Blueprints Lab

Commercializing Intellectual Property at Scale

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Summary:

A university ecosystem is a Collaboratory where an endowment of intellectual property is developed. Blueprint Labs transforms patentable research into valuable business intelligence and viable commercial enterprise.

"University researchers have produced acres of assets, worth billions of dollars, but it's held in such a way that it can't produce capital."

Blueprints and its IP2M (Intellectual-Property-To-Market) process has defined a clear path to commercialization and monetization of University knowledge assets.

Our solution is straightforward; by converting knowledge assets directly from intangible to tangible, the monetization potential may be greatly expanded. The IP2M process delivers tangible knowledge assets at scale by combining our proven IP development system with advanced data analytics, game mechanics, network effects, and decentralized ledger technology.

Characteristics of the University System

For nearly a thousand years, the **purpose** of a **university** has been to be the guardian of wisdom, reason, inquiry and philosophical openness, preserving pure inquiry from dominant public opinions. By contrast, the concept of intellectual property is a recent legal framework. Dating back a little more than two hundred years, the historical purpose of the Patent system was to encourage the development of new innovation, and in particular to encourage the disclosure of those new inventions. The Patent system provides the inventor with a temporary monopoly on their ideas so that they may benefit from their works and develop them further. Eli Whitney, Faraday, Edison, The Wright Brothers, and Henry Ford all benefitted from the patent systems as did society as a whole.

Today, the role of the University is multi-fold; to incentivize and protected intellectual property while also disseminating knowledge as broadly as possible. These two roles need not be mutually exclusive.

Most new ideas require knowledge, which is abundant (non-consumable), unable to be restrained, dynamic and interdependent. Most ideas include elements of human nature or intangible value that simply cannot be expressed in the legal terms of a patent – yet remain essential to the commercialization process. There is a very large gap between the patentable invention and the commercialized version of that invention. Nearly all of the activity in this gap is innovative and intangible in nature. <u>In other words, commercialization of a novel invention is likewise a novel invention.</u>

Reasons why most startups fail.

The primary commercialization risks can be taken from a typical list of top reasons why startups fail. Each of these failure modes exist due to an absence of some knowledge, skill, or human ability. Each requires a deep and highly specialized set of knowledge assets to mitigate. No single experience set can mitigate all of them, and most inventors are lacking most or all of the skills required to cover these supporting roles.

1. **Lack of market need** (42%): Metaphorically Is your product a **vitamin** or a **Painkiller.**

2. **Lack of cash** (29%): Many startups run into money problems /short runway.

3. **Wrong team** (23%): Having a cohesive group of highly motivated, persistent, and diversely skilled people is crucial for startup success

4. **Too much competition** (19%): A second-mover advantage allows new competitors to quickly capture market share that you helped validate.

5. **Pricing issues** (18%): Figuring out how to price the product.

6. **Poor product** (17%): founders sometimes release products that don't fully appeal to customers.

7. **Business model** (17%): Lacking a monetization strategy. Failing to find ways to scale.

8. **Ineffective marketing** (14%): not understanding how to get one's product into the hands of the target market.

9. **Not customer-centric** (14%): Many startups fail to obtain customer feedback and act on it.

10. **Poor timing** (13%): Airbnb's success can be attributed to its impeccable timing, as it "came out right during the height of the recession when people really needed extra money.

Ancillary Innovation:

Ancillary Innovation refers to the provision of necessary support to the primary activities or operation of an organization, institution, industry, or system. The value of the ancillary process may far exceed the value of the primary innovation process, yet it is possibly the least understood. Ironically, ancillary innovation may be the greater untapped opportunity for commercialization then the primary innovation itself.

Ancillary Innovation differs in many ways than primary or secondary innovation.
For example, even if a marketing study demonstrates that a primary innovation will fail, the ancillary innovator who identified the flaw, is successful regardless of the impact on the primary invention. As such, the value of the Ancillary innovation staff becomes increasingly honed with each experience being applied to the next - independent of outcome.

On the other hand, if ancillary innovation is misplaced, inaccurate, irrelevant or unqualified, the commercialization can be impacted far downstream. It is important that ancillary innovation is measurable, validated, and applied at the right time in the right quantities in order to optimize the results.

Many accelerators, incubators, and venture capital firms serve in the capacity of ancillary innovation. They are run by a relatively few numbers of people whose past experience is sufficiently (statistically) populated with relevant failures and successes in a specific domain. Looking through the filter of maximizing financial profit, VC seek to minimize development and maximize return in order to mitigation risk.

Risk Based Valuation:

One of the more pressing problems for the technology transfer office at research universities is the allocation of equity between the inventor and the university. There are various "rules of thumb" but little else. With so many unknowns in the commercialization process, it is nearly impossible to calculate a rational allocation of early equity. The value of the ancillary innovation may be characterized by the quantity and quality of risk removed from commercialization; as compared to a risk-free hypothetical value of the primary investment alone. While this may seem like an overly clinical explanation, it is essential to understanding how we must measure events across the commercialization spectrum.

The Funding Gap

The biggest problem facing the creator of new discovery is funding of ancillary innovation. The knowledge gap between inception of the idea, and bringing it to market requires specialized tools. Unlike tangible property where mainstream financial institutions can hold a lien on property, intellectual property is difficult to contain in this manner. In fact, some attempts to control intellectual property may renders the IP useless. For example, you cannot imprison an artist and demand they create a masterpiece.

Rather, ideas must be diffused and shared across a community – this is how they increase in value and utility. Issuing rights, access, and control requires a cumbersome suite of "tangibility" tools from patents to licensing, subscriptions, contracts, etc. – all of which add friction to the commercialization machinery. Communities must be incentivized to preserve their shared assets. New forms of currency may be required to measure

intangible value into existence so that they may be articulated directly in a mainstream monetary system. Smart people need to be adequately and reliably compensated for doing smart work regardless of outcome. There is no way around this.

New thinking is required.

From revenue-based value to intellectual property-based value. The need exists to create a knowledge inventory system; that curates, measures, and maneuvers knowledge assets that exist in IP communities.

From financial-based planning to technology planning. What if success is determined predictably by the planning that takes place in the technology space before surfacing in the marketplace? The need exists to induce an internal market to "sandbox" ideas with representative supply and demand functions.

From an economy of scarce tangibles to abundant intangibles. A system is needed to measure and articulate social capital, creative capital, and intellectual capital in a community. Each person holds natural talents and capabilities to be converted into living capital. Consider, the possibility that people are the tangible value and the things they produce, are the intangibles - rather than the reverse?

From time-bound to timeless potential innovation. Attention must be paid to imagination, belief, and nudges separated in time. What if the next breakthrough invention exists as a potential in a timeless plane before it enters our time-bound one? We need to express data, information, knowledge, innovation, and wisdom as a function of time and 3-dimensional space so that we may predict when and where they exist.

From close-handedness to open-handedness. More people must be brought into the mix, more often, more diverse, and included in the fractional rewards of proper stewardship. Technology transfer is not a zero-sum game. Countless interaction among people form the fabric of society upon which all markets depend. Collaboration beats competition in most natural systems including the advancement

Delivering a concept to market requires a diverse group of specialists interacting organically with each other in collaboration toward a common goal. These contributions are products of social, creative, and intellectual capital that are often not expressed in the tangible form such as a patent or a trademark. Yet, this is ultimately where the majority of value is stored – incorporated. The opportunity for IP2M is to measure and deploy this invisible capital more efficiently as a means of reducing the risk in these commercializing discoveries. IP2M has developed a new set of tools that enable this next economic paradigm.

Lab-to-Market

Lab-to-Market is a project originating at Duke University recognized for breaking down the actions and decisions required to deliver a university research discovery from inception to market. By forming a readiness checklist for potential discoveries, they may put into motion a self-reinforcing series of events:

1. Such a checklist will reduce the risk that an investment would fail.
2. Reduction of risk reduces the expected rates of return.
3. More discovery candidates can make the threshold
4. More candidates increases institutional wisdom.

The success of the Duke program is sufficient evidence to suggest that development of the self-reinforcing loop is better suited for the university ecosystem for the purpose of generalized Intellectual property development.

Blueprint Labs

The objective of the Intellectual-Property-To-Market (IP2M) process is to leverage collaborative intellectual property - developed in the University research setting - and to package those ideas for commercialization. Modern Network Effects are incorporated across the university ecosystem to allow rapid organization of novel discoveries into useful forms as an integrated teaching exercise. Network effects provide an efficient and scalable means to organize knowledge assets into communities of practice. IP2M introduces a new approach for documenting, measuring, and accounting for organic human interactions around shared assets.

Blueprint Labs recognizes enormous breadth and depth of knowledge, cultural diversity, and natural proclivities of any University academic community. Blueprints considers how people motivated by intrinsic goals will, in fact, reveal what path the market wants to go. By “sandboxing” (observing ourselves behaving in a controlled university setting) the experience created may yield intelligence that can be extrapolated to wider markets. It is the goal of the I2MP developer to empower people achieve their personal goals in exchange for such business intelligence. This approach stands in contrast to a more typical method of depositing pre-cast “innovation” to an ambivalent, uninformed, or imaginary market.

The IP2M process used distributed ledger technology to issue title for creative, intellectual, and social capital with rights and remuneration assignable directly, or in aggregate, to individual holding such title. The net sum may then represent the university endowment of primary, secondary, and ancillary innovation value.

IP Foresight.

Using a modern and scalable toolset, IP2M reimagines the traditional IP commercialization methods. The Blueprint Labs team searches out, develops, represents, and transfers breakthrough IP and technology; each based on an original invention to support further research and to meet real human needs. The novel IP2M process combines IP analytics, technology planning, marketplace mapping, professional funding resourcing, and a vast network of experts in a collaborative that converts ideas into commercialization-ready opportunities, follow-on research funding, and growth companies.

Development:

Ideas must be developed into actionable forms: The IP2M development process combines scientific curiosity, IP analytics, technology planning, favorable market mapping, and professional funding resourcing alongside a vast network of experts in a collaborative. Promising finds are analyzed for unmet need and fit, IP gaps, meaningful uniqueness, market-impact platform potential, and technological and commercial readiness. Collaborate with external experts to test the weaknesses and strengths of new concepts is promoted. We call this revolutionary methodology IP Foresight.

Representation:

Ideas must be validated for feasibility and marketability: Processed IP is represented in a diligence report and is assigned a Commercialization Readiness Level™ (CRL). We use a "CRL Chart" to judge a concept or a technology or to make a determination about what is required to elevate its "readiness" status. IP Foresight teams' road test the charts and discontinue processed IP that cannot, for whatever reason, validate their promise for marketplace adoption.

Transfer & Title:

Value must be articulated in a legal construct: By representing the IP in the form of a diligence report and a CRL color chart, our clients can quickly see the concealed value. Ultimately, a report with the appropriate CRL Levels is released for assessment and IP transfer. The client works to provide on-going connections and streams of follow-on funding back to the inventor's lab at the university where the IP originated and builds a business that creates extraordinary future value, sometimes launching as public companies.

What makes Blueprint Labs different?

Pull Vs. Push: The University environment provides the ideal substrate to measure the connections and collaboration of people interacting with each other to perform ancillary innovation related to primary innovation. Most people on a university campus are motivated by intrinsic goals such as learning, discovery, and attaining publications, diplomas, and certifications. Second, the knowledge often required to bring a new discovery to market largely exists within the ontology of the university major and minor degree / certification products. These two factors may allow us to pull ideas through the commercialization process as a function of the normal course and mission of university operations.

The traditional VC model relies on a supply side "push" of a new product to an existing market. VCs require exceptionally high ROI projections in order to subsidize high losses due to high failure rates. The IP To Market (IP2M) approach uses a demand-side strategy to pull the innovation through the mandrel of the university knowledge endowment. By observing human interactions, developers can observe flow, density, velocity, surplus and deficit of knowledge as they interact in real time. If done correctly, the resulting business intelligence may be worth as much or more than the primary invention

Blueprint Labs Production System

As a commercialization developer, Blueprints Lab works directly with university faculty, students and external networks of experts to collect and organize Commercialization Readiness Level (CRL) data designed to draw out the technical value and economic potential of the university's under-used IP. The Blueprint Labs teams synthesize, convert and package CRL data into actionable business intelligence for IP capitalization by local investors and for data-driven decision making by the university to retain, drop, prototype, or release the IP to Blueprints for out-licensing. When the preferred path is a start-up, Blueprints engages community stakeholders to prepare local landing zones and its workforce to ensure early company traction and future business growth.

Blueprint Labs establishes collaboration systems at client institutions to implement a disciplined, systematic process for university IP acquisition, development, and utilization. With the IP2M Collaborative in place, we invite our clients to come alongside a university's technology researchers with incentives to interact with inventors, students, and administrators with the intention of de-risking the commercialization initiative.

Blueprint Labs understands the challenges faced by the IP clients, including corporate intrapreneurs, early-stage investors, and those who participate in later stage business growth. IP2M blends an IP and technology perspective with time-tested business acumen to deliver superior IP analysis reports, IP strategies, and detailed market insights. We also help universities deepen their core competencies and capacity in technology planning and prototype development.

Blueprint Labs focuses on largely unexplored areas that allow commercialization partners to capture significant intellectual property, which protects the envisioned value. And, by seeking to represent IP responding to large unmet needs with technology, we create clear value propositions for everyone.

The development stage of our process is designed to uncover untapped potential value and to reduce risk. Unlike traditional IP analysis, we set a decision matrix in place and strive to move IP along a prescribed journey. If we can't validate the science or the commercialization path within a defined period of time, we give the idea more time to percolate through our IP Foresight teams before moving on.

Frictionless IP Transfer

As a Commercialization Readiness Report is prepared to validate final IP transfer, our emphasis remains focused on maximizing value and creating downside protection. Guiding the conversion of IP to a prototype driven by a customer validation process is a core part of our de-risking and focus-management strategy. And if IP is based on a platform with the potential to produce multiple products across different areas, the opportunity to create tremendous value is substantial.

