

WELCOME TO LOGVILLE

A PROPHECY OF THE GLOCAL VILLAGE

PART 1 – LOCAL X GLOBAL



A smart village. This is how we oftentimes refer to a sustainable, zero-waste generating community built on circular processes. Yet “smart” sounds so yesterday. A smart village is not about visible technology, but rather technology functioning in the background to enable a more organic and localized system. So we decided to give this new type of village an own name: **Logville.**

Logville’s founding documents are based on LogTrade’s vision and mission, which makes the town a trailblazer of sorts. Logville pioneered the first autonomous delivery system and paved the way for circular micro-logistics flows. The town vowed to use resources in the most effective manner, and to demonstrate to others how this is done by giving smaller players just as much power as the big, unwieldy giants of yesteryear.

First, every player got hooked up to an open system. Digital tools were given to makers, bakers, farmers and manufacturers so they could create autonomous products, with attributes.

Next, there was free flow of information, allowing for supply and demand to be matched in the best possible way. Primary producers were granted access to transportation, production and distribution data from millions of similar businesses around the world, to make predictive operations possible.

So you see, Logville is in no way alienated from global trade. It has simply made itself more resilient by maximizing local resources and collaborating on a global level to support regional movements. Raw goods do not need to be sent to different continents for processing, to be returned again in large quantities, of which ultimately a percentage will be dumped.

We have become painfully aware of the vulnerabilities of our current supply chain systems during the 2020 COVID-19 pandemic. Surely localized, digital supply chains would have fared better. Without hoarding. Without bullwhip effects.

We better catch up with Logville and make the local become the new global. How, you ask? Let’s start by assessing the present.



CIRCULAR LOGISTICS

AND THE INTERNET OF PACKAGES

*What if packages could deliver themselves?
How would they organize their journeys?
Would this be feasible, let alone sustainable?*

Most certainly. Spoilt by e-commerce solutions, we have become accustomed to shopping from home, purchasing in excess and returning goods willy-nilly. Doesn't sound super sustainable. Neither does taking the car to a mall, or shop-hopping. Ideally, we would go about our daily business, trusting that we would receive what we need, when we need it, and where we most need it.

Sounds even less sustainable.

Unless...our basic needs could be predictable. While providing us with accurate quantities of goods, predictive technology could help us manage resources and reduce waste by matching supply with demand.

Imagine if we could avoid hungry-last-minute-hypermarket-shop-ping-spree situations, where temptation

dominates reason. So much waste and stress reduction! Nothing that circular business models and some digital logistics can't solve.

Let's take a closer look at how this would work in the food industry.

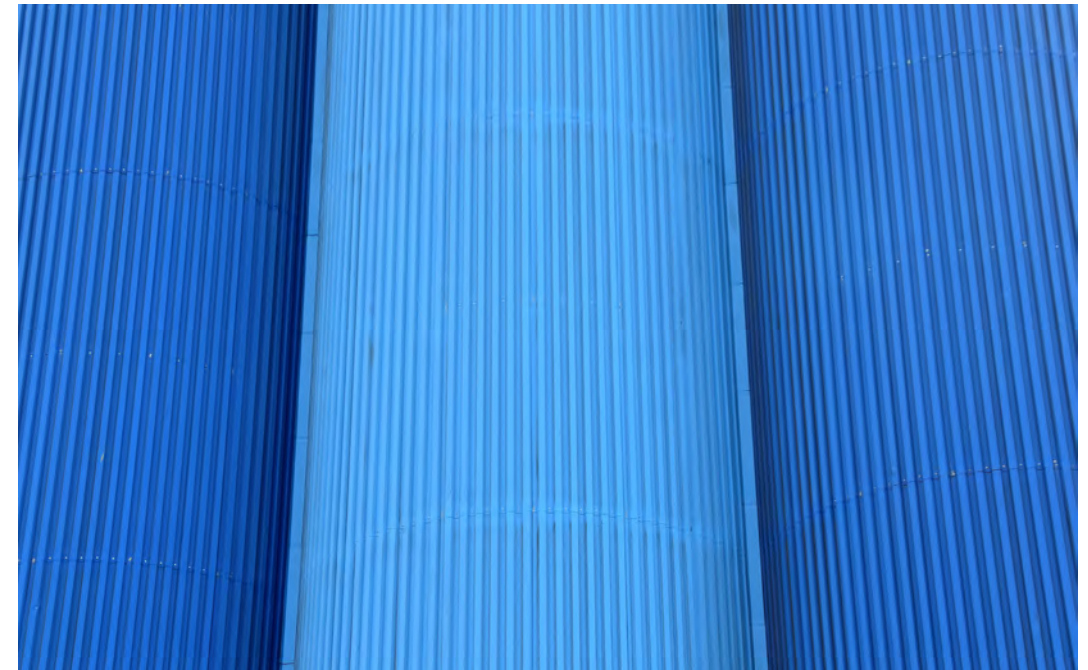
CIRCULAR LOGISTICS

In 2018, LogTrade started exploring a new way to distribute bread. A test was set up with the aim to empower bread to move and sell itself in a circular flow.

