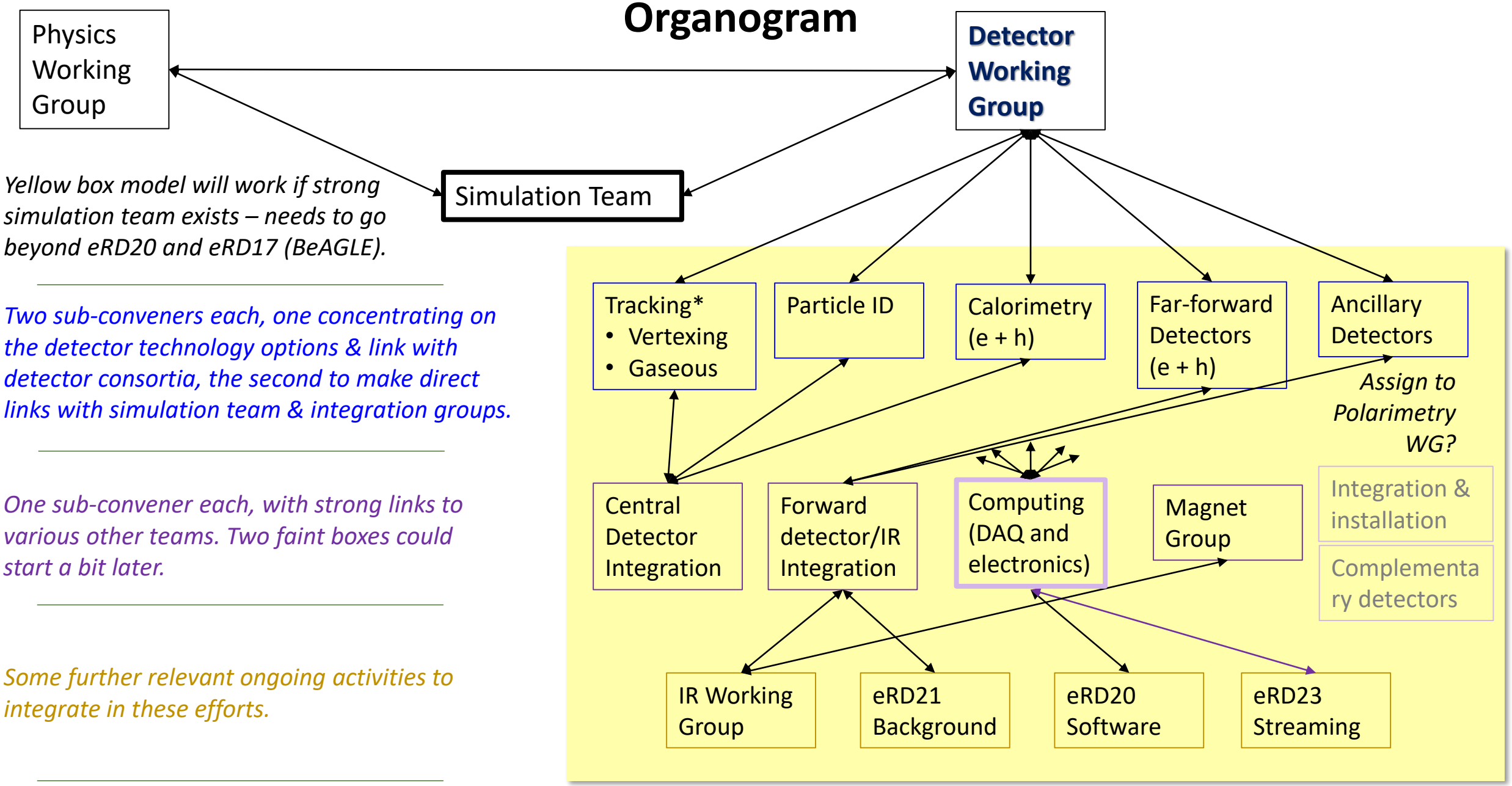
Detector Working Group – Introductory Remarks

- Organization should be an organically grown structure – open to all groups (new or already well-known in EIC efforts)
- Anticipate that this structure will evolve with time – effectiveness has to be checked as the work begins
- The model assumes a strong simulation team that needs to go well beyond the eRD20 (software) and eRD17 (BeAGLE) efforts
- Need to engage strong electronics groups from the start

Organogram



Yellow box model will work if strong simulation team exists – needs to go beyond eRD20 and eRD17 (BeAGLE).

