



A New Model For FEC Hardware Description And Configuration

Federico Vaga

2024-10-15

This is a collaborative effort among the following sections:

BE-CEM-EDL

BE-CEM-IN

BE-CSS-CSA

BE-CSS-GTA

Resources (light blue are links, click on them)

- **#5 Meeting CTTB Front-End 2022-10-22**
 - [Presentation](#): explaining the history, the architecture and technical details
- **FEC OS Alpha Testing: Introduction 2023-07-25**
 - [Presentation](#): the architecture overview (starting at slide 48)
- **#9 Meeting CTTB Front-End 2024-05-22**
 - [Presentation](#): explaining the history, the architecture, the migration, and a plan
 - [Demo Video](#): representing the development state in 2024Q2
- **#44 CTTB 2024-08-23**
 - [Presentation](#): status and plan report
- **Have a look at the above resources**
 - If not clear: don't hesitate, ask


The `transfer.ref` Era Is Coming To An End

End of Life LS3 2027

dscinit Generates transfer.ref - Abandonware

```
/*
* /acc/src/database/dscinit/dscinit.pc
* dscinit.pc : program for generating DSC startup files
* from information in the database tables.
*
* Started          may 1993    J.Cuperus
* Last updated: 1  sep 1993
*                21 sep 1993  J.C. several modifications
*                3  feb 1994  J.C. $D substitution by server directory
*                4  feb 1994  J.C. negative program sequence numbers
*                25 feb 1994  J.C. lastupdate noted in rc.local
*                14 jun 1994  J.C. several modifications
*                7  oct 1994  J.C. lun_tag and master-slave sequence
*                11 oct 1994  J.C. larger driver tags and parameter
[snip 48 lines]
*                08 Jul 2013  NMN   Add $H for hostname macro
*                24 Oct 2013  NMN   Change addr1/addr2 computation if am1="CR", i.e. CS/CSR like VD80
*                29 Oct 2013  NMN   special case also for ALGVA crates
*                10 Jan 2014  NMN   Use TERMINATE(a) instead of terminate(sizeof(a),a)
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```

The Original transfer.ref Sections

```
*****
# $Id: transfer.ref,v 1.97 2024/04/24 13:07:55 atopalou Exp $
*****
# WARNING: File generated from database. Can be overwritten at any time !

# Host          cfv-866-bidev4

#  sl  ss  lun  module-type      vendor device  subv  subdev
#Q#  1   0   0  CTRP              10dc  0300  10b5  9030

#  ln  mIn  bus  mtno  module-type      lu  W  AM  DPsz  basaddr1  range1  W  AM  DPsz  basaddr2  range2  testoff  sz  sl  ss  L  Vect
#+#  1   0  PCI  502  CTRP              0  N  --  DP16      0          0  N  --  ----      0          0          0  0  1  0  0  0x00
#+#  2   0  VME  0  ELM-PS250        0  N  --  DP16      0          0  N  --  ----      0          0          0  0  0  -1  0  0x00
#+#  3   0  VME  0  MEN-A25          0  N  --  DP16      0          0  N  --  ----      0          0          0  0  1  -1  0  0x00
#+#  4   0  VME  0  BI_ALPS_TT_APP    5  N  EX  DP32  5800000    40000  N  --  ----      0          0          0  0  5  -1  0  0x00
#+#  5   0  VME  0  BI_ALPS_TT_CH     20  N  EX  DP32  5800000    40000  N  --  ----      0          0          0  0  5  0  0  0x00
#+#  6   0  VME  0  BI_ALPS_TT_CH     21  N  EX  DP32  5840000    40000  N  --  ----      0          0          0  0  5  1  0  0x00
#+#  7   0  VME  0  BI_ALPS_TT_CH     22  N  EX  DP32  5880000    40000  N  --  ----      0          0          0  0  5  2  0  0x00
#+#  8   0  VME  0  BI_ALPS_TT_CH     23  N  EX  DP32  58c0000    40000  N  --  ----      0          0          0  0  5  3  0  0x00
#+#  9   0  VME  0  BI_ALPS_APP        4  N  EX  DP32  4800000    40000  N  --  ----      0          0          0  0  4  -1  0  0x00
#+# 10   0  VME  0  BI_ALPS_CH         16  N  EX  DP32  4800000    40000  N  --  ----      0          0          0  0  4  0  0  0x00

#% cd /usr/local/drivers/ctr; ctrinstall
#% cd /usr/local/drivers/bi_alps_tt_app; install_bi_alps_tt_app.sh
#% cd /usr/local/drivers/bi_alps_tt_ch; install_bi_alps_tt_ch.sh
#% cd /usr/local/drivers/bi_alps_app; install_bi_alps_app.sh
#% cd /usr/local/drivers/bi_alps_ch; install_bi_alps_ch.sh

#% upfiles -all
#% wreboot -all
#% end

# Startup timing services (script which find the good version of timService to launch)
/usr/local/timdt/timdt-service/ timService /usr/local/timdt/timdt-service/ timService root root 555 server -85 % ./timService >/dev/console 2>&1 %

/usr/bin chrt /usr/bin chrt root root 555 command - % echo Adjust threaded IRQs prio to 87 >/dev/console;/bin/sh -c "/bin/ps -eLo tid,class,rtprio | /bin/grep ' FF 50' | /bin/cut -c1-5 | /usr/bin/xargs -n1
chrt -f -p 87|| echo done";[ -z "" ] || /bin/sh -c "/bin/ps -eLo tid,class,rtprio | /bin/grep ' FF 49' | cut -c1-5 | /usr/bin/xargs -n1 chrt -f -p || echo done" %

# Execute a command
/dsc/bin /user/bdisoft/operational/config/alps_tt/VFC_SFP_GBT_Config -module BI_ALPS_TT_APP /dsc/bin /user/bdisoft/operational/config/alps_tt/VFC_SFP_GBT_Config -module BI_ALPS_TT_APP root root 555 command -17
% /user/bdisoft/operational/config/alps_tt/VFC_SFP_GBT_Config
-module BI_ALPS_TT_APP >/dev/con 2>&1 %

# End of file transfer.ref : all OK.
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#  ln  mln  bus  mtno  module-type      lu  W  AM  DPsz  basaddr1  range1  W  AM  DPsz  basaddr2  range2  testoff  sz  sl  ss  L  Vect
##+  1   0  PCI  502  CTRP          0  N  --  DP16      0          0  N  --  ----  0          0          0  0  1  0  0  0x00
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#% cd /usr/local/drivers/ctr; ctrinstall
#% cd /usr/local/drivers/bi_alps_tt_app; install_bi_alps_tt_app.sh
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# ln  mIn bus  mtno module-type      lu W AM DPsz basaddr1  range1 W AM DPsz basaddr2  range2 testoff  sz sl  ss  L Vect
#+#  1   0 PCI  502 CTRP              0 N -- DP16           0           0 N -- ---- 0           0 0 0 1 0 0 0x00
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DRIVERS

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##% upfiles -all
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```

PROGRAMS

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LUMENS Replaces Application Startup Sequence

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# WARNING: File generated from database. Can be overwritten at any time !

# Host          cfv-866-bidev4

#  sl  ss  lun  module-type          vendor device  subv  subdev
#Q#  1   0   0  CTRP                  10dc   0300  10b5  9030

#  ln  mIn  bus  mtno  module-type          lu  W  AM  DPsz  basaddr1  range1  W  AM  DPsz  basaddr2  range2  testoff  sz  sl  ss  L  Vect
#+#  1   0  PCI  502  CTRP                  0  N  --  DP16      0          0  N  --  ----      0          0          0  0  1  0  0  0x00
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LUMENS

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#  ln  mIn  bus  mtno  module-type          lu  W  AM  DPsz  basaddr1  range1  W  AM  DPsz  basaddr2  range2  testoff  sz  sl  ss  L  Vect
#+#  1   0  PCI  502  CTRP                  0  N  --  DP16      0          0  N  --  ----  0          0          0  0  1  0  0  0x00
#+#  2   0  VME  0  ELM-PS250            0  N  --  DP16      0          0  N  --  ----  0          0          0  0  0  -1  0  0x00
#+#  3   0  VME  0  MEN-A25             0  N  --  DP16      0          0  N  --  ----  0          0          0  0  1  -1  0  0x00
#+#  4   0  VME  0  BI_ALPS_TT_APP      5  N  EX  DP32  5800000    40000  N  --  ----  0          0          0  0  5  -1  0  0x00
#+#  5   0  VME  0  BI_ALPS_TT_CH      20  N  EX  DP32  5800000    40000  N  --  ----  0          0          0  0  5  0  0  0x00
#+#  6   0  VME  0  BI_ALPS_TT_CH      21  N  EX  DP32  5840000    40000  N  --  ----  0          0          0  0  5  1  0  0x00
#+#  7   0  VME  0  BI_ALPS_TT_CH      22  N  EX  DP32  5880000    40000  N  --  ----  0          0          0  0  5  2  0  0x00
#+#  8   0  VME  0  BI_ALPS_TT_CH      23  N  EX  DP32  58c0000    40000  N  --  ----  0          0          0  0  5  3  0  0x00
#+#  9   0  VME  0  BI_ALPS_APP          4  N  EX  DP32  4800000    40000  N  --  ----  0          0          0  0  4  -1  0  0x00
#+# 10   0  VME  0  BI_ALPS_CH           16  N  EX  DP32  4800000    40000  N  --  ----  0          0          0  0  4  0  0  0x00

#% cd /usr/local/drivers/ctr; ctrinstall
#% cd /usr/local/drivers/bi_alps_tt_app; install_bi_alps_tt_app.sh
#% cd /usr/local/drivers/bi_alps_tt_ch; install_bi_alps_tt_ch.sh
#% cd /usr/local/drivers/bi_alps_app; install_bi_alps_app.sh
#% cd /usr/local/drivers/bi_alps_ch; install_bi_alps_ch.sh

#% upfiles -all
#% wreboot -all
#% end
```

PLEASE Migrate!

If you did not do it yet,
get in touch with **Frank Locci**

```
# Startup timing services (script which find the good version of timService to launch)
/usr/local/timdt/timdt-service/ timService /usr/local/timdt/timdt-service/ timService root root 555 server -85 % ./timService >/dev/console 2>&1 %

/usr/bin chrt /usr/bin chrt root root 555 command - % echo Adjust threaded IRQs prio to 87 >/dev/console && /bin/ps -e | /bin/grep ' FF 50' | /bin/cut -c1-5 | /usr/bin/xargs -n1
chrt -f -p 87|| echo done";[ -z "" ] || /bin/sh -c "/bin/ps -eLo tid,class,rtprio | /bin/grep ' FF 50' | /bin/cut -c1-5 | /usr/bin/xargs -n1 chrt -f -p || echo done" %

# Execute a command
/dsc/bin /user/bdisoft/operational/config/alps_tt/VFC_SFP_GBT_Config -module BI_ALPS_TT_APP /dsc/bin /user/bdisoft/operational/config/alps_tt/VFC_SFP_GBT_Config -module BI_ALPS_TT_APP root root 555 command -17
% /user/bdisoft/operational/config/alps_tt/VFC_SFP_GBT_Config
-module BI_ALPS_TT_APP >/dev/con 2>&1 %

# End of file transfer.ref : all OK.
```

LUMENS

PROGRAMS



LUMENS Replaces Application Startup Sequence

```
*****  
# $Id: transfer.ref,v 1.97 2024/04/24 13:07:55 atopalou Exp $  
*****  
# WARNING: File generated from database. Can be overwritten at any time !
```

Host cfv-866-bidev4

#	sl	ss	lun	module-type	vendor	device	subv	subdev														
#Q#	1	0	0	CTRP	10dc	0300	10b5	9030														
#	ln	mIn	bus	mtno	module-type	lu	W	AM	DPsz	basaddr1	range1	W	AM	DPsz	basaddr2	range2	testoff	sz	sl	ss	L	Vect
#+#	1	0	PCI	502	CTRP	0	N	--	DP16	0	0	N	--	----	0	0	0	0	1	0	0	0x00
#+#	2	0	VME	0	ELM-PS250	0	N	--	DP16	0	0	N	--	----	0	0	0	0	-1	0	0	0x00
#+#	3	0	VME	0	MEN-A25	0	N	--	DP16	0	0	N	--	----	0	0	0	0	1	-1	0	0x00
#+#	4	0	VME	0	BI_ALPS_TT_APP	5	N	EX	DP32	5800000	40000	N	--	----	0	0	0	0	5	-1	0	0x00
#+#	5	0	VME	0	BI_ALPS_TT_CH	20	N	EX	DP32	5800000	40000	N	--	----	0	0	0	0	5	0	0	0x00
#+#	6	0	VME	0	BI_ALPS_TT_CH	21	N	EX	DP32	5840000	40000	N	--	----	0	0	0	0	5	1	0	0x00
#+#	7	0	VME	0	BI_ALPS_TT_CH	22	N	EX	DP32	5880000	40000	N	--	----	0	0	0	0	5	2	0	0x00
#+#	8	0	VME	0	BI_ALPS_TT_CH	23	N	EX	DP32	58c0000	40000	N	--	----	0	0	0	0	5	3	0	0x00
#+#	9	0	VME	0	BI_ALPS_APP	4	N	EX	DP32	4800000	40000	N	--	----	0	0	0	0	4	-1	0	0x00
#+#	10	0	VME	0	BI_ALPS_CH	16	N	EX	DP32	4800000	40000	N	--	----	0	0	0	0	4	0	0	0x00

DATA

```
##% cd /usr/local/drivers/ctr; ctrinstall  
##% cd /usr/local/drivers/bi_alps_tt_app; install_bi_alps_tt_app.sh  
##% cd /usr/local/drivers/bi_alps_tt_ch; install_bi_alps_tt_ch.sh  
##% cd /usr/local/drivers/bi_alps_app; install_bi_alps_app.sh  
##% cd /usr/local/drivers/bi_alps_ch; install_bi_alps_ch.sh
```

DRIVERS

```
##% upfiles -all  
##% wreboot -all  
##% end
```



PROGRAMS

```
# End of file transfer.ref : all OK.
```

Start Paying The Technical Debt



A New Hardware Model – Available From YETS24/25

- **Redesign the CCDB schema describing hardware and its configuration**
 - Description of binaries for Field Programmable Units (FPU). E.g. FPGA, FLASH, EEPROM, MCU, ...
 - Versioning for drivers and FPU
 - Configurations as container for drivers and FPU binaries to be installed on a module (versioned as well)
 - Operating System setup (it will work only with the new FECOS)
 - More detailed slot types and stricter checks
 - Generally, more constraints and checks directly in the database
- **Implement new CCDA REST end-points for interaction with the database**
 - No more direct access to the Oracle Database
 - Transactions handled by CCDA
 - Better and more extensive data validation
- **Redesign CCDE leveraging on the above changes**

A New Hardware Model – Available From YETS24/25

- **Eradication of `dscinit`**
- **Driver loading will keep using `transfer.ref`**
 - We will try to ensure byte-by-byte compatibility
- **FPU and Configuration features will not be available when using `transfer.ref`**
 - Of course, `transfer.ref` does not support these features
 - Need to migrate to the new driver loading model
 - No massive migration planned during 2025
 - Still some pending work to migrate EDGE to this new model (EDGE 4.2)

Technical Debt Brings More Technical Debt

- **Hardware Description model frozen for many years**
- **The general evolution slowness did not help to improve tools**
 - e.g. encore/EDGE
- **People found their ways to get the features they needed**
 - And those were necessary to keep the systems running
 - Examples:
 - SY-ABT TXMC
 - SY-BI ALPS
 - SY-RF VXS systems
 - ...

Example – VXS Systems – transfer.ref View

A bit manipulated to improve clarity

```
# WARNING: File generated from database. Can be overwritten at any time !
```

```
# Host          cfv-193-allbc1
```

#	ln	mln	bus	mtno	module-type	lu	W	AM	DPsz	basaddr1	range1	W	AM	DPsz	basaddr2	range2	testoff	sz	sl	ss	L	Vect
##+	1	0	VME	90	CTRV	0	N	ST	DP32	c00000	10000	N	SH	DP16	100	100	0	0	2	-1	2	0xb8
##+	2	0	VME	90	CTRV	1	N	ST	DP32	c10000	10000	N	SH	DP16	200	100	0	0	6	-1	2	0xb9
##+	3	0	NON	0	ELM-PS500	0	N	--	DP16	0	0	N	--	----	0	0	0	0	0	-1	0	0x00
##+	4	0	VME	2279	MEN-A20	0	N	ST	DP32	fff000	1000	N	--	----	0	0	0	0	1	-1	0	0x00
##+	5	0	VME	2399	RF_VXS_MAIN	4	N	EX	DP32	b0800000	2000000	N	--	----	0	0	4	4	4	-1	3	0xdc
##+	8	0	VME	2400	RF_FMC_DDC	0	N	EX	DP32	b09c0000	40000	N	--	----	0	0	4	4	4	7	0	0x00
##+	14	0	VME	0	RF_LNA_DSP_B	0	N	EX	DP32	b0840000	40000	N	--	----	0	0	4	4	4	1	0	0x00
##+	17	0	VME	2402	RF_VXS_FMC	0	N	EX	DP32	b0940000	40000	N	--	----	0	0	4	4	4	5	0	0x00
##+	11	0	VME	2412	RF_FMC_MDDS	0	N	EX	DP32	b0980000	40000	N	--	----	0	0	4	4	4	6	0	0x00
##+	20	0	VME	2421	RF_VXS_SWITCH	0	N	EX	DP32	b0900000	20000	N	--	----	0	0	4	4	4	-1	2	0x60
##+	21	0	VME	2421	RF_VXS_SWITCH	1	N	EX	DP32	b0920000	20000	N	--	----	0	0	4	4	4	-1	2	0x61
##+	6	0	VME	2399	RF_VXS_MAIN	11	N	EX	DP32	b1600000	2000000	N	--	----	0	0	4	4	11	-1	3	0xdd
##+	7	0	VME	2399	RF_VXS_MAIN	14	N	EX	DP32	b1c00000	2000000	N	--	----	0	0	4	4	14	-1	3	0xde
##+	9	0	VME	2400	RF_FMC_DDC	1	N	EX	DP32	b1780000	40000	N	--	----	0	0	4	4	11	6	0	0x00

```
##% cd /usr/local/drivers/ctr; ctrvinstall -object ctrvdrvr.o -M0xc00000 -X0x100 -V184 -L2 -M0xc10000 -X0x200 -V185 -L2
##% cd /usr/local/drivers/rf_vxs_main; install_rf_vxs_main.sh RF_VXS_MAIN -V220 -L3 -V221 -L3 -V222 -L3
##% cd /usr/local/drivers/rf_fmc_ddc; install_rf_fmc_ddc.sh RF_FMC_DDC
##% cd /usr/local/drivers/rf_fmc_ddc_16; install_rf_fmc_ddc_16.sh --version 1.1.2
```

cfv-193-allbc1

Example – VXS Systems – transfer.ref View

A bit manipulated to improve clarity

```
# WARNING: File generated from database. Can be overwritten at any time !
```

