It’s a big challenge

“ING serves 40 or more markets and we need to address the requirements of each of those countries.”

Ian Hollowbread, Head of RegTech for ING Labs, November 2020

Financial regulations are projected to reach over 300 million pages in 2020”

AIR Regtech Manifesto July 2020

Five separate federal agencies directly supervise depository institutions. Several dozen more get involved in financial regulatory matters. In addition, the fifty states and the US territories regulate banks and nonbank financial companies.

The Bank now receives 65 billion data points each year of firm-related information. To put that into context, reviewing it all would be the equivalent of each supervisor reading the complete works of Shakespeare twice a week, every week of the year.”

Former Bank of England Governor Mark Carney, June 2019

Dodd-Frank’s regulatory definition of “Swaps” is 160 pages long

FINOS
Fintech Open Source Foundation

And it’s expensive

33% of senior executives at financial institutions said they spent more than 5% of annual budgets on compliance \(^6\)

40% of financial crime compliance costs are associated with technology \(^7\)

Bank compliance costs jumped more than $50B a year after Dodd-Frank \(^8\)

Financial Crime Compliance costs grew by 7% over the 2018-2020 period \(^7\)

Compliance with the EU GDPR Regulation is estimated to have cost UK banks an average of £66 million in 2019 \(^6\)

What is FINOS?

The Fintech Open Source Foundation (FINOS) is an independent, non-profit membership organization whose purpose is to accelerate collaboration and innovation in financial services through the adoption of Open Source software, standards and best practices.
FINOS Community by the Numbers

**PLATINUM**
- citi
- Goldman Sachs
- GitHub
- J.P. Morgan
- Morgan Stanley
- Nomura
- Symphony
- RBC
- UBS

**GOLD**
- Capital One
- HSBC
- IHS Markit
- Intel
- openfin
- red hat
- Refinitiv
- SUSE
- Tradeweb

**SILVER**
- Adaptive
- BNY Mellon
- CloudBees
- Cloud9
- Cosaic
- Diffblue
- epam
- GitLab
- gk
- Glue42
- Itaú
- NearForm
- Scott Logic
- SNAP

**ASSOCIATE**
- Alliance for Innovative Regulation
- ISDA
- InterWork Alliance
- Wells Fargo
- Wipro

15 Active Open Source Projects and SIGs
23 Incubating Open Source Projects and SIGs
350+ Contributors
38 Corporate and Associate Members
Our goal: enable Open Source in Financial Services

FINOS brings together all parties of the financial services ecosystem to deliver open source software and standards.
Regulated industries CAN collaborate...

How is this possible?

**Governance**
- Decision making and project leadership
- Activity metrics
- Collaboration metrics
- Documentation

**Policies**
- Antitrust policies
- IP Policies
- Conflict of interest policies

**Licenses**
- Open Source Licenses (e.g. Apache 2.0)
- Contributor License Agreements (CLAs)
The FINOS landscape highlights our many projects solving challenges across the financial services industry.

Check back regularly as we continue to map the open fintech landscape.

Visit [landscape.finos.org](https://landscape.finos.org)

Contribute [github.com/finos/finos-landscape](https://github.com/finos/finos-landscape)
A Transparent, Robust and Flexible Governance

- FINOS hosts **40+ collaborative Open Source Software and Open Standards projects**
- The **FINOS Governance** provides a **robust framework** that enables **secure, compliant collaboration** in regulated industries
- FINOS policies and templates are **flexible** and can be tailored to projects’ need for autonomy
- A **meritocratic, governance-by-contribution** model enables transparent, independent operations under the oversight & steering of the FINOS Governing Board
- All FINOS Projects leverage, the **Open Developer Platform**, and FINOS Focus Projects receive additional support from the **FINOS team**
FINOS Corporate & Project Policies

The Foundation’s governance strives for **transparency**, **neutrality** and **meritocracy**. The following policies apply to all FINOS members and activities:

**CORPORATE POLICIES**
- **Antitrust Policy**
  Ensures the Foundation’s work is not deemed anti-competitive
- **Conflicts of Interest Policy**
  Covers disclosure and resolution of conflicts of interest
- **IP Policy**
  Contains rules related to the intellectual property of FINOS, our members, and contributors

**PROJECT & COMMUNITY POLICIES**
- **Community Governance**
  Governs the proposal and operation of Open Source Software and Open Standards projects, and Special Interest Groups (SIGs)
- **Contributor License Agreements**
  Corporate and individual agreements define contribution requirements

All policies are available at [finos.org/governance](http://finos.org/governance)
## Why projects choose FINOS vs going it alone

