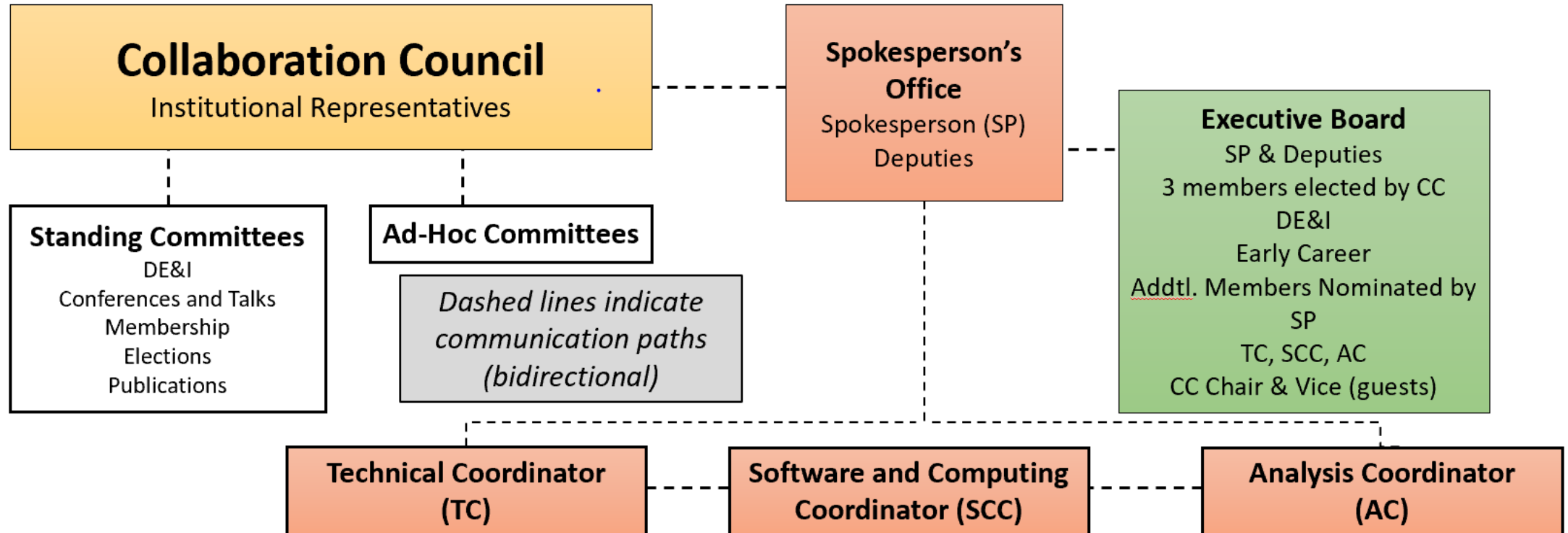# ePIC Working Groups: Formation and Status

J. Lajoie, S. Dalla Torre

April 21, 2023
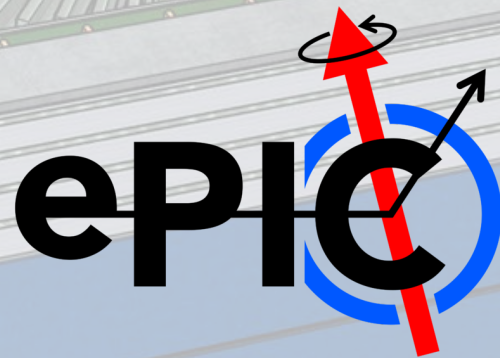
ePIC Management Structure - Coordinators

Collaboration Council
Institutional Representatives

Spokesperson's Office
Spokesperson (SP)
Deputies

Executive Board
SP & Deputies
3 members elected by CC
DE&I
Early Career
Addtl. Members Nominated by SP
TC, SCC, AC
CC Chair & Vice (guests)

Standing Committees
DE&I
Conferences and Talks
Membership
Elections
Publications

Ad-Hoc Committees

Dashed lines indicate communication paths (bidirectional)

