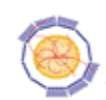


WP3-3

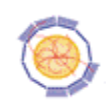
IP blocks HDR

C. De La Taille, G. Martin-Chassard
OMEGA/IN2P3



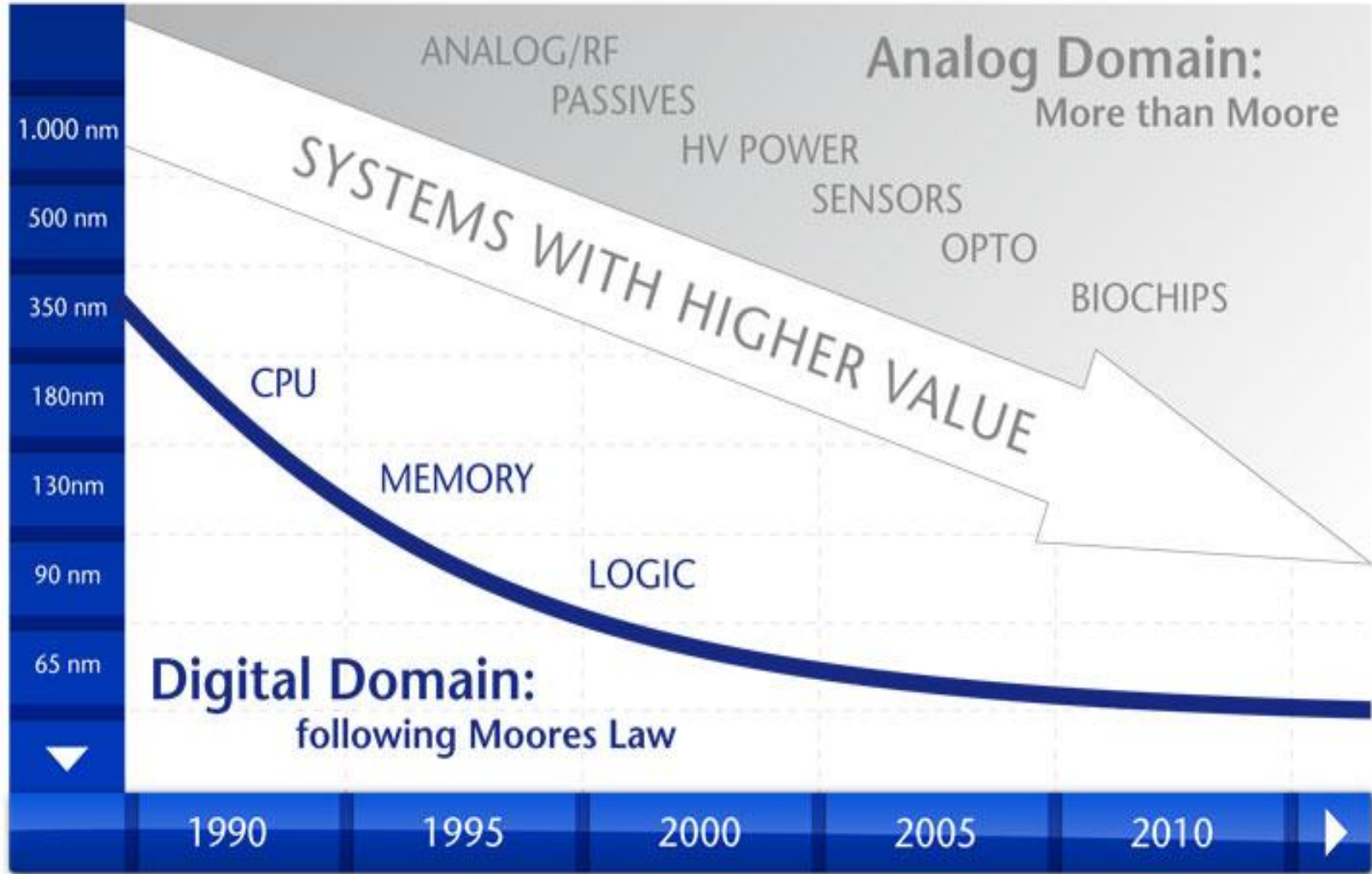
Work-package title : Shareable IP blocks for HEP

- Goal : provide 2 lots of IP blocks for needs in HEP with full documentation and laboratory tests.
- 1st set organized by CERN in TSMC 65nm more dedicated for tracker
- A 2nd set will be organized by IN2P3/OMEGA more dedicated for calorimetry, TPC, high speed



