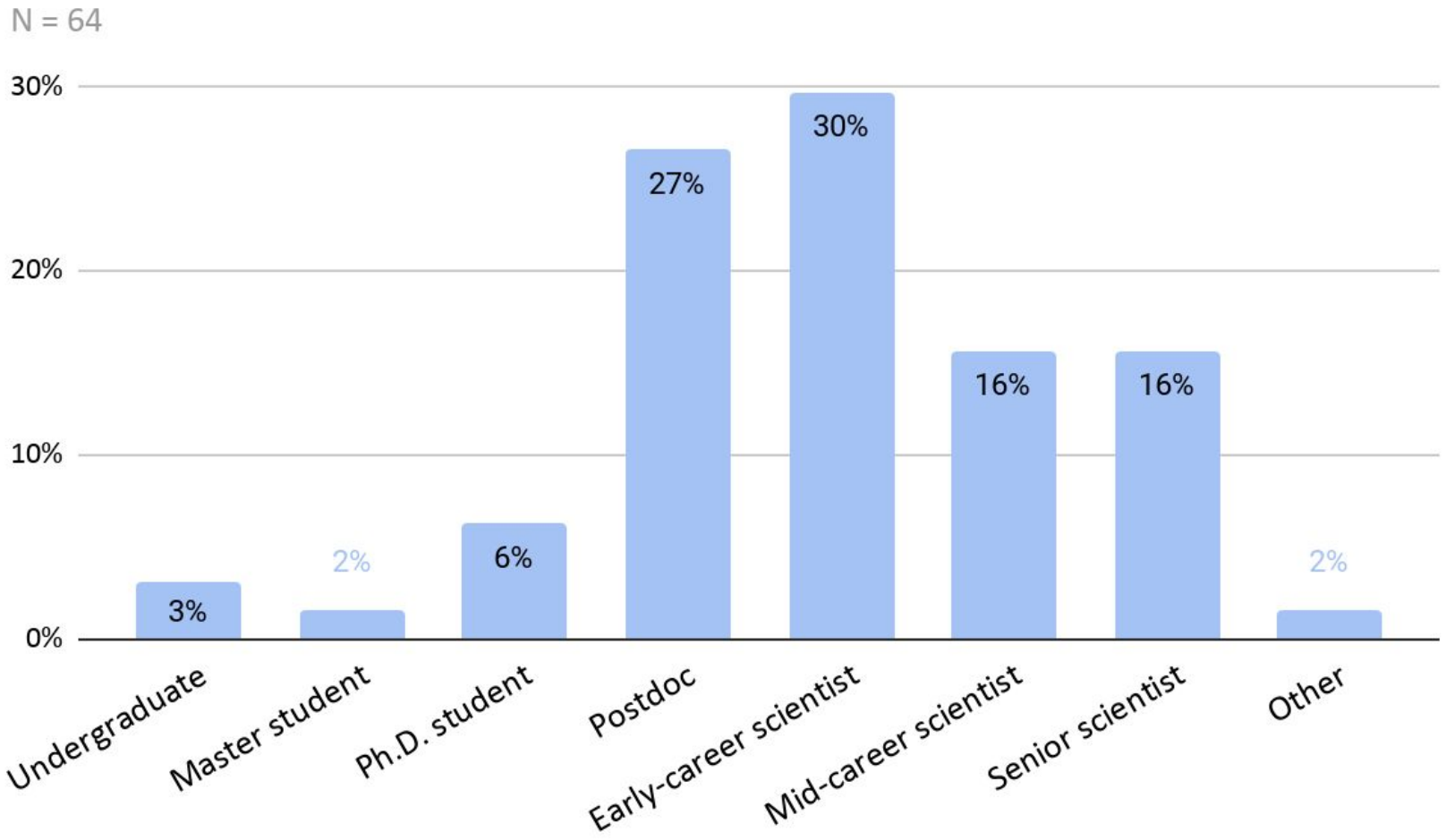
ELECTRON ION COLLIDER USER GROUP
STATE OF SOFTWARE SURVEY

Survey from February 16 – 23, 2021. Full questions and answers are listed in the appendix.

The Software Working Group collected information on the community's specific software tools and practices during the Yellow Report Initiative. This *software census* will be essential to better understand and quantify software usage throughout the EIC community.