```
# Host          cfv-193-allbc1
```

#	ln	mln	bus	mtno	module-type	lu	W	AM	DPsz	basaddr1	range1	W	AM	DPsz	basaddr2	range2	testoff	sz	sl	ss	L	Vect
##	1	0	VME	90	CTRV	0	N	ST	DP32	c00000	10000	N	SH	DP16	100	100	0	0	2	-1	2	0xb8
##	2	0	VME	90	CTRV	1	N	ST	DP32	c10000	10000	N	SH	DP16	200	100	0	0	6	-1	2	0xb9
##	3	0	NON	0	ELM-PS500	0	N	--	DP16	0	0	N	--	----	0	0	0	0	0	-1	0	0x00
##	4	0	VME	2279	MEN-A20	0	N	ST	DP32	fff000	1000	N	--	----	0	0	0	0	1	-1	0	0x00
##	5	0	VME	2399	RF_VXS_MAIN	4	N	EX	DP32	b0800000	2000000	N	--	----	0	0	4	4	4	-1	3	0xdc
##	8	0	VME	2400	RF_FMC_DDC	0	N	EX	DP32	b09c0000	40000	N	--	----	0	0	4	4	4	7	0	0x00
##	14	0	VME	0	RF_LNA_DSP_B	0	N	EX	DP32	b0840000	40000	N	--	----	0	0	4	4	4	1	0	0x00
##	17	0	VME	2402	RF_VXS_FMC	0	N	EX	DP32	b0940000	40000	N	--	----	0	0	4	4	4	5	0	0x00
##	11	0	VME	2412	RF_FMC_MDDS	0	N	EX	DP32	b0980000	40000	N	--	----	0	0	4	4	4	6	0	0x00
##	20	0	VME	2421	RF_VXS_SWITCH	0	N	EX	DP32	b0900000	20000	N	--	----	0	0	4	4	4	-1	2	0x60
##	21	0	VME	2421	RF_VXS_SWITCH	1	N	EX	DP32	b0920000	20000	N	--	----	0	0	4	4	4	-1	2	0x61
##	6	0	VME	2399	RF_VXS_MAIN	11	N	EX	DP32	b1600000	2000000	N	--	----	0	0	4	4	11	-1	3	0xdd
##	7	0	VME	2399	RF_VXS_MAIN	14	N	EX	DP32	b1c00000	2000000	N	--	----	0	0	4	4	14	-1	3	0xde
##	9	0	VME	2400	RF_FMC_DDC	1	N	EX	DP32	b1780000	40000	N	--	----	0	0	4	4	11	6	0	0x00

```
##% cd /usr/local/drivers/ctr; ctrvinstall -object ctrvdrvr.o -M0xc00000 -X0x100 -V184 -L2 -M0xc10000 -X0x200 -V185 -L2
##% cd /usr/local/drivers/rf_vxs_main; install_rf_vxs_main.sh RF_VXS_MAIN -V220 -L3 -V221 -L3 -V222 -L3
##% cd /usr/local/drivers/rf_fmc_ddc; install_rf_fmc_ddc.sh RF_FMC_DDC
##% cd /usr/local/drivers/rf_fmc_ddc_16; install_rf_fmc_ddc_16.sh --version 1.1.2
```

cfv-193-allbc1

Example – VXS Systems – transfer.ref View

WARNING: File generated from database. Can be overwritten at any time !

A bit manipulated to improve clarity

Host cfv-193-allbc1

#	ln	mln	bus	mtno	module-type	lu	W	AM	DPsz	basaddr1	range1	W	AM	DPsz	basaddr2	range2	testoff	sz	sl	ss	L	Vect
##	1	0	VME	90	CTRV	0	N	ST	DP32	c00000	10000	N	SH	DP16	100	100	0	0	2	-1	2	0xb8
##	2	0	VME	90	CTRV	1	N	ST	DP32	c10000	10000	N	SH	DP16	200	100	0	0	6	-1	2	0xb9
##	3	0	NON	0	ELM-PS500	0	N	--	DP16	0	0	N	--	----	0	0	0	0	0	-1	0	0x00
##	4	0	VME	2279	MEN-A20	0	N	ST	DP32	fff000	1000	N	--	----	0	0	0	0	1	-1	0	0x00
##	5	0	VME	2399	RF_VXS_MAIN	4	N	EX	DP32	b0800000	2000000	N	--	----	0	0	4	4	4	-1	3	0xdc
##	8	0	VME	2400	RF_FMC_DDC	0	N	EX	DP32	b09c0000	40000	N	--	----	0	0	4	4	4	7	0	0x00
##	14	0	VME	0	RF_LNA_DSP_B	0	N	EX	DP32	b0840000	40000	N	--	----	0	0	4	4	4	1	0	0x00
##	17	0	VME	2402	RF_VXS_FMC	0	N	EX	DP32	b0940000	40000	N	--	----	0	0	4	4	4	5	0	0x00
##	11	0	VME	2412	RF_FMC_MDDS	0	N	EX	DP32	b0980000	40000	N	--	----	0	0	4	4	4	6	0	0x00
##	20	0	VME	2421	RF_VXS_SWITCH	0	N	EX	DP32	b0900000	20000	N	--	----	0	0	4	4	4	-1	2	0x60
##	21	0	VME	2421	RF_VXS_SWITCH	1	N	EX	DP32	b0920000	20000	N	--	----	0	0	4	4	4	-1	2	0x61
##	6	0	VME	2399	RF_VXS_MAIN	11	N	EX	DP32	b1600000	2000000	N	--	----	0	0	4	4	11	-1	3	0xdd
##	7	0	VME	2399	RF_VXS_MAIN	14	N	EX	DP32	b1c00000	2000000	N	--	----	0	0	4	4	14	-1	3	0xde
##	9	0	VME	2400	RF_FMC_DDC	1	N	EX	DP32	b1780000	40000	N	--	----	0	0	4	4	11	6	0	0x00

```
##% cd /usr/local/drivers/ctr; ctrvinstall -object ctrvdrvr.o -M0xc00000 -X0x100 -V184 -L2
##% cd /usr/local/drivers/rf_vxs_main; install_rf_vxs_main.sh RF_VXS_MAIN -V220 -L3 -V221 -L5 -V222 -L5
##% cd /usr/local/drivers/rf_fmc_ddc; install_rf_fmc_ddc.sh RF_FMC_DDC
##% cd /usr/local/drivers/rf_fmc_ddc_16; install_rf_fmc_ddc_16.sh --version 1.1.2
```

All in the same VME slot

cfv-193-allbc1

Example – VXS Systems – transfer.ref View

A bit manipulated to improve clarity

WARNING: File generated from database. Can be overwritten at any time !

Host cfv-193-allbc1

#	ln	mln	bus	mtno	module-type	lu	W	AM	DPsz	basaddr1	range1	W	AM	DPsz	basaddr2	range2	testoff	sz	sl	ss	L	Vect
##+	1	0	VME	90	CTRV	0	N	ST	DP32	c00000	10000	N	SH	DP16	100	100	0	0	2	-1	2	0xb8
##+	2	0	VME	90	CTRV	1	N	ST	DP32	c10000	10000	N	SH	DP16	200	100	0	0	6	-1	2	0xb9
##+	3	0	NON	0	ELM-PS500	0	N	--	DP16	0	0	N	--	----	0	0	0	0	0	-1	0	0x00
##+	4	0	VME	2279	MEN-A20	0	N	ST	DP32	fff000	1000	N	--	----	0	0	0	0	1	-1	0	0x00
##+	5	0	VME	2399	RF_VXS_MAIN	4	N	EX	DP32	b0800000	2000000	N	--	----	0	0	4	4	4	-1	3	0xdc
##+	8	0	VME	2400	RF_FMC_DDC	0	N	EX	DP32	b09c0000	40000	N	--	----	0	0	4	4	4	7	0	0x00
##+	14	0	VME	0	RF_LNA_DSP_B	0	N	EX	DP32	b0840000	40000	N	--	----	0	0	4	4	4	1	0	0x00
##+	17	0	VME	2402	RF_VXS_FMC	0	N	EX	DP32	b0940000	40000	N	--	----	0	0	4	4	4	5	0	0x00
##+	11	0	VME	2412	RF_FMC_MDDS	0	N	EX	DP32	b0980000	40000	N	--	----	0	0	4	4	4	6	0	0x00
##+	20	0	VME	2421	RF_VXS_SWITCH	0	N	EX	DP32	b0900000	20000	N	--	----	0	0	4	4	4	-1	2	0x60
##+	21	0	VME	2421	RF_VXS_SWITCH	1	N	EX	DP32	b0920000	20000	N	--	----	0	0	4	4	4	-1	2	0x61
##+	6	0	VME	2399	RF_VXS_MAIN	11	N	EX	DP32	b1600000	2000000	N	--	----	0	0	4	4	11	-1	3	0xdd
##+	7	0	VME	2399	RF_VXS_MAIN	14	N	EX	DP32	b1c00000	2000000	N	--	----	0	0	4	4	14	-1	3	0xde
##+	9	0	VME	2400	RF_FMC_DDC	1	N	EX	DP32	b1780000	40000	N	--	----	0	0	4	4	11	6	0	0x00

Not all real (physical) module types

All in the same VME slot

```
#% cd /usr/local/drivers/ct; install_ct_ctrdrv.o -M0xc00000 -X0x100 -V184 -L2
#% cd /usr/local/drivers/ct; install_rf_vxs_main.sh RF_VXS_MAIN -V220 -L3 -V221 -L5 -V222 -L5
#% cd /usr/local/drivers/ct; install_rf_fmc_ddc.sh RF_FMC_DDC
#% cd /usr/local/drivers/ct; install_rf_fmc_ddc_16.sh --version 1.1.2
```

cfv-193-allbc1



Example – VXS Systems – transfer.ref View

A bit manipulated to improve clarity

WARNING: File generated from database. Can be overwritten at any time !

Host cfv-193-allbc1

#	ln	mln	bus	mtno	module-type	lu	W	AM	DPsz	basaddr1	range1	W	AM	DPsz	basaddr2	range2	testoff	sz	sl	ss	L	Vect
##	1	0	VME	90	CTRV	0	N	ST	DP32	c00000	10000	N	SH	DP16	100	100	0	0	2	-1	2	0xb8
##	2	0	VME	90	CTRV	1	N	ST	DP32	c10000	10000	N	SH	DP16	200	100	0	0	6	-1	2	0xb9
##	3	0	NON	0	ELM-PS500	0	N	--	DP16	0	0	N	--	----	0	0	0	0	0	-1	0	0x00
##	4	0	VME	2279	MEN-A20	0	N	ST	DP32	fff000	1000	N	--	----	0	0	0	0	1	-1	0	0x00
##	5	0	VME	2399	RF_VXS_MAIN	4	N	EX	DP32	b0800000	2000000	N	--	----	0	0	4	4	4	-1	3	0xdc
##	8	0	VME	2400	RF_FMC_DDC	0	N	EX	DP32	b09c0000	40000	N	--	----	0	0	4	4	4	7	0	0x00
##	14	0	VME	0	RF_LNA_DSP_B	0	N	EX	DP32	b0840000	40000	N	--	----	0	0	4	4	4	1	0	0x00
##	17	0	VME	2402	RF_VXS_FMC	0	N	EX	DP32	b0940000	40000	N	--	----	0	0	4	4	4	5	0	0x00
##	11	0	VME	2412	RF_FMC_MDDS	0	N	EX	DP32	b0980000	40000	N	--	----	0	0	4	4	4	6	0	8
##	20	0	VME	2421	RF_VXS_SWITCH	0	N	EX	DP32	b0900000	20000	N	--	----	0	0	4	4	4	-1	2	0x00
##	21	0	VME	2421	RF_VXS_SWITCH	1	N	EX	DP32	b0920000	20000	N	--	----	0	0	4	4	4	-1	2	9
##	6	0	VME	2399	RF_VXS_MAIN	11	N	EX	DP32	b1600000	2000000	N	--	----	0	0	4	4	11	-1	3	0x00
##	7	0	VME	2399	RF_VXS_MAIN	14	N	EX	DP32	b1c00000	2000000	N	--	----	0	0	4	4	14	-1	3	0xde
##	9	0	VME	2400	RF_FMC_DDC	1	N	EX	DP32	b1780000	40000	N	--	----	0	0	4	4	11	6	0	0x00

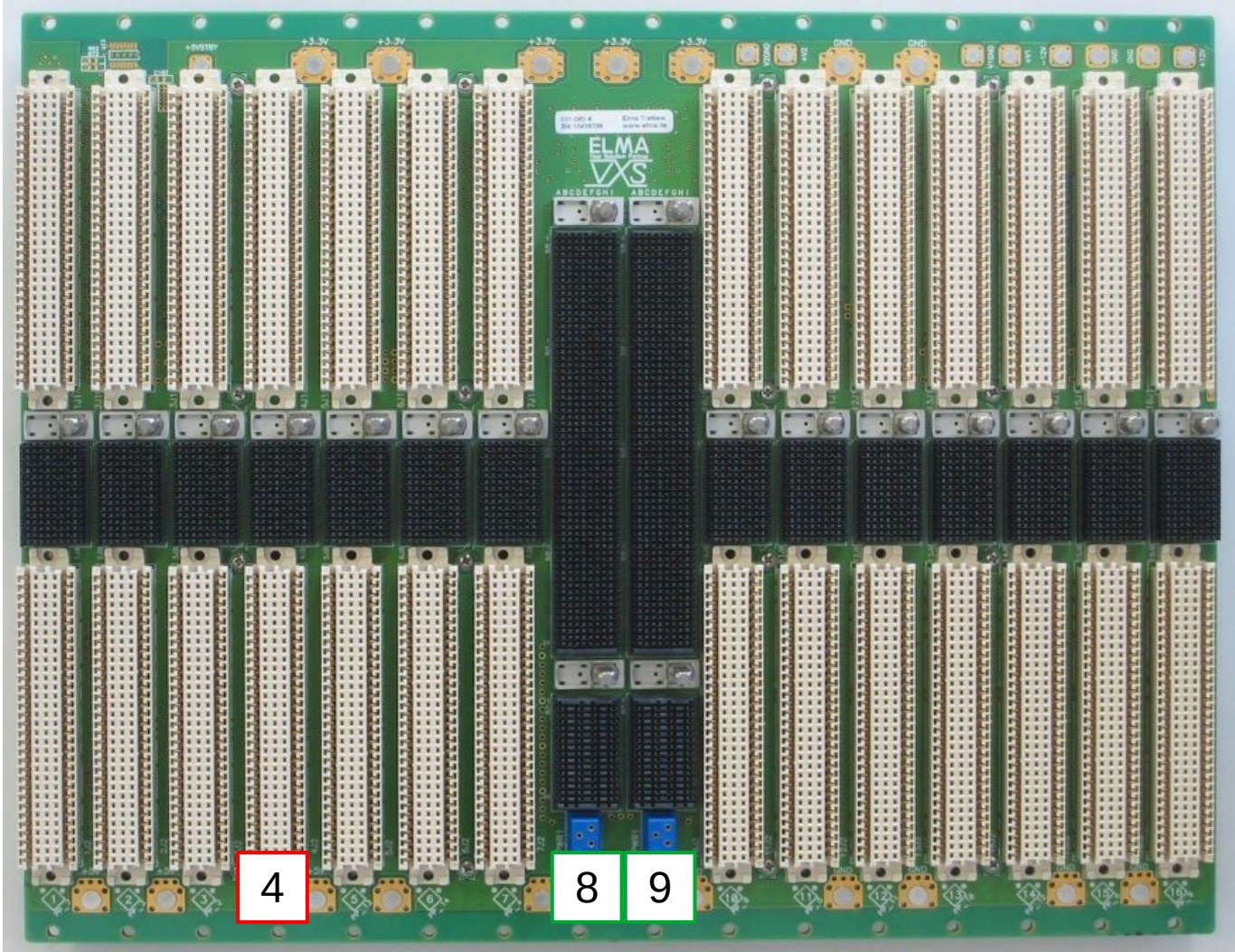
Not all real (physical) module types

All in the same VME slot

```
#% cd /usr/local/drivers/ct; install_ct_ctrdrv.o -M0xc00000 -X0x100 -V184 -L2
#% cd /usr/local/drivers/ct; install_rf_vxs_main.sh RF_VXS_MAIN -V220 -L3 -V221 -L5 -V222 -L5
#% cd /usr/local/drivers/ct; install_rf_fmc_ddc.sh RF_FMC_DDC
#% cd /usr/local/drivers/ct; install_rf_fmc_ddc_16.sh --version 1.1.2
```

cfv-193-allbc1

Example – VXS Systems – The Real Thing



Example - VFC ALPS Application – transfer.ref View

A bit manipulated to improve clarity

```
# WARNING: File generated from database. Can be overwritten at any time !
```

```
# Host          cfv-ba3-bpm
```

```
#  sl  ss  lun  module-type          vendor device  subv  subdev
#@#  1   0   0  CTRP                  10dc   0300   10b5  9030
```

#	ln	mln	bus	mtno	module-type	lu	W	AM	DPsz	basaddr1	range1	W	AM	DPsz	basaddr2	range2	testoff	sz	sl	ss	L	Vect
##+	1	0	VME	90	CTRV	0	N	ST	DP32	c00000	10000	N	SH	DP16	100	100	0	0	3	-1	2	0xb8
##+	2	0	NON	0	ELM-PS500	0	N	--	DP16	0	0	N	--	----	0	0	0	0	0	-1	0	0x00
##+	3	0	VME	0	MEN-A25	0	N	--	DP16	0	0	N	--	----	0	0	0	0	1	-1	0	0x00
##+	54	0	VME	0	VFC_HD_SYS	5	N	EX	DP32	5000000	34000	N	--	----	0	0	0	0	5	-1	3	0x5f
##+	4	0	VME	0	BI_ALPS_TT_APP	5	N	EX	DP32	5800000	40000	N	--	----	0	0	0	0	5	-1	0	0x00
##+	5	0	VME	0	BI_ALPS_TT_CH	20	N	EX	DP32	5800000	40000	N	--	----	0	0	0	0	5	0	0	0x00
##+	6	0	VME	0	BI_ALPS_TT_CH	21	N	EX	DP32	5840000	40000	N	--	----	0	0	0	0	5	1	0	0x00
##+	7	0	VME	0	BI_ALPS_TT_CH	22	N	EX	DP32	5880000	40000	N	--	----	0	0	0	0	5	2	0	0x00
##+	8	0	VME	0	BI_ALPS_TT_CH	23	N	EX	DP32	58c0000	40000	N	--	----	0	0	0	0	5	3	0	0x00
##+	9	0	VME	0	BI_ALPS_APP	4	N	EX	DP32	4800000	40000	N	--	----	0	0	0	0	4	-1	0	0x00
##+	10	0	VME	0	BI_ALPS_CH	16	N	EX	DP32	4800000	40000	N	--	----	0	0	0	0	4	0	0	0x00

```
##% cd /usr/local/drivers/ctr; ctrinstall
##% cd /usr/local/drivers/bi_alps_tt_app; install_bi_alps_tt_app.sh
##% cd /usr/local/drivers/bi_alps_tt_ch; install_bi_alps_tt_ch.sh
##% cd /usr/local/drivers/bi_alps_app; install_bi_alps_app.sh
##% cd /usr/local/drivers/bi_alps_ch; install_bi_alps_ch.sh
```

cfv-ba3-bpm

Example - VFC ALPS Application – transfer.ref View

A bit manipulated to improve clarity

```
# WARNING: File generated from database. Can be overwritten at any time !
```

```
# Host          cfv-ba3-bpm
```

```
#  sl  ss  lun  module-type      vendor device  subv  subdev
#@#  1   0   0  CTRP              10dc  0300  10b5  9030
```

