

The Smart Banana
& Other *Speculative* Artefacts
that might exist in 2040



/An archive of objects
found on the journey of
a banana, from farm to
mouth, in the future.

A project by Luke Aitken as part
of the SPINternship programme
within the
Satellite Applications Catapult

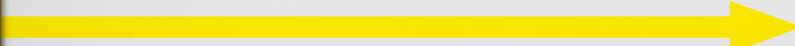
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This 'Archive'
is not
intended to be
a 100%
accurate
prediction of
the future.

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It is instead, a Speculation on objects, opinions,
people and conflicts that *might* exist based on my
own independent research as well as expert insight.
It aims not to predict the future, but to ask you...
What do you want for your future, the planet, its
people, its objects and ...

...its bananas?

INTRODUCTION

Throughout this archive I will refer to artefacts & objects as being preposterous, possible, plausible & probable. When using ‘futures thinking’ these are often terms used to discuss the likelihood of an artefact existing in the future. Often ‘Preferred’ is used within futures thinking however I have omitted that categorisation as the nature of the preference is inherently different depending on the humans involved. Here is some clarification on what these categorisations will mean within the context of this archive:

Now

Future

Preposterous

Borderline impossible. These artefacts will almost certainly not exist in 2040, but may be included to communicate an area of interest which cannot be communicated by the other categories of artefacts.

Possible

Can happen, but very unlikely. Artefacts in this category may be included in the archive to communicate a conflict or gap that may not be clear in **Probable** artefacts.

Plausible

Could happen, but not guaranteed. Artefacts in this category may need some technological innovation, investment or policy change to become a reality in 2040.

Probable

Most likely to happen, yet still not guaranteed. Artefacts, or very similar artefacts, in this category may already exist or are likely to materialise in the coming years.

But, why should I care about bananas?

Exploring ‘the future of autonomous technology’ can sound a bit daunting. To make it easier to digest, for the sake of this book I have grounded the speculations into one familiar object, a banana.

Other than its familiarity, why did I choose to focus on this fruit? —————>

Food demand in 2025 —————

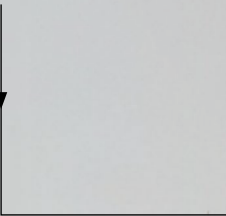


It is estimated that in 2040 the global food demand will rise by more than 40%¹. This massive increase in demand *could* be achieved by an increase in crop yield. But how would we strive toward in increase in crop yield? The answer isn’t particularly surprising; more efficiency and less waste².

As we move into the future; the population will grow, the demand for food will increase and climate changes will create weather that is harder to predict. In an industry that relies on stability for reliable yields, growing demand and an unstable climate provide a necessity for innovation³. Innovation not only in the process of producing the food, but increasing the efficiency of getting it from farm, to your mouth. The focus of innovation within this archive is within autonomous technologies, and how space can enable them⁴.

So, whilst bananas may feel like an odd object to focus on whilst discussing the future autonomous technologies, the growing need for efficiency within this sector means innovation and the emergence of autonomous technologies is present within *every* stage of a bananas journey. *So yes, this archive is following bananas, but really, its about the future of coordinated autonomy.*

But... what is coordinated autonomy?



Food demand in 2040 —————

● *Piles are not to scale

To explain, lets imagine we have been set a simple household task;

Task:
>Sweep the floors.

Manual:

Dust pan & Broom

No automation involved, analogue equipment being utilised by humans.



Automated:

Electric Vacuum

The process of dust being 'brushed onto the pan' has been automated. Still requires human operation.



Autonomous:

Robotic Vacuum

The latest Roomba models, (robotic vacuums that will freely roam your house to clean the floors) can not only operate without human intervention for 75 days, but can learn. The little robots use AI to identify and map obstacles as well as remember which areas get dirtiest fastest to adjust its cleaning patterns⁵. They still however require a 'human in the loop' to deploy the robot, schedule cleaning and occasionally replace dust bags.



Possible

**Coordinated
Autonomy:**

Robotic Vacuum +

Now imagine a Roomba that never required human intervention. Your 'smart floors' would simply detect that they are dirty and summon a fleet of autonomous robots; roombas, spraying drones & drying robots, to clear the dirt. Self charging, self scheduling, operating in tandem with a host of other autonomous technologies.