STARTING WITH THE GRAIN

In the heart of Silicon Valley lies The Midwife and The Baker, an artisan bakery that mills and ferments whole grains, turning them into highly digestible sourdough loaves.

At dawn, the bakery's delivery vehicles start their journey to supply coffee shops,



LOCKDOWN IN SILO LAND

COVID-19 INDUCED LOCKDOWNS have rattled global food distribution, increasing the gap between production and consumption. Farmers are dumping fruit, vegetables and dairy products while food pantries are running short on produce. There is no shortage in food, but a lack in flexibility to adjust packaging and supplier contracts to reroute wholesale goods from middlemen to end-consumers directly. In addition to these operational and legal constraints there is an inability to adjust deliveries.

Operating in their own high-security silos, carriers are incapable of speaking with each other to coordinate resources. Even in crisis, it appears that philanthropic band aids are an easier solution than embracing the opportunity to start working on systemic change.





restaurants,
offices and
Farmers Markets
in the Bay Area

with loaves and treats. The delivery routes are predefined, the fleet returns empty and remains unused for the rest of the day. Once delivered to the customer, the fate of unsold products is in their hands.

THIS IS WHERE AN AUTONOMOUS delivery system could help: Allowing bakers to focus on milling and baking, without the distraction of fleet management, and reaching customers directly to improve produc-

tion planning and reduction of waste at the end of the day. Further, enabling the bakery's fleet to move other goods along the way and during down-time. Ultimately, creating a circular logistics system.

Early 2018, LogTrade and **THE MIDWIFE AND THE BAKER** started with some simple tests to work towards such a system.

Equipped with a LogTrade TA license, the bakery was given access to the logistical operative system of the future. LogTrade has developed digital logistics tools since its beginnings in 1992. In 2017, the company started accelerating its R&D work to democratize logistics. Using its TA system as platform, extensions and applications were built to eventually establish an all-inclusive operative system, open to anyone wanting to move something.

Back to the script. What would a circular logistics flow look like for a bakery?

BREAD GOES CIRCULAR

A circular economy strives to create a regenerative system that is less reliant on natural resources by extending a product's



lifetime. A door for example, can be constructed in a way that its components can be used far beyond the door's initial duty as a gateway to a building. A bread's lifetime is much shorter – and therefore way more exciting to study.

A truly sustainable product follows a circular path. It leads an adventurous life, fulfilling a series of different purposes. Its transportation needs to be organized in an environmentally friendly and economically reasonable way, for example by using existing transportation resources. This is circular logistics, enabling circular business models.

SO WHAT WOULD A BREAD'S JOURNEY LOOK LIKE?

This is the envisioned model:



1. As soon as a loaf pops out of the oven, it starts its journey to Customer A, a coffee shop.



2. After a couple of hours at the coffee shop, purchases slow down. The bakery's ERP system, which mothers all its products' movements, feels that it's time for unsold breads to get a move on. Nearby transportation capacities are notified and called to action. "Taxis, bikes, scooters – take us to Customer B!"



3. Customer B can be found at a university, for example. Breads have cooled down and their prices are lowered accordingly. After a couple of hours, they call for transportation to Customer C, a food pantry. kök.



4. Any leftover bread will move onwards to a farm, as a treat for pigs or to decompose and eventually fertilize new grain crops.

Most likely, baked goods and other food products will catch rides from delivery robots, in standardized boxes. Equipped with smart locks and IoT sensors, these boxes will be able to monitor temperature, shocks, etc. to ensure quality and food safety. The boxes will fit into a car trunk, onto a bike trailer or similar, to retain carrier flexibility.

LACKING DIGITAL LOGISTICS TOOLS

RESOURCE PLANNING TOOLS are commonly targeted at large businesses with considerable financial prowess. Although enterprise resource planning systems (ERPs) with integrated transport admin-

istration software (TA) would make life considerably easier for any business, small companies typically wait much longer with implementing such tools.



LOCAL

IS THE NEW GLOBAL

WELCOME TO LOGVILLE

In Logville, products orchestrate their own circular journeys. Supply and demand are neatly aligned. Let us introduce you to its inhabitants:



FARMER GREENE runs a certified organic farm on the outskirts of Logville. Besides livestock, Farmer Greene cultivates approx. 10 acres of rye and oat. Being an optimistic realist, she believes in animal welfare and pesticide-free farming methods. Farmer Greene doesn't care much for middlemen and unnecessary transportation delays. She would much rather see her products reaching end-consumers directly.

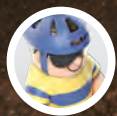
CATEGORY: LOCATION AND/OR PRIMARY-PRODUCER



BERNADETTE BAKER is an artisan baker. She started Logville's first sourdough bakery, working with flour from nearby farms. Like Farmer Greene, Bernadette is a down-to-earth optimist. Her pet

peeve is food waste and nothing upsets her more than dumped baguettes.

CATEGORY: LOCATION AND/OR PRODUCER



HENRY HOTWHEELS is the CEO of Pedal Pals. Once a professional cyclist, Henry rechanneled his remaining energy and road cycling expertise to bike deliveries. Pedal Pals works like Uber or Lyft for bikes, with a network of approx. 1000 bike enthusiasts.

