

VERSO and the Metaverse

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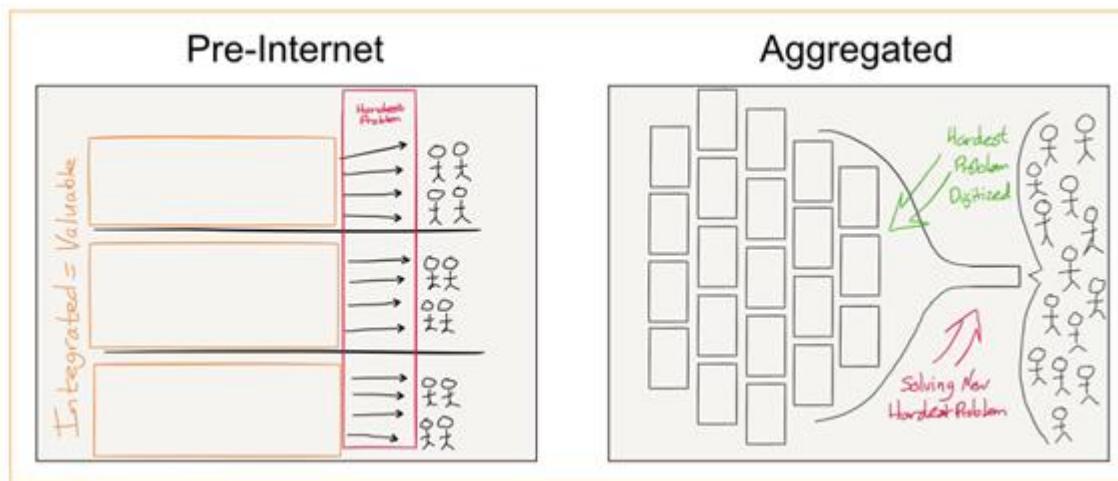
The last fifteen years

In the last few decades, the Internet has transformed the world. It allows access to knowledge hitherto inaccessible. It enabled communications to become global and free.

This transformation has truly organized our lives. We started using platforms that ensure efficiency and convenience in communication, human socialization, and in the search for knowledge. In exchange for these free services, we receive advertising, encouraging the purchase of products, which are delivered to us anywhere on the planet.

To ensure the efficiency of advertising and e-commerce, algorithms have been developed that are based on our data to provide better results. These operate on the systems back end, which on the front-end resort to news and entertainment to ensure our adherence to the platforms that use them.

Ben Thompson explained this World in his “Aggregation Theory”: the destruction of the “local”, characteristic of the pre-Internet; and its replacement by an “aggregate system”.



Now, approximately 80% of advertising revenues in Portugal (and many other European countries) end up in the coffers of Google and Facebook. Platforms such as Uber, Airbnb and Amazon brought efficiency and convenience, but also at the expense of local alternatives.

The EU answer has been increasing regulation, which in, many cases, is needed. But regulation is after the fact. I prefer an alternative where we compete now and work towards improved solutions for the coming Metaverse revolution.

The Metaverse

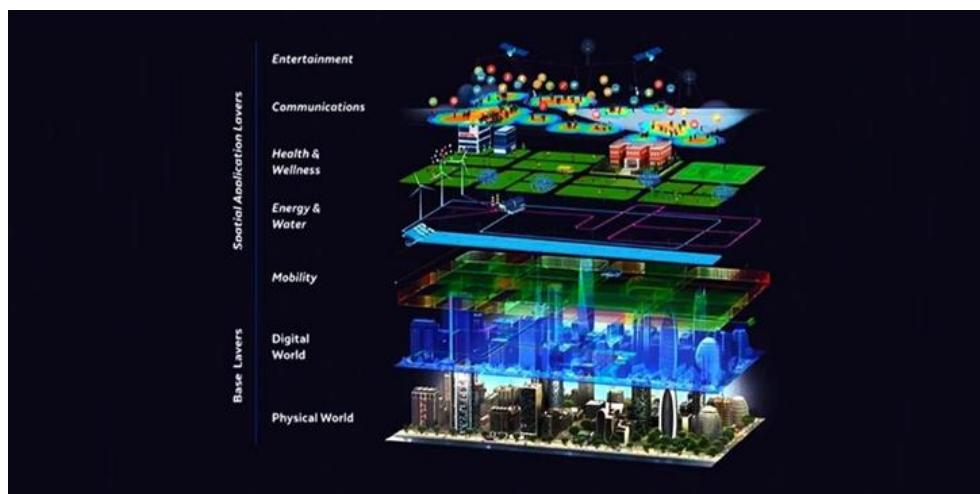
Mark Zuckerberg surprised the World by changing Facebook's name to Meta, and its mission to build the Metaverse. He also announced that he wants to hire 10.000 people in the EU for that purpose.

