Rafael Ferreira da Silva, Ph.D.

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Section Head (Interim) • Senior Research Scientist

I am a Senior Research Scientist and Section Head (Interim) for Data and AI Systems research in the Computer Science and Mathematics division at Oak Ridge National Laboratory (ORNL), leading research and development in AI, data and agentic workflows, and advanced computing systems.

Strategic and operational leadership for **45+** researchers across five groups; **$65M+** in funded awards across **21** competitively reviewed proposals; Co-PI for Transformational AI model consortium (ModCon) - DOE Genesis Mission; PI for robotics and automated laboratories project supporting Genesis; **21** competitively reviewed grants led or co-led; **9** best paper awards at international conferences; **156** peer-reviewed publications (**76** since **2020**); Senior Member of ACM, IEEE

Signature initiatives: **Workflows Community Initiative** (290+); **WfCommons** (55); **WRENCH** (40).

MAJOR FUNDED PROGRAMS

ModCon – Transformational AI model consortium — $30,000,000
Co-Principal Investigator • Office of Advanced Scientific Computing Research (ASCR) • DOE — 10/2025-09/2027

MINT: Model INTegration through Knowledge-Rich Data and Process Composition — $12,979,881
Co-Principal Investigator • World Modelers • DARPA — 12/2017–11/2021

OPAL – Orchestrated Platform for Autonomous Laboratories — $12,500,000
Senior Personnel • Offices of Biological & Environmental Research (BER) and Advanced Scientific Computing Research (ASCR) • DOE — 10/2025-09/2027

ExaWorks: ECP Workflows Project — $3,773,833
Co-Principal Investigator • Exascale Computing Project • DOE — 2017-12/2023

PROFESSIONAL APPOINTMENTS

Oak Ridge National Laboratory, USA
Section Head (Interim), Data and AI Systems, Computer Science and Mathematics — 2025-present
Group Leader, Workflow and Ecosystem Services, National Center for Computational Sciences — 2023-2025
Senior Research Scientist — 2021-present

Workflows Community Initiative (WCI)
Co-Founder and Executive Director — 2022-present

Future Generation Computer Systems Journal
Special Issues Editor-in-Chief — 2023-2025

University of Southern California, Department of Computer Science, USA
Adjunct Research Assistant Professor — 2021-2024
Research Assistant Professor — 2016-2021

University of Southern California, Information Sciences Institute, USA
Research Lead — 2019-2021
Computer Scientist — 2013-2019

Centre National de la Recherche Scientifique (CNRS), France
Software Engineer — 2010-2013

EDUCATION

Doctor of Philosophy in Computer Science 2013
Institut National des Sciences Appliquées de Lyon, France
Thesis: A science-gateway for workflow executions: online and non-clairvoyant self-healing of workflow executions on grids

Master of Science in Computer Science 2010
Federal University of Campina Grande (UFCG), Brazil

Bachelor of Science in Computer Science 2007
Federal University of Paraiba (UFPB), Brazil

RESEARCH FOCUS

My research sits at the intersection of advanced distributed systems and scientific innovation, spanning scientific workflows, agentic workflows and provenance capture, autonomous science, and hybrid quantum-classical systems. I provide strategic direction and leadership for scheduling, modeling, and optimization methods that scale across cloud, edge, and HPC environments.

Focus areas: **Scientific Workflows**; **Agentic Workflows**; **Autonomous Science**; **Hybrid Quantum-Classical Systems**; **Workflow Scheduling and Optimization**; **Modeling and Simulation of Distributed Systems**; **Cyberinfrastructure**; **AI-driven Data Analytics**; **Provenance Capture**; **High Performance Computing (HPC)**; **Cloud and Edge Computing**.

SELECTED RECENT PUBLICATIONS (LAST 10)

[156] Taufer, Michela and **Ferreira da Silva, Rafael** and Mintz, Benjamin and Abolhasani, Milad and Badia, Rosa M. and Deelman, Ewa and Moore, Robert G. and Shalf, John. "A2SD: Accelerating Scientific Innovation Through Autonomous Discovery Systems". *High Performance Computing*. 2026. DOI: 10.1007/978-3-032-07612-0_52.

[155] Widener, Patrick and Biven, Laura and Foster, Ian T. and Plale, Beth and Oral, Sarp and **Ferreira da Silva, Rafael**. "Scientific Data Management Beyond Traditional Computing Boundaries". *IEEE Computer*. 2026. DOI: 10.1109/MC.2025.3589134.

[154] Shehata, Amir and Groszkowski, Peter and Naughton, Thomas and Gopalakrishnan Meena, Muralikrishnan and Wong, Elaine and Claudino, Daniel and **Ferreira da Silva, Rafael** and Beck, Thomas. "Bridging Paradigms: Designing for HPC-Quantum Convergence". *Future Generation Computer Systems*. 2026. DOI: 10.1016/j.future.2025.107980.

[153] Frédéric Suter and Tainã Coleman and Ílkay Altintas and Rosa M. Badia and Bartosz Balis and Kyle Chard and Iacopo Colonnelli and Ewa Deelman and Paolo Di Tommaso and Thomas Fahringer and Carole Goble and Shantenu Jha and Daniel S. Katz and Johannes Köster and Ulf Leser and Kshitij Mehta and Hilary Oliver and J.-Luc Peterson and Giovanni Pizzi and Loïc Pottier and Raül Sirvent and Eric Suchyta and Douglas Thain and Sean R. Wilkinson and Justin M. Wozniak and **Ferreira da Silva, Rafael**. "A Terminology for Scientific Workflow Systems". *Future Generation Computer Systems*. 2026. DOI: 10.1016/j.future.2025.107974.

[152] Shin, Woong and Souza, Renan and Rosendo, Daniel and Suter, Frédéric and Wang, Feiyi and Balaprakash, Prasanna and **Ferreira da Silva, Rafael**. "The (R)evolution of Scientific Workflows in the Agentic AI Era: Towards Autonomous Science". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767580.

[151] Souza, Renan and Poteet, Timothy and Etz, Brian and Rosendo, Daniel and Gueroudji, Amal and Shin, Woong and Balaprakash, Prasanna and **Ferreira da Silva, Rafael**. "LLM Agents for Interactive Workflow Provenance: Reference Architecture and Evaluation Methodology". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767582.

[150] McDonald, Jesse and Wong, Yick-Ching and Mehta, Kshitij and Suter, Frédéric and **Ferreira da Silva, Rafael** and Pottier, Loïc and Deelman, Ewa and Casanova, Henri. "Determining Levels of Detail for Simulators of Parallel and Distributed Computing Systems via Automated Calibration". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767698.

[149] Maheshwari, Ketan and Borch, Anderson and Webb, Jordan and Etz, Brian and Miller, Ross and Suter, Frédéric and Oral, Sarp and **Ferreira da Silva, Rafael**. "Evaluating HPC Scheduling Strategies for Urgent Workloads". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767474.

[148] Rosendo, Daniel and DeWitt, Stephen and Souza, Renan and Austria, Phillipe and Ghosal, Tirthankar and McDonnell, Marshall and Miller, Ross and Skluzacek, Tyler J. and Haley, James and Turcksin, Bruno and McGaha, Jesse and Mintz, Benjamin and Wang, Feiyi and Shankar, Mallikarjun and Oral, Sarp and **Ferreira da Silva, Rafael**. "AI Agents for Enabling Autonomous

Experiments at ORNL's HPC and Manufacturing User Facilities". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767592.

[147] Godoy, William and Melnichenko, Tatiana and Valero-Lara, Pedro and Elwasif, Wael and Fackler, Philip and **Ferreira da Silva, Rafael** and Teranishi, Keita and Vetter, Jeffrey. "Mojo: MLIR-based Performance-Portable HPC Science Kernels on GPUs for the Python Ecosystem". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767573.

AWARDS & HONORS (9 BEST PAPER AWARDS)

2025 Outstanding Editors Awards 2025

Future Generation Computer Systems

Best Short Paper Award • PEARC '25 Practice and Experience in Advanced Research Computing 2025 2025

Secure API-Driven Research Automation to Accelerate Scientific Discovery

Best Paper Award • 2024 6th Annual Workshop on Extreme-Scale Experiment-in-the-Loop Computing (XLOOP) 2024

Integrating ORNL's HPC and Neutron Facilities with a Performance-Portable CPU/GPU Ecosystem

Best Paper Award • 2023 IEEE/ACM Workshop on Workflows in Support of Large-Scale Science (WORKS) 2023

Julia as a unifying end-to-end workflow language on the Frontier exascale system

Best Paper Candidate • 19th IEEE Conference on eScience (eScience 23) 2023

Driving Next-Generation Workflows from the Data Plane

Future Generation Computer Systems 2021 Best Paper Award 2021

End-to-End Online Performance Data Capture and Analysis for Scientific Workflows

FGCS Fall 2024 Editor's Choice Papers 2024

Integrating Quantum Computing Resources into Scientific HPC Ecosystems

IEEE Senior Member Elevation • IEEE 2022

ACM Senior Member Elevation • ACM 2023

FUNDING AWARDS

Total: $65,000,000+ across 21 competitively reviewed proposals

U.S. Department of Energy (DOE)

ModCon – Transformational AI model consortium $30,000,000

Co-Principal Investigator, 10/2025-09/2027

OPAL – Orchestrated Platform for Autonomous Laboratories $12,500,000

Senior Personnel, 10/2025-09/2027

A Testbed for Multi-Agent Autonomous Science: From Lab Bench to Supercomputer $250,000

Principal Investigator, 10/2025-09/2026

Center for Sustaining Workflows and Application Services $120,000

Principal Investigator, 04/2023-04/2024

ExaWorks: ECP Workflows Project $3,773,833

Co-Principal Investigator, 2017-12/2023

U.S. National Science Foundation (NSF)

Collaborative Research: OAC Core: Simulation-driven runtime resource management for distributed workflow applications $499,988

Co-Principal Investigator, 10/2021-09/2024 (#2106059, #2106147)

Collaborative Research: Elements: Simulation-driven Evaluation of Cyberinfrastructure Systems $600,000

Principal Investigator, 08/2021-07/2024 (#2103489, #2103508)

Collaborative Research: EAGER: VisDict - Visual Dictionaries for Enhancing the Communication between Domain Scientists and Scientific Workflow Providers $264,500

Co-Principal Investigator, 05/2021-10/2022 (#2100561, #2100636)

REU Site: SURF-I: Safe, Usable, Resilient and Fair Internet $405,000

Co-Principal Investigator, 03/2021-02/2024 (#2051101)

CCRI: Planning: Collaborative Research: Infrastructure for Enabling Systematic Development and Research of Scientific Workflow Management Systems $100,000

Principal Investigator, 10/2020-09/2021 (#2016610, #2016619, #2016682)

Collaborative Research: PPoSS: Planning: Performance Scalability, Trust, and Reproducibility: A Community Roadmap to Robust Science in High-throughput Applications $250,000

Co-Principal Investigator, 10/2020-09/2021 (#2028881, #2028923, #2028930, #2028955, #2028956)

Collaborative Research: CyberTraining: Implementation: Small: Integrating core CI literacy and skills into university curricula via simulation-driven activities $500,000

Co-Principal Investigator, 10/2019–09/2022 (#1923539, #1923621)

Coordinating Curricula and User Preferences to Increase the Participation of Women and Students of Color in Engineering $300,000

Co-Principal Investigator, 10/2018–09/2021 (#1826632)

BIGDATA: IA: Collaborative Research: In Situ Data Analytics for Next Generation Molecular Dynamics Workflows $1,993,043

Co-Principal Investigator, 10/2017–09/2021 (#1741057, #1740990, #1741040)

Collaborative Research: SI2-SSE: WRENCH: A Simulation Workbench for Scientific Workflow for Users, Developers, and Researchers $497,956

Co-Principal Investigator, 01/2017—12/2019 (#1642369, #1642335)

2018 Software Infrastructure for Sustained Innovation (SI2) Principal Investigators Workshop $85,065

Co-Principal Investigator, 06/2018–05/2019 (#1831393)

U.S. Defense Advanced Research Projects Agency (DARPA)

MINT: Model INTegration through Knowledge-Rich Data and Process Composition $12,979,881