In order to effectively serve our clients, we have designed technology transfer protocols and products to overcome IP licensing and assignment inefficiencies and to establish win-win transactions. During the transfer of the IP to a new principal owner, we continue to foster alignment with the originators of the IP and focus on securing future company value while maximizing the speed of the transaction.

The result is a seamless pipeline of sustainable deal flow and productive partnerships between industry and universities.

Process Overview:

Blueprint Labs retains a distinct scope of work in the process of also empowering the university community to execute their roles:

Asset Scouting: IP2M involves systematic, global asset scouting missions for our clients. We deploy artificial intelligence and machine learning using our proprietary software to mine and match our own data bases with worldwide data indices to find key patents and to discover additional potential assets not yet in the public domain that fit our client's criteria.

Due Diligence: IP2M works closely with our clients to undertake all aspects of due diligence. Data is reviewed to evaluate the expertise required and select a team of "bilingual" evaluators who have both a deep technical expertise and business acumen

that match the client's need. IP2M records findings with validated and actionable "readiness reporting systems" where opportunity, value, and even deficiencies are easily identified.

Deal-Making: IP2M Advises clients on both sides of the table using a unity-of-effort approach that delivers win/win IP assignments, licensing deals, and other value access systems. IP2M works with industry and university clients to optimize the partnering strategy, discover gaps, and to bring agreement on IP transfer and follow-on-funding goals. IP2M process facilitate access to confidential data, initiates term sheet creation, and coordinates communications between prospective partners through deal completion.

The Network Effect:

Our unique process integrates inventors, developers, promoters, strategic data science, and a vast network of crowdsourced subject matter experts, university faculty and students who collect, synthesize and report on technology commercialization claims and validations to drive IP capitalization and venture development.

Blueprints Labs searches IP databases and laboratories looking for under-used university assets and concealed technologies and "What should be released for human benefit..." Our entrepreneurial scientists interact with inventors and form hypotheses. Then using proprietary analytical tools, we evaluate concepts until we identify something that might be a breakthrough.

The objective of the Blueprints ontology is to establish the operational categories of the intellectual process commercialization process and match that with the existing ontology of the University's endowment of major and minor and degree programs. It is important to establish "supply and demand" for specific knowledge assets so that effective matched can be made in a tokenized ecosystem.

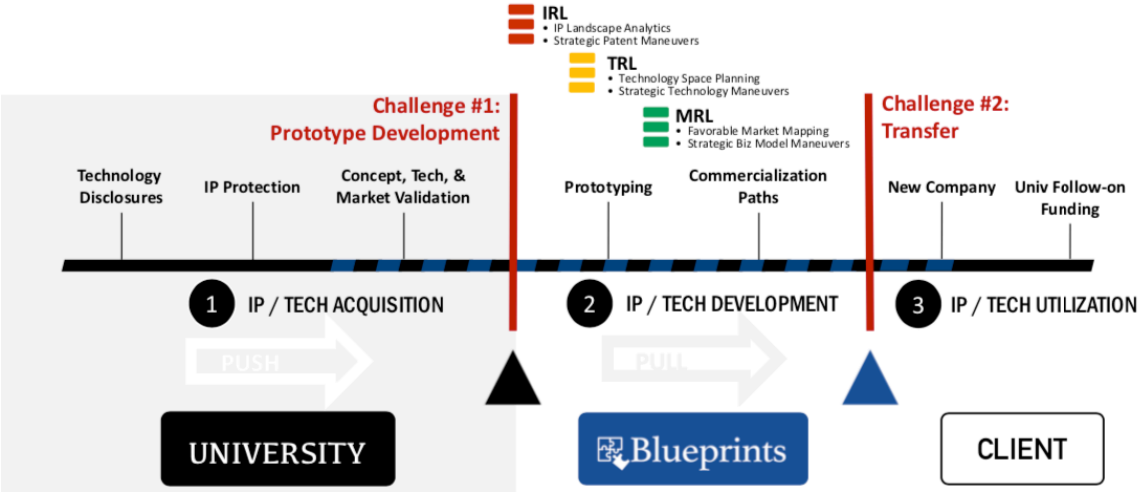


Figure 1: The IP2M roadmap for Intellectual property Commercialization

The IP2M System:

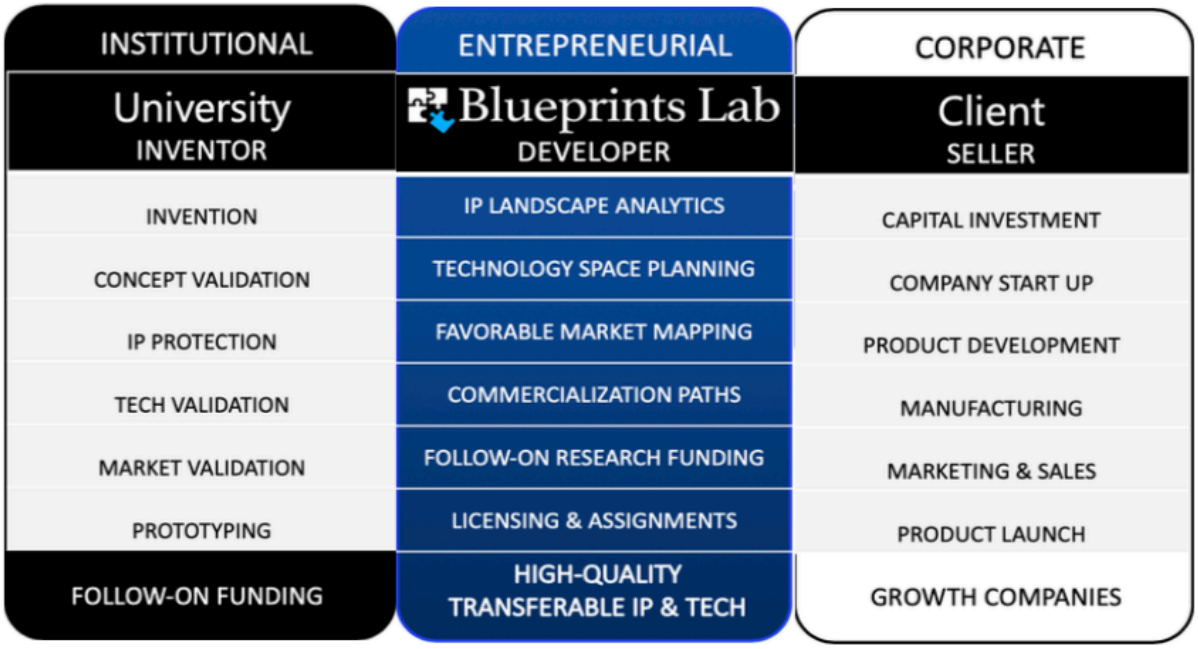


Figure 2: Top Level stakeholders and operational functions. Commercialization begins with Inventor, handed to developer, finishes with IP client acquisition

The operational functions of the IP2M community is comprised of 3 main segments. The University IP source, the Blueprints IP Development and commercialization, and the client, or 3rd party seeking to acquire IP at some stage of development.

Each category has a set of sub categories that represent specific milestones that a unit of Intellectual Property must register before being ready for handoff to the next phase.

Finally, a set of Commercialization Readiness Indicators will be cross-referenced for completion. The final stage is a state of de-risking, that is, as much commercialization risk has been reduced give the constraints of time and money on the commercialization process.

Development Flow:

The Inventor classification is largely characterized by the ideation and demonstration of novel discoveries with high potential for being practical and demanded by a market. Their responsibility for the development of the discovery is then passed to the Developer whose task is to perform business feasibility and marketability of the discovery. The promoter is the knowledge class that forms the corporation around the commercialization entity.

The terms Invention and Inventor are broad and not limited to any particular classification. Typically, they may be a university professor conducting experiments of interest, or performing research on behalf of a client, or grant.

Invention: The invention must be well-defined and comply with scientific methods and practices including, but not limited to control of test variables, null hypothesis, valid observation, repeatability, and peer review.

Concept Validation: The inventor's theory must be demonstrated either through prototype or simulation. Basic specifications of materials, I/O, user interface, and end product costs are needed to validate a concept and to provide initial conditions and limitations for additional steps.

IP Protection: Inventor must be able to demonstrate utility and novelty of methods, systems, or components that may qualify for patent protection. Preliminary patent claims should be established and cursory review of patent density in the area of the claims should be performed. Provisional patents, trademarks, copyrights, and trade secrets should be identified and initiated at the early stage of commercialization.

Technology Validation: It is important to understand if the technology that exists can carry the invention into the commercialized state. The prototype may not reveal deficiencies in producibility, service conditions, high loads, environment, etc.

Market Validation: The inventor needs to validate their assumptions regarding the target market and consumer demand. This may include sales channels, demand side factors, logistics, warranties and product liability.

Prototyping: Generally, a functional prototype is developed to the level of a minimum viable product. This is a subjective state of development often limited by cost and expedience. In any case, the prototype must be validated as an MVP.

Follow-on Funding: Once these initial steps are taken, the invention must be re-evaluated for feasibility as a condition for receiving additional development funding and/or specifying a development strategy to maximize commercialization value of the invention.

Blueprint Labs:

If the invention is deemed viable, preliminary work package may progress to the next levels. The role of the developer is to create the Ancillary Innovation plan. These are all of the factors from contracts to marketing to manufacturability – all matters leading to a product that may be sold in a market consisting of more than one client.

Readiness Levels:

IP Landscape Analysis: IP risk can have an outsized influence on the validity of commercialization effort. The purpose of this readiness level is to understand the intellectual property landscape surrounding the intended used case for the product. Is the space crowded, competitive, or vacant? The possibility of tangential and/or secondary innovation should also be considered at this phase.
The final category for the early stage innovation is comprised of a checklist intended to validate that each major commercialization step has been completed and ostensibly, associated risk has been removed from the commercialization prospectus of the initial discovery;

Leading indicators:

Is the IP intelligence shared in a compelling format ready for transfer? Are the claims properly addressed and fully defended? Can they be understood by a wide range of people from the patent officers to possible end-users?

IP positioned around larger entities likely to acquire - built to sell. Mapping the Intellectual property in and around commercial activity that is likely to expand or migrate across the claimed space.

Alternate tech paths & competition design around IP anticipated. Mapping trends and tangential innovation opportunities that may take advantage of subject IP. Identifying competitive behaviors among potential clients that may be enhanced or blocked by IP acquisition.

IP market-impact strategy planned & licensing matrix anticipated: Identify licensing contracts and terms likely to produce revenue, partnerships, or collaborations. Licensing for direct clients or as an added benefit to acquisition.

Time to follow-on IP filings established & linked to strategic plan: Identify future patent opportunities along the iteration path of original profile. Develop market driven scenarios and timing for additional filings.

White-space proven & exclusive ownership path defined: Identify areas where patents do not presently exist to assure dominant position on filings. Develop coverage against being boxed-in by competing IP.

IP proven unique with clear differentiated claims Develop claim structure that accurately represents nature of the IP as well as anticipating future advances, opportunities or threats.

Unmet need & entire product roadmap & implementation path captured: Multi-disciplinary assessment of potential / anticipated IP lifecycle. Road map to assist planning for next readiness level indicators.

High quality IP context data generated & prior art risks predicted: Aggregate all prior steps into actionable data from lineage to preceding patent filings. Identify risk exposures and determine likelihood and consequences of adverse actions

Technology Readiness Level:

System incorporated in commercial design & ready for full deployment: Technology related to IP is commercially viable, proven, and able to adapt to market requirements.

Prototype system verified & Integrated pilot system demonstrated: Minimum viable product developed further to working prototype able to meet patent claims and market projections

Technology space analyzed for competitive advantage or blind spots: Alternate technology review required to establish market alternatives and client options. Identify upstart competitors and disruptive innovation around the market edges.

Technology cost to validate estimated: Measure / test sample operations to measure launch, training, sustaining, maintenance, and operations costs. Extrapolate to lifecycle duty costs.

Regulatory ease determined to get FDA (or other) approval; Evaluate regulatory environment including local, state, national and international regulatory environment, cross compliance, and restrictions. Assess and initialize compliance standards

Laboratory testing of prototype component or process: 3rd-party controlled validation of claims and compliance criteria. Certification and endorsement of performance for due diligence.

Critical function; proof of concept established: Validate marketable claims, critical functionality, and proof of concept is a variable-controlled and transparent manner suitable for due diligence compliance.

Technology concept and / or application formulated: Technology specifications developed for production build plan, licensing, and distribution. Technologist review and validation.

Basic principles observed and reported: Aggregate data and validation records for outbound reporting to stakeholders and administrators

Marketplace Readiness Level:

Demonstrated readiness for national / global scale up: Marketing analysis performed for strategic test markets. Prioritization of expansion plan and progression. Optimize for message and cost

Integrated plan deployed with initial revenues / costs on target: Aggregate information from prior readiness levels and integrate with marketing plan. Compare revenue estimates with cost of goods sold.

Probability (%) of success determined in a fully integrated pitch: Assess net variance for both peril and opportunity. Determine high risk phases and mitigation strategies.
Timeline for all needed actions linked in strategic plan: Aggregate strategic plan, technical specifications, marketing plan, and develop proposed execution schedule.

Profitable business model alignment with target customers: Compete business plan ready for **feasibility study against target customer needs and requirements**. Stakeholder and investor review. Certified business model through accounting, engineering, and board of directors

Proven customer preference for conceptual products at price: Focus group and customer analysis. Comparable pricing in test markets. Proforma sales projections for various price points.

Market size, proven scope and urgency of customer needs by segment: Market analysis and diffusion rate graph for early adopters and mainstream acceptance. Assess demand based on customer needs assessment

Value prop formulated for broadly understood needs: Articulate value proposition in terms readily understood by clients and reflected by customer needs, references, and intrinsic motivations.

Basic need observed and documented from secondary sources: Test and validate assumptions from secondary sources and public literature reviews. Test null hypothesis to all accepted assumptions and claims.