CATEGORY: CARRIER



LOGBOX is an autonomous unit. In Logville, there are more than 10,000 LogBoxes in circulation. They are nifty little units that fit onto Pedal Pal bike racks, fit into taxi trunks, and that can be stacked onto pallets. LogBoxes are temperature regulated, powered by batteries that charge when strapped to a vehicle, when plugged into an outlet or via little solar panels on their lids.

CATEGORY: CARRIER



PABLO PALLET is a portable pallet. His cousin, Penelope Pallet is a pallet bearing a lockable box. Essentially a larger version of the LogBox, Penelope can also be temperature regulated when connected to a power outlet. Penelopes can be unlocked by a smartphone, connected to a mobile payment app called LogCoin. Most Pablo and Penelope Pallets are hooked up to Logville's digital infrastructure via 6G sensors that have a passive battery life of

over 30 years. These pallets can react to transportation requests and be placed anywhere from private sales points to public areas (with appropriate zoning). Pablos and Penelopes adjust their location to people's needs. You can typically find them meeting people on their daily commutes, or close to home.

CATEGORY: PLACE

FROM FARM TO TABLE AND BEYOND #CIRCULARLOGISTICS

FARMER GREENE supplies flour to Bernadette Baker, in bags of 10kg. She also sells oats and rye flour directly to end consumers, in smaller bags of 2kg. Her ERP system automatically directs the flour to its respective customer, guided by predictive technology rather than set contracts. Her flour can hop on any transport capacity within Logville's digital logistics network, the Internet of Logistics, an extensive network for location and transportation management.

Aiming to limit traffic and maximize load capacities, real-time route planning algorithms make sure that carriers pick up

and pool deliveries en route.

BERNADETTE BAKES a mean rye bread and other delicious sourdough treats using Farmer Greene's flour. She makes sure that they find their way to various locations in Logville. Some coffee shops buy a fixed amount of products, some only buy the ones that sell themselves at their location. Unsold products are owned by Bernadette and directed by her ERP system. The system will trigger the onward journey of these products according to a pre-set time marker. Bernadette's ERP system can automatically decrease the price for products moving to the next location, where they won't be quite as fresh

and crispy. Usually the treats move along to the Logville **UNIVERSITY CAMPUS** on a Pedal Pal, which drops them off at a Pablo Pallet that is closest to hungry students.

BERNADETTE also bakes gluten free oat buns that are placed on Pablo Pallets strategically placed at Logville's transit center. Here, Pablo Pallets are joined by Brew Trikes during the morning rush hour. Brew Trike brews specialty coffee on the go and is a subsidiary of Pedal Pals.

Those coffee shops that opt to buy fixed amounts of baked goods from Bernadette Baker are responsible to manage their own food waste. Some reuse unsold bread to make other snacks or ready-made meals. They may redistribute to other outlets in town, or send leftovers to the local food pantry via the heart-chain route.

Bread that ends up at the food pantry is by no means bad – given the high nutrition density and natural preservative factor of sourdough goods and its swift transportation from location to location.

After any remaining bread hardens, it is moved back to Farmer Greene, who feeds it to her animals or adds it to her compost. And so the circle is complete.

THE POWER OF SMALL

The more producers like Farmer Greene and Bernadette Baker that use DFOs' distribution services, the more useful the resulting transportation and sales data will be.

The accumulated data will eventually help all bakeries and producers around the world to learn from their own, as well as each other's experience. They

will also be able to tie in external data, such as weather reports, so they can strategically plan the placement of their products. On a rainy day, for example, Bernadette's croissants won't sell on campus and should rather move to the food pantry directly after the coffee shop.

The smarter a bakery gets, the more accurate all others will be at matching supply with demand, which eventually leads to less overall waste.

In the digital epicenter of this optimized trade distribution lies an operating system for logistics, similar to LogTrade. Its APIs connect with an ecosystem of match-making operators that handle data for different industries such as meteorology, transportation or blockchain-based tracking services for commodities.

What do we make of this? Well, the most important learning from the trailblazers in Logville is that if you empower the small, everyone is elevated.

WHERE DID ALL THE GROCERY STORES GO?

GETTING WITH THE TIMES, Logville's grocery stores morphed into digital food operators, a.k.a. DFOs. DFOs have localized servers in each neighborhood and act as operators in the Internet of Logistics system.

"What's the deal with DFOs?"

DFOs are virtual distributors that develop and sell food industry specific applications, driven by machine learning technology. These applications make it possible to supply the people of Logville with their daily staples when needed, wherever needed. A super tailored service of utmost convenience.

In a way, DFOs have retained their wholesale character. Yet instead of distributing food from giant warehouse systems, they have become good guys, who play a critical role in matching supply with demand in a decentralized distribution system. 3-for-2 sales are so yesterday.

The novelty and critical difference with this matchmaking machine is that it actually helps all primary and secondary producers like Farmer Greene and Bernadette Baker reach their end customers directly, allowing them to retain power, margins and dignity.



”THE INTERNET?”