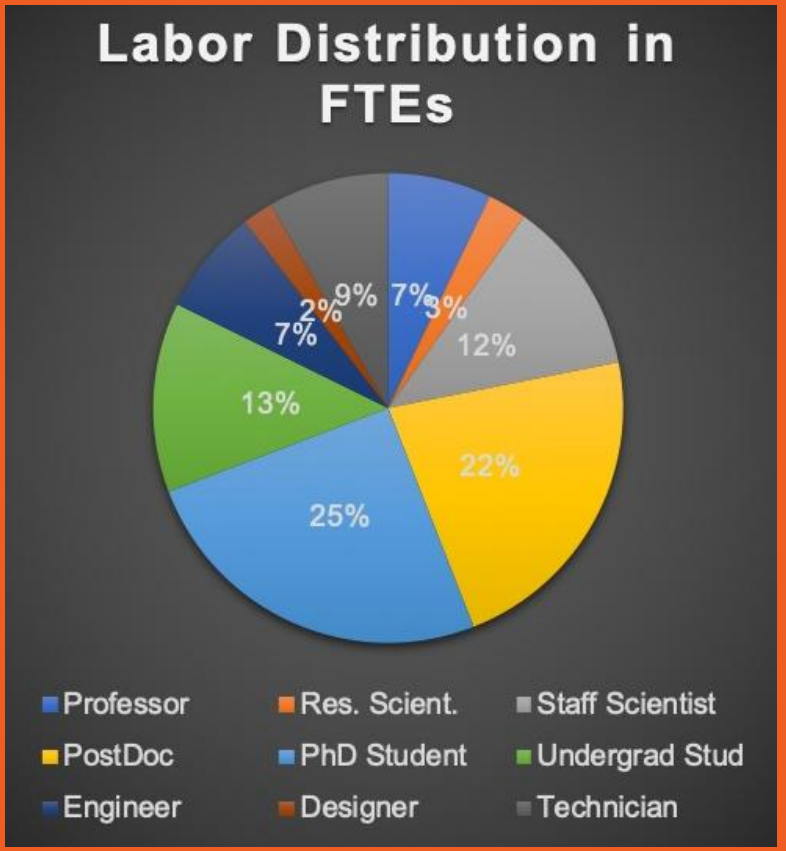
Survey results summarized by Wouter Deconinck (Manitoba), Markus Diefenthaler (JLab), Rebecca Duckett (JLab), Sylvester Joosten (ANL), and Kolja Kauder (BNL).

What is your current role in the EIC project?