In general, readiness levels may be broadly characterized in the following chart as operational milestones, the achievement of which requires the production of ancillary innovation.

Table 1: Readiness Summary Chart: Basic categories and checklist for validating IP commercialization readiness; IP Readiness, Technology Readiness, and Market Readiness.

Intellectual Property Readiness	**Technology Readiness**	**Market Readiness**
IP format	*Commercial design*	*Scalability*
IP positioning	*Prototype demonstration*	*Cash flow Roadmap*
IP alternate utility	*Technology ecosystem analysis*	*Risk Roadmap*
IP Strategic Planning	*Technology development cost estimate*	*Market roadmap*
IP market-impact & licensing	*Component analysis*	*Timeline*
IP white-space analysis	*Proof of concept*	*Focus Group Alignment*
IP claims	*Proof of application*	*Demand Analysis*
IP research and prior art analysis	*Documentation and references*	*Value proposition communication*
IP Roadmap	*Regulatory analysis*	*Market research validation*

Claims and Validations

The fundamental building block of the knowledge market will be a series of claims made by an individual contributor coupled with a validation of that claim by another individual contributor. A verified claim can now be treated as a unitary ***Knowledge Asset*** because it fulfils the definition of an asset as being formatted in terms of a "quantity and a quality". The strength of the claim is appraised through an assessment of the quantities and qualities of the validations.

Table 2: The following checklist demonstrates a graphical representation for the state of market readiness for a hypothetical IP discovery. Where green means GO and red means STOP, a visual review can easily convey the status of readiness checklist.

Marketing Readiness Checklist	***Claim***	***Validation***
Scalability analysis		
Cash flow Roadmap		
Risk Roadmap		
Market roadmap		
Timeline		
Focus Group Alignment		
Demand Analysis		
Value proposition Comm. Strategy		
Market research validation		

The yellow boxes represent a claim related to market readiness for ancillary innovation related to a hypothetical unit of Intellectual Property. The blue boxes represent the validation of the claim has been performed. The green box (spectral combination of yellow and blue) represents the validated knowledge asset is ready. The red Box indicates unvalidated claim or more work is required. White represents a null condition. Neither claimed nor validated

Incentives:

We have established the criteria by which IP may move across the timeline toward completion. Next, we need to specify the machinery that will autonomously pull this activity toward completion.

The IP Pull processes utilizes game theory to incentivize and reward the real-time matching and exchange (supply and demand) of knowledge assets between individual nodes (persons) in the network. All work packages are then conducted by the participants who register transactions to the distributed ledger. Little or no administrating overhead will be required.

Rewards:

Three forms of reward are available as incentives to attract and motivate game players to participate in pulling IP through the University knowledge inventory. game incentives:

1. Extrinsic Value
2. Intrinsic Value
3. Game Tokens

The novel application of relational database technology combined with decentralized ledger technology allows the users to interact with the database in many ways. It also allows the database to execute smart contracts, such as awarding a token for completing a programmed action. These tokens, called "credits" will provide a "receipt" for work performed on the IP commercialization project. These tokens may be exchanged for any number of offerings that will advance the intrinsic and / or financial aspirations of the individual contributor.

User Interface:

1. Users will register to the game platform.
2. Users will enter their knowledge inventory by filling out a series of specialized questionnaires.
3. The user starts with a top-level questionnaire and may populate deeper level questionnaires as they learn how the game works.
4. User can then accumulate game tokens for convincing one or more other participants to validate their claim related to the knowledge inventory.
5. Upon validation of claim, each claimant and validator receive a game token.
6. IP Readiness Work packages are issued in the form of a pending claim "white box"
7. Players claim the work item and complete the task within their validated knowledge range.
8. Other Players validate the completed claim within their validated knowledge range.
9. Upon validation of work package, claimant and validator each receive game token.
10. Game tokens may be exchanged between the participants for quid pro quo services on an internal exchange.
11. Tokens may also be used to query the overall database for business intelligence and contacts.
12. Each query generates more claims; thus, tokens are brought into existence as a function of work performed by the network.
13. 3rd parties may query the database as well, however, if they do not hold sufficient tokens, they may need to purchase tokens from the holders on an external exchange in order access the database.
14. Tokens peg to external market value by supply and demand for network intelligence.

Intrinsic Value to Player:

Participants may hold or liquidate their tokens to an external market at fair market value. Tantamount to receiving "royalties" for network contributions, talents and skills. Game play is a validated demonstration of work experience and may enhance professional advancement. Tokens registered to an immutable decentralized game ledger also provide the participant the ability to quantify and qualify their interaction with an IP2M community and positively record their activity allowing them to:

- Validate Certifications
- Gain Work experience
- Prove expertise
- Earn Citations
- Validate CV/Resumé
- Attract mentors, protégé, collaborators, etc.
- Establish a time-stamped Chronology
- Build professional network

The resulting data will include their knowledge, and the knowledge of the validator or validators, as well as citations from database queries. This may serve as a next generation Curriculum Vitae (CV) or certification system.

Token supply:

Tokens can only be generated as a proof-of-work. As such, the platform holds no tokens in reserve. Any tokens purchased by 3rd party in exchange for Fiat or another form of property, are then expired to a null account thereby constraining supply in proportion to tokens created. There should always be exactly the number of tokens in circulation as are needed to execute the business activity being measured.

Token demand

Third parties such as entrepreneurs, vendors, researchers, Artificial Intelligence engines, data analytics companies, corporations, banks, insurance companies, etc., all may have an interest in measuring the knowledge inventory in a community, geographic area, per topic, per time frame, etc. The accuracy of these assessments are contingent on verified data.

Token Value:

As the database becomes larger, interconnected, and diverse in subject matter, the value of discernable business intelligence will increase. As such, demand for the tokens will increase. In this manner, it is in everyone's best interest to act with high integrity rather

than low integrity. For enforcement, cheaters will be easy to identify by auditing database. Outliers should be easy to spot.

Extrinsic Value:

Commercialized Value of Innovation: The more obvious revenue driver is ultimately a licensing agreement for intellectual property secured by the university. Ideally, the University funds the research through public or private grants. The Technology Transfer office secures intellectual property protections in preparation for commercialization. The University seeks to offload the intellectual property at the optimum stage yielding the highest return for the lowest internal investment. In general, the closer to monetization, the higher the extrinsic value.

Ancillary Innovation Business Method: Deploy game mechanics to the IP2M interface.

1. The knowledge Inventory is used to motivate players to create their knowledge asset portfolio in a very specific format. Game tokens awarded.

2. Claims and validations are constructed as a means of achieving consensus related to the state of readiness for commercialization of IP. Game tokens will be awarded

3. Distribution and exchange of game tokens pulls the commercialization target forward toward completion, monetization, or transfer.

4. Access to data: game metadata provides important generalized business intelligence. Game tokens will be converted to cash by 3rd party inquiries.

5. Decentralized database is fully auditable such that specific validated transactions can be used to assign rights, contracts, and licenses.

6. IP is ready for commercialization. As the process reaches conclusion, potential buyers may begin bidding on the IP rights. Price increases as risk diminishes.

Conclusion Part 1:

Part 1 provides a general overview of the IP2M validation and Commercialization process including some of the challenges, rewards and definitions.

The IP2M process developed by Blueprint Labs modern database and decentralized ledger technology to "pull vs push" methodology conversion to improve the efficiency and scalability of traditional proven methods for commercialization. This conversion requires one-time installation of a system that takes advantage of network effects and game mechanics. Specifically, the system measures, stores, and provides an exchange for the

social, creative, and intellectual capital combined with the intrinsic motivations of the university community.

The result is improved performance and scalability in the ancillary (supporting) innovation processes that is essential for de-risking the commercializing of primary innovation.

Part 2 advances these ideas with specifications for several key components of the system platform. These include:

- Knowledge Inventory
- Intrinsic Value
- Claims and Validation
- Unit Business Transactions
- Network Effects
- Game Theory
- Distributed Ledger
- Tokenization

Part 3 will introduce the algorithmic treatments and relational database specifications that will enable the build team to advance the platform architecture to increase the value of associated business intelligence.

Part 2: Process Specifications:

The University Environment: The commercialization process may be used as a teaching tool within the schools related to the innovation, specifically, the school of business, the school of engineering, the school of law, etc. The professors may serve as validators of student claims regarding commercialization in their domain and likewise receive token from the incentives system. Tokens are awarded for completion of commercialization tasks. The University may accumulate substantial holdings of tokens for collaboration with other universities. Linking oneself to a commercialization effort may yield tangential opportunities such as co-authorships, novel business opportunities, cross-industry, or international applications.

Knowledge Inventory:

The knowledge inventory is an accounting system used to identify and distinguish what people know about (supply), and what they want to know more about (demand). Participants enter their applicable knowledge surplus and deficit across a structured ontology ranked from -3, -2, -1 deficit vs. 1,2,3 surplus. This segmentation corresponds to "six sigma", or +/- 3 standard deviations from the norm. The reason for this exercise is to establish a normal distribution from which statistical sampling may be applied. The exercise is not intuitive and will require some training for the participants. The Game of Zero is applied for several reasons stated below.

The Zero Constraint is required to enforce the normal distribution. We will be attempting to create a free and fair market for knowledge assets within which individuals will exchange interact in a networked environment. Roughly equal amounts of "supply and demand" are required so that matches may be readily discovered and memorialized using a time-banked currency. This information will also become the basis of an internal knowledge market and subsequent value calculations.

The Wiki-tagger

The Wiki-tagger is an essential application of the specialized knowledge inventory system. The goal of Wiki-tagger is to index the decentralized knowledge inventory to Wikipedia ontology. In doing so, Wikipedia may serve as a "validated" substrate upon which to discover and contrast knowledge pathology. For example, if a participant indicates proficiency in mechanical engineering and mastery of a musical instrument, projecting these two points on to the Wikipedia tag structure will reveal the degrees of separation between the two topics and provide a path of "relevance" between them. This path would assist in matching proximate knowledge assets as possible claimants or validators. Furthermore, visualizations of Wikipedia metadata may be projected on our knowledge inventory to identify opportunities, references, prior art, IP landscape, and a great deal more higher order business intelligence.

Knowledge Inventory User Interface / Experience:

1. Player registers on system with an avatar (Identity is secured elsewhere)
2. System presents specialized questionnaire requesting player selects highest level categories from Wikipedia Ontology.
3. Player selects category and reveals sub categories. Player may also access by entering a key word.
4. Article related to the key appears and player is required to "tag themselves" with Wikipedia links.
5. Corresponding to each tag, the player must register their interest in the topic by estimating their proficiency on a "bell curve"
6. The system will assign the corresponding "sigma" from -3 to +3.
7. The player is required to continue tagging themselves until the sigma total equals zero.
8. Player Stake will be memorialized through absolute value summation.
9. Player will then be allowed to save the entries.
10. The player's knowledge inventory may be edited at any time.

Table 3: The following is a matrix representation of the next generation CV/Resumé called a "Curiosumé" from the word Curate and Summary

Wikipedia Tags	**-3δ**	**-2δ**	**-1δ**	**1δ**	**2δ**	**3δ**
<Mechanical Engineering>					X	
<Percussionist>			X			
<Photographer>		X				
<Aircraft Certification>				X		
<Facility Condition Assessments>						X
<Parenthood>		X				
<Public Speaking>			X			
Total = ZERO		-4	-2	+1	+2	+3
Absolute "stake" Value = 12						

This may initially be difficult for many people to grasp at first since the process will be unfamiliar to them – but this is a necessary educational hurdle. In essence, they are being asked to registering their intentions on how they want to interact with the community. The system algorithms will then send them relevant work packages closely matched to their optimal state of flow.

Optimizing flow:

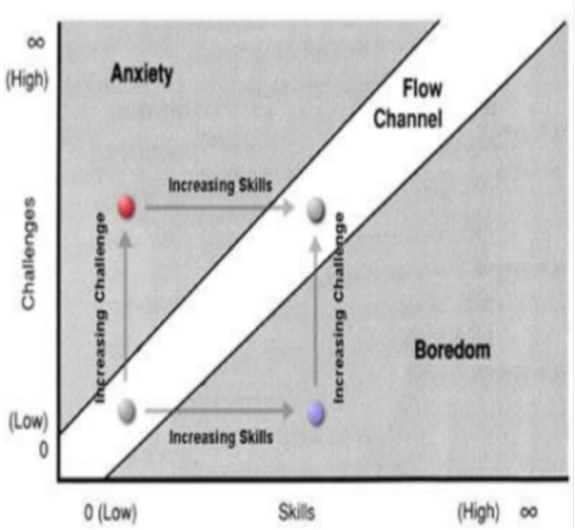


Figure 3 Mihaly Csikszentmihalyi' State of Flow where a person has the right skills to meet the right challenge, they operate at optimum creativity, intellect, and productivity.

Psychologist and author Mihaly Csikszentmihalyi provides a framework for the optimal state of personal productivity and self-actualization in his book *Flow and Creativity.* If a person does not possess the skills to meet a challenge, they will experience anxiety. If their skills far exceed the challenge, they will experience boredom. However, when skills match challenge, the person experiences personal growth and happiness.

The knowledge inventory system and Wiki-tagger provide the framework by which a person can identify, adjust, and direct themselves algorithmically to the optimal state of flow.

If a person states falsely, they risk not being able to secure a validation, or they receive irrelevant work packages that likewise will not be able to secure a validation, etc. If a person propagates false claims, they will make themselves unhappy when working on a work package that is outside their comfortable flow. They will perform below people who are more correctly allocated. The optimum game strategy will be to state and pursue their true interests, motivations, and natural talents.

The Knowledge Inventory

The Knowledge inventory is how the formation of the knowledge assets are stored and accessed. Proper formation of the Knowledge Inventory includes availability of knowledge assets contained within happy and productive persons willing and able to reliable execute a business objective in exchange for generous compensation with no further limitations. Ultimately, the knowledge inventory is a relational database that secures validated knowledge assets. The knowledge inventory will be managed on a blockchain where tokens are generated as a proof of actual work performed by individuals interacting with their networked community.

