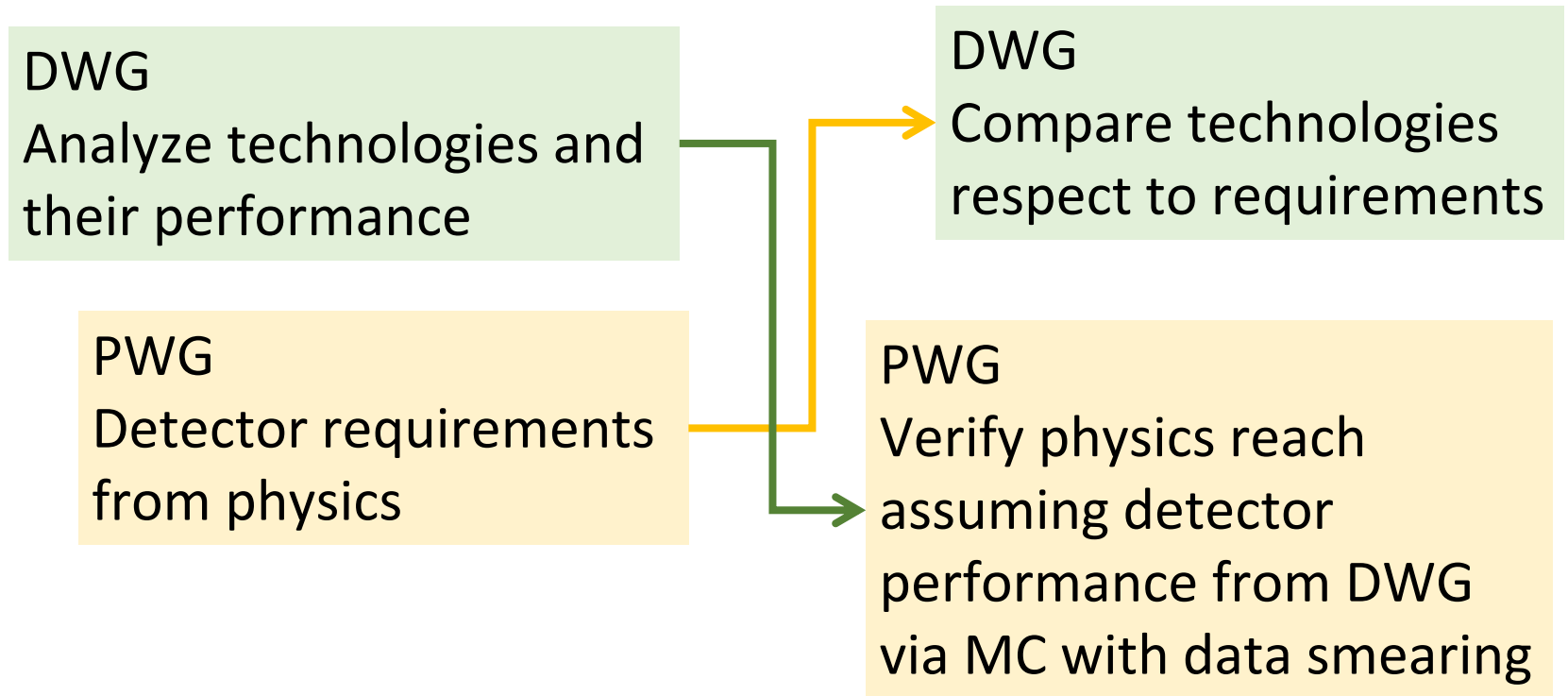# Information Work Flow between PWG+DWG

❑ Two types of information to consider regarding communication about requirements from physics and performance of different detector technologies

➢ **Updates, e.g. requirements from PWG**

➢ **Iteration, e.g. the "response" from DWG informed by performance of different technologies and iteration**
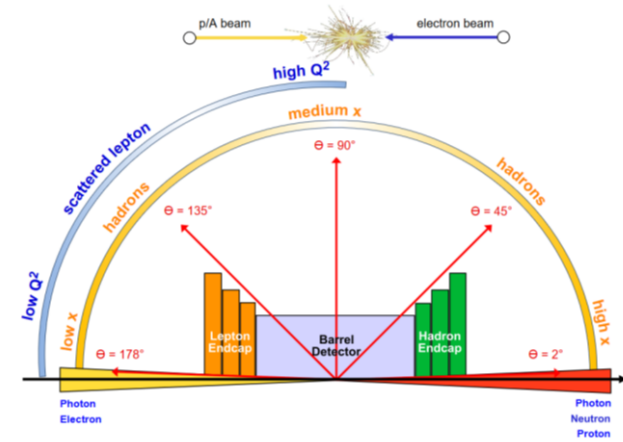
Suggested Scheme of the activity flow