<table>
<thead>
<tr>
<th>Technical Infrastructure</th>
<th>Community</th>
<th>Legal &amp; Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical Infrastructure &amp; Tooling.</strong> FINOS handles not only Github/Gitlab set-up and maintenance but also provides CI/CD tooling (the Open Developer Platform) to accelerate compliant, secure developer commits and pull requests.</td>
<td><strong>Ready and Growing Community.</strong> Rather than build a developer community from scratch, FINOS projects plug into a vibrant community across over 30 Projects.</td>
<td><strong>Neutrality.</strong> FINOS provides a neutral home and governance for industry standards and open source projects.</td>
</tr>
<tr>
<td><strong>Security Scanning.</strong> FINOS uses WhiteSource integration to scan repositories for CVEs coming from third-party dependencies, via GitHub Issues or via email.</td>
<td><strong>OSS Enabled Community.</strong> FINOS is trusted by the largest financial institutions to enable their developers to participate in open source projects in a compliant way.</td>
<td><strong>Open Source Readiness.</strong> Our Open Source Readiness (OSR) project supports your journey towards Open Source.</td>
</tr>
<tr>
<td><strong>Migration.</strong> For projects not already open sourced, FINOS assists with the legal and technical inspection required to prepare a project code base to be open sourced under the Apache 2.0 license (the preferred license of the foundation).</td>
<td><strong>Product Management and Marketing Support.</strong> FINOS supports programs in their development of roadmaps and feature prioritization. FINOS also helps with promoting projects to both contributors and end-users including press releases, microsites, social media, webinars, and in person events.</td>
<td><strong>IP Validation.</strong> FINOS handles the licensing agreements with developers -- and our CI/CD tooling checks they are in place upon commit.</td>
</tr>
<tr>
<td><strong>Governance.</strong> FINOS provides, monitors, and helps (gently) enforce “rules of the road” to foster community, promote contribution, and encourage meritocratic development based on quantity and quality of pull requests, not who shouts the loudest.</td>
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</tbody>
</table>
The FINOS Open Developer Platform

The Open Developer Platform (ODP) project provides a collection of services, tools and best practices that deliver a secure and compliant collaboration and development workflow across all FINOS hosted projects.

ODP offers communication and collaboration tools compliant with financial institutions regulations.

ODP delivers a software development workflow with continuous legal, security, quality scanning.

For more information, visit odp.finos.org and join the next ODP project meeting.
FINOS helps firms become “Open Source Ready”

The purpose of the OSR Project is to **accelerate our members' journeys toward Open Source Readiness**

Financial services firms face **unique obstacles** to collaborate in the open:

- Legal & regulatory concerns
- Lack of internal policies
- Cultural friction
- Heavily restricted technology environments

_We support financial services firms every step of the way through our Open Source Readiness Project_, providing guidance and tools for participants at every stage of Open Source maturity:

<table>
<thead>
<tr>
<th>Meetings</th>
<th>The biweekly OSR Meetings are open to participants at every stage of open source readiness. Each meeting focuses on a particular Open Source topic, introduced by a reading or presentation, followed by a discussion and &quot;office hours&quot; where members can raise issues and get answers.</th>
</tr>
</thead>
</table>
| Resources | **Reference OS Policy**
Template for a comprehensive open source software policy for a financial services institution, including sample provisions governing the acquisition and use of OSS, and contribution to OSS projects. |
|  | **OS License Compliance Handbook**
Reference guide to practical compliance information for the most common open source licenses. Great for engineers and compliance staff operationalizing compliance with third-party license. |
Our Long Term Vision

**TRADITIONAL MODEL**

Regulators define regulations... → ...in comprehensive and often lengthy documents → Regulated firms interpret those regulations... → ...and independently build technology solutions (or pay for vendor solutions) to meet them.

**OPEN SOURCE OPPORTUNITY**

Regulators define regulations... → Regulation in open source code form:
- Standardization
- Consistent Interpretation of Regulatory Requirements
- Efficiency
- Transparency
- Access to Talent

Industry participants collaborate to codify the regulation and tests.

Regulators have full visibility and can even participate (or lead)
FINOS Open RegTech Initiative

Open source to become a standard for regulation issuance and implementation

**Regulators**
- Regulators to embrace Open Source and to produce their documents and regulations in open source format

**Open source**
- Promote open source software, standards and best practices among financial regulators

**Financial Institutions**
- Financial Institutions to adopt open source as a way to implement and meet regulatory requirements

---

**Strategic Goal**

**2020 Key Results**

**Activities**

**Awareness**
- Webinars
- Virtual meetups
- OSSF & other conferences
- Blog posts
- White papers
- Case studies

**Collaboration**
- Tech Sprints
- FINOS projects
- Associate Membership
- Roundtables
- Discussions

For more information, visit finos.org/open-regtech
Open RegTech: Tentative Timeline

I. Identify Use Cases and Open Source-Ready Regulators

II. Collaborate on a Project or Use Case
The Regulation Innovation SIG brings together a community of people interested in creating open source solutions for regulatory and compliance issues. Creating open source solutions to regulatory compliance is particularly important because the market is currently using custom-built, one-off solutions, that are expensive, inefficient, and costly to manage and update over time.