```
#  ln  mln  bus  mtno  module-type      lu W  AM  DPsz  basaddr1  range1 W  AM  DPsz  basaddr2  range2  testoff  sz  sl  ss  L  Vect
##+  1   0  VME   90  CTRV              0 N  ST  DP32  c00000    10000 N  SH  DP16    100    100    0  0  3  -1  2  0xb8
##+  2   0  NON   0  ELM-PS500        0 N  --  DP16    0         0 N  --  ----    0         0  0  0  -1  0  0x00
##+  3   0  VME   0  MEN-A25           0 N  --  DP16    0         0 N  --  ----    0         0  0  0  -1  0  0x00
##+ 54   0  VME   0  VFC_HD_SYS        5 N  EX  DP32  5000000   34000 N  --  ----    0         0  0  0  5  -1  3  0x5f
##+  4   0  VME   0  BI_ALPS_TT_APP    5 N  EX  DP32  5800000   40000 N  --  ----    0         0  0  0  5  -1  0  0x00
##+  5   0  VME   0  BI_ALPS_TT_CH    20 N  EX  DP32  5800000   40000 N  --  ----    0         0  0  0  5  0  0  0x00
##+  6   0  VME   0  BI_ALPS_TT_CH    21 N  EX  DP32  5840000   40000 N  --  ----    0         0  0  0  5  1  0  0x00
##+  7   0  VME   0  BI_ALPS_TT_CH    22 N  EX  DP32  5880000   40000 N  --  ----    0         0  0  0  5  2  0  0x00
##+  8   0  VME   0  BI_ALPS_TT_CH    23 N  EX  DP32  58c0000   40000 N  --  ----    0         0  0  0  5  3  0  0x00
##+  9   0  VME   0  BI_ALPS_APP       4 N  EX  DP32  4800000   40000 N  --  ----    0         0  0  0  4  -1  0  0x00
##+ 10   0  VME   0  BI_ALPS_CH       16 N  EX  DP32  4800000   40000 N  --  ----    0         0  0  0  4  0  0  0x00
```

```
##% cd /usr/local/drivers/ctr; ctrinstall
##% cd /usr/local/drivers/bi_alps_tt_app; install_bi_alps_tt_app.sh
##% cd /usr/local/drivers/bi_alps_tt_ch; install_bi_alps_tt_ch.sh
##% cd /usr/local/drivers/bi_alps_app; install_bi_alps_app.sh
##% cd /usr/local/drivers/bi_alps_ch; install_bi_alps_ch.sh
```

cfv-ba3-bpm

Example - VFC ALPS Application – transfer.ref View

A bit manipulated to improve clarity

```
# WARNING: File generated from database. Can be overwritten at any time !
```

```
# Host          cfv-ba3-bpm
```

```
#  sl  ss  lun  module-type      vendor device  subv  subdev
#@#  1   0   0  CTRP                10dc   0300   10b5  9030
```

#	ln	mln	bus	mtno	module-type	lu	W	AM	DPsz	basaddr1	range1	W	AM	DPsz	basaddr2	range2	testoff	sz	sl	ss	L	Vect
##+	1	0	VME	90	CTRV	0	N	ST	DP32	c00000	10000	N	SH	DP16	100	100	0	0	3	-1	2	0xb8
##+	2	0	NON	0	ELM-PS500	0	N	--	DP16	0	0	N	--	----	0	0	0	0	0	-1	0	0x00
##+	3	0	VME	0	MEN-A25	0	N	--	DP16	0	0	N	--	----	0	0	0	0	1	-1	0	0x00
##+	54	0	VME	0	VFC_HD_SYS	5	N	EX	DP32	5000000	34000	N	--	----	0	0	0	0	5	-1	3	0x5f
##+	4	0	VME	0	BI_ALPS_TT_APP	5	N	EX	DP32	5800000	40000	N	--	----	0	0	0	0	5	-1	0	0x00
##+	5	0	VME	0	BI_ALPS_TT_CH	20	N	EX	DP32	5800000	40000	N	--	----	0	0	0	0	5	0	0	0x00
##+	6	0	VME	0	BI_ALPS_TT_CH	21	N	EX	DP32	5840000	40000	N	--	----	0	0	0	0	5	1	0	0x00
##+	7	0	VME	0	BI_ALPS_TT_CH	22	N	EX	DP32	5880000	40000	N	--	----	0	0	0	0	5	2	0	0x00
##+	8	0	VME	0	BI_ALPS_TT_CH	23	N	EX	DP32	58c0000	40000	N	--	----	0	0	0	0	5	3	0	0x00
##+	9	0	VME	0	BI_ALPS_APP	4	N	EX	DP32	4800000	40000	N	--	----	0	0	0	0	4	-1	0	0x00
##+	10	0	VME	0	BI_ALPS_CH	16	N	EX	DP32	4800000	40000	N	--	----	0	0	0	0	4	0	0	0x00

```
#% cd /usr/local/drivers/ctr; ctrinstall
#% cd /usr/local/drivers/bi_alps_tt_app; install_bi_alps_tt_app.sh
#% cd /usr/local/drivers/bi_alps_tt_ch; install_bi_alps_tt_ch.sh
#% cd /usr/local/drivers/bi_alps_app; install_bi_alps_app.sh
#% cd /usr/local/drivers/bi_alps_ch; install_bi_alps_ch.sh
```

All in the same VME slot

cfv-ba3-bpm

Example - VFC ALPS Application – transfer.ref View

A bit manipulated to improve clarity

```
# WARNING: File generated from database. Can be overwritten at any time !
```

```
# Host          cfv-ba3-bpm
```

```
#  sl  ss  lun  module-type          vendor device  subv  subdev
#@#  1   0   0  CTRP                  10dc   0300   10b5  9030
```

#	ln	mln	bus	mtno	module-type	lu	W	AM	DPsz	basaddr1	range1	W	AM	DPsz	basaddr2	range2	testoff	sz	sl	ss	L	Vect
##+	1	0	VME	90	CTRV	0	N	ST	DP32	c00000	10000	N	SH	DP16	100	100	0	0	3	-1	2	0xb8
##+	2	0	NON	0	ELM-PS500	0	N	--	DP16	0	0	N	--	----	0	0	0	0	0	-1	0	0x00
##+	3	0	VME	0	MEN-A25	0	N	--	DP16	0	0	N	--	----	0	0	0	0	1	-1	0	0x00
##+	54	0	VME	0	VFC_HD_SYS	5	N	EX	DP32	5000000	34000	N	--	----	0	0	0	0	5	-1	3	0x5f
##+	4	0	VME	0	BI_ALPS_TT_APP	5	N	EX	DP32	5800000	40000	N	--	----	0	0	0	0	5	-1	0	0x00
##+	5	0	VME	0	BI_ALPS_TT_CH	20	N	EX	DP32	5800000	40000	N	--	----	0	0	0	0	5	0	0	0x00
##+	6	0	VME	0	BI_ALPS_TT_CH	21	N	EX	DP32	5840000	40000	N	--	----	0	0	0	0	5	1	0	0x00
##+	7	0	VME	0	BI_ALPS_TT_CH	22	N	EX	DP32	5880000	40000	N	--	----	0	0	0	0	5	2	0	0x00
##+	8	0	VME	0	BI_ALPS_TT_CH	23	N	EX	DP32	58c0000	40000	N	--	----	0	0	0	0	5	3	0	0x00
##+	9	0	VME	0	BI_ALPS_APP	4	N	EX	DP32	4800000	40000	N	--	----	0	0	0	0	4	-1	0	0x00
##+	10	0	VME	0	BI_ALPS_CH	16	N	EX	DP32	4800000	40000	N	--	----	0	0	0	0	4	0	0	0x00

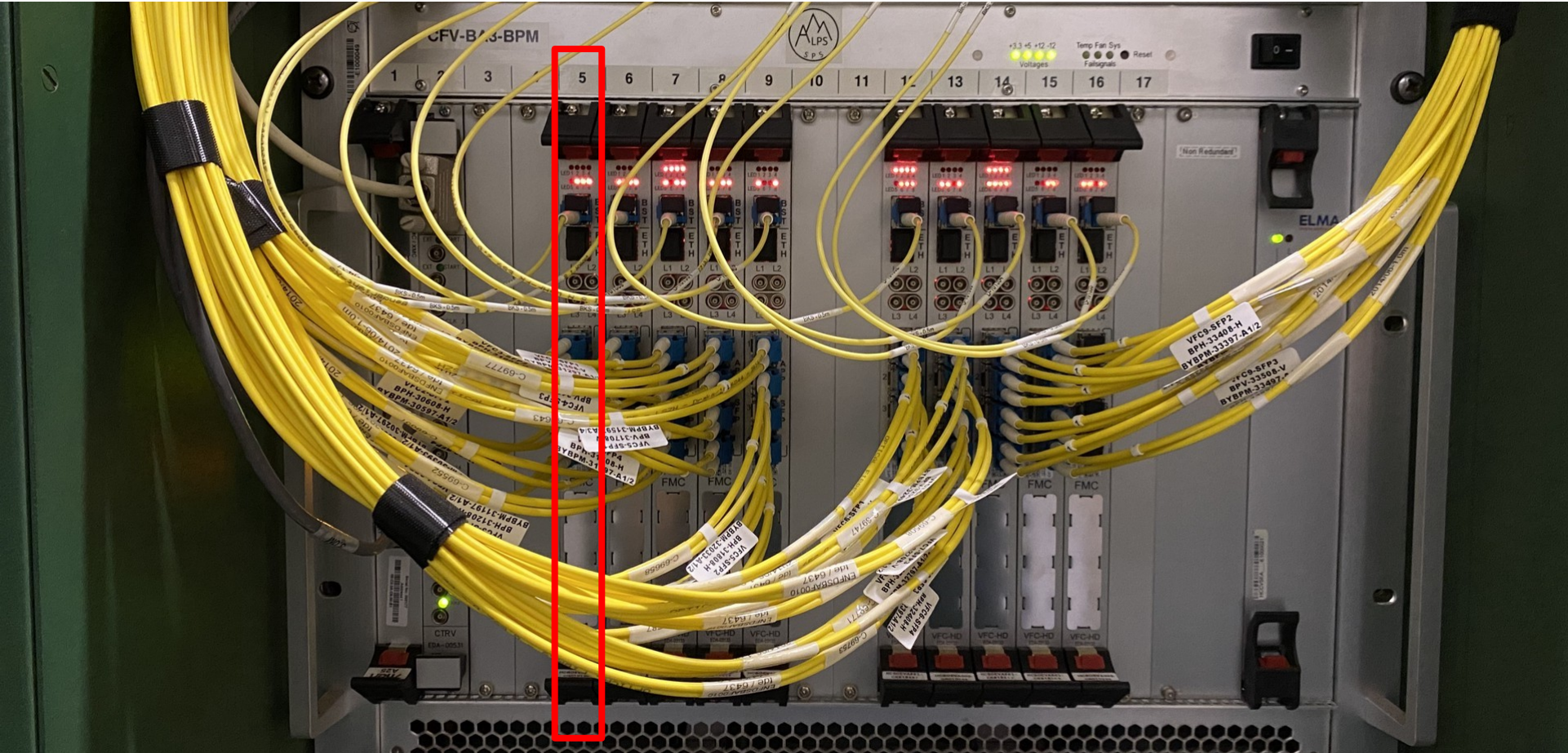
Not real (physical) module types

All in the same VME slot