- for discussion
- purpose: general agreement before defining procedure details
- the arrows indicate INFORMATION FLOW

DWG
Analyze technologies and their performance

DWG
Compare technologies respect to requirements

PWG
Detector requirements from physics

PWG
Verify physics reach assuming detector performance from DWG via MC with data smearing

The Interactive Detector Matrix

https://physdiv.jlab.org/DetectorMatrix/

➤ Supersedes the EIC Detector Handbook

➤ Collects physics requirements "real time", lists all technologies for a given region, and links to studies that established the numbers

➤ **Is the official EIC set of physics requirements and technology parameters**

View Matrix   View Model   View Help   Login to Edit

η		Nomenclature		Tracking			Electrons		π/K/p		HCAL	Muons
				Resolution	Allowed X/X$_0$	Si-Vertex	Resolution σE/E	PID	p-Range (GeV/c)	Separation	Resolution σE/E	
-6.9 to -5.8	↓ p/A	Auxiliary Detectors	low-Q2 tagger	σθ/θ < 1.5%; 10-6 < Q2 < 10-2 GeV2								
...												
-4.5 to -4.0			Instrumentation to separate charged particles from photons				2%/√E					
-4.0 to -3.5												
-3.5 to -3.0	Central Detector		Backward Detector	σp/p ~ 0.1%⊕0.5%	~5% or less X	TBD		π suppression up to 1:10⁴	≤ 7 GeV/c	≥ 3 σ	~50%/√E	
-3.0 to -2.5												
-2.5 to -2.0				σp/p 0.1%⊕0.5%			2%/√E					
-2.0 to -1.5				σp/p 0.05%⊕0.5%			7%/√E					
-1.5 to -1.0							7%/√E					
-1.0 to -0.5			Barrel	σp/p ~0.05%×p+0.5%		σxyz ~ 20 μm, d0(z) ~d0(rΦ) ~ 20/pTGeV μm + 5 μm	(10-12)%/√E		≤ 5 GeV/c			TBD
-0.5 to 0.0												
0.0 to 0.5												
0.5 to 1.0												
1.0 to 1.5			Forward Detectors	σp/p ~0.05%×p+1.0%		TBD			≤ 8 GeV/c		~50%/√E	
1.5 to 2.0												
2.0 to 2.5									≤ 20 GeV/c			
2.5 to 3.0				σp/p ~ 0.1%×p+2.0%								
3.0 to 3.5									≤ 45 GeV/c			
3.5 to 4.0	↑ e	Auxiliary Detectors	Instrumentation to separate charged particles from photons									
4.0 to 4.5												
...			Neutron Detection									
> 6.2			Proton Spectrometer	σintrinsic(|t|)/|t| < 1%; Acceptance: 0.2 < pt < 1.2 GeV/c								

