



Enabling Credit Access Through  
Distributed Intelligence

*February 2020*

# Our inspiration



*“ We were inspired to create Arboreum from our experiences at the UN World Food Programme.*

*We observed first-hand how lack of access to financing affected food traders and farmers, resulting in severe food crises. We wondered:*

*'How can we create affordable credit access for all?'*

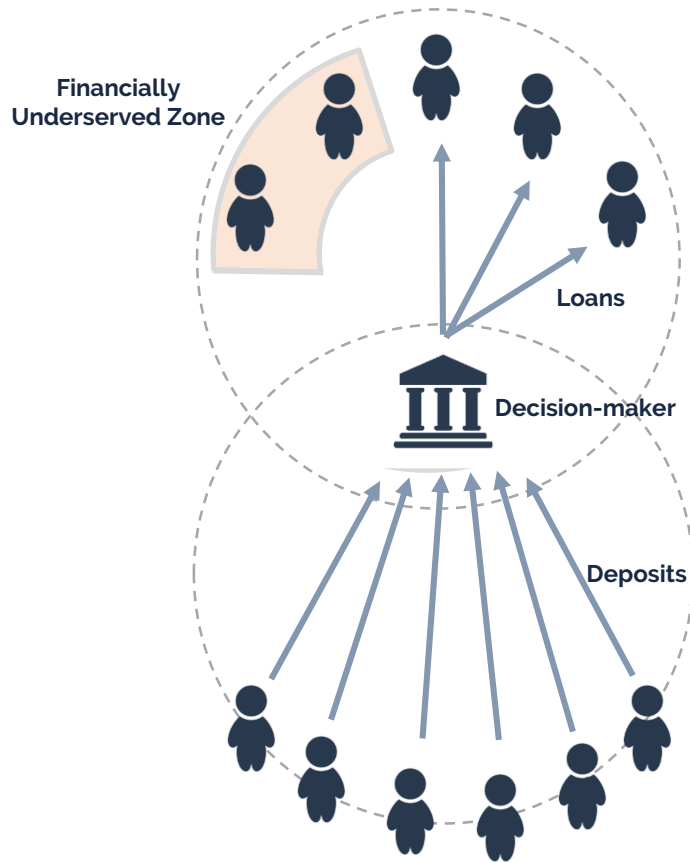
*”*

*- Gaurav Singhal & Mack Ramachandran,  
Arboreum Co-Founders*

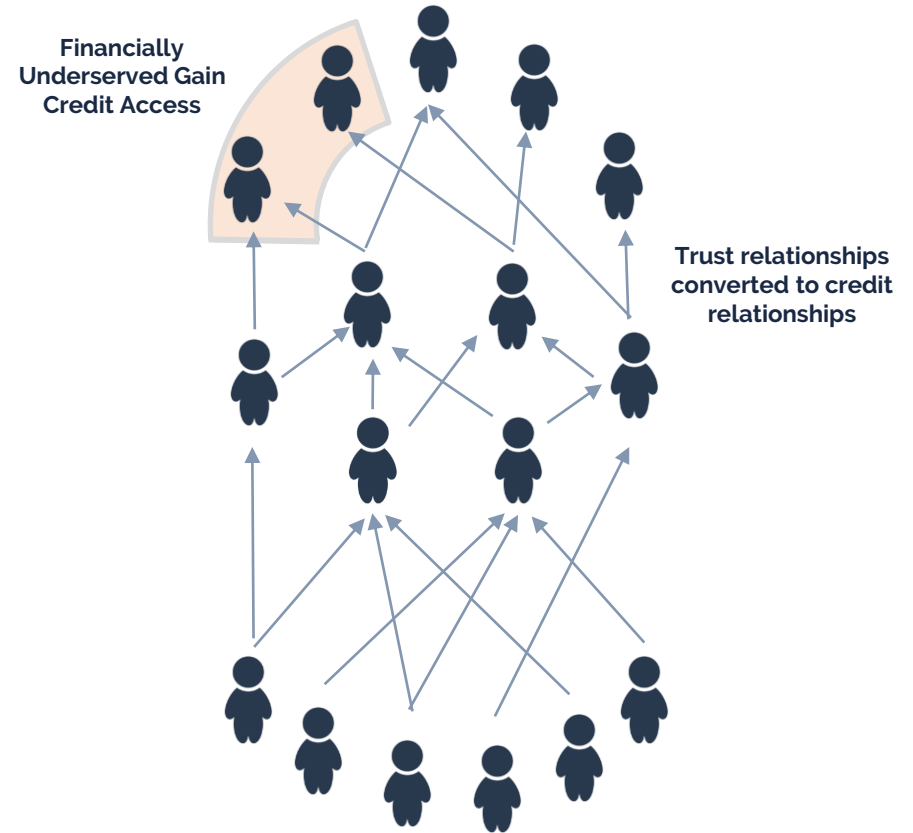
# Our Mission: Credit Access Via Decentralized Networks



