WeFindX: Simple Pattern for Problem Solving and Credit

And the design of the Infinity Project

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Whitepaper Draft

Time is a currency with which we buy assets from nature. By building a data system about the assets created over time, we estimate the value of time as an expectation computation (Stieltjes integral) of time with respect to assets (as a measure of sets) created over it. We encapsulate this information within the system, as sigma-additive "contribution certificates" generated for work of doers and investors, and stored in a an immutable database. Furthermore, we enrich the works with context information by introducing a context-free grammar derived by abstracting human work (x) through equivalence principle (equation model f(x)=y) to describe the parent *tasks*, projects ("*plans*"), *ideas*, and *goals* (y) with respect to world's *assets*, *agents*, *places*, *events*, and *topics* (f), making every work meaningfully traceable to its purpose (goal w.r.t. assets), and automatically encapsulating procedural knowledge along the way, allowing to parse (or decompose) human work sequences into a technology map (of state transitions) capturing and explaining human procedural knowledge. The time as currency can be mined directly with brain, resulting in the tokens that have traceable human work behind its value, enabling ICOs (initial coin offerings) on a granularity of a task.

Problems

(1) **Brains can't mine digital money.** While computers can mine cryptographic currency, human beings cannot do so efficiently with their brain, putting them as second class citizens to computers. Moreover, most people don't have an option to issue money by doing valuable work, and not selling it. However, it's an aspiration of so many artists and scientists, mathematicians to actually create a work of art, for the sheer aesthetic beauty or utility of it for everyone, and donate it to the world, rather than to sell it. We need a way for brains to issue money, but we don't have it yet.

(2) **Money value is an abstraction.** Every dollar that anyone makes today does not uniquely represent the value behind it, or - work or contribution that was done to get or make it (we use accounting for that, but the money itself is information-less, and lacks transparency), it doesn't have the history of asset generation and exchange associated. Thus, the true value of dollar is unknown. It is an approximation of demand and supply of associated

traded goods, and expectations of the demand of the currency, rather than true value representing the underlying assets, creating economic bubbles as mis-estimation of true value behind tokens. We need money that represents and is traceable to true value.

(3) **The ICO cost is prohibitive to use it for funding small tasks.** Today, in order to fund an endeavor via an ICO ("initial coin offering") approach, one requires to have a significant undertaking, on the level of a project. However, sometimes, even a single line of code, if done well, is reused across open software ecosystem, and is a significant contribution, for example, a Linux core bug fix. There's no reason why a single task wouldn't have a lasting value, and issue its own currency. However, this is not straightforward today.

(4) **People don't quite understand technology.** Take any product that people need today, and it is possible in principle to manufacture it from raw materials with enough of human time and appropriate tool-chain. The know-how represents an alternative way to satisfy the people's needs without money. However, we don't have such a technology map in public. Most of the know-how is hidden in the corporate information systems, which are not widely open.

(5) **People don't know what they want.** While the AI technologies are advancing quickly, we still have world conflicts between nations, corporations, and individuals. While this is not a major risk today, with the prospects of AI becoming superintelligent, it is an imperative for humanity to collectively define its goals to guide all optimization systems. We do not yet have a way to collectively define goals, people don't really know what they want.

Solution

To understand all humanity's know-how, we observe that the technology has evolved a simple process of people in existing situations (f) thinking how to turn them into desired situations (y), and looking for actions to take (x). For example, a monkey in a cage (f) wanted a banana (y), so it used a stick to hit it (x). We can safely say that the current state of the world is a composition of such functions into a network of states (the known STRIPS model). If we know all the state transitions we can understand the know-how.

All what people had done through the ages boils down to thinking of their current situations, what they want, and acting on it. Therefore, we start from the simplest non-trivial model, - the principle of equivalence.

$$(1) \quad left = right$$

Equality sign has been invented to represent the requirement of a condition that the left and

the right side be equal. For example:

$$(2) \quad \text{World} = \text{Dream}$$

represents the condition that the World be same as Dream.