**Target Audience**
- Financial Institutions
- Innovative Regulators
- Tech & Advisory Community

**Value Prop**
- Efficiency
- Standardization & Transparency
- Interoperability

**Potential focus areas**
- Digital Regulatory Reporting
- AML
- Horizon Scanning
- Payments

**Possible solutions**
- Common Taxonomy
- Data Ontology
- API Standards
- App Directory
- Interoperability

Learn more & get involved at [github.com/finos/open-regtech](https://github.com/finos/open-regtech)
FINOS Projects with Reg Potential

**Waltz**, contributed by Deutsche Bank, allows you to visualize and define your organisation’s technology landscape. Think of it like a structured Wiki for your architecture.

**Legend** is a data modeling language and environment contributed to FINOS by Goldman Sachs. Check out the Legend project site [here](#).

**Morphir**, developed by Morgan Stanley, is a multi-language system built on a data format that captures an application’s domain model and business logic in a technology agnostic manner.

**Open RegTech Use Case**

- Standardize data taxonomies and regulatory reporting interfaces
- Produce tools to map legal and regulatory data taxonomies (e.g. compliance with GDPR, SOX, BCBS 239)

**Open RegTech Use Case**

- Describe and connect data in business terms to create data models.
- Standardize terms and relationships across organizations to foster consistent data vocabulary.
- Explore data from various data stores

**Open RegTech Use Case**

- Codify regulations in a declarative model that can be cross-compiled to run in different execution contexts. *US Liquidity Coverage Ratio Regulation*
Call to action

- Who in your organization is consuming or contributing to Open Source?
- Are there any use cases where you could see benefits of the industry working together?
- Share your concerns. Tell us why you think it would or wouldn't work
Appendix
A brief history of FINOS

2015
- Symphony Software Foundation (SSF) created by several investment banks as Founding Members
- Goldman Sachs Livecurrent and Paragon contributions become the open core of Symphony

2016
- Deutsche Bank contributes Plexus
- Open Source Strategy Forum (OSSF) is launched

2017
- April 24, 2018
  - SSF becomes FINOS, the home for open source collaboration in financial services
  - JPMorgan Chase contributes Perspective
  - FDC3 1.0 launched with broad vendor support
  - FINOS Open Source Readiness Project accelerates industry OSS contributions
  - Goldman Sachs, Livecurrent and Paragon contributions become the open core of Symphony

2018
- April 24, 2018
  - FINOS launches 8 collaborative Programs in different areas of the industry
  - FDC3 1.0 drafted
  - FINOS support expands from FSI and OSS tech industries
  - OSSF goes global
- April 9, 2020
  - OSSF goes virtual!

2019
- April 9, 2020
  - FINOS joins the Linux Foundation
  - Over 400 people join the largest OSSF to date

Present
- Major projects contributed by FINOS FSI Members
- OSSF goes virtual!
The Five Stages of Community Engagement

**EVALUATE**
What the Foundation offers the FinServ developer

**CONSUME**
The Foundation’s open source software and open standards

**PARTICIPATE**
In existing projects, Special Interest Groups (SIGs) or Events hosted by the Foundation

**CONTRIBUTE**
A new project to the Foundation

**LEAD**
An open source software or open standards project, or a Special Interest Group (SIG)

Value Resulting from Leading

Value Resulting from Contribution

Value Resulting from Participation

Value Resulting from Consumption

Value Resulting from Evaluation

Value increases with deeper engagement

Engagement with FINOS projects is an iterative process
The Open Fintech Landscape

The FINOS landscape highlights our many projects solving challenges across the financial services industry.

Check back regularly as we continue to map the open fintech landscape.

Visit landscape.finos.org

Contribute github.com/finos/finos-landscape
FINOS Software Projects

DATA VISUALIZATION
- **Perspective** is an interactive visualization component for large, real-time datasets, used to build reports, dashboards and more, contributed by JP Morgan.

DATA MODELING
- **Legend** is a data modeling language and visual modeling environment contributed to FINOS by Goldman Sachs.

- **Morphir** is a multi-language system built on a data format that captures an application's domain model and business logic in a technology agnostic manner.