```
#% cd /usr/local/drivers/bi_alps_tt_app; install_bi_alps_tt_app.sh
#% cd /usr/local/drivers/bi_alps_tt_ch; install_bi_alps_tt_ch.sh
#% cd /usr/local/drivers/bi_alps_app; install_bi_alps_app.sh
#% cd /usr/local/drivers/bi_alps_ch; install_bi_alps_ch.sh
```

cfv-ba3-bpm

Example - VFC ALPS Application – The Real Thing

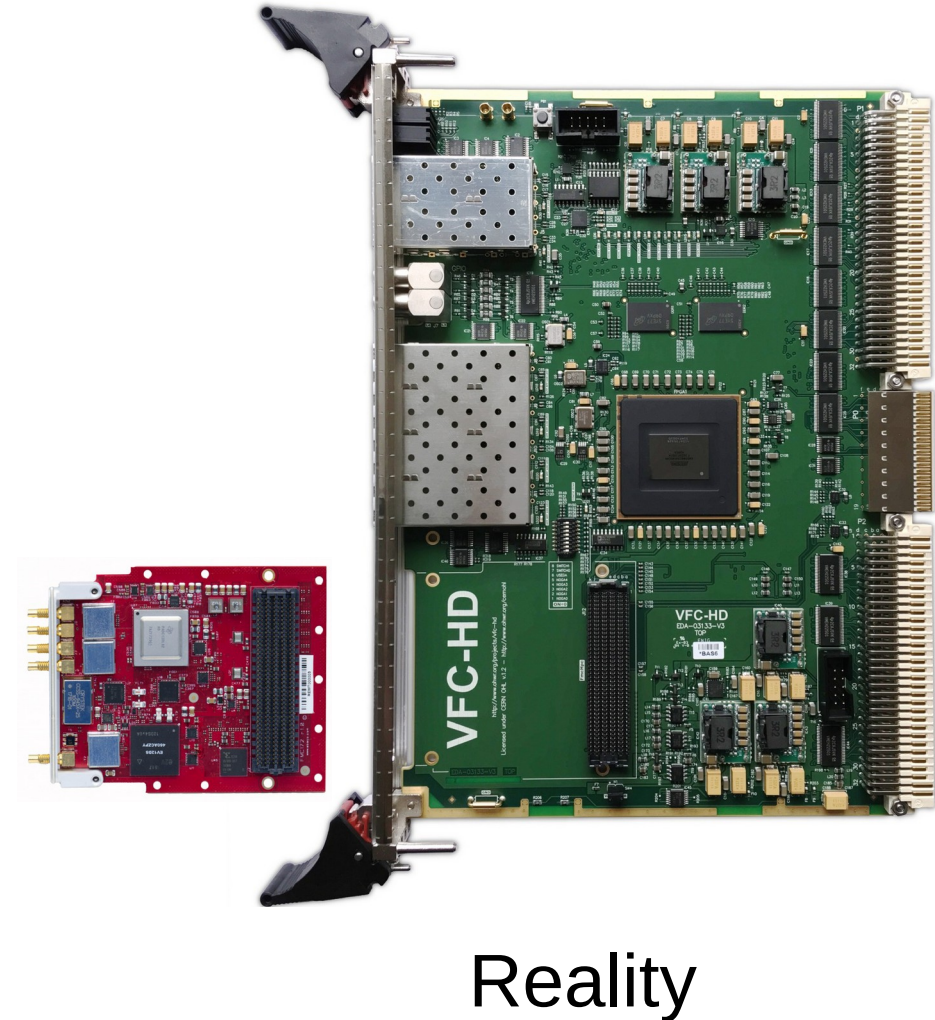


cfv-ba3-bpm

Example - VFC ALPS Application – The Solution

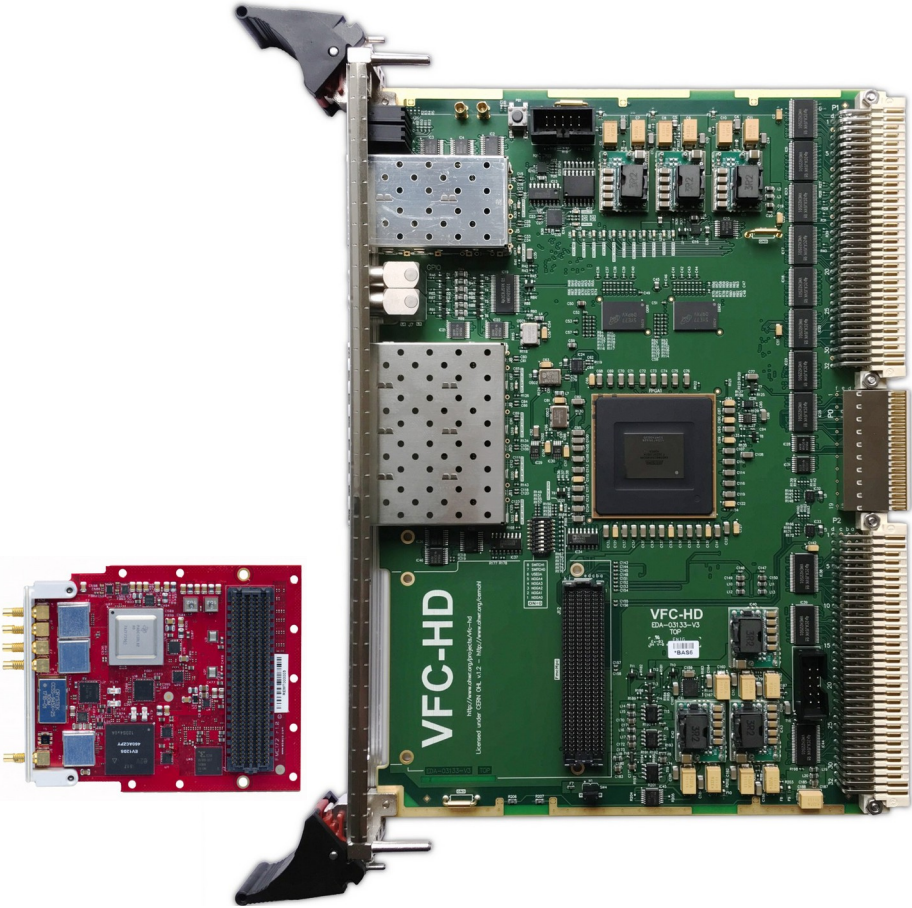


Example - VFC ALPS Application – The Solution

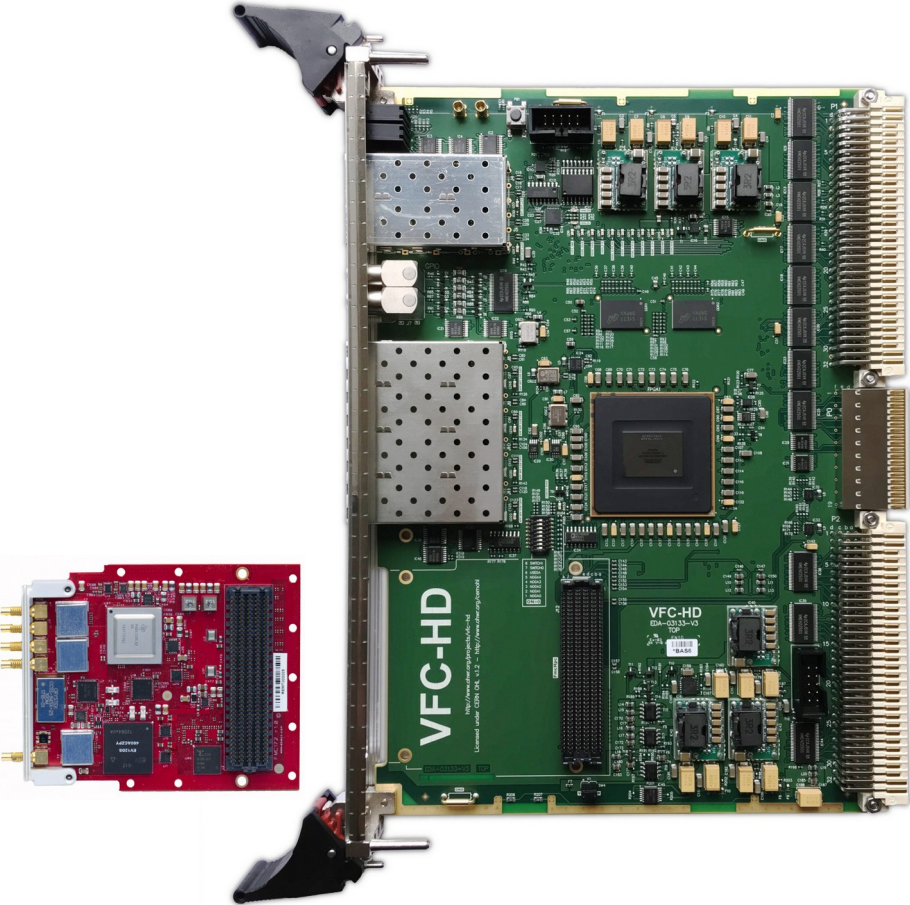


Reality

Example - VFC ALPS Application – The Solution

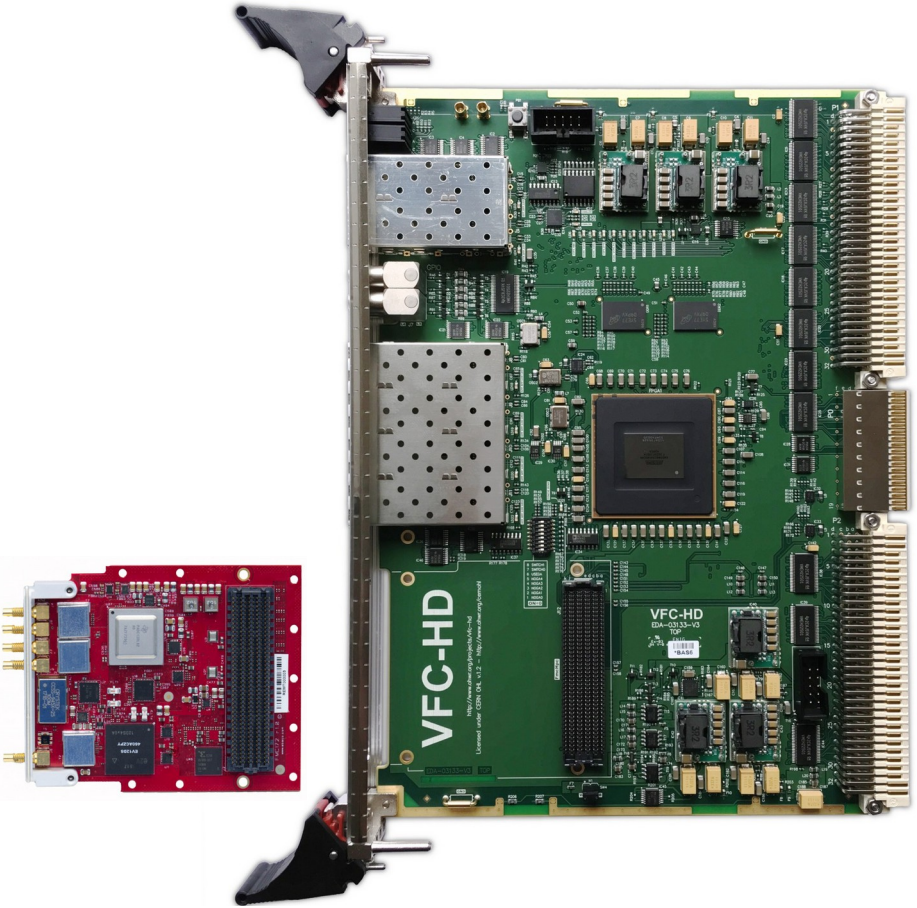


Reality

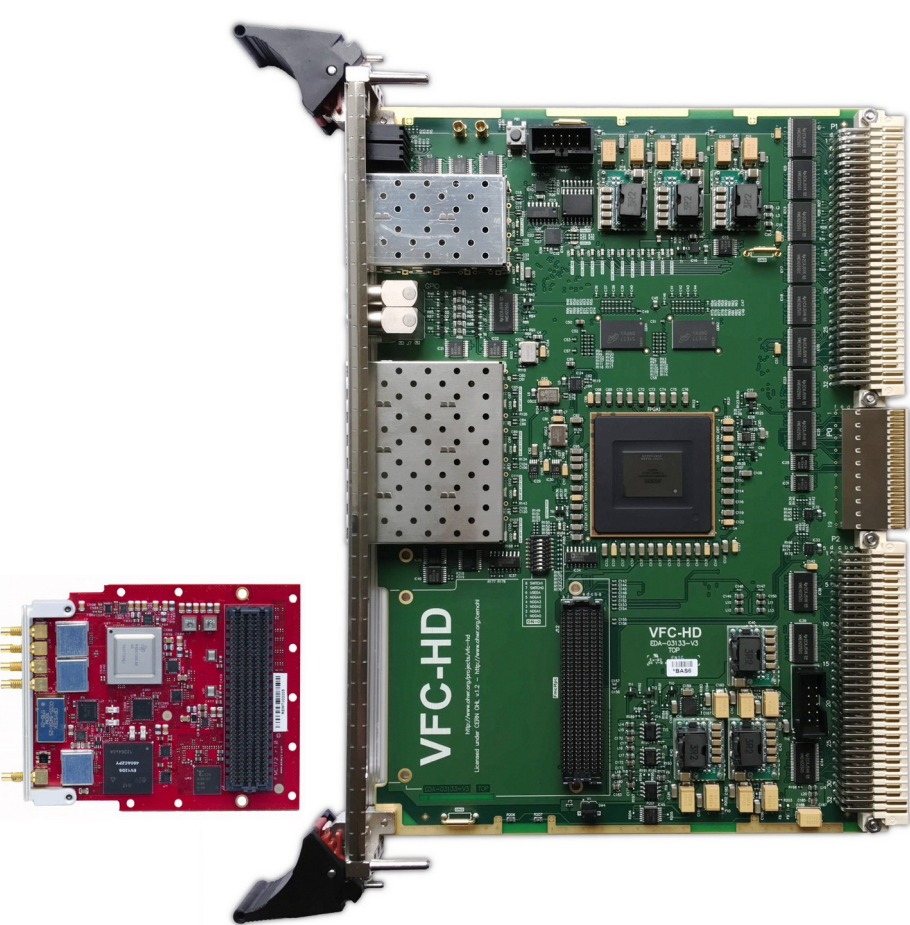


CCDB Representation

Example - VFC ALPS Application – The Solution



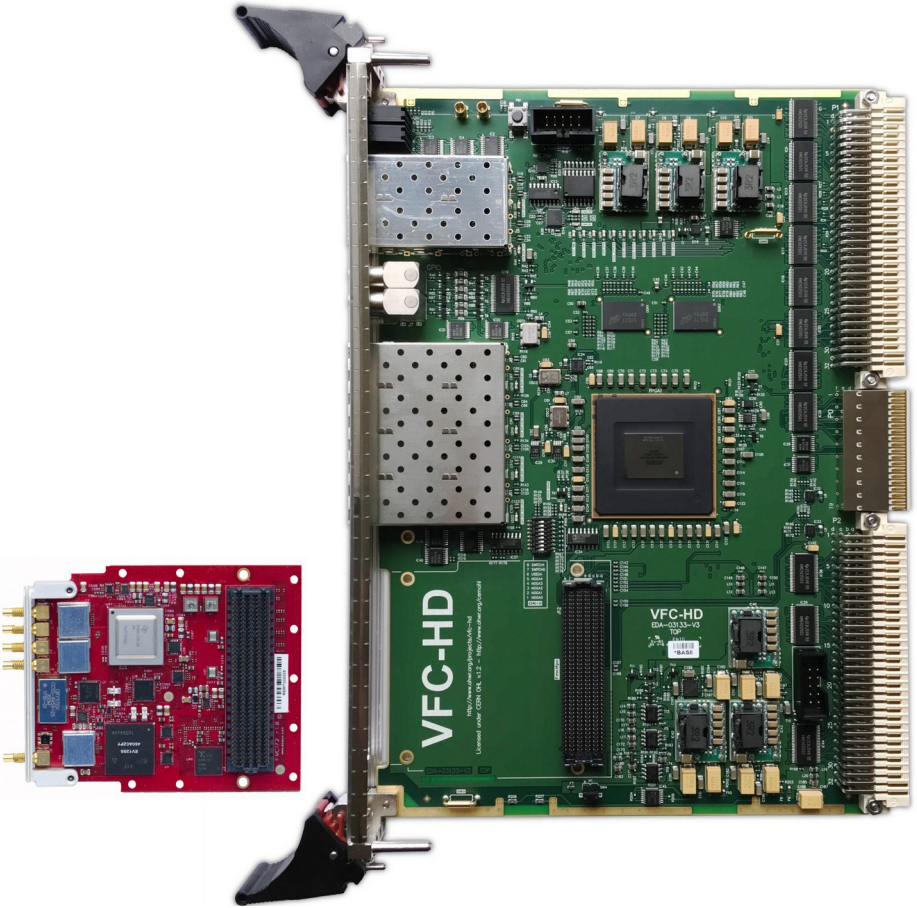
Reality



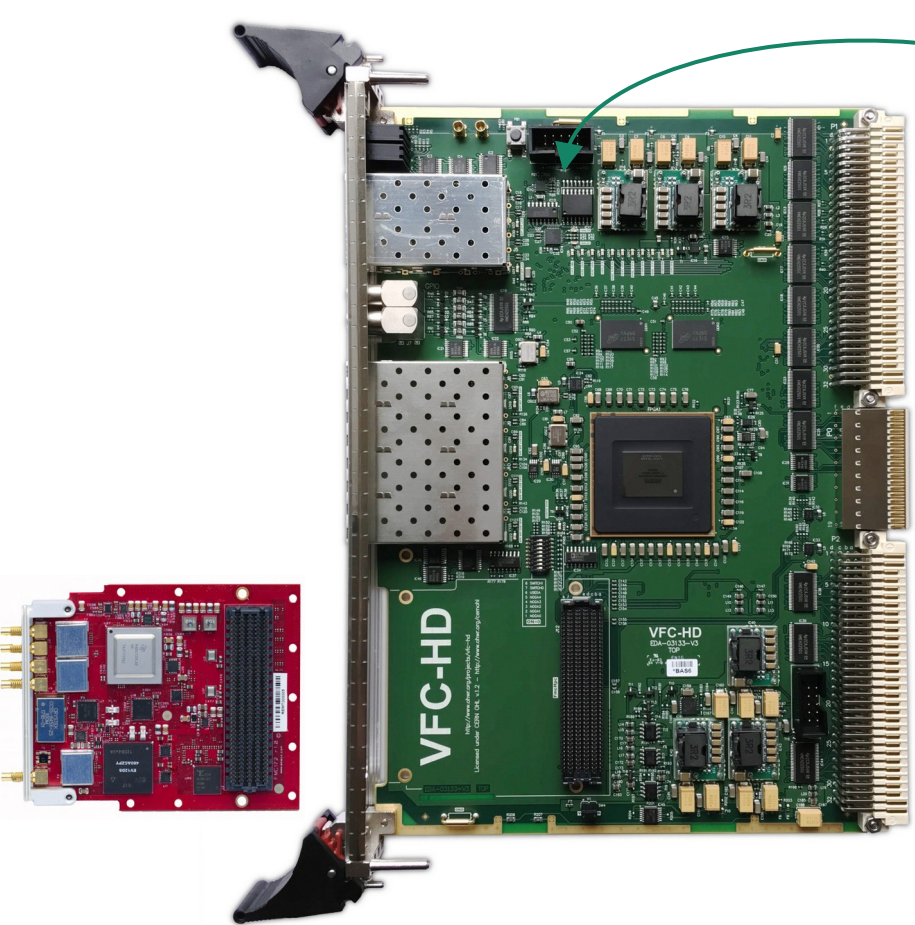
CCDB Representation

- VFC_HD
- ALPS
 - ALPS-CH0
 - ALPS-CH1
 - ALPS-CH3
 - ALPS-CH4
- FMC

Example - VFC ALPS Application – The Solution



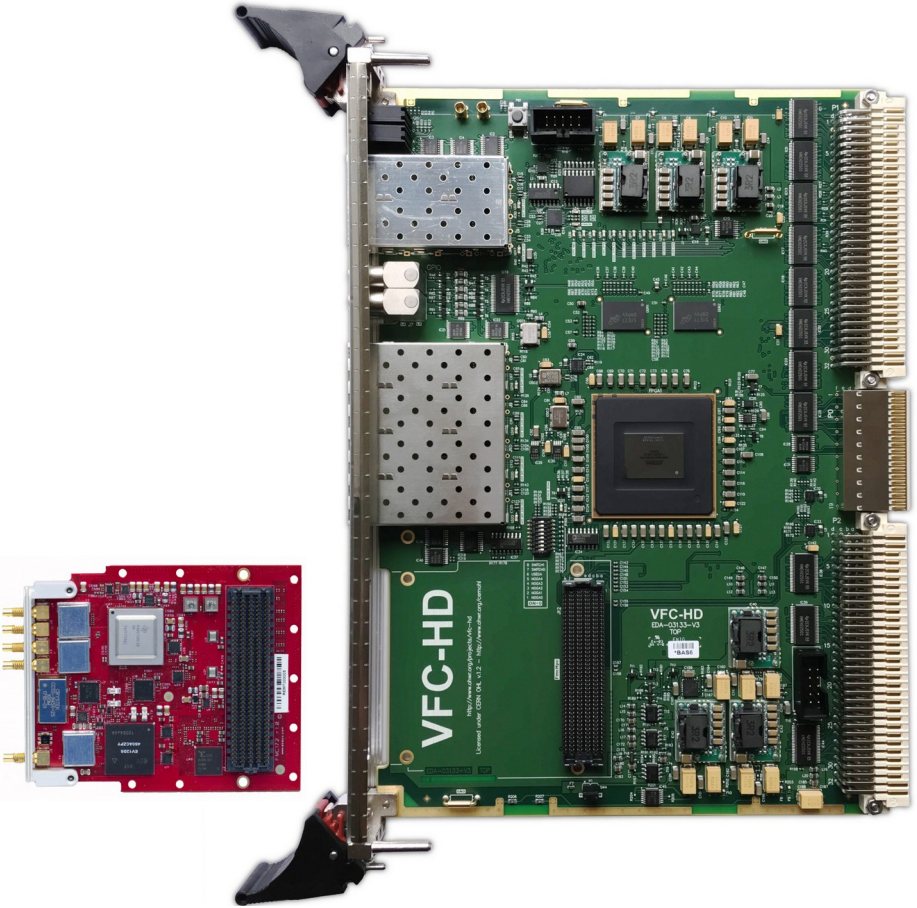