The bakery needs to be part of a much larger network application in order for the circular redistribution system to function. Something that resembles the World Wide Web.

THE WORLD WIDE WEB and the **INTERNET** are not the same thing. The Internet was created as

a grid-like structure in the 60ies, and the World Wide Web is an application that started running on the Internet in the 90ies. Joining the World Wide Web is simple: you follow standard protocol by creating a page in html

format, picking a name that conforms to the **URI CONVENTION** and by publishing the page on the web with an http(s) standard protocol. No need for permits from any authority.

The Web’s decentralized and open nature invites everyone around the world to participate and to innovate. It is universal, dynamic and limitless. The Web is whatever we shape it to be.

Fun fact: The founder of the World Wide Web, Tim Berners-Lee, actually intended

WEB 1.0 USED HYPERLINKS to help us navigate between pages and documents. There was little room for content generation, as it was pretty much read-only.

WEB 2.0 introduced content contributions and user interaction via applications such as LinkedIn, Facebook, MySpace, Instagram, Flickr, etc. These applications operate in silos, as they do not share information with each other. If you update your LinkedIn page, your Facebook page does not automatically follow suit. The same



principle applies to companies – there is little in the way of information exchange between databases. Sounds familiar?

The logistics industry is equally fragmented.

WEB 3.0 strives to connect data in a deeper manner, linking facts instead of documents. This is incredibly useful, as computers/machines start understanding content and can

point users to exactly what they actually need, instead of an approximate match.

for the Web to be semantic.

Conversely, **THE INTERNET OF LOGISTICS** shall replicate the World Wide Web by fostering the growth of a logistics network based on a semantic data model.

This is certainly confusing. Why wouldn’t it be called the Logistics Web then? Just like people commonly refer to the Web as the Internet, we realized that the Internet of Logistics would be a more graspable term. In case not everyone just read the previous two paragraphs.

Key to remember are the Internet of Logistics’ shared values with the Web: openness and decentralization.

A WEB OF KNOWLEDGE LINKED-DATA
Today, the Web is a tool for users to find

and hyperlink information pages. It is not (yet) possible for “data processors” to understand data on the Web. Users can piece together information from different pages, but the Web cannot answer user questions directly because data has not been linked in a way for computers to process. Once this becomes possible, we will have a web based on linked data. We will have gold. There will be an explosion of innovation, as people and computers collaborate in data interpretation. Having access to knowledge and applying it in appropriate contexts is basically how science started out!

In order for computers to comprehend linked data, the world wide web needs to be based on a semantic model.

THE INTERNET OF LOGISTICS & THE SEMANTIC WEB MODEL

The Web has evolved **FROM WEB 1.0 TO WEB 3.0**, where the latter is based on the semantic web model, or database model. This is what the Internet of Logistics is built on.

THE INTERNET OF LOGISTICS X WEB 3.0

The whole point of the Internet of Logistics is to provide horizontal visibility by tearing down information silos between players within the logistics industry.

If we can find accurate data on the web, the same should apply to packages. They too, should be able to find an accurate carrier, or destination. In fact, a package is an ultra-tangible object in the semantic model, as its contents, origin and destination can be more accurately defined than more abstract notions such as “love” or “good”.

To make a global internet of packages, a.k.a. Internet of Logistics work, it should use web principles such as URI, HTTP, HTML.

Let’s take a look at how a package can obtain an identity/ URI to gain visibility in the Internet of Logistics.

THE PACKAGE DECIDES

A package needs a unique identity in order to orchestrate its circular logistics flow. It needs to be able to delegate actions by informing relevant 3rd parties about its whereabouts, contents and destination. Similarly, destinations/ locations need to be able to communicate its coordinates and attributes.

Attributes are a crucial part of an identi-

ty – a truck for example, can have the attribute “cooling function”.

LogTrade has been providing packages with basic identities for almost 30 years. Now the time has come to fundamentally restructure and support more advanced attributes for both packages and locations. And carriers too, once they can be defined as locations such as food trucks. URIs to all!

A URI is a Uniform Resource Identifier that can take the form of a QR code, an RFID chip or an IoT sensor. We have used both IoT sensors and QR code stickers for our tests in the US and Sweden.

Important note: there is no need to use a sensor that pushes real-time notifications in the beginning. You get pretty far with simple QR code scanning to update identities with critical status changes.

In the case of a bread, its URI gets updated when it moves and changes status from popping out of the oven, to departure from bakery, arrival at café, transportation to food pantry and finally, consumption or decomposition. Movements are reported by carriers scanning the bread’s QR code. Purchases are reported by consumers scanning the same code.

To summarize, creating the Internet of Logistics is a communal effort. What makes the Internet so great is the volume of contributions. The Internet of Logistics will have to grow the same way; first people may be skeptical and unsure of how to use this new network. Then they will start to toy around with it and discover ways to engage.

This network is a fundamental structure that is independent of LogTrade. We will



certainly be early contributors and advocates, but the Internet of Logistics will be administered by a neutral, not-for-profit consortia composed of several companies, organizations and authorities. Read more

about the Internet of Logistics, here. Link to the everything ecosystem

What role will LogTrade assume in the IoL paradigm?