Technical Coordinator (TC)

Software and Computing Coordinator (SCC)

Analysis Coordinator (AC)

ePIC Management Structure – PWG's

Collaboration Council
Institutional Representatives

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Spokesperson (SP)
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Analysis Coordinator (AC)
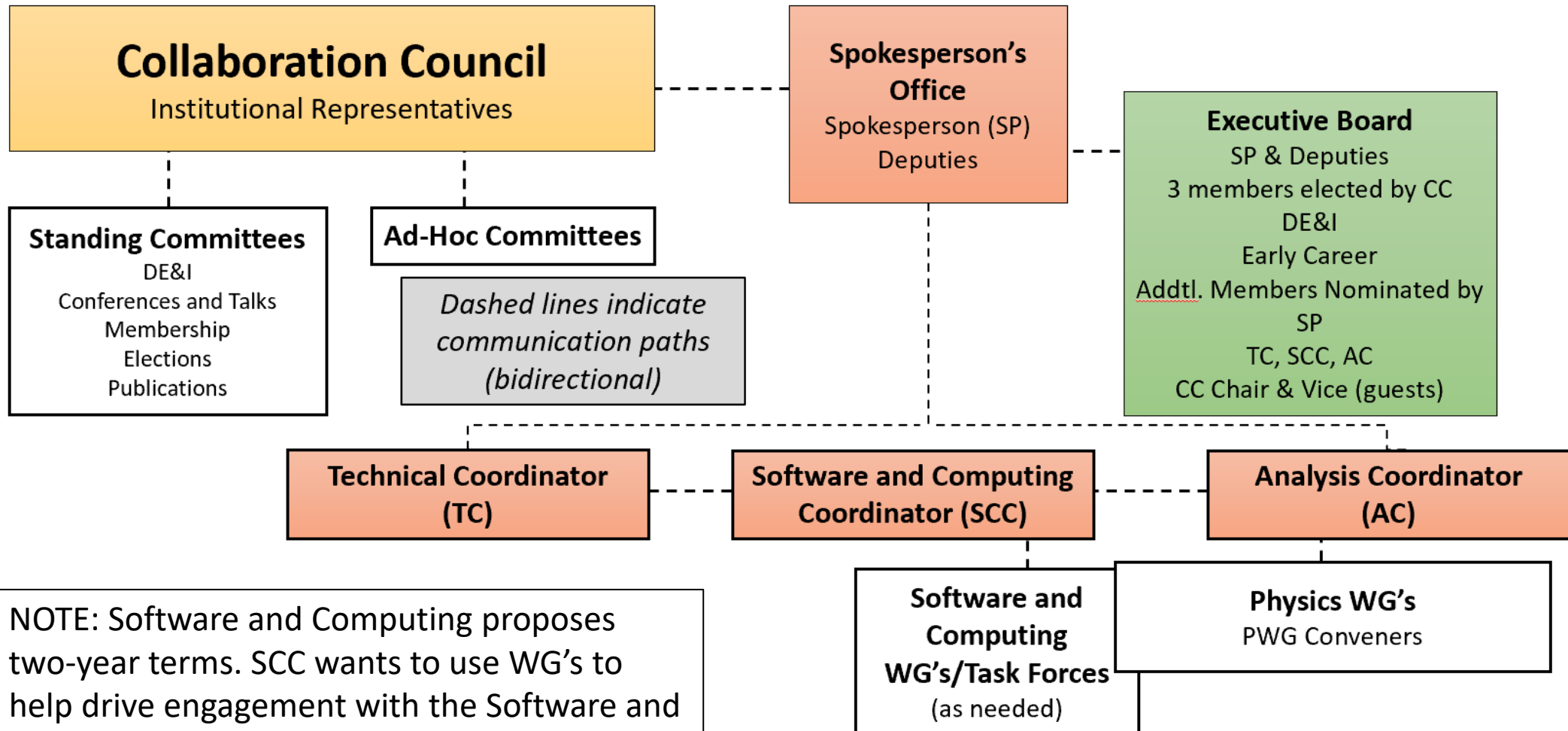
Physics WG's
PWG Conveners

NOTE: Analysis coordinators propose staggered terms for PWG convenors, so one convenors in each PWG will change every year.

