

# Ynvisible - Pioneer in a ground-breaking sector

Unicorn hunting can be one of the most exhilarating pursuits around.

The fast-moving technology space creates a constant stream of exciting opportunities.

Of course, being able to spot the next BIG thing is a rare talent, but every so often something truly special comes along.

Something so compelling that it seems destined to succeed.

Consider for a moment Microsoft, Apple, Amazon, and Google.

These trailblazers all went on to achieve incredible things, seizing first mover advantage. They revolutionized the world around us, forging brand new markets in their wake.

Had you had the vision to buy any of these stocks during their early days, and the conviction to hold over the long-term, wealth would have flowed over you.

This is true for any successful pioneering company and its early investors. It is the basis on which fortunes are made, but how do you spot tomorrow's champions?

For some, this might sound an impossible task.

However, for those that can spot an emerging technological trend at the right moment, the rewards can be spectacular.

The ground-breaking field of printed electronics holds just such promise for farsighted investors.

One firm is at the forefront of the **printed electronics** revolution and has positioned its patented technology to become a market-leader in this next multi-billion dollar global industry; **Ynvisible Interactive Inc.** (TSXV: YNV | OTCQB: YNVYF | 1XNA:GR).

And this tiny company is much further advanced than you might think. It already has global clients that you are guaranteed to know lining up as customers. However, rather than making a big deal of this, **Ynvisible** has just put the details up on its website quietly.

We explain the intriguing reason for this later on...

But, for now, it is important to understand that although this lucrative information is public, very few are aware of it. This is a rare and valuable advantage for clever investors who act now. After all, the opening will not last long.





# Introducing Printed Electronics

This is an electronic printed smart tag.



And, this is the future!

It is a flexible, micro-thin, electronically -controllable tag that has been "printed" using special electronic inks and traditional printing techniques.

This particular **smart tag** is a temperaturemonitoring label that confirms a maximum or minimum temperature in transit.

It is a simple, cost-effective invention that can dramatically improve the reliable transportation of temperature-sensitive medicines. All the shipper needs do is stick this smart tag to a shipment crate. It is that easy.

Because the smart tag contains its own power source, data processor and visual display, it is a fully self-contained device. It does not need any other equipment or intervention.

And this is just one application in one sector.

Intelligent smart tags, with intuitive visual displays, have the potential to transform a gigantic range of items across a vast array of sectors, from fitness, wellbeing and "smart healthcare" all the way to logistics, interior design and premium consumer brands.

**Ynvisible's** chief executive, Jani-Mikael Kuusisto, explains best how this sensational new technology works:



Printed electronics are remarkably simple to understand, albeit a new concept for the market to absorb.

Specially designed 'electronic inks', which act as electrical conductors, are printed in thin, flexible layers of stacks, using standard techniques such as screen-printing.

Essentially, a soft, bendable circuit board is printed, where each stack of *electronic ink* layers performs a specific function in the electronic device. These functional stacks include the power source, a stack for control and activation and one for picture presentation.

Ynvisible's proprietary printed ink sets are market -leading, with our core specialism being the creation of micro-thin flexible visual displays. These can be produced in the form of a smart tag, which can be applied onto nearly any device or surface.

This is our technology's critical cutting edge. 9 9



# **Ynvisible's** Specialism - The Display Technology

The display and presentation of information in a **flexible printed electronic tag** is made possible by what is known as "*electrochromic technology*".

**Electrochromic smart tags** are thin, lightweight, and consume little power.

When combined with sensors and micro-power sources, these **electrochromic displays** create powerful **smart tags** that can deliver **instant**, **intuitive visual readings**.

On activation, the smart tag processes the data directly and sends an electronic signal for the display to change color. This immediately communicates to the user whatever the intended information is.

It is this process of color change in the **electrochromic displays** that defines **Ynvisible's** substantial competitive edge.

Thanks to advances made in Ynvisible's research

laboratories, **electrochromic smart tags** are now relatively inexpensive to produce and can be applied to boxes, sewn into garments, or added to product labels effortlessly.

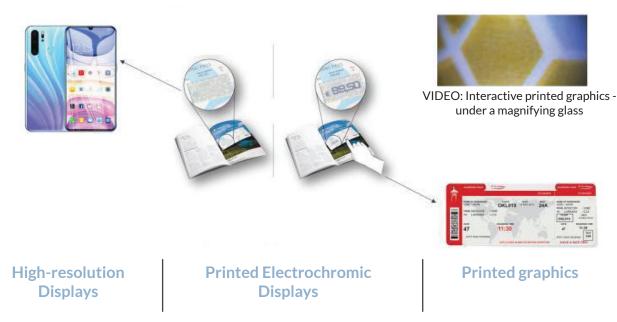
The potential applications are boundless.

