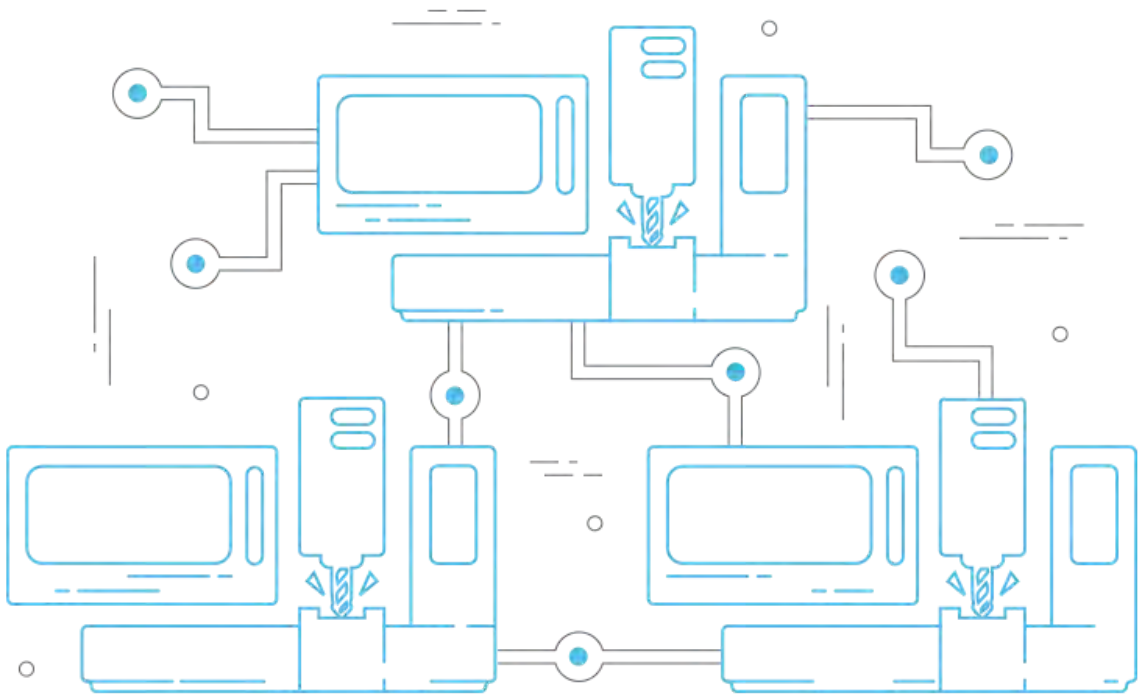


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# Decentralized Manufacturing

Creating the world's first peer-to-peer manufacturing supply chain and incentivized token system adapted for public and private blockchains

V16 - February 15, 2018



"The best way to predict the future is to create it."

- Peter Drucker, *Next Generation Manufacturing*

## Table of Contents

Regulatory Strategy	5
Abstract	5
1.0 Industrial Revolution 4.0: Where Manufacturing Technology Meets Global Demand	6
1.1 SyncFab’s Contribution to the Industrial Revolution 4.0	7
2.0 Braving the Burdens of Today’s Manufacturing Processes	11
2.1 High costs related to procurement brokers and agents when sourcing materials	12
2.2 High minimums for production because of time spent on finding the right manufacturing suppliers. Data regarding: performance track record, quality, and size of contracts between purchasers and manufacturers remain in silos.	12
2.3 Difficulty seeing manufacturer capacities and capabilities to achieve economies of scale within the supply chain	13
2.4 Difficulty tracking progress along the supply chain (when purchasers and manufacturers confront delays, or need to resolve problems in real-time throughout the production process)	14
2.5 Loss in labor-hours to inefficient procurement processes	14
2.6 Security concerns about protection of intellectual property	15
3.0 SyncFab’s Pathways to Decentralized Manufacturing	16
3.1 Re-shaping supply chain management through a public, direct peer-to-peer (P2P) manufacturing ecosystem	16
3.2 Incentivizing Change in Supply Chain Management	17
3.3 Smart Manufacturing Blockchain	18
3.4 Smart Contracts for Transparent Procurement Processing	20
3.5 Smart Business Model for Decentralized Supply Chain Management	20
4.0 MFG Utility Token: Incentivizing Blockchain Buy-in	22
4.1 Incentivizing the Manufacturer (Bidder)	22
4.2 Workflow for Purchaser Bids on Smart Manufacturing Blockchain	24
4.2.1 Tiered-Rewards for Bids	24

4.3 Incentivizing the Purchasers	25
4.4 Workflow and Distribution for Manufacturers	26
4.5 Transaction Fee	26
4.6 More Potential Uses for MFG Tokens (Future Builds)	27
4.7 MFG Economic Model	27
4.8 Loyalty Pool (Transaction Turnover)	27
5.0 Technical Overview	29
5.1 SyncFab Platform Web 2.0	29
5.2 Example of Parts Procurement Workflow Using SyncFab 2.0	30
5.3 SyncFab Platform Web 3.0 and the DApp (Decentralized Application): Smart Contracts and Smart Manufacturing Blockchain (Planned Build-Out)	32
5.3.1 Identity Contract	33
5.3.2 Purchase Order Contract	33
5.3.3 Payment Contract	33
5.3.4 Account Contracts	33
5.3.5 Insurance Contract	34
5.3.6 Production Contract	34
5.4 Example of Smart Contracts Procurement Transaction Workflow	34
5.5 More Streamlining of Procurement and Transaction within SyncFab Features	36
5.6 Example of Decentralized Procurement Transaction Workflow	37
5.7 Premium Features Planned for Future SyncFab DApp (Future Build-Outs)	38
5.7.1 Application Program Interface (API)	38
5.7.2 Machine Data Feed	38
5.7.3 Public Data Feed	39
5.7.4 Connection to Logistics Providers	39
6.0 Competitive Analysis	40
7.0 Roadmap	42
7.1 Milestones	42

7.2 Funding Roadmap	44
8.0 MFG Token Distribution Launch	45
8.1 Token Distribution Event	45
8.2 Bonus Incentives	46
8.2.1 Industrial Revolutionary Private Presale	46
8.2.2 Hardware Innovators Exclusive Presale	46
8.2.3 Public Presale	46
8.2.4 Main Public Sale	46
8.3 Token Distribution Plan	47
8.4 Strategic Partnership Adoption Pool	49
8.5 Funding Breakdown	49
8.6 MFG Token Distribution Smart Contract	51
8.7 Reference: Ethereum Smart Contract Standard	51
9.0 Risk Factors	52
10.0 Team	54
10.1 Smart MFG Tech LTD	54
10.2 SyncFab Team	55
10.3 Advisory Board	59
11.0 Changelog - White Paper Versions & Edits	64

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## Regulatory Strategy

The team behind the MFG is currently working with legal counsel to ensure that the MFG Token Distribution Event is fully compliant with all applicable federal and state securities laws.

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## Abstract

**Through public-private partnerships with manufacturers at the local, regional and national levels, SyncFab's Smart Manufacturing Blockchain will advance efforts to decentralize manufacturing via a public, peer-to-peer ecosystem, powered by the MFG Utility Token.**

This document examines current burdens faced by small to mid-sized enterprises working within the manufacturing supply chain, and provides a comprehensive set of solutions to engage isolated and inaccessible manufacturers, widening their inter-industry networks and encouraging collaboration to meet global production demands.

By collecting quality data about today's opaque manufacturing supply chain and making it public, SyncFab's platform aims to make the supply chain more transparent, efficient, and sustainable.

The paper highlights the development of SyncFab's decentralized application, the MFG Utility Token which incentivizes streamlining of bidding and procurement processes, and details the upcoming MFG Utility Token Distribution Event (token sale).

Blockchain and smart contracts serve as the way forward into the Industrial Revolution 4.0, creating economies of scale and potentially aggregating supply. Decentralized manufacturing will make the industry more accessible, secure and economically sound for more participants in a direct peer-to-peer (P2P) ecosystem.

***This document contains forward-looking statements, subject to risks and uncertainties that could cause actual results to differ materially.***

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## **1.0 Industrial Revolution 4.0: Where Manufacturing Technology Meets Global Demand**

The United States and China account for more than a third of the world's gross domestic product (GDP), and their combined GDP dominance is expected to continue into 2050, especially if their industries make the transition to new manufacturing processes. Manufacturing and trade gains signal growth for global economies as a whole, according to the International Monetary Fund. According to a study performed by PWC and shared by the World Economic Forum in 2016 - Companies from all sectors across the globe are embracing "Industry 4.0", or business in the digital age. About one third of 2,000 companies surveyed in 26 countries already rate their level of digitisation as high, and this value is expected to rise on average from 33% to 72% by 2020. In South Africa, the current level of digitisation and integration is expected to rise from 27% to 64% by 2020.

Forging into the Industrial Revolution 4.0, U.S. manufacturing companies (95% of which are independent, small- to medium-sized shops) must solve issues that currently hinder production, and find ways to aggregate their capacity to handle global demand more efficiently.

Significant advances in robotics, sensors, big data, artificial intelligence, and augmented reality have connected the digital and physical realms of manufacturing through robust and reliable networks.

With these technologies, integrated production and purchasing processes operating seamlessly along the supply chain would save time and resources; improve efficiency; and increase scalability and security.

Demand for services that support this potential global exchange of data, and its transaction of both data and contracts between businesses fuel the expansion of the Internet of Things (IoT) and the Industrial Internet of Things (IIoT).

As an industry leader said:

“The Internet of Things has already set in motion the idea of a fourth industrial revolution—a new wave of technological changes that will decentralize production control and trigger a paradigm shift in manufacturing.”<sup>1</sup>

## 1.1 SyncFab's Contribution to the Industrial Revolution 4.0

Silicon Valley-based SyncFab aims to harness technologies and connect with the IoT and the IIoT to provide purchasers and manufacturers with high quality data that would streamline processes along the supply chain.

Connecting purchasers with manufacturers in the IIoT through its business-to-business (B2B) SaaS ecosystem, SyncFab creates a public, peer-to-peer ecosystem whereby purchasers can find companies capable of advanced machining of on-demand precision parts production and engage participants passionate about improving efficiencies in the supply chain. While the government built the Internet (ARPANET), SyncFab believes the IIoT will be built collaboratively, through public-private partnerships (of which SyncFab has formed). Such cross-sector partnerships will collect and combine best practices and share wisdom from multiple perspectives.

Inventors, innovators, and designers enter an interactive, cloud-based portal where a growing network of certified machine shops and advanced

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<sup>1</sup> "The Internet of Things and the future of manufacturing | McKinsey ...."  
<http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/the-internet-of-things-and-the-future-of-manufacturing>. Accessed 3 Sep. 2017.

manufacturing facilities are mapped by several criteria, such as, who is local and clean.<sup>2</sup>

With SyncFab's curated and adaptive services, companies attempting to shift their manufacturing processes to high-tech smart factories, and those exploring ways to optimize their "cost-to-serve" process (lowering overhead costs per customer account) can find solutions such as sourcing, tracking and organizing precision parts production and improved procurement systems.

A recent report found that U.S. companies spent an estimated \$20 billion in 2012, and are forecasted to spend approximately \$500 billion by 2020 on smart technologies.<sup>3</sup>

In the 2016 Forbes' Manufacturer Outlook, 32% of companies surveyed said their corporate strategy largely relies on integrated technologies via the IIoT. See Chart: Putting Technology in the Supply Chain.<sup>4</sup>

These forward-looking companies are the customer base for SyncFab's services.

Essential to SyncFab's Smart Manufacturing Blockchain will be the use of the MFG Utility Token, a first of its kind to incentivize community users to embrace blockchain technology. Core to the blockchain's adoption is a shared sense of trust between purchasers, developers and manufacturers built on a public and more transparent supply chain system, where small to medium-sized manufacturers can access a blockchain and be a supplier in spaces where they are currently obscured.

For example, to compensate for work done on RFQs creates more responses to the just-in-time needs of supply chain purchasers and buyers. Purchase

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<sup>2</sup> "ISO 50001 Energy Management Standard | Department of Energy." <https://energy.gov/ISO50001>. Accessed 3 Sep. 2017.

<sup>3</sup> "Defining And Sizing The Industrial Internet - Wikibon." 27 Jun. 2013, [http://wikibon.org/wiki/v/Defining\\_and\\_Sizing\\_the\\_Industrial\\_Internet](http://wikibon.org/wiki/v/Defining_and_Sizing_the_Industrial_Internet). Accessed 10 Sep. 2017.