Co-Principal Investigator, 12/2017–11/2021

International Funding / Collaborations / Others

Integrating Cyberinfrastructure Literacy into University Curricula $4,400

Principal Investigator, 08/2021 – 05/2022

Teaching Parallel and Distributed Computing Concepts in Simulation $3,300

Principal Investigator, 08/2020 – 05/2021

Integrating core CI literacy and skills into university curricula via simulation-driven activities $2,825

Principal Investigator, 08/2019 – 05/2020

Laboratoire Virtuel pour la Conception de Systèmes de Gestion de Workflows 24,000 €

1/2016–12/2018

PROFESSIONAL ACTIVITIES

Steering Committees

Vice-Chair, IEEE Technical Community on High Performance Computing (TCHPC) 2025-present

Vice-Chair, IEEE eScience Conference 2023-present

Advisory Boards

Future Generation Computer Systems (Journal) — Impact Factor 6.1 2026-present

PESO: Partnering for Scientific-Software Ecosystem Opportunities (Project) 2026-present

Conference/Workshop Chair Roles

Student Program Chair, ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC), Notre Dame, IN, USA, 2025

Publication Chair, ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC), Pisa, Italy, 2024

Publication Chair, ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC), Orlando, USA, 2023

Poster Chair, International Conference on Parallel Processing (ICPP), San Diego, CA, USA, 2025

Track Chair: Data Analytics, Visualization, & Storage, IEEE/ACM The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC), USA, 2024

Program Chair, IEEE eScience Conference (eScience), Limassol, Cyprus, 2023

Publicity and Web Chair, IEEE eScience Conference (eScience), Salt Lake City, USA, 2022

Publicity Chair, IEEE eScience Conference (eScience), Innsbruck, Austria, 2021

Track Chair: Software Tools & Infrastructure, IEEE eScience Conference (eScience), San Diego, USA, 2019

Program Chair, IEEE Workflows in Support of Large-Scale Science Workshop (WORKS), Dallas, USA, 2022

Program Chair, IEEE Workflows in Support of Large-Scale Science Workshop (WORKS), Saint-Louis, USA, 2021

Program Chair, IEEE Workflows in Support of Large-Scale Science Workshop (WORKS), Atlanta, USA, 2020

Program Chair, IEEE Workflows in Support of Large-Scale Science Workshop (WORKS), Denver, USA, 2019

Program Chair, IEEE Workflows in Support of Large-Scale Science Workshop (WORKS), Dallas, USA, 2018

Publicity Chair, IEEE Workflows in Support of Large-Scale Science Workshop (WORKS), Denver, USA, 2017

Publicity Chair, IEEE Workflows in Support of Large-Scale Science Workshop (WORKS), Salt Lake City, USA, 2016

Track Chair: Performance Evaluation, IEEE International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD), Porto Alegre, Brazil, 2023

Local Arrangements Chair, IEEE International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD), Los Angeles, USA, 2016

Program Chair, Workshop on E-science ReseaRch leading tO negative ResultsWorkshop (ERROR), Salt Lake City, USA, 2022

Publication Chair, Gateways 2022 (Gateways), San Diego, CA, USA, 2022

Program Chair, Bridging from Concepts to Data and Computation for eScience Workshop (BC2DC), San Diego, CA, 2019

Organizer, Software Infrastructure for Sustained Innovation Principal Investigator Workshop (NSF SI2 PI Meeting), Washington D.C., USA, 2018

Program Committee Member

IEEE/ACM The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC): 2026, 2025, 2023, 2021

IEEE ISC High Performance (ISC-HPC): 2026, 2025

ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC): 2026, 2025, 2024, 2023, 2022

IEEE International Conference on Cluster Computing (CLUSTER): 2025, 2023, 2021, 2019, 2018, 2017

IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGrid): 2025, 2023, 2022, 2017, 2016, 2015

Platform for Advanced Scientific Computing (PASC): 2025, 2022

ACM/SIGAPP Symposium On Applied Computing (SAC): 2025

IEEE eScience Conference (eScience): 2025, 2024

International European Conference on Parallel and Distributed Computing (Euro-Par): 2025, 2024, 2023

IEEE International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD): 2025, 2022, 2021, 2019, 2018, 2017, 2016

International Conference on Parallel Processing (ICPP): 2024, 2023, 2019

IEEE International Conference on Cloud Computing (CLOUD): 2023

IEEE International Parallel & Distributed Processing Symposium (IPDPS): 2022, 2021

Workflows in Support of Large-Scale Science (WORKS): 2025, 2024, 2020, 2019, 2018, 2017, 2016

Workshop on Extreme-Scale Experiment-in-the-Loop Computing (XLOOP): 2025, 2024

International Workshop on Science Gateways (IWSG): 2025, 2024, 2023

IEEE/ACM International Workshop on Clouds and Edge Computing, and Applications Management (CloudAM): 2021, 2020, 2019, 2018, 2017, 2016, 2015, 2014

Workshop on Monitoring and Analysis for HPC Systems Plus Applications (HPCMASPA): 2021

Workshop on Reproducible Workflows, Data Management, and Security (ReWorDS): 2022, 2021

Workshop on High Performance Serverless Computing (HiPS): 2021

IEEE International Conference on Distributed Computing Systems (ICDCS): 2020

International Conference on High Performance Computing & Simulation (HPCS): 2018, 2017

International Workshop on Reproducible Open Science (RepScience): 2016

Editorial Positions

Special Issue Editor-in-Chief, *Future Generation Computer Systems* (2023-2025)

Associated Editor, *Journal of Parallel and Distributed Computing* (2019-2024)

Editor, *Future Generation Computer Systems* (2020-2023)

Guest Editor, *Computing in Science & Engineering* (2023)

Guest Editor, *Future Generation Computer Systems* (2018)

Funding Review Panels

In-person and Virtual Review Panels Reviewer, U.S. National Science Foundation (NSF) (2017-2026)

Mail In Reviews, U.S. Department of Energy (DoE) (2021-2025)

Ad-hoc Reviewer, Austrian Science Fund (FWF) (2024-2025)

Ad-hoc Reviewer, U.S. Army Research Office (ARO) (2020)

Ad-hoc reviewer, Netherlands Organisation for Scientific Research (NWO) (2019)

INVITED TALKS

2026

Enabling quantum-HPC convergence for future scientific workflows

Journées Informatique Quantique 2026, Bordeaux, France

2025

AI-Ready Scientific Workflows at Scale: Bridging Data, Infrastructure, and Automation

First International Symposium on Artificial Intelligence and Extreme-Scale Workflows (AIExScale), St. Louis, USA

Advancing Reproducible and Secure Workflows for Autonomous Science at Scale

Keynote for the 5th Workshop on Reproducible Workflows, Data Management, and Security (ReWorDS), Chicago, USA

Building Next-Generation Scientific Workflows for Autonomous Research Facilities

Multicore World XII, Christchurch, New Zealand

Building Next-Generation Scientific Workflows for Autonomous Research Facilities

SIGHPC Computing Continuum Chapter, Virtual

2024

The Evolution of Scientific Workflows

Science and Technology Facilities Council (STFC) at UK Research and Innovation (UKRI), Virtual

DOE's Integrated Research Infrastructure (IRI) Program

Low Energy Community Meeting 2024, Knoxville, TN, USA

National Scale Research Workflows and Community Development

ABRF 2024 Annual Meeting, Minneapolis, MN, USA

2023

Modern Scientific Workflows in the Era of an Integrated Research Infrastructure

Monterey Data Conference 2023, Monterey, CA, USA

The Workflows Community Initiative and Recent Summit

U.S. National Science Foundation (NSF) Office of Advanced Cyberinfrastructure (OAC) Brownbag, Virtual

An Overview of AI Workflows for HPC Systems

Middleware and Grid Interagency Coordination (MAGIC) Meeting, Virtual

Modern Scientific Workflows: State-of-the-art and Challenges

2023 Computer Science Department Inaugural Lecture, Fluminense Federal University, Rio de Janeiro, Brazil

TEACHING EXPERIENCE

INF 553 Data Mining (graduate) — Fall 2018
USC

CS 104 Data Structures and Object-Oriented Design (undergraduate) — Spring 2017
USC

AFFILIATIONS & CERTIFICATIONS

Professional Memberships

IEEE, Senior Member	2022-present
ACM, Senior Member	2023-present
ACM, Member	2018-2023
IEEE, Member	2017-2022

Certifications

Ground Instructor, Federal Aviation Administration	December 2020
Private Aircraft Pilot, Federal Aviation Administration	November 2020

STUDENTS & MENTORING

PhD Students

Tainã Coleman, Ph.D. in Computer Science (2020-2023)

Student Workers / Interns

Jason Feuerstein, B.S. in Computer Science (2020-2021)

Tabitha See Ya Lee, B.S. in Computer Science (Vanderbilt University) (2020-2020)

Vivian (Tongyu) Zhu, B.S. in Computer Science (2019-2020)

Gautam Jethwani, B.S. in Computer Science (2018-2021)

Samuel He, B.S. in Computer Science (2020-2020)

James Oeth, B.S. in Computer Science (2017-2018)

Directed Research Students

Manav Kaushik, undergraduate student, B.S. in Computer Science (Spring 2021)

Gautam Jethwani, undergraduate student, B.S. in Computer Science (Fall 2019)

James Oeth, undergraduate student, B.S. in Computer Science (Fall 2019)

Prithvi Kumar, graduate student, M.S. in Computer Science (Spring 2019)

Radhika Agarwal, graduate student, M.S. in Computer Science (Spring 2019)

Varad Kulkarni, graduate student, M.S. in Computer Science (Spring 2019)

Spencer Albrecht, undergraduate student, B.S. in Computer Science (Spring 2019)

Shiva Deviah, graduate student, M.S. in Computer Science (Spring 2019)

Vishal Oswal, graduate student, M.S. in Computer Science (Fall 2017)

Harshil Shah, graduate student, M.S. in Computer Science (Fall 2017)

Akshay Joshi, graduate student, M.S. in Computer Science (Fall 2017)

Thesis Committee Member

Alok Kamatar, MS Thesis, University of Chicago, USA (2025)

Alessio Orsino, PhD Thesis, University of Calabria, Italy (2025)

Aymen Al Saadi, PhD Thesis, Rutgers University, USA (2024)

Tainã Coleman, PhD Thesis, University of Southern California, USA (2023)

PUBLICATIONS (156 TOTAL)

2026

[156] Taufer, Michela and **Ferreira da Silva, Rafael** and Mintz, Benjamin and Abolhasani, Milad and Badia, Rosa M. and Deelman, Ewa and Moore, Robert G. and Shalf, John. "A2SD: Accelerating Scientific Innovation Through Autonomous Discovery Systems". *High Performance Computing*. 2026. DOI: 10.1007/978-3-032-07612-0_52.

[155] Widener, Patrick and Biven, Laura and Foster, Ian T. and Plale, Beth and Oral, Sarp and **Ferreira da Silva, Rafael**. "Scientific Data Management Beyond Traditional Computing Boundaries". *IEEE Computer*. 2026. DOI: 10.1109/MC.2025.3589134.

[154] Shehata, Amir and Groszkowski, Peter and Naughton, Thomas and Gopalakrishnan Meena, Muralikrishnan and Wong, Elaine and Claudino, Daniel and **Ferreira da Silva, Rafael** and Beck, Thomas. "Bridging Paradigms: Designing for HPC-Quantum Convergence". *Future Generation Computer Systems*. 2026. DOI: 10.1016/j.future.2025.107980.

[153] Frédéric Suter and Tainã Coleman and Ílkay Altintas and Rosa M. Badia and Bartosz Balis and Kyle Chard and Iacopo Colonnelli and Ewa Deelman and Paolo Di Tommaso and Thomas Fahringer and Carole Goble and Shantenu Jha and Daniel S. Katz and Johannes Köster and Ulf Leser and Kshitij Mehta and Hilary Oliver and J.-Luc Peterson and Giovanni Pizzi and Loïc Pottier and Raül Sirvent and Eric Suchyta and Douglas Thain and Sean R. Wilkinson and Justin M. Wozniak and **Ferreira da Silva, Rafael**. "A Terminology for Scientific Workflow Systems". *Future Generation Computer Systems*. 2026. DOI: 10.1016/j.future.2025.107974.