**From:** A System Wholly Reliant On Credit Institutions Which Excludes ~2bn Individuals



**To:** Safe, Resilient Credit Networks Enabling Credit Access Based On Societal Trust



# Challenge



Our financial system is falling short on matching parties who need credit with those who possess under-utilized capital

**1.8 bn**

*World Bank*

adults globally rely on friends and family for credit; 1.7bn of these are in low-mid income countries

**US\$5 tr**

*IEC*

funding gap for Small and Medium Enterprises in developing countries

**while**

**US\$12 tr**

*Bloomberg*





is under-utilized, currently in negative yield bonds

Peer-to-peer (P2P) lending is an alternative for formal credit access, however it has fundamental challenges:





Lenders

## Too Much Risk!

-  Little Credit Info
-  Weak Enforcement
-  No Collateral
-  Adverse Selection

## Too Much Work!

-  Origination Fees
-  Convincing Lenders Is Effort-Intensive



Borrowers

# Solution

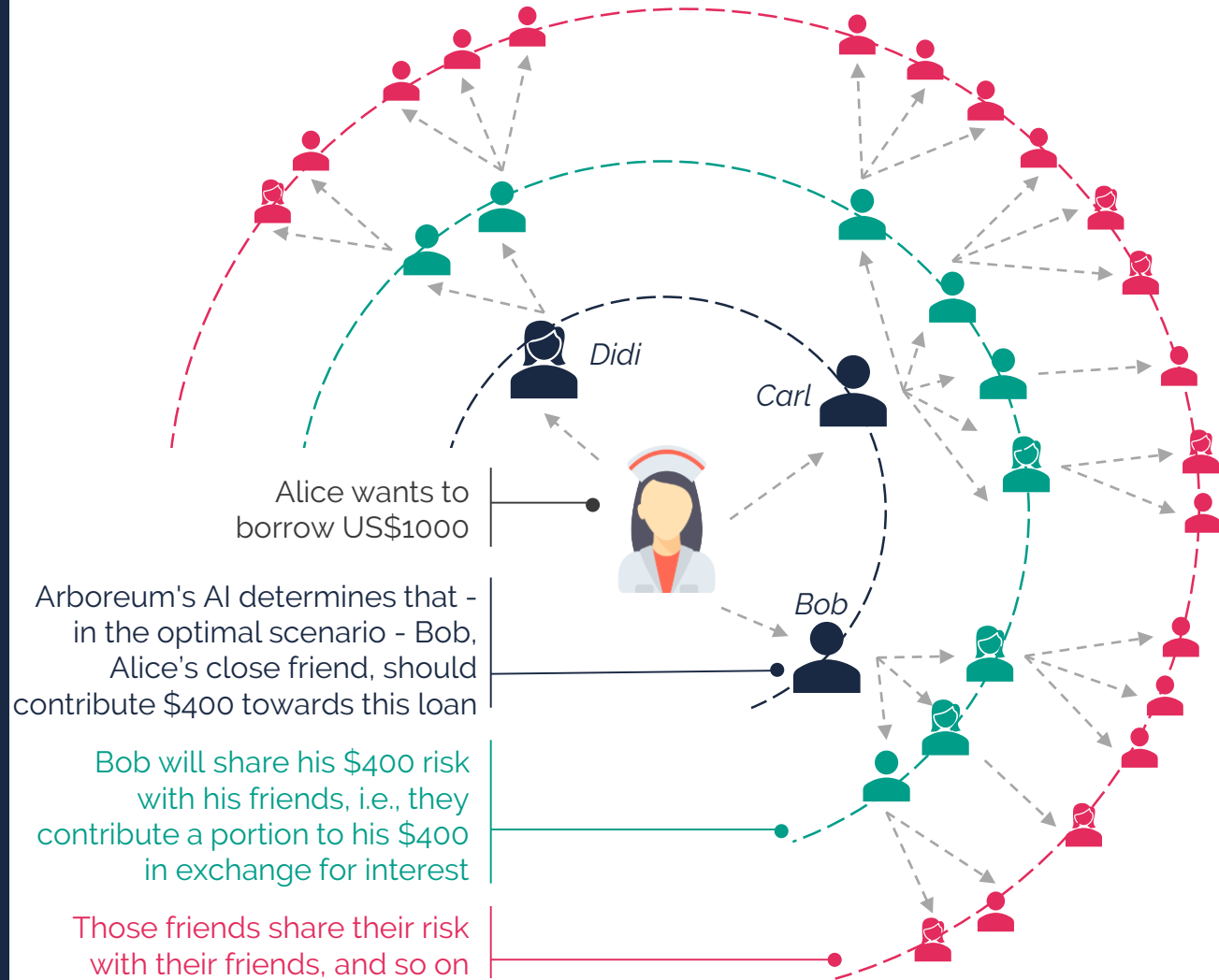
Arboreum is creating an intelligent peer to peer lending technology.

