

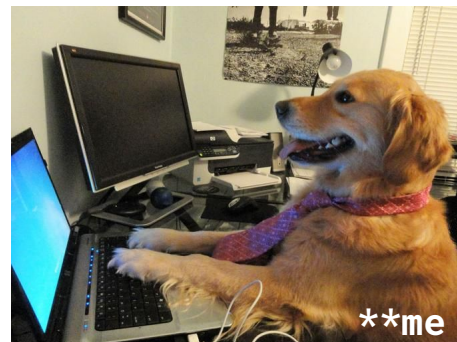
PXD_P4 Commissioning at KEK Status

We're approaching the hot PXD commissioning phase

- many things still to be prepared (services for KEK, coordination w/ VXD group, subsystem readiness, ... and yes, also the detector)
- even more things will start going on in parallel → needs planning, coordination and communication
- I've also tried to assemble necessary information and schedule tasks
- So: "lean back, relax and let me** handle it from here"*

Talk tries to summarize status documentation & planning: (all still work in progress) and get you involved

- PXD specific work plan / checklist on top of Karsten's [VXD Gantt chart](#)
 - [PXDCommissioningAtKEK_Timeline \(google docs\)](#)
- VXD commissioning confluence: [Documentation of VXD reinstallation](#)
 - More detailed PXD specific info and documentation during commissioning collected at <https://confluence.desy.de/display/BI/PXD+2022+Commissioning+at+KEK>
- [PXD person power potential](#)
 - Should soon converge towards (preliminary) travel **plans**
- [PXD 2022 ingredients list](#)
 - Should be checked and completed by subsystem experts



*should say
no one

PXD Commissioning Phases

task	PSP Code (if comparable)	scheduled time as of May 2022	target PXD on site head count	Contributors outside Japan (required, candidate for assistance)	Contributors from Japan
PXD p4 services preparations at B4	2.7.1.3.3	04.07.22 - 22.07.22 19.10.22 - 01.11.22	6	DESY: Arthur + Anselm Bonn: Botho X X X	MPP: Boqun Mainz: Björn
PXD p4 assembly at B4	2.7.1.3	19.10.22 - 27.10.22 and 14.11.22 - 21.11.22	6	DESY: Anselm, Arthur, Carsten, X X X X X	
PXD p4 standalone cooling	none	28.10.22 - XX.XX.XX and 22.11.22 - XX.XX.XX		IBBelle	interlock: Hara-san
PXD p4 standalone cold tests	2.7.1.3	28.10.22 - 10.11.22 and 22.11.22 - 06.12.22	6	DESY: Arthur X X X X X	FTSW: Nakao-san
VXD combined tests	2.7.1.6/7	28.03.23 - 09.05.23	2	PXD experts: DAQ expert: Bjoern Onsen experts: Jens S.L. + crew	
VXD p3 Removal	2.7.2			Karsten + X	
Inner cable (Patch panel) removal	2.7.2.1.10	13.01.23 - 14.01.23	2	X X	
Outer cable & dockbox removal	2.7.2.1.11/12	16.01.23 - 18.01.23	2	X X	
VXD p4 Installation	2.7.4			Karsten + X	
Outer cable & dockbox installation	2.7.4.1/2.1/5/6	10.05.23 - 22.05.23	2	PXD experts DESY engineers/technicians	
PXD racks preparations at Belle	2.7.4.1/2.11/12	05.06.23 - 08.06.23 and 19.06.23 - 21.06.23	2	PXD people	
install PXD inner cables	2.7.4.7/8.8-11	04.07.23 - 07.07.23 and 17.07.23 - 21.07.23	2	PXD experts DESY engineers/technicians	
VXD p4 system test	2.7.4.9	28.07.23 - 11.08.23	2	PXD experts	

October - December:

B4 PXD Standalone Commissioning

- little time, many things can go wrong
- strong permanent presence of ~6 PXD people desirable, imo
- who when?