2025

[152] Shin, Woong and Souza, Renan and Rosendo, Daniel and Suter, Frédéric and Wang, Feiyi and Balaprakash, Prasanna and **Ferreira da Silva, Rafael**. "The (R)evolution of Scientific Workflows in the Agentic AI Era: Towards Autonomous Science". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767580.

[151] Souza, Renan and Poteet, Timothy and Etz, Brian and Rosendo, Daniel and Gueroudji, Amal and Shin, Woong and Balaprakash, Prasanna and **Ferreira da Silva, Rafael**. "LLM Agents for Interactive Workflow Provenance: Reference Architecture and Evaluation Methodology". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767582.

[150] McDonald, Jesse and Wong, Yick-Ching and Mehta, Kshitij and Suter, Frédéric and **Ferreira da Silva, Rafael** and Pottier, Loïc and Deelman, Ewa and Casanova, Henri. "Determining Levels of Detail for Simulators of Parallel and Distributed Computing Systems via Automated Calibration". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767698.

[149] Maheshwari, Ketan and Borch, Anderson and Webb, Jordan and Etz, Brian and Miller, Ross and Suter, Frédéric and Oral, Sarp and **Ferreira da Silva, Rafael**. "Evaluating HPC Scheduling Strategies for Urgent Workloads". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767474.

[148] Rosendo, Daniel and DeWitt, Stephen and Souza, Renan and Austria, Phillipe and Ghosal, Tirthankar and McDonnell, Marshall and Miller, Ross and Skluzacek, Tyler J. and Haley, James and Turcksin, Bruno and McGaha, Jesse and Mintz, Benjamin and Wang, Feiyi and Shankar, Mallikarjun and Oral, Sarp and **Ferreira da Silva, Rafael**. "AI Agents for Enabling Autonomous Experiments at ORNL's HPC and Manufacturing User Facilities". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767592.

[147] Godoy, William and Melnichenko, Tatiana and Valero-Lara, Pedro and Elwasif, Wael and Fackler, Philip and **Ferreira da Silva, Rafael** and Teranishi, Keita and Vetter, Jeffrey. "Mojo: MLIR-based Performance-Portable HPC Science Kernels on GPUs for the Python Ecosystem". *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*. 2025. DOI: 10.1145/3731599.3767573.

[146] Gueroudji, Amal and Mallick, Tanwi and Souza, Renan and **Ferreira da Silva, Rafael** and Ross, Robert and Dorier, Matthieu and Carns, Philip and Chard, Kyle and Foster, Ian T.. "ControlA: Agentic Workflow Control Mechanisms for Reliable Science". *The Second International Workshop on AI Principles in Science Communication (Ai4SC)*. 2025. DOI: 10.1109/eScience65000.2025.00086.

[145] Souza, Renan and Gueroudji, Amal and DeWitt, Stephen and Rosendo, Daniel and Ghosal, Tirthankar and Ross, Robert and Balaprakash, Prasanna and **Ferreira da Silva, Rafael**. "PROV-AGENT: Unified Provenance for Tracking AI Agent Interactions in Agentic Workflows". *5th Workshop on Reproducible Workflows, Data Management, and Security (ReWorDS)*. 2025. DOI: 10.1109/eScience65000.2025.00093.

[144] Borch, Anderson and Maheshwari, Ketan and Wozniak, Justin M. and **Ferreira da Silva, Rafael**. "An LLM-enabled Workflow for Understanding and Evolving HPC Scheduling Practices". *ICPP Workshops '25: Workshop Proceedings of the 54th International Conference on Parallel Processing*. 2025. DOI: 10.1145/3750720.37572.

[143] **Ferreira da Silva, Rafael** and Abolhasani, Milad and Antonopoulos, Dionysios A and Biven, Laura and Coffee, Ryan and Foster, Ian T and Hamilton, Leslie and Jha, Shantenu and Mayer, Theresa and Mintz, Benjamin and Moore, Robert and Nimer, Salahudin and Paulson, Noah and Shin, Woong and Suter, Frédéric and Taheri, Mitra and Taufer, Michela and Washburn, Newell R.. "A Grassroots Network and Community Roadmap for Interconnected Autonomous Science Laboratories for Accelerated Discovery". *ICPP Workshops '25: Workshop Proceedings of the 54th International Conference on Parallel Processing*. 2025. DOI: 10.1145/3750720.3757292.

[142] Skluzacek, Tyler J. and Bryant, Paul and Ruckman, A.J. and Rosendo, Daniel and Prentice, Suzanne and Brim, Michael J. and Adamson, Ryan and Oral, Sarp and Shankar, Mallikarjun and **Ferreira da Silva, Rafael**. "Secure API-Driven Research Automation to Accelerate Scientific Discovery". *PEARC '25: Practice and Experience in Advanced Research Computing 2025: The Power of Collaboration*. 2025. DOI: 10.1145/3708035.373607.

[141] Etz, Brian D. and Rogers, David M. and Brim, Michael J. and Maheshwari, Ketan and Leland, Kellen and Skluzacek, Tyler J. and Lange, Jack and Pelfrey, Daniel and Webb, Jordan and Widener, Patrick and Adamson, Ryan and Zimmer, Christopher and Melesse Vergara, Verónica G. and Shankar, Mallikarjun and Oral, Sarp and **Ferreira da Silva, Rafael**. "Enabling Seamless Transitions from Experimental to Production HPC for Interactive Workflows". *Fifth Combined Workshop on Interactive and Urgent High-Performance Computing (WIUHPC)*. 2025. DOI: 10.1007/978-3-032-07612-0_28.

[140] Alsaadi, Aymen and Hategan-Marandiuc, Mihael and Maheshwari, Ketan and Merzky, Andre and Titov, Mikhail and Turilli, Matteo and Wilke, Andreas and Wozniak, Justin M. and Chard, Kyle and **Ferreira da Silva, Rafael** and Jha, Shantenu and Laney, Daniel. "Exascale Workflow Applications and Middleware: An ExaWorks Retrospective". *International Journal of High Performance Computing Applications*. 2025. DOI: 10.1177/10943420251331674.

2024

[139] **Ferreira da Silva, Rafael** and Moore, Robert G. and Mintz, Ben and Advincula, Rigoberto and Al–Najjar, Anees and Baldwin, Luke and Bridges, Craig and Coffee, Ryan and Deelman, Ewa and Engelmann, Christian and Etz, Brian D. and Firestone, Millie and Foster, Ian T. and Ganesh, Panchapakesan and Hamilton, Leslie and Huber, Dale and Ivanov, Ilia and Jha, Shantenu and Li, Ying and Liu, Yongtao and Lofstead, Jay and Mandal, Anirban and Martin, Hector Garcia and Mayer, Theresa and McDonnell, Marshall

and Murugesan, Vijayakumar and Nimer, Sal and Rao, Nageswara and Seifrid, Martin and Taheri, Mitra and Taufer, Michela and Vogiatzis, Konstantinos D.. "Shaping the Future of Self–Driving Autonomous Laboratories Workshop". 2024. DOI: 10.5281/zenodo.14430233.

[138] **Ferreira da Silva, Rafael** and Bard, Deborah and Chard, Kyle and DeWitt, Shaun and Foster, Ian T. and Gibbs, Tom and Goble, Carole and Godoy, William and Gustafsson, Johan and Haus, Utz–Uwe and Hudson, Stephen and Jha, Shantenu and Los, Laila and Paine, Drew and Suter, Frederic and Ward, Logan and Wilkinson, Sean and Amaris, Marcos and Babuji, Yadu and Bader, Jonathan and Balin, Riccardo and Balouek, Daniel and Beecroft, Sarah and Belhajjame, Khalid and Bhattarai, Rajat and Brewer, Wes and Brunk, Paul and Caino–Lores, Silvina and Casanova, Henri and Cassol, Daniela and Coleman, Jared and Coleman, Taina and Colonnelli, Iacopo and Da Silva, Anderson Andrei and de Oliveira, Daniel and Elahi, Pascal and Elfaramawy, Nour and Elwasif, Wael and Etz, Brian and Fahringer, Thomas and Ferreira, Wesley and Filgueira, Rosa and Fosso Tande, Jacob and Gadelha, Luiz and Gallo, Andy and Garijo, Daniel and Georgiou, Yiannis and Gritsch, Philipp and Grubel, Patricia and Gueroudji, Amal and Guilloteau, Quentin and Hamalainen, Carlo and Hong Enriquez, Rolando and Huet, Lauren and Hunter Kesling, Kevin and Iborra, Paula and Jahangiri, Shiva and Janssen, Jan and Jordan, Joe and Kanwal, Sehrish and Kunstmann, Liliane and Lehmann, Fabian and Leser, Ulf and Li, Chen and Liu, Peini and Luettgau, Jakob and Lupat, Richard and Fernandez, Jose M. and Maheshwari, Ketan and Malik, Tanu and Marquez, Jack and Matsuda, Motohiko and Medic, Doriana and Mohammadi, Somayeh and Mulone, Alberto and Navarro, John–Luke and Ng, Kin Wai and Noelp, Klaus and P. Kinoshita, Bruno and Prout, Ryan and R. Crusoe, Michael and Ristov, Sashko and Robila, Stefan and Rosendo, Daniel and Rowell, Billy and Rybicki, Jedrzej and Sanchez, Hector and Saurabh, Nishant and Saurav, Sumit Kumar and Scogland, Tom and Senanayake, Dinindu and Shin, Woong and Sirvent, Raul and Skluzacek, Tyler and Sly–Delgado, Barry and Soiland–Reyes, Stian and Souza, Abel and Souza, Renan and Talia, Domenico and Tallent, Nathan and Thamsen, Lauritz and Titov, Mikhail and Tovar, Ben and Vahi, Karan and Vardar–Irrgang, Eric and Vartina, Edite and Wang, Yuandou and Wouters, Merridee and Yu, Qi and Al Bkhetan, Ziad and Zulfiqar, Mahnoor. "Workflows Community Summit 2024: Future Trends and Challenges in Scientific Workflows". 2024. DOI: 10.5281/zenodo.13844759.

[137] Da Silva, Anderson Andrei and Hong Enriquez, Rolando Pablo and Rattihalli, Gourav and Thurimella, Vijay and **Ferreira da Silva, Rafael** and Milojicic, Dejan. "Enabling HPC Scientific Workflows for Serverless". *6th International Workshop on Containers and New Orchestration Paradigms for Isolated Environments in HPC (CANOPIE-HPC)*. 2024. DOI: 10.1109/SCW63240.2024.00022.

[136] Hahn, Steven E. and Fackler, Philip W. and Godoy, William F. and Maheshwari, Ketan and Morgan, Zachary and Savici, Andrei T. and Hoffmann, Christina M. and Valero-Lara, Pedro and Vetter, Jeffrey S. and **Ferreira da Silva, Rafael**. "Integrating ORNL's HPC and Neutron Facilities with a Performance-Portable CPU/GPU Ecosystem". *2024 6th Annual Workshop on Extreme-scale Experiment-in-the-Loop Computing (XLOOP)*. 2024. DOI: 10.1109/SCW63240.2024.00264.

[135] Kurihana, Takuya and Skluzacek, Tyler J. and **Ferreira da Silva, Rafael** and Anantharaj, Valentine. "Scalable Multi-Facility Workflows for Artificial Intelligence Applications in Climate Research". *2024 6th Annual Workshop on Extreme-scale Experiment-in-the-Loop Computing (XLOOP)*. 2024. DOI: 10.1109/SCW63240.2024.00266.

[134] Woong Shin and James B White III and Wael Elwasif and **Ferreira da Silva, Rafael** and Christopher Zimmer and Bronson Messer and Reuben Budiardja and Antigoni Georgiadou and Veronica Melesse Vergara and Jack Lange and Matthias Maiterth and Tim Osborne and Leah Huk and John Holmen and Nick Hagerty and Ahmad Maroof Karimi and Thomas Naughton and Ryan Adamson and Ryan Prout and Feiyi Wang and Scott Atchley and Kevin G. Thach and Thomas Beck and Sarp Oral. "Towards Sustainable Post-Exascale Leadership Computing". *2024 IEEE/ACM Workshop on Sustainable Supercomputing (SusSupSC)*. 2024. DOI: 10.1109/SCW63240.2024.00225.