Reality



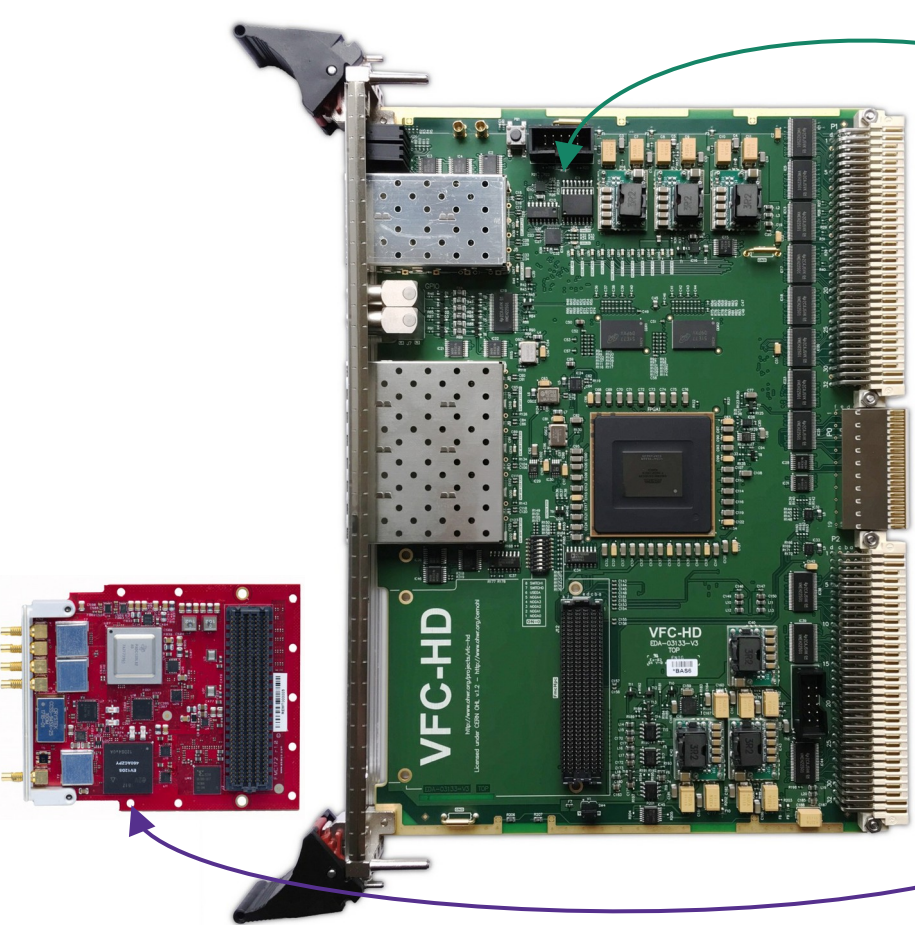
CCDB Representation

- VFC_HD
- ALPS
 - ALPS-CH0
 - ALPS-CH1
 - ALPS-CH3
 - ALPS-CH4
- FMC

Example - VFC ALPS Application – The Solution



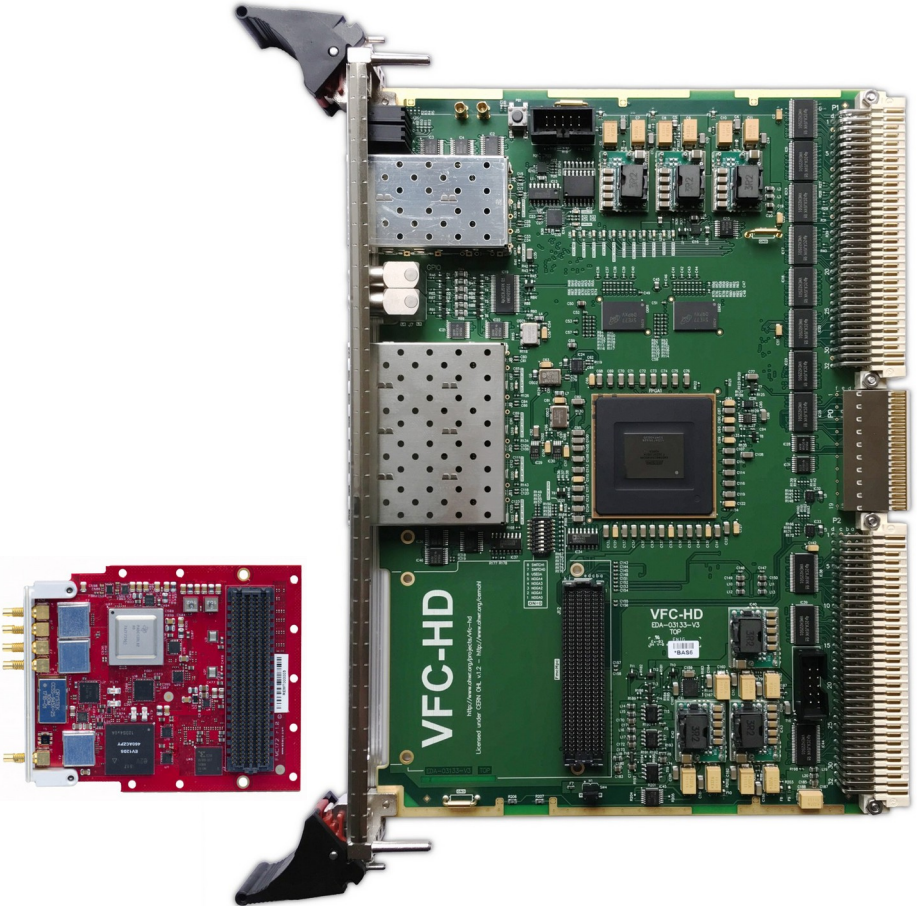
Reality



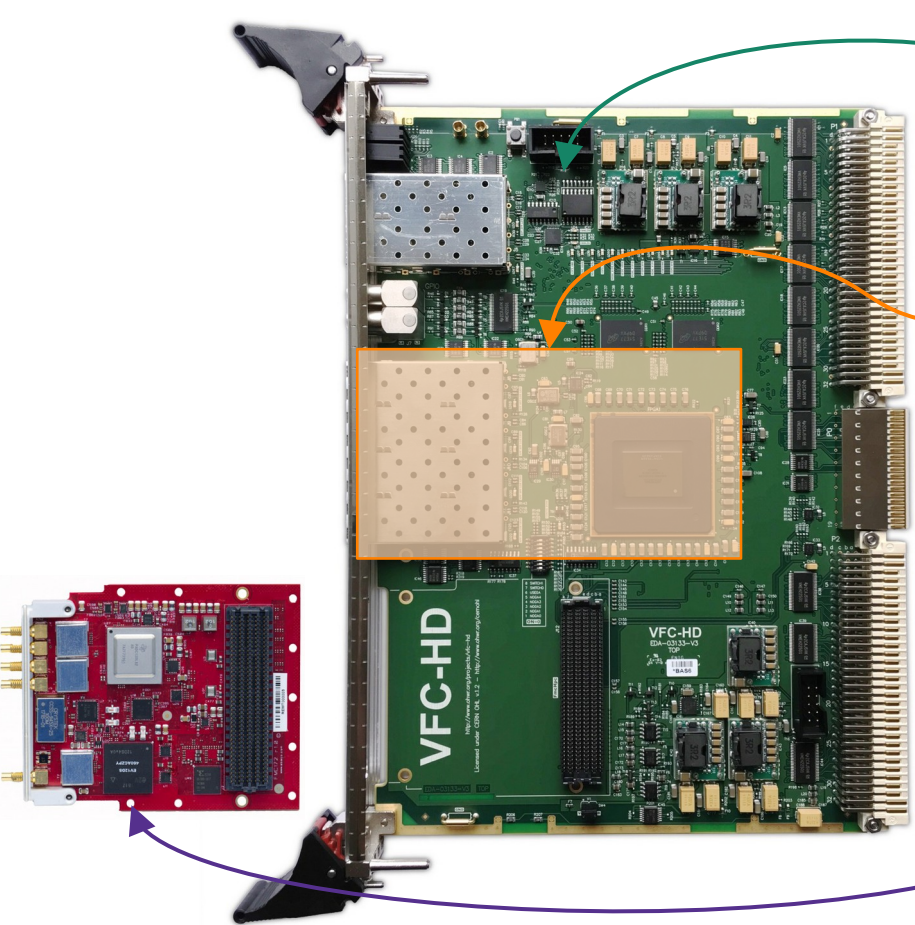
CCDB Representation

- VFC_HD
- ALPS
 - ALPS-CH0
 - ALPS-CH1
 - ALPS-CH3
 - ALPS-CH4
- FMC

Example - VFC ALPS Application – The Solution



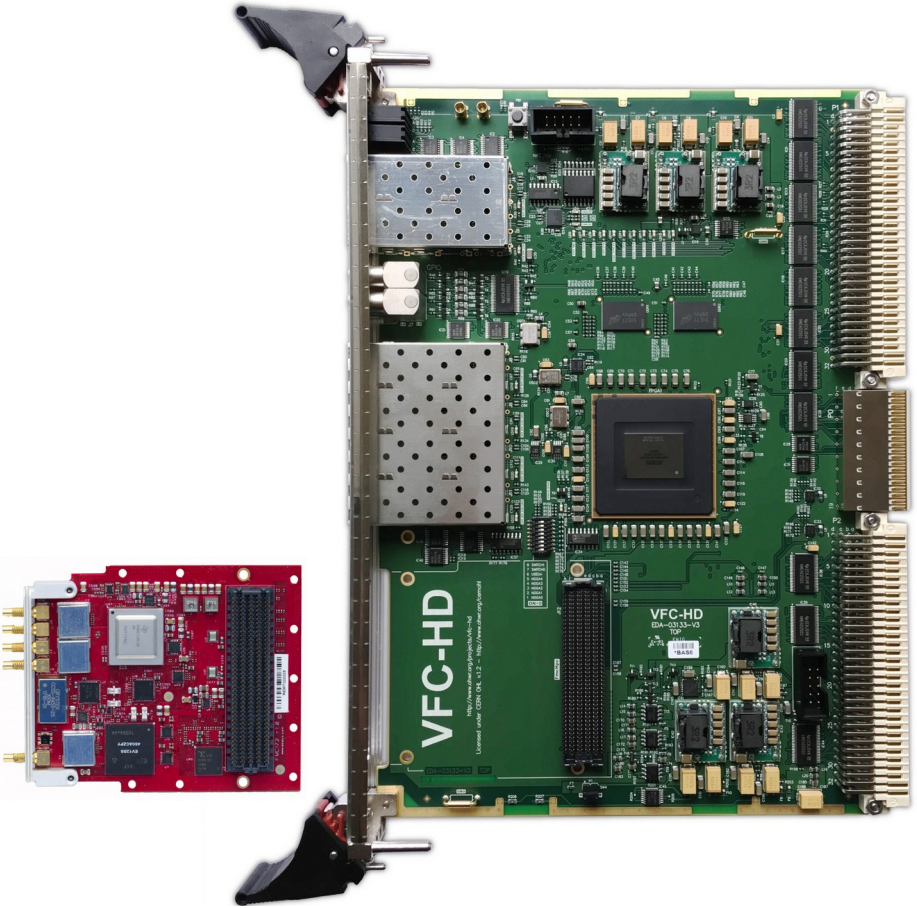
Reality



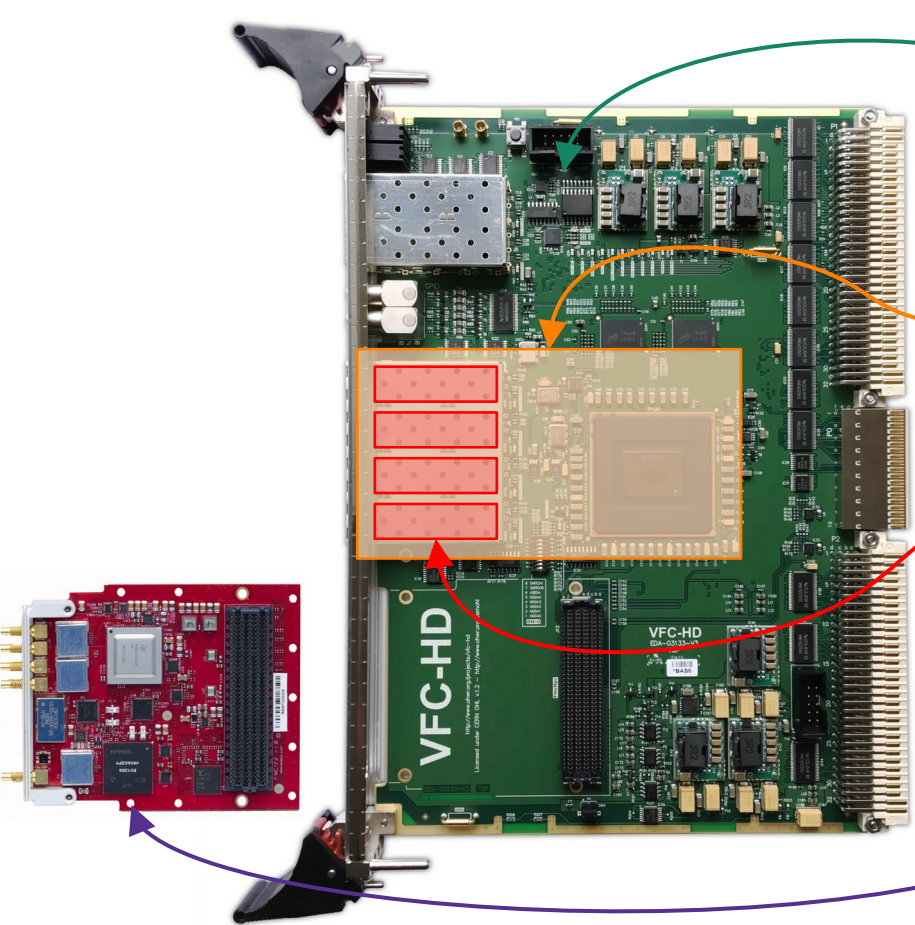
CCDB Representation

- VFC HD
- ALPS
 - ALPS-CH0
 - ALPS-CH1
 - ALPS-CH3
 - ALPS-CH4
- FMC

Example - VFC ALPS Application – The Solution



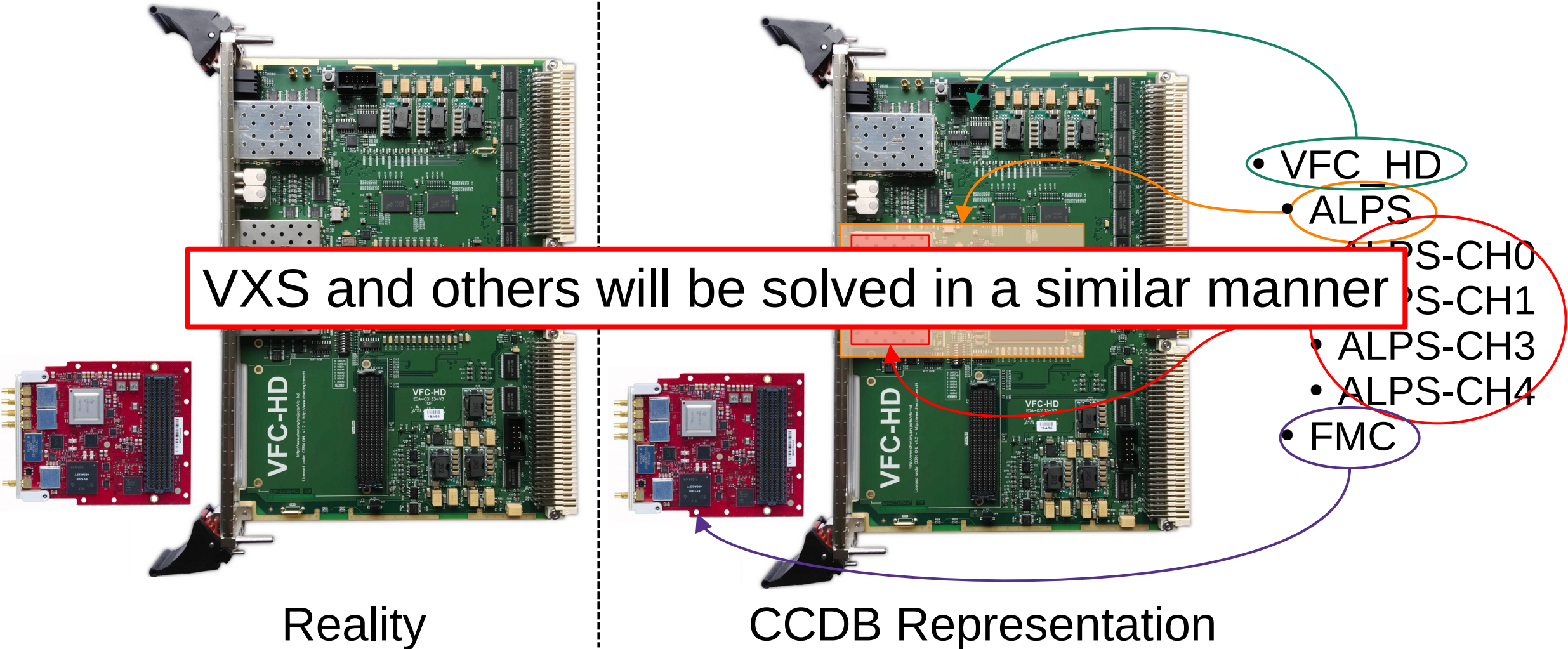
Reality



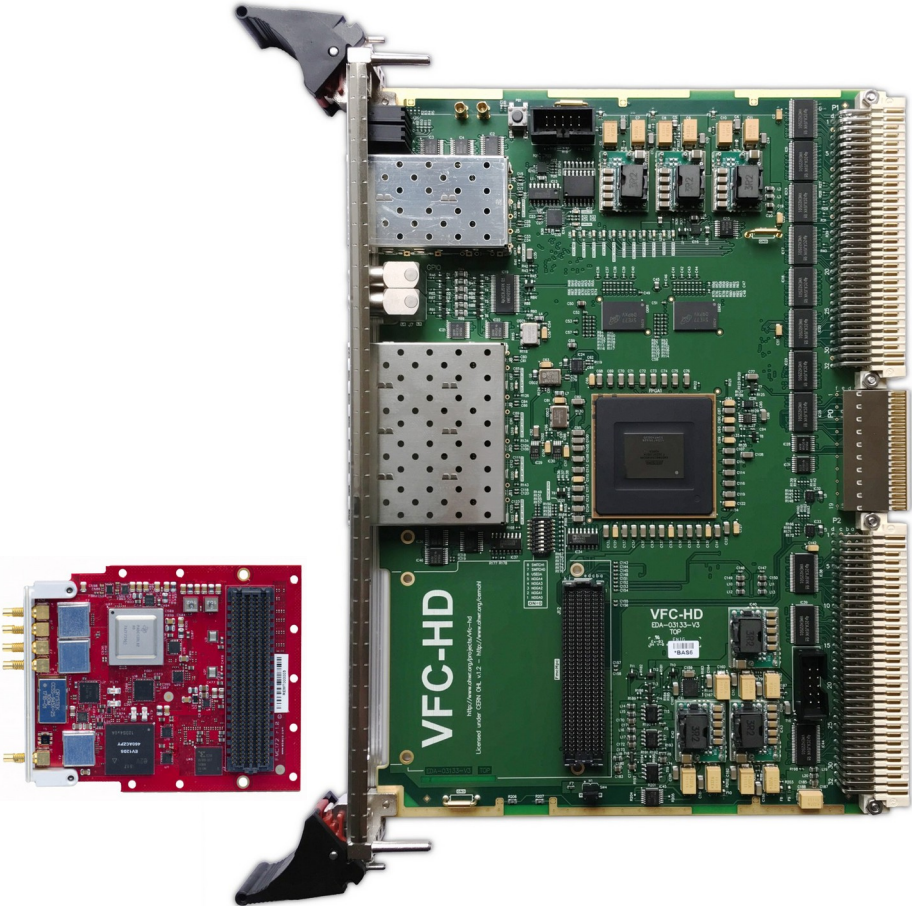
CCDB Representation

- VFC HD
- ALPS
 - ALPS-CH0
 - ALPS-CH1
 - ALPS-CH3
 - ALPS-CH4
- FMC

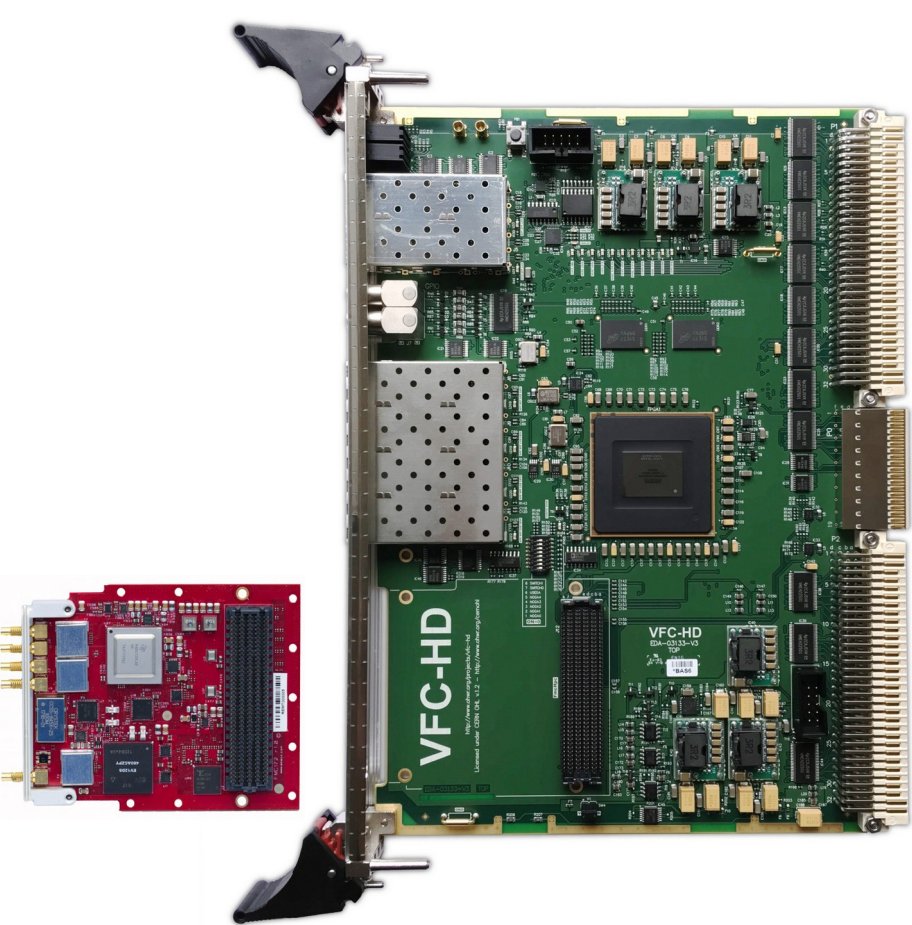
Example - VFC ALPS Application – The Solution



Example – The Permanent Solution



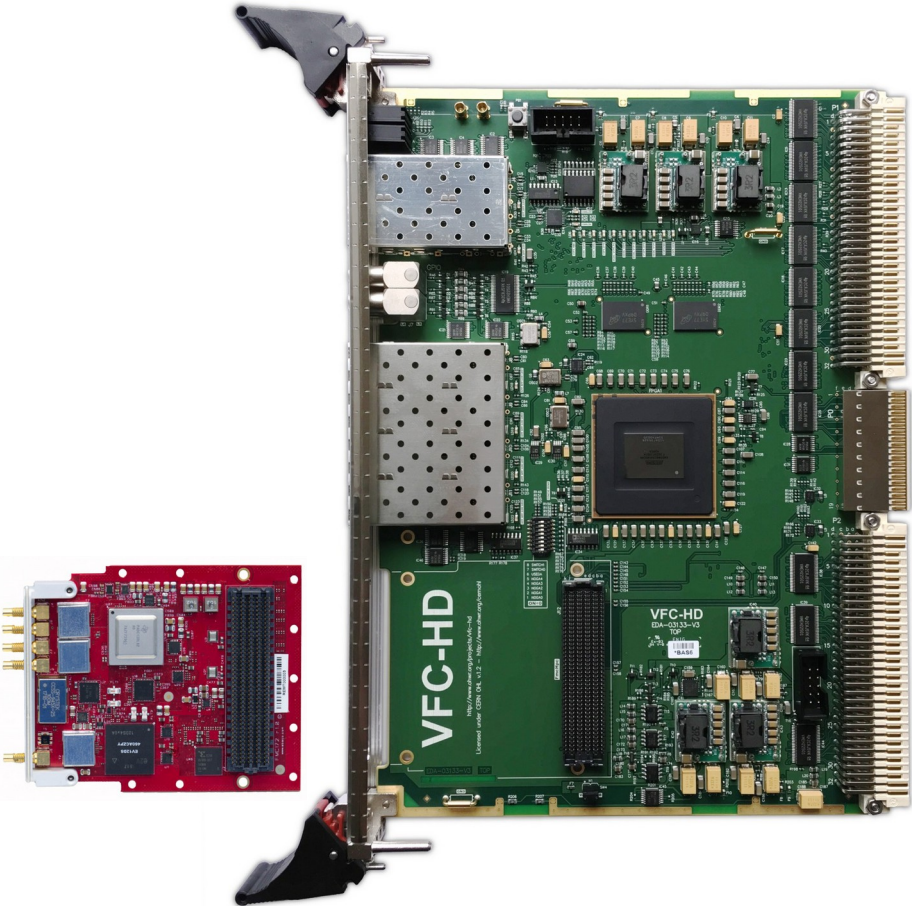
Reality



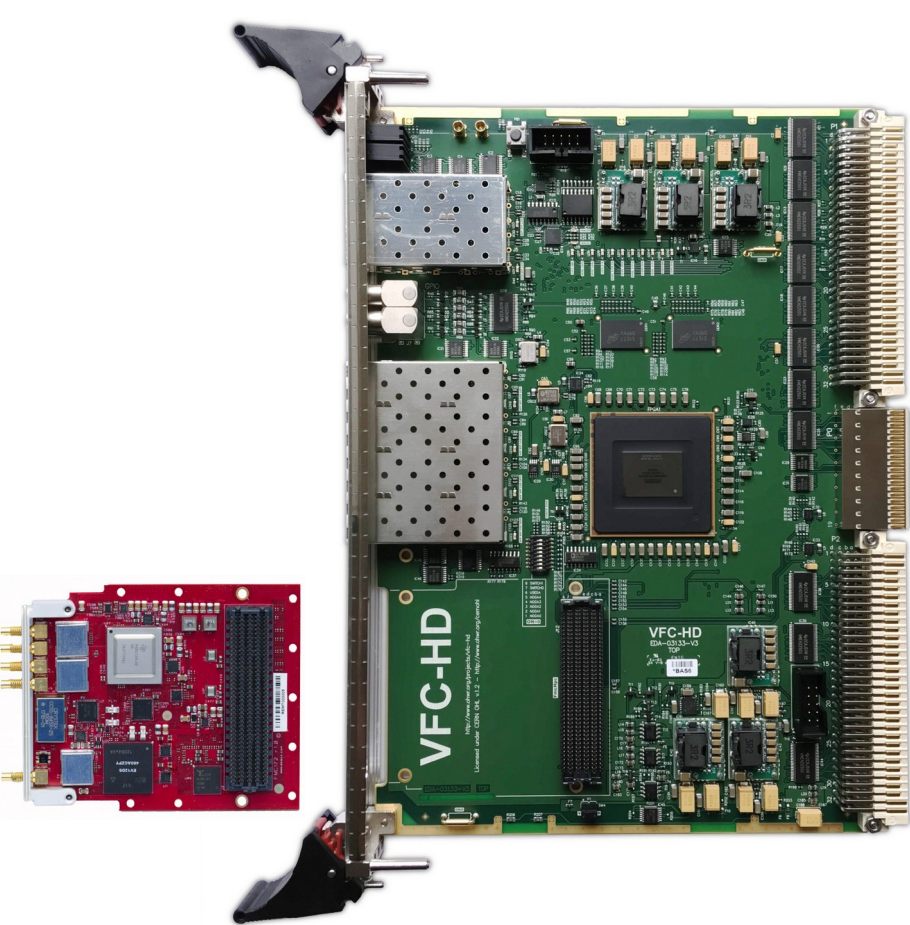