Spring - Summer 2023

- VXD3 extraction and VXD4 commissioning requires PXD support → PXD experts at KEK when needed (~2)
- VXD installation not only technical/engineering task but also requires PXD expendables → at KEK when needed (~2)

PXD B4 Commissioning Phase



Task list A:

- shipping:
- rack (PS, DHH) + Services Setup
- PXD HS2 module connecting
- PXD HS2 warm tests / cold tests
- PXD HS1 module connecting
- PXD HS1 warm tests / cold tests
- PXD HS2 module connecting
- Onsen setup
- VXD commissioning / combined tests
- VXD installation

October
19.



January



April



May

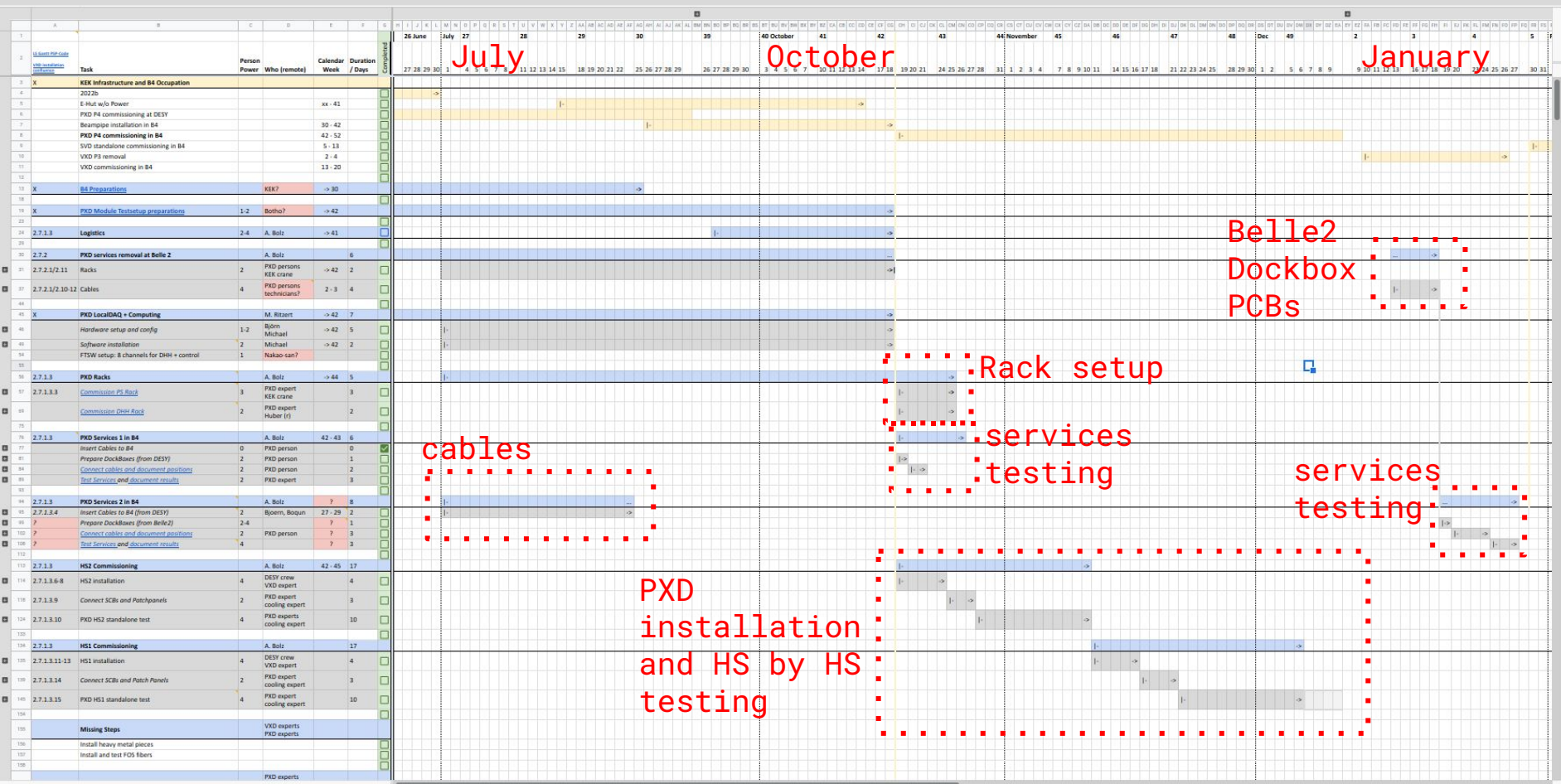
Task list B:

- PXD HS2 mounting
- SCB (cooling, N2, FOS) connecting
- PXD HS1 mounting
- SCB (cooling, N2, FOS) connecting
- VXD_p3 extraction (cables!)

Open questions:

- criteria and procedure to give VXD extraction a go
(eg. full test vs visual inspection + DHP connection)
- can speed up to start VXD extraction already in December

PXD Commissioning at B4: Detailed Schedule



Belle2
Dockbox
PCBs

Rack setup
services
testing

cables

services
testing

PXD
installation
and HS by HS
testing

**your input
needed!**

- most for people at KEK, but some can be done remotely
- would appreciate if you could have a look and

- claim tasks (put up your name)
- add missing tasks
- complete tasks (checkmark) if you have time or they fall into your responsibility

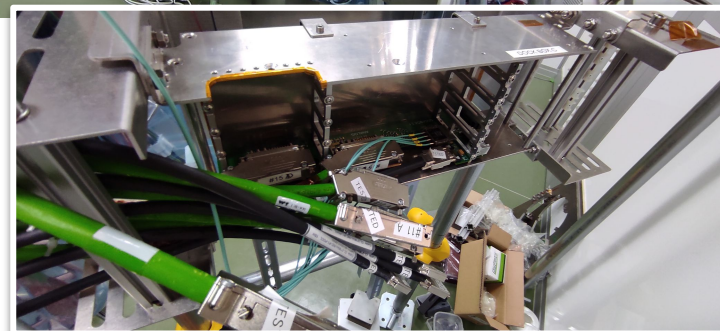
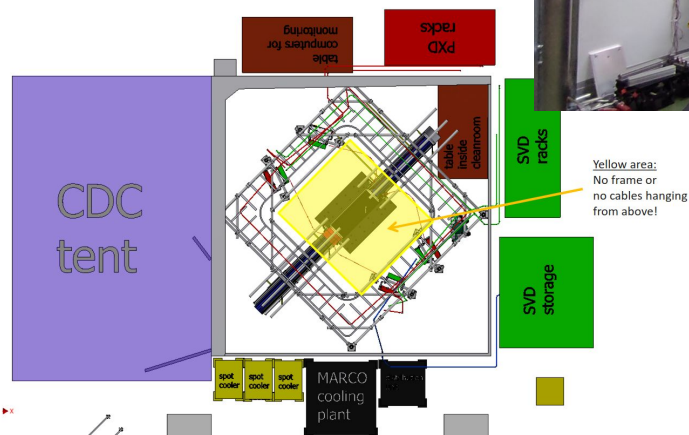
- of course overall schedule not 100% fix yet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	IJ	JK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
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B4 Preparations: PXD Cables

Cables:

- $\frac{1}{2}$ of cables still in B4 from 2018
- other half to be installed
- enough “new” cables in storage at DESY to do before opening Belle
- best before BP work (aka early July)