Key Features of The Knowledge Inventory:

- Knowledge Assets are expressed in normalized distributions.
- Knowledge Assets are comprised of validated claims.
- Knowledge Assets pathology is indexed to Wikipedia ontology.
- Behaviors are regulated by Game Mechanics

- Rewards are optimized for self-actualization of players
- Access, security, replicability, scale, and auditability are assured

System of Motivations:

In order for the IP commercialization to pull through the university system, it is important to assess the entire suite of motivational tools that may be deployed to incentivize people to autonomously complete work packages. The compensation package will include both extrinsic and intrinsic rewards.

Extrinsic Rewards:

In general, extrinsic rewards include cash payments, licensing rights, royalties, etc. Intrinsic rewards include path to attainment of personal goals such as certification, diploma, professional networks, etc. This suite of incentives is postulated in more detail below:

Network efficiency: Inventor wants to know if their idea has wings so they need to speak with a developer. Neither wants to waste their time speaking to the wrong people so they compare knowledge inventories to map most likely surplus and deficit.

Network Reputation: Both Claimants and validators want to maximize their reputation so they are choosy over whose claims they validate and who validates their claims. An ideal match optimizes network citations and references. A poor match reflects sub-optimally.

Micropayments: Both claimants and validators want to be assured they will receive an equity position for their contribution so they want to record knowledge assets for proactive citation by 3rd party queries. Each time they are picked up by the search engine, they receive reputation bonus or micropayments from token awards.

Expanded User Base: The university benefits from an expanded and diverse base of stakeholders within the university system who are incentivized and motivated to exchange information among themselves. These relationships may easily move beyond the university environment to include alumni, local industry, colleagues, or future benefactors of the innovation.

Stakeholder Linkages: Under the decentralized database, all stakeholder may be associated with each other in time and topic providing a history of interactivity. As tokens are delivered broadly and the size of the database increases, intrinsic goals of each participant are increasingly aligned.

Non-Disclosure agreements: Likewise, non-disclosure agreements may be enforced through auditing of transaction records. NDAs are not necessarily intended to restrict

access, rather, their purpose is to record who has had access. A digital handshake may then be used to be used to record secret; they are intended to discover who has had access to a secret.

Tracking Transactions: The tokenization process allows transactions to be tracked and audited so that future commercialization projects passing a similar phase of development may be replicated by the same or similar team who have developed such expertise. The amount of "stake" that each participant holds may be tracked and value may be assigned to these human "nodes" in a Metcalfe network.

Trade Secrets: Secret Sauce and Trade Secrets are often purposely not patented because the patent itself makes the secret public and visible. By assigning rights to individuals who developed trade secrets a de facto "unpublished" patent may be established.

Touch tags are instances where a quid pro quo interaction takes place between two persons. The condition represents the situation where one person askes the advice of another person with no particular claim or validation taking place with the exception of a shared tag. This is important because the role of "advisor" may reflect an amplified contribution over a collaborator.

Citations: are a specialized form of compensation vehicle. Not unlike Search Engine Optimization, a player with a high number of citations will elevate in status and value within the university ecosystem and beyond. Such enhanced placement has value to both the claimant and the validator. We would expect to see a citation market emerge using game tokens.

Publications and Presentations: When an innovation achieves a high state of validation or compensation in terms of tokens, the work would increasingly provide publication and speaking opportunities. Such opportunities create a condition of very high token creation and distribution for a conference speaker with a large audience.

Equity Awards: When the time comes to distribute equity, having the relevant stake of each "stakeholder" represented in specific form, any number of IP vehicles can be used to adequately reward the participants.

IP Licensing: can return a micro royalty to either to the system as a means of accessing intangible assets, or directly to specific persons who hold stake in the area of discovery.

MOUs: Two or more entities may enter into an MOU with a digital handshake consisting of a reciprocal claim and validation of the other.

Copyrights: may be claimed across the relevant portions of the intangible assets of the assignees rather than specific industry. Copyrights may be enforced as a function of relevance of the transaction records and the popularity of the copyrighted work.

Patents: A patent becomes a convenient distribution mechanism because it established finality. That is, the people who worked on the top-level innovation may be recorded on the patent itself. After the patent is issued, no other additions can be made and those transaction records are memorialized and compensated outside the tokenization system.

Intrinsic Rewards

Intrinsic values are very powerful motivators in an economy. The "Invisible Hand of Capitalism" is the intrinsic motivation of entrepreneurs to accumulate vast wealth - in doing so, they must employ workers, invest capital, and innovate; all of which ostensibly benefit society. The idea of competition can be traced back to the law of the jungle - kill or be killed. However, collaboration is far more prevalent intrinsic need of social animals to form and be a member of a community. Humans have developed an extraordinary array of emotions to reflect and articulate intrinsic motivations. Maxims such as "treat others how you wish to be treated" reflect on the intrinsic motivations of civilized society likely exceeding the punitive motivations of law, politics, or government.

The University: The University Campus provides a controlled environment to study intrinsic motivations of people. Everyone from students, teachers, administrators, alumni and even local business, industry, regulators, and politicians have an intrinsic motivation traceable to the university system. As mentioned previously, the University serves as a sandbox – in observing itself under controlled environment, a great deal of information may be extrapolated upon the external uncontrolled environment.

The following is a general summary of some of the forces that motivate people at the university:

Undergraduate Students: Undergrads are increasingly looking for a career as close to their natural interests and which promises an adequate income to mitigate economic risk. They need to pay down student debt, enjoy a comfortable life, attract a life partner and grow in their profession. Obstacles include financial risks, employment risk, technological risks, and competition from peers.

More recently, students are able to watch a YouTube video to access the answers that they need at the time that they need it. Obviously, you cannot watch a video on how to ride a bicycle and then be successful – students are looking for the practical experience where they can safely jump in, learn, fail, and learn, etc. This is different than the classroom where failure is not an option.

Graduate Student: A graduate student is often looking for one of two things, to specialize or to generalize. A specialist in, say, physics seeks a deeper understanding of the natural world through experimentation. The nature of research is that knowledge can be gained from both successes and failures. A failed experiment is an essential component of the

scientific method to prove the null hypothesis. These trials however are more often than not dictated by others rather than the individual unless specialized funding is attained. A specialist seeks novel problems with novel solutions.

A generalist may be an engineer who earns an MBA, or a social worker earning a law degree. In many cases this is akin to learning a different language. The reason why many engineers earn an MBA is to articulate what they experience in the natural world, in the language of the man-made world of business. A social scientist who is also an elite athlete who earns a law degree would benefit herself and society through the ability to articulate a diverse combination of knowledge assets.

Professors: Professors fall into several categories: adjunct, associate, tenured, and research. Each are motivated by publications and presentations in some form – i.e., some version of publish or perish. The adjunct is often a working professional whose career is enhanced by the adjunct position who bring real life accomplishments to the class room. An associate professor is looking to secure a tenured position actively publishing in peer-reviewed journals. Tenured professors are motivated by society leadership and increased journal status. Finally, research professors pursue novel and specialized topics. In Fact, many societies and journals exist for the sole purpose of vetting and validating professor publications.

For these reasons, opportunities to publish in the context of commercialization is a direct route to relevancy for professors. Professors are also vested in the future success of their students either through grants, consulting, or future employment, it is in their best interest for students to succeed. Professors are also sought as expert witness to social commentary or controversy as validated thought leader. A professor's pay and opportunities are directly and indirectly attached to their lectures, publications, and validated claims.

University Technology Commercialization Office (TCO): The University TCO is tasked with identifying and packaging novel research and discovery for commercialization. Their work is largely conducted under strict NDA and involves legal means for securing ownership of ideas. A TCO is judged by their portfolio of patents which also reflects on the University Status among other schools. Corporate associations mixed with Alumni leadership form a complex web of relationships seeking similar extrinsic goals. The work of the TCO generally ends where the work of commercialization and enterprise start up begins. The TCO depends on associations with industry, entrepreneurs, and government for bringing an innovation to market. This is an expensive process that is tasked with predicting most likely successes and truncating less likely successes. Existing processes are built on imperfect information within a closed environment (NDA).

University Administrators: University Administrators run the various non-teaching departments at the university including marketing, planning, registrar, alumni

association, grants, endowments, reunions, etc. An abbreviated intrinsic motivation profile may go like this:

Marketing seeks to portray the university as a thought leader in the community
Planning and facilities needs to justify feasibility for projects and renovations.
Grants need viable projects that match grant sources and offerings
Alumni Association seeks to increase the participation of alumni in the broader community.
Endowments seek to secure financial support of alumni, institutions, and corporate sponsors

External Agents: The University Ecosystem often extends far beyond the borders of campus. Community colleges and high schools feed the university enrollments. Local service providers maintain facilities and deliver supplies. Economic development professionals and politicians are tasked with creating living wage jobs for the community. Many corporations who provide such jobs look first and foremost at the strength of the local university ecosystem when deciding where to locate offices or facilities. Local accountants, engineers, attorneys, and medical professionals support commerce associated with the expanding university infrastructure. It is in the best interest of the wider community that the university is successful in commercializing knowledge assets

Sandboxing the University Ecosystem:

If people are excited about a project, they will want to work on it for intrinsic reasons. If there is no interest among ancillary innovators, it is unlikely that the market would respond favorably either. If an idea is successful on a spreadsheet, it is more likely to be successful on a blockchain. The factors that make a project successful in the sandbox may also make the project successful in the market. In other words, by observing and measuring actions and responses in the relatively controlled environment of the University, we may gather much of the knowledge needed for commercializing serial, parallel, and / or tangential innovation.

Formation of the asset:

The formation of knowledge assets in a community is probably the most difficult component of the project because it requires that the participants think differently about themselves and their future interactions with each other. Nothing economic can happen until two or more people get together and make something useful. In fact, the word "corporation" is defined as a group of people combined into or acting as one body. The challenge of decentralization requires that communities act as one body without the friction, boundaries, and limitations of a centralized corporation structure.

Table 4: Baylor University Ontology. The University is pre-classified by academic orders, programs, majors, minors, and certifications, etc. each program is indexed to Wikipedia as well as corporate placement classifications.

Accounting	Education Certification - Deaf Education	Middle East Studies
American Studies	Education Certification - Music Education	Military Studies
Anthropology	Education Certification - Physical Education	Museum Studies
Apparel Design & Product Development	Education Concentration for Biology Majors	Music
Apparel Merchandising	Education Concentration for Health Science	Music Composition
Applied Mathematics	Studies Majors	Music History and Literature
Applied Music	Education Concentration for History Majors	Music Theory
Arabic	Education Concentration for Math Majors	Neuroscience
Arabic and Middle East Studies	Education Concentration for	News-Editorial
Archaeology	Physics/Mathematics Majors	Nonprofit Marketing
Art History	Educational Psychology	Nursing
Asian Studies	Electrical and Computer Engineering	Nutrition Sciences
Astronomy	Engineering	Philosophy
Astrophysics	English	Photojournalism
Aviation Administration	Entrepreneurship and Corporate Innovation	Physics
Aviation Sciences	Environmental Health Science	Piano Pedagogy
Biochemistry	Environmental Science	Political Science
Bioinformatics	Environmental Studies	Poverty Studies and Social Justice
Biology	Exercise Physiology	Pre-Dentistry
Business Administration	Film and Digital Media	Pre-Law
Business Fellows	Finance	Pre-Medicine
Chemistry	Forensic Science	Pre-Occupational Therapy
Child and Family Studies	French	Pre-Optometry
Chinese	General Family & Consumer Sciences	Pre-Pharmacy
Choral Music	Geology	Pre-Physical Therapy
Church Music	Geophysics	Pre-Physician Assistant
Classics	German	Pre-Veterinary Medicine
Clinical Laboratory Science	Gerontology	Professional Selling
Communication	Great Texts of the Western Tradition	Professional Writing and Rhetoric
Communication Sciences and Disorders	Greek	Psychology
Communication Specialist	Greek and Roman Studies	Public Health
Computer Science	Health Science Studies	Public Relations
Computer Science Fellows	Health, Kinesiology, and Leisure Studies	Recreation and Leisure Services
Corporate Communication	History	Recreation Ministry
Creative Writing	Human Resource Management	Religion
Criminal Justice	Instrumental Music	Rhetoric and Public Discourse
Dance	Interior Design	Risk Management and Insurance
Earth Science	International Business	Russian
Economics	International Studies	Science Research Fellows
Education - Elementary Education	Italian	Sign Language Interpreting
Education - Middle Grade English,	Japanese	Slavic and East European Studies
Language Arts, and Reading	Journalism	Social Work
Education - Middle Grade Mathematics	Latin	Sociology
Education - Middle Grade Science	Latin American Studies	Spanish
Education - Middle Grade Social Studies	Leadership Studies	Statistics
Education - Secondary Business	Legal Reasoning and Analysis	Studio Art
Education - Secondary English,	Linguistics	Supply Chain Management
Language Arts, and Reading	Management	Theatre Arts
Education - Secondary Life Sciences	Management Information Systems	Theatre Design and Technology
Education - Secondary Mathematics	Marketing	Theatre Performance
Education - Secondary Physical Sciences	Mathematics	Theatre Studies
Education - Secondary Social Studies	Mechanical Engineering	University Scholars
Education - Spanish All Level	Media Management	Women's and Gender Studies
Education - Special Education	Medical Humanities	World Affairs
Engineering		

All assets are described in terms of a quantity and a quality. For example; real property may be described in terms of its dimensions and zoning. An acre of industrial property is a different asset than a half-acre of residential property. The skills required to develop, maintain, regulate, and transact are also very different. It is insufficient to call oneself a Real Estate professional without specifying such differences.

Real Estate is a good simple example because it defies centralization (location, location, location). But the same is true for all professions, certification, and professional classifications because assets value is location dependent. The granularity with which someone describes themselves breaks down at some point because the client may not be unqualified to determine if the classification is accurate. This is tantamount to purchasing a plot of land without knowing its dimensions or zoning.