<sup>4</sup> "Global Manufacturing Outlook - KPMG." <https://home.kpmg.com/content/dam/kpmg/pdf/2016/05/global-manufacturing-outlook-competing-for-growth.pdf>. Accessed 3 Sep. 2017.



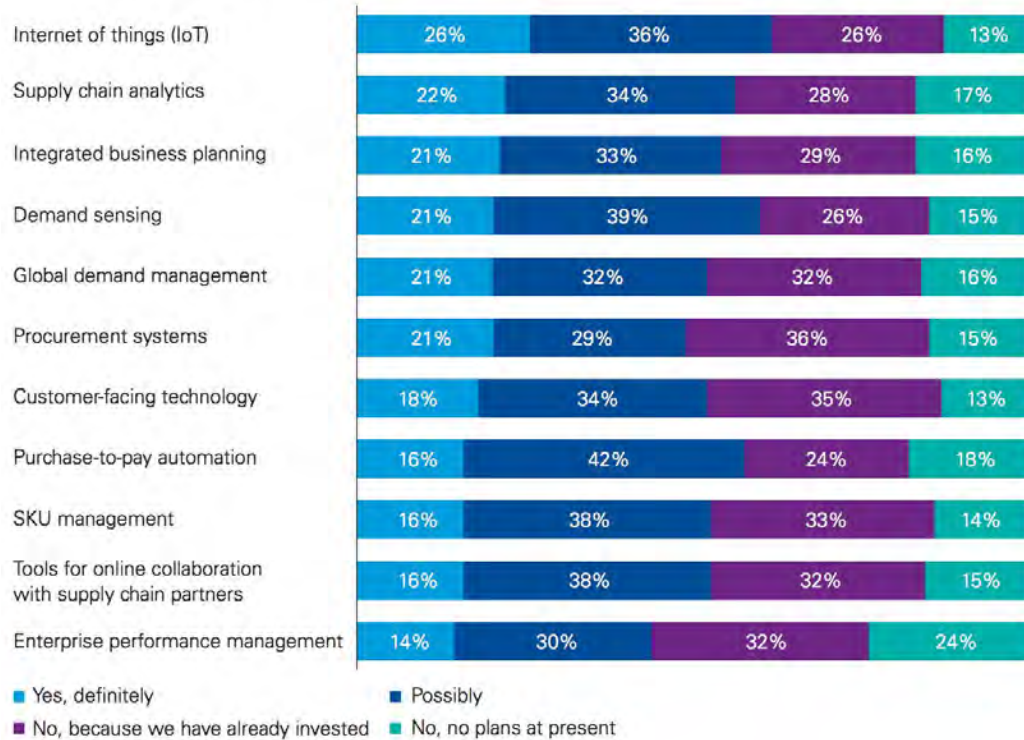
managers cut through trust issues and delays with blockchain's inherent transparency into cost and quality control.

With the MFG Token's launch, SyncFab serves as an early adopter, protocol developer and integrator of Smart Contracts into the manufacturing supply chain blockchain. The MFG Token will be utilized firstly on SyncFab, secondly on SyncFab's soon to be developed Smart Manufacturing Smart Contract Ethereum Blockchain and ultimately adopted by new and emerging partner manufacturing supply chain blockchains using SyncFab's developed blockchain smart contract protocols or their own with the industry's first MFG Token Smart Contract-based incentive mechanism.

The MFG Token will be integrated on the SyncFab platform which has a strong network launchpad built out from public-private partnerships. Though it's designed to serve a public, peer-to-peer Smart Manufacturing Blockchain, it's utility is designed to be complementary to third party standalone solutions, such as those future supply chain blockchains which are more inward-looking, private enterprise based supply chain blockchains.

## Putting technology to work in the supply chain

Do you have plans to invest in any of the following systems or technologies in the next 12 to 24 months?



Note: Percentages may not add up to 100 percent due to rounding.  
 Source: Global Manufacturing Outlook, Forbes, 2016

Figure 1: Putting Technology to work in the supply chain.<sup>5</sup>

The shift in business strategy within the revolution is driven by companies and manufacturers alike to streamline an efficient procurement and production process to reduce overhead costs and increase revenue.

<sup>5</sup> "Global Manufacturing Outlook - KPMG." <https://home.kpmg.com/content/dam/kpmg/pdf/2016/05/global-manufacturing-outlook-competing-for-growth.pdf>. Accessed 3 Sep. 2017.

## 2.0 Braving the Burdens of Today's Manufacturing Processes

Industrial manufacturing in the U.S. steadily rose, with growth forecasted at 5% compounded annually into 2018.<sup>6</sup> In 2014, an estimated \$1.4 trillion in exported goods were made in the United States.<sup>7</sup>

### Manufacturing Production Growth Stabilizes

The output of the U.S. manufacturing sector is forecast to grow at an annual compounded rate of 5 percent between 2014 and 2018. Data Published: February 2014



Figure 2: Manufacturing Production Growth Projection

Yet major manufacturing companies still face inefficiencies that drain resources and time, and contribute to the overall slowness and costliness within their manufacturing process.

U.S. companies investing heavily in IIoT technologies stand to gain yields from global demand as high as \$10-\$15 trillion by 2030, according to an Accenture Technology report.<sup>8</sup> Investments in such technology are limited to large conglomerates, while the vast majority of independent, small- to medium-sized companies still face well-known burdens within the manufacturing process, such as:

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<sup>6</sup> "Manufacturing & Distribution Industry Forecast | Sikich."

<http://www.sikich.com/find-solution/industries/manufacturing-distribution/manufacturing-forecast>. Accessed 3 Sep. 2017.

<sup>7</sup> "Industry 4.0 and manufacturing ecosystems: Exploring the world of." 22 Feb. 2016,

<https://dupress.deloitte.com/dup-us-en/focus/industry-4-0/manufacturing-ecosystems-exploring-world-connected-enterprises.html>. Accessed 10 Sep. 2017.

<sup>8</sup> "Defining And Sizing The Industrial Internet - Wikibon." 27 Jun. 2013,

[http://wikibon.org/wiki/v/Defining\\_and\\_Sizing\\_the\\_Industrial\\_Internet](http://wikibon.org/wiki/v/Defining_and_Sizing_the_Industrial_Internet). Accessed 10 Sep. 2017.

## 2.1 High costs related to procurement brokers and agents when sourcing materials

To source parts, companies hire an internal procurement manager (or rely on externally-contracted brokers or agents) to search for and order parts. Companies compensate for procurement salaries and commission bonuses, paying brokers “finder’s fees” or taking a markup fee on top of the manufacturer’s quoted price – which affect overhead costs that lower overall revenue. SyncFab’s Procurement Platform 2.0 supplants the need for brokers, or cuts time spent by Supply Chain Purchase Account Managers on putting out bids. SyncFab’s all-in-one platform matches purchasers’ RFQs to potential manufacturers. Through Smart Contracts, Sync Fab’s 3.0 platform will match up the requirements to supplier capabilities intuitively and unlock contract values as conditions are fulfilled.

## 2.2 High minimums for production because of time spent on finding the right manufacturing suppliers. Data regarding: performance track record, quality, and size of contracts between purchasers and manufacturers remain in silos.

In a survey conducted by Deltabid, 31% out of 500 purchasers said finding the right supplier remains a major obstacle.<sup>9</sup> A contributing factor is the risk manufacturers face when dealing with unknown and non-transparent purchasers’ profiles and their buying histories. Manufacturers want to ensure their orders are paid on time while purchasers are confronted with delays when unsure if a manufacturer can produce their product within specification needs. Without a broker’s reputation and network, purchasers spend hours on the phone or search through multiple directories. Sometimes, purchasers lack the sufficient technical understanding of the product to specify their search requirements, leading to dead-end outreach.<sup>10</sup> On the purchasers’ side, they want proof of experience and expertise from manufacturers to safeguard the

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<sup>9</sup> "Top 10 Biggest Procurement Challenges [Infographic] - DeltaBid Blog." 19 Apr. 2016, <http://blog.deltabid.com/top-10-biggest-procurement-challenges>. Accessed 3 Sep. 2017.

<sup>10</sup> "Managing Suppliers Up to Speed - Harvard Business Review." <https://hbr.org/1989/07/managing-suppliers-up-to-speed>. Accessed 3 Sep. 2017.

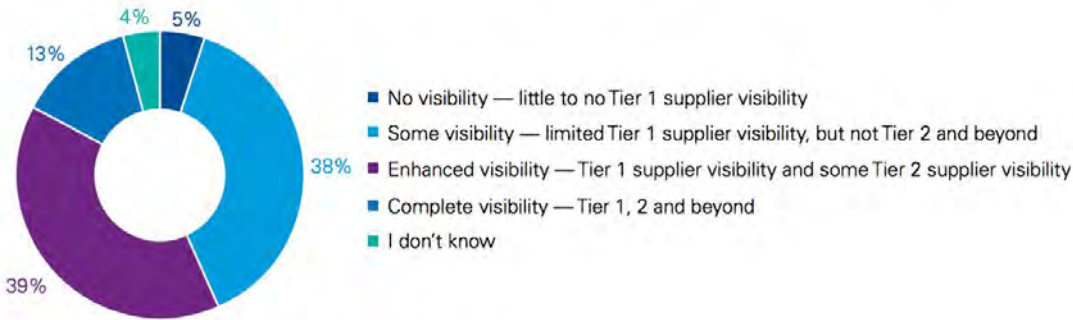
integrity and quality of their product. Negotiating the complexity of these needs results in high minimums, a required minimum number of parts produced. SyncFab's mapping feature allows for local sourcing, which lowers minimums, especially when procured through trusted channels. By aggregating demand and creating economies of scale, SyncFab's access to manufacturing capacities creates access to markets in ways that would revolutionize how small to medium-sized manufacturing businesses meet supply chain demand.

### 2.3 Difficulty seeing manufacturer capacities and capabilities to achieve economies of scale within the supply chain

Purchasers and manufacturers both suffer from a lack of data and high-quality information into the sourcing and production process of their supply chain. An astounding 39% of companies and individuals surveyed (See graph on Figure 2: "Lacking Visibility") state they aren't clear about the supply and capacity of their suppliers and logistic partners; 38% cite "some visibility," accounting for a total of 77% of those surveyed. With SyncFab products, purchasers and manufacturers can manage cross-functionality and look deeper into the end-to-end supply chain, enabling better real-time decisions to optimize and streamline their procurement and supply chain process.

#### Lacking visibility

How much visibility of supply and capacity information do you have across your suppliers and logistics partners?



Note: Percentages may not add up to 100 percent due to rounding.  
Source: Global Manufacturing Outlook, Forbes, 2016

Figure 3: Lacking Visibility Into Supply and Capacity<sup>11</sup>

Visibility into the supply chain would allow purchasers and manufacturers to manage cross-functionality and look deeper into the end-to-end supply chain, enabling better real-time decisions to optimize and streamline their procurement and supply chain process.

## 2.4 Difficulty tracking progress along the supply chain (when purchasers and manufacturers confront delays, or need to resolve problems in real-time throughout the production process)

Manufacturing is driven by details and specifications, making clear and precise communication vital between purchasers, manufacturers, suppliers and logistical partners along the supply chain. Miscommunication can lead to delays within the production process, drastically increasing costs when mistakes happen. A delay in communicating changes in design requirements between the procurement department and engineering department could increase the design to production time. Purchasers and manufacturers often forget to regularly communicate updates in production or material requirements, increasing lead time and increasing product cost or affecting product quality. SyncFab's automatic updates on production progress and tracking will be an evolving feature, which would replace the need for constant phone calls or status request updates between purchasers and manufacturers as automation would streamline communications.

## 2.5 Loss in labor-hours to inefficient procurement processes

According to research by The Topline Strategy Group, inefficient procurement processes account for a yearly loss of \$1.5 billion in revenue among North American businesses.<sup>12</sup> Most companies currently have little to no procurement

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<sup>11</sup> "Global Manufacturing Outlook - KPMG."

<https://home.kpmg.com/content/dam/kpmg/pdf/2016/05/global-manufacturing-outlook-competing-for-growth.pdf>. Accessed 3 Sep. 2017.

