

Banking on Open Source

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Good morning everyone. Quick question before I start:

In the last 25 years, do you think **poverty has gone up or down?**

Raise your hands if you think it has gone up?

Raise your hands if you think it has gone down?

Very good. So how many of you read Bill Gates Saturday opinion piece in the NYTimes?

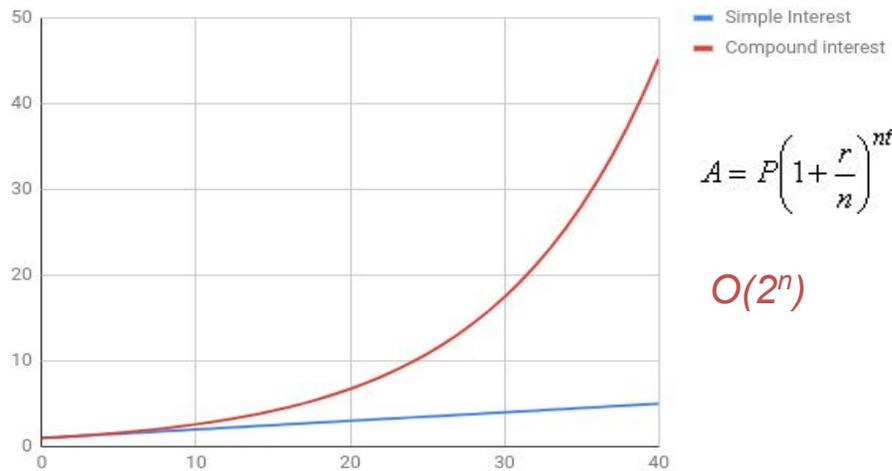
In fact more than **1 billion people have exited poverty since 2000.**

If you got this wrong, don't feel bad. The majority of people get this wrong.

Source:

<https://www.nytimes.com/2018/09/22/opinion/sunday/bill-gates-melinda-gates-global-poverty.html>

Interest compounding is magic...



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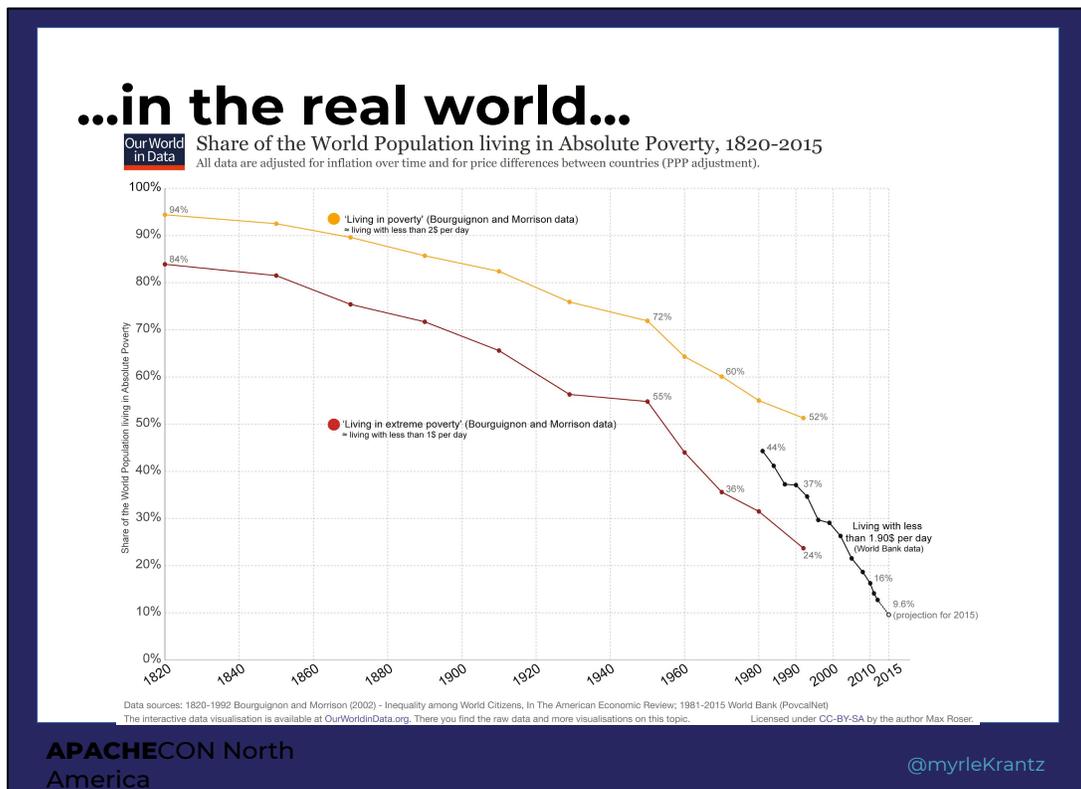
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I bet you didn't think we were going to be doing finance 101 at an ApacheCon, right?