The Claim:

A claim can be any assertion of value that a person makes regardless of size. A claim can be as simple as "I grow orchids" to as complex as "I cure Cancer" (later we will introduce methods for adjusting value of claims). Social media, for example is little more than a collection of claims set in time and space. The patterns that these claims produce creates a body of business intelligence that may be captured by advertisers and business analysts. Unlike social media however, this business intelligence may also be used to commercialize the Intellectual property of the participants <u>for the benefit of the participants</u> thereby yielding higher long-term value.

The Validation:

Ultimately, all claims have a physical manifestation that can be observed by a third party of similar or equal knowledge as the claimant OR sufficient knowledge of the topic under observation. In science it is called peer review, Lawyers call witnesses, construction and manufacturers use inspectors. Validation is the only way to be assured that a claim is accurate. In the financial industries, validation occurs at the point where financial risk is transferred from one entity to another. The validators would likewise have a comparable knowledge set as the claimant and must be incentivized not to collude with the claimant. In other words, the validator must be compensated independently regardless of the judgement that they make over the claimant.

The Claim and Validation system is comprised of a mutually reciprocal agreement between a claimant and a validator. While the terms we use here may sound somewhat clinical, claims and validations are more a fact of everyday life than not.

For example:

- A student claims that a reading assignment is complete and a teacher validates that claim with an examination.
- A taxpayer claims that their taxes are paid, and an auditor validates that claim.
- A researcher claims that an experiment is successful and a peer review process validates the claim.

One obvious application may be pre-validating the claims that a professional make on their CV or Résumé. An employer would obviously favor a validated CV account for claimed education, experience, and certifications, over an unvalidated CV.

The University as Validator

The University registrar's office is routinely familiar with the role of validating transcripts upon request from employers, other schools, professional examination boards, etc. So, the idea is not new. We intend to expand the validation role as a means of building social fabric in communities. One could also have a classmate validate as a witness and the reputation of the classmate may be sufficient proof that the claimant is accurate, depending on the circumstances. This interaction of claimants and validators is an important social function for building value networks.

Risk Mitigation:

Attacks on truthful information are not new, and in the age of high velocity information, they are becoming increasingly difficult to mitigate. If someone makes a false claim, it must be obvious for others to see.

For example, if the claimant states they are an accomplished neurosurgeon, and that claim is not validated by a colleague or an accredited medical school, it is not recommended that one undergoes surgery with this claimant. Upon additional inspection of a transaction record, a bad actor may claim on December 10, 2020 that they are a neurosurgeon and bribe somebody as false witness. Then, their transaction record notes that they claimed graduating from High School on October 3, 2019 – it is easy to identify corruption simply by auditing the transaction records of claims and validations. Because claims and validations are recorded on a blockchain, the bad actor would be unable to make a corrupt claim viable without pre-loading supporting facts long in advance. For more information see additional discussions on attack vectors.

In order to process analytics on claims and validations, we introduce the concept of a Percentile Search Engine (PSE) – the PSE is a conceptual placeholder for crowd sourced analytics suite that will develop around the Claim and Validation system.

The Percentile Search Engine:

You can't make a bet without odds, the Percentile Search Engine (PSE), for the purposes of this discussion, is an algorithmic "black box" where calculations related to time stamps, percentages, weights, values, transaction records, stake, gates, and filters are applied to the relational databases specified every time that a match is made and a claim is successfully validated. The percentile search engine returns probabilities that various combinations of knowledge assets may yield a particular result. The PSE represents risk removed from physical systems compared to otherwise random interactions between unvalidated claims.

The PSE may be a manual calculation or an A.I. enabled search engine powering a decentralized production line. The Percentile Search engine converts intangible assets to tangible assets that can be deployed directly to commercialization projects. The following is the graphic representation of the PSE for the purposes of this discussion.

The Unitary Knowledge Asset:

The Unitary Knowledge Asset (UKA) is the fundamental building block of all future structures and circuits that may be built on the platform. The UKA is defined as a single claim validated by a single validator for which each participant receives a single entry on the immutable ledger. A single token is provided to each participant similar to a receipt for any commercial transaction in a double entry accounting system.

Figure 4 The Unitary Knowledge Asset is comprised of a claim and a validation combined to represent the quantity and quality of a knowledge transaction. The asset is recorded, stored, and titled in a decentralized database accessible by the Percentile Search Engine

One may say, "But – not all claims are equal!" This is true, a claim to cure for particularly stubborn form of cancer has a much different value than a claim for watching a 1-hour training video on flower arrangements. On the other hand, if the platform were forced to assign the value to the tokens, or peg them to a fiat currency, then the decentralized system would, in fact, become *a centralized system* no better than the one it seeks to replace. Value must always be determined by supply and demand.

The Unit Asset is so called because all units are initially considered equal in value until they are articulated in a market where they will acquire their individual value through additional market forces.

Example: If it takes an hour to watch an instructional video and it takes another hour for another individual to validate that the video was comprehended. A total of 2 tokens are awarded at a rate of 1 token per nominal hour of time. An event of relatively low consequence would not trigger any of the intrinsic value of multipliers as would a highly consequential discovery such as curing cancer. Likewise, the cancer claim is likely sub-dividable into hundreds of sub-claims reflecting techniques, experimentations, data collection and so forth – all of which are subject to validation and additional token awards. Further, the Cancer claim may result in publications, presentations, university curricula, and subsequent development and commercialization claims – all of which generate additional tokens. The inventor would be asked to validate the claims of other researchers thereby increasing the alignment of their academic, professional, and financial network. On the long tail, the cancer claim may generate tens of thousands of tokens while the instructional video may generate a dozen or so.

Internal Markets:

The Unitary Asset contains information that a claim and a validation has occurred. The system does not record every detail of the transaction – those details remain with the relationship of the participants – however, the blockchain will produce a time stamped "receipt" of the exchange not unlike a common merchandise transaction at a retail store.

The Absolute Value of accumulated tokens represent the stake that the individual holds in the system. The value of the Stake becomes a multiplier for algorithmic token awards. Among the information contained in the receipt is a **pay wall** to the prior transaction records for the participants who are now immutably associated with each other among a broader community. The pay wall allows for a revenue stream to return to the claimants and validators – not unlike micro-royalties.

In practice, a claimant would seek to be validated by the most relevant "weighted" validator. A validator would seek to validate the claims of the most relevant claimant. As such, the stake value of claimants and validators can have important impacts on the creation and value of knowledge assets when assessing risk removed from physical systems.

Obviously, a time constraint would exist for validators and claimants – a substitute (less weighted) validator or claimant may be adequate for the task at hand. Nobody wants to spend their days on a computer registering claims and validations because that would take away from the time required to produce claims and validations – people will find the most efficient ways to gain stake by optimizing the allocation of their time between claiming and validating. These forces acting to yield a most efficient practice that each individual will adopt for themselves. Any number of scenarios may unfold:

- An alternate market may emerge such that a claimant would justify compensating a high-stake validator from their own stores of tokens because they know that the match will yield increased token awards downstream.
- A validator may accept lower weights in exchange for the efficiency of validating multiple similar claims such as a classroom teacher submitting grades.
- These are intended consequences for producing an internal market for quid pro quo exchanges. The players are encouraged to "game the game".

The teacher example:

A teacher gives classes with 25 students and each student receives a grade for passing a test. This is a common claim and validation event that plays out millions of times per day in schools across the country. The teacher receives 25 tokens for validating each student's claim. The students get 1 token each for completing the test.

However, if each student becomes successful in their careers, this will reflect back on the teacher who taught them by association with the student's transaction record. If the professor is a renowned expert in the field of coursework, the student receives the benefit of being associated with the teacher's transaction record.

The macro-effect would be that the most-worthy students will seek the most-worthy professors and vice-versa in order to maximize residual stake in the system. The incentive is then for the professor to become a renowned expert and for the students to be validated by others as naturally talented in the chosen career path. This motivates the teacher to remain current in their field and for the student to become a teacher in their field.

We can generalize the student teacher relationship to similar pairings such as mentors and protégé, coaches and athletes, managers and employees, politicians and citizens, etc. The difference is that the incentives dictate it is in the best interest of each party to elevate the other rather than exploit the other.

Traditionally, a parent teaches and invests in their child so that the child may be in a position to care for the parent when they are older. Communities grow to protect each

other and each other's children in order to assure an environment that protects them. Again, this is nothing new.

Building the Data Engine

In the last section, we discussed how the Unit Knowledge asset is formed and how extrinsic and intrinsic forces motivate each individual along a path the is most efficient given the specific situation at hand. The UKA is expressed in terms of a data receipt containing the combined transaction records of each participant from which system stake is derived.

The Unit Business Transaction (UBT) is similar to the Unit Knowledge Assets (UKA) where we simply replace the notion of a claim, with the economic principal of "demand". Quite literally, a claim on an insurance policy is a demand for remuneration. Likewise, the notion of a Validation is replaced by the economic principal of "supply" since the claim is not available in the absence of a validation of inventory. It is further implied that a validation is in itself a claim about a claim, and therefore, just another claim. With these generalizations accepted, transactions can be reciprocal and can be joined like Lego Blocks to build structures.

Knowledge Circuits:

Unit Business Transactions (UBTs) may be combined in multiple ways to form circuits from which novel business methods may be discovered, commercialized, and executed. By structurally reducing the risk of integrating knowledge assets, we may be able to augment or replace the corporate structure with Intentional Communities of people acting in their own best interest by elevating the people around them.

The UBM – Unit Business Transaction: May be represented graphically as follows:

Figure 5 The Unitary Business Transaction is conceptually identical to the Unitary Knowledge Asset but applied to a market. A claim and validation combined to represent the supply and demand of knowledge assets as stored, and titled in a decentralized database.

A Series Circuit:

A series circuit is formed like a resistors such as a motors or light bulbs. The work performed by the system is derived from the resistance of the system and generally represented by the disgram:

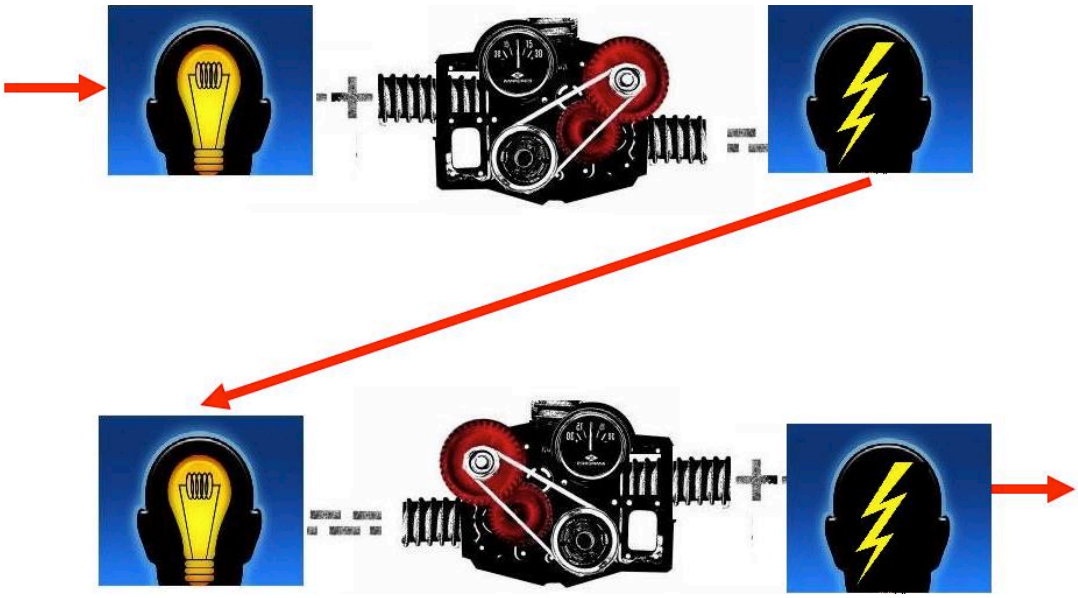


Figure 6 Formation of a circuit in series. The output of one transaction becomes the input of the next, etc.

Equation 1: *Where:* ***Vs : R1 + R2 + R3 …. Rn;*** *the Value of the transaction is proportional to the sum value of the individual transactions.*

Parallel Circuit:

A parallel circuit may be represented by the iterative process between two collaborators. In these cases, the role of claimant and validator is reciprocal and switches constantly between the two or more participants. This is the typical dynamic of a brain storming session. The corresponding Value analogy could be represented similar to resistors wired in parallel:

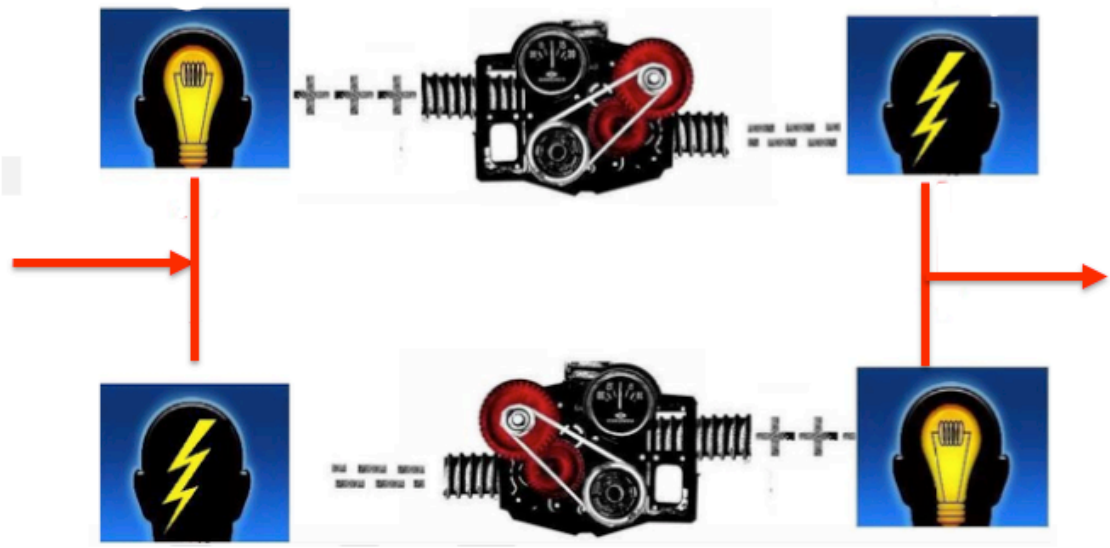


Figure 7 Formation of a circuit in parallel. The input is collaborated. The output is modeled on the estimated product divided by the sum of the interaction (iterations).

