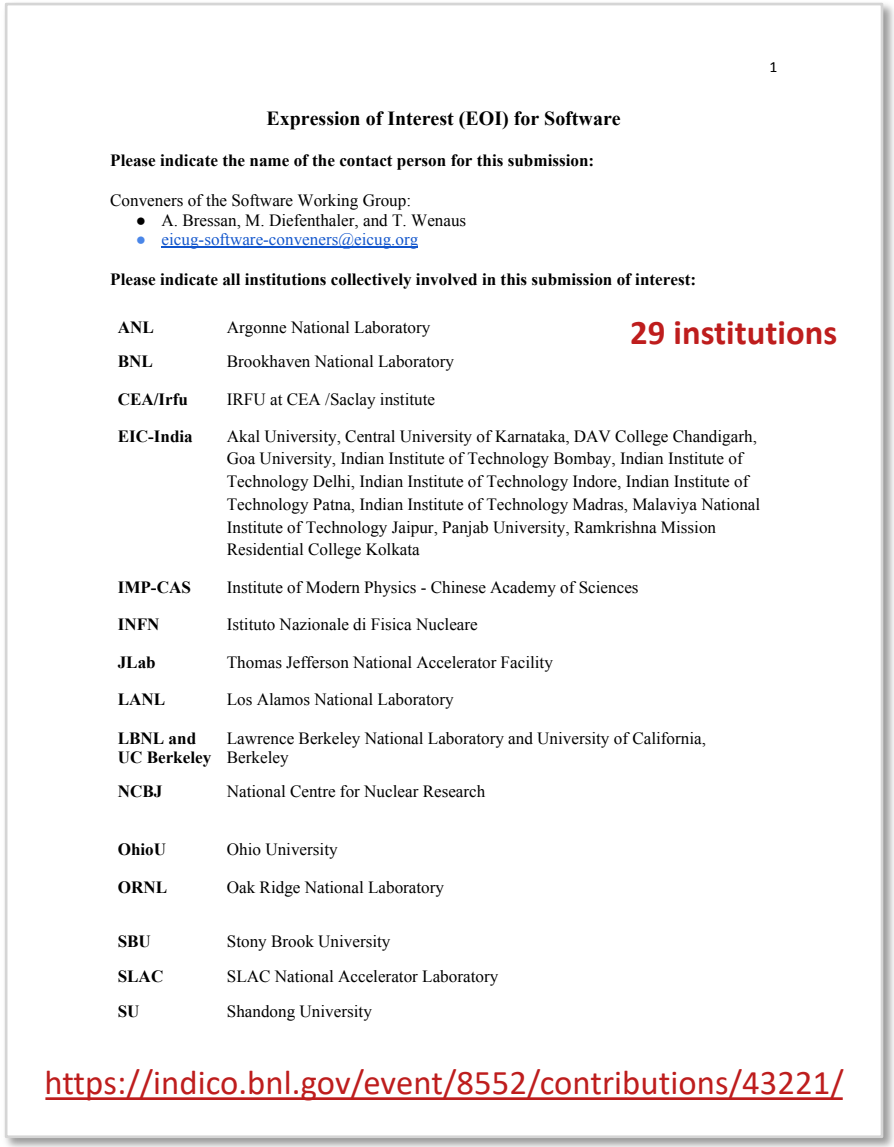
Expression of Interest for Software



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Expression of Interest (EOI) for Software

Please indicate the name of the contact person for this submission:

Conveners of the Software Working Group:
- A. Bressan, M. Diefenthaler, and T. Wenaus
- eicug-software-conveners@eicug.org

Please indicate all institutions collectively involved in this submission of interest:

29 institutions

ANL	Argonne National Laboratory
BNL	Brookhaven National Laboratory
CEA/Irfu	IRFU at CEA /Saclay institute
EIC-India	Akal University, Central University of Karnataka, DAV College Chandigarh, Goa University, Indian Institute of Technology Bombay, Indian Institute of Technology Delhi, Indian Institute of Technology Indore, Indian Institute of Technology Patna, Indian Institute of Technology Madras, Malaviya National Institute of Technology Jaipur, Panjab University, Ramkrishna Mission Residential College Kolkata
IMP-CAS	Institute of Modern Physics - Chinese Academy of Sciences
INFN	Istituto Nazionale di Fisica Nucleare
JLab	Thomas Jefferson National Accelerator Facility
LANL	Los Alamos National Laboratory
LBNL and UC Berkeley	Lawrence Berkeley National Laboratory and University of California, Berkeley
NCBJ	National Centre for Nuclear Research
OhioU	Ohio University
ORNL	Oak Ridge National Laboratory
SBU	Stony Brook University
SLAC	SLAC National Accelerator Laboratory
SU	Shandong University