<sup>12</sup> "PLANNING FOR INNOVATION - U.S.-China Economic and Security ..." 18 Sep. 2015,

<https://www.uscc.gov/sites/default/files/Research/Planning%20for%20Innovation-Understanding%20China%27s%20Plans%20for%20Tech%20Energy%20Industrial%20and%20Defense%20Development072816.pdf>. Accessed 3 Sep. 2017.

software, while larger companies mainly use in-house, company-specific software that can be slow and difficult to use across the supply chain. The resources required to manage and maintain such software account for \$32 million in labor-hours, all of which can be reallocated to finding more cost-saving technology and providing hands-on value to existing and prospective customers. SyncFab's frontend and backend software updates in real time, a benefit that reduces the financial burden of maintaining locally-hosted software. Purchasers can share files, improve communications, streamline procurement and manage parts inventory helping them hone in on creating quality products.

## 2.6 Security concerns about protection of intellectual property

Security concerns over intellectual property remain a scrutinized topic within the industry. In "Cyber Risk in Advanced Manufacturing," a study done by Deloitte, only 52% of executives surveyed felt confident or extremely confident their organization's assets were protected from external threats. Some 48% felt somewhat confident or less confident. Of all those surveyed, 36% cited protection of intellectual property as a top concern.<sup>13</sup> How can new technologies create some added security for manufacturers and purchasers who want to protect their ideas? Remaining competitive requires deep financial and time commitments, a luxury reserved for bigger, more established companies who can afford cybersecurity staff. For secured transactions, SyncFab's platform stores intellectual property, forms, and documents in Amazon Web Services (AWS) servers backed by top security protocols such as SSO, firewall and DDoS protection. All RFQs, IP, and transactional history are easily accessed in real time to help users compare pricing or past requirements to speed up the procurement process.

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<sup>13</sup> "Cyber risk in advanced manufacturing | Deloitte US." <https://www2.deloitte.com/us/en/pages/manufacturing/articles/cyber-risk-in-advanced-manufacturing.html>. Accessed 3 Sep. 2017.

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## 3.0 SyncFab's Pathways to Decentralized Manufacturing

Given the burdens of current manufacturing systems which perpetuate lack of transparency and inaccessibility for a multitude of stakeholders within the supply chain, SyncFab's solutions attempt to solve complex problems with five key innovations.

### 3.1 Re-shaping supply chain management through a public, direct peer-to-peer (P2P) manufacturing ecosystem

Traditional manufacturing economies of scale perpetuate a lack of transparency and inaccessibility, reserving privileged access to centralized assets controllers.

The largest purchasers, often conglomerates, monopolize access. Brokers control networks and procurement by keeping information in silos, complicating the entire supply chain management process.

A public, peer-to-peer (P2P) ecosystem, paves the way to an entirely decentralized supply chain management environment. Innovators, suppliers, and manufacturers regain control over the success, quality, and delivery of their product.

With Smart Contracts and the Smart Manufacturing Blockchain, decentralizing the manufacturing supply chain economies of scale, makes the entire system more accessible, transparent and profitable to all participants, and replaces a predominantly exclusive business-to-business model. SyncFab's public-private partnerships, and expansion of local ecosystems builds trust among stakeholders in the supply chain based on shared knowledge of track-record performance, capabilities and capacities in ways that would transform the manufacturing industry.



Agreements with the City of San Leandro<sup>14</sup> and the Clean Energy Smart Manufacturing Innovation Institute (jointly funded by the Department of Energy and Department of Commerce as directed by the White House)<sup>15</sup>, give SyncFab confidential access to high quality industry manufacturing process data, which will be key to future process optimization using artificial intelligence applications of the future.

Partnerships with Regional Manufacturing Centers will allow SyncFab to track under-utilized production assets.<sup>16</sup> Through this work and on-going new registrations, SyncFab continues to catalogue machining process capabilities and capacities within multiple jurisdictions and plans to expand this data collection on a regional, national, even international level.<sup>17</sup> With an expanded network of certified manufacturers online, SyncFab's database offers purchasers' a wide selection to meet regional demand.

### 3.2 Incentivizing Change in Supply Chain Management

The MFG Utility Token plays a vital role of the SyncFab platform in that it creates an online value sharing system within the decentralized manufacturing ecosystem.

Built on the Ethereum ERC-20 standard, and sold to existing and new SyncFab users, the MFG token will be used by early adopters to pay for order quotes. After the future build, users will be able to unlock and update Smart Contracts and pay transaction fees.

With the MFG token, in a decentralized system, users dictate the ecosystem's economy of scale by incentivizing and rewarding its community users.

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<sup>14</sup> "SYNCFAB Selected by Cities of San Francisco & San Leandro to STIR ...." 20 Jul. 2016, <http://www.releasewire.com/press-releases/syncfab-selected-by-cities-of-san-francisco-san-leandro-to-stir-program-707463.htm>. Accessed 19 Sep. 2017.

<sup>15</sup> "FACT SHEET: President Obama Announces Winner of New Smart ...." <https://obamawhitehouse.archives.gov/the-press-office/2016/06/20/fact-sheet-president-obama-announces-winner-new-smart-manufacturing>. Accessed 19 Sep. 2017.

<sup>16</sup> "CESMII." <https://www.cesmii.org/>. Accessed 3 Sep. 2017.

<sup>17</sup> "14 Startups Chosen for San Francisco Regional 'Startup in Residence ...." 19 Apr. 2016, <http://www.govtech.com/13-Startups-Chosen-for-San-Francisco-Regional-Startup-in-Residence-Program.html>. Accessed 19 Sep. 2017.

In the current SyncFab Web 2.0 platform, MFG tokens will incentivize manufacturers for traditionally uncompensated time for putting together quotes and make manufacturers more responsive to time-sensitive production deadlines. Enticed by a reward for timely quotes, manufacturers are expected to respond more quickly. With such token incentives, the pool of manufacturers a purchaser can choose from might increase and diversify.

SyncFab's public-private partnerships, investment into the platform and the MFG Utility Token are built to solve current supply chain trust dilemmas, where purchasers currently don't know enough about their suppliers to take the risk of placing an order. Many will turn to Smart Manufacturing Blockchain because of its openness to new suppliers, backed by an immutable distributed transaction ledger with cryptographic proofs of the integrity and access to transaction tokens which may well encourage manufacturers to hire a supplier in minutes, whereas previously they could never do so without face-to-face meetings.

### 3.3 Smart Manufacturing Blockchain

Blockchain applications within the IIoT are fast-emerging as the new standard in many sectors, including finance, real estate, food industries and manufacturing.

Blockchain's function as a digital ledger of codes containing programmed data and encryption, make records nearly incorruptible within its distribution networks.

As a shared database, where information is stored, verified and agreed upon simultaneously by the millions of computers within its hosted consensus, blockchains are considered extremely difficult to hack, and create an ideal ecosystem for manufacturing companies concerned with security and intellectual property.

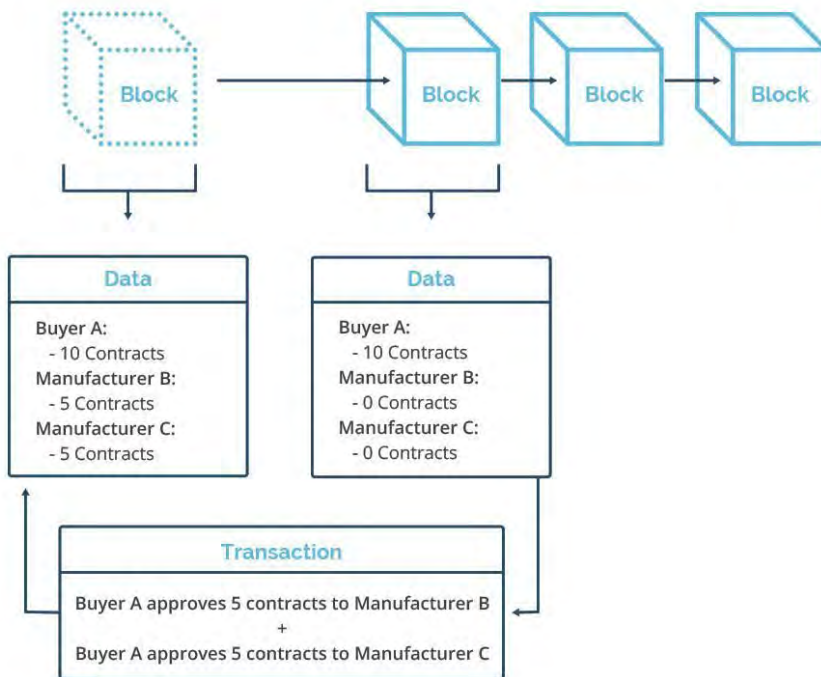


Figure 4: Transactions and Recording Contracts Between Blocks on Blockchain<sup>18</sup>

SyncFab's Smart Manufacturing Blockchain Smart Contract Protocol will utilize blockchain's system of records to match purchasers with their most ideal manufacturers.

Comparing various manufacturer's order histories, machine capacities, and previous product designs to a purchaser's project criteria, the Smart Manufacturing Blockchain will directly link purchasers to manufacturer, expediting procurement and production without brokers or banks.

Completed purchase orders recorded onto the Smart Manufacturing Blockchain will help build a user's service history, providing access to information to others in the network about performance, reliability, and on-time delivery. This online history will afford purchasers and manufacturers confidence that orders placed can and will be fulfilled.

<sup>18</sup> "Blockchain - Wikipedia." <https://en.wikipedia.org/wiki/Blockchain>. Accessed 3 Sep. 2017.

By eliminating intermediaries such as brokers, outdated software, and inefficient procurement processes, the Smart Manufacturing Blockchain aims to lower the barrier of entry, and connect innovators to manufacturers, smart machines to factories and create a transparent and decentralized network for supply chain management.

### 3.4 Smart Contracts for Transparent Procurement Processing

SyncFab's Smart Manufacturing Smart Contract Protocol will be pivotal in the standardization of a decentralized supply chain management.

SyncFab DApp's Smart Contracts will work on two levels.

Using SyncFab's future procurement process, Smart Contracts will store RFQs, quotes and encrypted intellectual properties, on the Smart Manufacturing Blockchain, but only allow access to those with allocated rights to track, record and monitor a manufacturers' assets. In the initial stages of SyncFab's procurement system the company charges a broker's fee , but as the system becomes decentralized, and Smart Contracts will be better tailored to purchasers' and manufacturers' needs, a fully decentralized ecosystem will emerge and fees adjusted to match services.

Meanwhile different datasets within the Smart Contract can be accessed by prospective purchasers on the Smart Manufacturing Blockchain. Data regarding purchasers' and manufacturers' profiles and their successful production orders will be recorded to the ledger, with each order leaving a digital paper trail of a company's credibility and performance.

### 3.5 Smart Business Model for Decentralized Supply Chain Management

Currently, SyncFab's platform includes a financial markup applied on top of the final agreement between purchasers and manufacturers — an industry practice for third-party referrers. However, in addition to connecting producers with

purchasers, SyncFab now already provides technologies for a faster and streamlined buying process. The markup usually equates to a much smaller quote compared to those received from purchasers without SyncFab.

SyncFab anticipates that in a decentralized supply chain management network, markup fees will likely be eliminated. Instead transaction cost on all final payments will be a percentage determined during development and after the Smart Contract proof of concept.

The Smart Contract proof of concept is where SyncFab plans to develop and improve Smart Contracts by adjusting and tailoring contracts to purchasers and manufacturers "real-life" and relevant procurement processes. As more companies seek a decentralized ecosystem, SyncFab will apply lessons learned and determine an appropriate fee based on a better understanding of purchasers' needs and each business' Smart Contract uses.

To pilot services, SyncFab collaborates with local cities and federal agencies building public-private partnerships to advance industry innovation and economic development.

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## 4.0 MFG Utility Token: Incentivizing Blockchain Buy-in

SyncFab envisions a vibrant ecosystem of purchasers, manufacturers, suppliers and logistics service providers actively buying, selling and ordering manufacturing-related services within the Smart Manufacturing Smart Contract Blockchain. Initially, incentives to join will be in the form of the MFG Utility Token, which give value to tasks those within the supply chain already do and are not currently compensated for, such as suppliers putting together quotes for purchasers. Incentives work for both purchasers and manufacturers as a way to bring them into the blockchain.

