

# François-René Rideau

SENIOR SOFTWARE ENGINEER AND ARCHITECT

Phone: +1 617 575 9012

E-mail: [fahree@gmail.com](mailto:fahree@gmail.com)

LinkedIn: <http://linkedin.com/in/fahree>

Philadelphia, PA — US permanent resident

## Professional Summary

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Senior software engineer and architect with more than 20 years of experience in mission-critical transaction systems, distributed systems, developer tools and software infrastructure. Combines hands-on implementation and technical leadership with research in formal methods, capability systems, orthogonal persistence and reflection. Builds secure, robust and maintainable software, improves developer workflows and leads teams from design through deployment and operational support.

## Work Experience

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*2025–present*    **Formal Foundry** (FormalFoundry.ai), Chief Science Officer (PA; Ongoing)

Developed foundations for AI safety based on formal methods, layered implementations, capability-based security, runtime observability and data persistence.

*2019–2025*    **Mutual Knowledge Systems** (MuKn.com), Co-Founder, President and Chief Scientist (MA, PA; 6 years)

Co-founded a software engineering company delivering distributed systems, programming languages and security services, generating \$2.5M in revenue. Led teams of up to 8 developers.

- Designed and implemented the *Glow* language for safer, portable decentralized applications, including a zero-knowledge back-end.
- Identified and fixed a security flaw in cross-shard communication in a distributed execution platform.
- Designed cross-system payment and contract protocols, transaction models and data availability infrastructure. Delivered custom development and security audits.

*2018–2019*    **Legicash** and **Alacris**, Co-Founder and Chief Architect (Cambridge, MA; 2 years)

Co-founded startups developing distributed transaction scaling technology and programming languages. Raised a bit under \$1M.

*2017–2018*    **Metafore Hyperpost**, Founder, CEO (NYC, NY; 2 years)

Founded a software consultancy and built a market-data analysis system to detect cryptocurrency arbitrage opportunities.

*2016–2017*    **Bridgewater Associates**, Senior Cloud Developer (Wilton, CT; 9 months)

Securely and reproducibly built and deployed financial simulations using Terraform on Amazon AWS.

Refactored existing code that used Buildbot, Make, Python and Jsonnet; redesigned it to use Scala, Nix and Pants.

*2013–2016*    **Google**, Developer Experience Designer (New York, NY; 3 years)

Designed DX for Software at Scale. Refactored the design and implementation (in Java) of Skylark, the extension language of `bazel.build`, the deterministic distributed build system. Also added GC to the `git` support of the code hosting platform.

*2005–2013*    **ITA Software**, Senior Software Engineer (Cambridge, MA; 8 years)

Helped launch the first interlining airline reservation system not based on SABRE, a mission-critical transaction-processing platform.

- Built software build, test and deployment infrastructure and intersystem messaging.
  - Developed schema upgrade capabilities and object-relational infrastructure on Oracle; migrated legacy data using a distributed cluster.
  - Performed code security audits, contributed to a 64-bit port and curated open-source dependencies.
- Implemented in Common Lisp. Managed up to 5 people. ITA was acquired by Google in 2011.

*2003–2004*    **CRPGL**, Researcher (Luxembourg; 18 months)

Public Research Center. Developed web-based collaborative tools in Common Lisp.

*2000–2001*    **IDEALX**, Consultant (Paris, France; 8 months)

Open Source Engineering Consultancy. Consulted on B2B middleware, real-time high-level languages, secure terminals.

Proved formal correctness (in Coq, now Rocq) of a centralized e-cash payment protocol.

*1997–2000*    **France Telecom**, Research Engineer (Paris, France; 36 months)

Researched under Jean-Bernard Stefani. Experimented with distributed calculi.

## Technical Skills

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*Architecture and Delivery* Distributed systems, backend and full-stack development, transaction processing, software architecture, reliability, database migrations and technical leadership.

*Developer Tools and Cloud* Build systems, CI/CD, reproducible deployments, AWS, Terraform, Linux, Git, Bazel, ASDF, Nix, Pants, Buildbot and Make.

*Security and Research* Software security audits, capability systems, authorization models, formal methods, Coq/Rocq, language semantics, orthogonal persistence, reflection and metaprogramming. Research foundations for AI containment.

*Programming and Data* Common Lisp, Scheme/Gerbil, Java, Python, JavaScript, C/C++, Scala, shell, SQL, PL/SQL and Oracle; additional experience with functional programming languages.

*Collaboration and AI* Developer experience, collaborative software design, mentoring and team organization. AI-assisted software development and writing; agentic AI development and AI security.

## Formal Training

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*1997–2000* PhD candidate in Computer Science at École Nationale Supérieure des Télécommunications (Télécom Paris). Thesis: Reconciling Semantics and Reflection: Formalisms, Protocols, Applications and Architecture. Research interrupted to pursue professional opportunities. Thesis completed in 2018 but not defended.

*1996–1997* DEA d’Informatique at the ESSI (University of Nice). Completed first half of Doctoral Studies (PhD quals) in Computer Science while teaching in Mathematics in a high school.

*1992–1996* Masters in Computer Science at the École Normale Supérieure (rue d’Ulm, Paris). Maîtrise d’Informatique (Masters in Computer Science) and Agrégation de Mathématiques (professorship in Mathematics). Specialized in the Formal Semantics of Computer Programs under Patrick Cousot. Teaching Assistant in CS & Maths.

## Open Source and Research

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*Developer Tools* Former maintainer of ASDF, the Common Lisp build system. Co-maintainer of Gerbil Scheme. Contributor to open-source language and software infrastructure projects.

*Current Research* Author of *Lambda: the Ultimate Object — Object Orientation Elucidated* (book manuscript, 2026), connecting programming-language semantics to modular software design. Developing C4 mixins, a C++20 library for modular extensibility.

*Communication* Technical author and conference speaker. Native French and fluent English.

## Select Publications

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- [1] François-René Rideau. Métaprogrammation et libre disponibilité des sources (English translation: Metaprogramming and free availability of sources). *Autour du Libre* 1999.
- [2] François-René Rideau and Robert P. Goldman. Evolving ASDF: More Cooperation, Less Coordination. *International Lisp Conference* 2010.
- [3] François-René Rideau. LIL: CLOS reaches higher-order, sheds identity and has a transformative experience. *International Lisp Conference* 2012.
- [4] François-René Rideau. ASDF 3, or Why Lisp is Now an Acceptable Scripting Language. *European Lisp Symposium* 2014.
- [5] François-René Rideau. From Software Creationism to Software Evolutionism. *Salon des Refusés* 2017.
- [6] François-René Rideau. Climbing Up the Semantic Tower—at Runtime. *Off the Beaten Track Workshop at POPL* 2018.
- [7] François-René Rideau, Alexander Knauth, and Nada Amin. Prototypes: Object-Orientation, Functionally. *Scheme and Functional Programming Workshop* 2021.
- [8] François-René Rideau. Lambda, the Ultimate Object: Object-Orientation Elucidated. *Book manuscript* 2026.