



U.S. DEPARTMENT OF
ENERGY

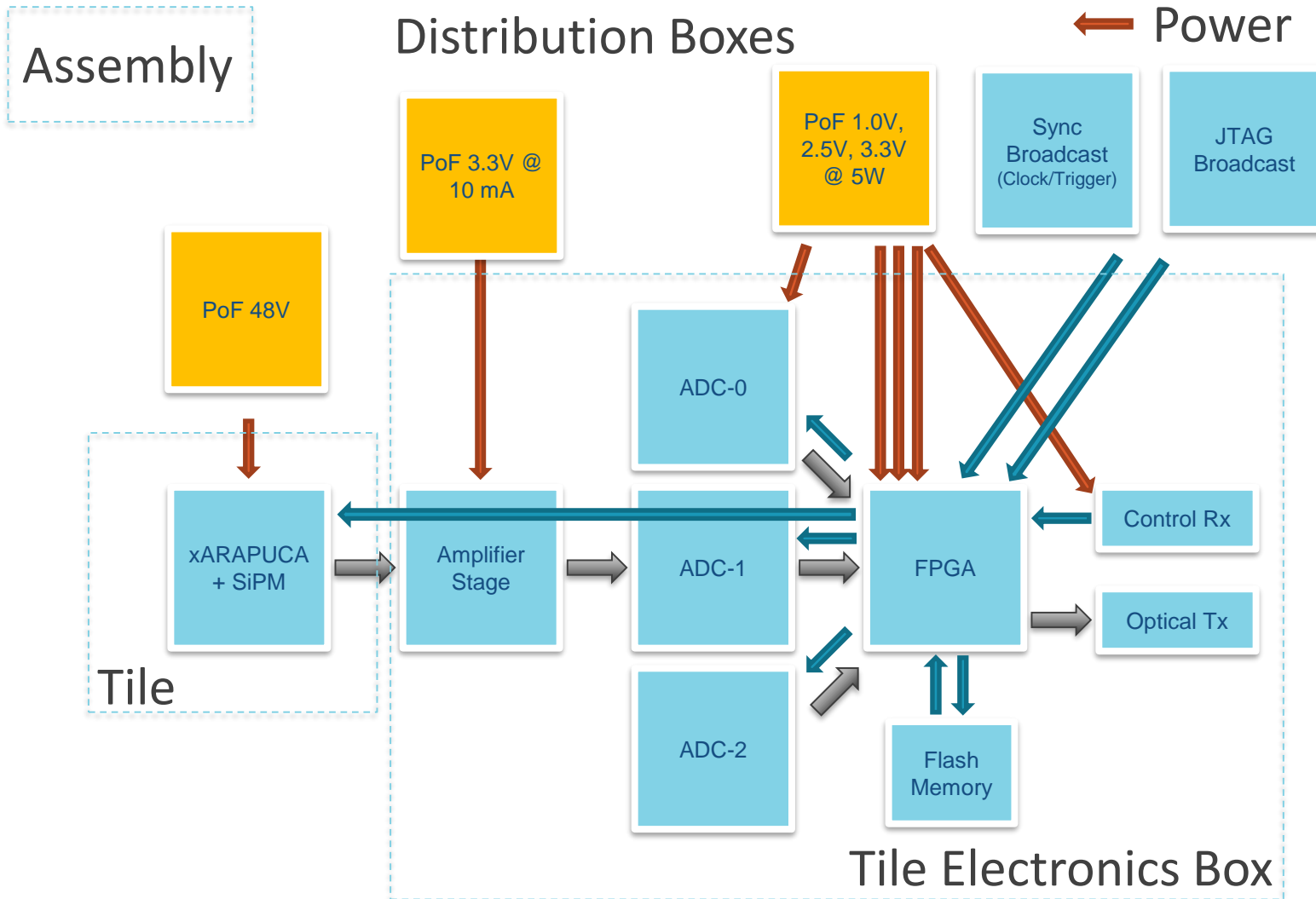
Office of
Science

DUNE Vertical Drift Photon Detector System Baseline Module Sketch and Timeline

18 March 2021

Ryan Rivera

Baseline PDS Sketch



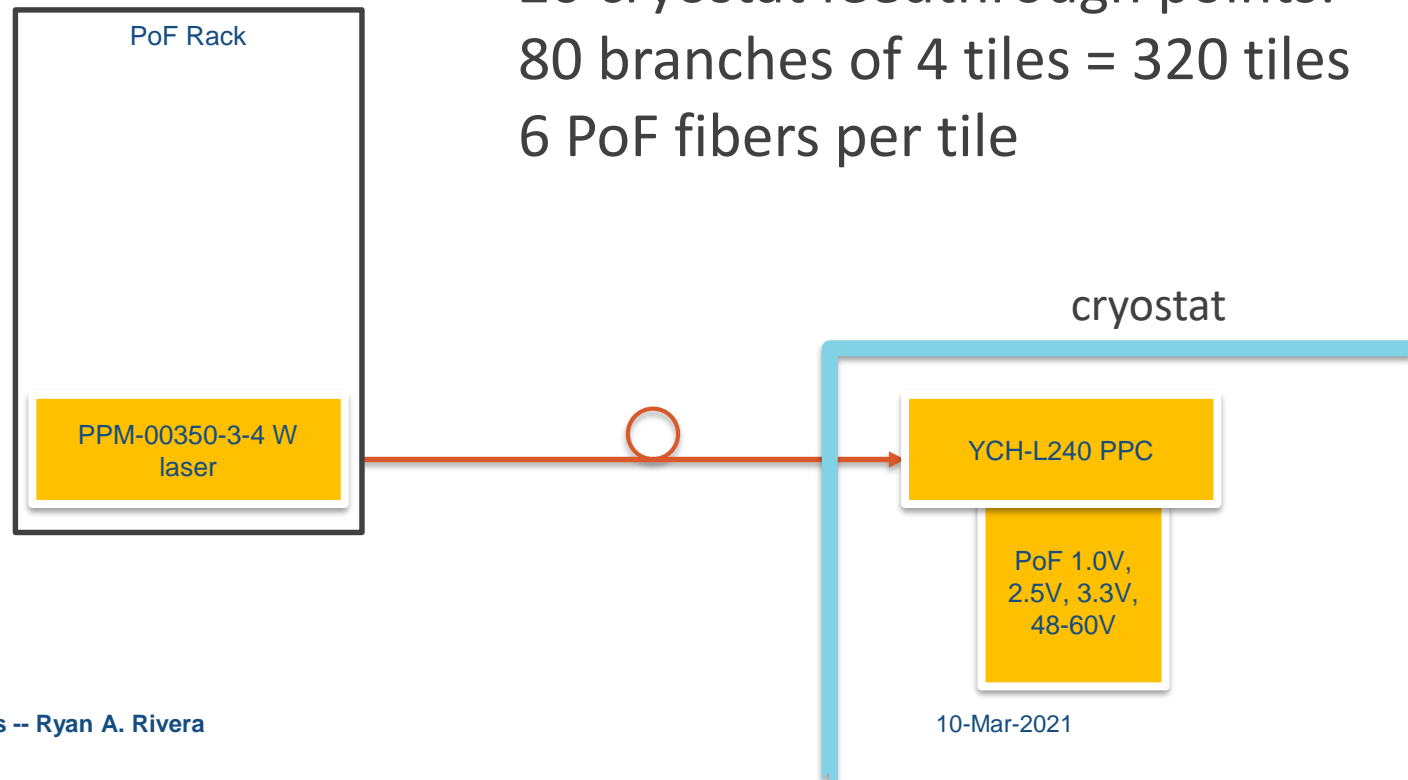
PoF Transmitter Infrastructure

For 48-60V, ..

2 cryostat feedthrough points:
8 branches of 40 tiles = 320 tiles
70mA per branch
1 branch copper line per tile

For 1V, 2.5, 3.3V,

20 cryostat feedthrough points:
80 branches of 4 tiles = 320 tiles
6 PoF fibers per tile



Milestone Timeline

Activity			FY21							FY22				
Subsystem or Task	Activity	Notes	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Project Management														
====>	Minor Milestone:	Select Control Rx Phase 1 candidate(s). Target 1 candidate.			X									
====>	Minor Milestone:	Select Control Rx Phase 2 candidate(s). Target 1 candidate.				X								
====>	Minor Milestone:	Select Control Rx Phase 3 candidate(s). Target 1 candidate.					X							
====>	Milestone:	Select Control Rx Prototype final candidate.					X							
====>	Minor Milestone:	Select Sync Distribution Phase 1 candidate(s). Target 1 candidate.				X								
====>	Minor Milestone:	Select Sync Distribution Phase 2 candidate(s). Target 1 candidate.					X							
====>	Minor Milestone:	Select Sync Distribution Phase 3 candidate(s). Target 1 candidate.						X						
====>	Milestone:	Select Sync Distribution Prototype final candidate.						X						
====>	Minor Milestone:	Select Analog/Digital Waveform Optical Tx Phase 1 candidate(s). Target 1 candidate.		X										
====>	Minor Milestone:	Select Analog/Digital Waveform Optical Tx Phase 2 candidate(s). Target 1 candidate.			X									
====>	Minor Milestone:	Select Analog/Digital Waveform Optical Tx Phase 3 candidate(s). Target 1 candidate.				X								
====>	Minor Milestone:	Select SERDES Phase 1 candidate(s). Target 1 candidate.		X										
