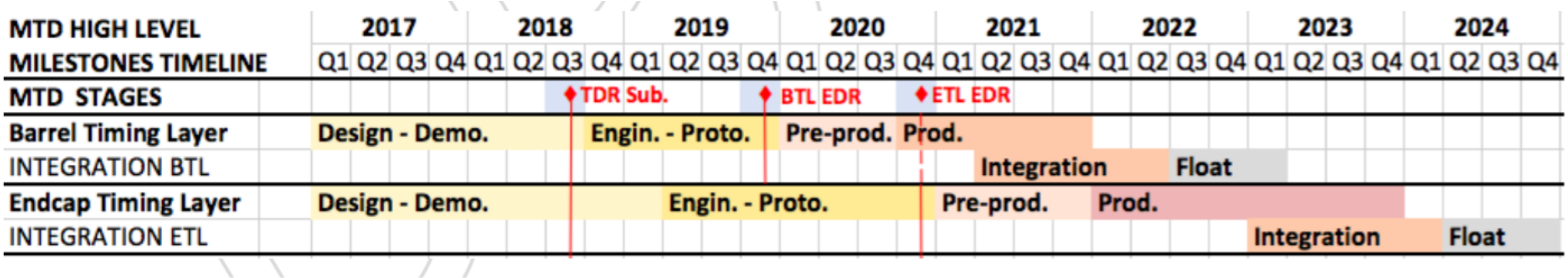
CMS timeline



MTD HIGH LEVEL	2017				2018				2019				2020				2021				2022				2023				2024			
MILESTONES TIMELINE	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
MTD STAGES							♦TDR Sub.					♦BTL EDR				♦ETL EDR																
Barrel Timing Layer	Design - Demo.							Engin. - Proto.					Pre-prod.			Prod.																
INTEGRATION BTL																		Integration					Float									
Endcap Timing Layer	Design - Demo.									Engin. - Proto.							Pre-prod.				Prod.											
INTEGRATION ETL																									Integration					Float		

Q3 2018: Single CMS ROC sensor (94 pads) from HPK (and FBK and CNM)

➔ Test of 1xROC sensor, study of gain uniformity, edges…

Q3 2018: TDR

➔ 2019: Production of sensors with 4xROC or even 8XROC, various gain layer doping