The shipper’s ally.

LOGTRADE

THE PACKAGE OPERATING SYSTEM

LogTrade develops digital tools and applications that support private individuals, companies and non-profit organizations in their efforts to create circular logistics models.

The more users of our applications, the more powerful the new standard will be.

Simultaneously, we are developing our cloud-based platform to become the world's first operating system for logistics.

Although our applications are free-standing, the beauty will lie in the complete operative system that is integrated in an ERP system.

Thanks to LogTrade's APIs, an ERP system can answer a myriad of shipment and trade related questions, in addition to automating sales and distribution flows. As LogTrade's ecosystem of add-ons grows, so does the value of its operating system. Think payment solutions, or open carrier marketplaces that enable scaling and business development.

Figuratively speaking, if an ERP system were to be a producer's brain, then the operative system would be its heart, pumping and distributing products to cus-

tomers. Add-ons that generate financially, environmentally and socially sustainable trade patterns will strengthen the heart.

THE CENTER OF THE ECOSYSTEM

FOUNDED IN 1992, LOGTRADE HAS ALWAYS had a disruptive streak, spurred by the somewhat paradoxical combination of software development and logistics, where the latter lags far behind in development and transparency.

LogTrade has focused on bridging the gap between the two industries, developing software to open up communication within the fragmented logistics industry. Quickly recognizing the economic potential of sharing information to free up resources, LogTrade was way ahead of the COVID-19 supply chain revelations. Our technical platform can handle an enormous amount of shipments, much more than the 180,000 packages that are currently sent via LogTrade every day.

So we know that our operative system can handle high shipment volumes, but in order to reach a critical mass, we need to build a network.

**LET YOUR
PRODUCTS SELL
THEMSELVES**

GET THE TRADE UNIT EXTENSION



We are proud to have the support of partners like Ericsson, IBM, Microsoft, universities and other innovators. We are constantly making more friends as we welcome add-ons to build out the ecosystem with the aim of enabling cross-sector value creation, where everyone can find new business opportunities.

One of our current efforts is to facilitate and participate in research collaborations between companies and institutes such as Malmö Högskola, Uppsala University, Stanford University and State University of Iowa.

As a values driven company, there is a thought behind each partnership. Let us take a closer look at our relationship with **IBM** and **IBM WATSON**.

PREDICTIVE TECHNOLOGY. THE NEXT GENERATION OF DISTRIBUTION

The more bakeries that participate in the

Internet of Logistics, the more transport and sales data is gathered. By accumulating and linking this data, machines will be able to find correlations between sales and seasons, weather, traffic, sports events, etc. Guided by this knowledge, a bakery can make more accurate production and distribution decisions.

These insights will help bakeries all over the world learn from each other's experiences. Currently, this type of information is reserved for companies with multiple outlets, one of the benefits of economies of scale.

We have chosen to team up with IBM Watson because the quality of predictive technology is the key to distribution automation, where products are placed exactly where they are needed, before the need even arises. IBM Watson is the world's most advanced cognitive AI. Further, IBM follows high technical and ethical standards with

regards data security. Lastly, IBM Food Trust is an important player within food supply chain tracing as it applies blockchain technology to enforce accountability within the industry:

All-inclusiveness is important to both IBM and LogTrade. In an effort to empower small to mid-scale farmers and producers, they are developing solutions that can easily be applied by anyone with a mobile phone. LogTrade's labels/ QR codes will be able to include food tracing data provided by IBM Food Trust.

ELIMINATING OVERCONSUMPTION

The Internet of Logistics will eventually be a sophisticated service including lots of competing operating systems. Which is exactly how it should be. No one company or organization should ever dominate. The most important mission for these operating systems is to match demand with supply in order to eliminate overproduction and overconsumption.

In addition, the Internet of Logistics will enable any unused resource to be a carrier, sales location, storage space, etc.

A bread will be able to organize its own delivery pool with products traveling the same way.

Circular logistics flows will be a natural consequence of enlightened products and resources that are whizzing around and willing to share their space.

We are still just skimming the surface of all the possibilities that the Internet of Logistics will provide. Like a Barbapapa, the system can adapt and empower any type of player. Right now, we are overjoyed that it will help the small, primary producers reach their end-consumers.

WILL WE SUCCEED?

If the Internet of Logistics follows in the footsteps of the World Wide Web, then the future looks rosy. Yet we must be mindful of data integrity and guarantee that whomever participates in the Internet of Logistics owns their own transportation data. Even if we believe in open communication and data accumulation, careless data sharing will compromise our end goal of a decentralized and democratic information sharing structure. No matter how long it takes. After all, the tortoise beat the hare.

Most importantly, we can already get going with the tools that are available to us now. Small producers, farmers, bakers & makers can already use digital logistics tools to reach their end consumers and directly observe purchasing patterns. Existing LogTrade customers can get an extension to their TA system that gives products the power to sell themselves. Rest assured, your current system is already mighty capable.

The World Wide Web's success lies in its principle of good faith. Its purpose is to serve humanity, to democratize information. For shared knowledge is shared power.