Not an individual piece of autonomy operated by a human, a system of coordinated autonomy.

This book follows a single fruit, but it is about more than bananas. The banana is a lens, a simple, familiar object used to reveal the sprawling, largely invisible network of autonomous technologies and human decisions that will shape everyday life. In a future of coordinated autonomy, even something as ordinary as a piece of fruit is touched by satellites, sensors, learning algorithms, robots, regulations, and people whose work you never see. By tracing one banana’s path, we can “peel back” those layers and make the abstract tangible.

The aim isn’t to have a perfect understanding of the banana industry in 2040, but to help you look at other objects on your desk, in your fridge, on your commute, and ask, how did this get here, who (or what) moved it, who benefited, who was left out, and what trade-offs were made?

The banana is a stand-in prop for countless flows of goods, data, energy, labour and responsibility. Ultimately, this is an invitation to decide what we want and what we need from the future, and to interrogate the paths that get us there.

Coordinated autonomy could deliver efficiency, safety, transparency, and sustainability; it could also lead to vast inequities, loss of trust and absence of agency if implemented without all the appropriate considerations. By starting with one humble banana, the book aims to open a space to form opinions, set principles, and imagine fairer, preferred ways forward.

Before we set off for the future we’ll make two quick stops:

first, today’s banana journey; then a leap to the far future of 2300, before circling back to the nearer horizon of 2040.



-----YEAR-----

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2025

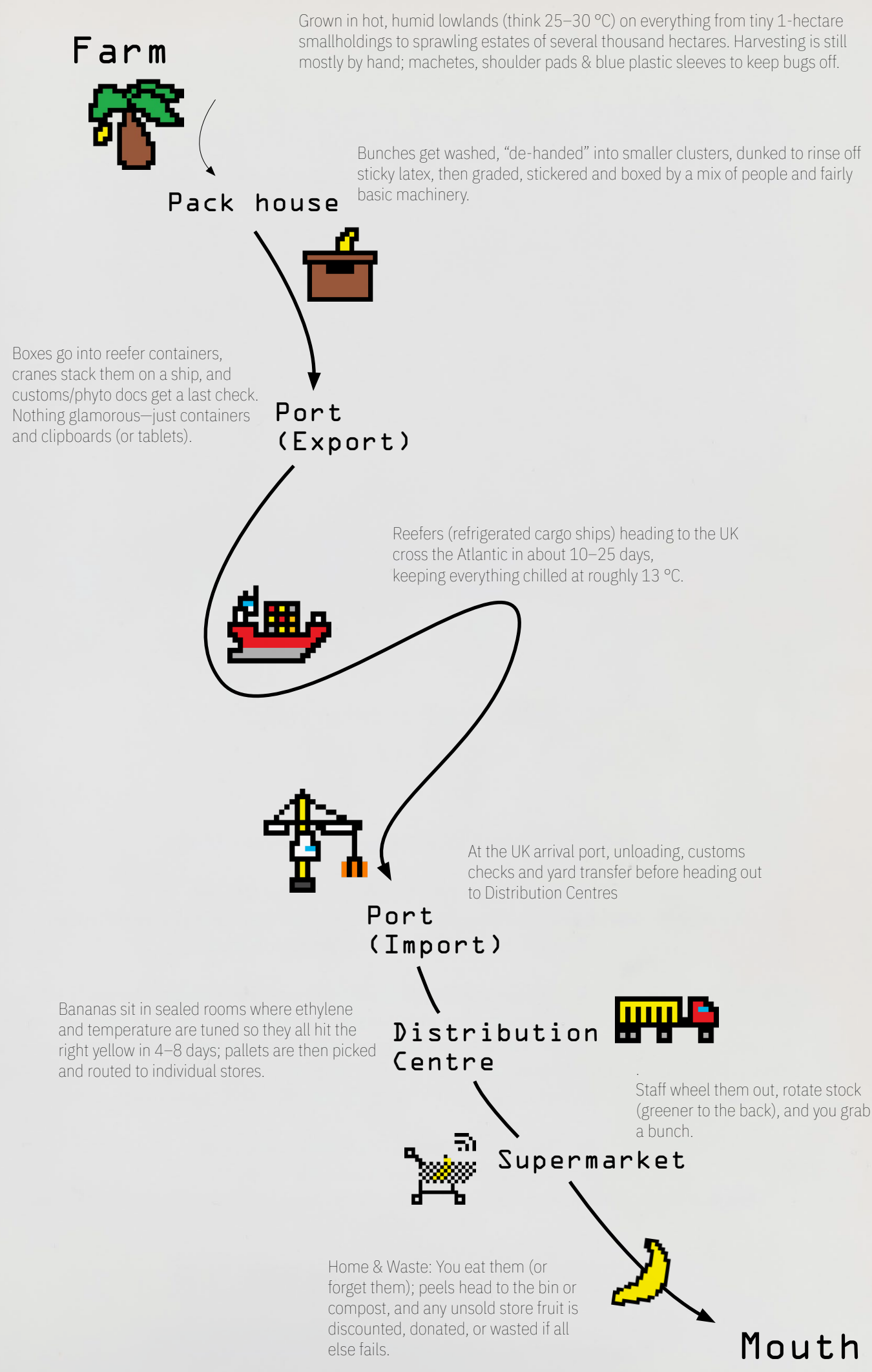
(PRESENT DAY AT TIME OF WRITING)