The Metaverse bridges the Real and Virtual Worlds, augmenting the former, and introducing synthetic Virtual Worlds. Both the Real and Virtual Worlds are in 3D.

Besides the traditional e-commerce layer, the Metaverse comes with an additional layer including smart contracts, NFTs and tokens that may be associated to both the Real and Virtual products.

Every major computing and entertainment company is now working on the development of the Metaverse. Every major brand and retailer are also looking to Metaverse induced opportunities. Microsoft announced that intends to lead the Metaverse for enterprises. EPIC Games has now a division to develop the Metaverse for architecture, engineering and construction.

The Metaverse is seen by the Web 3.0/crypto community as a future decentralized Internet. Smart contracts and NFTs are now regarded as "Web sites" and "apps" were seen in 2000's and 2010's respectively.



Introducing VERSO

In this decade, we will move from the current Data World based Internet to another in which we will interact with the Real World and will explore Virtual Worlds. We already do it through the “smartphone”, but the improvements on augmented and virtual reality glasses will create a new Internet now known as the Metaverse. We will move from a 2D and linear Web to another in 3D, where a digital layer will bridge the Data and Real Worlds, and add Virtual Worlds.

VERSO, developed by Aromni, intends to be a platform that will assure inter-operability in the Metaverse introducing Smart Tags, as a new atomic entity for this new Internet. Smart Tags will ensure both hyper-local development and a new vision for a World based on interconnected neighborhoods.

“Smart tags” may be used to digitally label or twin Real-World entities. They may include computer programs to share, rent, sale or mint them (into NFTs). These programs may be also related to specificities of the addressed vertical markets, such as communication requirements between producers and consumers.

The use of “smart tags” to index the World is achieved through its insertion in a hypergraph that links them. These links allow efficient searches, but also the generation of real routes encompassing the points they represent. Examples include thematic routes generated for the exploration of a city; and the definition of optimized circuits for the collection of food waste.

Smart tags and hypergraphs can also be used to represent our mental models of Virtual Worlds. A “smart tag” about a tree will not only identify it, but also inform, in a structured way, about its role in photosynthesis, pollination, noise reduction and air pollution, and impact on temperature.

A hierarchical 3D menu system will allow the exploration of these contents at more detailed levels if we so choose. This 3D menu type system may be applied to other systems. It inspired the creation of VERSO’s Augmented Reality Console (ARC), a window to the Metaverse.

The interaction between the Real and the Virtual also inspired the creation of new content creation video-based tools called VERSOs.

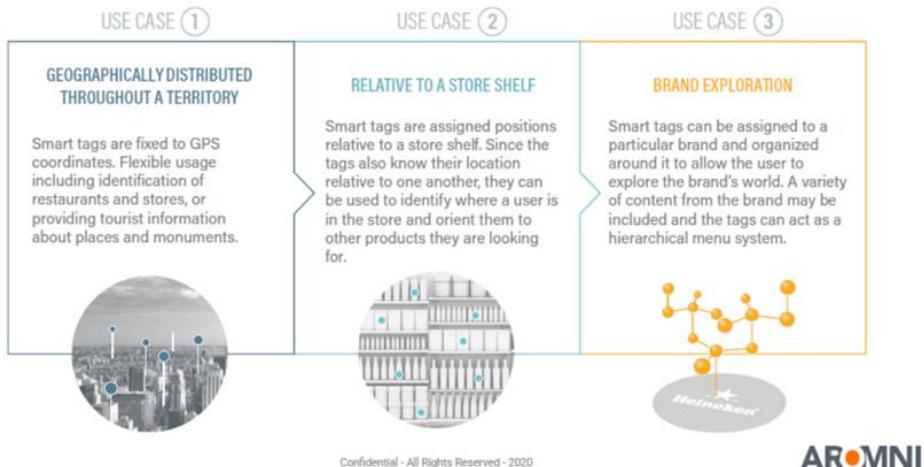
VERSO’s Smart Tags- the World is our neighborhood

A neighborhood “tagged” to the last detail allows a constant matching of supply and demand, ensuring incomparable economic efficiency, circularity, nature conservation and health preservation. The creation of local media will be a “fuel” for the system, also ensuring that the advertising media will not need individual data, as in the case of “classifieds” in newspapers of the past.