[133] Maheshwari, Ketan and Arndt, William and Karimi, Ahmad Maroof and Yin, Junqi and Suter, Frederic and Johnson, Seth and **Ferreira da Silva, Rafael**. "Enabling Low-Overhead HT-HPC Workflows at Extreme Scale using GNU Parallel". *2024 IEEE/ACM Workshop on Workflows in Support of Large-Scale Science (WORKS)*. 2024. DOI: 10.1109/SCW63240.2024.00257.

[132] Souza, Renan and Caino-Lores, Silvina and Coletti, Mark and Skluzacek, Tyler J. and Costan, Alexandru and Suter, Frédéric and Mattoso, Marta and **Ferreira da Silva, Rafael**. "Workflow Provenance in the Computing Continuum for Responsible, Trustworthy, and Energy-Efficient AI". *2024 IEEE 20th International Conference on e-Science (e-Science)*. 2024. DOI: 10.1109/e-Science62913.2024.10678731.

[131] McDonald, Jesse and Dobbs, John and Ching Wong, Yick and **Ferreira da Silva, Rafael** and Casanova, Henri. "An Exploration of Online-simulation-driven Portfolio Scheduling in Workflow Management Systems". *Future Generation Computer Systems*. 2024. DOI: 10.1016/j.future.2024.07.005.

[130] Beck, Thomas and Baroni, Alessandro and Bennink, Ryan and Buchs, Gilles and Coello Perez, Eduardo Antonio and Eisenbach, Markus and **Ferreira da Silva, Rafael** and Gopalakrishnan Meena, Muralikrishnan and Gottiparthi, Kalyan and Groszkowski, Peter and Humble, Travis S. and Landfield, Ryan and Maheshwari, Ketan and Oral, Sarp and Sandoval, Michael A. and Shehata, Amir and Suh, In-Saeng and Zimmer, Christopher. "Integrating Quantum Computing Resources into Scientific HPC Ecosystems". *Future Generation Computer Systems*. 2024. DOI: 10.1016/j.future.2024.06.058.

[129] Turilli, Matteo and Hategan-Marandiuc, Mihael and Titov, Mikhail and Maheshwari, Ketan and Alsaadi, Aymen and Merzky, Andre and Arambula, Ramon and Zakharchanka, Mikhail and Cowan, Matt and Wozniak, Justin M and Wilke, Andreas and Kilic, Ozgur Ozan and Chard, Kyle and **Ferreira da Silva, Rafael** and Jha, Shantenu and Laney, Daniel. "ExaWorks Software Development Kit: A Robust and Scalable Collection of Interoperable Workflows Technologies". *Frontiers in High Performance Computing*. 2024. DOI: 10.3389/fhpcp.2024.1394615.

[128] Skluzacek, Tyler J. and Souza, Renan and Coletti, Mark and Suter, Frédéric and **Ferreira da Silva, Rafael**. "Towards Cross-Facility Workflows Orchestration through Distributed Automation". *PEARC '24: Practice and Experience in Advanced Research Computing 2024: Human Powered Computing*. 2024. DOI: 10.1145/3626203.3670606.

[127] **Ferreira da Silva, Rafael** and Badia, Rosa M. and Bard, Deborah and Foster, Ian T. and Jha, Shantenu and Suter, Frédéric. "Frontiers in Scientific Workflows: Pervasive Integration with HPC". *IEEE Computer*. 2024. DOI: 10.1109/MC.2024.3401542.

2023

[126] Godoy, William F. and Valero-Lara, Pedro and Anderson, Caira and Lee, Katrina W. and Gainaru, Ana and **Ferreira da Silva, Rafael** and Vetter, Jeffrey S.. "Julia as a unifying end-to-end workflow language on the Frontier exascale system". *2023 IEEE/ACM Workshop on Workflows in Support of Large-Scale Science (WORKS)*. 2023. DOI: 10.1145/3624062.3624278.

[125] Gesing, Sandra and Ma, Julie and Neeman, Henry and Christopherson, Laura and Colbry, Dirk and Dougherty, Maureen and Griffioen, James and Tussy, Susan and Crall, Alycia and Goodhue, John and **Ferreira da Silva, Rafael** and Chard, Kyle and Brazil, Marisa and Cheatham, Thomas. "Community of Communities: A Working Group Enhancing Interactions Between Organizations and Projects Supporting RC Professionals". *Gateways 2023*. 2023.

[124] Suter, Frederic and **Ferreira da Silva, Rafael** and Gainaru, Ana and Klasky, Scott. "Driving Next-Generation Workflows from the Data Plane". *19th IEEE Conference on eScience*. 2023. DOI: 10.1109/e-Science58273.2023.10254849.

[123] Souza, Renan and Skluzacek, Tyler J. and Wilkinson, Sean R. and Ziatdinov, Maxim and **Ferreira da Silva, Rafael**. "Towards Lightweight Data Integration using Multi-workflow Provenance and Data Observability". *19th IEEE Conference on eScience*. 2023. DOI: 10.1109/e-Science58273.2023.10254822.

[122] Hategan-Marandiuc, Mihael and Merzky, Andre and Collier, Nicholson and Maheshwari, Ketan and Ozik, Jonathan and Turilli, Matteo and Wilke, Andreas and Wozniak, Justin M. and Chard, Kyle and Foster, Ian and **Ferreira da Silva, Rafael** and Jha, Shantenu and Laney, Daniel. "PSI/J: A Portable Interface for Submitting, Monitoring, and Managing Jobs". *19th IEEE Conference on eScience*. 2023. DOI: 10.1109/e-Science58273.2023.10254912.

[121] Casanova, Henri and Berney, Kyle and Chastel, Serge and **Ferreira da Silva, Rafael**. "WfCommons: Data Collection and Runtime Experiments using Multiple Workflow Systems". *The 1st IEEE International Workshop on Workflows in Distributed Environments (WiDE 2023)*. 2023. DOI: 10.1109/COMPSAC57700.2023.00290.

[120] Coleman, Taina and Casanova, Henri and **Ferreira da Silva, Rafael**. "Automated Generation of Scientific Workflow Generators with WfChef". *Future Generation Computer Systems*. 2023. DOI: 10.1016/j.future.2023.04.031.

[119] **Ferreira da Silva, Rafael** and Badia, Rosa M. and Bala, Venkat and Bard, Debbie and Bremer, Timo and Buckley, Ian and Caino-Lores, Silvina and Chard, Kyle and Goble, Carole and Jha, Shantenu and Katz, Daniel S. and Laney, Daniel and Parashar, Manish and Suter, Frederic and Tyler, Nick and Uram, Thomas and Altintas, Ilkay and Andersson, Stefan and Arndt, William and Aznar, Juan and Bader, Jonathan and Balis, Bartosz and Blanton, Chris and Braghetto, Kelly Rosa and Brodutch, Aharon and Brunk, Paul and Casanova, Henri and Cervera Lierta, Alba and Chigu, Justin and Coleman, Taina and Collier, Nick and Colonnelli, Iacopo and Coppens, Frederik and Crusoe, Michael and Cunningham, Will and de Paula Kinoshita, Bruno and Di Tommaso, Paolo and Doutriaux, Charles and Downton, Matthew and Elwasif, Wael and Enders, Bjoern and Erdmann, Chris and Fahringer, Thomas and Figueiredo, Ludmilla and Filgueira, Rosa and Foltin, Martin and Fouilloux, Anne and Gadelha, Luiz and Gallo, Andy and Garcia, Artur and Garijo, Daniel and Gerlach, Roman and Grant, Ryan and Grayson, Samuel and Grubel, Patricia and Gustafsson, Johan and Hayot, Valerie and Hernandez, Oscar and Hilbrich, Marcus and Justine, Annmary and Laflotte, Ian, and Lehmann, Fabian and Luckow, Andre and Luettgau, Jakob and Maheshwari, Ketan and Matsuda, Motohiko and Medic, Doriana and Mendygral, Pete and Michalewicz, Marek and Nonaka, Jorji and Pawlik, Maciej and Pottier, Loic and Pouchard, Line and Putz, Mathias and Radha, Santosh Kumar and Ramakrishnan, Lavanya and Ristov, Sashko and Romano, Paul and Rosendo, Daniel and Ruefenacht, Martin and Rycerz, Katarzyna and Saurabh, Nishant and Savchenko, Volodymyr and Schulz, Martin and Simpson, Christine and Sirvent, Raul and Skluzacek, Tyler and Soiland-Reyes, Stian and Souza, Renan and Sukumar, Sreenivas Rangan and Sun, Ziheng and Sussman, Alan and Thain, Douglas and Titov, Mikhail and Tovar, Benjamin and Tripathy, Aalap and Turilli, Matteo and Tuznik, Bartosz and van Dam, Hubertus and Vivas, Aurelio and Ward, Logan and Widener, Patrick and Wilkinson, Sean R. and Zawalska, Justyna and Zulfiqar, Mahnoor. "Workflows Community Summit 2022: A Roadmap Revolution". 2023. DOI: 10.5281/zenodo.7750670.

[118] Casanova, Henri and Wong, Yick Ching and Pottier, Loic and **Ferreira da Silva, Rafael**. "On the Feasibility of Simulation-driven Portfolio Scheduling for Cyberinfrastructure Runtime Systems". *Workshop on Job Scheduling Strategies for Parallel Processing (JSSPP)*. 2023. DOI: 10.1007/978-3-031-22698-4_1.

2022

[117] Maheshwari, Ketan and Wilkinson, Sean R. and May, Alex and Skluzacek, Tyler and Kuchar, Olga A. and **Ferreira da Silva, Rafael**. "Pseudonymization at Scale: OLCF's Summit Usage Data Case Study". *2022 IEEE International Conference on Big Data (Big Data)*. 2022.

[116] Coleman, Taina and Casanova, Henri and Maheshwari, Ketan and Pottier, Loïc and Wilkinson, Sean R. and Wozniak, Justin and Suter, Frédéric and Shankar, Mallikarjun and **Ferreira da Silva, Rafael**. "WfBench: Automated Generation of Scientific Workflow Benchmarks". *2022 IEEE/ACM International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computer Systems (PMBS)*. 2022. DOI: 10.1109/PMBS56514.2022.00014.

[115] Do, Tu Mai Anh and Pottier, Loïc and **Ferreira da Silva, Rafael** and Suter, Frédéric and Caíno-Lores, Silvina and Taufer, Michela and Deelman, Ewa. "Co-scheduling Ensembles of In Situ Workflows". *2022 IEEE/ACM Workshop on Workflows in Support of Large-Scale Science (WORKS)*. 2022. DOI: 10.1109/WORKS56498.2022.00011.

[114] Abhinit, Ishan and Adams, Emily K. and Alam, Khairul and Chase, Brian and Deelman, Ewa and Gorenstein, Lev and Hudson, Stephen and Islam, Tanzima and Larson, Jeffrey and Lentner, Geoffrey and Mandal, Anirban and Navarro, John-Luke and Nicolae, Bogdan and Pouchard, Line and Ross, Rob and Roy, Banani and Rynge, Mats and Serebrenik, Alexander and Vahi, Karan and Wild,

Stefan and Xin, Yufeng and **Ferreira da Silva, Rafael** and Filgueira, Rosa. "Novel Proposals for FAIR, Automated, Recommendable, and Robust Workflows". *2022 IEEE/ACM Workshop on Workflows in Support of Large-Scale Science (WORKS)*. 2022. DOI: 10.1109/WORKS56498.2022.00016.

[113] Honore, Valentin and Do, Tu Mai Anh and Pottier, Loic and **Ferreira da Silva, Rafael** and Deelman, Ewa and Suter, Frederic. "Sim-Situ: A Framework for the Faithful Simulation of in situ Processing". *2022 IEEE 18th International Conference on eScience (eScience)*. 2022. DOI: 10.1109/eScience55777.2022.00032.

[112] Do, Tu Mai Anh and Pottier, Loïc and **Ferreira da Silva, Rafael** and Caíno-Lores, Silvina and Taufer, Michela and Deelman, Ewa. "Performance assessment of ensembles of in situ workflows under resource constraints". *Concurrency and Computation: Practice and Experience*. 2022. DOI: 10.1002/cpe.7111.