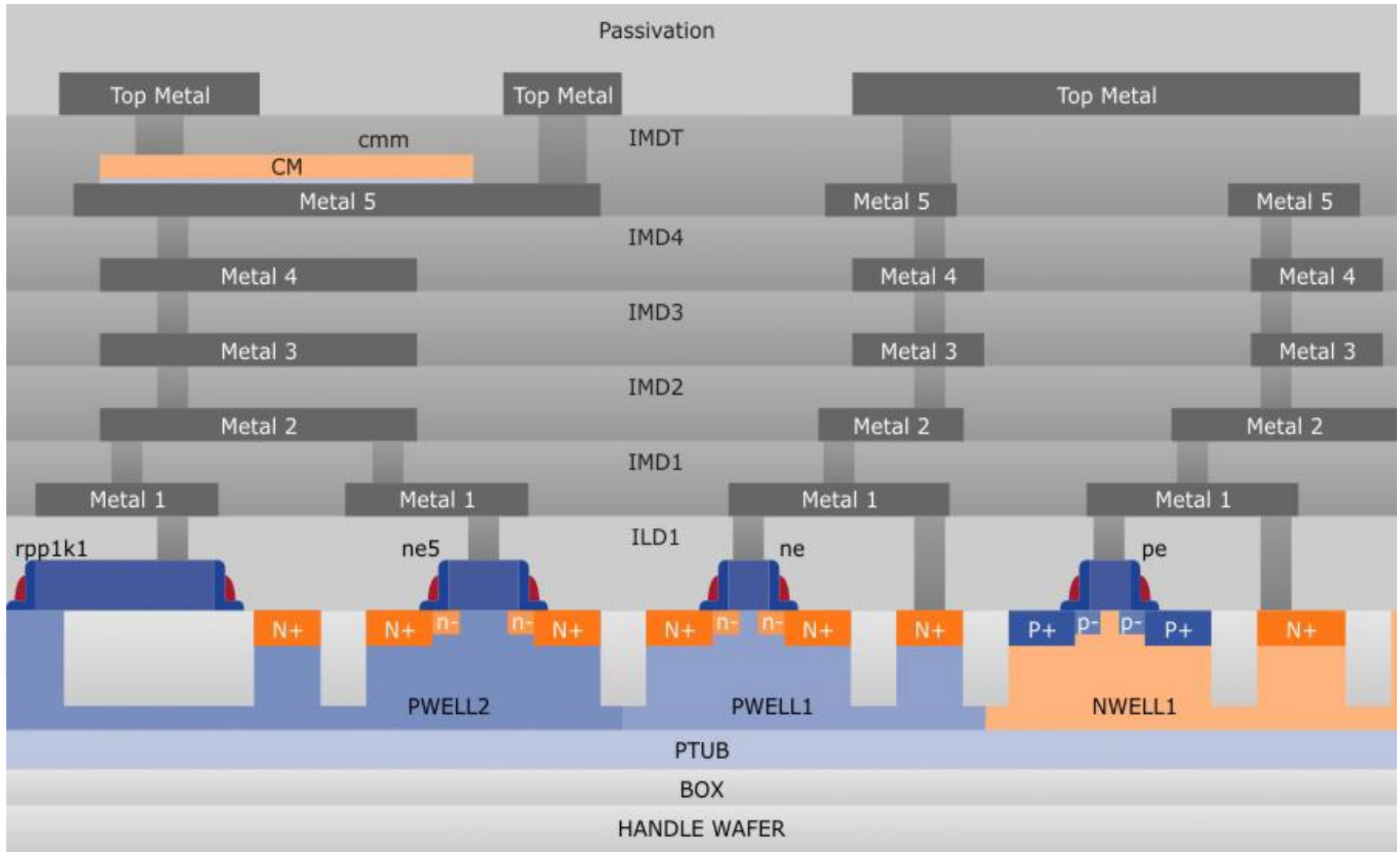
- Electronics needs in calorimeters and TPCs :
 - large dynamic range,
 - high speed,
 - low noise,
 - low offset,
 - need of precise capacitors and resistors, ...
- Blocks :
ADC, TDC, DAC, Bandgap, OTA, Rad-tol memory, SEU resistant flipflop ...
- Technology : SiGe or HV SOI
 - SiGe still moving a lot => shift to AIDA2
 - Choose XFAB SOI 180 nm (SOI --> fast, low substrate noise, low cost, HV capability, latchup free)

Miniaturization vs. Diversification



X-FAB's Open Platform Technology Overview





0.18 μm Modular Trench Isolated SOI CMOS Technology

The XT018 series is X-FAB's 0.18 μm Modular High-voltage SOI CMOS Technology.

Based on SOI wafers and the industrial standard single poly with up to six metal layers 0.18 μm drawn gate length process, integrated with high voltage and Non-Volatile-Memory modules, the platform is specifically designed for a new generation of cost-effective "Super Smart Power" technology

Offering up to 200V MOS capability and operating in temperature range of -40 to 175 $^{\circ}\text{C}$.

Main applications

Applications requiring larger than 60V and up to 200V with 0.18 μm capabilities

Medical Imaging

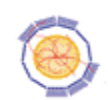
Physics and astrophysics

Communications, Consumer and Industrial markets



- XT018 0.18 μ HV SOI CMOS:
 - Up to 6 Metal (one thick)
 - 1 poly (high res) – MIM capacitors
 - Deep N-well and P-well modules
 - power supply : 1.8V 3.3V or 5V (option)
 - Up to 200V MOS
 - digital cells
- Design kit and MPW runs finally provided by Europractice
- Price : from 1435€/mm² (4M) to 1610€/mm² (6M)
10mm² minimum area and 30 samples
- 3 MPW runs /year : 10 feb. , 19 may, 22 sept.

Possible run for blocks soumission :
22 september 2014



Milestones and deliverables for 2nd set of IPs:

- blocks due for month 44 ([September 2014](#))
- Characterization of these blocks before month 48 ([January 2015](#))

→ All people interested in these blocks are welcomed

Thank you
for your attention