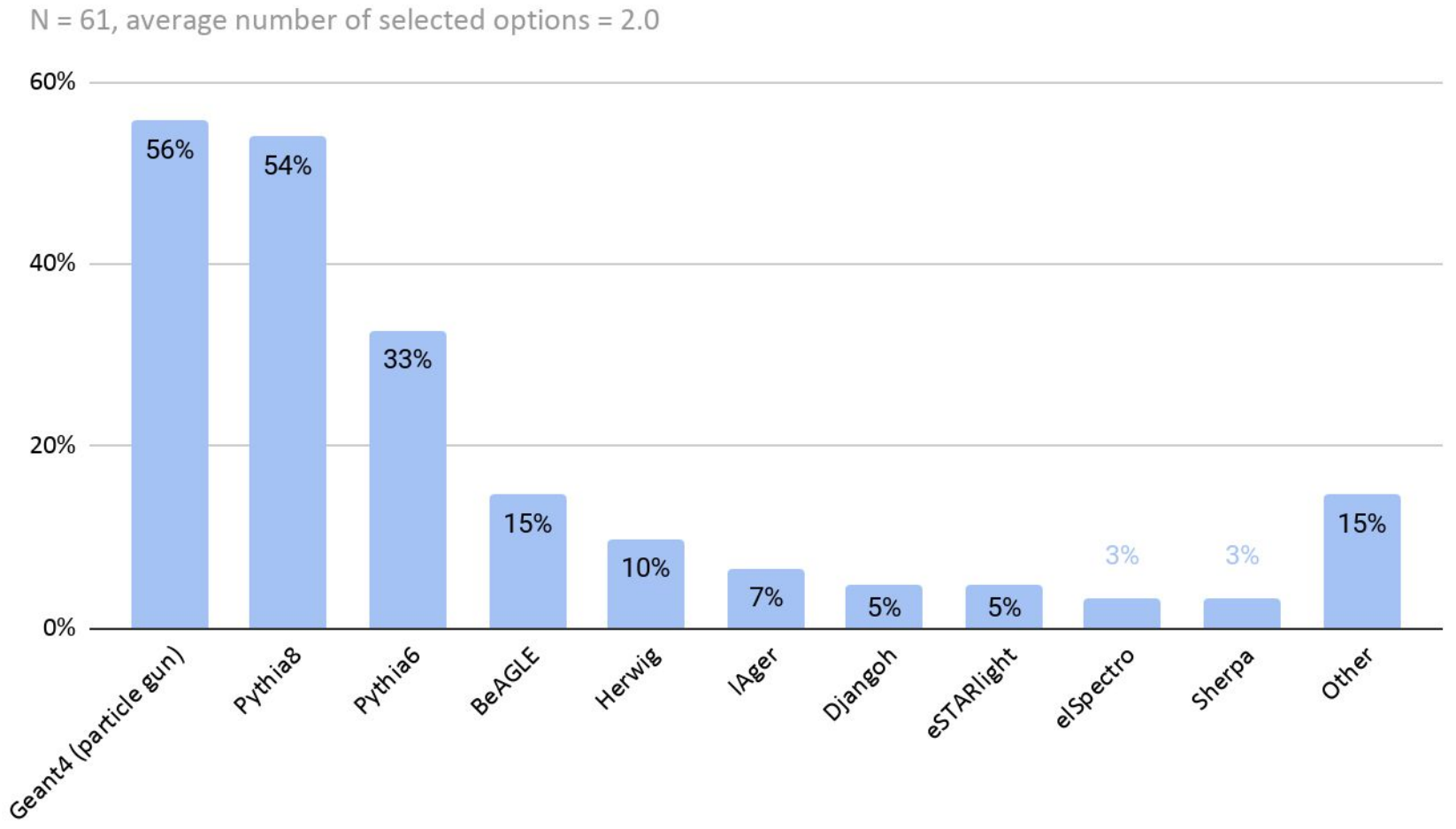


Other (N = 1): semi-retired senior researcher

Feedback from Expression of Interests (link)
Contributions from Ph.D. students will increase over time.