CURRENT PWGS:
- **Inclusive Physics**
- **Jets and Heavy Flavor**
- **Exclusive, Diffraction, & Tagging**
- **Semi-Inclusive Physics**
- **BSM & precision EW**

ePIC Management Structure – SCC WG's

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Institutional Representatives

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Spokesperson (SP)
Deputies

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DE&I
Early Career
Addtl. Members Nominated by SP
TC, SCC, AC
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Standing Committees
DE&I
Conferences and Talks
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Publications

Ad-Hoc Committees

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Technical Coordinator (TC)

Software and Computing Coordinator (SCC)

Analysis Coordinator (AC)

Software and Computing WG's/Task Forces
(as needed)

Physics WG's
PWG Conveners

NOTE: Software and Computing proposes two-year terms. SCC wants to use WG's to help drive engagement with the Software and Computing effort, consistent with the use of Task Forces prior to the management plan.
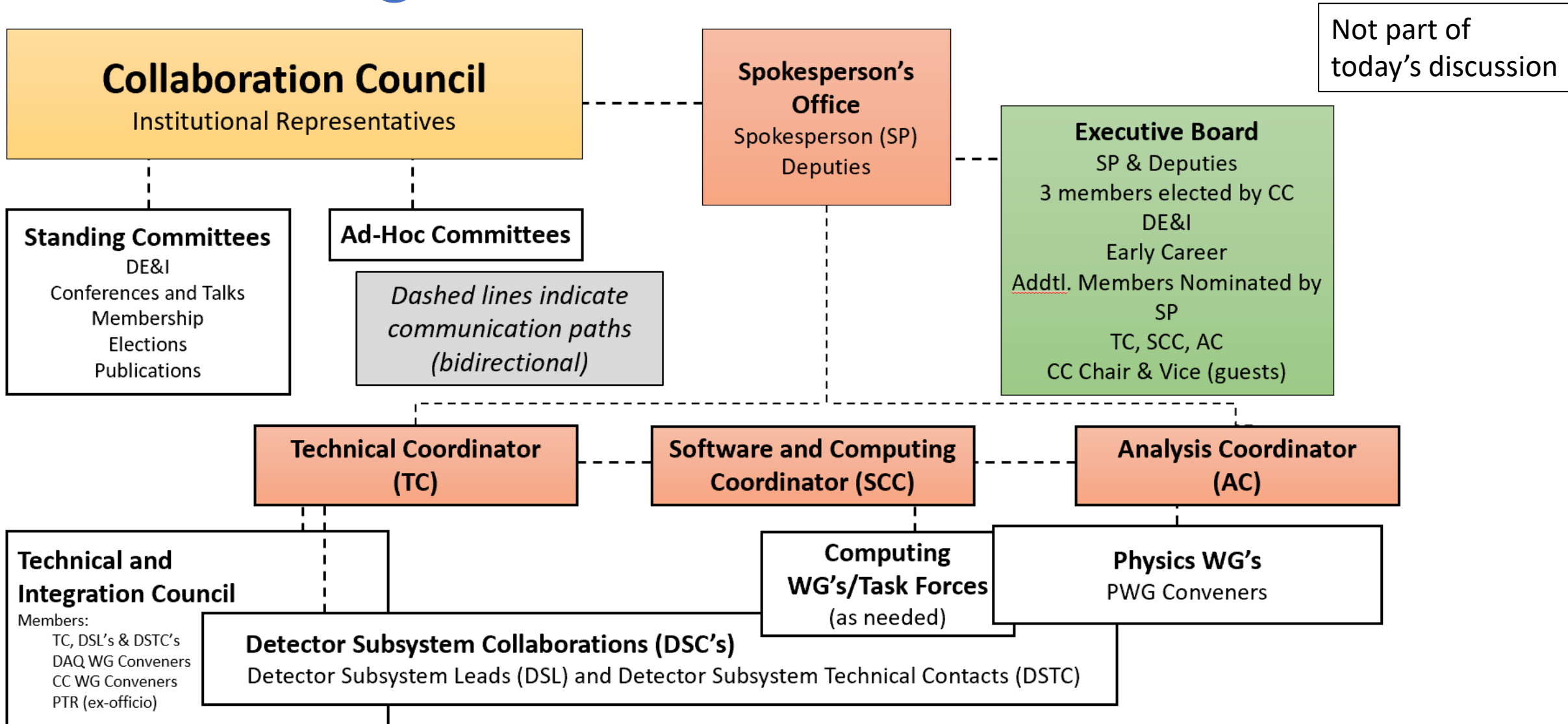
SCC activity includes:
Operations (Production, Validation, User Learning)
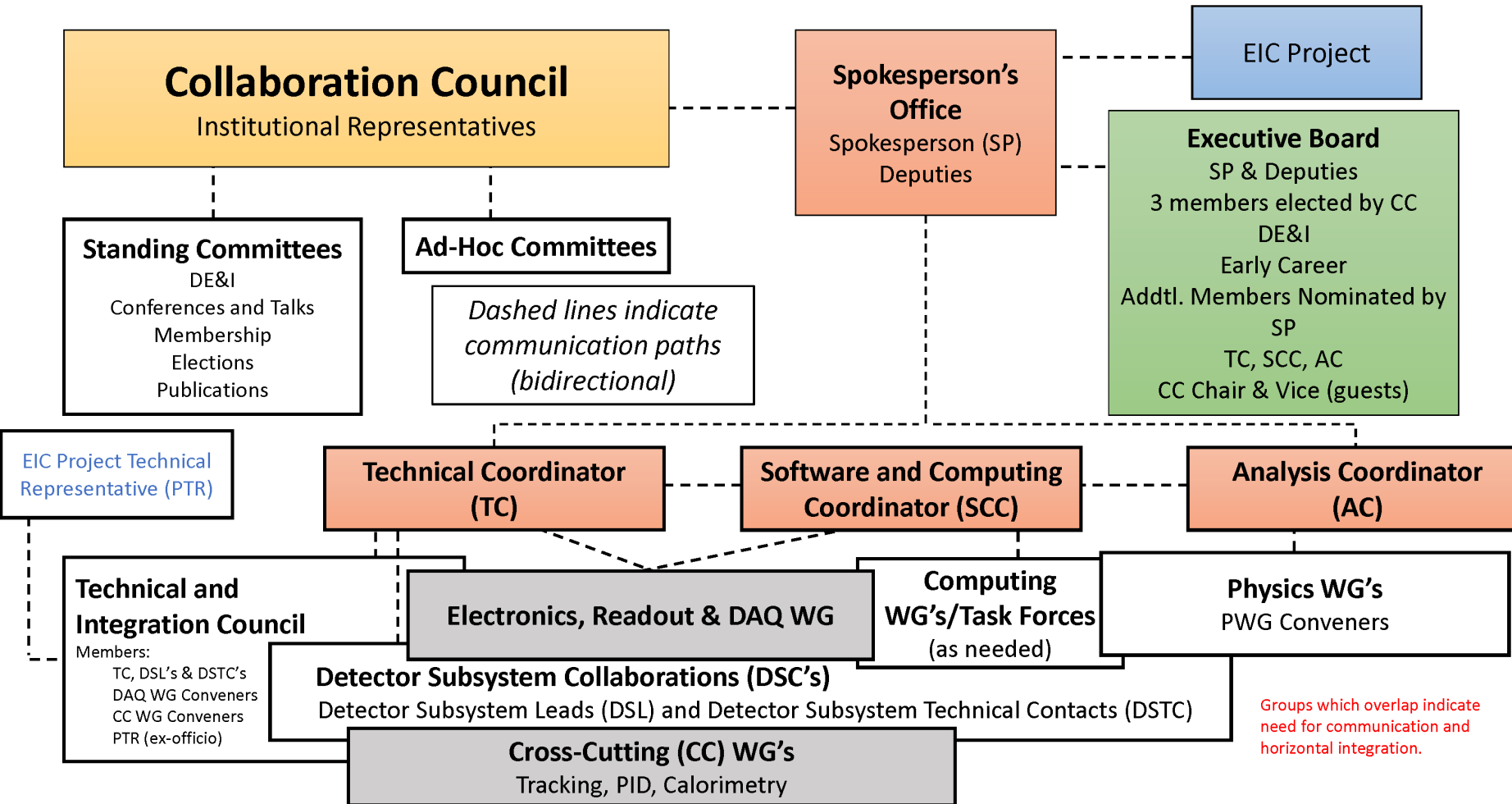**Development** (Physics and Detector Sim., Reconstruction, Analysis Tools)
Infrastructure (Streaming Computing Model)