[111] Wilkinson, Sean and Maheshwari, Ketan and **Ferreira da Silva, Rafael**. "Unveiling User Behavior on Summit Login Nodes as a User". *Computational Science – ICCS 2022*. 2022. DOI: 10.1007/978-3-031-08751-6_37.

[110] Bücker, H. Martin and Casanova, Henri and **Ferreira da Silva, Rafael** and Lasserre, Alice and Luyen, Derrick and Namyst, Raymond and Schoder, Johannes and Wacrenier, Pierre-Andre and Bunde, David P.. "Peachy Parallel Assignments (EduPar 2022)". *12th NSF/TCPP Workshop on Parallel and Distributed Computing Education (EduPar)*. 2022. DOI: 10.1109/IPDPSW55747.2022.00068.

[109] Ferreira da Silva , Rafael and Chard , Kyle and Casanova , Henri and Laney , Dan and Ahn, Dong and Jha , Shantenu and Allcock , William E. and Bauer , Gregory and Duplyakin , Dmitry and Enders , Bjoern and Heer , Todd M. and Lan, Eric and Sanielevici , Sergiu and Sayers , Kevin. "Workflows Community Summit: Tightening the Integration between Computing Facilities and Scientific Workflows". 2022. DOI: 10.5281/zenodo.5815332.

[108] Coleman, Tainã and Casanova, Henri and Pottier, Loïc and Kaushik, Manav and Deelman, Ewa and **Ferreira da Silva, Rafael**. "WfCommons: A Framework for Enabling Scientific Workflow Research and Development". *Future Generation Computer Systems*. 2022. DOI: 10.1016/j.future.2021.09.043.

2021

[107] Casanova, Henri and Deelman, Ewa and Gesing, Sandra and Hildreth, Michael and Hudson, Stephen and Koch, William and Larson, Jeffrey and McDowell, Mary Ann and Meyers, Natalie and Navarro, John-Luke and Papadimitriou, George and Tanaka, Ryan and Taylor, Ian and Thain, Douglas and Wild, Stefan M. and Filgueira, Rosa and **Ferreira da Silva, Rafael**. "Emerging Frameworks for Advancing Scientific Workflows Research, Development, and Education". *2021 IEEE Workshop on Workflows in Support of Large-Scale Science (WORKS)*. 2021. DOI: 10.1109/WORKS54523.2021.00015.

[106] Taufer, M and Deelman, E and da Silva, R Ferreira and Estrada, T and Hall, M. "A Roadmap to Robust Science for High-throughput Applications: The Scientists' Perspective". *2021 IEEE 17th International Conference on eScience (eScience)*. 2021. DOI: 10.1109/eScience51609.2021.00044.

[105] Casanova, Henri and **Ferreira da Silva, Rafael** and Gonzalez-Escribano, Arturo and Li, Herman and Torres, Yuri and Bunde, David P.. "Peachy Parallel Assignments (EduHPC 2021)". *2021 IEEE/ACM Ninth Workshop on Education for High Performance Computing (EduHPC)*. 2021. DOI: 10.1109/EduHPC54835.2021.00012.

[104] **Ferreira da Silva, Rafael** and Casanova, Henri and Chard, Kyle and Altintas, Ilkay and Badia, Rosa M and Balis, Bartosz and Coleman, Tainã and Coppens, Frederik and Di Natale, Frank and Enders, Bjoern and Fahringer, Thomas and Filgueira, Rosa and Fursin, Grigori and Garijo, Daniel and Goble, Carole and Dorran Howell and Shantenu Jha and Daniel S. Katz and Daniel Laney and Ulf Leser and Maciej Malawski and Kshitij Mehta and Loïc Pottier and Jonathan Ozik and J. Luc Peterson and Lavanya Ramakrishnan and Stian Soiland-Reyes and Douglas Thain and Matthew Wolf. "A Community Roadmap for Scientific Workflows Research and Development". *2021 IEEE Workshop on Workflows in Support of Large-Scale Science (WORKS)*. 2021. DOI: 10.1109/WORKS54523.2021.00016.

[103] Andrew W. Brown and Stella Aslibekyan and Dennis Bier and **Ferreira da Silva, Rafael** and Adam Hoover and David M. Klurfeld and Eric Loken and Evan Mayo-Wilson and Nir Menachemi and Greg Pavela and Patrick D. and Quinn and Dale Schoeller and Carmen and Tekwe and Danny and Valdez and Colby J. Vorland and Leah D. Whigham and David B. Allison. "Toward more rigorous and informative nutritional epidemiology: The rational space between dismissal and defense of the status quo". *Critical Reviews in Food Science and Nutrition*. 2021. DOI: 10.1080/10408398.2021.1985427.

[102] Taufer, Michela and Deelman, Ewa and **Ferreira da Silva, Rafael** and Estrada, Trilce and Hall, Mary and Livny, Miron. "A Roadmap to Robust Science for High-throughput Applications: The Developers' Perspective". *2021 IEEE International Conference on Cluster Computing (CLUSTER)*. 2021. DOI: 10.1109/Cluster48925.2021.00068.

[101] Do, Hoang-Dung and Hayot-Sasson, Valérie and **Ferreira da Silva, Rafael** and Steele, Christopher and Casanova, Henri and Glatard, Tristan. "Modeling the Linux page cache for accurate simulation of data-intensive applications". *2021 IEEE International Conference on Cluster Computing (CLUSTER)*. 2021. DOI: 10.1109/Cluster48925.2021.00058.

[100] Do, Tu Mai Anh and Pottier, Loïc and **Ferreira da Silva, Rafael** and Caíno-Lores, Silvina and Taufer, Michela and Deelman, Ewa. "Assessing Resource Provisioning and Allocation of Ensembles of In Situ Workflows". *14th International Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2)*. 2021. DOI: 10.1145/3458744.3474051.

[99] Coleman, Taina and Casanova, Henri and **Ferreira da Silva, Rafael**. "WfChef: Automated Generation of Accurate Scientific Workflow Generators". *17th IEEE eScience Conference*. 2021. DOI: 10.1109/eScience51609.2021.00026.

[98] Burkat, Krzysztof and Pawlik, Maciej and Balis, Bartosz and Malawski, Maciej and Vahi, Karan and Rynge, Mats and **Ferreira da Silva, Rafael** and Deelman, Ewa. "Serverless Containers – Rising Viable Approach to Scientific Workflows". *17th IEEE eScience Conference*. 2021. DOI: 10.1109/eScience51609.2021.00014.

[97] **Ferreira da Silva, Rafael** and Casanova, Henri and Chard, Kyle and Coleman, Tainã and Laney, Dan and Ahn, Dong and Jha, Shantenu and Howell, Dorran and Soiland-Reys, Stian and Altintas, Ilkay and Thain, Douglas and Filgueira, Rosa and Babuji, Yadu and Badia, Rosa M. and Balis, Bartosz and Caino-Lores, Silvina and Callaghan, Scott and Coppens, Frederik and Crusoe, Michael R. and De, Kaushik and Di Natale, Frank and Do, Tu M. A. and Enders, Bjoern and Fahringer, Thomas and Fouilloux, Anne and Fursin, Grigori and Gaignard, Alban and Ganose, Alex and Garijo, Daniel and Gesing, Sandra and Goble, Carole and Hasan, Adil and Huber, Sebastiaan and Katz, Daniel S. and Leser, Ulf and Lowe, Douglas and Ludaescher, Bertram and Maheshwari, Ketan and Malawski, Maciej and Mayani, Rajiv and Mehta, Kshitij and Merzky, Andre and Munson, Todd and Ozik, Jonathan and Pottier, Loïc and Ristov, Sashko and Roozmeh, Mehdi and Souza, Renan and Suter, Frédéric and Tovar, Benjamin and Turilli, Matteo and Vahi, Karan and Vidal-Torreira, Alvaro and Whitcup, Wendy and Wilde, Michael and Williams, Alan and Wolf, Matthew and Wozniak, Justin. "Workflows Community Summit: Advancing the State-of-the-art of Scientific Workflows Management Systems Research and Development". 2021. DOI: 10.5281/zenodo.4915801.

[96] Casanova, Henri and Tanaka, Ryan and Koch, William and **Ferreira da Silva, Rafael**. "Teaching Parallel and Distributed Computing Concepts in Simulation with WRENCH". *Journal of Parallel and Distributed Computing*. 2021. DOI: 10.1016/j.jpdc.2021.05.009.

[95] Hataishi, Evan and Dutot, Pierre-Francois and **Ferreira da Silva, Rafael** and Casanova, Henri. "GLUME: A Strategy for Reducing Workflow Execution Times on Batch-Scheduled Platforms". *Workshop on Job Scheduling Strategies for Parallel Processing (JSSPP)*. 2021. DOI: 10.1007/978-3-030-88224-2_11.

[94] Coleman, Tainã and Casanova, Henri and Gwartney, Ty and **Ferreira da Silva, Rafael**. "Evaluating energy-aware scheduling algorithms for I/O-intensive scientific workflows". *International Conference on Computational Science (ICCS)*. 2021. DOI: 10.1007/978-3-030-77961-0_16.

[93] **Ferreira da Silva, Rafael** and Casanova, Henri and Chard, Kyle and Laney, Dan and Ahn, Dong and Jha, Shantenu and Goble, Carole and Ramakrishnan, Lavanya and Peterson, Luc and Enders, Bjoern and Thain, Douglas and Altintas, Ilkay and Babuji, Yadu and Badia, Rosa and Bonazzi, Vivien and Coleman, Taina and Crusoe, Michael and Deelman, Ewa and Di Natale, Frank and Di Tommaso, Paolo and Fahringer, Thomas and Filgueira, Rosa and Fursin, Grigori and Ganose, Alex and Gruning, Bjorn and Katz, Daniel S. and Kuchar, Olga and Kupresanin, Ana and Ludascher, Bertram and Maheshwari, Ketan and Mattoso, Marta and Mehta, Kshitij and Munson, Todd and Ozik, Jonathan and Peterka, Tom and Pottier, Loic and Randles, Tim and Soiland-Reyes, Stian and Tovar, Benjamin and Turilli, Matteo and Uram, Thomas and Vahi, Karan and Wilde, Michael and Wolf, Matthew and Wozniak, Justin. "Workflows Community Summit: Bringing the Scientific Workflows Community Together". 2021. DOI: 10.5281/zenodo.4606958.

[92] Deelman, Ewa and Mandal, Anirban and Murillo, Angela P. and Nabrzyski, Jarek and Pascucci, Valerio and Ricci, Robert and Baldin, Ilya and Sons, Susan and Christopherson, Laura and Vardeman, Charles and **Ferreira da Silva, Rafael** and Wyngaard, Jane and Petruzza, Steve and Rynge, Mats and Vahi, Karan and Whitcup, Wendy R. and Drake, Josh and Scott, Erik. "Blueprint: Cyberinfrastructure Center of Excellence". *Zenodo*. 2021. DOI: 10.5281/zenodo.4587866.

[91] Yolanda Gil and Daniel Garijo and Deborah Khider and Craig A. Knoblock and Varun Ratnakar and Maximiliano Osorio and Hernán Vargas and Minh Pham and Jay Pujara and Basel Shbita and Binh Vu and Yao-Yi Chiang and Dan Feldman and Yijun Lin and Hayley Song and Vipin Kumar and Ankush Khandelwal and Michael Steinbach and Kshitij Tayal and Shaoming Xu and Suzanne A. Pierce and Lissa Pearson and Daniel Hardesty-Lewis and Ewa Deelman and **Ferreira da Silva, Rafael** and Rajiv Mayani and Armen R. Kemanian and Yuning Shi and Lorne Leonard and Scott Peckham and Maria Stoica and Kelly Cobourn and Zeya Zhang and Christopher Duffy and Lele Shu. "Artificial Intelligence for Modeling Complex Systems: Taming the Complexity of Expert Models to Improve Decision Making". *ACM Transactions on Interactive Intelligent Systems*. 2021. DOI: 10.1145/3453172.