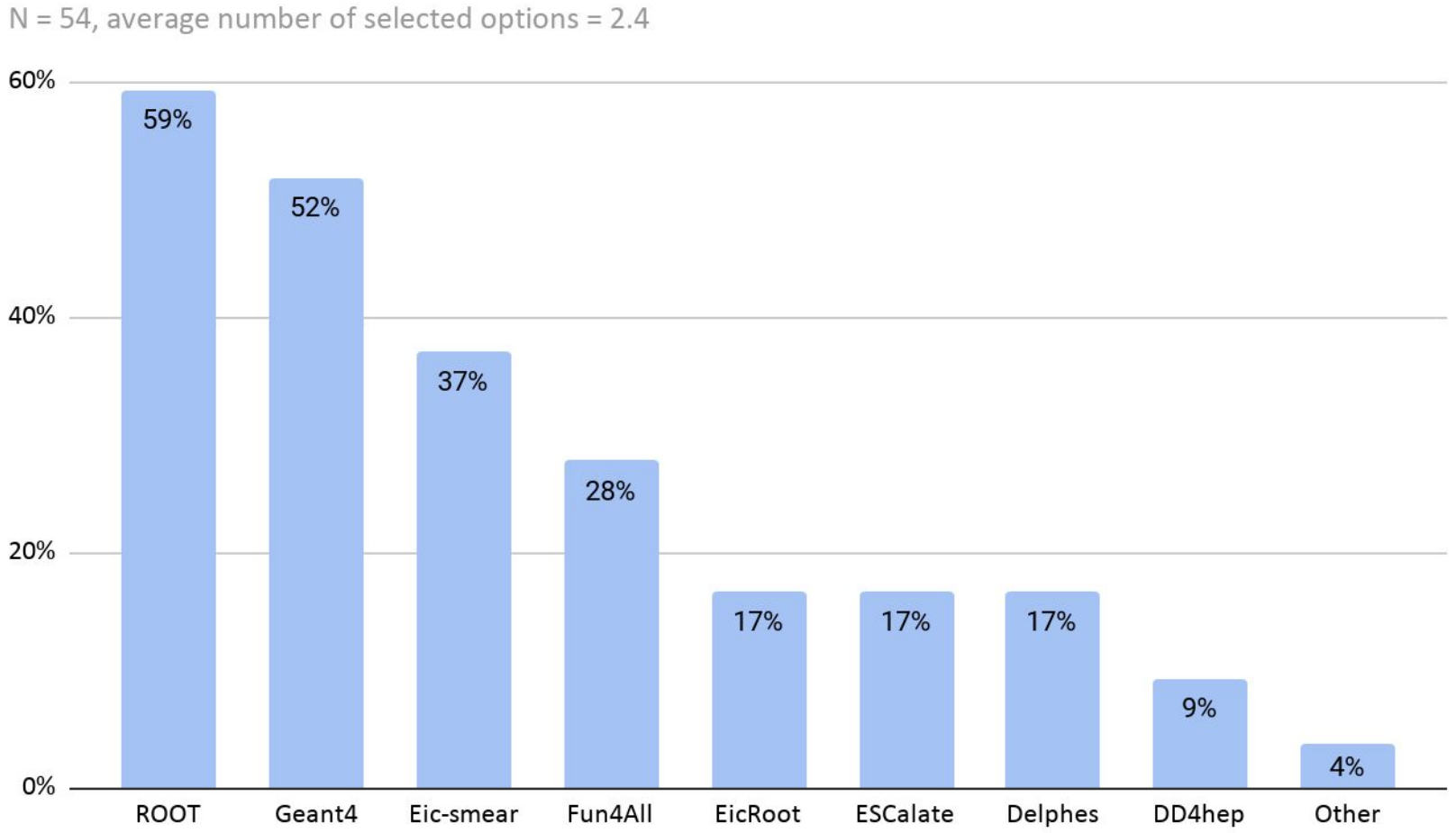


Over the past year, which physics event generation tools did you use for EIC simulations?



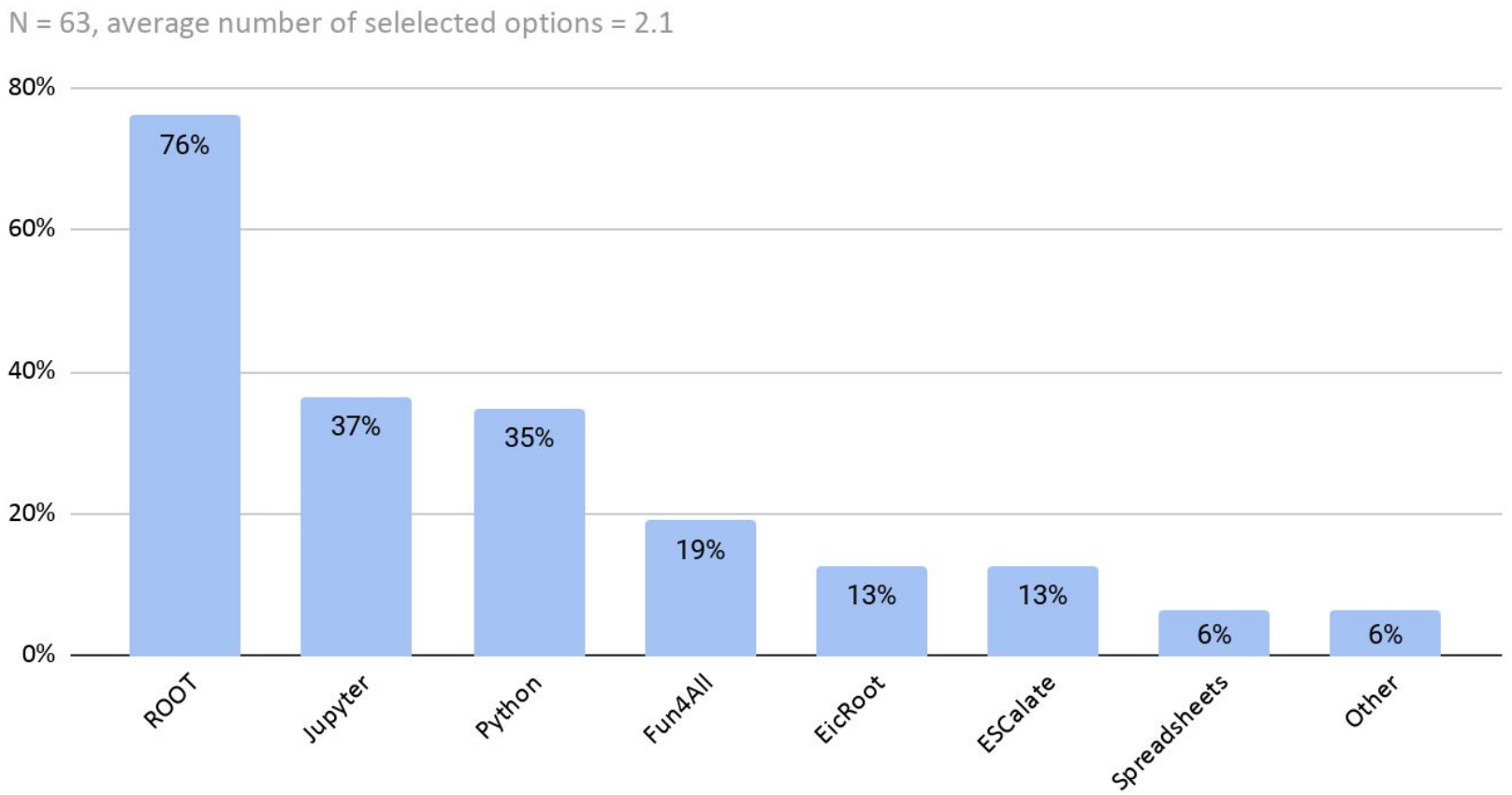
Other (N = 9): personal computer codes (N = 2), ACT, CLASDIS, ComptonRad, GRAPE-DILEPTON, MADX, MILOU, OPERA, RAYTRACE, Sartre, Topeg, ZGOUBI