A bananas journey, today:

Ecuador, Guatemala, the Philippines, Costa Rica and Colombia currently dominate global banana exports⁶. This book follows fresh bananas headed to consumers, not fruit destined for processing or starch products. Most supermarkets secure year-round supply by buying from multiple plantations and countries; the chain mixes millions of smallholder farmers with a handful of powerful multinationals such as Chiquita, Dole, and Del Monte⁷. Today, bunches are cut, washed, graded and packed green in pack houses, shipped in refrigerated containers at about 13 °C for roughly 10–25 days, then ripened with ethylene in controlled rooms (≈14–18 °C) for 4–8 days before reaching store shelves⁸.

Parts of today’s banana chain *already* runs on quiet, proven automation: packhouses use automated palletisers and case packers to stack crates; programmable ripening rooms dose ethylene and control temperature without the need for manual tweaking; refrigerated containers can stream temperature data automatically throughout the voyage; and grocery distribution centres rely on automated storage/retrieval systems (AS/RS) and conveyor-driven sorting to pick and stage loads.

Today’s systems are mostly **automated**, not **autonomous**: a human still sets the rules, watches the dashboards, and signs off on exceptions. As we move toward **coordinated autonomy**, the technology will increasingly interpret context and make those calls itself, shifting people from hands-on control to oversight and governance.