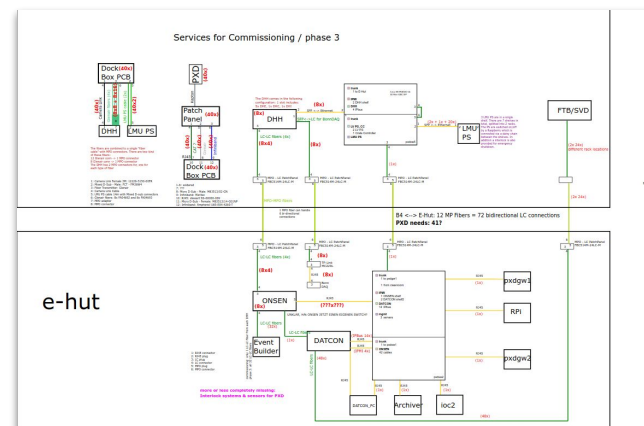


B4 Preparations: Infrastructure

Misc other things still need to be prepared or verified for B4 commissioning
eg

- networking B4 → e-hut
- Racks
- IBBelle and cooling infrastructure at B4
- cleanroom equipment (tools, clothing, ...)
- temp/H/DP monitoring (different system than 2018, still to be organized w/ SVD/KEK)
- FOS fibers readout (for test after mounting)
- PXD testsetup (chiller, ...) for extended guinea pig module tests (backup)

A lot of work done 2018
but to be verified.
Some work by KEK but we
must define what we need.

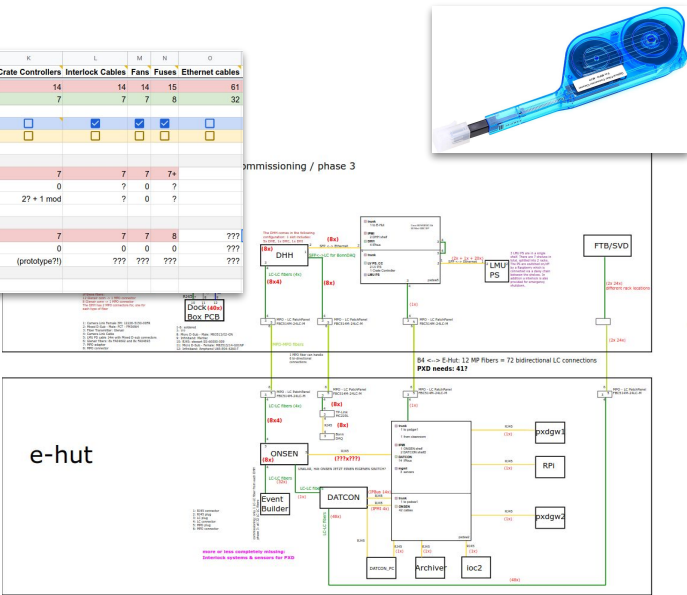


HW and Services Requirements

Tried to document services (cables, tools, ...) we need and who can provide [here](#)

- Please have a look (in particular DHH, PSU, DAQ/ONSEN experts) and update
- IT/Computers not included → don't have overview, assume Phase3 setup enough?
 - however some things unknown in particular wrt B4 e-hut network: eg enough MPO → LC "switchers", fibers, optical to ethernet switches, ...
- please check what you have (KEK, ONSEN, DHH)
 - we should order ASAP

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1		Primary PS	PSU cables	PSUs	Interlock box	Rack shelves	Shelf insets	Raspberry pi	Interface board	Backplane	Crate Controllers	Interlock Cables	Fans	Fuses	Ethernet cables
2	Needed for FXD2	4	80	40	1	40	14	1	14	14	14	14	14	15	61
3	- stage 1 testing	2	40	20	1	20	7	1	1	7	7	7	7	8	32
4															
5	enough available	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6	enough at KEK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7															
8	at KEK (Boquen)														
9	- FXD	2	40	21	1	20	?	1	1	7	7	7	7	7	7+
10	- B4	0	40	0	0	-127	1	?	?	0	0	?	?	?	?
11	- storage	1	3	0	1	?	?	?	?	27 + 1 mod	27 + 1 mod	?	?	?	?
12															
13	DESY (Arthur)														
14	- HS setup	2	40	11	1 (old)	30	7	1	1	7	7	7	7	8	???
15	- DAQ setup	0	1	0	0	?	?	?	?	0	0	0	0	0	???
16	- spare	0	1	1 (old)	?	???	???	?	?	0	(prototype?)	???	???	???	???
17	Bones (Botha)														
18	- test setup														



Unleashing the PXD Person Power Potential

your input needed!