Over the past year, which detector simulation tools did you use for EIC simulations?



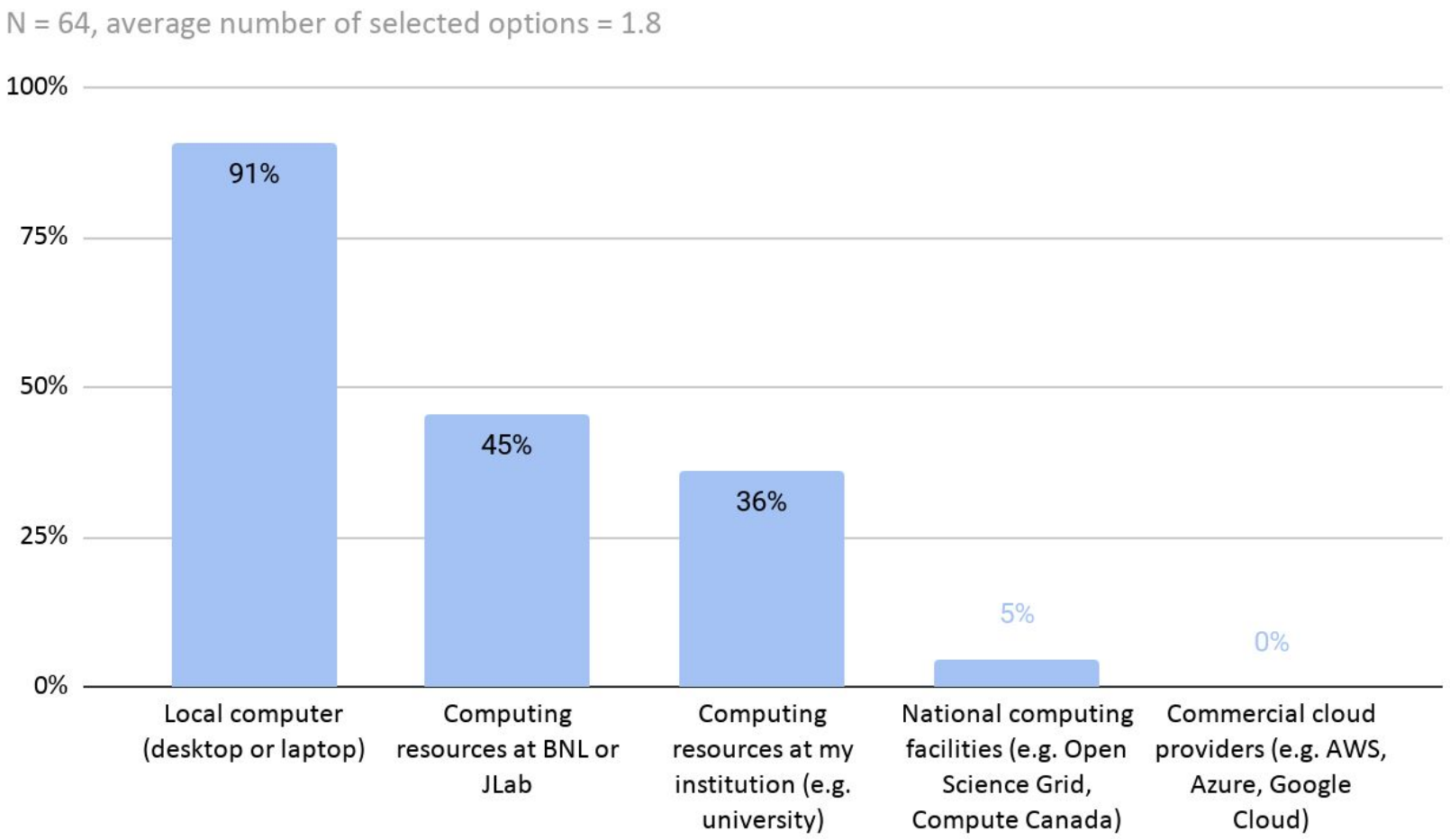
Other (N = 2): GEMC, RAYTRACE

Over the past year, which analysis tool(s) did you use for EIC simulations?

