Kick off meeting

- Benvenuti!
- Goals per oggi:
  - Iniziare a definire le specifiche dei vari sottosistemi e della loro integrazione, nonché dei test
    - Abbiamo un paio di mesi per finalizzarli, come da Gantt chart
    - Teniamo in mente le tempistiche delle sottomissioni dei chip elettronici e fotonici (ed eventuali tempi di prenotazione)
  - Definire i lavori nei WP per i prossimi mesi
  - Logo del progetto
  - Individuare i profili e possibilmente i candidati da reclutare per gli assegni di ricerca, tenendo in conto delle tempistiche (~3-4 mesi) di reclutamento INFN
- Contatti con il CERN e con il FNAL

Gantt chart

Month		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WP1 (System Design)	specibenchiver																																				
	Demonstrators																																				
WP2 (PIC)	PIC mini-block																																				
	PIC full-block																																				
WP3 (EIC)	IP and FE 1st																																				
	IP and FE 2nd																																				
	Final EIC																																				
WP4 (EIC-PIC Integration)	1st demo																																				
	final demo																																				
WP5 (Irradiation)																																					
WP6 (Project management & dissemination)																																					
MILESTONES		M1		M2						M3				M4	M5				M6				M7				M8			M9						M10	
Deliverables		D1.1		D2.1						D3.1/5				D3.1/2 D5.1	D1.2	D2.2			D4.1				D5.1 D3.6						D5.1	D2.3	D4.1				D4.2 D6.2	

Legenda

- Specifications/benchmark/verification
- PIC design & layout
- PIC fabrication
- EIC design & layout
- EIC fabrication
- Integration test
- Integration design
- EIC-PIC Integration
- EIC test
- PIC test
- Irradiation

Milestones

M1 (Definitions of the specs and KPI) (T0+2)
M2 (Silicon Photonics PIC design for the submission of the mini-block chip fabrication) (T0+6)
M3 (1st submission of the High Speed rad-hard block design) (T0+10)
M4 (2nd submission of the High Speed rad-hard block design) (T0+16)
M5 (Final Silicon Photonics PIC design for the submission of the full block chip fabrication) (T0+18)
M6 (First integration EIC+PIC) (T0+21)
M7 (Final, large area EIC submission) (T0+25)
M8 (Qualification of rad-hardness of PIC and EIC) (T0+29)
M9 (Final demonstrator integration) (T0+32)
M10 (Final demonstrator qualification) (T0+36)

Work package details - I

- WP1 (System Design) defines the system specifications and key performance indicators (KPI) as inputs to WP 2 to 5 to outperform state of the art and benchmarking. Designs the final demonstrator together with WP4.
  - D1.1 System specifications and KPI (INFN PV, UNIMI) (T0+2)
  - D1.2 Demonstrator design (INFN PV) (T0+18)

- WP2 (Silicon Photonics) It will develop the SiPh building blocks.including RM, MZM,bus waveguides, optical couplers and splitter, integrated thermal heaters. It will submit the MPW of a mini-block chip (2.5x~5 mm^2). The fabricated mini-block will be characterised, providing information for the design and fabrication of the second full block chip (5x~5 mm^2) that will be tested allowing the final integration with EIC.
  - D2.1 SiPh submissions for the MPW run of the first miniblock including the building blocks (SSSA, INFN PI, UNIPI, UNIMI) (T0+7)
  - D2.2 SiPh submission for the MPW run full final block (SSSA, INFN PI, UNIPI, UNIMI) (T0+19)
  - D2.3 SiPh final PIC characterization (SSSA) (T0+31)

Work package details - II

- WP3 (Electronics) design of the fundamental rad-hard and high-speed electronics and test boards
  - D3.1/3.1b Serdes (INFN PI, UNIPI, UNIMI): 1st/2nd submissions (T0+10, T0+16)
  - D3.2/3.2b Drivers and Tune circuit (INFN PI and PV, UNIPI): 1st and 2nd submissions (T0+10, T0+16)
  - D3.3/3.3b PLL/CDR (UNIPI, INFN PD and PI): 1st/2nd submission (T0+10, T0+16)
  - D3.4/3.4b Front-End circuits (INFN PV): 1st/2nd submissions (T0+10, T0+16)
  - D3.5/3.5b DAC/Bandgap (INFN PV, UNIMI): 1st/2nd submissions (T0+10,T0+16)
  - D3.6 Final large area EIC submission (INFN PV) (T0+25)

- WP4 (EIC-PIC Integration) will develop the integration of the PIC and EIC (akaDemonstrator), together with an external company.
  - D4.1/4.1b Prototypes and final demonstrator system (All) (T0+22, T0+32)
  - D4.2 Demonstrator tests (All) (T0+36)

Work package details - III

- WP5 (Radiation hardness)
  - D5.1 Perform irradiation of the electronics and photonics dies (INFN Padova) (T0+17, T0+24, T0+30)
  - D5.2 Perform irradiation of final demonstrator (INFN Padova) (T0+36)

- WP6 (Project management & dissemination)
  - D6.1 Recruit AdR (T0+5)
  - D6.2 Publish results (T0+36)

Assegni

Ad R #	Type	Unit	Months	Research Topic	Bandito/ Partenza	Vincitore
1	**J**	**PI**	**30**	**PIC design and test. PIC-EIC integration and test**	**2021**	
2	**S**	**PI**	**24**	**Driver design. PIC-EIC integration and test**	**2020/2021**	**G. Ciarpi**
3	J	PI	12	PLL/CDR design and test	2022	
4	**J**	**PV**	**30**	**DAC design and test**	**2020/2021**	
5	S	PV	12	FE design, test and integration in the demonstrator	2022	
6	J	PD	12	Irradiation tests and analysis	2022	

WP Structure

Table 3. Work Packages.

WP	Topic	Leader	Unit	Areas of work
1	System Design	Luigi Gaioni	INFN Pavia	Demonstrator design, system specifications and key performance indicators
2	Silicon Photonics	Stefano Faralli	Scuola Superiore S. Anna of Pisa	PIC blocks, Ring-Resonator Modulator, MachZehnder Modulator, WDM and SDM
3	Electronics	Gianluca Traversi (focus FE) and Guido Magazzu (focus IP cores)	INFN Pavia INFN Pisa	Serdes, Driver, PLL/CDR, DAC, Bandgap, Front-End
4	EIC-PIC Integration	Sergio Saponara	University of Pisa	Packaging and integration, thermal studies, prototyping and fabrication
5	Radiation hardness	Serena Mattiazzo	INFN Padova	Tests with X-rays, Heavy Ions, protons, neutrons
6	Project management and dissemination	Fabrizio Palla	INFN Pisa	Resource management, planning and coordination. Dissemination and exploitation of the results