[90] Papadimitriou, George and Wang, Cong and Vahi, Karan and **Ferreira da Silva, Rafael** and Mandal, Anirban and Liu Zhengchun and Mayani, Rajiv and Rynge, Mats and Kiran, Mariam and Lynch, Vickie E. and Kettimuthu, Rajkumar and Deelman, Ewa and Vetter, Jeffrey S. and Foster, Ian. "End-to-End Online Performance Data Capture and Analysis for Scientific Workflows". *Future Generation Computer Systems*. 2021. DOI: 10.1016/j.future.2020.11.024.

[89] Do, Tu Mai Anh and Pottier, Loïc and Caíno-Lores, Silvina and **Ferreira da Silva, Rafael** and Cuendet, Michel A. and Weinstein, Harel and Estrada, Trilce and Taufer, Michela and Deelman, Ewa. "A Lightweight Method for Evaluating In Situ Workflow Efficiency". *Journal of Computational Science*. 2021. DOI: 10.1016/j.jocs.2020.101259.

[88] Deelman, Ewa and **Ferreira da Silva, Rafael** and Vahi, Karan and Rynge, Mats and Mayani, Rajiv and Tanaka, Ryan and Whitcup, Wendy and Livny, Miron. "The Pegasus Workflow Management System: Translational Computer Science in Practice". *Journal of Computational Science*. 2021. DOI: 10.1016/j.jocs.2020.101200.

2020

[87] Casanova, Henri and **Ferreira da Silva, Rafael** and Gonzalez-Escribano, Arturo and Koch, William and Torres, Yuri and Bunde, David P.. "Peachy Parallel Assignments (EduHPC 2020)". *2020 IEEE/ACM Workshop on Education for High-Performance Computing (EduHPC)*. 2020. DOI: 10.1109/EduHPC51895.2020.00012.

[86] Adams, Joel C. and Back, Godmar and Bala, Piotr and Bane, Michael K. and Cameron, Kirk and Casanova, Henri and Ellis, Margaret and **Ferreira da Silva, Rafael** and Jethwani, Gautam and Koch, William and Lee, Tabitha and Zhu, Tongyu. "Lightning Talks of EduHPC 2020". *2020 IEEE/ACM Workshop on Education for High-Performance Computing (EduHPC)*. 2020. DOI: 10.1109/EduHPC51895.2020.00013.

[85] **Ferreira da Silva, Rafael** and Pottier, Loïc and Coleman, Tainã and Deelman, Ewa and Casanova, Henri. "WorkflowHub: Community Framework for Enabling Scientific Workflow Research and Development". *2020 IEEE/ACM Workflows in Support of Large-Scale Science (WORKS)*. 2020. DOI: 10.1109/WORKS51914.2020.00012.

[84] Pottier, Loic and **Ferreira da Silva, Rafael** and Casanova, Henri and Deelman, Ewa. "Modeling the Performance of Scientific Workflow Executions on HPC Platforms with Burst Buffers". *2020 IEEE International Conference on Cluster Computing (CLUSTER)*.

2020. DOI: 10.1109/CLUSTER49012.2020.00019.

[83] **Ferreira da Silva, Rafael** and Casanova, Henri and Orgerie, Anne-Cécile and Tanaka, Ryan and Deelman, Ewa and Suter, Frédéric. "Characterizing, Modeling, and Accurately Simulating Power and Energy Consumption of I/O-intensive Scientific Workflows". *Journal of Computational Science*. 2020. DOI: 10.1016/j.jocs.2020.101157.

[82] Casanova, Henri and **Ferreira da Silva, Rafael** and Tanaka, Ryan and Pandey, Suraj and Jethwani, Gautam and Koch, William and Albrecht, Spencer and Oeth, James and Suter, Frédéric. "Developing Accurate and Scalable Simulators of Production Workflow Management Systems with WRENCH". *Future Generation Computer Systems*. 2020. DOI: 10.1016/j.future.2020.05.030.

[81] Do, Tu Mai Anh and Pottier, Loic and Thomas, Stephen and **Ferreira da Silva, Rafael** and Cuendet, Michel A. and Weinstein, Harel and Estrada, Trilce and Taufer, Michela and Deelman, Ewa. "A Novel Metric to Evaluate In Situ Workflows". *International Conference on Computational Science (ICCS)*. 2020. DOI: 10.1007/978-3-030-50371-0_40.

2019

[80] **Ferreira da Silva, Rafael** and Callaghan, Scott and Do, Tu Mai Anh and Papadimitriou, George and Deelman, Ewa. "Measuring the Impact of Burst Buffers on Data-Intensive Scientific Workflows". *Future Generation Computer Systems*. 2019. DOI: 10.1016/j.future.2019.06.016.

[79] Deelman, Ewa and Vahi, Karan and Rynge, Mats and Mayani, Rajiv and **Ferreira da Silva, Rafael** and Papadimitriou, George and Livny, Miron. "The Evolution of the Pegasus Workflow Management Software". *Computing in Science Engineering*. 2019. DOI: 10.1109/MCSE.2019.2919690.

[78] **Ferreira da Silva, Rafael** and Filgueira, Rosa and Deelman, Ewa and Pairo-Castineira, Erola and Overton, Ian Michael and Atkinson, Malcolm. "Using Simple PID-inspired Controllers for Online Resilient Resource Management of Distributed Scientific Workflows". *Future Generation Computer Systems*. 2019. DOI: 10.1016/j.future.2019.01.015.

[77] Brinckman, Adam and Deelman, Ewa and Gupta, Sandeep and Nabrzyski, Jarek and Park, Soowang and **Ferreira da Silva, Rafael** and Taylor, Ian J. and Vahi, Karan. "Collaborative Circuit Designs using the CRAFT Repository". *Future Generation Computer Systems*. 2019. DOI: 10.1016/j.future.2018.01.018.

[76] **Ferreira da Silva, Rafael** and Mayani, Rajiv and Shi, Yuning and Kemanian, Armen R. and Rynge, Mats and Deelman, Ewa. "Empowering Agroecosystem Modeling with HTC Scientific Workflows: The Cycles Model Use Case". *2019 IEEE International Conference on Big Data (Big Data)*. 2019. DOI: 10.1109/BigData47090.2019.9006107.

[75] Mitchell, Ryan and Pottier, Loic and Jacobs, Steve and **Ferreira da Silva, Rafael** and Rynge, Mats and Vahi, Karan and Deelman, Ewa. "Exploration of Workflow Management Systems Emerging Features from Users Perspectives". *2019 IEEE International Conference on Big Data (Big Data)*. 2019. DOI: 10.1109/BigData47090.2019.9005494.

[74] Tanaka, Ryan and **Ferreira da Silva, Rafael** and Casanova, Henri. "Teaching Parallel and Distributed Computing Concepts in Simulation with WRENCH". *Workshop on Education for High-Performance Computing (EduHPC)*. 2019. DOI: 10.1109/EduHPC49559.2019.00006.

[73] **Ferreira da Silva, Rafael** and Casanova, Henri and Tanaka, Ryan and Suter, Frederic. "Bridging Concepts and Practice in eScience via Simulation-driven Engineering". *Workshop on Bridging from Concepts to Data and Computation for eScience (BC2DC'19), 15th International Conference on eScience (eScience)*. 2019. DOI: 10.1109/eScience.2019.00084.

[72] Thomas, Stephen and Wyatt, Michael and Do, Tu Mai Anh and Pottier, Loic and **Ferreira da Silva, Rafael** and Weinstein, Harel and Cuendet, Michel A. and Estrada, Trilce and Deelman, Ewa and Taufer, Michela. "Characterizing In Situ and In Transit Analytics of Molecular Dynamics Simulations for Next-generation Supercomputers". *15th International Conference on eScience (eScience)*. 2019. DOI: 10.1109/eScience.2019.00027.

[71] Vahi, Karan and Rynge, Mats and Papadimitriou, George and Brown, Duncan and Mayani, Rajiv and **Ferreira da Silva, Rafael** and Deelman, Ewa and Mandal, Anirban and Lyons, Eric and Zink, Michael. "Custom Execution Environments with Containers in Pegasus-enabled Scientific Workflows". *15th International Conference on eScience (eScience)*. 2019. DOI: 10.1109/eScience.2019.00039.

[70] Bogol, Steve and Brenner, Paul and Brinckman, Adam and Deelman, Ewa and **Ferreira da Silva, Rafael** and Gupta, Sandeep and Nabrzyski, Jarek and Park, Soowang and Perez, Damian and Rynge, Mats and Taylor, Ian and Vahi, Karan and Werf, Matt Vander and Rucker Sarah and Wyngaard, Sebastian. "A Secure Gateway for Enabling ASIC Design Collaborations". *11th International Workshop on Science Gateways (IWSG 2019)*. 2019.

[69] **Ferreira da Silva, Rafael** and Orgerie, Anne-Cécile and Casanova, Henri and Tanaka, Ryan and Deelman, Ewa and Suter, Frédéric. "Accurately Simulating Energy Consumption of I/O-intensive Scientific Workflows". *Computational Science – ICCS 2019*. 2019. DOI: 10.1007/978-3-030-22734-0_11.

[68] Herbein, Stephen and Domyancic, David and Minner, Paul and Laguna, Ignacio and **Ferreira da Silva, Rafael** and Ahn, Dong H.. "MCEM: Multi-Level Cooperative Exception Model for HPC Workflows". *9th International Workshop on Runtime and Operating Systems for Supercomputers (ROSS 2019)*. 2019. DOI: 10.1145/3322789.3328745.

[67] Garijo, Daniel and Khider, Deborah and Ratnakar, Varun and Gil, Yolanda and Deelman, Ewa and **Ferreira da Silva, Rafael** and Knoblock, Craig and Chiang, Yao-Yi and Pham, Minh and Pujara, Jay and Vu, Binh and Feldman, Dan and Mayani, Rajiv and Cobourn, Kelly and Duffy, Chris and Kemanian, Armen and Shu, Lele and Kumar, Vipin and Khandelwal, Ankush and Tayal, Kshitij and Peckham, Scott and Stoica, Maria and Dabrowski, Anna and Hardesty-Lewis, Daniel and Pierce, Suzanne. "An Intelligent Interface for Integrating Climate, Hydrology, Agriculture, and Socioeconomic Models". *ACM 24th International Conference on Intelligent User Interfaces (IUI'19)*. 2019. DOI: 10.1145/3308557.3308711.

2018

[66] Glatard, Tristan and Kiar, Gregory and Aumentado-Armstrong, Tristan and Beck, Natacha and Bellec, Pierre and Bernard, Rémi and Bonnet, Axel and Brown, Shawn T and Camarasu-Pop, Sorina and Cervenansky, Frédéric and Das, Samir and **Ferreira da Silva, Rafael** and Flandin, Guillaume and Girard, Pascal and others. "Boutiques: a flexible framework to integrate command-line applications in computing platforms". *GigaScience*. 2018. DOI: 10.1093/gigascience/giy016.

[65] Tovar, Benjamin and **Ferreira da Silva, Rafael** and Juve, Gideon and Deelman, Ewa and Allcock, William and Thain, Douglas and Livny, Miron. "A Job Sizing Strategy for High-Throughput Scientific Workflows". *IEEE Transactions on Parallel and Distributed Systems*. 2018. DOI: 10.1109/TPDS.2017.2762310.

[64] Casanova, Henri and Pandey, Suraj and Oeth, James and Tanaka, Ryan and Suter, Frederic and **Ferreira da Silva, Rafael**. "WRENCH: A Framework for Simulating Workflow Management Systems". *13th Workshop on Workflows in Support of Large-Scale Science (WORKS'18)*. 2018. DOI: 10.1109/WORKS.2018.00013.

[63] Filgueira, Rosa and **Ferreira da Silva, Rafael** and Deelman, Ewa and Christodoulou, Vyron and Krause, Amrey. "IoT-Hub: New IoT data-platform for Virtual Research Environments". *10th International Workshop on Science Gateways (IWSG 2018)*. 2018.

[62] **Ferreira da Silva, Rafael** and Garijo, Daniel and Peckham, Scott and Gil, Yolanda and Deelman, Ewa and Ratnakar, Varun. "Towards Model Integration via Abductive Workflow Composition and Multi-Method Scalable Model Execution". *9th International Congress on Environmental Modelling and Software*. 2018.