Introducing actors in (2), such as *us* in the World, and we can write :

$$(3) \quad \text{World(We)} = \text{Dream.}$$

Let's denote **World** by "f", **We** by "x", and **Dream** as "y", and we turn the standard mathematical equation:

$$(4) \quad f(x) = y$$

into a tool to for humanity to self-actualize. We could say that fundamentally, living beings are solving (4) equation by trying to come up with better selves (x) to parametrize the world (f) to satisfy the equation with their goal state on the right (y). To solve the four major problems above, we have introduced a couple of innovations on top of the equation.

f - world content

We observed that all variables in the world could be meaningfully grouped into *things, actors, spacial, temporal,* and *thoughts* about them, and that it covers the space of variables with respect to which we could possibly describe the goal state (or "Dream World"). Therefore, we introduce five symbols to talk about the **world content**, namely: ASSET, AGENT, PLACE, EVENT, TOPIC. [*]

Under different contexts, an item of the world can be both an asset and an agent, an event about assets and agents in places. When we formulate propositions of higher order logic about them, topic is to refer to thoughts in minds as variables, so, we can possibly formulate goals to have people think specific things.

y - our intent

We observed that all things that people made, were done by work to satisfy their ***needs***, which are conditions for **world content**, and that people generally break down the pursuit of satisfaction of needs into mental hierarchies, starting from *goals* as sets of needs to satisfy, *ideas* -- as transformations to independent variables of the world content that goal conditions depend on, *plans*, which instantiate ideas, and the *task* hierarchies under the plans. Therefore, we introduce five symbols to talk about **our intent**: NEED, GOAL, IDEA, PLAN, TASK.

x - our actions

According to the introduced symbols, then we can rewrite the _f(**x**)=y_ as

[AGENTS, ASSETS, EVENTS, PLACES, TOPICS](**WORK**) = [NEEDS, GOALS, IDEAS, PLANS, TASKS],

which means that people do work to parametrize what's on the left, according to what's on the right. [*]

We can summarize that all what happens in society, is _AGENTS set [y: GOALS about the NEEDS] regarding (f: AGENTS, ASSETS, EVENTS, PLACES, TOPICS) and pursue them by coming up with [y: IDEAS, from which they derive y:PLANS as networks of y:TASKS] to realize them, and instantiate the TASKS (prototypes for action) as actual WORKS (actions,or world parametrizations by selves)_. This is my social hypothesis. If true, then expressing all society's work via these symbols is enough to understand all technology, and hopefully is a convenient tool to share intent about content in the process of solving goal alignment problems.

The Grammar

Acting on a TASK that is small enough to directly act upon produces instances of WORK. If we connect these symbols to the definition of a **Contex-Free Grammar**, we can say that the non-terminal symbols of the grammar are N={NEED*, GOAL, IDEA, PLAN, TASK}, and the terminal symbols of it are Σ={WORK}, and that when people think how to achieve a goal (set of needs), which we can mark as start symbol S, they come up with rewrite rules R={N->(N U Σ)*} to decompose it.

*NEED: inequality about parts of world content, in symbols AGENT, ASSET,..

Just like poets who write verses as sequences of letters, society writes technology as sequences of works, and if we parse it into non-terminal symbols and rewrite rules ("ideas") to them, we can understand it.

The Pattern

People do the work in the world, they **spend time** and **create assets**, as a result. This pattern is all that was needed to create everything that humanity has ever created, which is the integral of time with respect to assets as a measure-theoretic measure. Thus, it is sufficient to record people's WORK (actions), or - x, and measure its utility with respect to our collective GOAL (all NEEDS) to find out how much credit is due to every one of us, as the true value of anything is the amount by which it reduces the distance to our goal.

To measure distance increments of works to goals, we need data about the asset flows in every instance of work, and transaction, and the landscape of needs. The below, I will describe the specific work mechanics of the investment system proposed and used on the Infinity Project, that integrates well with the multitude of currencies in existence.

Details

Under the Infinity Project's database model, we have tables *Item*, and *Topic*, where all **Item** instances correspond to **f** classes contextually labeled by the five **world content** categories, and **Topic** instances correspond to **y** classes labeled into the five **our intent** categories. We also have a *Comment* table, which corresponds to **x** class (a comment is an action, i.e., WORK). Thus, people can *work on topics about items*. Comments are supposed to contain description of progress of work. Moreover, each Comment has associated payments in **Transaction** table, allowing others to credit the work declared in comments. Here is how it works.

Suppose we stumble upon any problem in a personal daily life. The pattern we propose is to think how to solve it in general for everyone, and if this is a problem that possibly can happen to many people, describe this as a global problem on the platform in public, where an implicit goal is to solve problem (**Topic**.type=GOAL). To formalize the goal, add associated conditions as needs linked to the goal (**Topic**.type=NEED), each of which represents a condition for an asset class (**Item**.type=ASSET) associated with the problem. When thinking of the problem thus defined leads to inventions or ideas (**Topic**.type=IDEA), write them, and link them to the associated assets (e.g., assets that are independent and dependent variables of the idea, because idea, as described above, is a transformation to assets), this implicitly links those ideas to needs, and in turn - to goals that can be affected by these ideas.