ePIC Management Structure – DSC's and TIC

Not part of today's discussion

Collaboration Council
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Technical Coordinator (TC)

Software and Computing Coordinator (SCC)

Analysis Coordinator (AC)

Technical and Integration Council
Members:
    TC, DSL's & DSTC's
    DAQ WG Conveners
    CC WG Conveners
    PTR (ex-officio)

Computing WG's/Task Forces
(as needed)

Physics WG's
PWG Conveners

Detector Subsystem Collaborations (DSC's)
Detector Subsystem Leads (DSL) and Detector Subsystem Technical Contacts (DSTC)

*Each subsystem is built by a **Detector Subsystem Collaboration (DSC)** formed by the groups and institutions contributing to it*

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ePIC Management Structure – CC WG's

Collaboration Council
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Spokesperson (SP)
Deputies

EIC Project

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3 members elected by CC
DE&I
Early Career
Addtl. Members Nominated by SP
TC, SCC, AC
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Standing Committees
DE&I
Conferences and Talks
Membership
Elections
Publications

Ad-Hoc Committees

Dashed lines indicate communication paths (bidirectional)

EIC Project Technical Representative (PTR)

Technical Coordinator (TC)

Software and Computing Coordinator (SCC)

Analysis Coordinator (AC)

Technical and Integration Council
Members:
TC, DSL's & DSTC's
DAQ WG Conveners
CC WG Conveners
PTR (ex-officio)

Electronics, Readout & DAQ WG

Computing WG's/Task Forces
(as needed)

Physics WG's
PWG Conveners

Detector Subsystem Collaborations (DSC's)
Detector Subsystem Leads (DSL) and Detector Subsystem Technical Contacts (DSTC)

Groups which overlap indicate need for communication and horizontal integration.

Cross-Cutting (CC) WG's
Tracking, PID, Calorimetry

CC WG's are special things – they report to the TIC, they don't sit between the TIC and the DSC's!

They provide a forum for the discussion of common issues between DSC's.

Propose 2-year terms

Reaching Out

- Collaboration input sought on proposed WG's and convenor recommendations:
  - Email sent 4/3/23
  - Google form accompanied by a list of proposed WG's
    - One-sentence description of WG charge
  - 116 responses!
- Recommended WG convenors selected by Coordinators with this input in mind:
  - In addition to all the input already received during the development of the management plan.
  - This was a workforce optimization exercise!
- Incorporated comments from Apr. 14th General Meeting.

ePIC Working Group Convenor Recommendation and Comment Form

Use this form to recommend ePIC Working Group Conveners. You may use this form to submit as many recommendations as you like. Keep in mind that the Spokespersons Office, in conjunction with the Coordinators, will make convenor nominations to the Collaboration Council, subject to their endorsement.

You can also use this form to send us general comments! Select the WG or WG category, and just leave comments in the comment box, there is no requirement to fill in a name to submit the form.