====>	Minor Milestone:	Select SERDES Phase 2 candidate(s). Target 1 candidate.			X									
====>	Minor Milestone:	Select SERDES Phase 3 candidate(s). Target 1 candidate.				X								
====>	Minor Milestone:	Select ADC Phase 1 candidate(s). Target 1 candidate.		X										
====>	Minor Milestone:	Select ADC Phase 2 candidate(s). Target 1 candidate.			X									
====>	Minor Milestone:	Select ADC Phase 3 candidate(s). Target 1 candidate.				X								
====>	Major Milestone:	Pair-wise integration of most promising phase 1 candidate components and Power-over-fiber.				X								
====>	Milestone:	Analog Front-end integration Prototype in cold validated.					X							
====>	Milestone:	SERDES Tx integration Prototype in cold validated.					X							
====>	Milestone:	SERDES Rx integration Prototype in cold validated.					X							
====>	Major Milestone:	Downselect ADC/SERDES/digital Tx or analog Tx Prototype final candidate.					X							
====>	Major Milestone:	ADC+SERDES+Optical Rx/Tx integration Prototype OR Analog Optical Tx integration Prototype in cold validated.						X						
====>	Milestone:	1-channel waveform readout integration Prototype in cold validated.						X						
====>	Major Milestone:	Full modules waveform readout integration Prototype in cold validated.							X					
====>	Major Milestone:	Two synchronized integration Prototype modules in cold validated.							X					
====>	Milestone:	Two synchronized integration Prototype modules in cold <10KV plane validated. Or documented as not needed.							X					
====>	Major Milestone:	Two Prototype v1 modules installed at CERN Cold Box Test Part-A.								X				
====>	Major Milestone:	Two Prototype v2 modules installed at CERN Cold Box Test Part-B.										X		
====>	Major Milestone:	Synchronized waveform readout of two Prototype modes in CERN Cold Box Test.											X	