Need to fix who will be at KEK when

Proposal headcounts

- PXD Commissioning: Oct - Dez
 - ≥6 PXD on site (continuous)
- VXD p3 extraction: Jan
 - ≥2 PXD on site (when needed)
- VXD commissioning: Feb - Apr
 - ONSSEN preparations
 - ≥2 PXD on site (when needed)
- VXD installation: May - Aug
 - ≥2 PXD on site (when needed)

Should decide soon and

- start visa applications
- kek registrations (irradiation, B4, ...)
- flights
- etc

	task	PXD Code (if comparable)	scheduled time as of May 2022	target PXD on the final report	Contributors outside Japan (required, candidate for assistance)	Contributors from Japan
1	VXD p4 Commissioning at B4	2.7.1			Arthur + X	
2	PXD p4 services preparations at B4	2.7.1.3.3	19.10.22 - 01.11.22	6	DESY: Arthur + Annette Bonn: Bothe X X	MPP: Boegen
3	PXD p4 assembly at B4	2.7.1.3	19.10.22 - 27.10.22 and 14.11.22 - 21.11.22	6	DESY: Annette, Arthur, Carsten, X X X	
4	PXD p4 stand-alone cooling	none	28.10.22 - XX.XX.XX and 22.11.22 - XX.XX.XX		DESY: Arthur X X X	interlock: Hans van
5	PXD p4 stand-alone cold tests	2.7.1.3	28.10.22 - 10.11.22 and 22.11.22 - 06.12.22	6	DESY: Arthur X X X	FTSW: Nathan van
6	VXD p3 Removal	2.7.1.6/7	28.03.23 - 09.05.23	2	DESY: experts DAQ experts: System Onsen experts: van S.L. + crew	
7	Inner cable (flex-pipe) removal	2.7.1.3.10	13.01.23 - 14.01.23	2	Karsten + X	
8	Outer cable & deckboard removal	2.7.1.3.10/12	16.01.23 - 18.01.23	2	X	
9	VXD p4 Installation	2.7.4			Karsten + X	
10	Outer cable & deckboard installation	2.7.4.1/2.1/5/6	16.05.23 - 22.05.23	2	PXD experts PXD engineers/technicians	
11	PXD racks preparations at Belle	2.7.4.1/2.1/11/12	06.06.23 - 08.06.23 and 19.06.23 - 21.06.23	2	PXD people	
12	Install PXD inner cables	2.7.4.1/8&11	04.07.23 - 07.07.23 and 17.07.23 - 21.07.23	2	PXD experts PXD engineers/technicians	
13	VXD p4 system test	2.7.4.6	26.07.23 - 11.08.23	2	DESY: experts	

