

SYNEREO LIBERATED ATTENTION ECONOMY LAYER: WILDSPARK WHITEPAPER

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1. INTRODUCTION

In today's information economy, value is generated by those who create information desirable by others as well as by those who organize the Internet and flow this information through it such that it arrives at the attention of others who may appreciate it.

This "attention economy", a subset of the information economy, is becoming more relevant than ever with the information explosion we have been experiencing in recent years. As content becomes easier to create, and as the friction in replicating and spreading of information approaches zero, the economy created around attention, a rate-limiting step in the consumption of information, takes centre stage.

Much of this creation and curation activity is done by people who did not take part in this economy before the Internet existed, and are, for the most part, simple participants in it. This User Generated Content (UGC) market has skyrocketed in the past decade, creating platforms - content hubs and social networks, where people upload and move digital information - relying almost solely on user contributions in a way that was unimaginable before. However, while much of the value in these platforms is created by these users, they see little in terms of reward - monetary or otherwise - for their work.

Largely, this is the result of a reliance on these platforms as intermediaries. Centralized entities, dominant monopolies in their niche of content type and audience, have completely cornered the markets solely by virtue of having offered a simple online service, placing themselves between hosted content and its audience, at the right place and time. Synereo argues that these services are significantly less important than the economy they underlie, and that it is time to liberate this economy from their hands.

Date: Dec 20, 2017.

2. WHY WILDSPARK

While the engines of the Internet - the users powering it - work hard to make and distribute valuable information, these users see very little in terms of exposure, recognition, and monetary reward. This is largely because users rely on content creation and distribution hubs, such as YouTube and Facebook, who profit from their position as intermediaries between content creators, curators and consumers. YouTube, for example, offers video hosting services, and in return co-opts the traffic generated by the creators' content for advertising purposes. Facebook, on the other hand, creates bespoke, algorithmically generated feeds based on the user's behavioural patterns and the information the user's own friends and acquaintances create and curate for them, attracting their attention, which is then directed towards ads. In contrast, the utility that the users in these arenas gain is mostly from the generic nature of their platforms, addressing the widest audience possible to create optimal network effects.

In order to disrupt this monopolized market and to provide a business model capable of compensating content creators as well as curators, Synereo has designed a **three stage roadmap** whose first step is the decentralization of the way User Generated Content is published, distributed and monetized. This is done through introducing the Liberated Attention Economy Layer, stacked above content hubs and content distribution arenas, creating a freer and fairer content network above and outside the existing, confined architectures of these platforms today. As this layer is developed, it will offer more and more of the services available on the Internet today, bootstrapped on top of these existing services while being completely agnostic to them, in ever-decentralizing form.

WildSpark, a key tool in this new layer, allows content creators to monetize their existing works on content hubs without relying on, and paying exorbitant fees to, the centralized entities their content resides in. Additionally, this model compensates curators for their work in distributing content to areas of the net where it is appreciated. With this, the economic ground to finance independent, original content will be laid on top of the existing landscape; sparking ingenuity and helping consumers find what they need, when they need it, by virtue of a new economy that provides incentives to industrious curators. WildSpark is seamlessly integrated with the user's direct internet experience in such a way that other services, such as Patreon, fail to do.

Beyond the set of economic incentives implemented into Synereo's suite of Attention Economy Layer tools elaborated on below, these tools also allow users to invest money

in content directly such that a wider audience can be exposed to what they have to say - similar to how advertising on social networks currently functions. However, our tools mitigate the dependency on advertiser funding and their agendas by establishing direct payment channels between Amplifiers and their audiences, and compensates those exposed to such Amplified content, rather than the entity located at the center of the interaction and monetary exchange, now no longer required.

Using the Attention Economy Layer, Synereo's WildSpark transcends current tipping and advertising mechanisms and takes a more holistic approach; one that may push this economy to the next level by providing an environment that accompanies users on their various web adventures and allows them to engage with content in ways that benefit them, their social environment, and content creators alike. WildSpark is designed to be beautiful and functional, non-intrusive yet immediately available, helpful, informative and friendly. With special attention to social network functionalities, WildSpark aims to make it effortless not only to discover quality content, but also to support and connect with the people who create and curate it.