Equation 2: *Where* ***Vp : (R1 x R2)/ (R1 + R2);*** *The value of the transaction is proportional to the product of the work accomplished divided by the sum of work accomplished.*

Tangential Innovation:

The special case where a claim and validation jumps track to become applicable in an alternate application that the one from which it originated may modeled for Tangential Innovation.

For example:

Carbon fiber composite structures are strong and light weight making them idea for some aircraft applications with heavy development beginning in the 1970s including the space shuttle, the F117, and the B2 Bomber in the 1990s, and ultimately the B787 commercial aircraft.

Meanwhile, tangential innovation applied this technology to golf clubs, snow skis, running shoes, automobiles, recreational equipment, wind energy, and more recently, automobiles. Arguably, the tangential innovation market eclipsed the aerospace application from which it originated.

Stepping back even further, the Apollo moon missions are notable not only for the bravery and ingenuity, the tangential innovation from that program can be directly attributed for the technological revolution that we enjoy today. Great advances in battery technology, the integrated circuit, composite structures, thermal insulation, structural fabric, and many more innovations emerged.

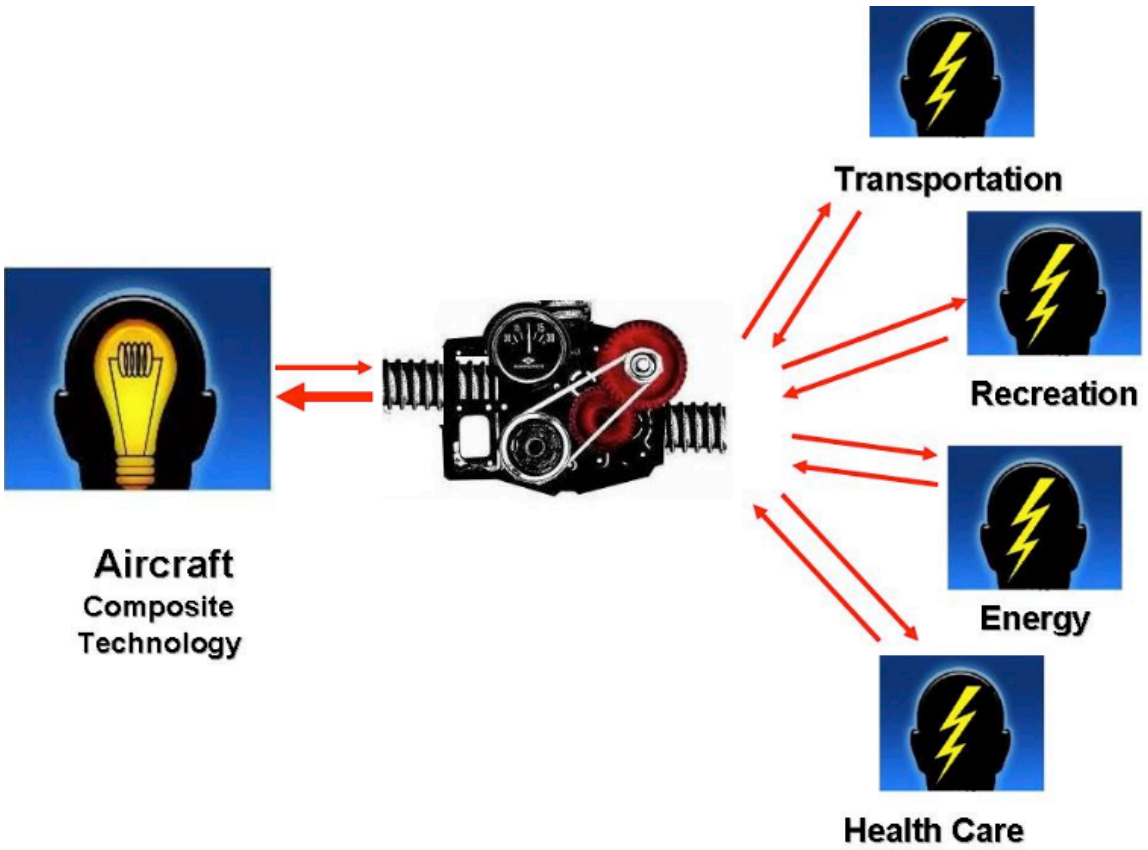


Figure 8 Tangential innovation takes off in different directions all of which initiate an independent circuit. The net value is multiplicative.

Equation 3: Where **Vt : (R1 x R1 x R3 x … x Rn)** the value of the transaction is proportional to the product of all subsequent values of transactions.

Network effects.

Arguably, traveling to the Moon was a very expensive way to collect about 1000 lbs. of rock and dust. However, the value of all innovation needed to go to the moon is immeasurable due to the series, parallel, or tangential innovation required to return the rocks safely. In terms of a circuit analogy, we can arrange a knowledge amplifier for which a relatively small input can yield a large output when provided with the correct incentive (energy).

In the case of the proposed innovation economy, the "energy" is the social, creative, and intellectual properties of people interactive with each other in productive manners.

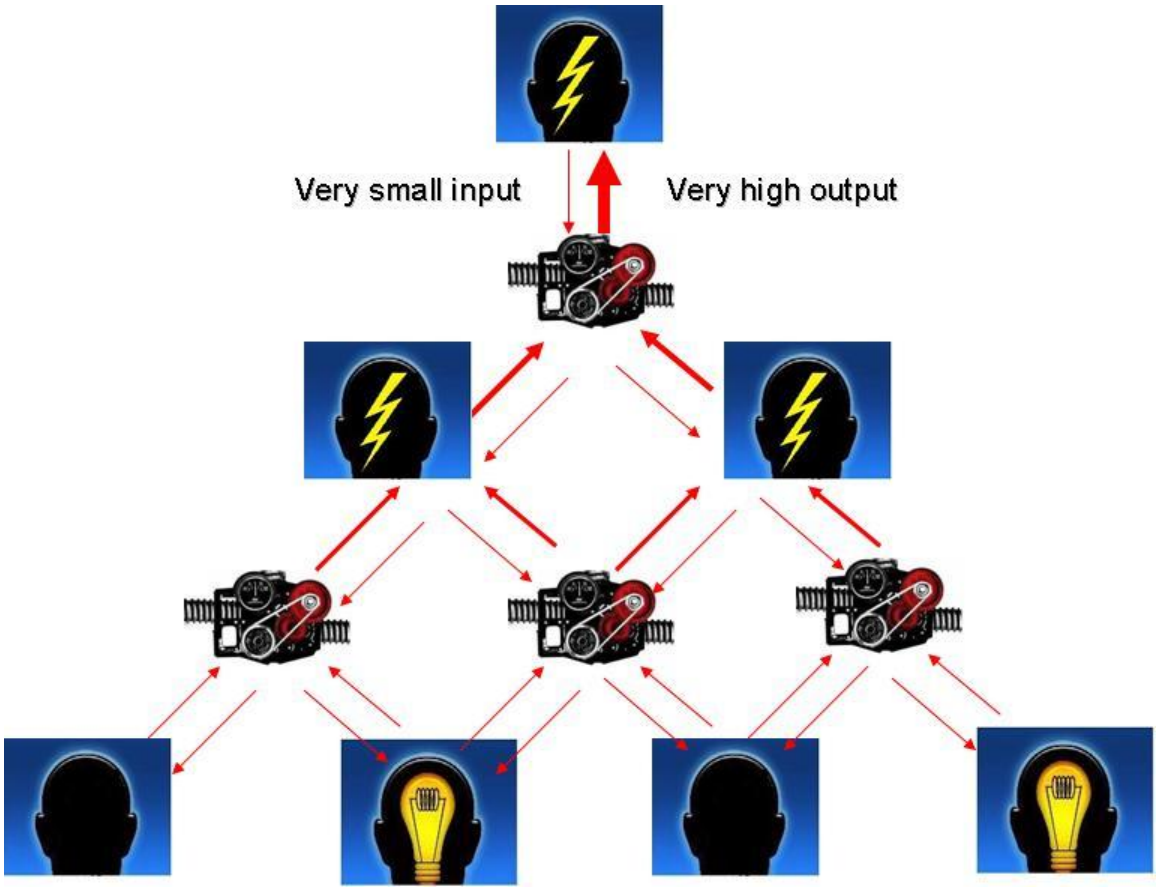


Figure 9: A Metcalfe valuation applies to a distributed network comprised on series, parallel, and tangential innovation.

Equation 4: Where: **Vn : R_{avg} (N^2)** the network value is proportional to the average nodal value multiplied by the square of number of nodes in the network (Metcalfe's law)

Unlike classic business leverage, neural networks have characteristics of fault tolerance. This means that if a few nodes are damaged or corrupted, the network will autonomously bypass the fault and isolate it from infecting the network. This characteristic is consistent with the keystone objective eliminating risk from physical systems. A self-correcting system is unencumbered by punitive legislation, policing, and expensive judicial actions that effectively divide communities rather than unite them. It is expected that such a system will scale rapidly and prove to be exceptionally well-suited to augmentation by artificial intelligence modules.

Database Structures:

Many ideas are presented here in the form of a matrix. The reason is that at some point we need to represent our data in a series of relational databases, integrate with a blockchain database, and reconcile with external real-world databases such as corporate, government, and academic frameworks.

Intellectual Property Readiness Matrix:

The IP2M Readiness chart demonstrates Intellectual property readiness in a matrix formation for a hypothetical invention. The vertical side bar represents the individual readiness claims. The horizontal top bar represents the relevant validation agencies within the university systems. The green box indicates that the work package associated with the claim is complete and validated. The white boxes represent a null condition where a certain department would not necessarily be involved in either a claim or validation of the IP.

Intellectual Property Readiness	*School of Engineering*	*School of Law*	*School of Business*	*Creative Arts*	*Social Sciences*
IP format					
IP positioning					
IP alternate utility					
IP Strategic Planning					
IP market-impact & licensing					
IP white-space analysis					
IP claims					
IP research and prior art analysis					
IP Roadmap					

Figure 10 The readiness matrix represents the unique set of knowledge assets required to execute a business process relevant to a specific type of project.

Technology Readiness Matrix:

The following IP2M Readiness chart demonstrates technology readiness in a matrix formation for a hypothetical invention. The vertical side bar represents the individual readiness claims. The horizontal top bar represents the relevant validation agencies within the university systems. The green box indicates that the work package associated with the claim is complete and validated. The white boxes represent a null condition where a certain department would not necessarily be involved in either a claim or validation of the IP.

Technology Readiness	*School of Engineering*	*School of Law*	*School of Business*	*Creative Arts*	*Social Sciences*
Commercial design					
Prototype demonstration					
Technology ecosystem analysis					
Technology development cost estimate					
Component analysis					
Proof of concept					
Proof of application					
Documentation and references					
Regulatory analysis					

Figure 11: The technology readiness matrix represents the unique set of knowledge assets required to execute a business process relevant to a specific type of project and objective.

Market Readiness Matrix:

The IP2M Readiness chart demonstrates market readiness in a matrix formation for a hypothetical invention. The vertical side bar represents the individual readiness claims. The horizontal top bar represents the relevant validation agencies within the university systems. The green box indicates that the work package associated with the claim is complete and validated. The white boxes represent a null condition where a certain department would not necessarily be involved in either a claim or validation of the IP.

Market Readiness	School of Engineering	School of Law	School of Business	Creative Arts	Social Sciences
Scalability					
Cash flow Roadmap					
Risk Roadmap					
Market roadmap					
Timeline					
Focus Group Alignment					
Demand Analysis					
Value proposition communication					
Market research validation					

Figure 12 The Market Readiness Matrix represents the unique set of knowledge assets required to execute a business process relevant to a specific type of project.

Secret Sauce

Ultimately, the Patent System may be the best way to secure an invention. However, the often-daunting task of commercializing intellectual property requires a significant amount of creativity, innovation, and specialized skills. Furthermore, the number of different combinations and proportions for applied knowledge assets is near infinite. Many corporations are limited only by their ability to retain knowledge assets within the confines of their niche. Competitors may be attracted or deterred by the prospect of replicating the ancillary innovation of the commercialization process. Corporate trade secrets are among the most guarded classifications of knowledge asset in the world.

The ability to retain, protect, and deploy a "secret sauce" is a primary activity of the enterprise. The reason is not necessarily to simply protect, but also to improve, evolve, diversify, and expand the applicability of enterprise assets across a broader range and much higher complexity of innovation required in the age of advancing technology.

The following visualizations of the above readiness matrices shows how each project may generate a different block code for commercialization readiness. Each is block is verified true and correct, then memorialized on the blockchain in time, relative placement, and applied knowledge. By measuring the rates of change between and among knowledge assets, the developers may assess the allocation, probabilities, new innovation potential, and net wisdom of a collection of diverse knowledge assets. If a player leaves the team, the data can quickly find an adequate replacement. Likewise, if a player does not like their position, the data can identify one that matches their state of flow with great precision.

Figure 13 Graphic representation of unique patterns formed by validated blocks overlaid on a database

There may be several levels below or even above the readiness levels that are also in this format. These forms may be overlaid on other databases or other projects to reveal any number of comparisons. No competitor would be able to "guess" or reverse engineer the secret sauce as fast or faster than the owner, thus rendering predation unprofitable. Where predation is unprofitable, corruption is eliminated.

Part 3 reveals the algorithms that will underwrite the value of the secret sauce.