https://indico.bnl.gov/event/8552/contributions/43221/

Common Projects

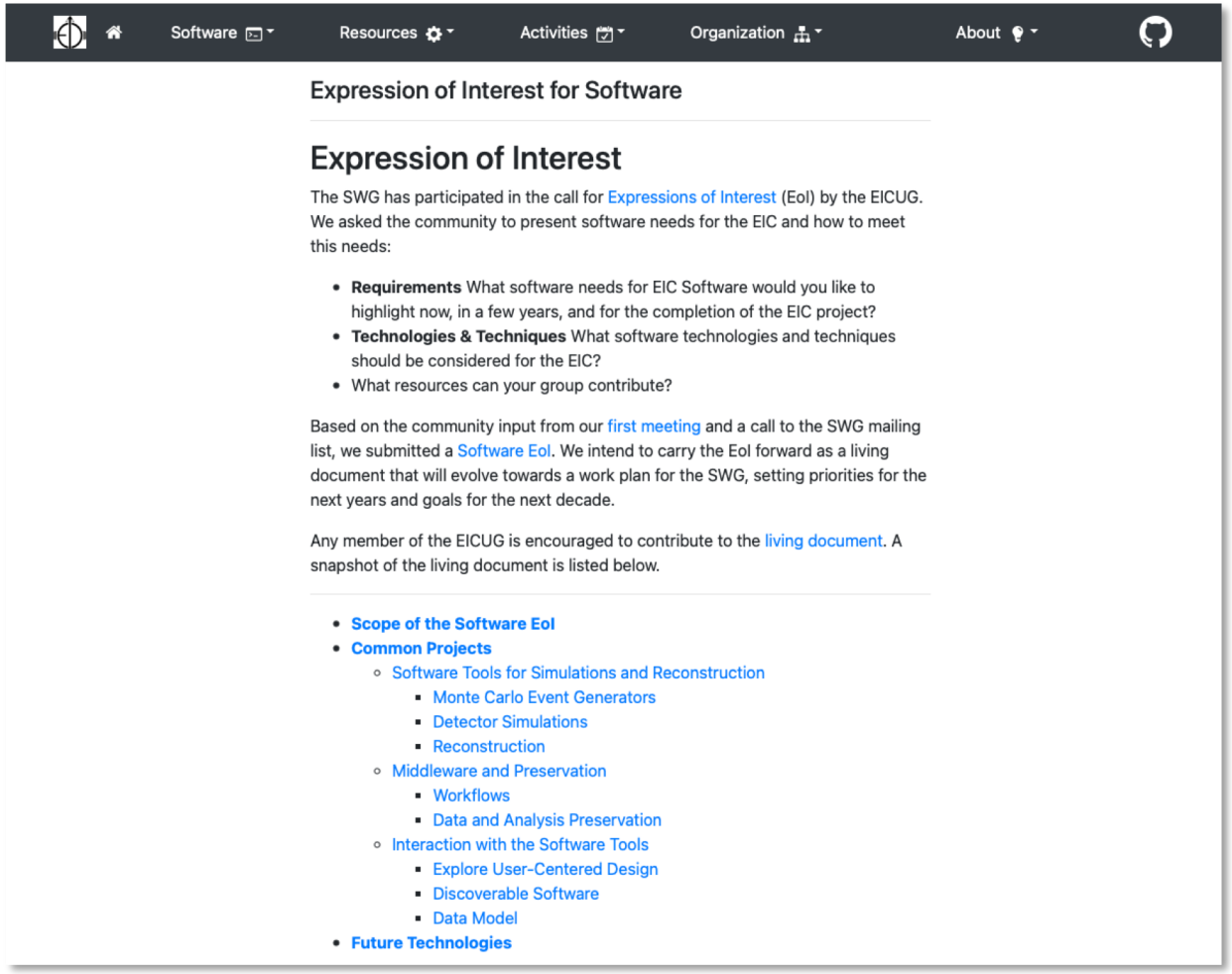
- **Software Tools for Simulations and Reconstruction**
  - Monte Carlo Event Generators
  - Detector Simulations
  - Reconstruction
- **Middleware and Preservation**
  - Workflows
  - Data and Analysis Preservation
- **Interaction with the Software Tools**
  - Explore User-Centered Design
  - Discoverable Software
  - Data Model