We make use of artificial intelligence and decentralized networks.

Our technology *significantly* reduces lender risk.

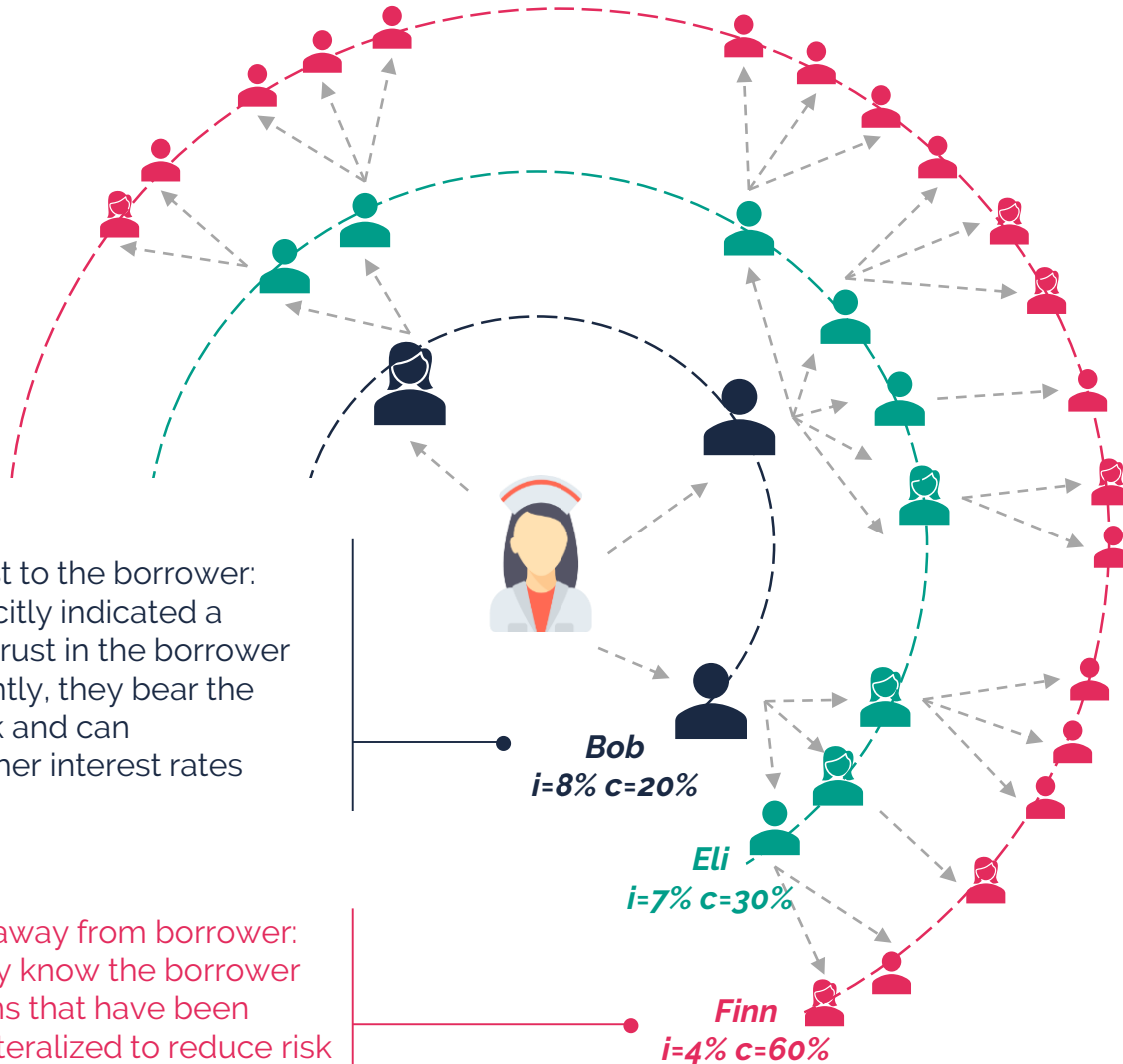
The result is increased credit access for all participants.

