

VXD Upgrade

Upgrade Working Group

- Preparation of the EoIs
 - time scales:
Design/High Luminosity (2026: QCS replacement), little time for R&D
Upgrades beyond 2032: no real information from KEK
 - collecting EoI for the design/high lumi upgrade options – end of 2020

System	Limits understood ?	Upgrade activities and time scale	EoI intention ?
VXD	Reasonably well	Several options on different time scales (CMOS, DEPFET, Strips, SOI, ...)	Yes, maybe more than one
CDC	Not clear Reasonably well	Electronics Electronics (ASIC, FPGA) 2026 or earlier	Not clear No (for 2022)
TOP	Reasonably well	STOP, MCPMT, SiPM on different time scales	Yes
ARICH	Reasonably well	Photon detectors on 2030 timescale	No
ECL	Reasonably well	Crystals, Photodiode, Preshower on long(?) timescale	Yes, but not clear when
KLM	Yes	Scintillators, readout electronics, TOF possibly on short time scale (?)	Yes
DAQ	Yes	Ongoing – ballistic	No

- Snowmass document – summer 2021
- Produce CDR for the design/high lumi upgrade options – end 2021/start 2022
- Belle II management → Upgrade Advisory Committee (core members + contacts)
follow-up with EoIs progress, help converge... → EB meeting at B2 GM
- Description of VXD upgrade contributions for IN2P3 by end of the year

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VXD technology options for which an EoI is expected:

	Pitch (μm^2)	Time resolution (ns)	Sensor thickness (μm)	Comments
DEPFET	50x50	3000	30	Inner layers and disks
Thin strips	50x75	8	140	Outer layers
TSI-180 nm	150x50	25	30	Full volume
TowerJazz 180 nm	30x30	25 - 100	30	Full volume
SOI	35x35	63	75	Full volume

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