The document linked below outlines the Working Groups we plan to create and for which we are looking for convenor recommendations:

https://iastate.box.com/s/stksl1gjv3yobvijmw8p2l3jnvb14fyq

The document has a one-sentence description for each Working Group, along with the number and length of term we are considering for the convenors.

ePIC Working Groups
4/2/2023

Physics Working Groups

Inclusive Physics

- Focus on measurements that involve detecting, identifying, and measuring the kinematics of the scattered electron.
- Tyler Kutz (MIT, 2-year)
- Claire Gwenlan (Oxford, 1-year)

Semi-Inclusive Physics

- Focus on measurements that require detecting, identifying and measuring a final state hadron or hadrons in addition to the scattered electron.
- Charlotte Van Hulse (U. Alcala, 2-year)
- Stefan Diehl (UConn, 1-year)

Exclusive, Diffraction and Tagging

- Focus on measurement that require detecting the scattered proton/ion, whether it remains intact or not, together with all the final state produced particles, in addition to the scattered electron.
- Raphael Dupré (Orsay, 2-year)
- Rachel Montgomery (Glasgow, 1-year)

Jets and Heavy Flavor

- Focus on measurements that involve high momentum exchanged processes, which could produce a spray of final state particles or hadrons that have one or more heavy quark constituents.
- Olga Evdokimov (UIC, 2-year)
- Brian Page (BNL, 1-year)

BSM & Precision EW

- Focus on measurements of the cross-sections, helicities of electroweak gauge bosons that can lead to a better understanding of quark-level electroweak couplings and the potential for measurements beyond the standard model.
- Ciprian Gal (MSU/JLab, 2-year)
- Michael Nycz (Virginia) (1-year)

Physics Working Groups are encouraged to hold joint meetings where appropriate.

Software and Computing

Operations WGs:

Production
- Responsible for the coordination and production of simulation campaigns based on priorities from the TC and AC's. Develop automated production workflows that scale with the needs of the collaboration.
- Sakib Rahman (Manitoba)
- Thomas Britton (JLab)

User Learning
- Responsible for support via documentation, help desk, and training. Ensure that software is discoverable (easy to use with only minimal instructions) and simulated data and metadata is findable.
- Holly Szumila-Vance (JLab)
- Kolja Kauder* (BNL)

Validation
- Responsible for the validation of the simulations via a suite of detector and physics performance plots. Develop autonomous checks and verification of the validation plots.
- Torri Jeske (JLab)
- Dmitry Kalinkin (Kentucky)

Development WGs:

Physics and Detector Simulation
- Development of accurate MC simulations using a suite of physics and background generators and detector simulation based on Geant4 and DD4hep.
- Kolja Kauder* (BNL)
- Chao Peng (ANL)

Reconstruction
- Development of a holistic and modular reconstruction for the integrated ePIC detector.
- Shujie Li (LBNL)
- Derek Anderson (ISU)

Analysis Tools
- Integration of analysis methods and tools in central software and computing workflows.
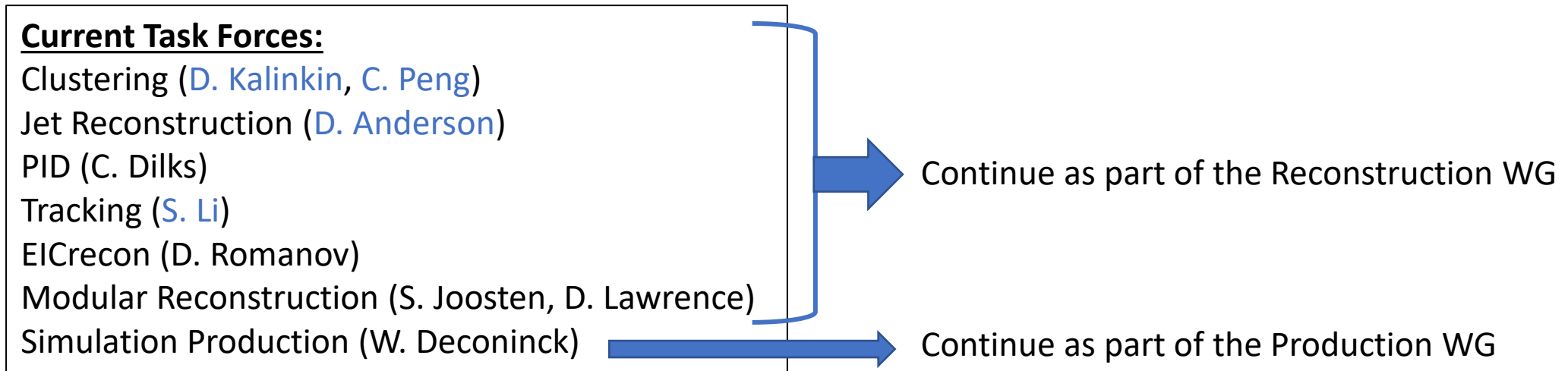- Zhoudunming (Kong) Tu (BNL)
- TBD