CCDB Representation

Example – The Permanent Solution

- VFC_HD
- FMC

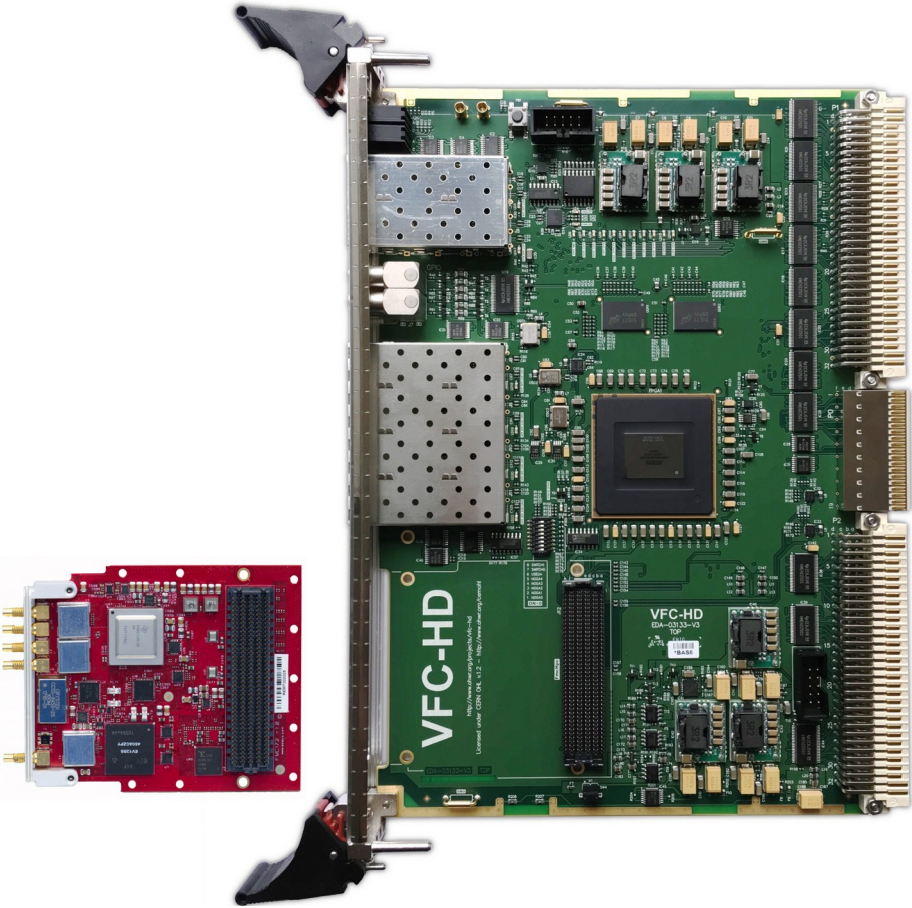


Reality

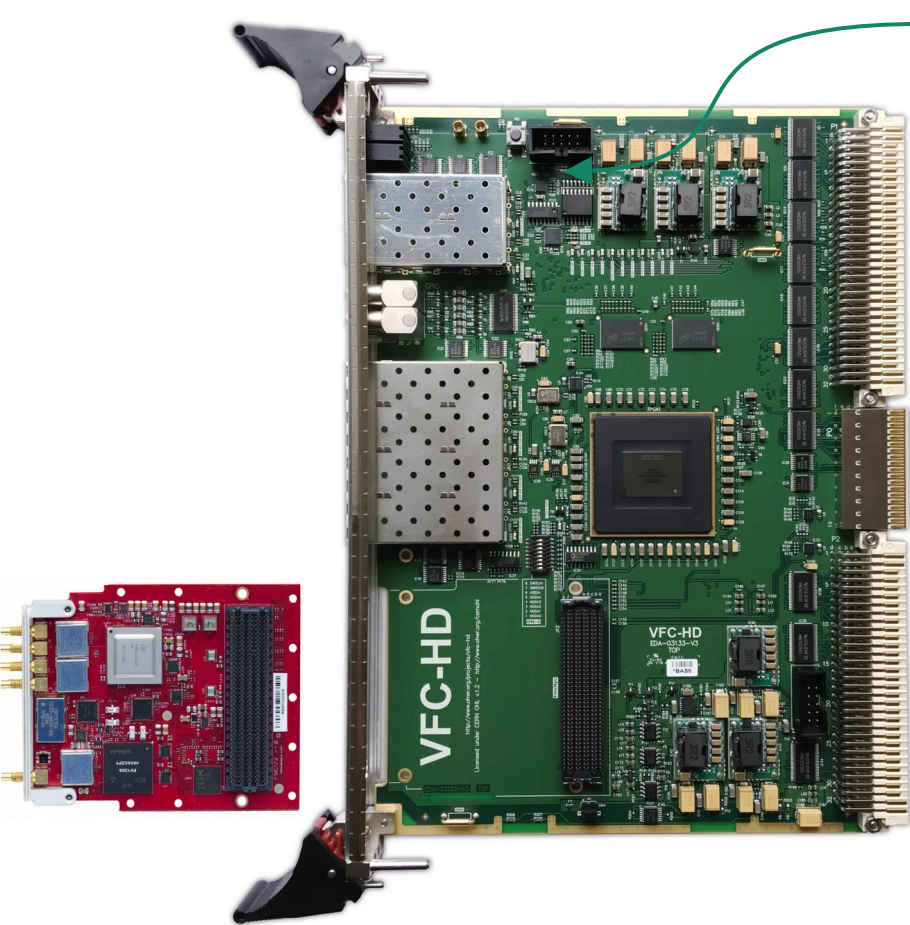


CCDB Representation

Example – The Permanent Solution



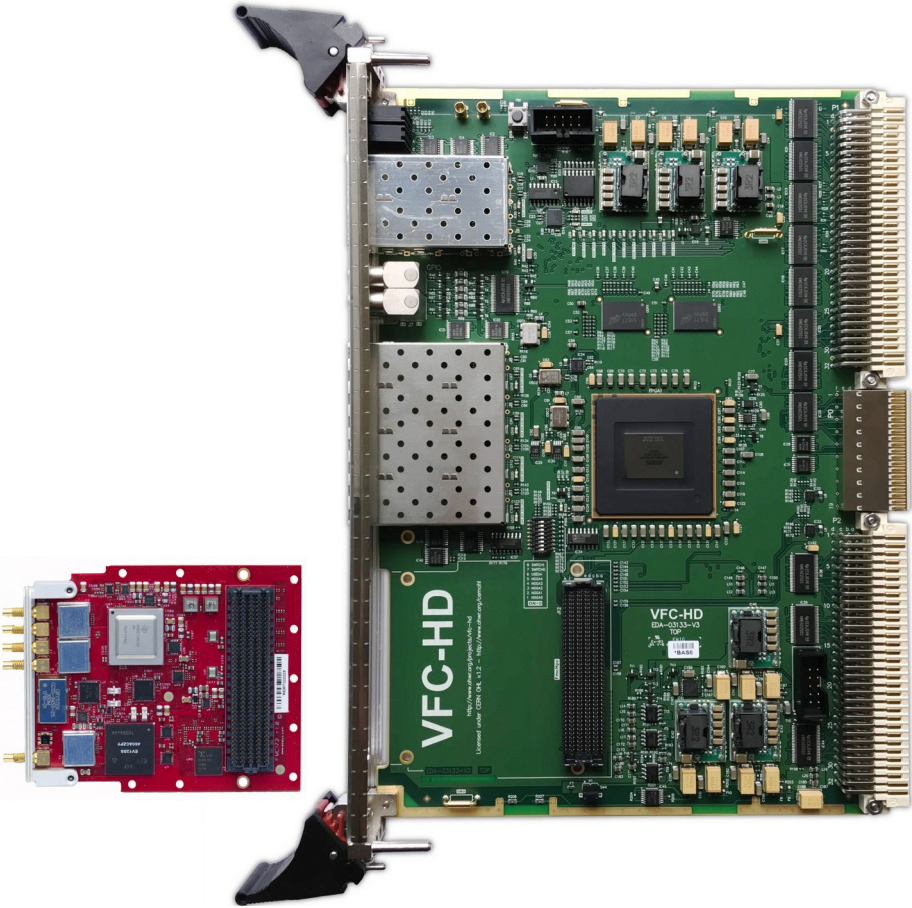
Reality



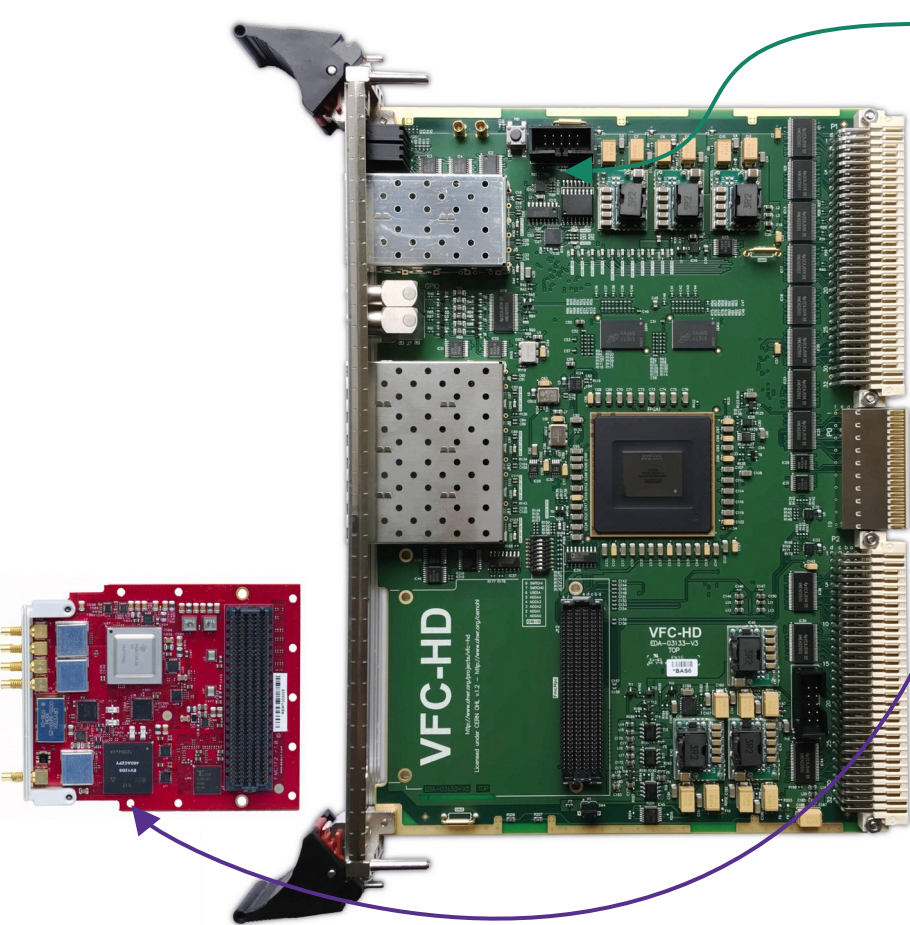
CCDB Representation

- VFC_HD
- FMC

Example – The Permanent Solution



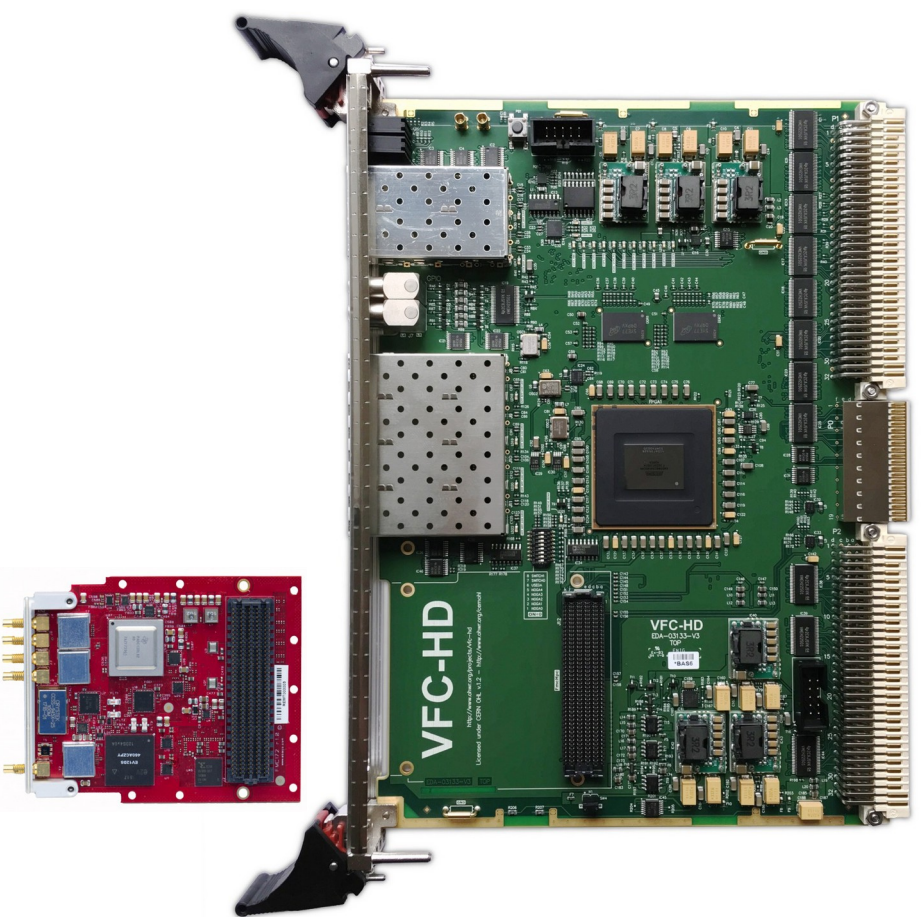
Reality



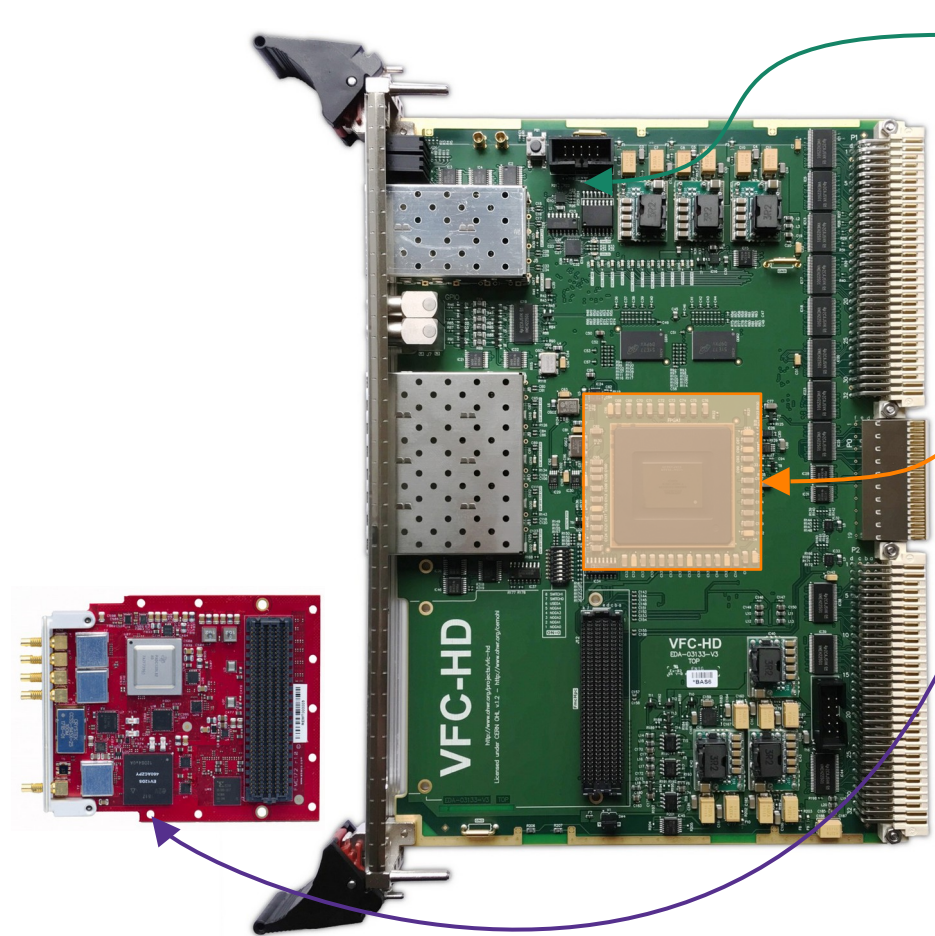
- VFC_HD
- FMC

CCDB Representation

Example – The Permanent Solution



Reality

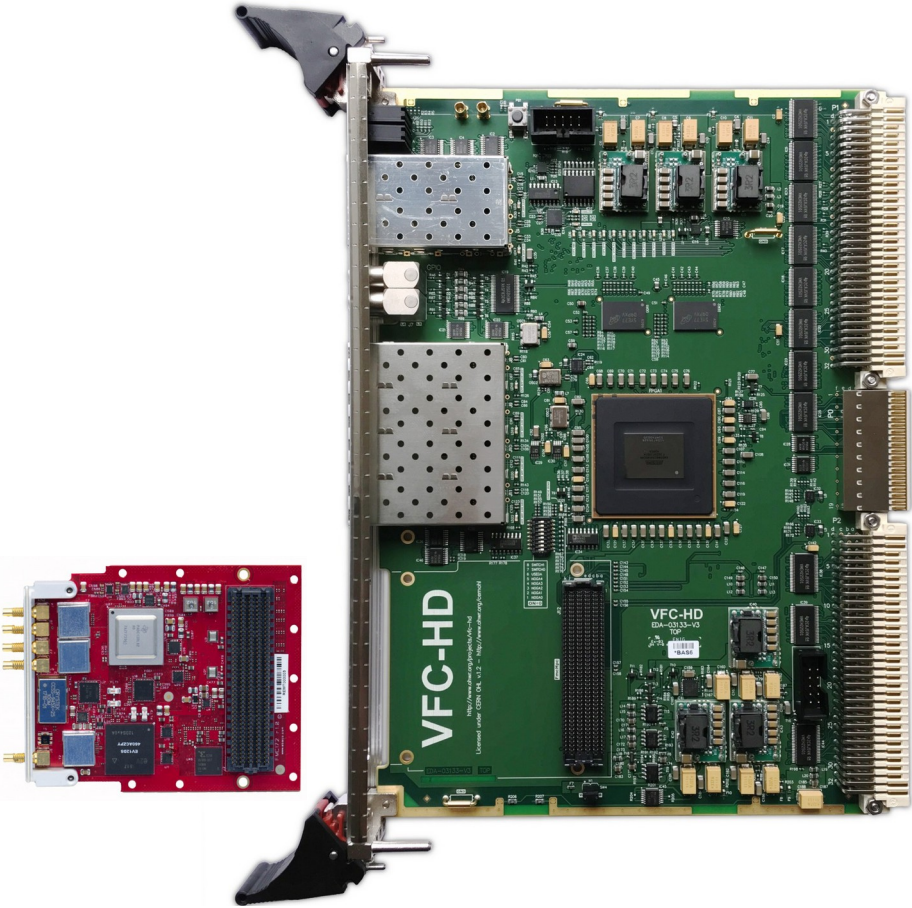


CCDB Representation

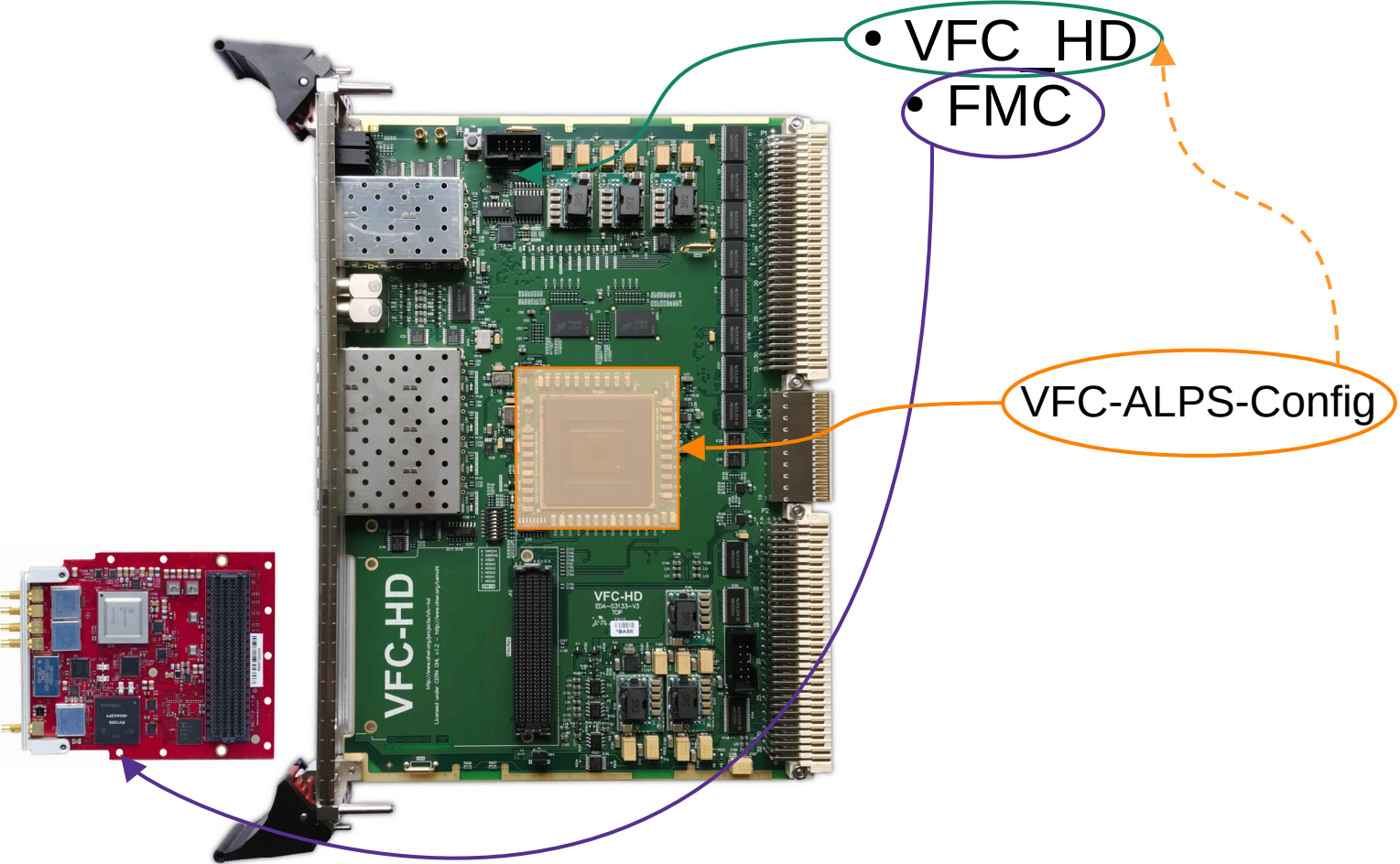
- VFC_HD
- FMC

VFC-ALPS-Config

Example – The Permanent Solution

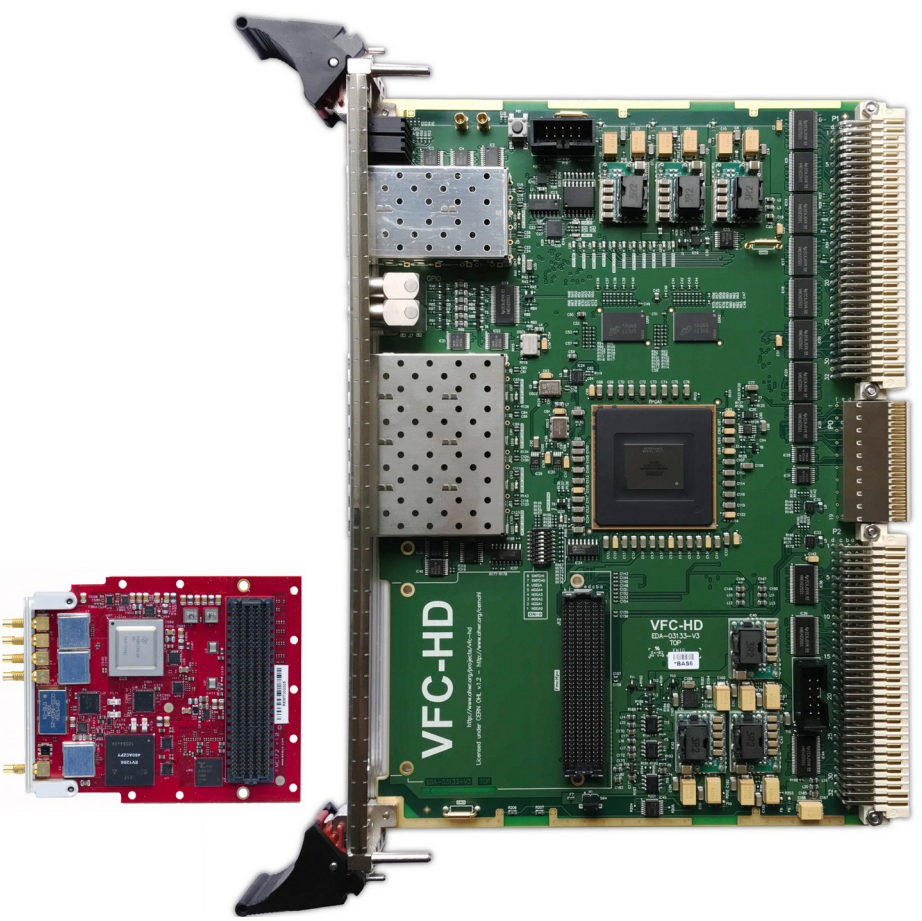


Reality

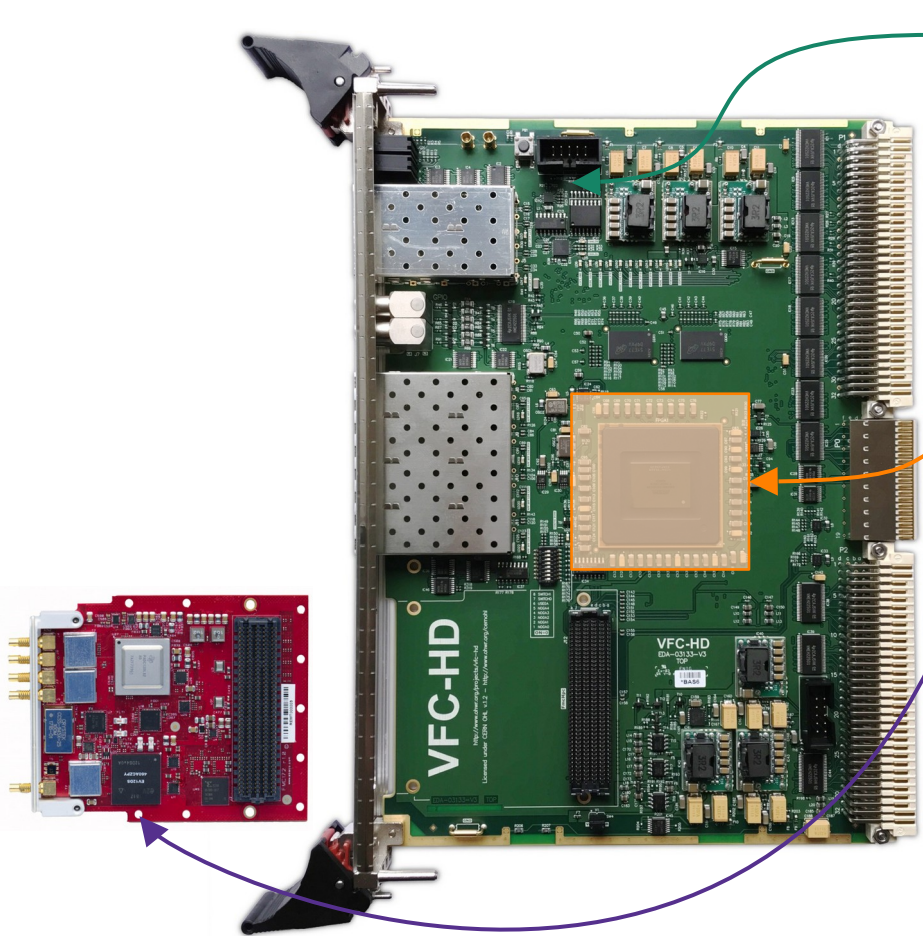


CCDB Representation

Example – The Permanent Solution



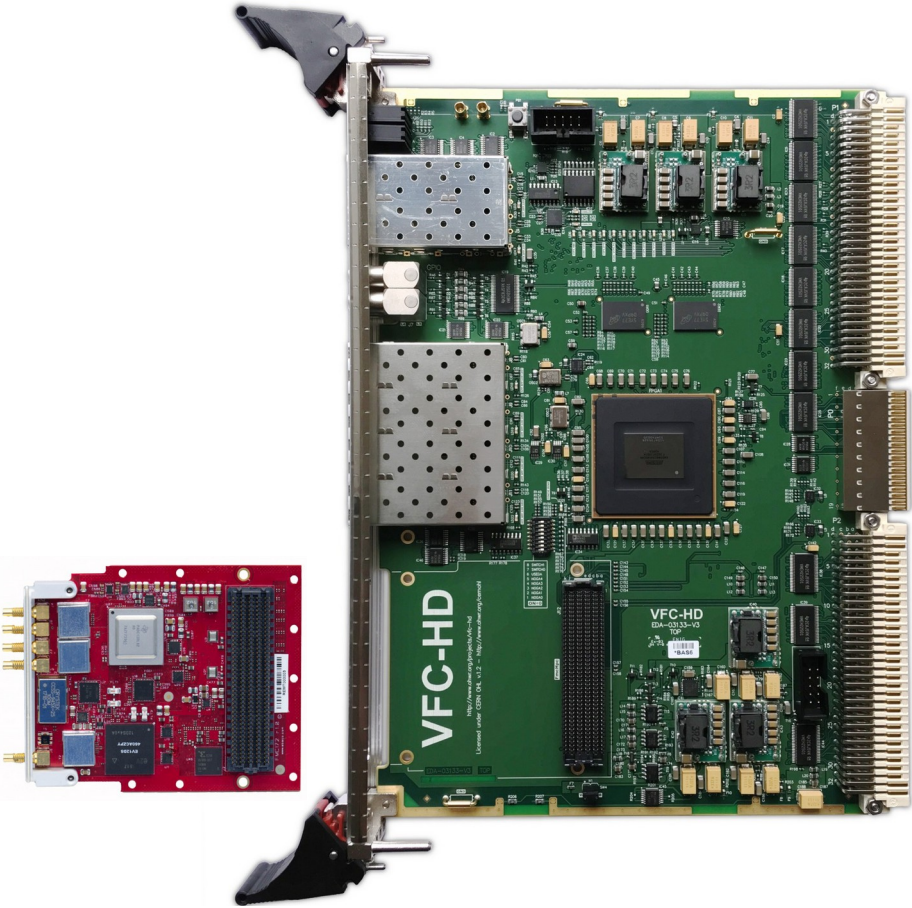
Reality



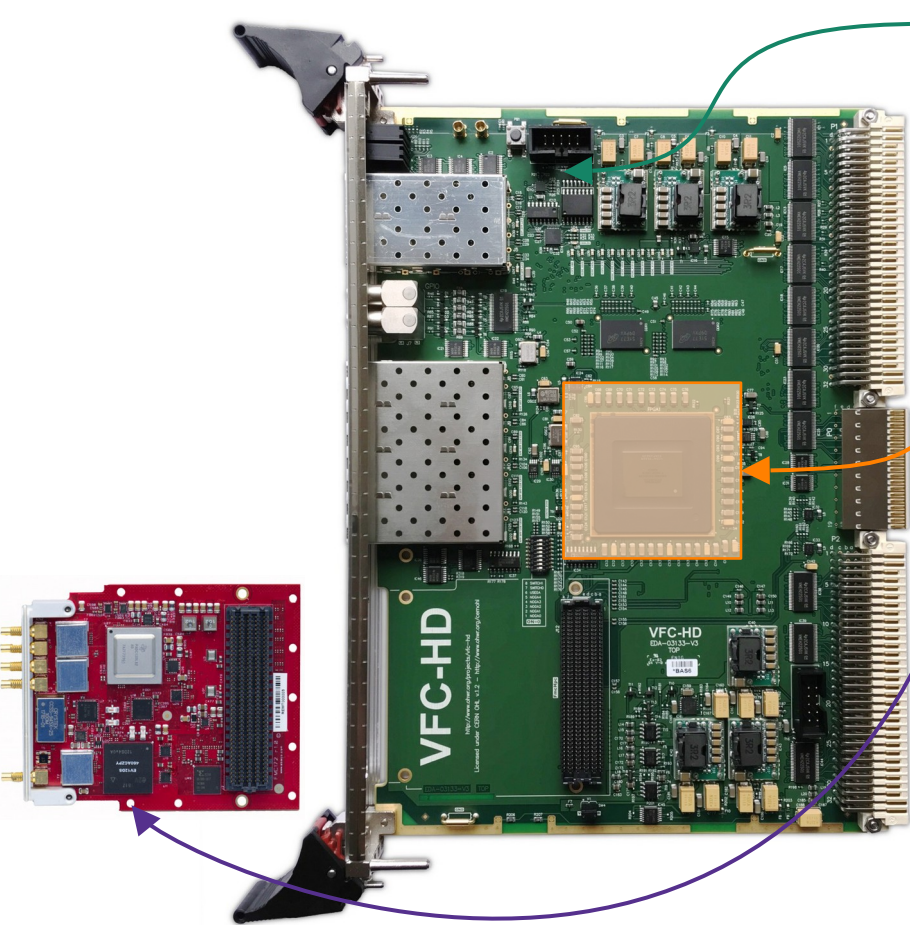
CCDB Representation

- VFC_HD
- FMC
- VFC-ALPS-Config
- ALPS-bitstream