Making this smorgasbord of knowledge available to everyone is not entirely selfless. What could be more exciting for a developer than to contribute to the most powerful tool that was ever built? A tool that can prevent a climate crisis for example, by supporting circular logistics systems that make climate-smart purchases the default.

We are hopeful that we'll get there. Join in on the fun!

BACK TO THE FUTURE

A PROPHECY OF THE GLOCAL VILLAGE.
PART 2 - THE TIME MACHINE

Join us in our time machine. We are traveling to the future.

A future where the profitability of a businesses is not determined by size, but rather by shape. Circles are in. All resources follow a circular life journey, accessible to anyone along the way. Proximity is key, all around the world. Connectivity empowers communities to make the most of the resources around them. These communities thrive, as they are all-inclusive and genuinely sustainable.

A future where local is the new global.

A future that has been shaped by disruptive technology and a handful of political leaders that understood the importance of developing additive manufacturing, for example. Or vertical agriculture, mycelium applications, and the World Wide Web for logistics, a.k.a. Internet of Logistics.



CIRCULAR BUSINESS MODELS ARE POWERED BY CIRCULAR LOGISTICS



Located in the heart of Supplania, Logville was one of the first communities to hook up to the Internet of Logistics. The early introduction of this digital infrastructure catapulted Logville to the forefront of the circular economic movement.

The digital infrastructure completely transformed Logville. Changes happened successively. Today, people in Logville no longer go grocery shopping. Instead, they receive their supplies predictively. Things appear when they are needed, and in the right spot. No need to place an order. Or even give it a thought.

Hey, presto! Here comes your pesto.

Daily life in Logville is convenient and colorful, kind of like in *The Jetsons*. Yet

unlike Orbit City, Logville is grounded. An underground universe of mycelium is keeping soils healthy and buildings are either covered in solar panels, or greens. The air is clean and biodiversity reigns.

SCREEN-STARING AND MEDITATION-APPS are out. IRL is in. Business is no longer about cubicles, but about intentions and relations. We are liberated from handheld devices as voice control takes over like the Star Trek delta insignia communicator pin. There will still be screens, yet they won't be part of our everyday lives.

The software in the communicator pin does not need much attention. It knows your values and preferences, which can be adjusted anytime along with privacy settings, etc.

Anyways, back to no shopping. What will happen to all the grocery stores? Good thing you asked.

Grocery stores are transformed into digital food operators, or “DFOs” with local servers.

Say what?

VIRTUAL SERVICE OPERATORS

A DFO is **AN OPERATOR** that offers and develops machine learning driven applications that are guided by algorithms focused on food and beverage consumption. That way everyone in Logville can get the groceries they need, from the brands they like and at the price point they have predefined as reasonable. DFOs are still middlemen, but instead of distributing products from large warehouses, whereby creating much

waste and pollution, they can accurately match supply with demand in a decentralized distribution system – perfect.

No more 3 for 2 sales that tempt you to get more than you need.

The most important aspect of the **DIGITAL FOOD OPERATOR** system is that products are sourced from primary and secondary producers and directly rerouted to end-consumers. Profits are left to those who deserve them most.

If you want more avant-garde, get this: fruit and vegetables in Logville are self-aware. They know when they are ripe enough to request harvesting, packaging and delivery to the appropriate end-consumer. A cucumber knows if it should become a pickle or a crudité.



THERE IS IN FACT A HANDFUL of old-school, manual buyers. They call themselves hipsters.

Other than the hipsters, there is little left of old trade patterns. DFOs cover food and beverage matching, apparel brands use the same method to match clothes, etc. Many fashion services are based on subscription models that provide you with your preferred brands, cuts, sizes and colors at pre-set intervals. If you get fed up with the style, you simply move on.

At this point it is well worth mentioning that products go through proper lifecycles. Gone are the days of linear production. Some products are meant to live for 100 years, like construction material. Other products deteriorate faster and become mulch in just 2 years. This is valuable stuff, as mulch can aid byproduct recovery in wastewater treatment.

IN LOGVILLE, RECYCLING is not just a lifestyle, it is required by law. For everything can be dismantled into basic components, from bulky packaging to care labels. In fact, these labels play an important role as they contain sensors bearing a product's identity. This is useful in order to sell a product. Once in possession of the end-consumer, the sensor is deactivated until it is time for the product to move onwards or decompose. The sensor will always be accompanied by a QR code that can manually be activated via mobile phone scanning, as a backup communication

method with the logistics cloud that holds all information pertaining to products in Logville. If the QR code never gets scanned, or a product gets lost, a logistics algorithm will start weeping in said cloud.

Ok, so there are matchmakers/ operators that work similarly in different industries. Are there also freight-matchers?

Yes, in the form of a logistics operating system. The system is a software that producers can install and apply as a command

and control center within their ERP system. More on ERPs later - we must home in on transport logistics first.

CIRCULAR LOGISTICS = circular lifecycles = circular business models. The key to all of this is an operating system that connects any person or business that partakes in a product's journey. Most commonly this plays out as a drama triangle of sorts, between carriers, locations and packages.



