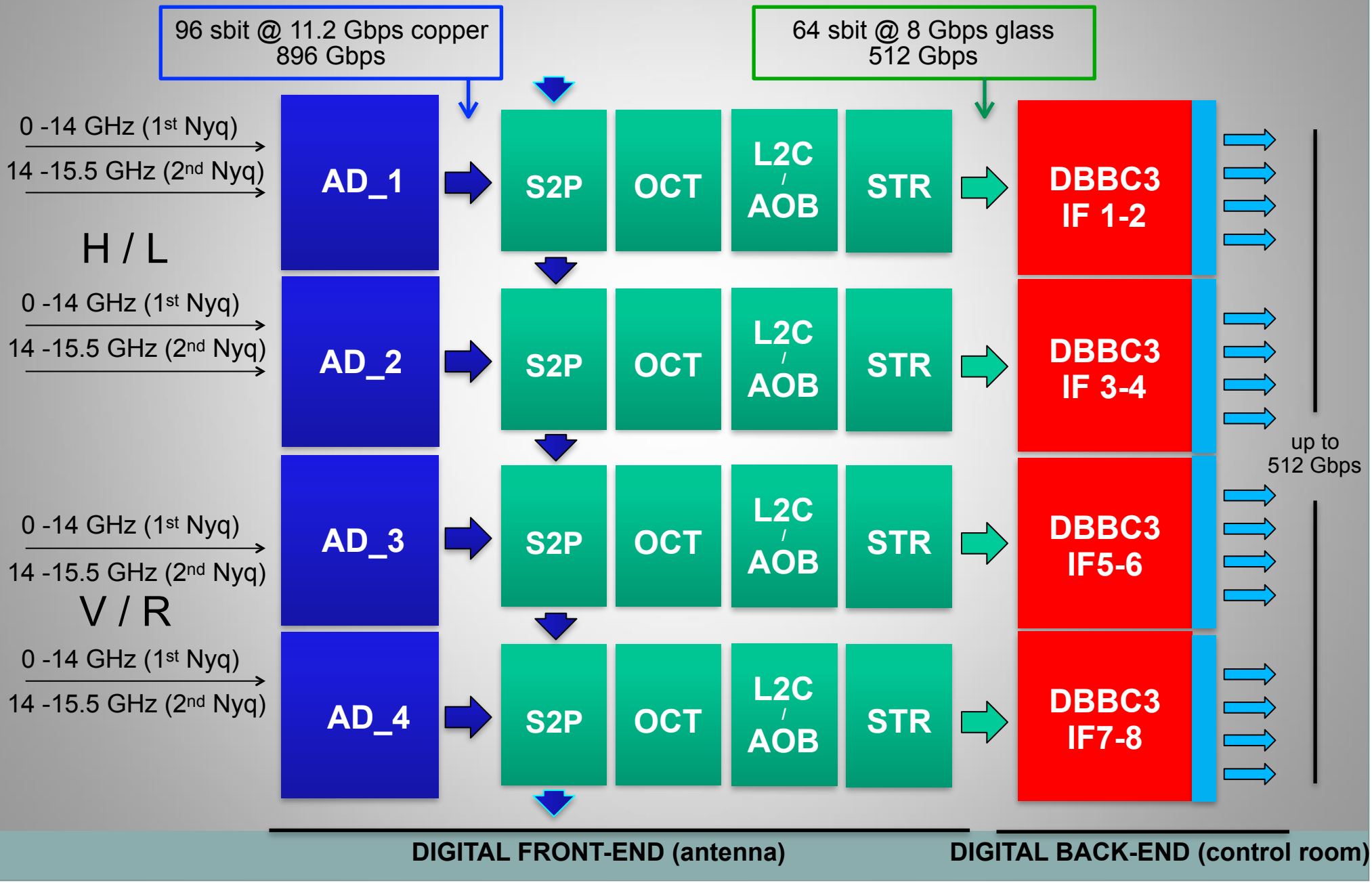
- The entire full band digitized without analogue down-conversion