PXD Power Rangers:
 • power people
 • data dudes
 • crane crew



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S						
1	https://docs.google.com/forms/d/1FAiQOLSeK78e-HbZelw_ezQck_El6oaYUe-C50nLFTZdZarw/viewform																								
2	https://coordfluence.desy.de/submit/possible-travelers-for-vxd-reinstallation																								
3		Travel availability																							
4		Extended stays possible (multiple weeks)																							
5		Short stays (days to weeks)																							
6		Unavailable																							
7		Beyond contract																							
8		Scheduled stay: X																							
9	Person	Institute	Willing to travel	Expertise	KEK presence crucial for	May 22	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan 23	Feb	Mar	Apr	May	Jun	Jul	Aug				
10	PXD Experts (at least one always present)					(target headcount at KEK)																			
11	Arndt Baur	DESY		1 PXD HS, slow control, services, CSS, IOCs	PXD HS mounting						X														
12	Arthur Bolt	DESY		1 PXD HS, services, CSS, IOCs	PXD HS mounting						X	X	X												
13	Bjoern Spruck	Mainz		1 PXD slow control, CSS, IOCs, computing, DAQ		X																			
14	Botho Paschen	Bonn		1 PXD HS, modules, slow control, services, CSS, IOCs																					
15	Georgios Gakoulidis	Bonn		1 PXD modules, lab framework																					
16	Jannes Schmitz	Bonn		1 PXD modules, power supplies, PUP sequence																					
17	Simon Reiter	Gießen		1 PXD slow control, CSS, IOCs, computing, DAQ, lab framework																					
18	PXD Assistance (subsystem experts, general helpers → help at KEK or remote support)					(target headcount at KEK)																			
19	Boqun Wang	MPP		1 PXD services							4+				1+	1+									
20	Carsten Niebuhr	DESY		1 PXD mechanics, PXD integration	PXD HS mounting																				
21	Igor Kononov	TUM	Feb 23 DHH																						
22	Jakub Kandra	Prague		? PXD modules																					
23	Larissa Jasienicki	Bonn		0 PXD computing and software, slow control, CSS IOCs																					
24	Michael Ritzert	Heidelberg		0 DHH																					
25	Munira Khan	Bonn		? PXD power supplies																					
26	Stefan Huber	TUM		1																					
27	Thomas Lück	LMU		1																					
28	Yubo Han	DESY		1																					
29	Qingyuan Liu	DESY		1																					
30	Hans-Günther Moser	MPP		1 IBelle, PXD mechanics, services																					
31	Merle Schreiber	DESY		1																					
32	Pascal Wolf	Bonn		1 (attends vertex conference and willing to help in October)								X													
33	Engineers/Technicians (target headcount)					(target headcount at KEK)																			
34	David Kittinger	MPP		1 VXD installation							1+				1+	1+									
35	Enrico Töpfer	MPP		?																					
36	Jasper Kehl	DESY		1 electromechanics																					
37	Karsten Gadow	DESY		? everything																					
38	Michelle Klotz	DESY		? electromechanics																					
39	Reiner Slaver	DESY		? PXD mechanics, MARCO	PXD HS mounting, CO2 cooling																				
40	Christian Wessel	DESY		1																					
41	Ulrich Leis	MPP	Jul 22 IBelle																						
42																									
43																									

System Readiness

your input
needed!

Are the respective systems ready or what still needs to be planned?

- I still don't have full overview, please also think about this!

some example questions:

computing and network:

- all HW we need? configurations (CSS, iocs, ...)
- need special network config (switches, daq NW) or additional HW
- PXD Phase3 → PXD Phase4 storage transition
 - backup data (archiver, localDAQ, ...) somewhere (where?) and remove from local storage?
 - or just build up on top?

DAQ + DHH + Onsen:

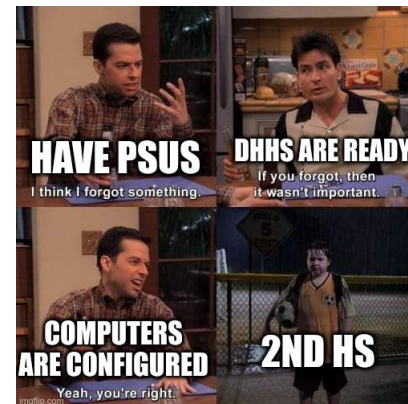
- all components ready and configs prepared (optical switch, fibers, etc)?
- FTSW setup

PSUs:

- lab PSU modifications for KEK (fast shutdown, DCDC for HV, ...)
- calibration and testing procedure of new PSUs (calib, test, and guineapig setup at KEK?)