The premise of Arboreum's solution is risk sharing across a network of lenders to reduce any one individual's risk



The same logic repeats for Alice's other friends, Carl and Didi.  
**Risk is now shared by Alice's network**

# Risk Distribution Logic



Lenders closest to the borrower:

- Have explicitly indicated a degree of trust in the borrower
- Consequently, they bear the highest risk and can charge higher interest rates

Lenders farther away from borrower:

- Don't directly know the borrower
- Take on loans that have been further collateralized to reduce risk
- Receive lower interest rates than those close to borrower

## Funds Flow On The Basis Of Trust

Funds on an Arboreum network flow through chains of trust, i.e. from person to person who know each other and where one party (or both) has opted to extend trust to the other.

The trust others place in you is therefore an indicator of your creditworthiness.

Defaulting on a loan affects the credit worthiness of those who opted to trust you!

This is proven to be a powerful repayment enforcement mechanism.

Numbers shown are interest rate  $i$  and collateralization  $c$  as output of a simulation

# What Makes Arboreum Unique



**This is the world's first lending network that allows fractal lending, borrowing, and underwriting and is powered by artificial intelligence-enabled distributed ledger technology**

**Through our distributed intelligence platform we can optimize allocations based on the risk appetite of each user and provide near-optimal risk adjusted returns with almost no intermediaries, transaction costs, or overhead.**



Near zero transaction costs



High collaterals on loans



Best possible risk-adjusted returns



Strong enforcement mechanism



No user involvement needed after setup



Highly diversified portfolio of smaller loans



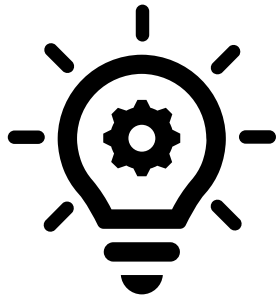
# Go-To-Market Approach



## Arboreum is a B2B2C Endeavour

**arboreum**

Arboreum is creating a back-end solution that enables *intelligent network lending*, which reduces the risk involved with traditional peer to peer lending.



### Local Partners

We allow -

- P2P-lending platforms
- Microlending platforms
- Mobile money providers
- Service companies with credit-based payment option – e.g. utilities, equipment provider, etc
- Blended finance providers

- to integrate Arboreum's services within their own lending platforms, leveraging their strengths to adapt to local context.



### Individual Or SME Users

Typical end customers are people or enterprises who struggle to access credit through financial institutions



*Smallholder farmers*



*Small-scale traders/  
shop owners*



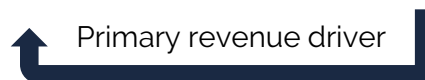
*Construction workers  
in contract jobs*