3. HOW IT WORKS

The lifecycle of User Generated Content comprises three main actors: *content creators*, publishing original videos, music, pictures and texts; *curators*, identifying high quality content and matching it with appropriate audiences; and *consumers*, who, like all of us, turn to the Internet for entertainment, education and research.

Let us start with curators: based on a crypto-monetary model, the Attention Economy Layer enables curators to invest a customizable amount of AMPs, a digital cryptocurrency issued by Synereo, in promising content, before funnelling it from the content hub arena, such as YouTube, to the relevant network segments of a content distribution arena, such as Facebook, to match it with the right audiences. The AMPs aggregated in this way are then distributed back to the content creator as well as the curators who have created the highest amount of added value.

After choosing the desired amount of AMPs to be invested in a piece of content, WildSpark generates a unique link, associated with user's account, which they can then share on social networks or distribute as they like. The friends and followers, who receive and click on the link, will be directed to this content embedded in the WildSpark site and presented with the option to Amplify and share it as well. If they

choose to do so, a share of the AMPs invested by them will be credited to the user who Amplified and shared the link, and to the previous *Amplifiers* the user discovered the content through, while a significant part will be handed to the original content creator. The more AMPs each user invest in the content, and the more traction they create, the higher will be their reward from future Amplifications. This way, content creators can derive income from their work, while people who are on the lookout for high-quality content are incentivized to match it with new audiences.

From the Creator side of the game, there is the ability to place a bounty on their content, that is collected by users who can distribute it successfully, bringing views, subscriptions, and Amplifications. This allows the creator to break the boundaries of his organic reach, finding new audiences, and creates a demand for AMPs on the creator side.

With this, we envision a new form of relationship between creators and their audience, one based on participation, mutuality, and fairness. As the technological infrastructure underlying WildSpark becomes more decentralized, these principles will become even more pronounced and set the stage for a new form of decentralized economy.

4. DETAILS OF THE AMPLIFICATION PROCESS

In this section, we take a closer look at the Amplification process and describe the economic model behind the attribution formula. First, note that Amplification is fundamentally different from liking, commenting or sharing a piece of content, as it involves making an economic decision and investing AMPs as well as time. Additionally, Amplifying content with Synereo's WildSpark is not just a form of tipping or a voluntary payment for information received for free. Amplifying means teaming up with a content creator and becoming their partner. It also sends a signal about the quality of content to other users in the community, and is a call to action to support the content creator and distribute the content. The AMPs that are invested in a content are then used to reward the content creator as well as other curators that participate in Amplifying and spreading this content.

After users join Synereo's WildSpark, they can participate in the Amplification game, by either creating content or by curating high quality content and Amplifying it. Any curator could start an *Amplification chain* by being the first who Amplifies a piece

of content or by joining an existing Amplification chain. Either way, this process is designed to distribute funds among the content creator as well as among previous curators and Amplifiers up the chain. Any user who chooses to Amplify the content rewards all the curators who Amplified the content before him/her, as participants in the value chain responsible for bringing content he appreciated to his attention, and is likewise rewarded when others downstream from him Amplify the content. In other words, AMPs travel *backward* through the chain of Amplifiers all the way back to the original content creator.

Since the financial rewards that individuals receive depend on other users downstream who Amplify the content, users would choose to Amplify or *re-Amplify* a post, if they truly believe that the content is high value/quality enough to attract the attention of other users. They would also spread the Amplified content widely in their own channels to generate awareness and attract other Amplifiers. Notice that individuals have a stake in the re-Amplification process and carefully choose to Amplify only the content that would travel in the network with high probability. Through this mechanism, the community rewards the curators of high quality content by further Amplifying good content.