CLOUD
- The **Cloud Service Certification** project, contributed by JPMorgan, is following an open, code-first, collaborative process to mutualize among FIs and vendors the cost of cloud control interpretation and implementation.

INTEROPERABILITY
- **FDC3** is an open standard that enables plug-and-play interoperability on the financial desktop.

- **Plexus Interop** aims to define an open standard for desktop application interoperability and provides reference implementation of this standard.

---

Check out the full list of FINOS projects on the [FINOS Landscape](#).

Contribute to our [Github organization](#).

Get in touch with the Community through our [mailing lists](#).
2020 Q3 was our busiest quarter ever!

Our open source project landscape continued to grow...

- **finos / community**
  - 4 new projects incubating in Q3
  - 2 new SIGs (DevOps and Reg)
  - 62% new projects contributed by FSI in 2020

- **Community Spotlight** recognizes community contributors (4 editions so far)
- **Virtual Meetups** over 1000+ registered/attended in 2020 (see archive)
- **FINOS Podcast** steady increase in plays week on week
- **OSR Guest Speakers & All Community Calls** continue to attract new participants

Press Releases promoted new contributions and chair/co-chair, Legend launch (scheduled)
- **OSSF launched** with LF including LF keynote press release, FINOS and LF promotion.
- **OSS EU - FINOS Mini Summit** scheduled leveraging LF events and network
- **Interviews & presentations** for FINOS to speak, including Financial Inclusion & ESG

... and we kept open source in financial services in the news
Open Source is becoming mainstream
Who uses Open Source and Open Standards?

**You**
- Smartphones
  - Google
- Chrome
- Twitter
- Netflix

**Technology**
- IBM-Red Hat
- Microsoft - GitHub
- Facebook
- Google
- AWS

**Transportation**
- Aviation
- Automotive: GENIVI Alliance
- Automotive Grade Linux

**Science**
- CERN
- NASA

**Government**
- US Federal Government (code.gov)
- US Department of Defense
- European Commission

**Financial Services**
- Financial Institutions
- Standards Organizations
- Regulators

[Images of logos and brands related to technology, transportation, science, and government]
Why should Regulators care?

THE BIG PICTURE

- **Access to talent**: talent crunch makes it difficult for regulators to keep up with technology
- **Robust market infrastructure**: build and sustain a more transparent, fairly competitive and user centric set of services
- **Boost innovation and welfare** by freeing up resources

REGULATION

- **Standardization**: common standards used across the industry to meet regulatory requirements

SUPERVISION & ENFORCEMENT

- **Transparency**: access to information and eventually real-time reporting
- **Automation**: leverage open standards, tech and processes to automate manual processes
- **Efficiency** in policy making and inspection when open standards & open source are used
Debunking OS Myths

- **Security**: "Open Source software is not secure"
  - Many eyeballs offer comparable security and a transparent disclosure

- **Governance**: "It’s not well-governed"
  - That’s why Foundations exist

- **Compliance**: "Cross-firm collaboration in regulated industries is trouble"
  - Open Source is a compliant collaboration model

- **Value**: "Open Source == No value"
  - Commercial OSS (COSS) companies with $100M+ ARR total over $146B
## Evaluating the risks

<table>
<thead>
<tr>
<th>Category</th>
<th>Risk Level</th>
<th>Mitigation Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security vulnerabilities</td>
<td>High</td>
<td>All software has vulnerabilities; with OSS they’re documented. Risk higher for services exposed to public internet. Mature consumption policies and automated tooling can mitigate this almost 100%..</td>
</tr>
<tr>
<td>&quot;Data leakage&quot;</td>
<td>Moderate</td>
<td>Risk is highest with passwords and keys embedded in source code. Automated scanning is effective here.</td>
</tr>
<tr>
<td>&quot;IP Leakage&quot; (copyleft effect)</td>
<td>Low</td>
<td>Copyleft requires providing source code to recipients of object code, not public. Injunction more likely than specific performance. Avoid copyleft licenses for redistributable code.</td>
</tr>
<tr>
<td>Accountability (licenses)</td>
<td>Low</td>
<td>Licenses govern how the software can be used and distributed. Ultimate responsibility for the output of the software lies with each organization who runs it.</td>
</tr>
</tbody>
</table>
Open RegTech in the news

Business

FINOS Launches Open RegTech Initiative as It Receives Record High Number of Open Source Contributions

11:33 AM EST

FINOS Launches Open RegTech Initiative

From The Markets

FINOS Launches Open RegTech Initiative

Share this on:
FINOS
Fintech
Open Source
Foundation

Questions?

Learn more at
finos.org/open-regtech
github.com/finos/open-regtech
Sign up for updates at
open-regtech+subscribe@finos.org