*Workers  
in the gig economy*

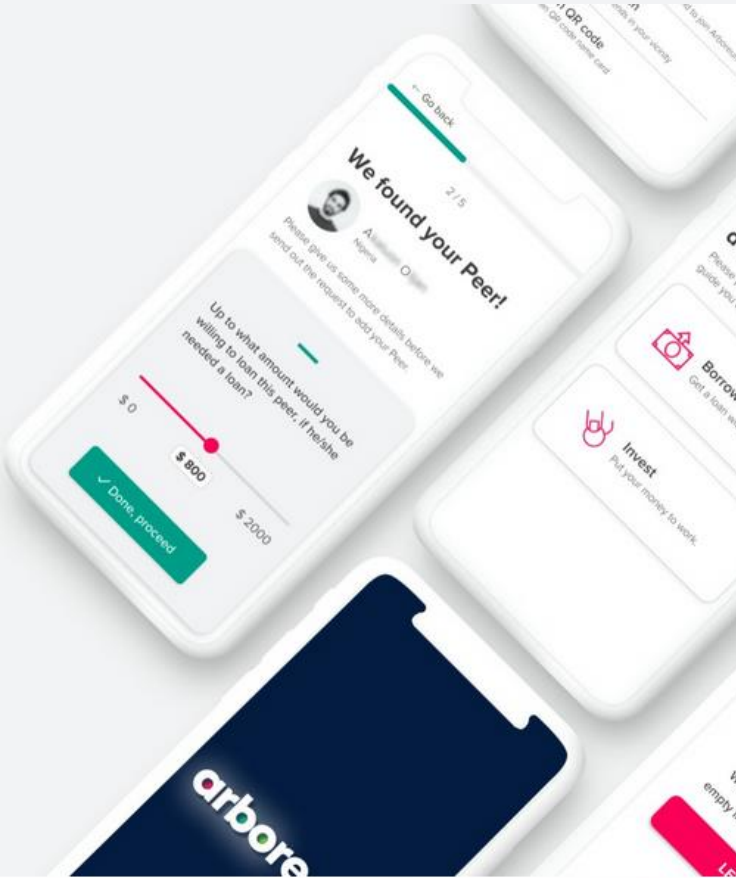


*Home based  
business owners*

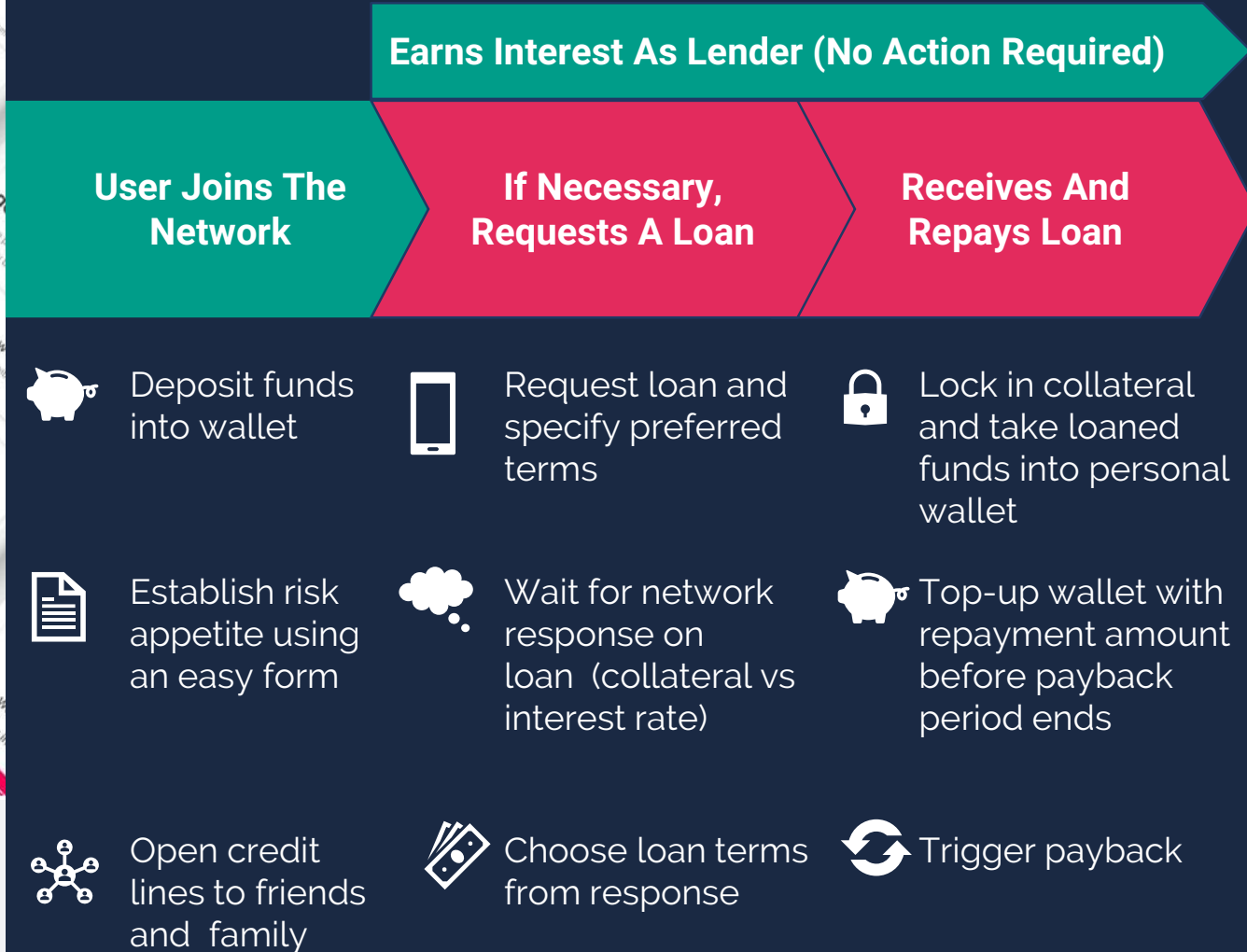




# How It Works: End User POV



While our partners will ultimately productize our solution, we have an initial view on how this will work