Selected Yellow Report Collaborative Tools

➢ **Indico**: archives meetings, discussion material, notes
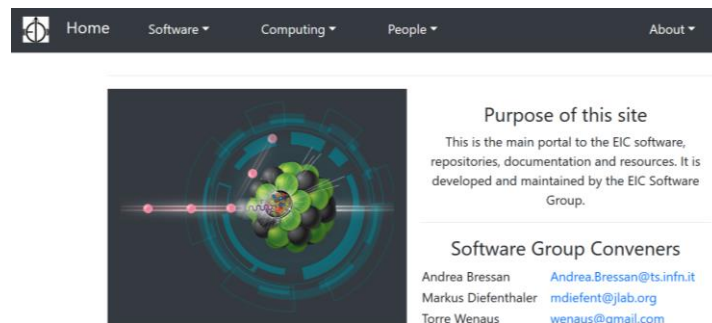
https://indico.bnl.gov/category/274/
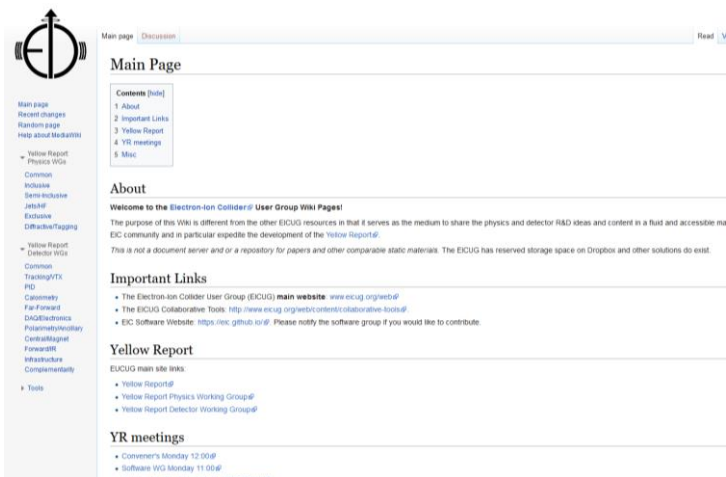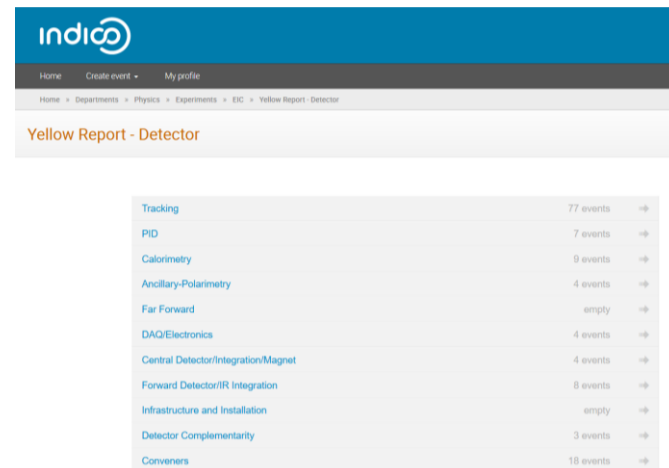
➢ **EIC Wiki**: Storage of documentation, e.g. manuals

https://wiki.bnl.gov/eicug/index.php/Main_Page

➢ **Dropbox**: Storage of larger files

➢ **GitHub Pages**: Software documentation

https://eic.github.io/

Looking ahead to EIC YR Workshop #3 (Sept 2020)

❑ Overall goal: "*present mature studies of detector requirements from physics processes, balance detector concepts versus impact on physics measurements. Discuss possible systematics reduction among complementary detector choices. Complete final "to-do" list for YR(s)"*

➢ Common theme will shift to discussions of global issues that impact all (or a large number of) Physics and Detector Working Groups rather than individual ones

➢ Need the communication and work flow to be in place and all information accessible in common, well-defined space for this to succeed

Current Procedures for Information Work Flow between PWG+DWG

❑ **How to communicate detector requirements to the DWG**

https://wiki.bnl.gov/eicug/index.php/Yellow_Report_Physics_Common#How_to_communicate_your_detector_requirements_to_the_DWG:

➢ Once you think you have some concrete detector requirements out of your work, please follow the following procedure in order to let the DWG (and everybody else) know about them:

1. Discuss your results within your WG

2. Document the work in your WG wiki area

3. Your WG conveners will then contact the DWG conveners by email describing the results and pointing to the corresponding documentation in the wiki

4. The DWG conveners update the interactive detector matrix

Current Procedures for Information Work Flow between PWG+DWG

- ❑ **How to store technologies and performance and communicate these to the PWG**

  1. Discuss your results within your WG

  2. Document the work in your WG wiki area

  3. Your WG conveners will then contact the DWG conveners by email describing the results and pointing to the corresponding documentation in the wiki

  4. The DWG conveners update the interactive detector matrix

Discussion

❑ **Activity Work Flow**

  ○ Developing common tracking performance benchmarks for (two) different field settings

  ○ Improving detector response/parametrization

❑ **Procedures**

❑ **Other**