4.1. Rules of the Game. At any given time, users could choose one of the following roles and receive some payoff as a function of their role:

- *Creator*: Every time that the content is Amplified, the content creator receives $1/3$ of the invested AMPs¹.
- *Amplifiers*: The payoff that each Amplifier receives depends on how early he joined the Amplification chain, how much they Amplified themselves, and total amount of AMPs invested in this chain.

As mentioned earlier, in the Amplification process, AMPs travel backward through the known path of the previous Amplifiers to the originator of the content. The content creator, will receive $1/3$ of the total amounts of AMPs, and the rest will be distributed among the previous Amplifiers according to the following rules:

¹ In line with this approach, WildSpark's attribution formula will gradually be updated to allocate a greater share of AMPs to creators. At this early stage of growing the network, the current formula allows us to test the product better and make the game more exciting for those Amplifying and curating content.

- The amount of AMPs that an Amplifier would receive from other Amplifiers who participate in the process after him, depends on how much he invested himself: if a user invests 5 AMPs, he only receives rewards from the next immediate Amplifier (even if the chain goes on forever!). If he invests 10 AMPs, he would receive rewards from next two Amplifiers, if he invests 100 AMPs, he receives AMPs from next 11 Amplifiers, etc. Let's call the number of downstream Amplifiers that a user is eligible to receive AMPs from the *AMP Threshold*².
- How much AMP each Amplifier receives from other Amplifiers after him depends on the distance between two Amplifiers. Imagine the Amplification chain starting from user 1, the content creator. Let a_i be the total amount of AMPs that user i invests in the content. Then the amount of AMPs that user i receives from user j , S_j^i , is:

$$S_j^i(d_{ij}, w_j) = 2^{-d_{ij}} w_j$$

where $j > i$ (j Amplifies after i), and d_{ij} represents the distance between user i and j , and is equal to $d_{ij} = j - i$, and w_j is the remainder of AMPs after setting aside the portion of the content creator, i.e. $w_j = \frac{2}{3}a_j$.

- After this stage, the remaining AMPs go to a common pool called *Fractal Reserve*³ for short. At the end of the Amplification chain, or at the end of a designated time, whichever comes first, the total AMPs in Fractal Reserve is awarded to an Amplifier who generates *the highest value in the chain*. This score depends on how much AMP each user invest themselves, as well how much the Amplifiers who follow them invest. This is an indirect way of capturing how much engagement each user creates in their networks, and how many other (new) users Amplify the content as a result. In other words, the more users invest themselves, and the more *offsprings* they generate, and the more they invest, the higher the score.

² At the early stages of Beta release, the AMP Threshold is set to smaller amounts (Up to 1 AMP = 1 downstream Amplifier, up to 2 AMPs = 2 downstream Amplifiers and so on). We implement a linear function for calculating the Threshold levels, but later on an exponential function is used instead. How the Threshold levels is calculated is described in detail in the following section.

³This feature is not implemented yet, and is forthcoming in the next variations of the Beta.

- Additionally, if the content creator places an AMP bounty on his content⁴, each Amplifier will receive 1 AMP from this bounty as a reward, until these AMPs run out. If there is still AMPs remaining from this bounty at the end of the chain or the designated time, the leftover AMPs will be added to the common pool. This way, the Amplifiers are rewarded immediately for their participation from the content creator.

This formulation has several benefits. It encourages users to invest more AMPs, because of the potential benefits from the future Amplifiers as well as a higher probability of winning the AMPs accumulated in Fractal Reserve. It also fuels the Amplification chain with more AMPs which translates to more AMP rewards for the content creator. Said differently, if Amplifiers do not invest tangible amounts, they are not going to enjoy the full benefits of the chain, specially as it gets long.

Furthermore, the way AMPs are distributed among Amplifiers creates local effects in the chain: more of the AMPs always go to the curators that are closer to current Amplifier (depending on their AMP Threshold). This could create loyalty among curators and lead to beneficial social games such as tit-for-tat that help sustain longer Amplification chains. This also ensures that late Amplifiers receive reasonable rewards as well, as their rewards are always directly proportional to their skill and success as curators, and helps keep all Amplifiers engaged and interested in the game. Curators realizing the AMP attribution mechanism and the potential for reward will be encouraged to participate in the game at an earlier stage.