- Simultaneous multi-wavelenght VLBI for astronomy

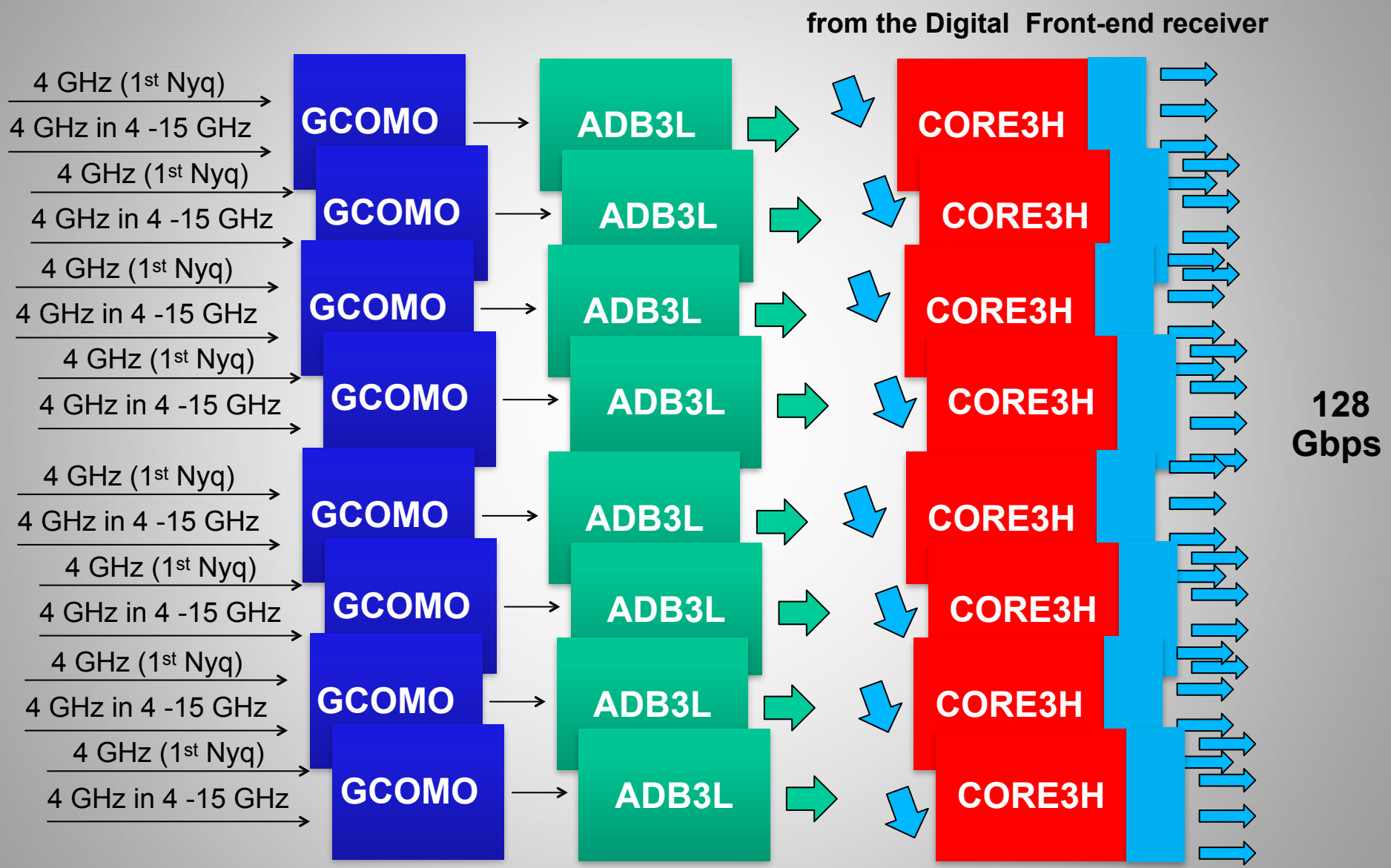
- Includes VGOS band

- more later …..