Let people filter and discover those topic types, and critically discuss these goals and ideas by adding **comments** to these topics, and questioning relationships with the described assets.
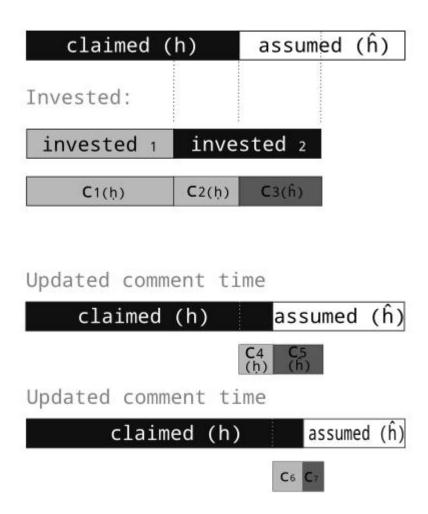
Given that there is an idea, that we want to try to realize, we create a plan object (**Topic**.type=PLAN), link it to that idea (for example, "plan to build a concrete vehicle prototype " may link to the idea "invention of a car"), and whenever we want to do some work for that idea, we create tasks or sub-tasks (**Topic**.type=TASK) under that plan.

When we want to do work and receive investment money to support the work on the task, we create **comments** on it with estimates of time amounts spent to do work on the task, and the estimated remaining time to be spent to complete the task, and share results by updating the comment and the estimates as we get more work done, or change the opinion:

`Comment.assumed_hours` – *the expected remaining time until task is done*

`Comment.claimed_hours` – *the declared spent time to do the work claimed*

If a comment on a task has non-zero amount of `.claimed_hours` or `.assumed_hours`, then comment snapshot is saved to immutable database (like BigChainDB), and investment options appears, creating investors an opportunity to invest into the declared work results, or expected future results, depending on which type of time they **cover** by their investment, with `.claimed_hours` being a priority, and it being impossible to invest into `.assumed_hours` without first covering the `.claimed_hours`.

Commented:

| claimed (h) | assumed (ĥ) |

Invested:

| invested ₁ | invested ₂ |

| C1(h) | C2(h) | C3(ĥ) |

Updated comment time

| claimed (h) | assumed (ĥ) |

| C4 (h) | C5 (ĥ) |

Updated comment time

| claimed (h) | assumed (ĥ) |

| C6 | C7 |

By "covering," we mean transferring the amount of money to the doer (comment author), that buys the amount of hours declared, at the **price of one hour of labor**, chosen freely by the doer on a per-comment basis, and currency exchange rates, but if not, defaulting to the average price of hour of labor in the user's country.

When an investor makes a transaction transferring some amount of money to the comment author, another comment snapshot is saved to immutable database, and **ContributionCertificates** are created for both doer and investor, each carrying half of the matched time, and the future time to be matched, depending on which type of time has been compensated for -- the claimed, or assumed:

`.matched_hours` – *the time created as a result of investing into* `.claimed_time`
`.donated_hours` – *the time created as a result of investing into* `.assumed_time`

When the doer in the future updates the comment to claim more time, the additional matched time is created by creating child ContributionCertificates with `.matched_hours`, associated for the parent ContributionCertificates with originall `.donated_hours`, this way, invalidating parent certificates. Only the certificates with `.donated_hours` can have child certificates. This structure matches well with the immutability of ContributionCertificates condition, and covers the declared time spent and expected to be spent with disjoint finitely additive intervals.

The contribution certificates then become the basis for defining credit, because they define additive intervals of minimal size of contribution, that can be summed both for estimating the investment requirements for projects, as well as for purposes of determining the contributions to goals, evaluating ideas.

Adding `.expected_input_assets`, and `.expected_output_assets`, to comments, and the relationships between concrete and more abstract asset types via ideas, allows for quick estimation of the tasks that optimize the asset structure in the world based on the asset structure defined by goal conditions (needs) can be automated. Associating assets created with ContributionCertificates allows for equitable rights in assets created as a result of work.

Discussion

Necessary condition - a liquid market of works, with baseline price.

Conclusion

The Infinity API consists of 3 endpoints: Topic, Comment, Transaction, which, when interacted with, generates the sigma-additive contribution certificates stored in blockchain database, creating a basist to work, invest and derive value on topics on the Internet.

Further Work

Formalization. It is not enough to show that the ideas work by making unit tests that pass illustrating the work, as it is now [*]. The contribution certificates define the time value, as expectation computation of Stieltjes integral, which can be symbollically estimated in this whitepaper.

Note: the reason for choice of hour as unit to measure time is well-understood both in physics and economics.

Hourly Wages

U.S.: https://fred.stlouisfed.org/series/CES0500000003
China: https://tradingeconomics.com/china/wages
Lithuania: https://tradingeconomics.com/lithuania/wages