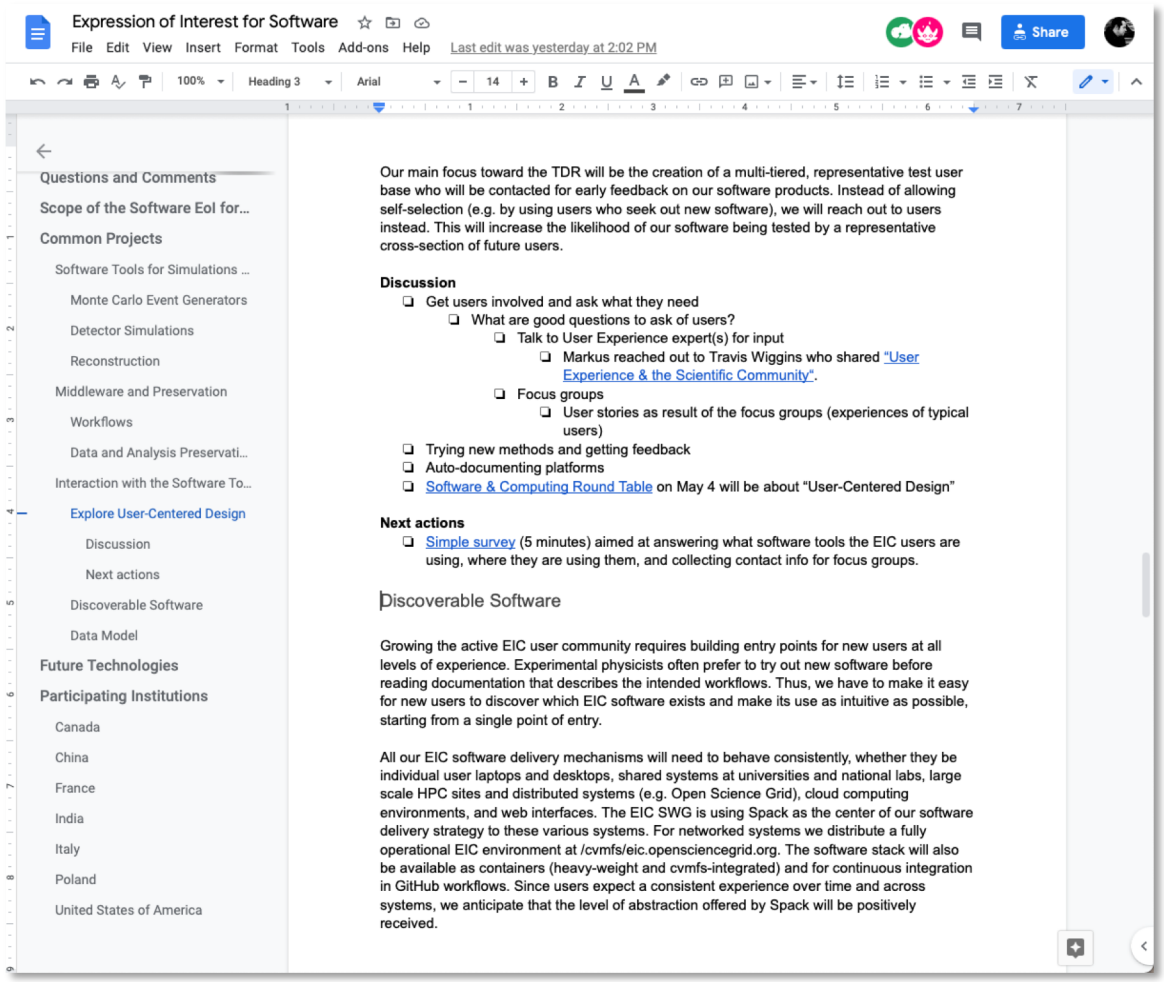
Future Technologies

- Artificial Intelligence
- Heterogeneous computing
- New languages and tools
- Collaborative software