In computer science we spend so much time trying to avoid **exponentials** that we forget they are sometimes good.

Most of you, I'm sure, are familiar with the principles behind interest compounding. As you earn money on the *return* on your investment you get exponentially increasing returns. As you can see in this example, **10% interest** is enough to cause return on investment to be over **40 times** the initial investment after just **40 cycles**.

You may not, however, have put much thought into how this simple principle has **changed the course of modern history**. It doesn't work just because it's a pretty formula. That formula actually describes the **broad underlying economics of the last 200 years**.



This graph shows the share of the world population living in **abject poverty since the 1820's**. There are **three different boundary values** being used which is why you see three different lines. As you can see the amount of poverty world wide is declining precipitously. That's really good news. But **why** is that? What you see here is a result of the **industrial revolution**.

What does this have to do with **interest compounding**? The industrial revolution wasn't just one innovation, or one change. It was an **accumulation** of inventions and innovations which occurred over the course of two hundred years and which has continued to accelerate. Each invention, each innovation built on a previous set of innovations increasing the value of what was already there. Working towards innovation is a form of investment widely recognized in the modern world because it has been so wildly profitable for humanity as a whole. And this investment clearly produces compounding returns.

The most recent projection is that we will have managed to push global poverty to **8.6 percent by the end of 2018** (source: worldbank.org). But our progress has **slowed**. We may be approaching a bend in this very promising curve.

We want **more**. We want to reach those last 8 or 9 percent of people who are still in abject poverty. And we want to continue to improve the lives of those just above that arbitrary definition of poverty. *The UN's number 1 Sustainable Development Goal is to halve poverty again by 2030.* To do that, let's try and figure out *what's been working so well for the last 200 years*.

Image source: <https://ourworldindata.org/extreme-poverty>

Information source:
Wealth and Poverty of Nations, David S. Landes

...founded on the exchange of ideas.



photo: Jerry Saslav

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This process of building new ideas on existing ideas requires an **exchange of ideas**. It requires a free flow of information within a community of individuals striving towards common goals. It requires results we can **trust** and people we can rely on to check and verify results.

We often like to point here or there at this **genius** or that, but the real progress has been a sum of many many parts.

The key words here are COMMUNITY and TRUST. Another word for this is "Social Capital".

Using social capital we can build capital in the more traditional sense, and even enjoy the process of doing so.

Photo source: <https://www.hanscom.af.mil/News/Photos/igphoto/2001016233/>

Information source:
https://en.wikipedia.org/wiki/Steam_engine

Apache knows how to community



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But this is nothing new for anyone who's been around the Apache Software Foundation for a little bit. For years, the Apache Software Foundation has declared "**Community over code**", and every decision the ASF board makes can be linked back to that principle in some way.

...which is why we keep doing it.