4.2. Attribution Formula. To summarize the discussion above, the Attribution Formula, that characterizes users' payoff, depends on how much AMPs they Amplified the content with through (1) the *threshold level* they are eligible to receive rewards from, and (2) the *user score* that determines who wins the AMPs accumulated in Fractal Reserve. The way the AMPs are distributed also depends on the distance between two Amplifiers in the same chain.

Let a_i be the total amount of AMPs that user i invests in the content. If $a_i < 10$, he is rewarded only from his next immediate Amplifier, if $10 \leq a_i < 20$, he is rewarded from his next two immediate Amplifiers, etc. Let t_i indicate i 's **Threshold level**: i.e. the number of next immediate Amplifiers that he is eligible to receive rewards from.

⁴ This is implemented at the later stages of the Beta release.

Then:

$$(4.1) \quad t_i = \text{ceil}(a_i/10)$$

Let user j be an Amplifier that is down the chain from user i . If a_j is his total AMP investment, then $\frac{1}{3}a_j$ goes to the content creator, and $w_j = \frac{2}{3}a_j$ will follow backward from j to reward Amplifiers/curators before him such as i . Let $d_{ij} = j - i$ **indicate the distance between i and j** . Given user i 's threshold level, the amount of AMPs that he receive from j is:

$$(4.2) \quad S_j^i(i, w_j) = \begin{cases} 2^{-d_{ij}}w_j & \text{if } d_{ij} \leq t_i \\ 0 & \text{otherwise} \end{cases}$$

$$(4.3) \quad \pi^i = \sum_{j=i+1}^N S_j^i$$

where π^i is the total amounts of AMPs that i receives from the Amplifiers following him.

Now, let A_k be the set of Amplifiers before k (i.e. $k > i$) who are eligible to receive AMP rewards from k , i.e.

$$(4.4) \quad A_k = \{i | k > i \ \& \ d_{ik} \leq t_k\}$$

Then the amount of AMPs from k 's Amplification that goes to **Fractal Reserve** is:

$$(4.5) \quad \rho_k = w_k - \sum_{i \in A_k} S_k^i = w_k(1 - \sum_{i \in A_k} 2^{-d_{ik}})$$

And the total amount of AMPs in Fractal Reserve at the end of the chain or the designated time is:

$$(4.6) \quad \rho = \sum_{i \in \text{chain}} \rho_i$$

As mentioned earlier, the AMPs accumulated in Fractal Reserve will be rewarded to the user that generated the highest value in the chain. This score is a *weighted sum* of own AMPs, children's AMPs, grandchildren's AMP, etc⁵. The extent of this sum depends on the Threshold level of every user (as defined in Eq. 2.2). Let N_i^r be the set

⁵ Currently, the Fractal Reserve score is only calculated based on Amplifications and re-Amplifications. In the future, more parameters will be added to better estimate the positive impact of a curator's engagement.

of all the Amplifiers following i , who are at distance r from i (i.e. the distance between i and any user in N_i^r is r). This set is called r -neighbourhood of i . Then:

$$(4.7) \quad N_i^r = \{ \text{the } r\text{-neighbourhood of } i \} = \{j | d_{ij} = r\}$$

$$(4.8) \quad \begin{aligned} \text{Score}_i &= a_i + d_i \sum_{r=1}^{t_i} 2^{-r} \sum_{j \in N_i^r} a_j \\ &= a_i + d_i \left(2^{-1} \sum_{j \in N_i^1} a_j + 2^{-2} \sum_{j \in N_i^2} a_j + \dots + 2^{-t_i} \sum_{j \in N_i^{t_i}} a_j \right) \end{aligned}$$