Whereas most flat surfaces currently hold limited capacity to communicate to users other than through flat images (e.g. written instructions on a packet), an electrochromic smart tag opens up a whole world of electrifying possibilities.

For it is now possible to bring life and value to everyday items and surfaces, where previously it did not exist, was prone to failure, or was far too expensive to capture.

Billions of ordinary items around the planet are now set for transformation into diagnostic apps, timers, sensors, and all manner of other smart objects. We are now primed for an explosion in intelligent objects.

# Printed Electrochromics - Bridging the gap between high-end and low-end technologies



# Years ahead of the field – **Ynvisible's** secret ink formulations

**Ynvisible's** vision is extremely ambitious. The company's long-term goal is to become the Hewlett Packard of **printed electronics!** 

Rapid advances in **printed electronics** are creating a brand new, multi-billion dollar industry and **Ynvisible** is right on the frontline.

The company has patented a number of chemical processes within **electrochromic displays**, which are at the cutting edge of this technology.

However, Ynvisible's secret sauce is in its proprietary ink formulations.

Printed electronic displays and smart tags, that use **Ynvisible's** inks, are ultra-low power.

They consume five times less energy than the closest competing displays.

This is extremely important because the less energy a printed electronic display requires the more lightweight and powerful it becomes. This broadens the opportunities for the widespread adoption of **Ynvisible's** special inks and electrochromic technology.

Displays created using **Ynvisible** inks can be printed with disposable or rechargeable micro power sources. This creates energy autonomous

devices that are more environmentally friendly than conventional electronic systems. They do not require conventional batteries or external power sources, putting Ynvisible's electronic Inks into a league of their own. Ynvisible's chief technology officer, Dr. Carlos Pinheiro explains:



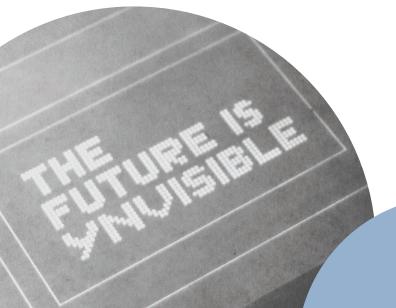
We have spent years designing special ink systems that, when printed in layers, allow the creation of thin, flexible forms of electronic displays.

We patent how certain chemistries work within the electrochemical device, but our core intellectual property is in the *Ynvisible™-branded* ink formulations themselves for printing onto different base materials, in different print processes, and for different display structures.

We are expanding this database of secret formulations and simultaneously defining the design tools, production parameters, and systems for quality control.

We compete on offering the solutions and products platform for the design and production of the most flexible, lowest power consuming, visually appealing, cost-effective, and most scalable interactive display technology.

This will be vital to our future success. We are years ahead in our field. 9 9



# A globally scalable opportunity, using existing printers!

What is further remarkable about **Ynvisible's** electronic inks is that they are printed using conventional, well-established techniques.

Today, electronic printing is achieved using 'screenprinting'. This is a technique commonly used to print flat images onto cloth, garments, and other common materials such as paper, plastics and laminates.

Stop!

Read that paragraph again.

You are correct.

The brand new billion-dollar **electronic printing** industry will be built on existing infrastructure.

There will be no need to invest in state-of-the-art manufacturing plants around the world.

This should prove critical to Ynvisible's future growth. According to <a href="Missingle-BISWorld">IBISWorld</a>, there are over

12,500 screen-printing houses in the USA alone. Globally, there are tens of thousands more.

In other words, the stage is perfectly set for the electronic printing revolution.

Each and every one of these printing houses is a potential customer for **Ynvisible** and its electronic inks. Since the company's visual displays are so far ahead of the competition in this budding market, **Ynvisible now has a genuine shot at capturing the lion's share.** 

This really could become a billion-dollar play.

The question will be whether this company can become the future's "go-to" electronic ink brand?

Is Ynvisible another Epson or HP in the making?



# Supplying electronic ink to blockbuster products

An obvious question to ask at this point is how will **Ynvisible** capitalise on its position and make money?

What is the game plan?

Well it is simple.

**Ynvisible** offers a complete product development lifecycle to its corporate clients.

First, it helps large companies (including a number of Fortune 500 businesses) develop product prototypes with mass-market applications. Once these have been thoroughly tested and put into large-scale production, **Ynvisible** will supply its proprietary ink formulations to the electronic printers producing these items.

This is the perfect position to be in.

**Ynvisible** is already experiencing extensive and varied interest in developing prototypes, but it is impossible to predict exactly which ones will become blockbuster products.

But that does not matter.

For **Ynvisible** and its shareholders, all that matters is that these blockbuster products are coming.

At some point in the near future, there will be hundreds of millions, if not billions, of micro-thin printed electronic devices on people's arms or around their necks, on packaging boxes or crates, on home worktops or office desks.