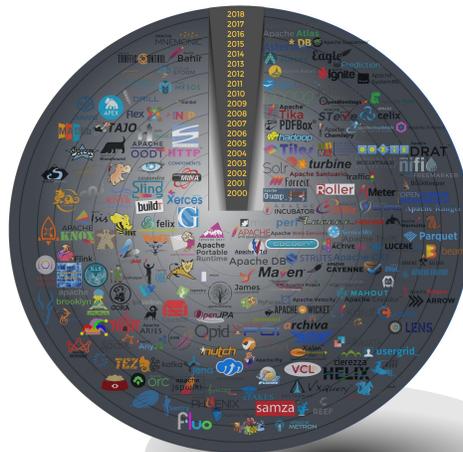


image: Daniel Gruno

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The result has been an **exponential growth in projects** (or far more important: “**communities**”) finding their homes at Apache.

Weren't we talking about global poverty?

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Remember the problem we are trying to solve here? We're trying to **bring the last 8.6% of the population out of poverty**. It stands to reason that what we really want to do is to **integrate poor people into the global economy**. But not in the sense that we want them as consumers, or as borrowers, or as cheap labor. We want them to be able to participate as **full partners**, because we've learned through our projects that each new person brings new gifts to the table.

In order for the global poor to participate as full partners in the global economy, they first need to be partners in their local economy.

Before I go on:

How many of you have taken out loans to pay for college, a house, or some other form of investment?

How many of you are saving for retirement?

How many of you paid for your flights to Montreal using cash?

2.5 billion people don't have a bank account, ...

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Banking services are the key to the door for economic participation.

Things like, **sending** money, **receiving** money, **saving** money, and **borrowing** money don't work very well if you don't have a bank account.

Things like paying for an education and vaccines , smoothing over unexpected bumps in the road, and starting a business are much harder without money transfers, savings accounts, and loans with reasonable rates.

This is not an easy problem. Poor people often aren't attractive customers for banks. They can't keep a **minimum balance** or afford even small **account fees**. They often live in difficult to reach places with **minimal infrastructure**.

...but remember how powerful communities are?



photo: Le Korrigan

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Fortunately there's nothing magical or mystical about banking. There are ways these *communities can help themselves*.

What does community banking look like?

Image source:

https://www.flickr.com/photos/le_korrigan/5016005298/in/photolist-8DfkBY-eqWtbi-2mhUMz-8DfjBo-7jB9CM-erVaiS-bX8u6T-ikHQSw-XfjxTG-7m7K7J-Z8HJTN-pFerSY-GJbiPQ-7m7GmQ-XBYN3T-dJpQJU-aNZMM6-7m3VGv-7m3XNg-b3EpmM-rgDrio-7m3YU4-eqVEjr-erX9Af-esm8Gm-eqVc2F-eqVRsD-eqV9y8-524yw4-CPat7t-er8aFT-W7PzWP-erR8E3-211EA1C-9rAxBd-GksvVD-z4FxFz-R6bGAW-PTFzjk-YRSZvp-SbHXjB-SnUXgM-H3323R-SbHQJn-X6mUbA-Xhnmw9-SbHZAK-VYJfJa-27Vjhxp-VYJfBg

Community savings groups...



© Jon Spaul / Banking on Change 2012

care-international.org

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Savings groups is **saving and lending by a community for that community**. What is a savings group? A group of people (usually women) get a **lockbox** and a **ledger**. The group **meets** to decide what they want the **rules** of their group to be. They each put **money** in the lockbox. Then they meet **once a week** to add **savings**, and **decide** what to do with that money. They can **lend it for interest** to a member trying to start a business. They can **lend it for no interest** to a member struggling with a family illness. They can even bring it to a brick and mortar bank if they want to. After a half a year, or a year, the group **splits out the money** in the box based on how much each member paid in. *If the group earned interest on loans, everyone has a little more than they started with.* Then they can decide if they want to go for **another round**, and if they want to change anything this time round.

Image source:

<https://www.careinternational.org.uk/get-involved/corporate-partnerships/financial-inclusion/breaking-barriers-financial-inclusion>

...support businesses...



photo: IBM & TWIGA Pictures-14

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Because those people seeking **loans** are seeking it **from their peers**, the lenders have very good information about their **creditworthiness**. No **Equifax** necessary. Because the savings group only gets its money back if the borrowers can repay, the community has an **extra incentive to help out new business owners** with advice and labor, or to aid people struggling with economic difficulties. And the borrower has an extra incentive to be open about where they need help.