-----YEAR-----

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2300

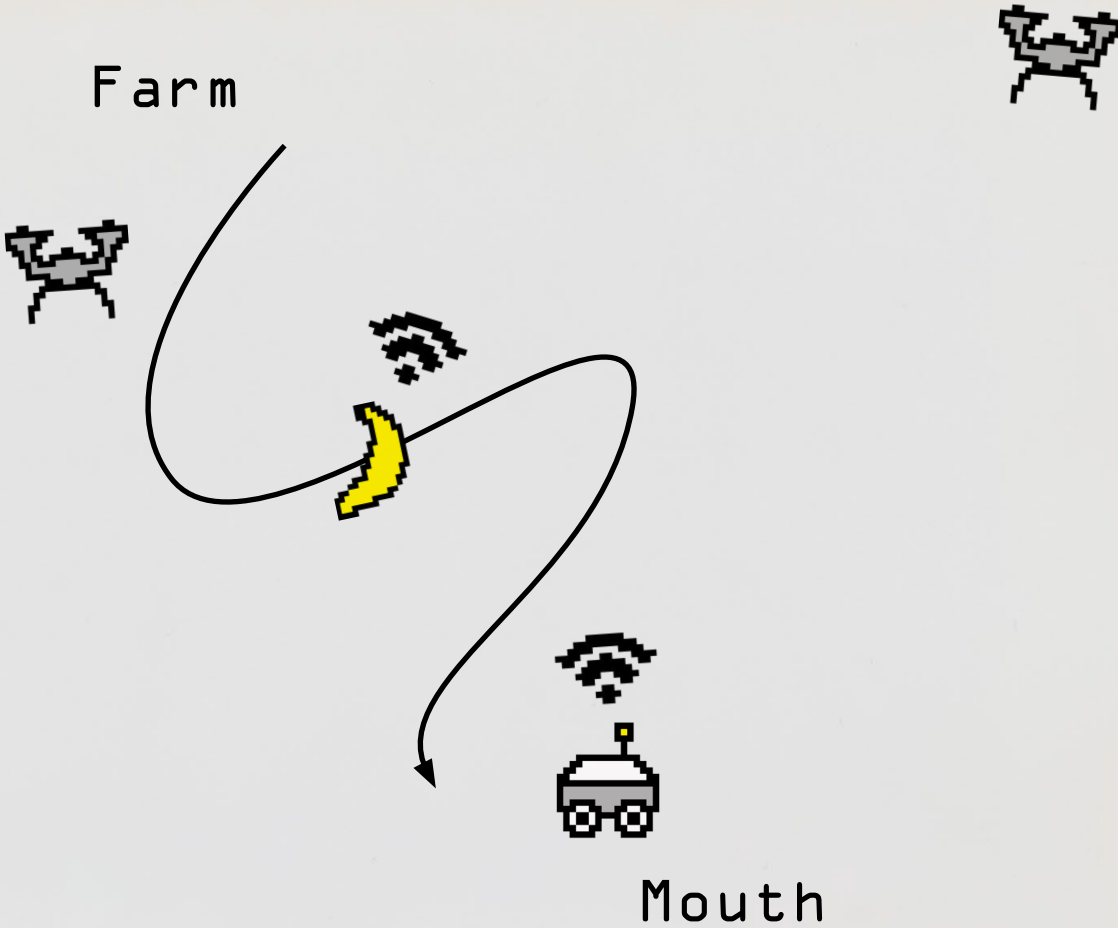
(THE FAR DISTANT FUTURE)



A bananas journey, in 2300:

On the farm, swarms of small harvest drones glide through the rows, snip bunches, and shuttle them to field hubs while buried sensors and weather feeds tell an irrigation AI exactly when to water and feed. In the pack house, robotic arms wash, de-hand, grade and box the fruit; an algorithm stamps each pallet “pass” or “repack” and conveyors redirect it accordingly. No clipboards, no forklifts. Driver-less refrigerated trucks form platoons to the port, where autonomous cranes drop containers straight onto uncrewed reefer ships. Customs and plant-health checks run as silent software routines, any anomaly gets auto-flagged, otherwise the vessel sails itself, adjusts course around storms, and keeps the cold chain perfect without a call to anyone.

At the UK end, autonomous yard vehicles unload, and ripening pods micro-dose ethylene so each batch hits peak yellow exactly when predicted demand says it should. Smart shelves (and your smart fridge) notice the moment stocks dip to zero and trigger an order; an electric driver-less van or sidewalk bot delivers without a single human hand off. From cutting to cupboard, the banana moves through a chain of machines that decide, coordinate and act. Humans only appear in the background, watching dashboards and stepping in if something truly unexpected happens.



Smart Banana. 1

c. 2300

Preposterous

Balancing speculation with realism and the problems of looking too far into the future...

A completely driver-less, human-less chain in 2300 is the kind of future people might picture when they hear “autonomy.” It is also borderline sci-fi: technically possible in theory, but so distant (if it ever arrives) that it collapses all the messy realities (policy, cost, culture, labour) into shiny inevitability.