Example – The Permanent Solution



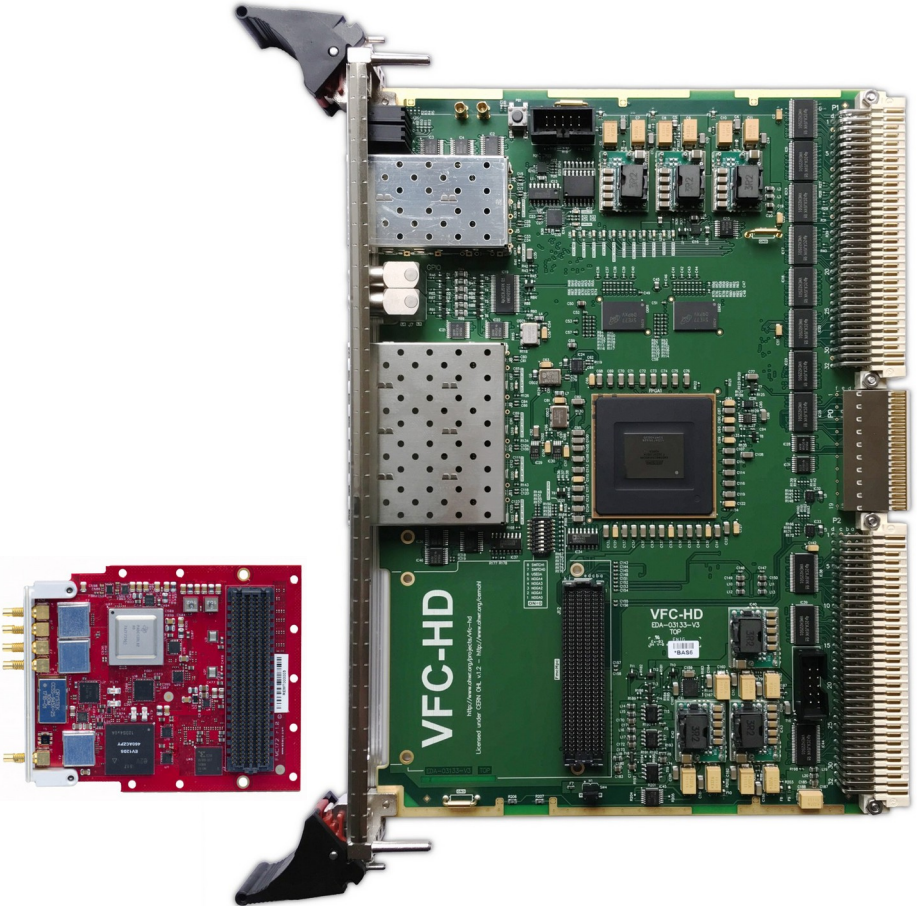
Reality



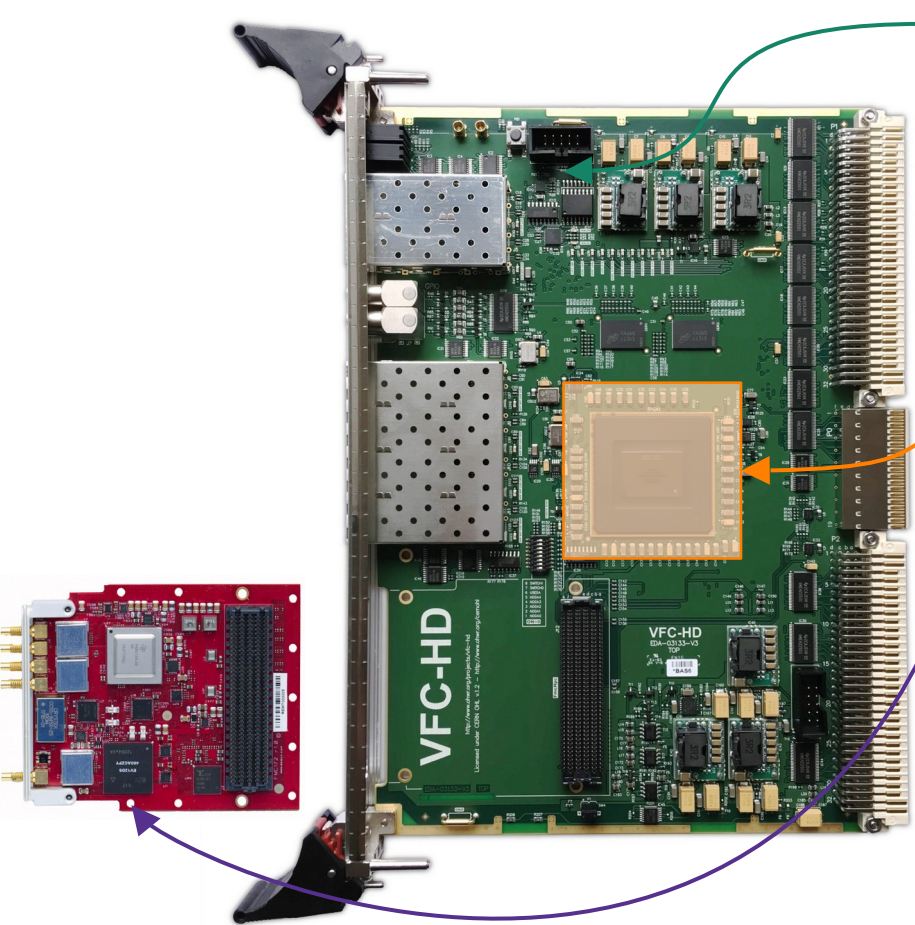
CCDB Representation

- VFC_HD
- FMC
- VFC-ALPS-Config
- ALPS-bitstream
- EDGE 4.x
 - ALPS-MFD
 - ALPS-CH-PLATFORM

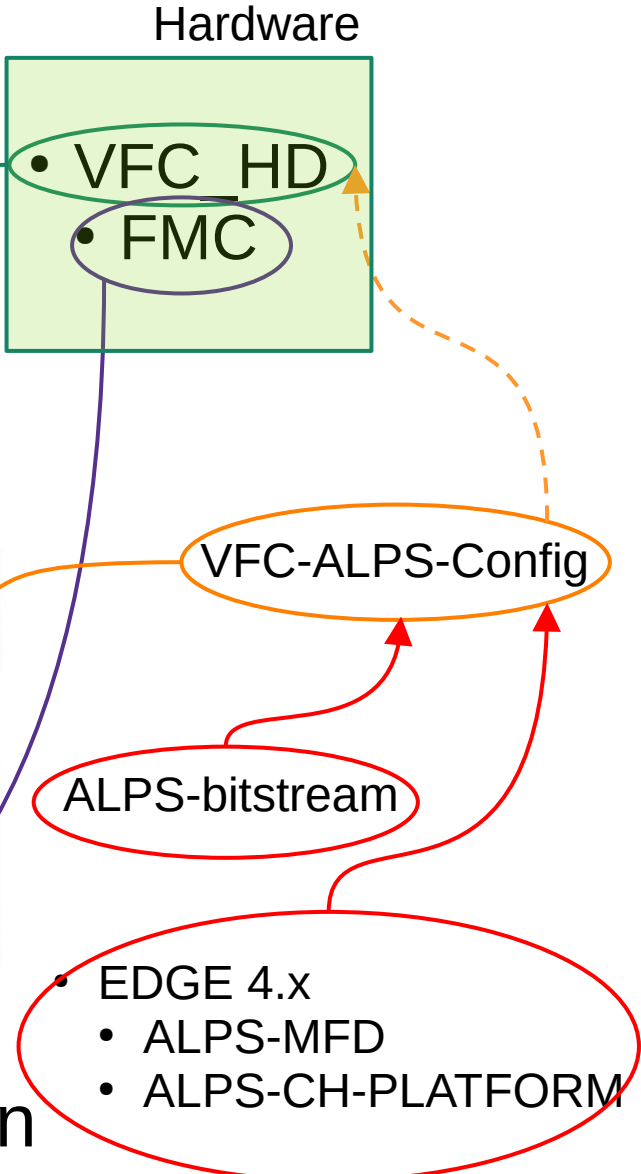
Example – The Permanent Solution



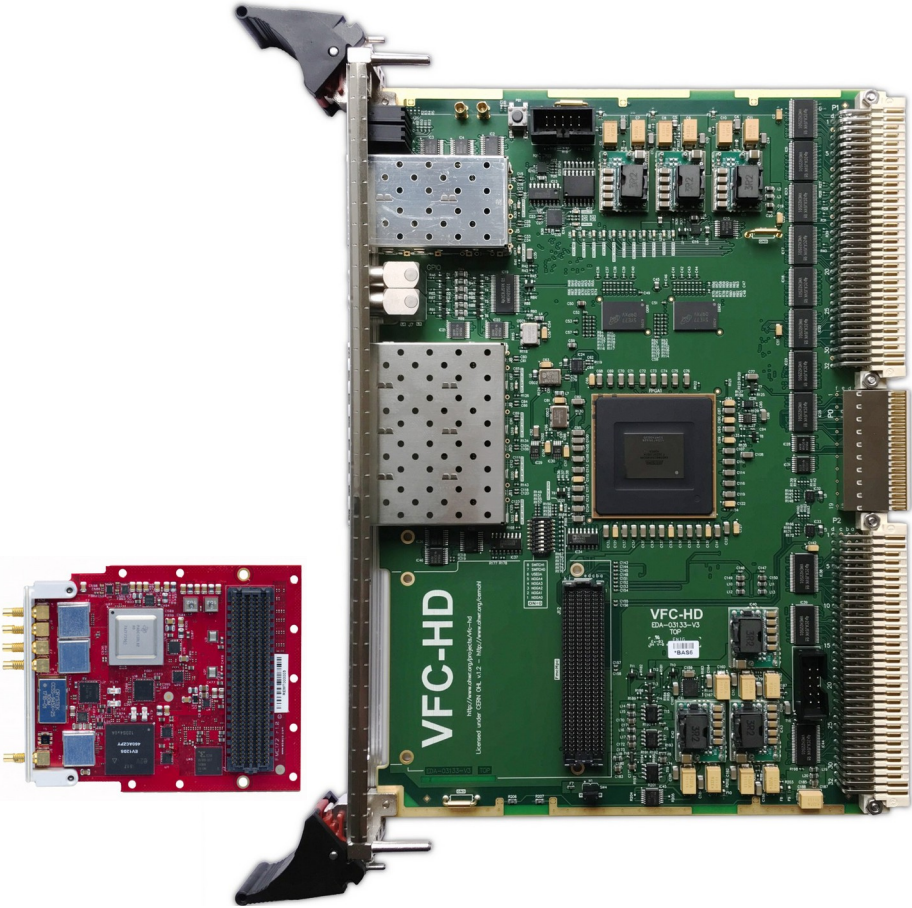
Reality



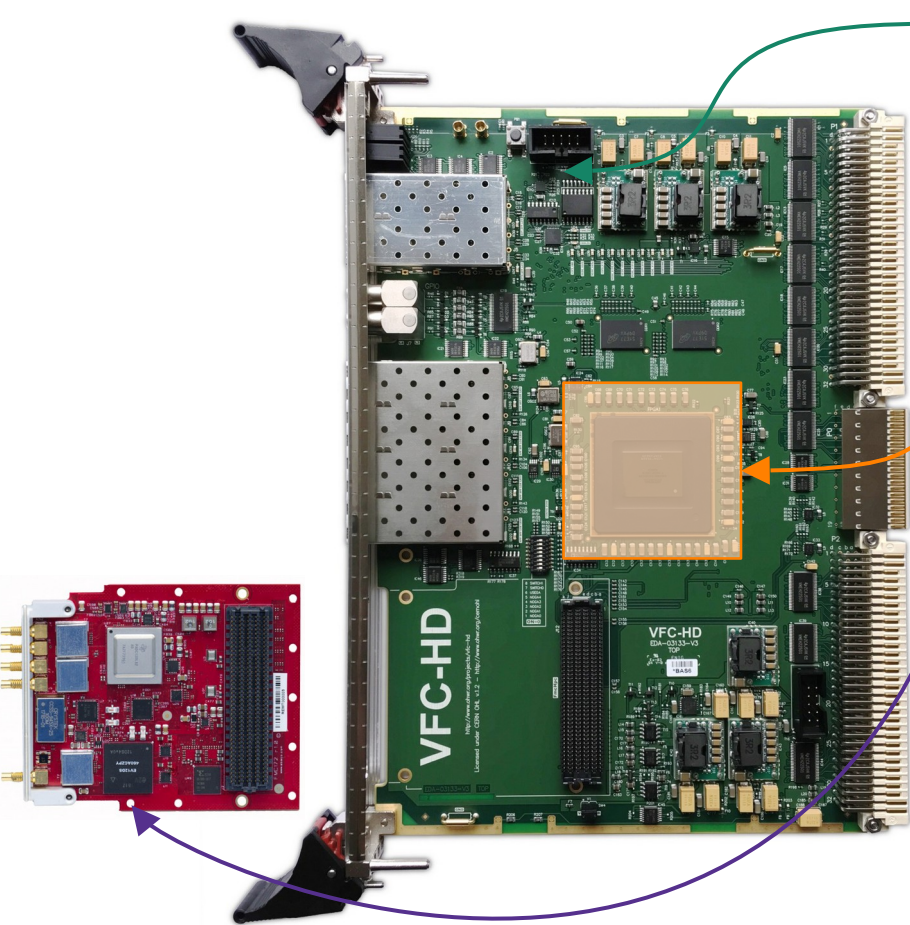
CCDB Representation



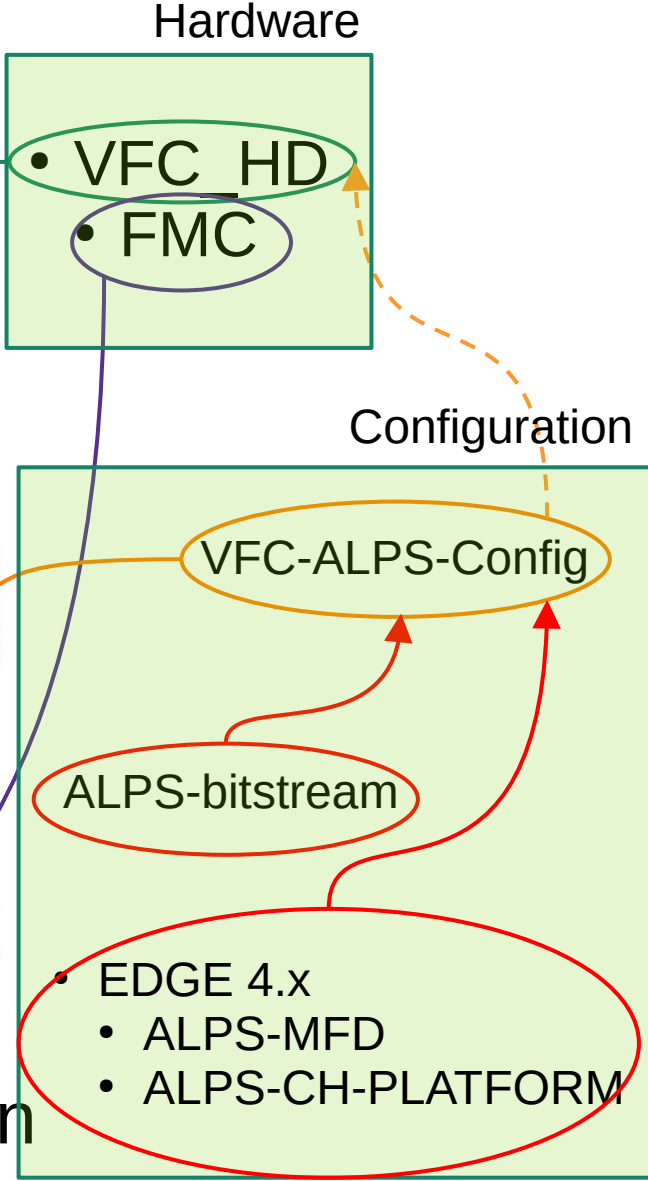
Example – The Permanent Solution



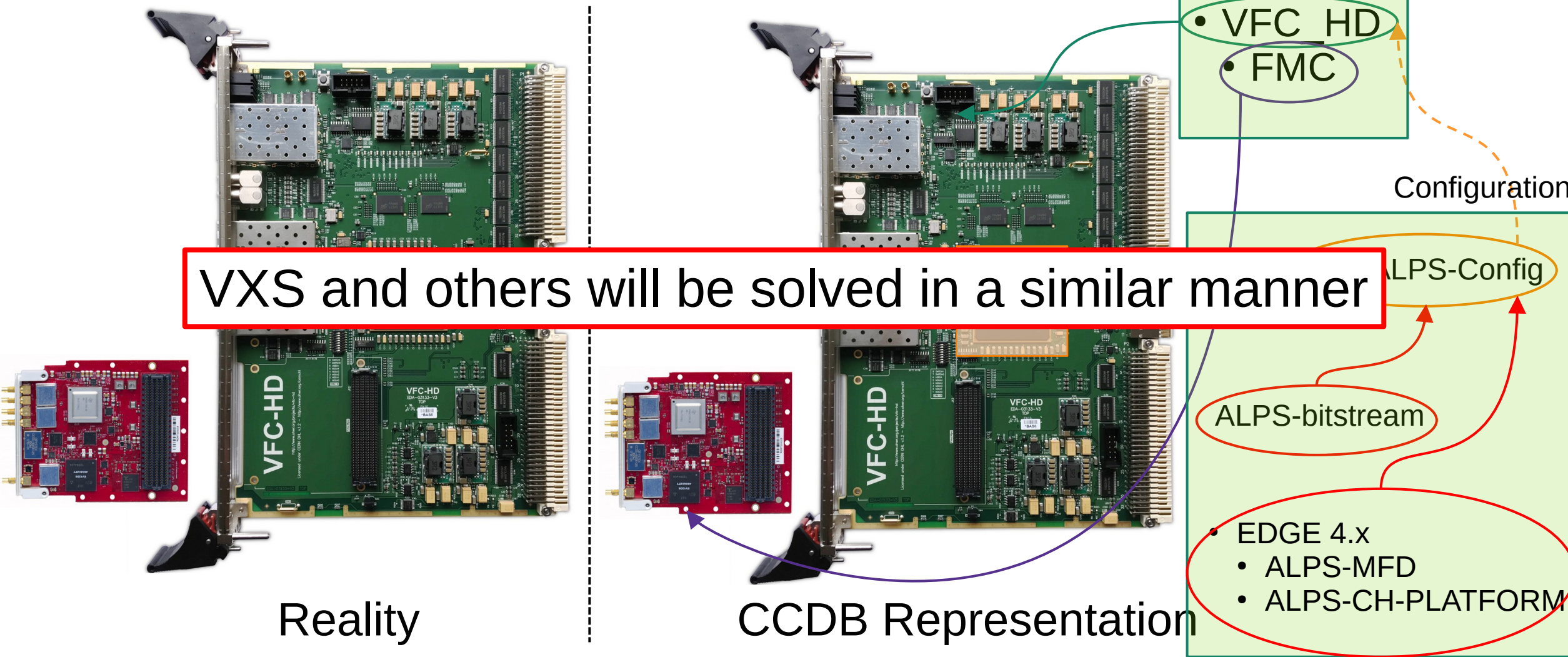
Reality



CCDB Representation




Example – The Permanent Solution



Migration To The New Hardware Model

- **Data migration will be handled by BE-CEM and BE-CSS**
- **Sometimes data can't be migrated as it is**
 - To guarantee data consistency, the new model is much stricter
 - The new model does not accept the old hacks
 - Ad-hoc migration logic will be implemented for special cases
 - Like the previous examples
- **Only 2% of the modules have not been migrated yet**
 - Tiny mistakes here and there to be fixed
 - MTCA, TXMC, and CTRP on PCI system use cases to be fixed
- **EQ Groups are asked to contribute only when there is not enough context information**
 - You probably already received some of my emails asking to clean this or that
 - If not, better, all data were perfect

CCDE Development

- **#9 Meeting CTTB Front-End 2024-05-22**
 - **Presentation**: explaining the history, the architecture, the migration, and a plan
 - **Demo Video**: representing the development state in 2024Q2
- **We are working on the Computer page**
 - This is where the actual FEC configuration happens
- **Gathering feedback and implementing changes in a fast pace manner**
 - Regular demos will be offered presenting all new functionalities – (bi)weekly Friday 9:30
 - All changes will be directly deployed on ccde-dev.cern.ch
- **Dedicated Mattermost channel for feedback and demo announcements**
 - <https://mattermost.web.cern.ch/gui/channels/ccde>
- **Before the YETS we will organize a complete DEMO**
 - We will try to get an auditorium 

The End