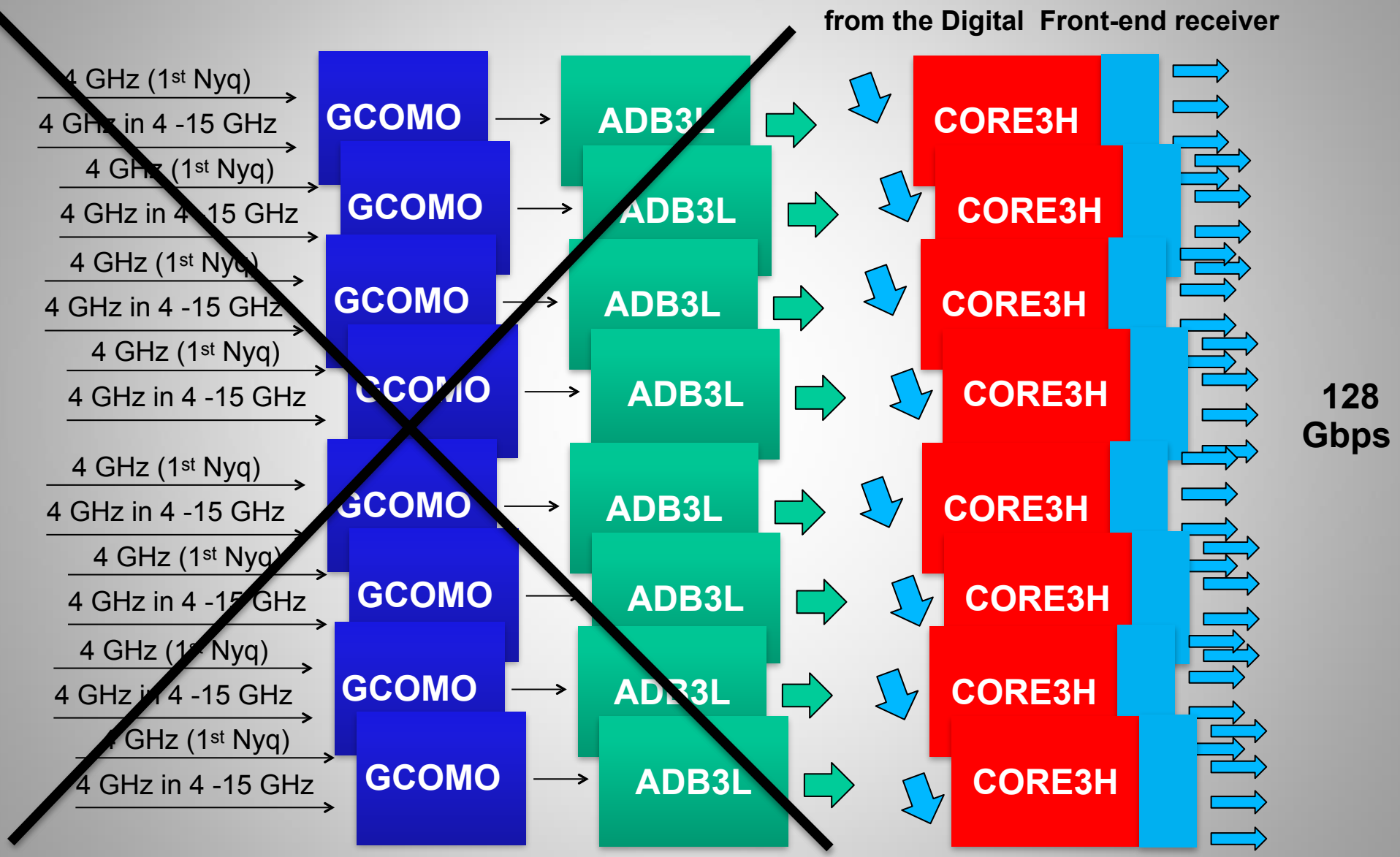
BRAND EVN Digital Data Flow



DBBC3L-8L8H$_2$ Receiving Brand Digital Front-end



DBBC3L-8H2 Receiving Brand Digital Front-end



DBBC3 Firmware usable for BRAND:

Different packages for the modes (.bit, .exe, .txt, .doc)

DSC: 0 - 4 GHz (1 - 2 - 4 - 8 bit) —-> operational

OCT1: 0-2, 2-4 GHz (1 - 2 - 4 - 8 - 16 bit) —-> operational

0-1, 1-2, 2-3, 3-4 GHz (1 - 2 - 4 - 8 - 16 - 32 bit) —-> operational

0.5-1.0, 1.0-1.5, .., 3.5-4.0 GHz (1 - 2 - 4 - 8 - 16 - 32 bit) —-> operational

OCT2: 2 filters as above at the same time per IF,
output on different streams (1 - 2 - 4 - 8 - 16 - 32 bit) —-> operational

DDC-L: 16 bbc/CORE3 (U&L) 2-4-8-16 MHz tunable in 4GHz —-> operational
(legacy) 32 bands tunable PFB 2-4-8-16 MHz block in 4GHz —-> operational

DDC-V: 12 bbc (U&L) 32MHz tunable in 4GHz —-> operational
(VGOS) 24 bands 32 MHz PFB block tunable in 4GHz —-> operational

DDC-U 16 bbc (U&L) tunable 2-4-8-16-32-64-128 MHz in 4GHz
(all) —-> *in progress*
32 bands tunable 2-4-8-16-32-64-128 MHz PFB block in 4GHz
—-> *in progress*

THANK YOU!