The “tagging” of any space replicates the approach followed with the “tagging” of a store as shown below: its location is tagged; its individual objects (its products in the case of a store) are “tagged”; and exploration of each object is enabled using a conceptual graph (the brand of a product in this case).

VERSO's Smart Tags approach has been successfully applied in two cases: the city of Lisbon's pioneer project for the Alcantara neighborhood; Jerónimo Martins' flagship store; and a Google sponsored local media project for Algés.

SMART TAGS IN USE



Our experience from working with both large and small retailers has shown that VERSO may be used in different stages of the sales cycle:

- AR plus AI enable planogram checking which helps inventory and sales control (for the retailer) and facilitates product finding (for the consumer in the store).
- AR may be used to promote selected products in the store.
- Persistent AR labels may include two-way communication channels between brand owners and consumers that may be used during the product's life cycle.
- The use of AR plus Ai in the store will greatly facilitate the creation of a digital twin virtual store to be accessed remotely.
- Thus, curated local stores may be brought to the global World. The use of near human and AI (including translation in multiple languages) technologies will enable those curators (or their Ai versions) to help buyers across the World.



Similar approaches are being discussed to be implemented in Portugal's Agriculture and Sea Exploration Digital Hubs. An approach including an extra layer allowing for minting "sanctuaries" as NFTS is being discussed with Portugal's Institute for Nature Conservation.

VERSO's ARC- Windows to the World

Our "windows" to the World enable access to media objects such as text, static and dynamic images, sounds, games, and marketplaces. In our living, working and entertainment environments these displays may be associated to television sets and cable TV boxes, gaming consoles, computers, smart home devices, smartphones and other wearables. We can be plain local users, but also access and interact remotely with multi-user platforms, such as multi-player games.

There are visions for "disappearing" these physical displays and devices, using holography. Holography is a photographic recording of a light field, rather than of an image formed by a lens. It is used to display a three-dimensional image of a subject, without the aid of special glasses or other intermediate optics. Static holograms have been developed for decades. But interactive holographic methods still have limitations

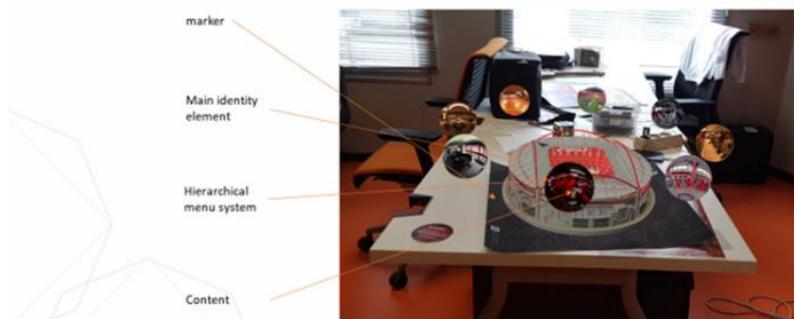
VERSO applies Augmented and Virtual Reality approaches to create a new unified display, in plain air, replacing all the above-mentioned displays and associated devices. This display is the window to a system of menus that helps one explore and experience any type of media objects. These may be accessed using a three-dimensional hierarchical menu system. The media objects are organized invisibly using Smart Tags, similar to those highlighted in Use Case 3 (see above) and a hypergraph-based data system. This new system is called VERSO's Augmented Reality Console (VERSO's ARC).

ARC may be one day fully accessible using Augmented Reality glasses. Currently, a smartphone may be used to interact and visualize the system on the phone or on a larger display using a digital media player.

ARC has been applied in the proposal of Benfica's future media World including the access to current media properties (site, social media, app, TV) but also to virtual explorations in the stadium and multi-player gaming in the Metaverse.

AROMNI'S AR CONSOLE

AR console implementation example (Benfica demo)



ARC relies on a gesture-based interface to navigate through the media and interact with objects. You can see our award-winning technology, developed for Canesta-later acquired by Microsoft- [here](#).