Part 3: Managing Dynamic IP Systems

Formation of IP market

Until now, we have been discussing relatively static "snapshots" of how the ecosystem would behave. This is a bit like reading a comic book with a few key frames and adding foreboding captions hoping that the reader has sufficient real-life context to fill in the gaps. The goal of Part 3 is to demonstrate how we can set these snapshots into motion by measuring the performance of a system dynamics. Part 3 discusses the time-based algorithms that we may use to manage the IP commercialization and ancillary innovation functions in the wild.

It is not possible to describe, let alone manage, every possible permutation acting across every possible event that may occur in large networked interactions. The cost of micro managing outcomes would be prohibitive and scaling would be impossible. Instead we can use automation tools such as relational databases to manage data and blockchain technology as the conductor to orchestrate, administer and record incentives and rewards. Initiating this system in a university environment is ideal because there is sufficient infrastructure in place to control some variable such as proximity and ontology. This is akin to controlling the temperature in a room by turning the thermostat. Managing such a system in the outside world is like trying to control the temperature in the room with the windows open. As such, the university system provides a valuable apparatus to calibrate a set of algorithms that we may then apply to the open sources applications.

Observing the internal markets at the university level provides valuable business intelligence through test markets, focus groups, and feasibility exercises. By depositing tokens at key moments in time, we can measure and assess velocity of interactions. High velocity may serve as a proxy for high value and decreasing risk. We would want to pay attention to such indicators. If some activity gets people excited, stimulates the imagination or creativity in others, or jumps across many disciplines (as measured by the social linkages and token awards, like bread crumbs marking the trail) – The system will make these events visible.

The ability to identify high potential provides a roadmap to entrepreneurs seeking high yield and / or low risk investments. Such business intelligence is in itself highly marketable. Further, the entrepreneur would be concerned with forming the right team in order to execute a particular business plan. Again, the transaction records would reveal who, what, when, where, and how to accomplish business objectives. Finally, the ability to assign rights and equity in a simple and equitable manner reduces the financial risk associated with investment in novel technologies. Taken together, the value of the data as a business intelligence source is an abundant resource.

Concept review:

A market exists for the purpose of matching of supply and demand. The challenge is to bring most worthy surplus to the worthiest deficit. The fundamental construct of the UKA is Quantity x Quality, therefore "most worthy" can be expressed explicitly in the dataset.

- Supply is taken to be "knowledge surplus"
- Demand is taken to be "knowledge deficit"
- Together, they create a market

The basis of supply and demand for the IP market will be Claims and Verifications, where:

- The Claim is the Demand
- The Validation is the Supply, or vice versa
- Unit Transaction = 1 instance of supply meets demand.
    - Unweighted
    - 1 credit

Any entrepreneur can join the network and earn tokens by submitting their own claims and validations. In the event that one does not possess sufficient tokens to access the amount of data required, they may purchase tokens from the generalized market of people who would be willing to convert tokens to a fiat currency such as dollars.

Setting up the PULL economy

The PULL economy happens when the demand drives the supply (demand-side economics)

- The claimant needs to have someone validate a claim (most worthy deficit)
- The validator is an expert at validating that type of claim (most worthy surplus)
- Weighting as a function of system activity and applied to credits

Observing and measuring transactions provides all of the metrics for predictions, AI, Valuation, and creating more transactions and building value circuits.

- UBTs in series circuits represents student teacher transaction
- UBTs in parallel circuits represent iteration (where claimants and validators reciprocate roles)
- The velocity and acceleration of UBTs matters
- The Density or scarcity of UBTs matters
- UBTs form networks, shapes and patterns that can be overlaid on other databases.
- All business intelligence can be gleaned from observing UBTs

Valuation of Networks vs Hierarchy:

Modern platforms such as Google, Facebook, Airbnb, and others enjoy astronomical market valuations despite having comparatively less hard assets as legacy firms like Marriot, Boeing, T-Mobile, or Walmart. The difference may have something to do with their organizational structure.

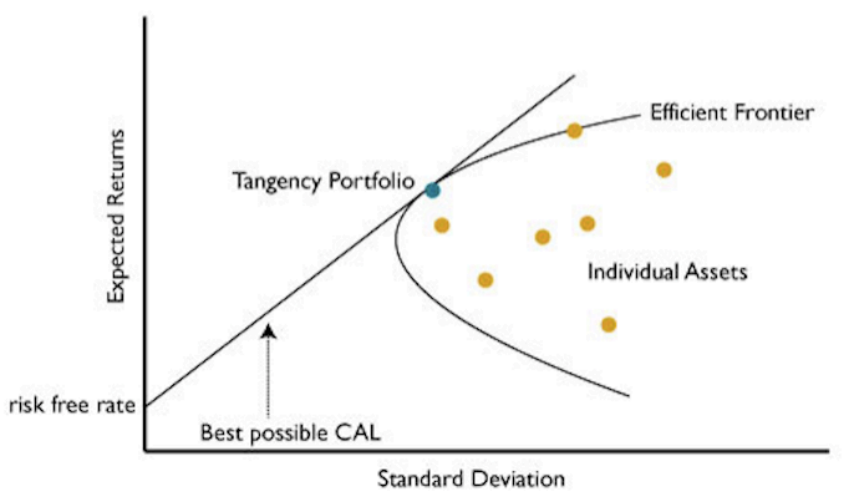
Hierarchy: Since the dawn of the industrial revolution, centralized organizations comprised of multiple levels of management have been the proven means for allocating resources and minimizing risk. The value of such a construct is expressed in terms of market demand and sensitivity to risk as expressed by the Capital Asset Pricing Model (CAPM).

Equation 5: $E(R_i) = R_f + B_i\,(E(R_m)-R_f)$

Where:

$E(R_i)$ = Expected rate of return on capital amount
R_f = Risk free rate of return
B_i = Sensitivity to market volatility
$(E(R_m)$ = Expected market return

The CAPM valuation model for an organization is dominated by market risk multiplied by a firm's sensitivity to market risk. CAPM valuations are limited by market expectations and performance. CAPM is largely a linear function except in the exclusive state where volatility is very low and market returns are very high, such as monopoly or some duopoly conditions.

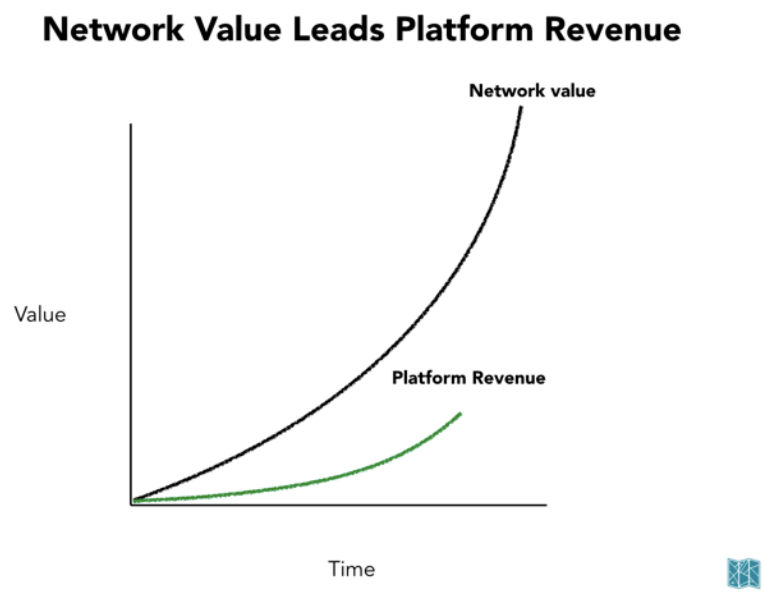


Networks: A network is characterized by a collection of nodes (which may represent a switch, a computer, a sensor, or a person) and branches (wires, signals, instructions, or

communications) connecting the nodes. The value of networks is a function of the total number of nodes and the total number of possible connections that can be completed between them multiplied by some coefficient of value for the quality of those connections.

Metcalfe's law for Networks suggests that the theoretical value of a network will be proportional to the square of the number of nodes according to the following relationship.

Equation 6: Theoretical value is proportional to: $n(n-1)/2$



The Actual value would be related to the quality of the nodes, the actual number of existing branches, and the net quality for the transactions that transpire over the network. For example, the Value of Facebook is estimated at:

$V_{Facebook} = (5.70 \times 10^{-9}) \times n^2$

Where (n^2) is the total number of users and (5.70 x 10^{-9}), is an incredibly small number represents the average quantity and quality of nodes and branches between them. The Facebook platform objective is to maximize total number of connects AND maximize quantity AND quality of the interactions. For reference; Myspace still has 500M registered users giving it a valuable network, however, a low coefficient of interaction has eroded value of the platform substantially.

Self-regulation, fault-tolerance, and Management Autonomy

The network can make independent decisions: An engineer that is mis-allocated can quickly move closer to their area of interest and competence. Overlap between civil,

mechanical, and electrical engineers can be managed appropriately. A corrupt engineer would have a very difficult time gaining access to a target without enduring a long and difficult road to establishing a transaction record that would permit sufficient isolation to the target to actually profit from the crime. It would be difficult to corrupt an engineer without knowing if they will be assigned to a target. It would be difficult to which engineer will be assigned to a potential target in advance of the attack. If an attack was attempted, it would be easy to identify who committed the crime. High impact targets may be covered with redundancy or a Byzantine proof. Obviously, Bots would be quickly and easily dispatched to the null condition.

Network Learning

Interactions between nodes will tend to optimize claims such that the value of the compensation received is proportional to the effort required to establish and verify a claim. This is a common practice in professional societies and certification bodies today. Further, strong professional communities with sufficient diversity, create conditions for rapidly and iterative teaching, learning, and collaboration leading to a high rate of innovation. Finally, professionals may reflect artistic or literary expertise or cite membership in multiple networks on their own valuation and the valuation of their team. Reflecting diverse interests from professional, recreational, and social opportunities will increase the individuals stake in the network and everyone's stake in a team.

- The decentralization of knowledge assets diversifies interactions
- The dominant game strategy for each participant is to cultivate a diverse personal network of claimants s and validators in one's professional community
- The Percentile Search Engine provides analysis that assigns optimum probability to all transactions.
- Individual transactions and collective transactions are readily assigned a price.

Knowledge Asset networks can be assembled and subdivided in any number of ways and theoretical values may be assigned to them making the valuation of teams, mergers of teams, divestiture of teams, or scenario testing of any imaginable combination of teams, a quick and accurate projection of network value.

Introducing Incentives

Most people are familiar with the traditional arcade token or amusement park tickets – the visitor exchanges fiat currency for an in-house token or ticket that provides access to attractions. Visitors may also win fun prizes such as stuffed animal or inflatable ball for winning arcade games. In effect, converting fiat currency to stuffed animal that can often be purchased at Wal Mart for less.

Instead of a straight forward transaction, the tokens incentivize the visitor to interact with the staged environment in ways that are intrinsically entertaining, recreational, and fun. By introducing a game token to the IP2M Knowledge asset community, we can "PULL" the desired participation through the intrinsic motivations of the community. This could be done with extrinsic tokens such a college degree, or certification, or even a grade on an exam. Another way to accomplish this is through a recent advance in decentralized ledger technology able to issue tradable cryptographic tokens.

Blockchain Technology

Blockchain Technology is a relatively new innovation that began as the rallying cry of the Libertarian movement. Once it's potential was realized, blockchain tech became quickly absorbed by mainstream corporations as just another business automation tool. Further, the Securities and Exchange Commission of the US and other countries placed strict limitations on the issuance of tokens due to a perceived resemblance to securities and possibly to money itself. The activity described herein, however, is intended to be used as an exempted class of token called a "Utility Token", not unlike the arcade or amusement park tokens. As such, the blockchain will be a very simple device performing a very simple task at enormous scale.

The specified Blockchain will be very simple in its objectives and native to the IP2M platform. A simple Proof-of-stake blockchain cloned from, Bitshares, or EOS would be sufficient to perform simple I/O tasks and distribute to external relational databases. Blockchain administration will be performed by a set of 21 witnesses, each holding a copy of the chain on servers in their possession or control. Each block will bring a set number of tokens into existence according to a predetermined algorithm. A relatively small percentage of these tokens will be awarded to witnesses for operating their node. The balance will be deposited into a pool from which claims and validations will draw. Tokens that are converted to fiat and then taken up by the system in exchange for business intelligence, for example, will be destroyed. The system itself holds no tokens – all tokens are held and controlled by the players.

The Credit Token:

The mechanics of blockchains is an in-depth discussion beyond the scope of the project we are describing here. However, one familiar concept is that consensus over which copy of a replicated database is deemed valid relies on a selection process that takes into account proof-of-stake / proof-of-work. A cryptographic token is awarded each time that validation is established. It should be clear that the system we have set up also relies on validations and consensus of work performed within a community. Without deep-diving into cryptographic math, it would be accurate to assume that integrating a blockchain to generate tokens as a consequence of making claims and validations is inherent to this structure.

For the purpose of this discussion we will call our cryptographic token a "Credit". The term credit allows the reader to relax their interpretation to common semantics. A credit may be a college credit, or credit as in borrowing something of value, or gaining recognition for an act of valor. All would be true in the case of the token that we'll specify.

Credits:

Through a simple smart contract: a claim may be validated after it is closed. After a claim is validated, the system will award 1 Credit to the claimant and 1 Credit to the validator.

The blockchain will retain a "receipt" of the transactions for perpetuity in an immutable time stamped decentralized ledger. Each participant will have a "wallet" that enables trade and exchange of their accumulated Credit tokens with other participants in the network.

This is the extent of the applicability of a very simple blockchain. All other activity related to tokens, exchanges, values and rewards will be managed by game mechanics driven by the percentile search engine and data analytical outputs.

Monetization of tokens:

- Credits may be exchanged between parties within the network as a quid pro quo exchange. QPQ exchanges may have monetary implications such as job placement or IP licenses or additional token awards.
- 3rd party stakeholders who don't hold credits may purchase them from the exchange comprised of holders that may want to liquidate some holdings. The business intelligence available from a large and targeted network would have strategic value.