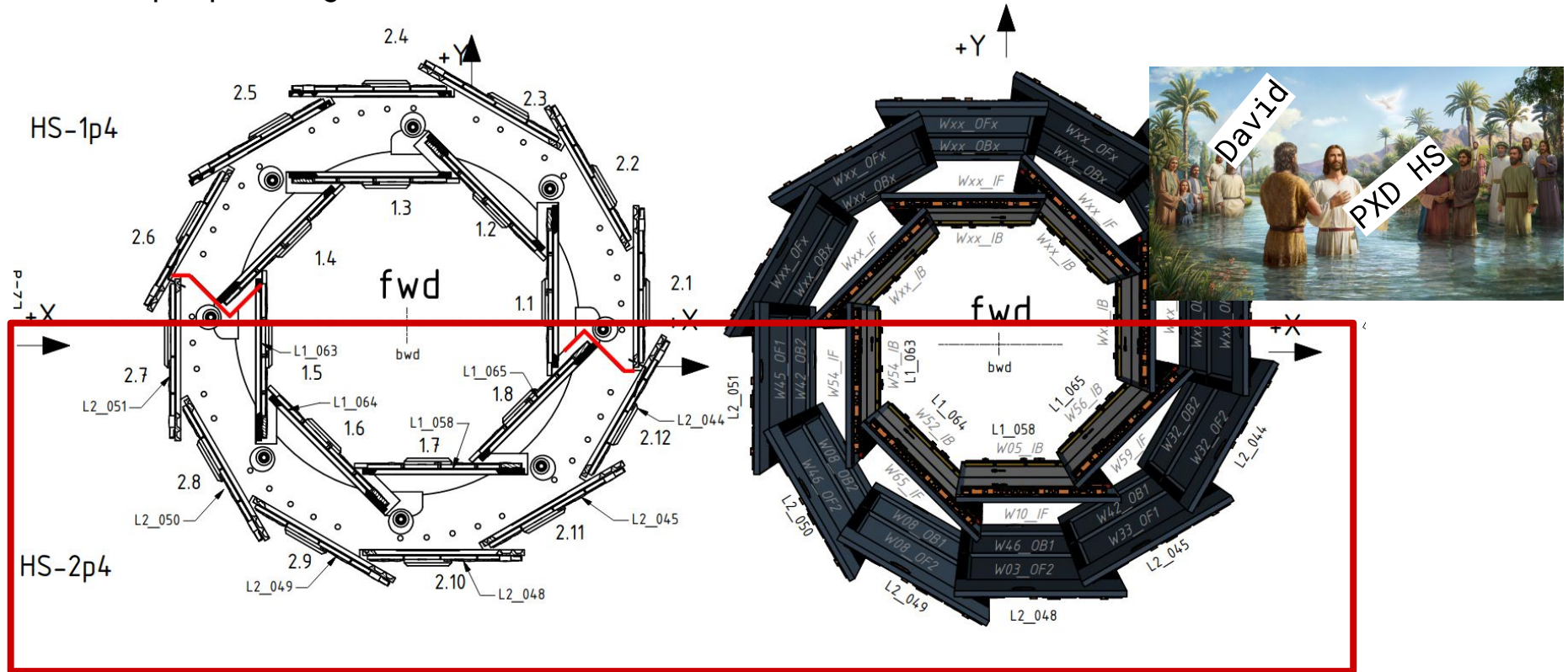
PXD:

- shipping preparations (again direct flights Munich → Tokyo, plan, investigate security avoidance possibilities, ...)



HS Nomenclature

- **HS_2p4** assembled and currently at DESY for testing (w/ wrong DHE names!)
- HS_1p4 pending





"If there is anyone who objects to this union, either here or on the Internet, speak now or forever hold your peace."

Proposed DHH Mapping:

Fix now to prepare

- [cable mapping](#)
- onsen mapping (Simon?)
- optical switch mapping (Stefan)
- iocs (Arthur + Simon?)
- CSS (Arthur + ?)
- config db (Arthur)

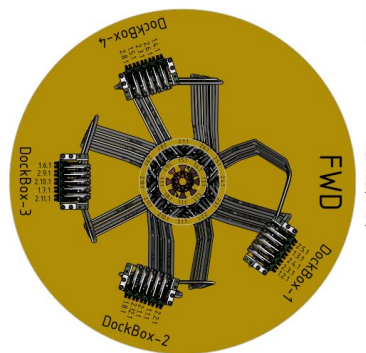
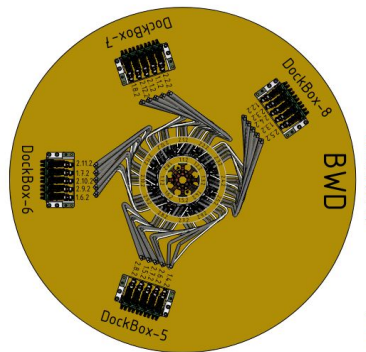
Proposal:

- DB arrangement wise (fibers!)
 - not HS sector wise ($\pm x \otimes \pm y$)
 - not Phase3 extension

Impact on B4 commissioning:

- due to DBPCBs: test HS by HS only!
- need to replug fibers, CLC, PPs
- reconfigure PSUs

Any objections?