VERSOs

VERSO's Smart Tags intend to index and foster the development of local economies in the Metaverse. VERSO's ARC intends to be a preferred local window to the World.

Both Smart Tags and ARC are constructs for the 3D Internet that will emerge from augmenting the Real World and developing Virtual Worlds. But most people mostly use video- a two-dimensional (2D) dynamic image representation of three-dimensional (3D) spatial and temporal phenomena.

3.6 billion people have video cameras in their smart phones. You Tube alone claims more than 2 billion unique viewers of their published videos.

Video interactivity has been achieved using quizzes, hotspots, branches, data inputs and 360 images. Video components have been also augmented using filters available in a number of platforms such as Snap, Instagram and Tik Tok.

VERSOs are new approaches to video-based simulation in the Metaverse. VERSOs includes two separate contributions: the no code **SIMVIDEO** approach enabling anyone to develop games; and **REALSIM**, a high-quality real time simulation games based on real time videos.

SIMVIDEO is a simulation system that enables real time gaming based on video. It includes the insertion in real time of virtual entities that can be directly controlled or pre-programmed by the user.

The back-end of VERSOs is based on machine and human learning strategies to identify entities and their behavior and interaction rules. It also includes a 3D mirror of the 2D video for improved precision.

A high-end example is the agent-based modelling developed for Lego available [here](#).

A low-end example is the conversion of a National Geographic video one predators and preys in an interactive video game, where the user adds/deletes predators and preys in the video or its 3D mirror, in real time.

VERSOs main aim is to be a no code development platform for video/3D games inspired in videos available in existing platforms. Such games may be minted into NFTs with associated smart contracts to benefit all involved creators.



REALSIM approach may be applied to real time videos on events, including those being broadcasted in real time. Gaming results again from the insertion and control of virtual elements in real phenomena. In this case, realism is central to the gaming experience: collisions, occlusions and shadows casted by those elements have to be computed and displayed in an augmented reality setting.



In this case, the development of meaningful games requires well-planned image and sound capture to enable high quality first-person experiences using immersive or non-immersive virtual reality.

Real time car racing has been the first target. The goal is to allow users at home to drive virtual cars racing against real cars in real time.



REALSIM can be also used for real time gaming in sailing, rowing, and biking. Aromni's team is also involved in REALSIM based approaches to football, baseball and cricket. An early approach was developed for Nike's LA Staples Center Vault Store where the user could impersonate a player in the free throw line. You can see it [here](#).



Opportunities in this area include pilot projects with TUGA Innovations (a micro-vehicle maker), NASCAR, YES Network (New York Yankees, Brooklyn Nets, New York FC) and two teams from the Indian Premier league.

Aromni's team

Aromni's founders Antonio Camara, Edmundo Nobre and Nuno Cardoso have 25+ years of experience in artificial intelligence (AI), virtual and augmented reality (VR/AR). YDreams, their previous company, was a World leader in technological development and market validation with 50 Fortune 500 clients in more than 30 countries. See a repository of its main projects, products and platforms [here](#). They have built an ecosystem of AI/VR/AR companies, both in Portugal and Brazil, that will enable Aromni to scale efficiently.

They are joined at Aromni's management team by John Hagie, an executive with more than twenty-year's experience at Hewlett Packard, and Ross Plummer, formerly managing Director at Ridley Scott Creative Group.

Allies and competitors

Aromni inherited YDreams ecosystem of relationships in US, Europe, Asia and South America. They will be used in VERSO's development through strategic partnerships. Those relationships have included most notably Dell, Intel, Epic Games, Disney and Apple.

Aromni's main competitor is [Niantic](#). It has been valued at \$4 billion in 2019, but its valuation may be substantially higher at this point with its latest Nintendo deal. The founders of both companies have a similar background.

Working together

Aromni founders are pursuing two alternative strategies: bootstrapped growth based on software-as-a-service strategic contracts; and growth acceleration via investment. In both cases, stock market listing is the end game.

Strategic contracts in these areas, at this point, are mostly pilot projects except in the case where e-commerce is already viable NFTs can be minted and sold successfully. This is the case of contracts that can be jointly pursued with the EU or national institutions in areas such as nature conservation and culture.

Pilot projects may be jointly developed for using smart tags in retail and local media.

Impact projects may include a new generation AR console for Juventus, and a REAL Sim implementation with Ferrari