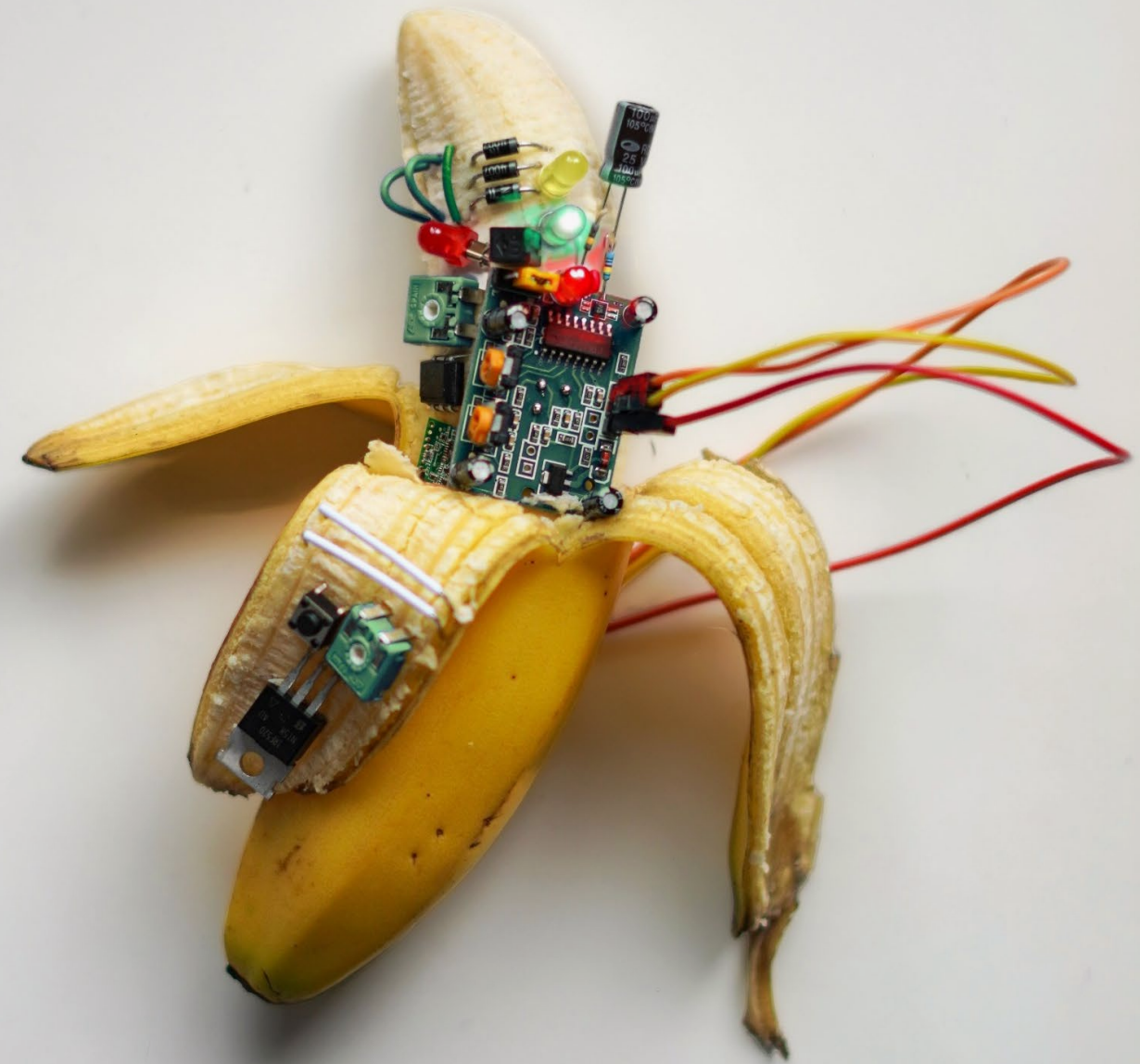
For example, our opening artefact comes from 2300: a ‘Smart Banana’ embedded with circuitry, sensors and glowing indicators, offering exhaustive traceability from field to shelf. It demonstrates the technical possibility of total transparency, yet also shows us what can get diluted when futures lean too hard into sci-fi. When imagination runs miles ahead of real people, the future starts to feel interesting but hollow. Sometimes the thing we need is closer, simpler, and easier to swallow.

The act of looking closer, 2040 for example, has far more value. It’s close enough that we can see the concrete shifts required: which standards must change, where investment is needed, what skills workers will need, which regulations block progress. It’s a time-frame where today’s prototypes could plausibly scale, and today’s gaps can actually be closed. Push too far out and ambiguity takes over; the future becomes so foggy we lose urgency and fail to notice the leverage points right under our noses.

Digital end to end traceability for fresh produce is most certainly **probable** for 2300, 2040 and is even being implemented in supply chains now. However it is **preposterous** to think it will manifest like this hardware filled banana. It is far more **probable** that end to end traceability could be communicated to the consumer via QR codes and made possible behind the scenes by more visually discrete technologies like AI and Block-chain.