Two sub-conveners each, one concentrating on the detector technology options & link with detector consortia, the second to make direct links with simulation team & integration groups.

One sub-convener each, with strong links to various other teams. Two faint boxes could start a bit later.

Some further relevant ongoing activities to integrate in these efforts.

**One additional sub-convener (to cover each of these distinct and evolving detector technologies)*

Organizational Structure (I)

- Assume a separate strong simulation team efforts working together with both Physics and Detector WGs

- The organization starts from the references given:
  - science as from EIC white paper,
  - known detector requirements,
  - listed introductory documents,
  - detector-consortia related papers

- The Central Detector here includes the central detector itself and both electron and proton/ion endcaps

- The Ancillary Detectors here includes both polarimeters and luminosity monitors. We hope the Polarimetry WG is willing to include the luminosity monitor scope.

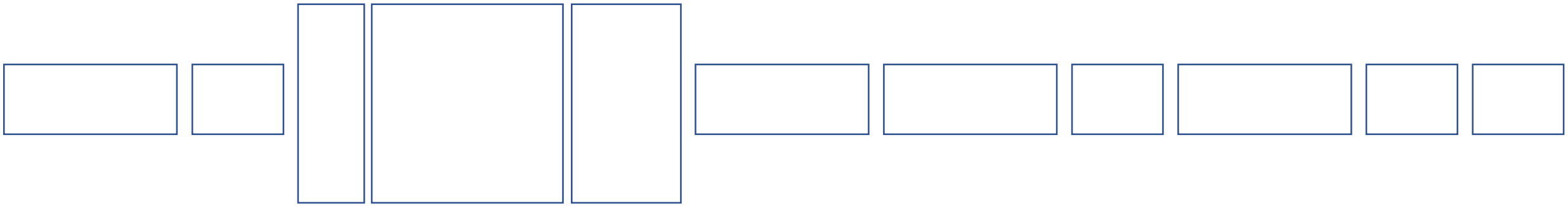
Organizational Structure (II)

- We assume ***two sub-conveners*** each for particle identification detectors, calorimetry, and far-forward detectors (including tracking, Roman Pots, ZDCs, etc.). Far-forward is after the final-focus quads. We assume ***one additional sub-convener*** for tracking detectors to cover the two technologies (vertexing and gaseous).
  - One of these sub-conveners concentrates more on the detector technology options and link with detector consortia, the second sub-convener on coordination with simulation team & integration groups.
  - ***As first task, we would ask each of these groups to first start with listing pros and cons of possible detector technologies, and a general set of parameters associated with each linking to simulations.***

- We assume ***one sub-convener each for various overarching activities***: the central detector integration, the forward detector/IR integration, the readout- and computing-related activities, and the magnet field choice.
  - We have indicated several further ongoing activities to integrate in such overarching activities.
  - ***As first task, we would ask these sub-conveners to list what activities are required over the next 6-12 months, and what questions need to be answered.***

- We assume the Integration & Installation and Complementarity of two detectors activities ***can start later***, and can either assign one sub-convener or initially assign this scope to the Detector WG conveners.

Organizational Cartoon/Model of the Extended Detector and IR



far-forward e detection	e final-focus quads	“Central detector”, includes e endcap, central, and p/ion endcap detectors	Ion final-focus quads	far-forward h detection	forward dipole	far-forward h detection	forward dipole	far-forward h detection
Low-Q^2 spectroscopy		Inclusive Structure Functions, TMDs, heavy flavors and jets, electrons for GPDs		Baryon decay π/K structure evaporated n		GPDs/DVCS, tagging, diffraction		lowest-t, diffraction
GEMs Diamond detectors?		Vertex and Tracking detectors, particle identification detectors, calorimetry detectors, muon detectors, etc.		GEMs ZDCs e/γ calorim.		GEMs Roman pots e/γ calorim.		Roman pots GEMs?