The list goes on exponentially.

Thanks to the strong lead it has established over its nearest competition, **Ynvisible** is in pole position to supply the electronic inks that will make this all possible.

**Ynvisible's** chief executive officer Jani-Mikael Kuusisto goes on to expand the point:



Over the last 12-16 months, we have experienced a significant rise in requests from large potential clients and nimble industry challengers in different end markets. They want to use our technology and services to make the surfaces they work with interactive and intelligent.

We have delivered samples and prototypes for dozens of international firms, including several Fortune 500 companies. We see more exciting clients emerging all the time.

Thanks to our technology, ink formulations, and complete solutions capability, Ynvisible is now positioned to become one of the leading players in the entire *printed electronics* space.

This sounds exciting, and there are signs that the widespread global adoption of printed electronics might be closer than you think.



# Could global RFID demand trigger an explosion in printed electronic devices?

Radio-Frequency Identification ("*RFID*") chips are tiny, low-power, and low-cost communication devices that can also have sensors that react to motion, temperature, touch, and proximity.

These chips have been around for years and are now everywhere.

Whether used in debit cards for contactless payments, in driving licences for authentication, or in our pets for identification, as many as 12 billion RFID chips were manufactured in 2019.

RFID chips are responsible for the mobile digital revolution.

Companies across all sectors are now dedicating vast amounts of energy and investment into the further development of RFID technology to add increased functionality and interactivity to their products and operations. For businesses on the supply side of this thriving market, the profit potential is huge. <u>Industry figures</u> value the global RFID market at \$31.9 billion by 2025, up from \$16.45 billion in 2016.

A key drawback of sensors such as RFID chips is that they are back-end technologies that *only transmit* data signals.

To complete communication of data to users, they require additional scanning technology and hardware that can *receive* transmitted radio waves.

Usually these require readers like a smartphone or tablet. These can be expensive, complicated and require staff training and support. The notion that such equipment could be disposal is unthinkable.

But for most of the readings that are required in supply chain management these tend to be extremely simple data points.

The limitations of existing technology have meant we have ended up with highly over-engineered solutions. Just imagine the degree to which a simple printed electronic smart tag with an electrochromic display, could transform processes like this.

Mass-production of paper-thin disposable **smart tags** that receive data from RFID chips and display the processed results intuitively could save logistics companies millions of dollars in hardware and training costs.



# Combining RFID Chips with **Ynvisible's** Displays

If we return to our example of a smart tag at the beginning of this report, a simple temperature monitor, would it not be far better if a shipper could directly see on the shipping crate that cold-chain delivery had been adhered to?

The answer is a categoric YES.

If a temperature range is breached, then the printed electronic display would alert the user immediately that this has happened so that he or she could respond as required.

The versatility of RFID chips combined with printed electronic displays opens up a world of possible applications across global supply chains. With 12 billion RFID chips having been manufactured in 2019, the potential for **Ynvisible** to scale up quickly is clear.

<u>Markets & Markets</u> estimates the global industry for product shipment loggers alone to be worth

\$6.3 billion a year. If the cost savings can be proven, **printed electronic** solutions could act as a viable alternative for these cumbersome devices **creating a substantial market opportunity for Ynvisible's ink formulations.** 

To this end, in December 2019, **Ynvisible** secured its first major go-to-market development partnership with **Identiv** (NASDAQ:INVE), to develop a range of RFID-enabled smart labels. Identiv has chosen **Ynvisible** as a partner for its range of uTrust Sense temperature trackers. Expect more news flow on this over the rest of 2020.

And this is only one example. There are thousands of other potential applications across many sectors.

# Ynvisible's progress & targets

### 2018

• RTO

- Set up business development and production teams
- Sheet-to-sheet production line (Portugal)
- Ink development & commercialization center opened (Germany)
- Strong EU cofunded R&D portfolio

#### 2019

- Grow client base
- Develop tools for product designers
- Develop new inks
- Acquisition of Consensum Production AB (Sweden)
   roll-to-roll production

### 2020 - 2021

- Launch prototypes with clients
- Launch products at scale
- Sell proprietary ink sets to major clients
- Scale business to higher volumes



# From innovative diagnostic devices to intelligent packaging - how **Ynvisible's** inks could revolutionize healthcare

Beyond linking their electrochromic displays with RFID chips, **Ynvisible sees huge future demand** for its technology and electronic inks in two other major global markets; **innovative diagnostic devices and intelligent packaging.** 

Starting first with wearable diagnostic devices, widespread demand for the next generation of these products could be a huge driver for the printed electronics industry. As Kuusisto puts it:



This is a mega trend that is attempting to solve a global problem. Aging populations are creating a healthcare crisis across the world. Too many people need to use frontline services.