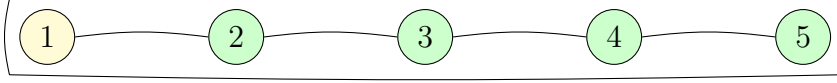
d_i is the **Descendant Factor**, and grows at a decreasing rate the further Amplifiers get from the creator⁶. The Descendant factor is implemented to give a higher weight to the Amplifiers joining the chain later on who may not have as many offsprings as the early Amplifiers, and insures that they also have a realistic chance at winning the Fractal Reserve. The following table presents one example of the descendant factor for different Amplifiers:

| Amplifier | DF |
|-----------|--------|
| 1 | 1.00 |
| 2 | 1.10 |
| 3 | 1.15 |
| 4 | 1.175 |
| 5 | 1.1875 |
| 6 | 1.1938 |

In summary, the total amount of AMPs that users receive at the end of the Amplification process or the designated period, whichever one comes first, is the sum of these small payoffs that Amplifiers accumulate during this period as well as possibility of winning the common pool based on their scores.

4.3. Example. The following example, explains how this process works in practice. Imagine the following chain, where user 1 is the content creator, and users 2-5 are the Amplifiers, who each contribute 40, 10, 20, 20 AMPs respectively.

⁶ In other words, this factor is a concave function of the distance between the Amplifier and the creator of the content.



The content creator, user 1, will receive $1/3$ of the total AMPs from each Amplifier, therefore his total income is $13.3 + 3.3 + 6.67 + 6.67 \simeq 30$ AMPs. The remaining AMPs that are used to reward the Amplifiers respectively are 26.7, 6.7, 13.33, and 13.33.

Next note that:

$t_2 = 4 \rightarrow$ User 2 is eligible to receive AMPs from the next 4 Amplifiers

$t_3 = 1 \rightarrow$ User 3 is eligible to receive AMPs from the next 1 Amplifiers

$t_4 = t_5 = 2 \rightarrow$ User 4, 5 are eligible to receive AMPs from the next 2 Amplifiers

Let π_i be the AMPs that user i receives, and ρ be the remainder of AMPs that goes to the common pool at each stage. First note that the remainder of user 2's AMPs after rewarding the content creator, goes to the common pool, since there is no other Amplifier before him (i.e. $40 - 13.3 = 26.7$). Then he receives $S_3^2 = 2^{-1}6.7$ from Amplifier 3, $S_4^2 = 2^{-2}13.33$ from Amplifier 4, and $S_5^2 = 2^{-3}13.33$ from Amplifier 5. At this point, the remainder of Amplifier 3's AMPs will go to the pool (i.e. 3.35) and he receives $S_4^3 = 2^{-1}13.33$ from Amplifier 4. Note that 3 is not eligible to receive AMPs from Amplifier 5. The payoffs of Amplifiers 4 and 5 are calculated in a similar manner. Below is the step by step sketch of this process:

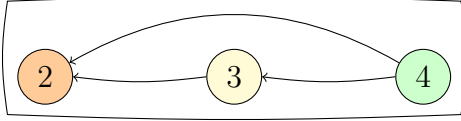


$$\pi_2 = 2^{-1}6.7 = 3.35$$

$$s_2 = 45, \quad s_2 \text{ is the score of user 2.}$$

$$s_3 = 10$$

$$\rho = 26.7 + 3.35 = 30.05$$



$$\pi_2 = 3.35 + 2^{-2}13.33 = 6.68$$

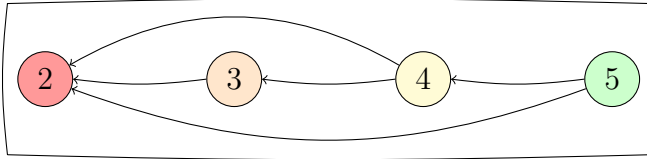
$$\pi_3 = 2^{-1}13.33 = 6.67$$

$$s_2 = 50$$

$$s_3 = 21$$

$$s_4 = 20$$

$$\rho = 30.05 + (13.33 - 6.67 - 3.33) = 33.38$$



$$\pi_2 = 6.68 + 2^{-3}13.33 = 8.34$$

$$\pi_3 = 6.67 + 0 = 6.67$$

$$\pi_4 = 2^{-1}13.33 = 6.67$$

$$s_2 = 55$$

$$s_3 = 26.50$$

$$s_4 = 31.50$$

$$s_5 = 20$$

$$\rho = 33.38 + (13.33 - 1.67 - 6.67) = 38.38$$

Therefore, user 1 is the winner of the pool, since he has the highest score. Note that the second highest score is user 4. Although he is the second last user, but since he invested higher amounts of AMPs himself, he creates higher value in the chain. The

final payoffs are:

$$\left\{ \begin{array}{l} \pi_1 = 30 \\ \pi_2 = 43.10 \\ \pi_3 = 10 \\ \pi_4 = 6.67 \\ \pi_5 = 0 \end{array} \right.$$

5. BOT-RESISTANT DESIGN

An important consideration is the presence of bot networks, and how they may influence the flow of information and AMPs. The attribution formula used in this model is designed to mitigate the impact of bots as much as possible. First, note that the only way for a bot to benefit from an Amplification chain is through participation in the chain, that is, a bot has to actually Amplify the content and invest AMPs. Additionally, users are rewarded if other Amplifiers participate and Amplify the chain afterwards. This requires active promotion of the content in a user’s local social networks and communities to attract new Amplifiers. Therefore, for a bot to benefit from Amplification of other real users, it should be able to attract them to the chain in the first place. Being situated in a bot network not only will not generate “new” income for the bot network as a whole, but also will allocate a portion of their collective AMPs to the creator and the previous “real” Amplifiers.

Additionally, the design of the attribution formula ensures that a bot only receives AMPs from other “real” users - if it happens that other users end up Amplifying a chain following a bot - if the bot itself has invested a reasonable amounts of AMPs. This is done through the introduction of the *Threshold Level* (Eq. 2.1 & 2.2). Because of this threshold, users who invest fewer than 10 AMPs only benefit from the next immediate Amplifiers; they have to invest at least 20 AMPs to access the next 3 layers for instance. Note that this threshold level is also used in calculating user scores, which is the deciding factor in who wins the AMPs accumulated in Fractal Reserve.

In short, in order for bots to benefit from an Amplification chain, they have to be followed by other “real” users, and also invest a reasonable amounts of AMPs themselves. That is to say, for bots to be successful, they have to generate real value.

6. CONCLUSION

The introduction of the Liberated Attention Economy Layer, stacked above content creation and distribution hubs and serving as a meta-layer for the Internet, is aimed at enabling content creators as well as curators of content monetize their work without relying on the centralized entities their content resides in and flows through. This is done through active participation and investment of users who create and distribute the content in many different social networks and communities. The model presented here not only serves to support the original creator of the content, but also compensates the many users that help order the information and content on the net in a way that benefits others. Special attention has been paid to the design of the attribution formula, to ensure that users who generate the most amount of value in the chain are compensated accordingly, and that there are very few to no opportunities for harmful or malicious activities.

The rewards that users receive depend on the amount that they invest themselves as well as the total amounts of AMPs invested by other Amplifiers. The more users invest, the greater the benefits to the creator and previous Amplifiers, as well as the higher probability of winning the AMPs accumulated in Fractal Reserve for users. In particular, the amount of AMPs that each user received from the following Amplifiers depends on their threshold level as well as the distance between the two Amplifiers. Additionally, all these factors ensure that the presence of bot networks would not impact the Amplification process or the reward that users receive from the chain.

Synereo will be developing and enhancing these models continuously, adding new features that help users gain the highest value from their efforts, leading to communities of users that support each other to find the information they need, when they need it, by virtue of a new attention economy that provides incentives to industrious curators. With this, WildSpark is our first step towards the creation of a sustainable economy for content creation and curation online.