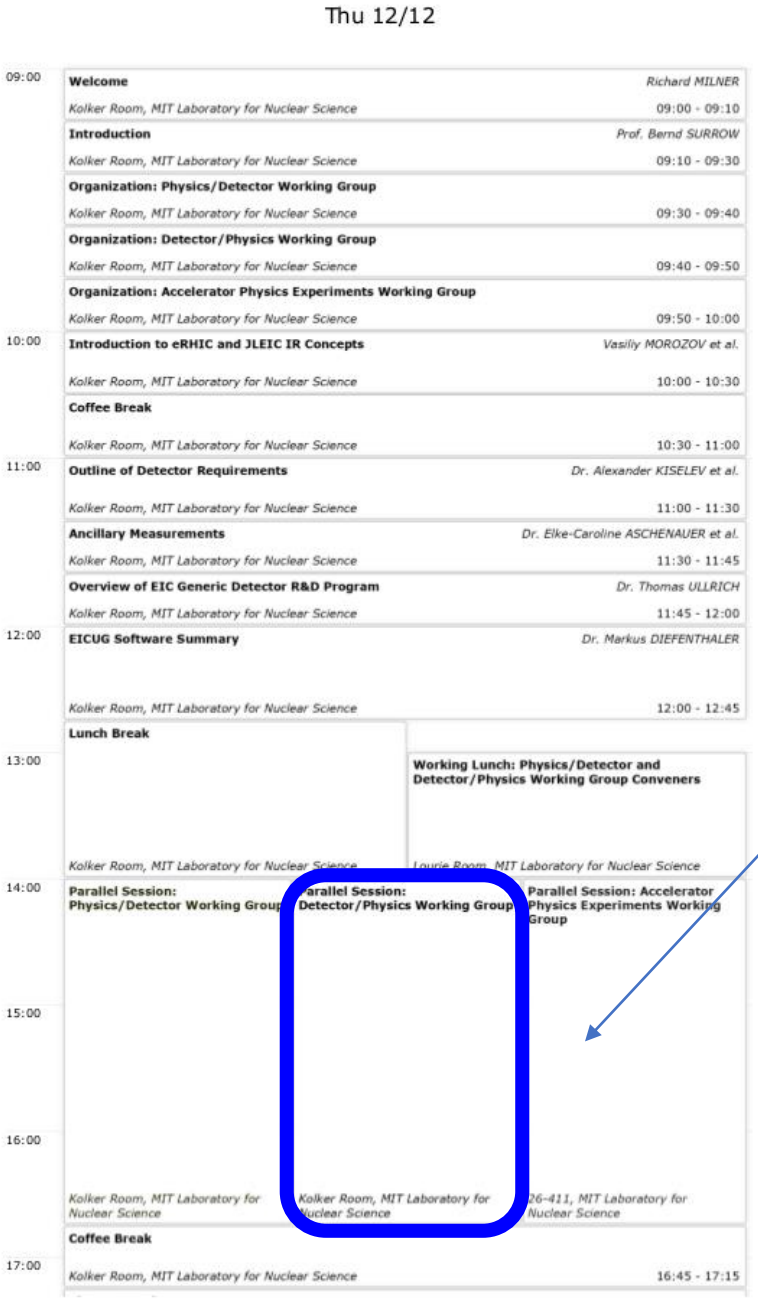
physics examples

detector examples

Detector WG Sub-conveners

System	Sub-convener names	Sub-convener task
Tracking	1. 2. 3.	(vertex) detector technologies (gaseous) detector technologies simulation, integration coordination
Particle Identification	1. 2.	detector technologies simulation, integration coordination
Calorimetry (e + h)	1. 2.	detector technologies simulation, integration coordination
Far-forward detectors	1. 2.	detector technologies Simulation, integration coordination
Ancillary detectors	Polarimetry WG?	detector technologies
Central detector integration	1.	integration tasks
Forward detector/IR integration	1.	integration tasks
Readout and Computing	1.	list of activities/tasks needed
Magnet(s)	1.	field strength need, pros and cons
Integration and Installation	NA yet	NA yet
Detector Complementarity	NA yet	NA yet
Simulations (shared with Physics WG)	1. – n.	work with both WGs central to progress

Detector WG Parallel Sessions



- ❑ Initial time of parallel session (14:00-15:45) to gather input from attendants on proposed structure/organization and iterate.
- ❑ Last hour (15:45-16:45) on Thursday will be a closed session for WG conveners only to settle on sub-convener names in face-to-face meeting.