Image source: https://www.flickr.com/photos/ibm_research_zurich/41427312652

...and long term investments...



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The savings group community can also choose those investments which have the most potential to **bring the community forward** as a whole.

Image source: <https://pixabay.com/en/people-of-uganda-children-of-uganda-2398373/>

...with full transparency.



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The lockbox is only **opened with the entire group present**. All money put into the box or taken out of the box is recorded on a **ledger** that everyone can look at. This transparency promotes trust.

Communities which create savings groups are building more than just financial capital. They are building social capital.

They are putting themselves in a position to profit as a community from the compounding interest of investing in themselves.

Image source: <https://www.flickr.com/photos/theworldfishcenter/32220151794>

Savings groups aren't new.

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Savings groups have been around for literally more than two thousand years. This innovation started in Africa and spread all over the world. There is a word in over 100 languages for this form of banking:

“tandas” in Latin America

“chama” in Swahili

“susu” in the Caribbean.

The form of savings groups I'm describing here, was an incremental innovation by a group called **CARE** building on those previous innovations. CARE started work in the early 90's. They've been steadily developing the method ever since. A group called **The SEEP Network** has also started doing research into the effectiveness of Savings Groups funded by the Bill and Melinda Gates Foundation. They've found that Savings groups are **reaching the very poor**. They've found that Savings Groups **increase asset ownership** without decreasing household spending. Savings Groups **increase food security**. And Savings Groups **increase enrollment in primary education**. The effects over short time periods are small, but we've seen what compounding small increases can lead to. And research into savings groups effectiveness is still in its early stages.

There's also an idea which is similar in principle but got started in India called **Joint Liability Groups**.

Information sources:

https://en.wikipedia.org/wiki/Rotating_savings_and_credit_association

<https://www.puddle.com/story>

Joint Liability Groups



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Unlike Savings Groups Joint Liability Groups involve some form of **bank**. Generally via a **Microfinance Institution** or a **Field Agent**. These banks give **micro loans to individuals based on their communities willingness to guarantee for their creditworthiness**. People use their **social capital as a sort of loan collateral**. Just as in the case of savings groups, loans are taken out for building local businesses and making **long-term investments**.

For many years the very poor were assumed to be credit-unworthy, or at least not sufficiently profitable. When the Grameen Bank and later the Grameen Foundation started making microloans, they determined that this belief was false. The very poor are credit worthy.

The Grameen Foundation found that the **average credit write-off rate is 1%**. The average **overdue rate is between 3 and 6%**.

There were also concerns that providing debt to the poor would make them poorer. But microfinance can lift poor people out of poverty.