[61] Gil, Yolanda and Cobourn, Kelly and Deelman, Ewa and Duffy, Chris and **Ferreira da Silva, Rafael** and Kemanian, Armen and Knoblock, Craig and Kumar, Vipin and Peckham, Scott and Carvalho, Lucas and Chiang, Yao-Yi and Garijo, Daniel and Khider, Deborah and Khandelwal, Ankush and Pahm, Minh and Pujara, Jay and Ratnakar, Varun and Stoica, Maria and Vu, Binh. "MINT: Model Integration Through Knowledge-Powered Data and Process Composition". *9th International Congress on Environmental Modelling and Software*. 2018.

2017

[60] **Ferreira da Silva, Rafael** and Filgueira, Rosa and Pietri, Ilia and Jiang, Ming and Sakellariou, Rizos and Deelman, Ewa. "A Characterization of Workflow Management Systems for Extreme-Scale Applications". *Future Generation Computer Systems*. 2017. DOI: 10.1016/j.future.2017.02.026.

[59] Glatard, Tristan and Rousseau, Marc-Etienne and Camarasu-Pop, Sorina and Adalat, Reza and Beck, Natacha and Das, Samir and **Ferreira da Silva, Rafael** and Khalili-Mahani, Najmeh and Korkhov, Vladimir and Quirion, Pierre-Olivier and Rioux, Pierre and Olabarriaga, Silvia D. and Bellec, Pierre and Evans, Alan C.. "Software architectures to integrate workflow engines in science gateways". *Future Generation Computer Systems*. 2017. DOI: 10.1016/j.future.2017.01.005.

[58] Santana-Perez, Idafen and **Ferreira da Silva, Rafael** and Rynge, Mats and Deelman, Ewa and Pérez-Hernández, Maria S. and Corcho, Oscar. "Reproducibility of Execution Environments in Computational Science Using Semantics and Clouds". *Future Generation Computer Systems*. 2017. DOI: 10.1016/j.future.2015.12.017.

[57] Deelman, Ewa and Carothers, Christopher and Mandal, Anirban and Tierney, Brian and Vetter, Jeffrey S. and Baldin, Ilya and Castillo, Claris and Juve, Gideon and Król, Dariusz and Lynch, Vickie and Mayer, Ben and Meredith, Jeremy and Proffen, Thomas and Ruth, Paul and **Ferreira da Silva, Rafael**. "PANORAMA: An Approach to Performance Modeling and Diagnosis of Extreme Scale Workflows". *International Journal of High Performance Computing Applications*. 2017. DOI: 10.1177/1094342015594515.

[56] **Ferreira da Silva, Rafael** and Callaghan, Scott and Deelman, Ewa. "On the Use of Burst Buffers for Accelerating Data-Intensive Scientific Workflows". *12th Workshop on Workflows in Support of Large-Scale Science (WORKS'17)*. 2017. DOI: 10.1145/3150994.3151000.

[55] Mandal, Anirban and Ruth, Paul and Baldin, Ilya and **Ferreira da Silva, Rafael** and Deelman, Ewa. "Toward Prioritization of Data Flows for Scientific Workflows Using Virtual Software Defined Exchanges". *First International Workshop on Workflow Science (WoWS 2017)*. 2017. DOI: 10.1109/eScience.2017.92.

[54] Lynch, Vickie and Calvo, Jose Borreguero and Deelman, Ewa and **Ferreira da Silva, Rafael** and Goswami, Monojoy and Hui, Yawei and Lingerfelt, Eric and Vetter, Jeffrey. "Distributed Workflows for Modeling Experimental Data". *2017 IEEE High Performance Extreme Computing Conference (HPEC'17)*. 2017. DOI: 10.1109/HPEC.2017.8091071.

[53] Taylor, Ian J. and Brinckman, Adam and Deelman, Ewa and **Ferreira da Silva, Rafael** and Gupta, Sandeep and Nabrzyski, Jarek and Park, Soowang and Vahi, Karan. "Accelerating Circuit Realization via a Collaborative Gateway of Innovations". *9th International Workshop on Science Gateways (IWSG 2017)*. 2017.

2016

[52] Deelman, Ewa and Vahi, Karan and Rynge, Mats and Juve, Gideon and Mayani, Rajiv and **Ferreira da Silva, Rafael**. "Pegasus in the Cloud: Science Automation through Workflow Technologies". *IEEE Internet Computing*. 2016. DOI: 10.1109/MIC.2016.15.

[51] Chen, Weiwei and **Ferreira da Silva, Rafael** and Deelman, Ewa and Fahringer, Thomas. "Dynamic and Fault-Tolerant Clustering for Scientific Workflows". *IEEE Transactions on Cloud Computing*. 2016. DOI: 10.1109/TCC.2015.2427200.

[50] Filgueira, Rosa and **Ferreira da Silva, Rafael** and Krause, Amrey and Deelman, Ewa and Atkinson, Malcolm. "Asterism: Pegasus and dispel4py hybrid workflows for data-intensive science". *7th International Workshop on Data-Intensive Computing in the Clouds*. 2016. DOI: 10.1109/DataCloud.2016.004.

[49] **Ferreira da Silva, Rafael** and Filgueira, Rosa and Deelman, Ewa and Pairo-Castineira, Erola and Overton, Ian Michael and Atkinson, Malcolm. "Using Simple PID Controllers to Prevent and Mitigate Faults in Scientific Workflows". *11th Workflows in Support*

of Large-Scale Science. 2016.

[48] **Ferreira da Silva, Rafael** and Deelman, Ewa and Filgueira, Rosa and Vahi, Karan and Rynge, Mats and Mayani, Rajiv and Mayer, Benjamin. "Automating Environmental Computing Applications with Scientific Workflows". *Environmental Computing Workshop, IEEE 12th International Conference on e-Science*. 2016. DOI: 10.1109/eScience.2016.7870926.

[47] Krol, Dariusz and **Ferreira da Silva, Rafael** and Deelman, Ewa and Lynch, Vickie E.. "Workflow Performance Profiles: Development and Analysis". *Euro-Par 2016: Parallel Processing Workshops: Euro-Par 2016 International Workshops*. 2016. DOI: 10.1007/978-3-319-58943-5_9.

[46] Krol, Dariusz and Kitowski, Jacek and **Ferreira da Silva, Rafael** and Juve, Gideon and Vahi, Karan and Rynge, Mats and Deelman, Ewa. "Science Automation in Practice: Performance Data Farming in Workflows". *21st IEEE International Conference on Emerging Technologies and Factory Automation*. 2016. DOI: 10.1109/ETFA.2016.7733677.

[45] Schlagkamp, Stephan and **Ferreira da Silva, Rafael** and Allcock, William and Deelman, Ewa and Schwiegelshohn, Uwe. "Consecutive Job Submission Behavior at Mira Supercomputer". *25th ACM International Symposium on High-Performance Parallel and Distributed Computing*. 2016. DOI: 10.1145/2907294.2907314.

[44] Schlagkamp, Stephan and **Ferreira da Silva, Rafael** and Deelman, Ewa and Schwiegelshohn, Uwe. "Understanding User Behavior: from HPC to HTC". *Procedia Computer Science*. 2016. DOI: 10.1016/j.procs.2016.05.397.

[43] Schlagkamp, Stephan and **Ferreira da Silva, Rafael** and Renker, Johanna and Rinkenauer, Gerhard. "Analyzing Users in Parallel Computing: A User-Oriented Study". *2016 International Conference on High Performance Computing & Simulation*. 2016. DOI: 10.1109/HPCSim.2016.7568362.

[42] Schlagkamp, Stephan and Hofmann, Matthias and Eufinger, Lars and **Ferreira da Silva, Rafael**. "Increasing Waiting Time Satisfaction in Parallel Job Scheduling via a Flexible MILP Approach". *2016 International Conference on High Performance Computing & Simulation*. 2016. DOI: 10.1109/HPCSim.2016.7568331.

[41] Nawaz, Hassan and Juve, Gideon and **Ferreira da Silva, Rafael** and Deelman, Ewa. "Performance Analysis of an I/O-Intensive Workflow executing on Google Cloud and Amazon Web Services". *18th Workshop on Advances in Parallel and Distributed Computational Models*. 2016. DOI: 10.1109/IPDPSW.2016.90.

[40] Mandal, Anirban and Ruth, Paul and Baldin, Ilya and Krol, Dariusz and Juve, Gideon and Mayani, Rajiv and **Ferreira da Silva, Rafael** and Deelman, Ewa and Meredith, Jeremy and Vetter, Jeffrey and Lynch, Vickie and Mayer, Ben and Wynne III, James and Blanco, Mark and Carothers, Chris and LaPre, Justin and Tierney, Brian. "Toward an End-to-end Framework for Modeling, Monitoring, and Anomaly Detection for Scientific Workflows". *Workshop on Large-Scale Parallel Processing*. 2016. DOI: 10.1109/IPDPSW.2016.202.

2015

[39] **Ferreira da Silva, Rafael** and Glatard, Tristan and Desprez, Frédéric. "Self-Managing of Operational Issues for Grid Computing: The Case of The Virtual Imaging Platform". *Emerging Research in Cloud Distributed Computing Systems*. 2015. DOI: 10.4018/978-1-4666-8213-9.ch006.

[38] **Ferreira da Silva, Rafael** and Juve, Gideon and Rynge, Mats and Deelman, Ewa and Livny, Miron. "Online Task Resource Consumption Prediction for Scientific Workflows". *Parallel Processing Letters*. 2015. DOI: 10.1142/S0129626415410030.

[37] Howison, James and Deelman, Ewa and McLennan, Michael J. and **Ferreira da Silva, Rafael** and Herbsleb, James D.. "Understanding the scientific software ecosystem and its impact: Current and future measures". *Research Evaluation*. 2015. DOI: 10.1093/reseval/rvv014.

[36] Glatard, Tristan and Lewis, Lindsay Burke and **Ferreira da Silva, Rafael** and Adalat, Reza and Beck, Natacha and Lepage, Claude and Rioux, Pierre and Rousseau, Marc-Etienne and Sherif, Tarek and Deelman, Ewa and Khalili-Mahani, Najmeh and Evans, Alan Charles. "Reproducibility of neuroimaging analyses across operating systems". *Frontiers in Neuroinformatics*. 2015. DOI: 10.3389/fninf.2015.00012.

[35] Deelman, Ewa and Vahi, Karan and Juve, Gideon and Rynge, Mats and Callaghan, Scott and Maechling, Phil J. and Mayani, Rajiv and Chen, Weiwei and **Ferreira da Silva, Rafael** and Livny, Miron and Wenger, Kent. "Pegasus, a Workflow Management System for Science Automation". *Future Generation Computer Systems*. 2015. DOI: 10.1016/j.future.2014.10.008.

[34] Chen, Weiwei and **Ferreira da Silva, Rafael** and Deelman, Ewa and Sakellariou, Rizos. "Using Imbalance Metrics to Optimize Task Clustering in Scientific Workflow Executions". *Future Generation Computer Systems*. 2015. DOI: 10.1016/j.future.2014.09.014.

[33] Oda, Ricardo and Cordeiro, Daniel and **Ferreira da Silva, Rafael** and Deelman, Ewa and Braghetto, Kelly. "The Case for Resource Sharing in Scientific Workflow Executions". *XVI Simposio em Sistemas Computacionais de Alto Desempenho*. 2015.

[32] Juve, Gideon and Tovar, Benjamin and **Ferreira da Silva, Rafael** and Król, Dariusz and Thain, Douglas and Deelman, Ewa and Allcock, William and Livny, Miron. "Practical Resource Monitoring for Robust High Throughput Computing". *2nd Workshop on Monitoring and Analysis for High Performance Computing Systems Plus Applications*. 2015. DOI: 10.1109/CLUSTER.2015.115.

[31] **Ferreira da Silva, Rafael** and Rynge, Mats and Juve, Gideon and Sfiligoi, Igor and Deelman, Ewa and Letts, James and Würthwein, Frank and Livny, Miron. "Characterizing a High Throughput Computing Workload: The Compact Muon Solenoid (CMS) Experiment at LHC". *Procedia Computer Science*. 2015. DOI: 10.1016/j.procs.2015.05.190.