IN THEIR TRANSITION FROM super stores to DFOs, supermarkets started sharing their power with the smaller players by building a super sensitive network that allows for data sharing amongst local, regional, national and international operators. Every bakery can thereby access analytical data from other bakeries around the world.

Oh boy, data sharing is a sticky subject. Do not fear. In Logville, public policy was ahead of the game.

Since data volumes handled by DFOs are so vast, they are governed and subsidized by Supplania's parliament. DFO developers are educated in philanthropy and business ethics and are led by value-based guidelines. It is critical to apply human skill to the data analysis process in order to prevent data abuse. Every consumer has the right to exit the system at any time, to switch to operators or to go back to manual ordering altogether.

CARRIERS

»ALL CARRIERS ARE ON EQUAL DIGITAL TERMS.«

Gas-guzzling delivery trucks that roar through inner cities with free load capacities are history. Logville banned large delivery trucks from inner cities, forcing them to reload their goods onto autonomous vehicles or bikes outside of the city.

Further, Supplania imposed a 90% line-haul fill rate and subsidized the construction

of induction tracks for electric vehicle charging en-route.

This works as a part of a larger system, including redistribution of warehouses and addition of unconventional carrier capacities. There shall not be any shortages.

All carriers are on equal digital terms. They may have different fleets, and different specializations for various transportation types. But in the end, they are all participating in the same logistics network. Participating in the sense of collaborating. For open communication results in horizontal visibility where line haul carriers can share information about deliveries with taxi companies or bike couriers, for example.

Nifty! How did that happen?



WHEN DID CARRIERS START CARING ABOUT THE ENVIRONMENT?

Back in the day, every carrier fended for itself. Competing for shippers, carriers tried to outplay each other with better packages, prices, delivery times, reach.

SHIPPERS WERE FORCED to have a separate agreement with each and every carrier they wanted to ship with. Worse yet: if a shipper did not possess an ERP system with an integrated TA system, then shipments had to be manually input into each carrier's own online portal.

This fragmented and highly competitive system resulted in unused capacities, i.e. trucks driving around half full and returning empty.

The only way out was government intervention: Supplania introduced a carrier visibility law to pave the way for a decen-

tralized transportation and logistics data sharing system.

"Our country needs a world wide web for physical objects!", declared the Minister of Transportation and Infrastructure.

"IT'S LIKE WE WALKED around blindfolded all this time", explained Trendy Tracy, one of Supplania's most successful influencers in a blog post: "...e-commerce is no longer innovative, and has never been sustainable. We are in desperate need of an AI based trade system that is open and agile!"

And so Trendy Tracy and her followers encouraged the adoption of the new carrier visibility law that would transform logistics forever.

One of the first products following the introduction of this law was an open carrier platform called Myrstack.



THE FRIENDLY COHABITATION OF ANTS AND ELEPHANTS

Myrstack was developed in partnership with LogTrade Technology, a Swedish company that would later become the operative system for the Internet of Logistics. Myrstack means anthill in Swedish and refers to a system that is composed of countless small carriers, sharing the burden of deliveries. A carrier could be anyone or anything, preferably on wheels, moving in the direction of a package's destination.

Millions of people signed up to become ants, by joining a so-called ant colony. An ant colony is a legal entity, for example a conventional carrier, a co-op or a non-profit organization.

ALTHOUGH INCUMBENT CARRIERS, or elephants, were initially weary of the compe-

tition, they were eventually attracted to the platform where they benefitted from:

- A.** being able to fulfill deliveries quicker in peak-season
- B.** making their fleet visible to customers in order to sell empty capacity

OPEN CARRIER PLATFORMS like Myrstack created an unprecedented movement within distribution networks by empowering collaborative delivery solutions. The more people that joined the system, the better it got. All of a sudden, the democratization of logistics became a conceivable concept. People were on the move. Things were on the move. But what about locations? The following paragraph will guide you through the evolution of flexible locations, a moveable feast, if you will.



LOCATIONS

REINVENTING TRADE, BOTTOM UP

By the time laws were passed to support the expansion of a cloud-based logistics infrastructure, there were plenty of players ready to act. Digital logistics companies, for example, that had spent years on R&D in preparation for this moment. Others spent time on developing 5G networks and airfreight innovations, aiming to establish a standard format for logistics that would counteract linear trade patterns.

SPEARHEADED BY LOGTRADE, the digital logistics movement welcomed new sensor and network

development, but emphasized the need to start small:

“Why not attempt a grassroots movement now, and add IoT technology when available? IoL technology can already give locations and carriers unique identities in the form of URIs. This type of visibility allows us to start revolutionizing trade right here, in Logville, where tomatoes grow, where grains are processed and where people live.”

What LogTrade understood was that there was an opportunity to **HELP SMALL-ER PLAYERS** stand their ground in highly competitive markets dominated by large players. By circumventing unnecessary middlemen, for example. One of the key obstacles for small producers to sell their products was their reliance on retailers. IoL offered a solution to this by providing any location with an identity that was



visible to all and could thus become a sales point. **SALES POINTS WERE LIBERATED** of static inventory and were free to host products for any given amount of time, until they were sold or moved onwards.