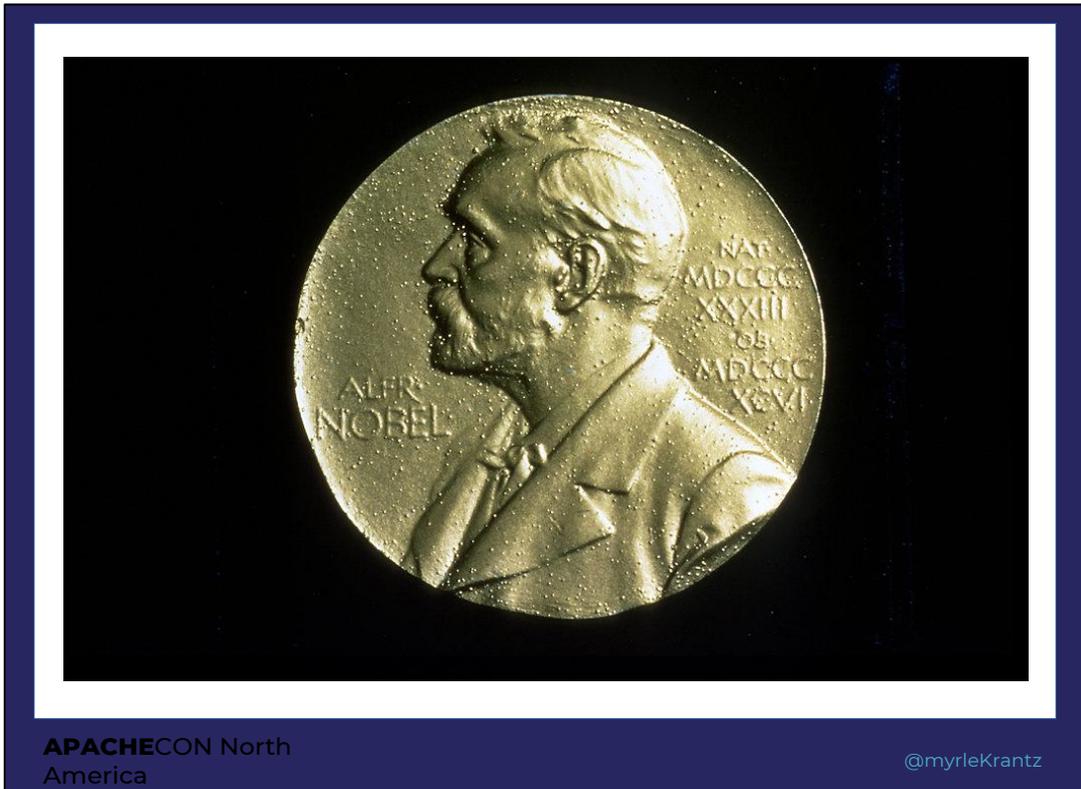
55% of Grameen customers who remained customers for 5 years or more exit poverty.

Image source: <https://www.flickr.com/photos/waterdotorg/14662192035>

Information sources:

http://www.grameenfoundation.org/sites/default/files/resources/Measuring-Impact-of-Microfinance_Nathanael_Goldberg.pdf

https://brage.bibsys.no/xmlui/bitstream/handle/11250/135982/Mersland_2011_Women.pdf



Because of the tremendous impact the Grameen Bank has had on the fight against poverty, the Grameen Bank and Mohammed Yunus received the Nobel Peace prize in 2006 for their groundbreaking work.

**But what does all this have to do
with open source?**

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So I've been going on here about a kind of community which shares a lot in common with our open source projects at Apache. In fact you could say they follow **the Apache Way**.