The MFG Token's value will shadow the value of relevant workers' hourly wage in accordance with its intended reward audience. So essentially the value of buying the MFG Token includes:

- Buying into SyncFab's existing production capacity network
- Supporting the continued build-out and evolution of SyncFab's smart manufacturing production capacity network
- Expanding partner network adoption of the MFG, smart manufacturing and smart contract blockchain buildout on SyncFab and in the supply chain industry
- Incentivizing workers to embrace the technology and be more responsive to buyers requests while compensating them for a critical function for which they are taken for granted - RFQs (Details outlined in Section 3.1)

### 4.1 Incentivizing the Manufacturer (Bidder)

To reduce the time to production and drive competition, SyncFab plans to use MFG Tokens to reward manufacturers who place faster bids and price more competitive (lower-priced) quotes in proportion to their quote acceptance rates.

Every RFQ created will be listed as an auction, attached with a MFG Token reward to the manufacturers for their bidding efforts. Similar in process to a unique bid auction, the winner usually offers the lowest bid, but also has the

skillsets, capabilities and certifications required to successfully complete the work.

A minimum requirement will be placed on all RFQs listed -- an amount to be determined after the initial token distribution. Rates and values are subject to change upon future user feedback and engagement. The amounts will vary and are dependent on the scope and delivery of the project. Added benefits for using the system, include:

- Manufacturers earn compensation for their responsiveness to all RFQs including those from small and mid-sized business buyers.
- Manufacturers see upfront investment by committed purchasers who offer MFG Token bid rewards.
- Manufacturers can focus on production and spend less time in pre-production communication qualifying walk-in customers.
- Hard-to-find small to mid-sized businesses and other less accessible shops will more likely make bids, because of the lowered barrier of entry.
- Manufacturers gain confidence in purchasers who compensate for their effort – whether their bid wins or not.
- Manufacturers increase engagement on SyncFab or partner networks to search and seek out MFG Token bid rewards.
- Manufacturers potentially will be able to submit a portion of cost related to incomplete or flawed orders to be partially compensated by tokens. Currently these substantial cost flaws are covered by the manufacturer or their insurance agents in full.
- Manufacturers who perform exceptionally well receive “tips” from their buyer.

## 4.2 Workflow for Purchaser Bids on Smart Manufacturing Blockchain

1. Purchaser creates an RFQ (auction listing).
2. Purchaser will submit project budget inclusive of a tolerance amount of how much they're willing to go over budget. The proposed budget will be visible to the manufacturers, while the tolerance amount will not.
3. Purchaser adds the MFG token bid reward amount. A minimum amount of MFG token bid reward will be determined for all RFQ auctions.
4. RFQs come in bid packages of three. If the Purchaser wants more bids, they would buy two packages for a total of 6 bids.
5. RFQ is sent via Smart Manufacturing Blockchain to multiple manufacturers for bidding.
6. Manufacturers review the RFQ and decide to make a bid.
7. SyncFab's system compares bids, automatically rejecting bids above the tolerance amount set by purchaser. Manufacturers will be informed beforehand that any bids exceeding the purchaser's tolerance will not be included in the three-bid package to the purchaser.
8. However, manufacturers whose bid amount exceeds the tolerance will be given the option to revise and re-price their bid only once during the bidding process.
9. The Purchaser selects the winner.

### 4.2.1 Tiered-Rewards for Bids

Once a purchaser selects a winner, a tiered reward for bids takes effect:

Scenario with three bids or more:

- 50% of the MFG bid reward will be awarded to winning bidder.



- 20% of the MFG bid reward will be awarded to each of the two (2) losing bidders, totaling 40%.
- 10% of the MFG bid reward will be allocated into the Loyalty Pool to incentivize future users for increased engagement.

Scenario with less than three bids:

- Purchaser will be refunded 20% for every bid that was not received.
- If there is only one bid with said bid accepted as the winner, the 50% of reward goes to the winner, 40% is refunded to the purchaser with the remaining 10% allocated to the Loyalty Pool.
- If there is at least one bid with no winner accepted, 20% will be allocated to each bidder, 10% to the Loyalty Pool and the remaining refunded to the purchaser.
- If there are no bids, 10% will be allocated to the Loyalty Pool, and the remaining will be refunded to the purchaser.

### 4.3 Incentivizing the Purchasers

Similar to purchasers being able to add rewards to RFQ auctions, manufacturers can tag on a MFG Token quote reward.

Upon submitting a quote to a purchaser, the manufacturer can include a reward in an amount of MFG tokens on top of their quote (the “MFG quote reward”).

The MFG quote reward can be viewed as a discount, which is then awarded to the purchaser if the offering manufacturer is selected as the winner. Usually quotes are good for 30 days, and giving purchasers MFG tokens could increase their rate of re-order.

This will allow manufacturers to allocate the MFG token they’ve been awarded through the bidding process back into the ecosystem through the purchasers.

The amount will depend on the manufacturers as they can allot the same amount as the amount of MFG as stipulated to the winning bidder. The

manufacturer can also allocate a larger amount of MFG to further incentivize the purchaser to select their quote as the winning bid. This incentive model will also help to resolve rare occurrences where purchasers will receive bids of exact amount from multiple manufacturers - a bid with a reward will make it more favorable. Additional benefits to purchasers, include:

- Purchasers with time-sensitive projects can expect faster and more quotes from manufacturers if they add MGF token bid rewards.
- Purchasers drive competition among manufacturers who offer reduced lead time, competitive prices and faster quotes.
- Purchasers who make commitments and order faster give and get MFG token incentives from manufacturers.
- Purchasers can use token rewards and values re-circulated into the ecosystem for various incentives such as placing quicker re-orders or rewarding future purchases.

#### 4.4 Workflow and Distribution for Manufacturers

1. Manufacturer designates "X" amount of MFG as a quote reward on top of their bid.
2. Purchaser accepts the offer and is rewarded 80% of MFG allocated as the reward.
3. The remaining 20% will be reallocated into the community pool.

#### 4.5 Transaction Fee

A transaction fee will be added to the final purchase orders amount transacted within the ecosystem. The transaction fee is paid for by the purchasers on top of the quoted price. Said value is to be determined during development. The fee will be distributed between SyncFab, Smart MFG Tech LTD and the Loyalty Pool.

## 4.6 More Potential Uses for MFG Tokens (Future Builds)

MFG Token development is dependent and prioritized based on SyncFab's user feedback, engagement within the platform, feedback from Smart MFG Tech and partner network adopters. The SyncFab team sees unlimited potential in the MFG Tokens for future builds on SyncFab and partner supply chain partner networks. A few applications may include:

- With some customer education and outreach, the MFG token's instantaneous and secure financial transactions would replace traditional forms of payment through bank wires, ACH and paper checks.
- MGF tokens may be used as payment for contractors, such as designers, engineers, and quality control consultants. These service professionals could be integrated into SyncFab's ecosystem alternatively into partner supply chain blockchain networks. Design service professionals can give feedback to purchasers' engineering designs and audit machine compatibility to production requirements.
- SyncFab or partners could be paid in MGF tokens for concierge delivery services and/or consultations to manufacturers on how to network their machines and more closely integrate with SyncFab's network and the supply chain blockchain.

## 4.7 MFG Economic Model

The Smart Manufacturing Blockchain has a fixed amount of one billion (1,000,000,000) MFG tokens. The tokens will be generated prior and will be distributed during the token distribution event. (Please refer to Section 7.0 for additional information regarding the token distribution event.) No additional MFG tokens will be created after the token distribution event.

## 4.8 Loyalty Pool (Transaction Turnover)

The Transaction Turnover and Loyalty Pool is used to promote and encourage continued engagement within the supply chain ecosystem by rewarding users

with MFG tokens. Examples of such engagement are: regular logins to SyncFab and partner networks, creating and updating Smart Contracts, placing orders, auction listing, and bidding on projects.

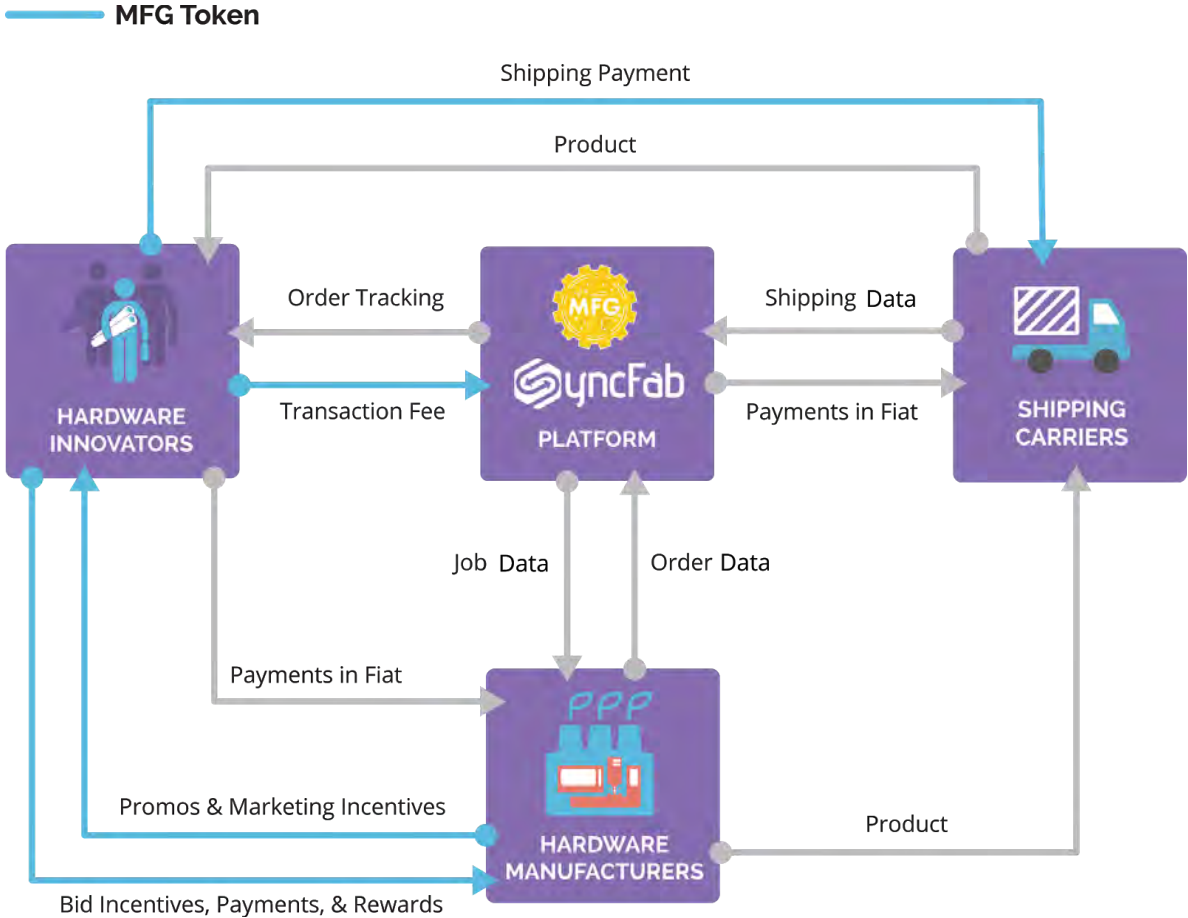


Figure 5: MFG Token Workflow

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## 5.0 Technical Overview

### 5.1 SyncFab Platform Web 2.0

Current features within the SyncFab Web 2.0 platform connect purchasers to a network of vetted manufacturers for a streamlined procurement process. Users on the site can:

- Scan through an expanding database of vetted machine shops, mapped by locality
- Search each company's machine capabilities
- Find Profiles, certifications and production ratings of parts manufacturers
- Process Request-for-quotation (RFQs) ordering & management
- Upload and share design files
- Enter Quality Inspection reports
- Review Order and Re-Order histories
- Communication between buyers and suppliers facilitated by SyncFab
- Make payments to 3<sup>rd</sup>-parties via Stripe integration
- Make direct ACH and wire transfer with banks for lower transaction costs
- Order product shipment with delivery tracking