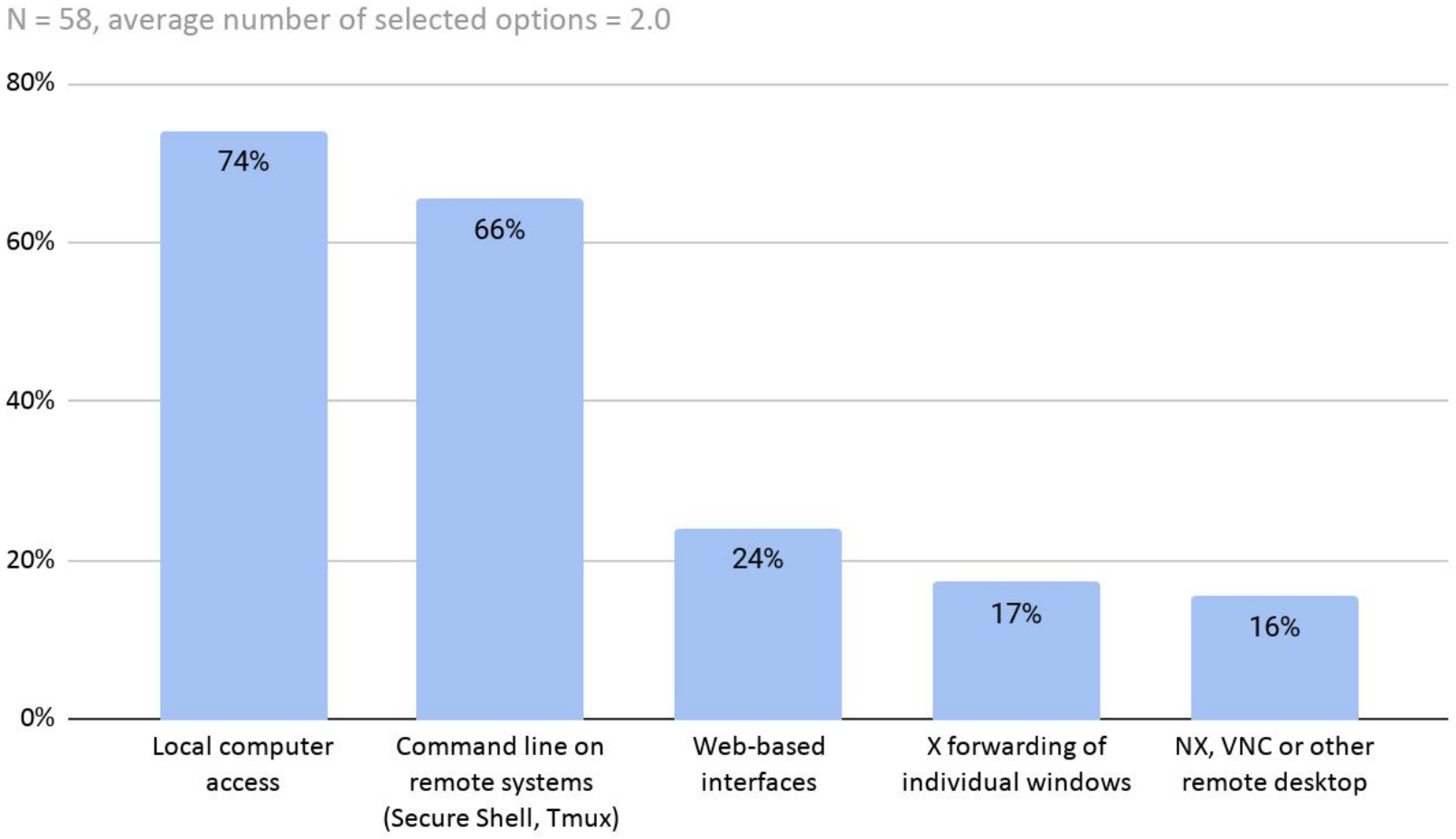


Other (N = 4): Rivet, ACE3P, jas4pp, custom codes

Over the past year, which resources did you use for EIC simulation and analysis?



Over the past year, how did you access the computing resources for EIC analysis?



Do you have any comments on your current experience with EIC Software?

N = 9

There are too many generators and simulation tools used at the moment.

5 x

- Lack of documentation.
- More tutorials would be beneficial.

3 x

The group should focus on full Geant4 simulation.

1 x

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STATE OF SOFTWARE SURVEY

Thank you to everyone who participated in the EICUG State of Software survey. We would like to extend a special thanks to those who volunteered for the focus-group discussions. The Software Working Group will repeat the survey at the end of 2021 to compare results as we continue to design and build the Electron-Ion Collider.

Next steps

- We will organize focus group discussions that will result in user stories.
- These user stories will provide input to software developers as to which users they are writing software for.

Appendix: Survey Questions

Q1. What is your current role in the EIC project?

- ○ Undergraduate student
- ○ Graduate student (M.Sc.)
- ○ Graduate student (Ph.D.)
- ○ Postdoctoral researcher
- ○ Early-career scientist (pre-tenure, assistant professor, staff scientist < 5 years)
- ○ Mid-career scientist (tenure, associate professor, staff scientist 5-10 years)
- ○ Senior scientist (full professor, staff scientist > 10 years)
- ○ Other (please specify)

  _____

Q2. Over the past year, which physics event generation tool(s) did you use for EIC simulations? Check all that apply.

- □ Geant4 (particle gun)
- □ BeAGLE
- □ Djangoh
- □ eSTARlight
- □ Herwig
- □ lAger
- □ Pythia8
- □ Pythia6
- □ Sartre
- □ Other (please specify)

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Q3. Over the past year, which detector simulation tool(s) did you use for EIC simulations? Check all that apply.

- □ ROOT
- □ Geant4
- □ DD4hep
- □ Delphes
- □ Eic-smear
- □ EicRoot
- □ ESCalate
- □ Fun4All
- □ Other (please specify)

Q4. Over the past year, which analysis tool(s) did you use for EIC simulations? Check all that apply.

- □ ROOT
- □ EicRoot
- □ ESCalate
- □ Fun4All
- □ Jupyter
- □ Python (NumPy/Pandas/...)
- □ Spreadsheets
- □ Other (please specify)

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Q5. Over the past year, which resources did you use for EIC simulation and analysis? Check all that apply.

- □ Local computer (desktop or laptop)
- □ Computing resources at my institution (e.g. university)
- □ Computing resources at BNL or JLab
- □ National computing facilities (e.g. Open Science Grid, Compute Canada)
- □ Commercial cloud providers (e.g. AWS, Azure, Google Cloud)

  _____

Q6. Over the past year, how did you access the computing resources for EIC analysis? Check all that apply.

- □ Local computer access
- □ Command line on remote systems (Secure Shell, Tmux)
- □ X forwarding of individual windows
- □ NX, VNC or other remote desktop
- □ Web-based interfaces

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Q7. Do you have any comments on your current experience with EIC Software?

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Q8. Are you interested in volunteering for future focus group discussions on EIC Software? If so, please enter your email address.