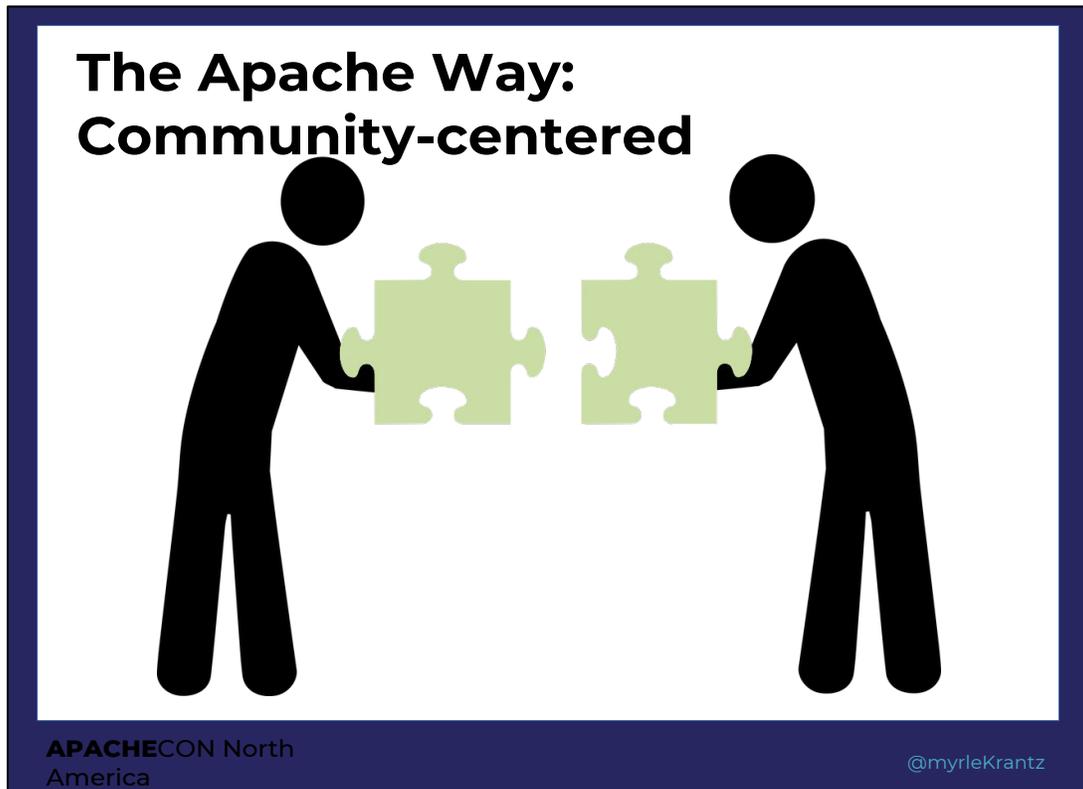
The Apache Way: Charitable



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Savings groups are **charitable**. If a member has an **emergency, zero-interest loans** are possible. And if a loan isn't repaid, the group absorbs those costs together.



Savings groups and joint liability groups are **community-centered**. Sometimes a field agent or other person comes to a community to **train** a community how to conduct a savings group. But the **by-laws** and **officers** of a savings group are selected by the community. *The community sets the direction and makes all the decisions.*

The Apache Way: Consensus-based



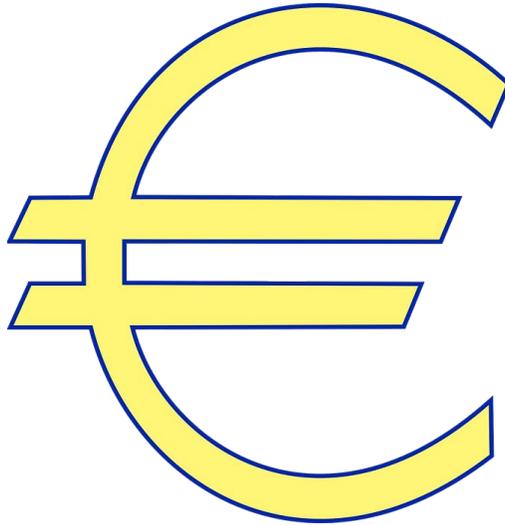
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Savings groups and joint liability groups allocate their resources based on **consensus**.

Image source: https://en.m.wikipedia.org/wiki/File:ROC_Judicial_Yuan_Seal.svg

The Apache Way: Meritocratic

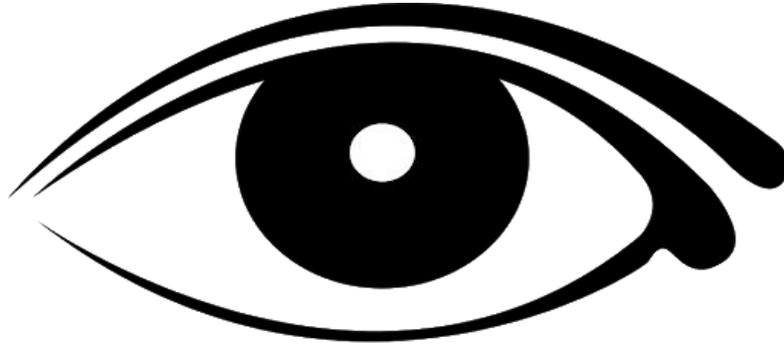


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Savings group and joint liability group members **accumulate merit**. Those who show they can be trusted with money can be elected to be their **groups' treasurer**. Borrower's **creditworthiness** is judged by the community as well.