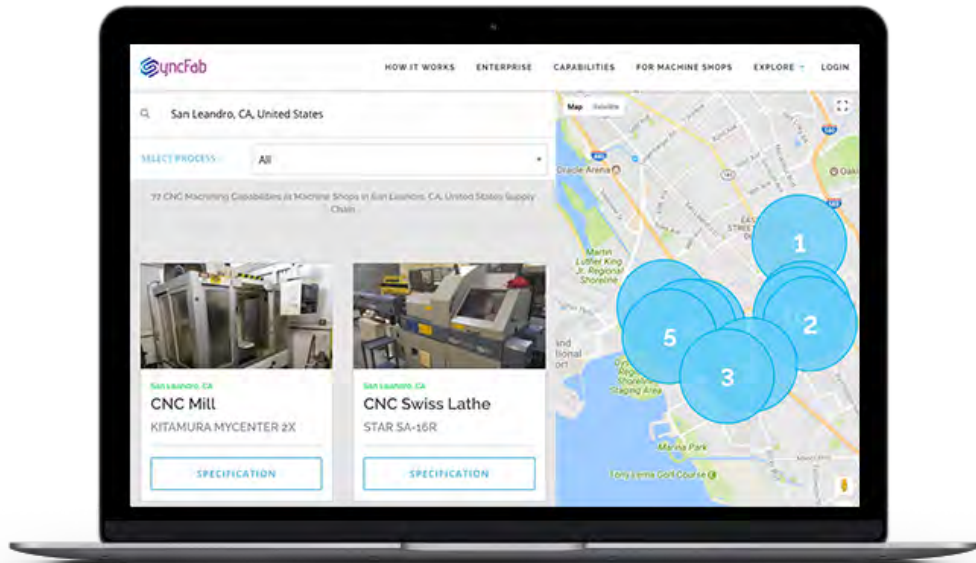


Figure 6: Searching for local machine capabilities

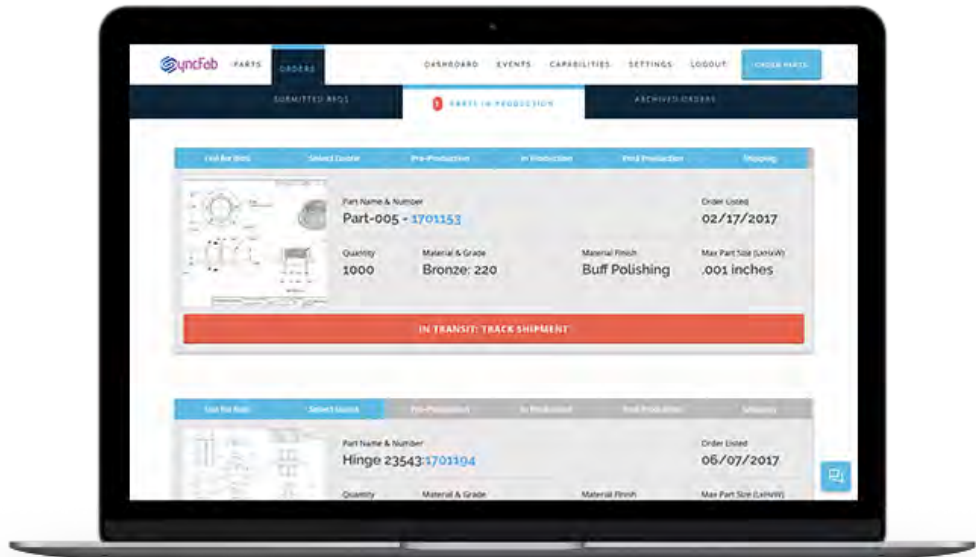


Figure 7: RFQ Management Within SyncFab

## 5.2 Example of Parts Procurement Workflow Using SyncFab 2.0

A procurement process on SyncFab Web 2.0 platform saves significant time compared to traditional procurement processes within the supply chain as it currently functions.

1. Purchaser searches the SyncFab database of vetted manufacturers.
2. Purchaser creates RFQ and sends to SyncFab for RFQ quality control.
3. SyncFab sends out approved RFQ to manufacturers.
4. Manufacturers review RFQ, decide to send quote.
5. SyncFab receives quotes, reviews bids for tolerance amounts, applies markup on top of quote and sends bids received to Purchaser.
6. Purchaser reviews and accepts winning quote, which sets an automatic notification to the selected manufacturer that they've won the bid.
7. SyncFab creates an electronic agreement between the parties.
8. New Purchasers make 1st payment or deposit amount to SyncFab.
9. SyncFab issues said deposit to the manufacturer.
10. Purchaser tracks production on SyncFab's web and mobile app.
11. Part is completed and delivered to the purchaser with tracking code.
12. Purchaser makes final or complete payment to SyncFab.
13. SyncFab issues final payment to manufacturer.

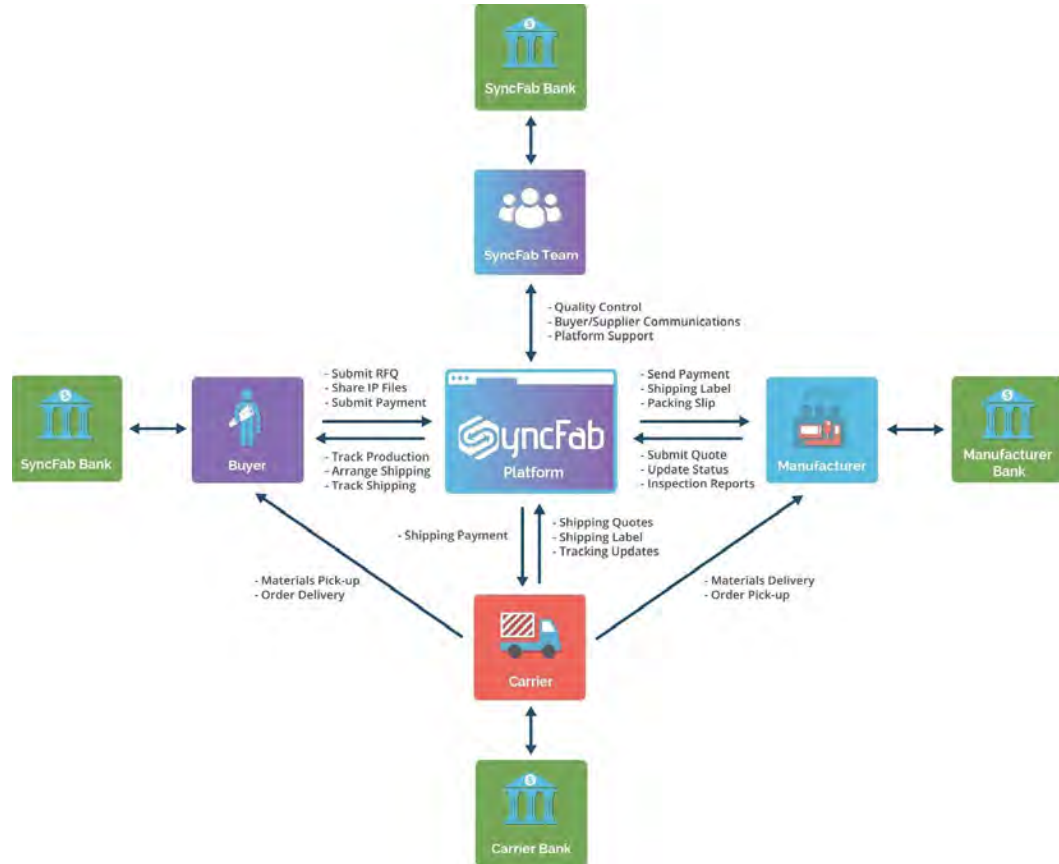


Figure 8: Procurement process workflow in the current SyncFab platform

### 5.3 SyncFab Platform Web 3.0 and the DApp (Decentralized Application): Smart Contracts and Smart Manufacturing Blockchain (Planned Build-Out)

Planned improvements to the SyncFab Platform will integrate SyncFab's Decentralized Application DApp, which will expand the blockchain.

As SyncFab builds back-end architecture to store different types of smart contracts and create tools that allow easy access to them, integrated data set to automation will further improve efficiencies in the supply chain.



As community members populate smart contracts, architectural concepts can change during development because of customer use cases and other changes within the industry.

To start, the SyncFab DApp will collect data and create three types of smart contracts:

### 5.3.1 Identity Contract

- Stores records of user identification within the system, i.e. username, email, wallet, ratings, historical order volume, etc.
- Takes MFG tokens to create and update.

### 5.3.2 Purchase Order Contract

- Serves as an account record for type of work sought/provided:
- Documents scope of work: Request for Quotation (RFQ), bidder and quote amount, production criteria, designs files or any other shareable IP, and inspection reports.
- Records all agreement documentation: contracts and payment terms.
- Takes MFG tokens to initiate an update on the Smart Manufacturing Blockchain.

### 5.3.3 Payment Contract

- Initiates and confirms payments
- Allows Purchaser to stipulate payment terms
- Takes MFG tokens to initiate an update on the Smart Manufacturing Blockchain

After the initial integration of the three Smart Contracts, SyncFab anticipates adding more types of smart contracts which foster the ecosystem's exchange and efficiency as part of an adequately funded future buildout:

### 5.3.4 Account Contracts

- Stores company information that is accessible by multiple users

- Contains company wallet, ratings, machine capabilities

### 5.3.5 Insurance Contract

- Outlines coverage for defective products insured by the Smart Manufacturing Blockchain

### 5.3.6 Production Contract

- Stores data inputted and outputted by users
- Drives private and public data feeds, such as material cost price fluctuations
- Updates parts production status via smart machines

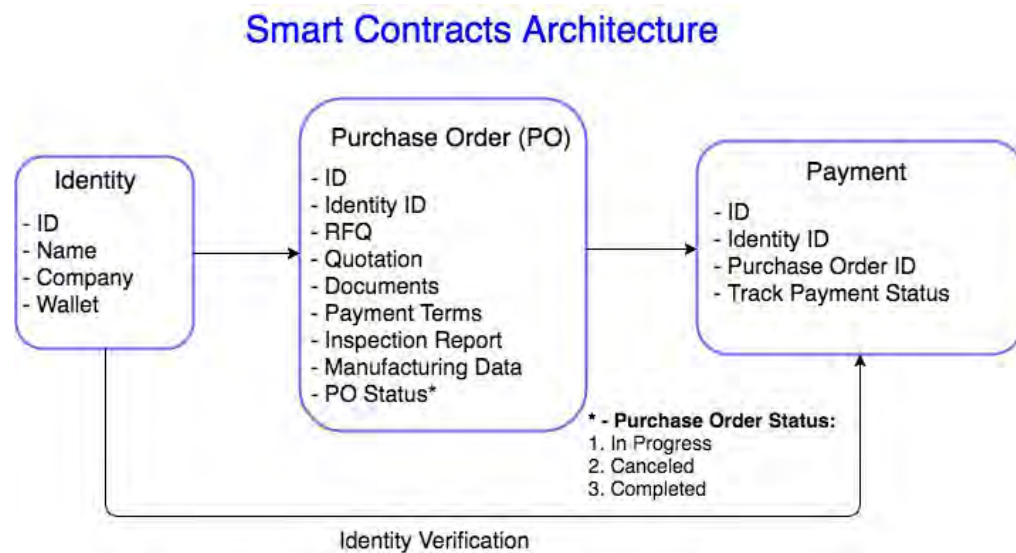


Figure 8: SyncFab Smart Contract Architecture

## 5.4 Example of Smart Contracts Procurement Transaction Workflow

Using the Smart Contracts, the back and forth of a parts procurement process between the purchaser and manufacturer is streamlined:

1. Purchaser creates RFQ on the SyncFab platform.
2. Purchaser submits RFQ to SyncFab for quality assurance services.
3. SyncFab rep reviews or suggests edits to the RFQ.
4. RFQ is approved by SyncFab.
5. The DApp then generates a Purchase Order Contract.
6. RFQ and agreement documents are sent to the manufacturer(s) via the DApp.
7. Manufacturer(s) review the RFQ and agreement terms.
8. Manufacturer(s) quote, and agree to the terms, then submits to quote the DApp.
9. SyncFab reviews bids for tolerance amounts, applies markup on top of quote and sends 3 bids to purchaser.
10. Purchaser reviews bids and approves the quote on the DApp.
11. The manufacturer is automatically notified to produce the product.
12. When part is completed, manufacturer completes an inspection report.
13. Inspection report is sent to the purchaser on the SyncFab platform.
14. The purchaser reviews the inspection report on the SyncFab platform.
15. SyncFab generates a Payment Contract.
16. Purchaser selects shipment option via a third-party API on the SyncFab platform. (ex. FedEx). All shipments require a signature upon receiving.
17. A shipment tracking code is generated by the third-party API.
18. The purchaser makes the payment to the manufacturer on SyncFab via a third-party, such as Stripe.