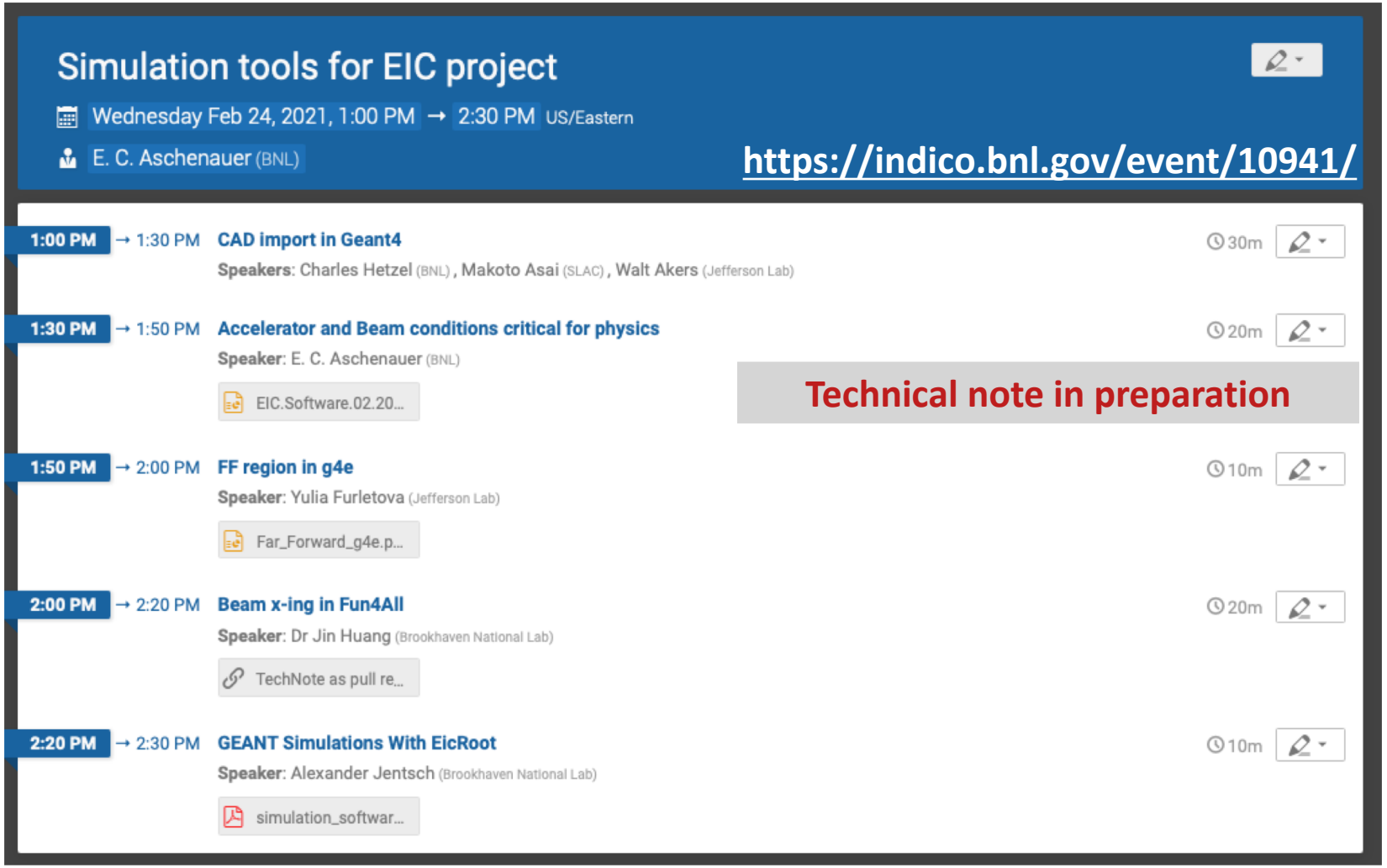
Evolving the EoI towards a Work Plan for the SWG

https://eic.github.io/activities/eoi.html





Update on Common Projects

- **Software Tools for Simulations and Reconstruction**
  - Monte Carlo Event Generators
    - **02/24** Kolja reported on maintaining Pythia6 for the EIC.
    - **03/10** Prabhakar Palni (Goa University) will report on MC-data comparisons for the EIC
  - Detector Simulations
  - Reconstruction
    - **02/24** Joe Osborn updated us on ACTS for the EIC.
  - **Middleware and Preservation**
    - Workflows
    - Data and Analysis Preservation
    - **02/24, 03/10** Kolja, Markus, Maxim, Sylvester, and Wouter will give update on prototype.
- **Interaction with the Software Tools**
  - Explore User-Centered Design
    - **03/03** Kolja, Markus, Rebecca, Sylvester, Wouter will report on "Status of Software Survey."
  - Discoverable Software
    - Spack (Wouter)
  - Data Model
    - Common output format (Dmitry), data model for streaming readout (Jan)
- **Validation**
  - MCEGs
  - **Fast simulations** eic-smear
  - **Full simulations** ESCalate, Fun4All

Simulation Tools for EIC Project