Q3 2019: Sensor vendor qualifications, decision on the final geometry

➔ Early 2020: Production of sensors with 8xROC and/or16xROC

Q2 2020: Submission of pre-production

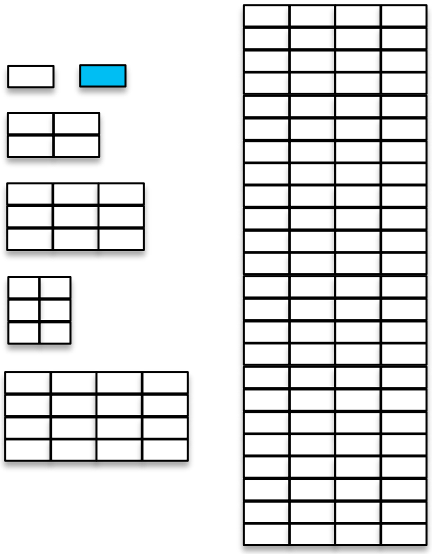
CMS wish list for 2018 production

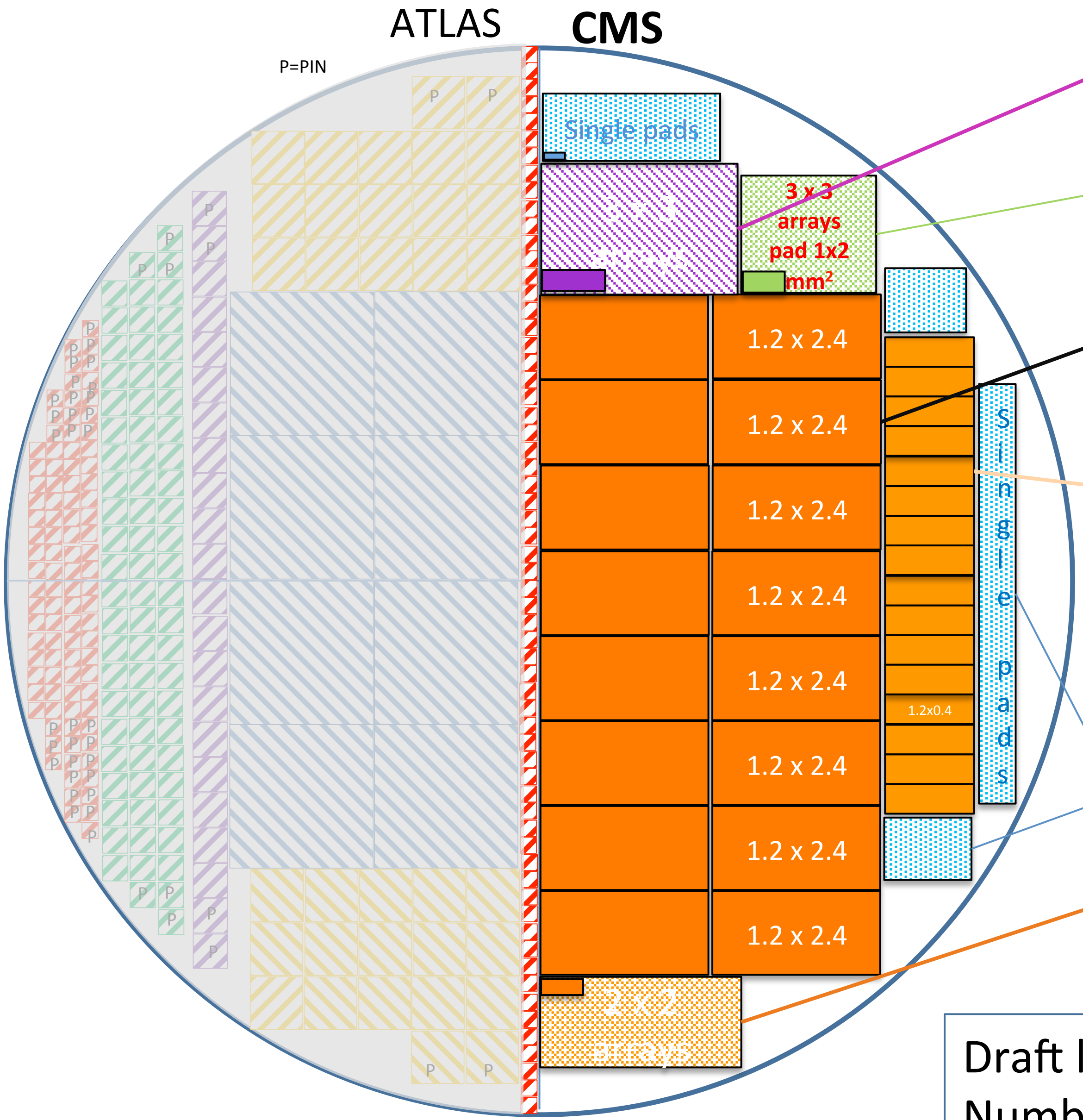
General remarks

- Pad size always **1x3 mm^2** unless otherwise stated
- LGADs unless otherwise stated
- All pads to be wire-bonded

List of structures

- LGAD and **PIN** single pads
- 2x2 arrays
- 3x3 arrays
- 3x3 arrays with 1x2 mm^2 pad size
- 4x4 arrays
- **CMS small prototype:** 4x24 arrays (96 pads). This matches the CMS ROC size.





~15 x (0.3 x 0.9 cm²)
3x3 arrays

~12 x (0.3 x 0.6 cm²)
3x3 arrays - pad size 1x2 mm²

16 CMS chip
1.2x2.4 cm²
4x24 arrays

16 x (1.2 x0.4 cm²)
Arrays 4x4

N single pads (0.1 x 0.3 cm²)

~20 x (0.2 x 0.6 cm²)
2x2 arrays

Draft layout of the CMS half-wafer
Number of arrays are indicative
PIN: 20% of single pads
10% of 2x2 arrays