19. The logistic partner picks up product and delivers to purchaser.
20. The purchaser receives the package and signs off.
21. The logistic partner updates the status to “Delivered”, which is reflected in the SyncFab platform under the shipment tracking dashboard.
22. The Purchase Order Contract is then marked as “Completed” and recorded to the Smart Manufacturing Blockchain.

## 5.5 More Streamlining of Procurement and Transaction within SyncFab Features

With adequate funding, SyncFab plans more advanced features of Smart Contracts to record and validate procurement transactions in the Smart Manufacturing Blockchain, such processes would trim delays in payment.

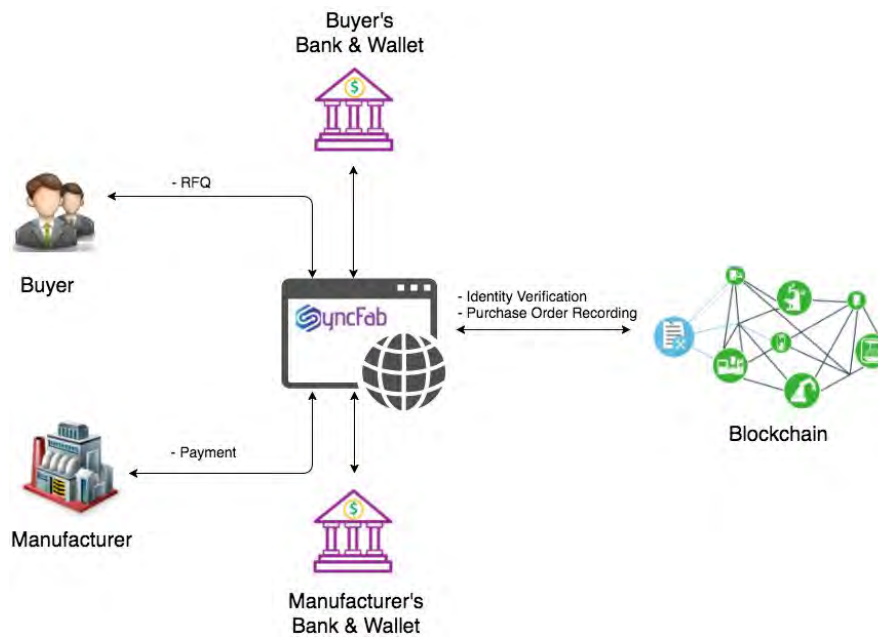


Figure 9: Streamline Procurement transaction with blockchain

## 5.6 Example of Decentralized Procurement Transaction Workflow

A high-level overview of a parts production workflow within a decentralized system highlights the efficiencies of the Smart Manufacturing Blockchain:

1. Purchaser creates an Identity Contract, which holds contact information, wallet, past order history, and purchaser ratings.
2. Manufacturer creates an Account Contract containing contact information, wallet, manufacturer rating and current machine capabilities that can be regularly updated with usage of MFG token.
3. Purchaser creates a Purchase Order Contract on the ledger, which contains the RFQ, manufacturer requirements, and all associated agreement documents.
4. The ledger filters manufacturer matching machine capabilities to RFQ and best location fit.
5. Matching manufacturers receive the RFQ to bid on the project.
6. The bid and associated agreement documents are sent to the purchaser for approval.
7. Upon approval, and agreement of terms, the Purchase Order Contract is updated to "In Production."
8. The Purchase Order Contract is used to update production status and store machine data.
9. Upon completion of the production, the manufacturer issues an inspection report to the purchaser.
10. Upon purchaser's approval, a Payment Contract is created between the purchaser and manufacturer.
11. Manufacturer reviews the Payment Contract.

12. Upon approval of the Payment Contract from the manufacturer, a Purchase Order Contract is created between the purchaser and logistic company for product shipment.
13. Upon the completion of this contract, the original Purchase Order updates its status to “Completed” and is recorded to the ledger. All previous processes continue at Step 3.
14. Upon arrival of the product, the Purchase Order Contract with the logistic company updates its status to “Completed” and updates to the ledger.
15. Upon complete payment from the purchaser to the manufacturer, the original Purchase Order Contract updates its status to “Completed” and is recorded to the ledger.

## 5.7 Premium Features Planned for Future SyncFab DApp (Future Build-Outs)

As the ecosystem of manufacturing stakeholders adopt SyncFab’s services, purchasers and manufacturers can easily manage their end-to-end supply chain production. SyncFab’s forward-looking approach would include premium features, such as:

### 5.7.1 Application Program Interface (API)

In creating a public API where companies, vendors and other blockchains can interact and transact on the Smart Manufacturing Blockchain, the supply chain can share and industry-wide standard platform.

### 5.7.2 Machine Data Feed

Direct and live data feeds from smart (or smart-adapted) machines to the Smart Manufacturing Blockchain will allow purchasers and manufacturers to track their parts production in real-time, directly from machine status updates. Inclusive add-on, inserted hardware would attach to factory equipment and the internet

so that smart machines communicate directly with the Smart Manufacturing Blockchain in real time.

### 5.7.3 Public Data Feed

Real-time feed from public databases will provide insights into real-time commodity cost, private and public machine capabilities, news RSS by keyword and other related data. Manufacturers can, in turn, use data to better price their quotes based on real-time material costs. Purchasers will have a broader comparative view into machine capabilities outside of the Smart Manufacturing Blockchain.

### 5.7.4 Connection to Logistics Providers

When the ecosystem expands, Smart Manufacturing Blockchain, can track real-time delivery throughout the supply chain to manage their entire production from concept to delivery.

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## 6.0 Competitive Analysis

Blockchain and expansion of IIoT has been a growing area for investment for many private companies, focused on pinpointing and correcting company inefficiencies. These investments have been largely made by conglomerates hoping to capitalize on global demand for manufactured products.

There are limited, direct comparisons to Smart MFG Tech's and SyncFab's industry-specific MFG Token incentive system to facilitate blockchain engagement and build-out on the shopfloor or in the factories. As the blockchain flourishes, large manufacturers or supply chain companies looking for blockchain solutions will adopt the MFG on their networks or simply use SyncFab's smart manufacturing smart contract protocol and/or production capacity network.

Within the competitive landscape, companies are approaching decentralized manufacturing in different ways:

- General Electric: Focused on finding inefficiencies within its own systems, GE's migration towards smart factories is mostly self-contained and aimed at improving the company's performance within its massive enterprise and vast product lines. Large conglomerates like GE can afford to invest millions of dollars on company-specific smart technologies.
- IBM: Hyperledger is designed for business-to-business exchanges, and functions as a private enterprise blockchain for companies who may already do business together and trust each other enough to share documents, designs and contracts. Aimed at creating efficiencies among partners, this system would serve prominent manufacturers who may already dominate the supply chain in various ways.
- Google: Google search engines place priorities on paid advertisers. In a given search, topping their lists are supply chain players who pay to get business to their door. Yet many precision parts machine shops remain unknown. The effort it takes



for purchasers to investigate and learn more about a company' capabilities and capacities can't be easily accessed on public search engines. Such clearinghouses for small- to medium-sized shops do not exist yet.

- SyncFab serves as the first, public peer-to-peer manufacturing ecosystem. A decentralized manufacturing platform where token holders can interact directly with each other to launch projects and procure parts, pay for services, and get them delivered creates trust among community users. In the future, SyncFab would authenticate off-chain data sets on-chain using Cornell's IC3 developed Town Crier System. SyncFab plans to explore the public to private blockchain smart contract data synthesis using Cornell's Town Crier project when SyncFab proceeds to build out its live machine data feed in the scenario the funding hard cap is achieved.

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## 7.0 Roadmap

Conceptual development planning for the MFG Token, the Smart Manufacturing Smart Contract and SyncFab Platform Web 3.0 began in August 2017 with a goal of completing token integration soon after the end of MFG Token Distribution Event and completion of a smart contract adapted 3.0 platform by 2019. SyncFab is committed to the long-term success of the platform and the standardization of the Smart Manufacturing Blockchain. Listening and adjusting to customer feedback is ingrained in SyncFab's approach and essential to building a product of high value that will save time or reduce overhead for clients.

If the ETH minimum crowdsale target is met the MFG Token launch will involve:

- Creation of the smart contracts to generate and distribute the 1,000,000,000 supply of MFG to the allotment stipulated in the Token Distribution Plan.
- Creation of five (5) wallets. Each will store its individually distributed MFG amounts in the allotment. An encrypted digital wallet stores its encoded MFG or ETH, and can be decoded to validate its actual amount on the Ethereum Network.
- Creation of a crowdsale smart contract to distribute the MFG tokens in the amount relative to the ETH contributed from the Token Distribution Sale.
- Creation of the Ethereum Virtual Machine (EVM) to secure, execute and validate the previously mentioned smart contracts, future smart contracts, and the transfer and conversion of MFG to ETH, and vice versa on the Ethereum Network.
- Integration of the EVM into the current SyncFab 2.0 platform and technology stack.

### 7.1 Milestones

*\*The roadmap is subject to changes during development and regulations affecting blockchain technology and utility token economics. Dependent on the soft cap raised during the initial token issuance to early adopters and any regulatory changes to the utility token economies, the roadmap is subject to re-prioritization due to unforeseen*

circumstances or complications during development stages or through customer feedback of real life use cases.

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**Milestone 1 - Q1 2018**

**MFG Token Generation Event and Distribution**

*February 15 - Token Generation and March 30 - April 15 MFG Token Distribution. (If 500 ETH/500K USD Minimum is met)*

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**Milestone 2 - Q2 2018**

**MFG Token Acceptance Integration**

*Integration of the MFG token for acceptance into existing SyncFab RFQ Web 2.0 Sourcing (Pre-Blockchain) platform.*

*Ongoing Exploratory discussions with partner manufacturing supply chain networks for MFG token acceptance integration for dedicated and inter-industry protocol blockchains and smart contracts.*

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**Milestone 3 - Q3 2018**

**Format Ethereum Blockchain Smart Contracts for Purchasers**

*Amend Ethereum Smart Contract conditions for Supply Chain Purchaser Requirements (If 15K ETH/15M USD Soft Cap is met)*

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**Milestone 4 - Q4 2018**

**Format Ethereum Blockchain Smart Contracts for Suppliers**

*Amend Ethereum Smart Contract conditions for existing Machine Shop Capabilities*

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**Milestone 5 - Q1 2019**

**Implement MFG Ethereum Supply Chain Blockchain Smart Contract**

*Implement Purchaser-Supplier MFG tailored Ethereum Smart Contract on SyncFab Platform*

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**Milestone 6 - Q2 2019**

**Survey Machine Shop Upgrade Requirements**

*Survey machine shop upgrades to meet more Supply Chain Purchaser automated requirements on end-to-end Blockchain Smart Contract (If 33K ETH/30M USD Hard Cap is reached)*

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**Milestone 7 - Q3 2019**

Formulate Upgrade Solution for Machine Shops

*Based on wholistic survey results formulate economical hardware networking solution to instantaneously grab and put online data feeds from the production machines for data driven process optimization and real time monitoring*

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**Milestone 8 - Q4 2019**

Begin Implementing Machine Live Data Feed Upgrade Solution

*To include Off-chain & Onchain data authentication mechanism integration*

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## 7.2 Funding Roadmap

<b>Funding to Milestone Targets</b>			
<b>Funding Target:</b>	Minimum: 500 ETH (500K USD)	Soft Cap: 15K ETH (15M USD)	Hard Cap: 33K ETH (30M USD)
<b>Deliverables:</b>	MFG Token Generation	Layer Blockchain Smart Contracts to 2.0	Supplier Holistic Integration Survey
	MFG Token Distribution	Format Purchaser Smart Contracts	Machine Live Data Feed Solution
	MFG Token SyncFab 2.0 Integration	Format Supplier Smart Contracts	Upgrade Adapted Blockchain 3.0
	MFG Token Industry Partnership Outreach		MFG Token Industry 4.0 Strategic Partnership Outreach

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## 8.0 MFG Token Distribution Launch

Smart MFG Tech's MFG Token Distribution Event in partnership with SyncFab provides opportunities for those who want to see manufacturing revolutionized by a public, peer-to-peer ecosystem and blockchain. The MFG Tokens will incentivize innovators and manufacturers to connect and create.