Thanks to machine learning technology, producers started getting advance input on where their products would sell best, making the solution even more powerful. A phone was all the end-consumer needed in order to buy these products that were now much more conveniently located. **IN 2020, FOCALPAY WAS THE FIRST COMPANY TO CREATE A MOBILE PAYMENT APPLICATION THAT ENABLED PRODUCTS TO SELL THEMSELVES ANYTIME, AT ANY LOCATION.**

In fact, this solution drove the microfication of supply chains as a whole. If end-consumers could be reached directly, then there was no longer an economic in-

centive in sending goods around the world for different stages of production. A connected community could now become self-sufficient.

POSITIVE SIDE-EFFECT #1: the food industry became more creative in cultivation techniques and started experimenting with composition, nutrition values and tastes adapted to local demographics. No need for ultra-resistant, one-size fits all veggies with artificially extended shelf lives to endure a long journey.

POSITIVE SIDE-EFFECT #2: supply chain microfication led to a near elimination of waste. Thank goodness, as production adaptation was long overdue. Not long ago, there was a time when acute food and apparel shortages in European refugee camps coincided with the burning of e-commerce returns...





CREATING SPACE

LogTrade has always had a progressive streak and envisioned a change in the logistics industry long before it came. With disruption in mind, the company successively rebuilt and extended its transport administration software to accommodate for the envisioned changes.

For 25 years, LogTrade focused on providing shippers with the swiftest solution to transport their packages. That knowledge would be applied to packages, carriers and locations, in order to make all players in the logistics system hyper-flexible and interchangeable. Democratization was necessary in order to achieve the goal of getting a package from A to B in the smartest, most sustainable way.

So you see, LogTrade did not sit around and wait for the market, and regulators to make a move. The Internet of Logistics was built organically, and in partnership with customers who were open to test new, circular business models.

APPLICATION DEVELOPMENTS WERE

propelled by partnerships with entrepreneurs in various niche sectors, like fintech, IoT, AI, ERP systems and data security.

In 2020, LogTrade x Microsoft x Ifdef launched a solution for **AUTONOMOUS TRADE**, where products sold themselves at novel locations, such as a front yard, or a pallet placed in front of a gym.

Open solutions do not require open source. LogTrade left the administra-

tion of locations and carriers up to landlords and principals. Principals were all equal players in LogTrade's application system. These applications gave the market the tools for open logistics communication on a micro-level, which was the key for packages to start organizing their own circular journeys. This too, happened organically.

LOGTRADE WAS NEVER INTERESTED in owning locations. The aim was to break through the opacity of carrier and location silos and to make them visible to each other, to producers as well as end-customers. Visibility and open communication would allow the concept to flourish and scale independently.

Eventually, LogTrade took on the role of an operating systems in the Internet for Logistics.



PRODUCTS DEVELOP FEELINGS AND LOGISTICS BECOME DEMOCRATIC

It is 2030 and LogTrade is no longer the only operating system in Logville. A myriad of other players has assumed the same role, communicating with all sorts of operators and matchmakers in different industries.

A DIGITAL FOOD OPERATOR, for example, connects local carrots with the nearest customer or manufacturer. A logistics operator makes sure that the carrots deliver “themselves” by hitching a ride with a suitable vehicle going in the right direction. Perhaps even car-pooling with

similar goods that get picked up along the way.

Thanks to the likes of Uber and Airbnb, the gig economy was a thriving concept when LogTrade embarked on its disruptive journey in the late 2010s. However, there remained many open questions with regards to its practical application in a system like the Internet of Logistics. How would a private person covering transportation for only a leg of the way be reimbursed?

The Internet of Logistics made it possible for anyone to become a carrier. But the details still needed to be hashed out to prevent any type of exploitation. LogTrade figured that autonomous vehicles would be a good way to solve this issue, and they started working with robot developers called Dynorobotic. This made good sense, as a robot would be just as capable a recipient of transportation data as any other carrier. Of course, a robot could also be provided with an identity with specific

attributes, on par with locations and products/ producers. Thereby the premise for “fair trade” was set.

Over the years, Logville has been working toward becoming self-sustaining. A milestone along the way was the technical convergence of odor-sensing technology and nanotechnology, that granted vegetables a feelings. Feelings = attributes = identity. This elevated to the same level as all other visible players, and they could start organizing their lives from soil to compost. They felt what they were best suited for and where they should be transported first – to become a salad, smoothie or biogas.

IN THE YEAR 2030, Logville is pretty much paradise. A place where people have time to feel and think. What got them there is an organic movement that empowered the small.

The IoL ecosystem made logistics smart and feasible by way of democratization. The small town, the small fishery, the small-scale farmer, the small café became just as

robust and resilient as their big industrial counterparts.

IoL diminished barriers of entry and encouraged the development of the niftiest solutions. A cool example? Urban farming was given a healthy push when hydroponic systems got hooked up to the system. Circular logistics models naturally morphed into safe and healthy metabolisms without toxic waste, a.k.a. cradle-to-cradle models.

Everyone wins. Local is the new global. And we all end up in Logville. Amen.



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