The Apache Way: Transparent



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Savings groups and joint liability groups make their **decisions** and keep their **records openly**. Group money is only handled when the **whole group is present**, and anyone can look into the **ledger and other group records** at any time. *This transparency promotes the trust which is so crucial to collaboration.*

The Apache Way: Pragmatic



theapacheway.com

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Savings groups and joint liability groups are **pragmatically** oriented. These people don't have the time or resources to mess around. But that pragmatic problem-solving approach is also the reason these groups place so much value on the social bonds that hold the group together.

If you'd like to learn more about the way the Apache Way is lived in open source you can check out Shane's website on the Apache Way, or you can visit the Apache community track on Thursday in Viger B.

Are open source projects a form of savings group?



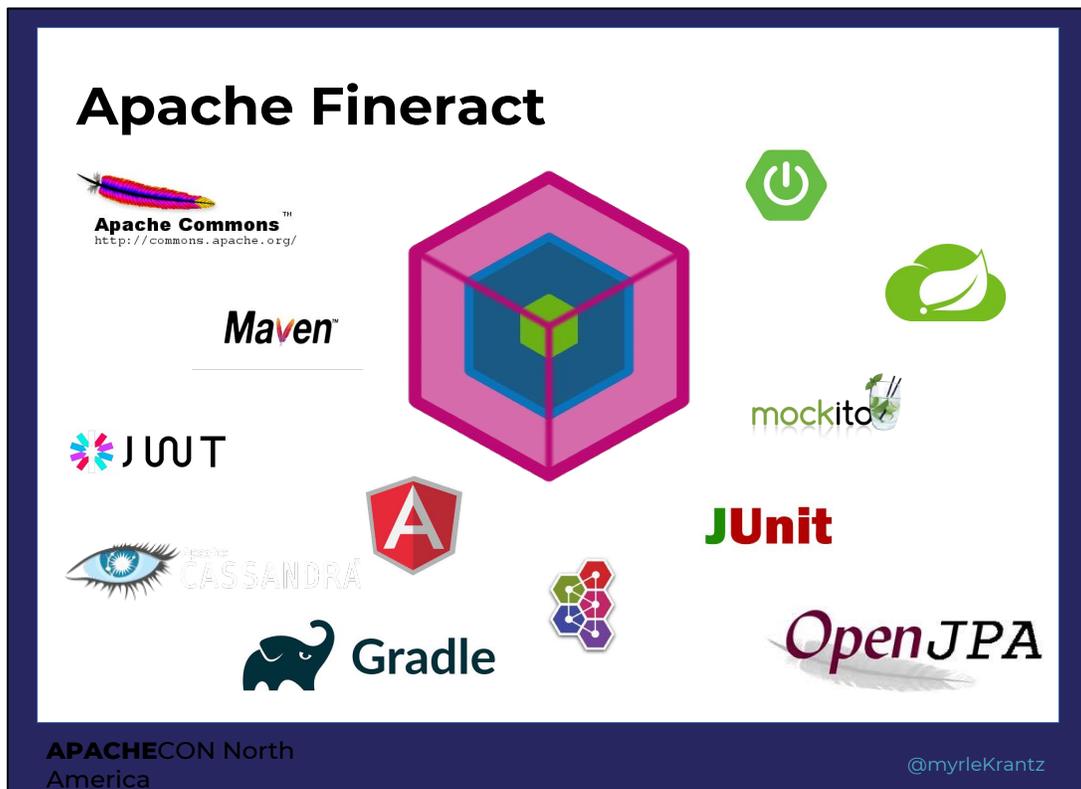
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But savings groups and joint liability groups **share more than just culture with open source communities**. Because software can be used to support these communities in the **computational and record keeping side** of this problem.

I'm working on a project called Apache Fineract which does just that.