[30] Mayer, Benjamin and Worley, Patrick and **Ferreira da Silva, Rafael** and Gaddis, Abigail. "Climate Science Performance, Data and Productivity on Titan". *Cray User Group Conference*. 2015.

[29] Glatard, Tristan and **Ferreira da Silva, Rafael** and Boujelben, Nouha and Adalat, Reza and Beck, Natacha and Rioux, Pierre and Rousseau, Marc-Etienne and Deelman, Ewa and Evans, Alan C.. "Boutiques: an application-sharing system based on Linux

containers". *NeuroInformatics 2015*. 2015. DOI: 10.3389/conf.fnins.2015.91.00012.

2014

[28] **Ferreira da Silva, Rafael** and Glatard, Tristan and Desprez, Frédéric. "Controlling fairness and task granularity in distributed, online, non-clairvoyant workflow executions". *Concurrency and Computation: Practice and Experience*. 2014. DOI: 10.1002/cpe.3303.

[27] Srinivasan, Sudarshan and Juve, Gideon and **Ferreira da Silva, Rafael** and Vahi, Karan and Deelman, Ewa. "A Cleanup Algorithm for Implementing Storage Constraints in Scientific Workflow Executions". *9th Workshop on Workflows in Support of Large-Scale Science*. 2014. DOI: 10.1109/WORKS.2014.8.

[26] **Ferreira da Silva, Rafael** and Chen, Weiwei and Juve, Gideon and Vahi, Karan and Deelman, Ewa. "Community Resources for Enabling and Evaluating Research in Distributed Scientific Workflows". *10th IEEE International Conference on e-Science*. 2014. DOI: 10.1109/eScience.2014.44.

[25] Santana-Perez, Idafen and **Ferreira da Silva, Rafael** and Rynge, Mats and Deelman, Ewa and Pérez-Hernández, María S. and Corcho, Oscar. "A Semantic-Based Approach to Attain Reproducibility of Computational Environments in Scientific Workflows: A Case Study". *Euro-Par 2014: Parallel Processing Workshops*. 2014. DOI: 10.1007/978-3-319-14325-5_39.

[24] James, Doug and Wilkins-Diehr, Nancy and Stodden, Victoria and Colbry, Dirk and Rosales, Carlos and Fahey, Mark and Shi, Justin and **Ferreira da Silva, Rafael** and Lee, Kyo and Roskies, Ralph and Loewe, Laurence and Lindsey, Susan and Kooper, Rob and Barba, Lorena and Bailey, David and Borwein, Jonathan and Corcho, Oscar and Deelman, Ewa and Dietze, Michael and Gilbert, Benjamin and Harkes, Jan and Keele, Seth and Kumar, Praveen and Lee, Jong and Linke, Erika and Marciano, Richard and Marini, Luigi and Mattman, Chris and Mattson, Dave and McHenry, Kenton and McLay, Robert and Miguez, Sheila and Minsker, Barbara and Perez-Hernandez, Maria and Ryan, Dan and Rynge, Mats and Santana-Perez, Idafen and Satyanarayanan, Mahadev and Clair, Gloriana St and Webster, Keith and Hovig, Elvind and Katz, Dan and Kay, Sophie and Sandve, Geir and Skinner, David and Allen, Gabrielle and Cazes, John and Cho, Kym Won and Fonseca, Jim and Hwang, Lorraine and Koesterke, Lars and Patel, Pragnesh and Pouchard, Line and Seidel, Ed and Suriarachchi, Isuru. "Standing Together for Reproducibility in Large-Scale Computing: Report on reproducibility@XSEDE". 2014.

[23] Malawski, Maciej and Nowakowski, Piotr and Gubala, Tomasz and Kasztelnik, Marek and Bubak, Marian and **Ferreira da Silva, Rafael** and Deelman, Ewa and Nabrzyski, Jarek. "Experiments with Complex Scientific Applications on Hybrid Cloud Infrastructures". *NSFCloud Workshop on Experimental Support for Cloud Computing*. 2014.

[22] **Ferreira da Silva, Rafael** and Fahringer, Thomas and Durillo, Juan J. and Deelman, Ewa. "A Unified Approach for Modeling and Optimization of Energy, Makespan and Reliability for Scientific Workflows on Large-Scale Computing Infrastructures". *Workshop on Modeling & Simulation of Systems and Applications*. 2014.

[21] Glatard, Tristan and Lewis, Lindsay B and **Ferreira da Silva, Rafael** and Rousseau, Marc-Etienne and Lepage, Claude and Rioux, Pierre and Mahani, Najmeh and Deelman, Ewa and Evans, Alan C. "Extending provenance information in CBRAIN to address reproducibility issues across computing platforms". *Frontiers in Neuroinformatics*. 2014. DOI: 10.3389/conf.fninf.2014.18.00076.

[20] Santana-Perez, Idafen and **Ferreira da Silva, Rafael** and Rynge, Mats and Deelman, Ewa and Pérez-Hernández, María S. and Corcho, Oscar. "Leveraging Semantics to Improve Reproducibility in Scientific Workflows". 2014.

[19] Juve, Gideon and Tovar, Benjamin and **Ferreira da Silva, Rafael** and Robinson, Casey and Thain, Douglas and Deelman, Ewa and Allcock, William and Livny, Miron. "Practical Resource Monitoring for Robust High Throughput Computing". 2014.

2013

[18] **Ferreira da Silva, Rafael** and Glatard, Tristan and Desprez, Frédéric. "Self-healing of workflow activity incidents on distributed computing infrastructures". *Future Generation Computer Systems*. 2013. DOI: 10.1016/j.future.2013.06.012.

[17] Camarasu-Pop, Sorina and Glatard, Tristan and **Ferreira da Silva, Rafael** and Gueth, Pierre and Sarrut, David and Benoit-Cattin, Hugues. "Monte Carlo simulation on heterogeneous distributed systems: A computing framework with parallel merging and checkpointing strategies". *Future Generation Computer Systems*. 2013. DOI: 10.1016/j.future.2012.09.003.

[16] Glatard, T. and Lartizien, C. and Gibaud, B. and Ferreira da Silva, R. and Forestier, G. and Cervenansky, F. and Alessandrini, M. and Benoit-Cattin, H. and Bernard, O. and Camarasu-Pop, S. and Cerezo, N. and Clarysse, P. and Gaignard, A. and Hugonnard, P. and Liebgott, H. and Marache, S. and Marion, A. and Montagnat, J. and Tabary, J. and Friboulet, D.. "A Virtual Imaging Platform for Multi-Modality Medical Image Simulation". *IEEE Transactions on Medical Imaging*. 2013. DOI: 10.1109/TMI.2012.2220154.

[15] **Ferreira da Silva, Rafael** and Juve, Gideon and Deelman, Ewa and Glatard, Tristan and Desprez, Frédéric and Thain, Douglas and Tovar, Benjamin and Livny, Miron. "Toward fine-grained online task characteristics estimation in scientific workflows". *8th Workshop on Workflows in Support of Large-Scale Science*. 2013. DOI: 10.1145/2534248.2534254.

[14] Azarnoosh, Sepideh and Rynge, Mats and Juve, Gideon and Deelman, Ewa and Niec, Michal and Malawski, Maciej and **Ferreira da Silva, Rafael**. "Introducing PRECIP: an API for Managing Repeatable Experiments in the Cloud". *IEEE 5th International Conference on Cloud Computing Technology and Science*. 2013. DOI: 10.1109/CloudCom.2013.98.

[13] Chen, Weiwei and **Ferreira da Silva, Rafael** and Deelman, Ewa and Sakellariou, Rizos. "Balanced Task Clustering in Scientific Workflows". *IEEE 9th International Conference on eScience*. 2013. DOI: 10.1109/eScience.2013.40.

[12] **Ferreira da Silva, Rafael** and Glatard, Tristan and Desprez, Frédéric. "On-Line, Non-clairvoyant Optimization of Workflow Activity Granularity on Grids". *Euro-Par 2013 Parallel Processing*. 2013. DOI: 10.1007/978-3-642-40047-6_28.

[11] **Ferreira da Silva, Rafael** and Glatard, Tristan and Desprez, Frédéric. "Workflow Fairness Control on Online and Non-clairvoyant Distributed Computing Platforms". *Euro-Par 2013 Parallel Processing*. 2013. DOI: 10.1007/978-3-642-40047-6_13.

[10] **Ferreira da Silva, Rafael** and Glatard, Tristan. "A Science-Gateway Workload Archive to Study Pilot Jobs, User Activity, Bag of Tasks, Task Sub-steps, and Workflow Executions". *Euro-Par 2012: Parallel Processing Workshops*. 2013. DOI: 10.1007/978-3-642-36949-0_10.

[9] **Ferreira da Silva, Rafael**. "A science-gateway for workflow executions: online and non-clairvoyant self-healing of workflow executions on grids". 2013.

2012

[8] **Ferreira da Silva, Rafael** and Glatard, Tristan and Desprez, Frédéric. "Self-Healing of Operational Workflow Incidents on Distributed Computing Infrastructures". *12th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing*. 2012. DOI: 10.1109/CCGrid.2012.24.

[7] Glatard, T. and Marion, A. and Benoit-Cattin, H. and Camarasu-Pop, S. and Clarysse, P. and Ferreira da Silva, R. and Forestier, G. and Gibaud, B. and Lartizien, C. and Liebgott, H. and Moulin, K. and Friboulet, D.. "Multi-modality image simulation with the Virtual Imaging Platform: Illustration on cardiac echography and MRI". *9th IEEE International Symposium on Biomedical Imaging*. 2012. DOI: 10.1109/ISBI.2012.6235493.

2011

[6] Brasileiro, Francisco and Gaudencio, Matheus and **Ferreira da Silva, Rafael** and Duarte, Alexandre and Carvalho, Diego and Scardaci, Diego and Ciuffo, Leandro and Mayo, Rafael and Hoeger, Herbert and Stanton, Michael and Ramos, Raul and Barbera, Roberto and Marechal, Bernard and Gavillet, Philippe. "Using a Simple Prioritisation Mechanism to Effectively Interoperate Service and Opportunistic Grids in the EELA-2 e-Infrastructure". *Journal of Grid Computing*. 2011. DOI: 10.1007/s10723-010-9177-5.

[5] **Ferreira da Silva, Rafael** and Camarasu-Pop, Sorina and Grenier, Baptiste and Hamar, Vanessa and Manset, David and Montagnat, Johan and Revillard, Jérôme and Rojas Balderrama, Javier and Tsaregorodtsev, Andrei and Glatard, Tristan. "Multi-infrastructure workflow execution for medical simulation in the Virtual Imaging Platform". *2011 HealthGrid Conference*. 2011.

[4] Marion, A. and Forestier, G. and Benoit-Cattin, H. and Camarasu-Pop, S. and Clarysse, P. and Ferreira da Silva, R. and Gibaud, B. and Glatard, T. and Hugonnard, P. and Lartizien, C. and Liebgott, H. and Specovius, S. and Tabary, J. and Valette, S. and Friboulet, D.. "Multi-modality medical image simulation of biological models with the Virtual Imaging Platform (VIP)". *2011 24th International Symposium on Computer-Based Medical Systems*. 2011. DOI: 10.1109/CBMS.2011.5999141.

2010

[3] **Ferreira da Silva, Rafael** and Brasileiro, Francisco and Lopes, Raquel. "Provendo Eficiência e Justiça em um Sistema de Cache em Disco para Grades Computacionais Entre-Pares". *28th Brazilian Symposium on Computer Networks and Distributed Systems (SBRC)*. 2010.

2009

[2] Brasileiro, Francisco and Duarte, Alexandre and **Ferreira da Silva, Rafael** and Gaudêncio, Matheus. "On the co-existence of service and opportunistic grids". *First EELA-2 Conference*. 2009.

2007

[1] Pires, Stéfani and **Ferreira da Silva, Rafael** and Mongiovi, Giuseppe. "Lupa: Um Ambiente Facilitador de Desenvolvimento de Aplicaões Data Mining". *IV Simpósio Mineiro de Sistemas de Informaão (SMSI)*. 2007.

Last updated: January 2026