Forward				Backward			
DHE	ch/fiber	DHC/DHI	ONSEN	DHE	ch/fiber	DHC/DHI	ONSEN
H1021	1, 8x1	H10 H38m	O01SY	H1042	1, 8x1	H50 H58m	O10SY
H1031	2, 8x2		O01SY	H1052	2, 8x2		O10SY
H2031	3, 12x1		O01SY	H2062	3, 12x1		O10SY
H2041	4, 12x2		O01SY	H2072	4, 12x2		O10SY
H2051	5, 12x3		O01SY	H2082	5, 12x3		O10SY
H1011	1, 8x1	H20 H48m	O02SY	H1062	1, 8x1	H60 H68m	O11SY
H1081	2, 8x2		O02SY	H1072	2, 8x2		O11SY
H2011	3, 12x1		O02SY	H2092	3, 12x1		O11SY
H2021	4, 12x2		O02SY	H2102	4, 12x2		O11SY
H2121	5, 12x3		O02SY	H2112	5, 12x3		O11SY
H1061	1, 8x1	H30 H18m	O03SY	H1012	1, 8x1	H70 H78m	O11SY
H1071	2, 8x2		O03SY	H1082	2, 8x2		O11SY
H2091	3, 12x1		O03SY	H2012	3, 12x1		O11SY
H2101	4, 12x2		O03SY	H2022	4, 12x2		O11SY
H2111	5, 12x3		O03SY	H2122	5, 12x3		O11SY
H1041	1, 8x1	H40 H28m	O04SY	H1022	1, 8x1	H80 H88m	O11SY
H1051	2, 8x2		O04SY	H1032	2, 8x2		O11SY
H2061	3, 12x1		O04SY	H2032	3, 12x1		O11SY
H2071	4, 12x2		O04SY	H2042	4, 12x2		O11SY
H2081	5, 12x3		O04SY	H2052	5, 12x3		O11SY

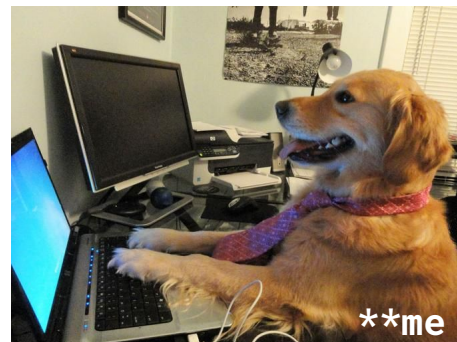
PXD_P4 Commissioning at KEK Status

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- many things still to be prepared (services for KEK, coordination w/ VXD group, subsystem readiness, ... and yes, also the detector)
- even more things will start going on in parallel → needs planning, coordination and communication
- I've also tried to assemble necessary information and schedule tasks
- So: "lean back, relax and let me** handle it from here"*

Talk tries to summarize status documentation & planning: (all still work in progress) and get you involved

- PXD specific work plan / checklist on top of Karsten's [VXD Gantt chart](#)
 - [PXDCommissioningAtKEK_Timeline \(google docs\)](#)
- VXD commissioning confluence: [Documentation of VXD reinstallation](#)
 - More detailed PXD specific info and documentation during commissioning collected at <https://confluence.desy.de/display/BI/PXD+2022+Commissioning+at+KEK>
- [PXD person power potential](#)
 - Should soon converge towards (preliminary) travel **plans**
- [PXD 2022 ingredients list](#)
 - Should be checked and completed by subsystem experts



*should say
no one