### 8.1 Token Distribution Event

1. Token Name: Smart Manufacturing Token
2. Token Symbol: MFG
3. Total Supply: 1,000,000,000 MFG
4. Allocated market (public) supply: 300,000,000 MFG (30%)
5. Pre-Sale Start Date: November 15, 2017
6. Pre-Sale will conclude when allocation is deemed exhausted or on February 15, 2018.
7. Main Public Sale Date: February 15, 2018
8. We will be accepting ether (ETH) as the form of payment.
9. 1 ETH = 5,000 MFG
10. **Minimum Goal: 500 ETH (500K USD)** ~ This is our minimum goal. If the amount is not reached, we will refund all ETH contributed in the crowdsale.
11. **Soft Cap: 15K ETH (15M USD)**

12. **Hard Cap: 33K ETH (30M USD)** This is the maximum amount in MFG Tokens we're looking to sell in the crowdsale.
13. Any unsold MFG allocated to the public market supply will be destroyed after the distribution event.

## 8.2 Bonus Incentives

### 8.2.1 Industrial Revolutionary Private Presale

This presale is exclusive to long-term or strategic partners in the industrial manufacturing space which have expressed interest in participating and supporting the expansion of the Smart Manufacturing Blockchain.

- Start Date: November 15, 2017

### 8.2.2 Hardware Innovators Exclusive Presale

For innovative manufacturing and supply chain professionals and apprentices.

- Bonus: +50% MFG Tokens
- No Minimum
- Start Date: November 15, 2017

### 8.2.3 Public Presale

For the aspiring early adopter supply chain purchasers and hardware manufacturers.

- Bonus: +25% MFG Tokens
- No Minimum
- Start Date: January 1, 2018

### 8.2.4 Main Public Sale

For the aspiring hardware innovators, supply chain and manufacturing professionals.

- No Minimum

- *February 15—February 21, 2018 (9:00 AM PST): **15% Bonus***
- *February 21—February 28, 2018 (9:00 AM PST): **10% Bonus***
- *February 28—March 11, 2018 (9:00 AM PST): **5% Bonus***
- *March 11—March 15, 2018 (9:00 AM PST): **2.5% Bonus***

Any unsold MFG will be destroyed after the distribution event.

### 8.3 Token Distribution Plan

1. Prior to the token distribution event, Smart MFG Tech LTD will generate a supply of one billion (1,000,000,000) MFG tokens.
2. A total of three hundred million (300,000,000) MFG will be offered to the public (current SyncFab users and the Smart Manufacturing Blockchain early adopters).
3. Each MFG wallet account will store MFG tokens on the blockchain to the unit of 18 decimal places - the smallest unit of an MFG token being 0.000000000000000001 MFG.
4. The distribution Smart Contract does not permit any new tokens to be created or destroyed after the token distribution event. At the conclusion of the distribution event, the token distribution Smart Contract will destroy any MFG publically-allocated tokens which are not sold at the close of the event.
5. There will be no inflating of the MFG.
6. The total supply of MFG is dependent on how many MFG's are sold during the distribution event; the final supply has yet to be determined.

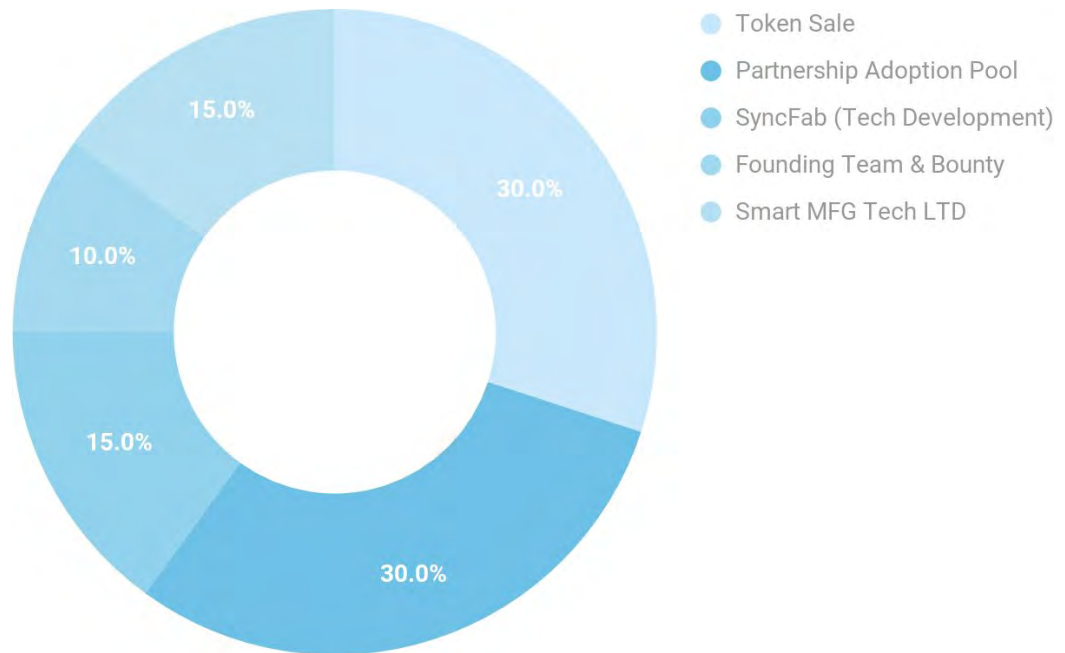


Figure 10: MFG Token distribution chart

1. 30% to Token Sale offered to the public (current and new SyncFab users and early adopters of the Smart Manufacturing Blockchain)
2. 30% to Strategic Partnership Adoption Pool for long-term community building and adoption of the Smart Manufacturing Smart Contract Blockchain Protocol through partner manufacturing supply chain networks and other partnerships based on MFG token acceptance. The MFG within this pool will be allocated to potential Smart Manufacturing Blockchain partners who will adopt and implement the usage of said blockchain to their network of users
3. 15% to SyncFab for research, engineering, deployment, business development, and marketing with standard 2 year lock-up.
4. 10% to Founding Team and Bounty—Team, Advisors and Early Contributors



5. 15% to Smart MFG Tech LTD for long-term ecosystem promotional budget, and network governance.

## 8.4 Strategic Partnership Adoption Pool

The Strategic Partnership Adoption Pool with a pre-allocated amount of three hundred million (300,000,000) MFG tokens is created to support continued community growth and Smart Manufacturing Blockchain adoption. The MFG tokens will be distributed to potential partners who commit to implementing the Smart Manufacturing Blockchain into their current systems.

The MFG tokens will also be distributed by the Smart Manufacturing Blockchain partners to their current user base to promote adoption and engagement within their own networks. For example, to ease the barrier of entry of adopting a new ordering system, the partner can allocate their current users with 1,000 MFG tokens to start using within the Smart Manufacturing Blockchain to procure parts production. New members to the ecosystem are given incentives to use allocated amounts to cover time and resources needed to learn about and promote the Smart Manufacturing Blockchain.

## 8.5 Funding Breakdown

Smart MFG Tech LTD's expected use of proceeds is dependent on the soft-cap of Ethereum (ETH) raised during our token distribution event.

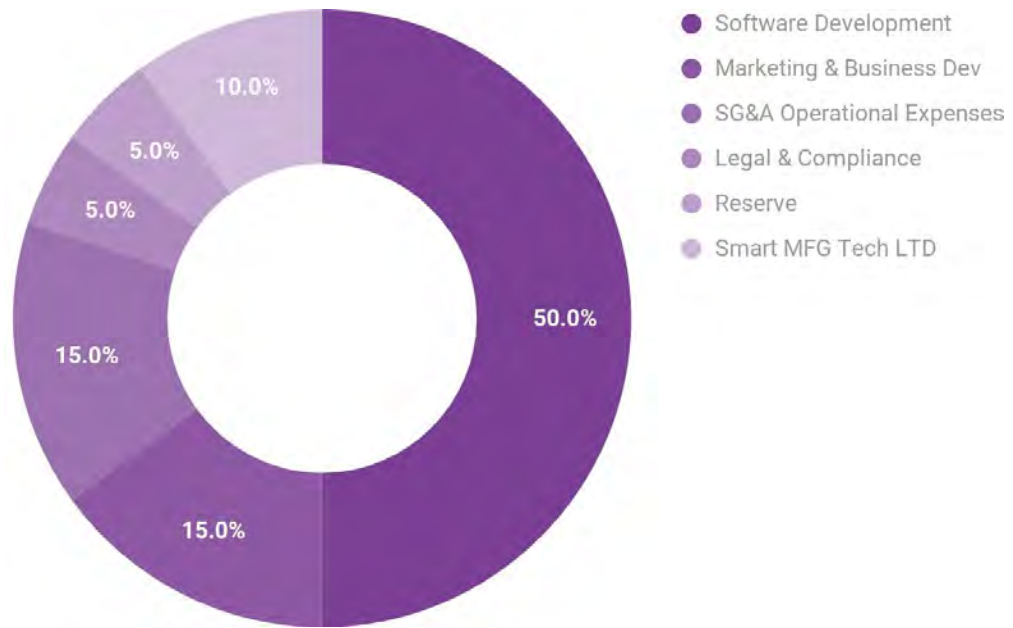


Figure 11: Smart MFG Tech LTD Expected Use of Proceeds

1. 50% Software Development – Smart Manufacturing Blockchain and Smart Contract
2. 15% Marketing and Business Development - Marketing efforts include expanding awareness and adoption of the platform while enhancing engagement with current users. These funds will be directed at third-party providers offering marketing, PR, partnerships, and affiliates
3. 15% Administration and Operational Expenses - Consists of security, accounting and other associated administration costs
4. 5% Legal & Compliance - Legal efforts include incorporation, regulation, compliance and ongoing operation
5. 5% Reserved - This is a set aside for unforeseen costs
6. 10% Smart MFG Tech LTD - Allocated to Smart MFG Tech LTD budget to foster stability and demand for the MFG Token

## 8.6 MFG Token Distribution Smart Contract

View our Github repository for latest code updates: <https://github.com/syncfab>

## 8.7 Reference: Ethereum Smart Contract Standard

View Ethereum Smart Contract Standards at: <https://www.ethereum.org/greeter>

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## 9.0 Risk Factors

There are many challenges that can potentially serve as a barrier of entry for mass adoption of the Smart Manufacturing Blockchain in the manufacturing industry, including widespread acceptance of the proposed economic model. Some initial risk factors may include:

- Reluctance by suppliers to adopt new technology. SyncFab would have to provide effective training to use the platform
- Brokers resist change and hold on to customers.
- Supply capacity bottlenecks and price surges.
- Manufacturers want to remain siloed and isolated. SyncFab would create ways for them to adapt to its reporting systems and communications channels.
- Local ecosystems and laws could be slow to adapt.

Additional risk factors apply to SyncFab's business in general and the MFG Token Sale event in particular, and of widespread adoption of the Smart Manufacturing Blockchain:

- SyncFab may not reach the minimum, soft cap or hard cap target sale amounts and may not have the sufficient funds to execute on its business plan.
- The MFG token may be significantly influenced by digital currency market trends and MFG value may be severely depreciated due to non-MFG related events in the digital currency markets.
- Areas of the manufacturing supply chain industry may fall under global or local regulation that may limit the use of tokens for supply chain procurement.
- SyncFab Web 3.0 is a complex software platform, and its launch may be significantly delayed due to unforeseen development barriers.
- Competition may introduce same or better manufacturing supply chain smart contract solutions and cause SyncFab to lose market share and eventually fail to deliver on its business goals.
- The use of MFG tokens may come under the scrutiny of governmental institutions.

- The ownership of MFG tokens may fall under new and unpredicted taxation laws that will erode MFG benefits.
- Smart MFG Tech LTD may not succeed in creating the necessary momentum and acceptance for the MFG token, which may result in low liquidity and depletion of trades.
- The positions and plans outlined in this white paper may be altered as the project progresses.

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## 10.0 Team

### 10.1 Smart MFG Tech LTD

Smart MFG Tech LTD promotes new technologies and applications for use within the Industrial Manufacturing industry. A dominating, but not exclusive focus is the promotion of the Smart Manufacturing Blockchain, the MFG Token and its related technologies, as well as its promotion of technologies and applications supporting said blockchain. Smart MFG Tech will generate, distribute and manage the MFG Token and will work to add partners such as private and public companies, along with government entities to adopt and standardize the Smart Manufacturing Blockchain as a system of records for all manufacturing procurement within the industrial supply chain. For new strategic partnerships, Smart MFG Tech LTD will manage the network governance and overall health of the MFG token ecosystem as well as allocate from the partner adoption pool of MFG tokens, to be given to new users to source and procure parts production through the usage of the Smart Manufacturing Blockchain.