# Why Now: Innovative Lending Has Explosive Potential



[MarketWatch](#)

**\$800+ bn**

expected size of peer to peer lending market alone by 2025: **P2P lending is growing exponentially**

[ConsultancyEU](#)

**\$112 bn**

invested in FinTechs in 2018; a 100% rise over 2017: **growing interest in innovative solutions**

[GSMA](#)

**~1 billion**

people already using mobile money: **providing the essential, low-cost infrastructure for our solution**

# We Are Leading In A Newly Emerging Space



		Is Legal Vehicle A Loan?	Is Collateral Needed?	Is Creditworthiness Measured / Known?	Decentralized?	Was There An ICO?
<b>arboreum</b>		✓	✓	✓	✓	✗
is not like other P2P Lending		✓	✗	✗	✗	✗
is not Crowdfunding		✗	✗	✗	✗	✗
is not like other Distributed FinTechs		✓	✗	✓	✗	✗
is not like other Blockchain Based Lending Platforms		✓	✓	✗	✗	✓

# The Team



**Gaurav Singhal (CEO)** was formerly Lead Data Scientist for the UN World Food Program (WFP). He led a transformation of WFP's targeting and analysis capabilities, devising ways to provide near real-time information on food prices, food security, and scarcity of essentials using a combination of mobile-based surveys, call-detail records, and satellite imagery. At WFP, Gaurav was a recipient of two large grants, published several research papers and won multiple innovation awards. Prior to WFP he was a Junior Fellow at the William Davidson Institute (an economic development think tank), earned two masters degrees at the University of Michigan (Economics & Information Science), and a Machine Learning Engineer for Accenture Technology Labs.



**Dr. Laurence E. Day (CTO)** is a software engineer specializing in functional programming and financial risk. As a Developer and later Risk Quant at Standard Chartered Bank, Laurence built and maintained – an ETL tool for firmwide risk reporting, a simulated stress testing generator, a tool for simplified credit rating and analysis and an internal rapid application development platform. Laurence holds a degree in mathematics, a Ph.D. in theoretical computing from the University of Nottingham and is working towards a Masters in Financial Engineering. As a cryptocurrency enthusiast since 2012, he specializes in the implementation of smart contracts with safety guarantees made via type systems.



**Nupur Joshi (COO)** was a McKinsey & Co. consultant for 5 years, managing multi-stakeholder strategy & operational transformations across Europe, Middle-East, Africa, and the United States, with specific focus on Energy & Chemicals clients. Through a short stint at the UN World Food Programme, she became passionate about solving the challenges identified by the Sustainable Development Goals. Nupur holds an MBA from the Wharton School of Business, a BS in Civil Engineering from the India Institute of Technology – Mumbai and is the former Founder & CEO of Anja Muri, a women's shoe startup.



**Dr. Mack Ramachandran (Senior Advisor)** until recently was Chief of Supply Chain Planning and Retail Supply Chains for the UN World Food Program (WFP), prior to which he was Deputy Director of Procurement. Over a 22-year period, he has worked in senior management positions with the WFP in Sudan, Zimbabwe, DPR Korea, Cambodia, Thailand and Panama. He has done short term rapid food and cash emergency response missions in over 30 developing countries. He holds a Ph.D. in economics from Clark University, USA.

# Applications Go Far Beyond P2P Lending



Arboreum's core technology of combining distributed ledger technology with AI agents can be used to solve a whole new class of negotiation and optimization opportunities, beyond improving credit access

**Arboreum's Near-term focus: Improving credit access in different contexts, e.g.:**



**Agri-Entrepreneur Ecosystems**



**Small Business Associations**



**Retail Pharmacy Ecosystems**



**Cryptocurrency Lending**

## Long term expansion: Non-Finance Use Cases



**Creating decentralized energy grids**



**Building Smart IoT Device Networks**



**Trading Digital Securitized Assets**



**Harmonizing Value Chains**



**Negotiating Access to Personally-Identifiable Information**



**Smart, Self-Regulating Infrastructure (e.g. parking)**

Only one company in the non-finance space currently:  
**Fetch.ai**