The only way to solve this is to start treating more people at home, and the only way to achieve that is to provide more simple-to-use self-diagnostic tools. However, these tools cannot be ultra complicated, and they cannot be expensive. They have to have an intuitive interface and be lightweight to be wearable. Ideally, they also need to provide instant readings.



This is where our visual technology comes in. We have the potential to create millions of units, deployed on wearable devices, that take constant measurements and give immediate results. These could be provided on arm patches, sewn into garments or deployed in any other number of ways, but the key point is that printed electronic devices can achieve this and our inks provide the best visual solutions.

It is quite possible to imagine printed electronic displays on the arms of hundreds of millions of people, but there is another aspect of healthcare that could see billions of units produced each year. We have already examined their positive impact on cold-chain shipments, but consider also the vast potential individual medicine packaging holds for **Ynvisible** and its inks.

Wafer-thin interactive printed electronic displays can be combined with simple timers to provide real-time readings of how much time has elapsed since opening. This alerts users when their medicines need to be disposed of, preventing them from taking ineffective or potentially even harmful spoilt drugs.

Ynvisible's ink formulations enable cost-effective electronic printing of micro-thin displays that fit this market's requirements precisely.



# Intelligent packaging for premium brands - giving a crucial competitive edge

Of course, the potential for next-generation "intelligent packaging" is so great that it extends far beyond health applications.

Historically, consumer brands have been able to do very little with their packaging aside from printing graphically. This is flat, often boring, and offers little in the way of added value. The capability has previously not been there to provide a viable alternative.

This is now changing quickly thanks to advances **Ynvisible** is making in the printed electronics space. In the words of Kuusisto:

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All the big Fortune 500 companies that are involved somehow in the retail space operate in an extremely competitive domain. Not only do products compete on the shelves, but the rise of the Internet has also increased the demand for interactivity.

We offer a radically new way of competing thanks to our electronic ink formulations. We can now approach a major brand owner and show them fresh ways of communicating interactively with their customers in-store and in their homes.

Our technology opens up a world of opportunities for some of the best-known names around.

This fantastic potential has already been picked up by a number of major international firms. **Ynvisible** is currently working on dozens of prototype products, each of which could be a huge game changer. Kuusisto goes on:

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We are extremely encouraged by the response we have had so far from some of the most famous global brands. We continue to work closely with a number of them, subject to strict confidentiality.

We cannot go into specific details about the various projects we are involved in. Our clients are looking to maintain their significant competitive edges, thanks to what our advanced electronic ink formulations can do for them.

What we can highlight, however, is our design/development facility and the team we have behind us. 9 9



# How **Ynvisible** will build and conquer the global printed electronics market

Imagine a world where every surface you can see is able to communicate with you intelligently.

That is the vision upon which **Ynvisible** is built.

The potential is enormous.

And it is just beginning to be realized.

Ultra-thin, low-power, low-cost electrochromic displays will enhance a vast multitude of everyday objects and surfaces, transforming the way we interact with them and the way they communicate with us.

For **Ynvisible** and its shareholders, this is an incredible opportunity.

Thanks to its patented technology and range of proprietary electronic ink formulations, **Ynvisible** is perfectly positioned to become one of this brand-new industry's "go to" suppliers.

Unsurprisingly, the company has <u>some of the</u> <u>sector's finest minds behind it</u>, and in <u>August 2019</u> pushed the "fast-forward" button with the acquisition of a roll-to-roll printed electronics manufacturing firm called Consensum.

Consensum, now renamed to Ynvisible Production, is a full-scale, high-volume roll-to-roll printed display production house in Sweden, with all the equipment required for the manufacture, conversion and testing of **printed electronic** components and systems.

Through this acquisition, **Ynvisible** leap-frogged into high volume production capability, rather than spending several years constructing a facility by itself. This should prove vital in enabling **Ynvisible** to carve out a dominant market share.

With such a strong backbone, **Ynvisible** is several years ahead of its nearest competitors and has seized first-mover advantage.

Add to this its growing list major international clients and it is no wonder Kuusisto is so confident about the future:



We are at an inflection point in this incredibly exciting industry. Now that our technology's success is being increasingly proven, we can sell design tools, inks, and quality control systems to our customers and their product designers, allowing for continuous large-scale production.

This is a global opportunity. We will not compete with existing print and packaging suppliers; we will complement them. Our electronic inks are developed for use around the world in existing printing facilities and processes. This is the key, and means the infrastructure is already in place to allow for explosive growth across the printed electronics sector. Ynvisible's mission is to be at the forefront of this.





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# **Ynvisible's** Growing Route to Market

# **Publically Disclosed Clients**





























# **Strategic Partnerships**























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### **Author: Ben Turney**

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# Contact Us

To find out more please contact Ben:

### Email:

contact@valuethemarkets.com

## Telephone:

+44 (0) 208 226 5175

### Website:

www.valuethemarkets.com



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