Infrastructure WGs:

Streaming Computing Model
- Development of the computing model for the compute-detector integration using streaming readout, AI/ML, and multi-architecture computing (CPU, GPU, …) with a specific focus on the data flows after the FEE layer.
- Marco Battaglieri (INFN Genova)
- Jin Huang (BNL)

*Kolja Kauder is 100% on EIC

Existing Task Forces

The existing task forces were Software and Computing's approach in building a workforce for the simulation and reconstruction effort during the consolidation phase, before the current management structure. The task forces addressed specific needs but left flexibility for change in creating a scientific management structure.

Current Task Forces:
Clustering (D. Kalinkin, C. Peng)
Jet Reconstruction (D. Anderson)
PID (C. Dilks)
Tracking (S. Li)
EICrecon (D. Romanov)
Modular Reconstruction (S. Joosten, D. Lawrence)
Simulation Production (W. Deconinck)

Continue as part of the Reconstruction WG

Continue as part of the Production WG

Cross-Cutting Working Groups

Electronics, Readout and DAQ
- Oversee development of readout and DAQ from front end to storage.
- Fernando Barbosa (JLab), Jeff Landgraf (BNL), Jin Huang (BNL)*
    - One each with analog electronics, digital electronics, and streaming readout emphasis
    - *Streaming Readout convenor shared with Streaming Computing Model WG under SCC

Tracking WG
- Design and performance of an integrated tracking system for ePIC
- Ernst Sichtermann (LBNL), Matt Posik (Temple)

Calorimetry WG
- Address common concerns of calorimetry in ePIC
- Oleg Tsai (UCLA)

PID WG (TOF and Cerenkov)
- Development of an integrated PID system for ePIC
- Oskar Hartbrich (ORNL), Thomas Ullrich (BNL)

FFWD/FBKWD
- Development of integrated FFWD/FBWD systems for ePIC
- Simon Gardner (Glasgow)
- Nathaly Santiesteban (UNH)

Next Steps

- How to include/support/develop e+A physics?
  - Analysis Coordinators to work with collaboration members
  - Proposed ideas include starting with a Task Force, developing ideas

- Put the structure to work addressing the key issues facing the evolution of the ePIC technical design:
  - Use the second simulation campaign to make progress on key integration priorities to in support of CD-3A and the TDR
  - Develop goals, enumerate tools and workforce required to achieve goals
    - Discussions underway between SP Office, EIC Project, Coordinators
  - Coordinators to … coordinate the efforts to develop the required tools and mobilize the workforce
    - Implement TF's where critical short-term needs are identified

Motion to the Collaboration Council

- The Spokesperson's Office requests that the Collaboration Council endorse:
  - The proposed structure of Cross-Cutting, Software and Computing and Physics Working Groups
  - The proposed conveners for each Working Group (by working group)
    - SP Office and Coordinators worked hard to develop teams that can complement each other
    - Postpone vote on Analysis Tools convenors until complete team is identified

ePIC CC Meeting