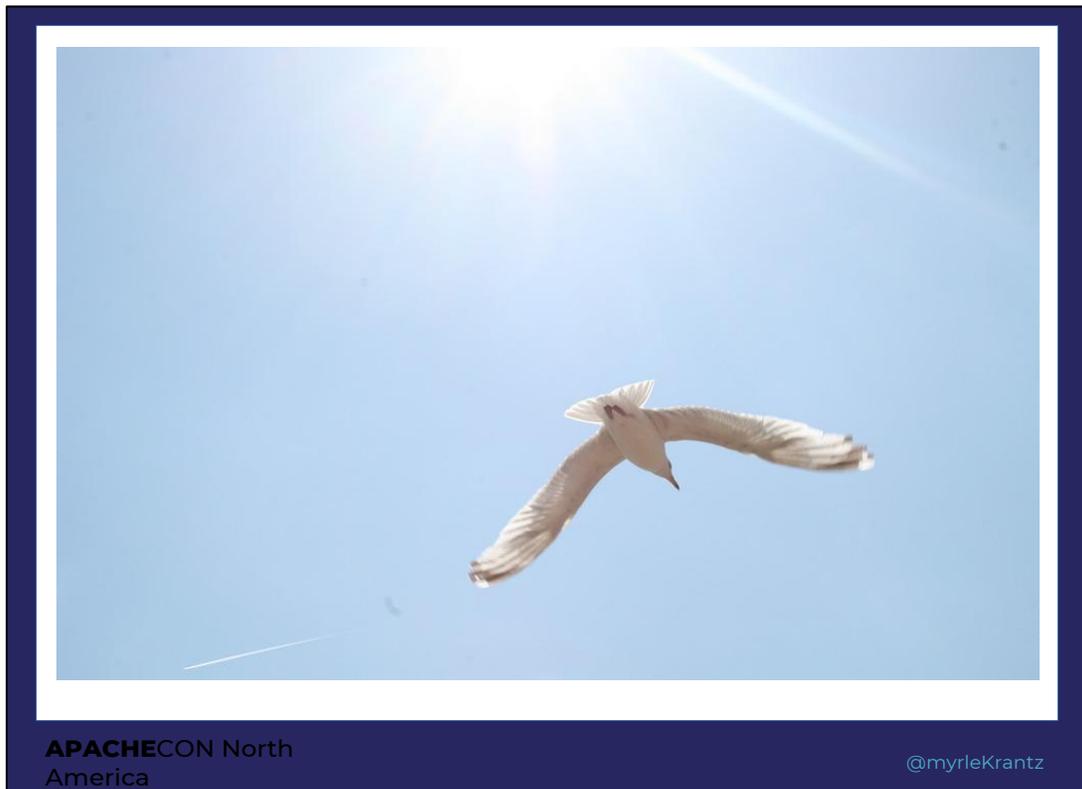
Image source: <https://www.flickr.com/photos/rbowen/27282543>



At Apache Fineract we are creating an **open source financial services platform**. Our mission is to be **the leverage point for defeating global poverty**. Our project was started under the name Mifos in 2004 at the Grameen Foundation to support Joint Liability Groups. We made our way to the Apache Software Foundation in 2015 to become a top level project in 2017. We are adding the pieces we need to support Savings Groups as well. We are doing so in a transparent, open source way.

If you want to learn more about Fineract and Mifos and Open Source in Fintech, there are several presentations today in Viger B. I strongly recommend them.

We're relying on **many other open source projects** to help us build this. *So if you have contributed in any way to any of these projects, then you are helping us fight global poverty. Remember innovation builds on innovation iteratively step-by-step.* You may think you're just scratching your own itch, but you're doing it in a generous, open manner. You may be doing good you didn't realize you were doing.



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You all are here at ApacheCon, because you are a part of a community. You have know-how, and you have problems. You have ideas, and you have puzzles. Please use this conference, in the talks and on the hallway track to share your problems and help each other.

The best communities are those which reach out and support other communities.

Image source: <https://www.maxpixel.net/Seagulls-Hope-Flight-Wings-Seagull-Blue-Sky-Sun-429052>

THANK YOU

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...and for that, say to all of you THANK YOU.

References

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