The Value Game:

The value Game is an intentional arrangement of claimants and validators who are sharing, preserving and sustaining a material asset such as a building, company, community, or event.

The Value Game (TVG) is a new class of business methods where value is extracted from an asset, not by consuming the asset, rather, by preserving the asset. In order for TVG to work, each participant must have some intrinsic reason for interacting with the asset. The most obvious example may be a condominium building where each person has their own life and priorities, but share the process of preservation and maintenance with the community. The building itself is the shared asset that provide a context for the interaction of the community. The shared asset is the substrate for the creation of social, creative, and intellectual capital in a community. TVG is a difficult thing to sustain in a legacy economic model which is dominated by competition, consumption, and scarcity of

all tangible assets. However, for intangible assets, TVG may work quite well. In fact, several business models including Cooperatives, Social Clubs, and some Non-profits are sustained largely by a form of TVG. New technology such as blockchain, decentralized governance, and game theory may allow TVG to scale, which may be quite efficient and profitable in the modern networked organizational structures.

Consider the 5-billion-dollar Fantasy Sports industry. Fantasy baseball is a role-playing game adapting real life game statistics to create hypothetical game scenarios using some randomization system such as a set of dice. Over time these games have become more sophisticated, computerized, and have spread to other sports, and now they are on-line. Today, fantasy sports are estimated to be a 2-billion-dollar industry involving over 56 million people.

What if a "fantasy play" could be replicated given a set of validated statistics, in real life? How would the real-world game actually turn out? This is not an uncommon thought. Many HR directors, corporate recruiters, and entrepreneurs' dwell on this topic extensively: *"How could we identify social capital, creative capital, and intellectual capital of people, given a set of market measures, and allocate them into a self-optimizing game to yield production and profit?".*

Building A Value Game on the University Campus

- The Value Game starts by identifying any asset that a group of people may share. In the case of IP2M, this can be simply stated as the strength, reputation, and net value of the University Institution.
- The next step is to find 3 or more diverse communities that have a vested interest in preserving the asset rather than consuming the asset. These may include students, teacher, administrators, alumni and extended community.
- Each player acting in their own best interest will seek to play their expertise among the others as best as possible. This is condition mandates a knowledge inventory as a reference tool for the network to find each other.
- The transactions between the diverse communities of people will "mine" social capital, creative capital, and intellectual capital into existence generating tokens in the process.
- Tokens will be earned for making claims on the shared asset and validations of other members on the shared asset.
- Individual transaction records will be memorialized on a blockchain under the control of the individual representing proof of work associated with preserving the shared asset.
- Compensation will be rendered as a function of quality and quantity of social interactions. Proof of stake algorithm will calculate remuneration
- Validated transaction records may be transferable to other Value Games, blockchains, or tokens.

The University System provides a very efficient sandbox for testing and deploying TVG. Everyone on campus has an intrinsic reason for being there; students, teachers, administrators, etc., are working toward something personal and they need each other to accomplish it. The University System is also segmented by a workable ontology that would allow us to control specific variables as we observe and conduct feasibility tests. These factors are an important middle step toward deploying TVG more broadly in an uncontrolled environment.

Example: A University is an important factor in the economic development of a community. The better the reputation of the university, the higher the value of the proximate community. It is therefore in the best interest for each member of the community that the buildings are well maintained and the students lead productive careers. While everyone is not qualified to manage a complex institution, they all perform ancillary functions to support the university.

Another community of nearby vendors such as restaurants, accountants, engineers, physicians, and employers have in their best interest that the university is reputable and productive. The value of their homes and businesses depend on it – as such they may be counted on to act in high integrity rather than low integrity when interacting with the school. It is also in the best interest of neighboring buildings, the school district, and the city tax pool, civil servants, etc., that the shared asset is maintained to optimize its value. Each player is aware of their impacts in the network based on the analysis of similar networks elsewhere.

While malicious actors may be a symptom of illness, by actual attack vector is apathy, neglect, or unfair university practices. A recent scandal involving purchased acceptance to Stanford University sent several prominent parents to jail. The reason that this is a serious crime is because the impact of cheating can reverberate in unpredictable ways having always negative impact on the community. Maintaining the integrity of the shared asset appreciates the value of social, creative, and intellectual capital created by the shared asset.

How to Play TVG:

The Value Game would form a cryptographic token that may be exchanged among the parties in whose best interest it is to preserve an asset rather than to consume the asset. This is done in many forms today – a restaurant may offer a coupon to residents for a lunch special. A physician may locate close to patients relying on referrals instead of advertising. A trades person saving time and travel expenses may pass that on to local community. When a drug dealer comes to town, they are quickly identified and excised from the community by the community.

New Value Entrepreneur

The objective of the New Value Entrepreneur will be to organize three or more communities to interact around a shared asset where the interactions among these community's act to preserve the asset rather than consume the asset. As people interact with each other, they teach, learn, and iterate with each other. This activity manufactures social capital, creative capital, and intellectual capital memorialized by transaction records represented by the community token.

In general, once a value game is started, it will improve itself. The longer people play, the more tokens they receive and the higher their "stake" in the shared asset becomes. The token records are permanent, but the tokens themselves can be traded for access, discounts, or services among anyone in the ecosystem. Most players will eventually find and play roles in Value Games that correspond most closely to their natural interest and passions and therefore maximize their personal value.

Almost any shared asset may be used to form a value game.

- A Corporation
- A car, airplane, or other transportation asset
- A residential or commercial building
- Land for farming, mining, or urban forest
- Water, food, and energy
- Engineers, Doctors, Civil Servants, Educators, mentors, apprentices
- Laborers, Maintainers, cleaners
- Planet Earth

Measuring Intangible Assets: The WIKiD Tools Algorithm

WIKiD stands for:

(W) = Wisdom
(I) = Innovation
(K) = Knowledge
(i) = information
(D) = Data

In the prior section we described a Game incentivized by intrinsic values and memorialized by meaningful tokens where players are striving toward a common goal. In effect, we set a static condition into motion – a game moves at a certain pace and continues until a pre-specified constraint is applied. Now we are able to measure the distance between assets, the velocity of exchange, acceleration of exchange, and even the impact of exchange using derivatives. Derivative is something whose value is *DERIVED* from the value of something else – in this case the above mentioned *WIKiD*

elements are derivatives of Wisdom which serve as algorithmic tools for assigning value to events.

> *Biblical Considerations: The semantics of this moniker may come into question*
>
> *Wickedness like all forms and thoughts of wrong, kept warm in mind, becomes a thing of growth and weakness; it begins with a thought, then a deed, then a character, and finally a destiny.*
>
> *Let WIKiD-ness be an opposing force of Wickedness - like all forms and thoughts of good, kept warm in mind, becomes a thing of growth and strength; it begins with a thought, then a deed, then a character, and finally a Destiny. May knowledge and innovation lead to the destiny of wisdom.*

The WIKiD Tool algorithm is a mathematical tool that provides a framework for analyzing dynamic data related to social interactions in a network as memorialized on a Blockchain. The mathematics is similar to the High School Calculus example of position / velocity / acceleration equations of an object in motion, where position is a derivative of velocity and velocity is a derivative of acceleration, etc. The "object-in-motion" analogy reinforces how typical, if not ubiquitous, these types of mathematical relationship are in the physical world. They are important for analyzing events that cannot be observed or measured directly. The same Calculus is used to predict commodity values on Wall Street or calculate the trajectory of a space probe against the gravitational pull of a planets moon.

Financial analysts noticed that the price of some commodities track closely with consumer confidence so they use that as a proxy for the thing they cannot measure directly. This is called a derivative – something whose value is derived from the value of something else. Suppose we use the same idea to measure things like Wisdom, Innovation, Knowledge, Information, and Data (WIKiD)?

As participants interact with each other to form transaction records, the blockchain records the chronological order of every event, so we can now correlate all events *with respect to time.* The connections that are made may be analyzed for both quantity and quality (*magnitude and direction).* We can now use common mathematical tools from finance and physics.

We have established that the blockchain records the time function for all events to an immutable ledger. In order to represent vector magnitude, we'll follow a well-known analogy to the displacement-velocity-acceleration formulas from physics and associated Calculus.

WIKiD Elements:

Data: In general, we can define data as points placed on such a coordinate system. Each point defines a position in space and the time where an event is recorded. The distance between data points can be called "displacement", because of the relative distance between the points. In the simplest sense, we can see that Data (D_1) and Displacement (D_2) share an analogy.

Information: When you draw a line connecting two points, or you draw a line approximating a cluster of points, the slope of that line on a graph provided information about the phenomenon under observation. Is it getting larger slowly? Is it getting smaller rapidly? In essence, the slope of the line represents the rate of change in displacement with respect to time and gives the observation its "velocity".
This may be represented by the relationship simply stated as:

Equation 7: $i = dD/dt$

Information is proportional to the rate of change in the data with respect to time
It should be clear that we are defining 'information' as a derivative of 'data'. a derivative in physics is the same as a derivative in finance, that is "something whose value is derived from the value of something else" That said, we now proceed down the latter of derivatives.

Knowledge: The analogy between velocity and knowledge is intuitive. Knowledge is a phenomenon that may be modeled as the derivative of 'information'. Strictly speaking, the value of knowledge is derived from the value of the information from which knowledge was created. It is intuitive that one accumulates knowledge over a long period of absorbing information and integral data. Education is the process of absorbing information from a printed page or screen, and combining that with other previously accumulated information to form knowledge.
Hence, the following relationship holds and is simply stated as follows:

Equation 8: $K = di/dt = d^2D_1/dt^2$

Knowledge is proportional to the rate of change of information with respect to time
The analogy between acceleration and innovation is also intuitive but a little more difficult to put to words (that is why we use equations). Consider a child who is knowledgeable in riding a bicycle on pavement. Suppose that the child, for the first time, encounters sand on the pavement while also executing a sharp turn. During the ensuing deceleration, *the child experiences a very high increase in knowledge about their environment within an extremely short period of time.* In any case, the child is forced to innovate a solution. Likewise, the motocross racer is constantly innovating to adapt to the conditions of the

track. You can read a book about riding bicycles, but none can adequately describe the moment when the child must create the experience anew.

For the fact of innovation, we provide the following relationship simply stated as follows:

Equation 9: $I = dk/dt = d^2i/dt^2 = d^3D/dt^3$

Innovation is proportional to the rate of change of knowledge with respect to time:
One of the gross errors that we make in business is due to the inability to differentiate an economic event from its constituent physical parts. The classic example is innovation; Venture Capitalists often describe innovation as a new idea that has an economic outcome. This is problematic because innovation is defined with one equation having two unknowns. This is mathematically impossible to solve, except by laborious and expensive iterations.

The rational (mathematical) approach would be to test and observe high rates of change of knowledge in a community and use that as a proxy to identify the presence of innovation (as defined above). After that, the community may be tested for economic outcomes. Unfortunately, $I=dk/dt$ is not normally possible to observe in a hierarchical business structure. However, when formatted and validated correctly, and applied to a network organizational structure, then $I=dk/dt$ can be represented graphically and accurately identified even by a child.

Wisdom: When we think of wisdom, our minds conjure the image of an elderly person with a lifetime of experiences behind them. Somehow, our elders seem to be able to predict the outcome of a series of actions before those actions take place. This is why we seek wisdom to lead our organizations and institutions.

Consider the manager of a factory floor who has 30 years of experience. During those 30 years, they have seen many things succeed and many things fail. In fact, their experience represent a statistically significant sample of representative events that they have experienced in the past. The wise manager is able to process new information with old information to predict the probability that the new idea will yield the desired results. The propensity for wisdom may be modeled as a time function in a similar manner.

Equation 10: $W = dI/dt = dK^2/dt^2 = d^3i/dt^3 = d^4D/dt^4$

Wisdom is proportional to the rate of change of innovation with respect to time:
In general, we could say that Wisdom is the second derivative of Knowledge and the fourth derivative of Data. Similarly, Innovation is the first derivative of Knowledge and the second derivative of information, and so on. In order to identify innovation, we would measure high rates of change of knowledge. Wisdom would be proportional to high rates of innovation, etc. The utility of these functions should be apparent.

The WIKiD tools algorithm provides a set of relationships for what are now considered intangible assets that are integrated by a time function. The Blockchain provides the master schedule for the time function to be recorded, leaving us with a somewhat routine task of identifying rates of change in observable events.

Conclusion:

This whitepaper describes a method for converting intangible assets into tangible assets. While it may seem like an overly complex effort, the process is not much different than the processes that currently exist for tangible assets.

First, we start with a proven method for commercializing intellectual property developed by Blueprint Labs and combine it with the existing incentives in the university ecosystem. Next, we add a knowledge inventory, which is simply a direct analogy to any sort of product inventory. The Curiosumé process is a direct relative of the six sigma quality systems well known to millions of product managers. The Percentile Search Engine is based on actuarial math – the same mathematical tools that are commonplace in the insurance industry – and a ranking system similar to early Google PageRank system for citations. The Unit Business Transaction arrangements are typical to physical phenomenon from electrical energy flows to logic control systems. The WIKiD tools algorithm is the same math used on Wall Street to create various financial instrument exotica from Mortgage Backed Securities to options, futures, and derivatives. Finally, network effects and associated valuation schema is the cornerstone of social media platforms from Google to Facebook. Of course, everyone has heard of Wikipedia and have interfaced with relational databases. The newest component to add to our tangible asset converter is distributed ledger technology which allows us to cheaply duplicate the functions of otherwise expensive and friction inducing institutions such as accounting, token administration, and judicial vetting.

On the soft science side, our specifications are consistent with luminaries in the fields of innovation, social capital (Jane Jacobs), Creative capital (Richard Florida), and intellectual Capital (Peter Senge). The work borrows heavily from Clay Christenson, Edwin Teese, and many The delivery of tokens is consistent with the Hernando De Soto vision of giving people title to their assets as a means of creating wealth.

TBD

End Notes: TBD