#### Hikaru Yuki - Executive Director



Hikaru is an International Supply Chain Professional with almost a decade of experience at Fuji Xerox Global Supply Chain Department.

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#### Jason Tong - General Manager



Jason is an International business professional with extensive experience in Blockchain, Cryptocurrencies, eCommerce and Internet Technologies.

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## 10.2 SyncFab Team

### Jeremy Goodwin - Chief Executive Officer



Jeremy is CEO of SyncFab, an IIoT Industry 4.0 Blockchain Manufacturing Industry Partner to the \$140MM US D.O.E. & D.O.C. Clean Energy Smart Manufacturing Innovation Initiative (CESMII) appointed by the White House and US Departments of Energy and Commerce National Network for Manufacturing Innovation (NNMI). SyncFab is also the San Francisco Mayor's Office of Civic Innovation - 2016 Startup in Residence (STIR) in partnership with the Cities of San Leandro, Oakland and West Sacramento.

From 2008 - 2012, Jeremy served as Executive President and CFO of China Advanced Construction Materials Company, leading it to peak performance of 2,000 employees and NASDAQ IPO. As the only bilingual member of the company board of directors, he was responsible for negotiating large international contracts, implementing SOX 404 compliance, and managing international accounting audits, SEC and shareholder communications. Jeremy secured a \$100M Private Equity investment offer in support of company expansion plans and NASDAQ listing before board decision to privatize.

From 2002 - 2008, Jeremy was Managing Director of 3G Capital Partners and Global Capital Group - Trans-Pacific merchant banking firms with more than \$250M in transaction mandates.

From 1996 - 2002, Jeremy worked as a financial executive at ING Barings, Baring Capital Partners, ABN Amro, Mees Pierson in New York, London, Amsterdam, Geneva, Beijing, and Hong Kong including Carlyle Partners first \$1BN Fund.

Jeremy is fluent in Chinese and French and as a social impact entrepreneur, is passionate about technologies improving the human condition.

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## Andy Tong - Chief Strategy Officer



Andy Tong is an entrepreneur well known for his success in the video game industry as CEO and Founder of top online game portal MMOABC, which at its peak garnered millions of monthly MMO gaming visitors from North America with zero spent on advertising before the proliferation of social media.

Andy's current role as Chief Strategy Officer involves influencing, maintaining, and fostering relationships with strategic partnerships, and customers. In addition, he achieved great success in the eCommerce referral industry by securing thousands of advertiser partnerships through his portfolio of web portals that leveraged state of the art search engine marketing and deployed browser based advertising technologies with online retail sales totaling over \$50 million USD in the last decade. Andy also serves as President of IVP Investment Group an angel investor in startups and serves on the advisory board for Senhoa. He earned his bachelor's degree in business administration (CIS) from the California State Polytechnic University in Pomona, California. For over 18 years he has been an avid practitioner of health and fitness.

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## Jay Ligda - Chief Technology Officer



Jay is currently the Chief Technology Officer of SyncFab. Jay's responsibilities involve managing a team of developers to maintain, and develop the SyncFab application. Jay is a self-educated technologist who's been in the development community for the last 20 years. He owned and managed

Synergetic Web Creations Website, which provided consultation for small to medium businesses developing solutions in HTML, CSS, JS, CGI Script Integration, ASP, SQL Server, PHP, AJAX and MySQL.

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## Dennis Delgado - Chief Design Officer



Dennis Delgado has over 10 years in the art and design world. He has played many roles from gallery director to UI/UX designer. He has curated numerous Art & Design shows with artists whose works are in the collections of SFMoMA, MoMa, Mint Museum, Pompidou, and The Art Institute of Chicago. More recently, he co-founded SyncFab.com, an online platform matching businesses to local manufacturers to help bring ease and accessibility to the product design & production process. Currently, Dennis resides in San Leandro, CA, working with the city to create the first ever Smart Manufacturing grid.

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## Victor Nguyen - VP Product & Operations



Victor Nguyen is a driven self-starter and professional with a vast skillset and experiences in the startup, public, and private sector, both nationally and internationally. His entrepreneurial mindset and expertise are driven by an obsession to “do what it takes” to be successful and streamlining processes to be as efficient as possible.

Victor graduated with a degree in Civil Engineering and spent eight years designing highways and pipelines while working for the City of Arcadia and Psomas, a private company. His entrepreneur nature then took him into a different direction, away from Civil Engineering and into events, marketing and development. Relocated in Vietnam, he created and operated two companies: I AM Group, an events and marketing company, and Adventuity, a development consultant company. Victor is now back in the United States and a part of the SyncFab team after a two-year tenure at a SaaS startup, SalesHood, where he was responsible for customer success, product management, and operations.

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## Ben Gerstein - VP Marketing



Ben Gerstein has over 12 years' experience in digital marketing, during which he's advised fast growing venture-funded SaaS startups and Fortune 50 global consumer product companies in their digital marketing strategy. Ben has helped companies accelerate growth and optimize the customer journey through SEM, PPC, SEO, display / retargeting campaigns, email marketing, social media ads, content marketing, conversion rate optimization, account based marketing and growth hacking.

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### Sharon Wang - UX Designer

Sharon Wang is a UX/UI and graphic designer based in the Bay Area but originally from Los Angeles. She has a passion for human-centered design as a way to help others.

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### Ali Zain - Blockchain Developer

Ali Zain has over a decade of experience in Full-Stack application development. He is an expert in blockchain, cryptocurrency & ICO development. He also co-founded Ideofuzion.

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### Yasir Iqbal - Blockchain Developer

Yasir Iqbal is a veteran in blockchain, cryptocurrency and software development. He has extensive experience in mobile application development and has lectured university students in Java, C++, data structures and databases. Yasir has a master's degree in computer science and also co-founded Ideofuzion.

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### Ali Rizvi - Blockchain Developer

Ali Rizvi is a software developer with experience in Solidity, Node JS, Angular 2 and MEAN stack. He has a strong passion for world changing disruptive technologies such as blockchain and cryptocurrencies.

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## 10.3 Advisory Board

### Mike Jones - Science Inc. , Dollar Shave Club, MySpace



Mike Jones is an internet executive, investor and strategic advisor and CEO of Science, Inc. He is Los Angeles's most active angel investor with more than \$2.5B in exits. His exits in 2016 alone included Science portfolio companies HelloSociety (acquired by New York Times), FameBit (acquired by Google) and Dollar Shave Club (acquired by Unilever). He is also a long-time entrepreneur. He started his first company in college, and he was previously the CEO of Userplane (acquired by AOL), Tsavo (acquired by Cybermedia), PBJ (acquired by JB), MySpace (acquired by Specific Media), Myspace Japan (acquired by Softbank), and FIM (acquired by Rubicon Project).

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### Gil Penchina - Ridge Ventures, Paypal, Ebay



Gil Penchina is a serial entrepreneur, super angel and Partner at Ridge Ventures. He's an investor in Brave, Ripple, Filecoin, Civic, EOS and was actually an angel investor in the first cryptocurrency startup, PayPal in 1999. Previously he was the founder of Flight.vc which manages over 25 investment syndicates with over 3,000 angel investors, a co-founder of Fastly, CEO of Wikia, now a top 50 website and was a member of the pre-IPO team at eBay. Before eBay, Gil worked at General

Electric, Bain & Co. and started two small technology companies. In addition, Gil has been an active angel investor in over 300 companies including firms such as Dollar Shave Club, Cruise Automotive, LinkedIn, PayPal, AngelList, AltSchool, eShares, Wealthfront, Indiegogo, and many others.

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### Jeff Berwick - CEO of The Dollar Vigilante



Jeff Berwick has been a technology entrepreneur and investor since he founded Canada's largest financial website, Stockhouse.com, in 1993. The company went on to be worth \$240 million at the peak of the tech bubble. Mr. Berwick founded The Dollar Vigilante in 2010 and became one of bitcoin's most prominent promoters when it was \$3 in 2011. He continues to be one of the most watched promoters of cryptocurrencies and blockchain technologies through The Dollar Vigilante.

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### Simon Cocking - Senior Editor, Irish Tech News



Simon Cocking is Senior Editor at Irish Tech News, Editor in Chief at CryptoCoinNews, and freelances for Sunday Business Post, Irish Times, Southern Star, IBM, G+D, and other publications. He has advised 18 successful ICOs to date and is an accomplished public speaker at events including TEDx, Web Summit, Dublin Tech Summit, and overseas in Singapore, Moscow, Tel Aviv, Madrid, Tbilisi, Riga, Porto and Helsinki in the last 12 months.

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### Peter Moricz - CEO of Moricz.io

Peter M. Moricz is an investor, founder, a mentor in startups and a successful advisor to numerous blockchain token offerings. Peter brings a wealth of first-hand knowledge and expertise to this ever-evolving industry. His focus is mainly Europe but has a global network of partners who are highly respected in the blockchain community.

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### Steve Sprague - CEO of Rivetz Corp.



Steven Sprague is the CEO of Rivetz Corp. and one of the principle industry evangelists for the application of trusted computing technology. Steven has a strong technical foundation in the principles, capabilities and business models of incorporating trusted hardware into everyday computing, and is skilled at translating these concepts into layman's terms.

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### Professor Xiaochun Li - UCLA Raytheon Chair of Manufacturing, CTO of CA CESMII



Professor Xiaochun Li is the Raytheon Chair in Manufacturing Engineering at UCLA Department of Mechanical and Aerospace Engineering, & Department of Materials Science and Engineering. He is also CTO, California Smart Manufacturing Center, Clean Energy Smart Manufacturing Innovation Institute of which SyncFab is a resource partner.

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## Mark Crone - CLG LAW

Mr. Crone is the Managing Partner of Crone Law Group, specializing in the corporate, securities and other regulatory aspects of global business ventures across a diverse array of industries between companies in the U.S. with Asia, Central and South America, Russia, Africa, Australia and the Middle East.

With almost twenty-five years of global legal, corporate and investment banking experience, Mr. Crone represents both U.S. and foreign corporations across a wide range of industries. His broad experience includes public and private equity and debt security financings, international mergers and acquisitions, angel, venture capital and private equity financings, project finance, banking and financial instruments, secured debt transactions, going private transactions, foreign direct investment and corporate law and governance.

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## Michael Wong - MUFG



Michael Wong is an experienced cyber security expert and leader in the financial services industry, working with teams to balance security and business objectives. As VP at MUFG he led the development of the cybersecurity program for System & Endpoints and was instrumental in the creation of the Cyber Security Operations Center (CSOC). Prior to MUFG, Michael has consulted for Fortune 100 companies while at KPMG and data analytics with the Walt Disney Company.

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## Chris Cheng - Apple

Chris Cheng is a senior mechanical product designer with expertise in consumer electronics and medical devices. He values a detail-oriented and user-centered approach to design with an eye for aesthetics. He is comfortable working with senior management and cross-functional teams. He worked in startup garage to Fortune 500 company and was a co-inventor on 6 issued patents.

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## 11.0 Changelog - White Paper Versions & Edits

1. 09/18/2017 - V1 Public Release
2. 09/19/2017 - V2 Expanded on Sections 1.2.4, 2.1.3, 6.1, and 6.2
3. 09/20/2017 - V2 Expanded on Section 3.6, Added Mark Crone to Section 7.3
4. 09/21/2017 - Added Michael Santore to Section 7.2
5. 09/29/2017 - Added Mike Jones to Section 7.3
6. 10/09/2017 - Added Gil Penchina to Section 7.3
7. 10/11/2017 - Clarification of inherent risks and industry terminology per lawyer's comments (numerous sections)
8. 11/02/2017 - Updated token economics, bonus structure in 8.0 and added
9. 11/7/2017 - Editorial restructuring including roadmap clarification, competitive analysis and bonus structure revision
10. 11/10/2017 - Clarification on Section 8.0
11. 11/14/2017 - Final Edits before PreSale
12. 12/13/2017 - Lowered Soft Cap & Hard Cap
13. 12/14/2017 - Edited Presale Date & Added Steven Sprague Advisor
14. 1/9/2018 - Edited Section 8, added USD caps with ETH equivalent
15. 1/20/2018 - Edited Section 8 Hard Cap & Soft Caps
16. 2/15/2018 - Public Sale Bonuses Added