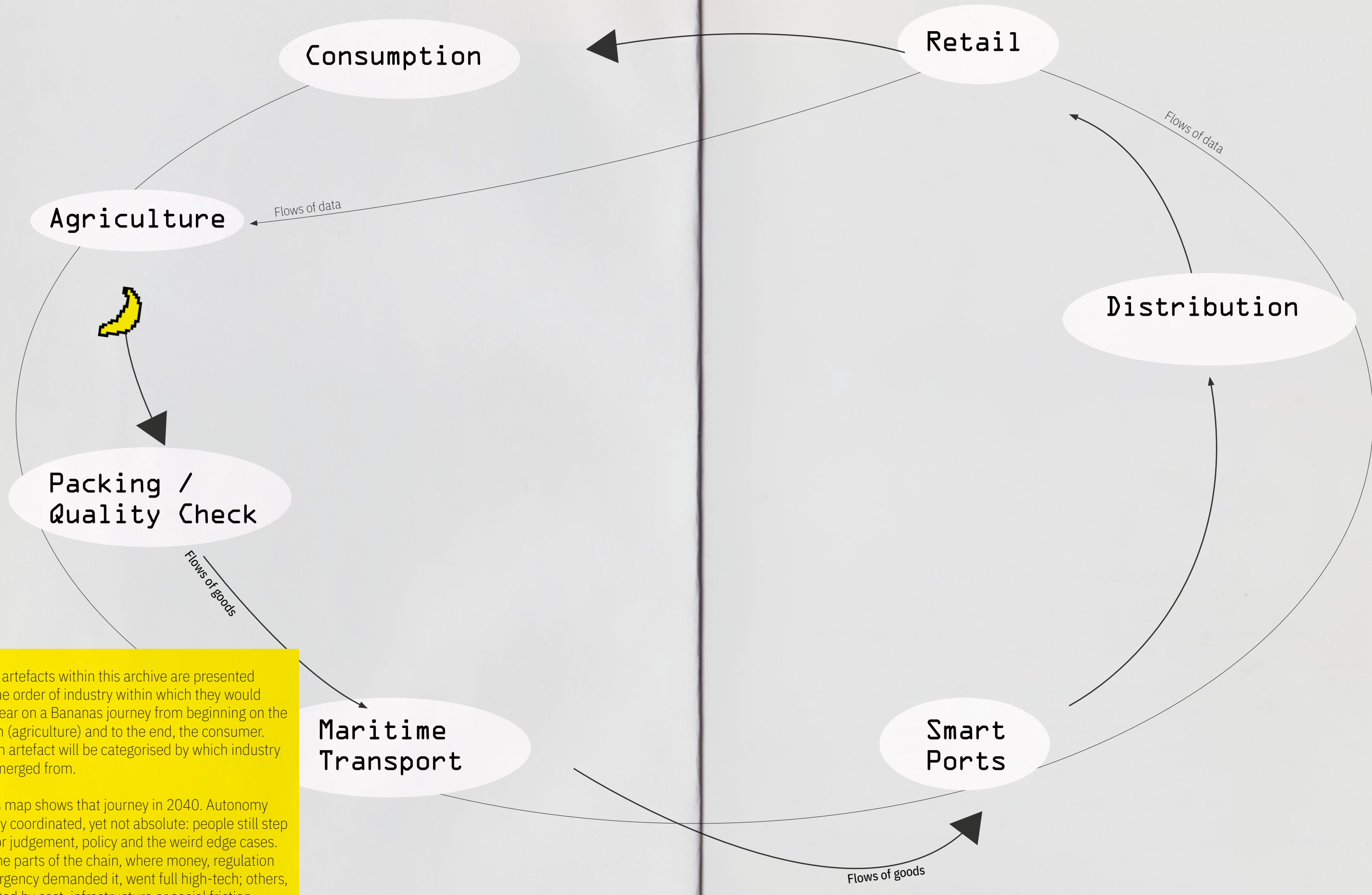
That’s why this book is set in 2040. It’s near enough to act on, far enough to still be imaginative with storytelling, and grounded enough to help us choose, not just what we want from autonomy, but what we need and how to get there, starting now.

Artefact
1



THE JOURNEY

2040:



The artefacts within this archive are presented in the order of industry within which they would appear on a Bananas journey from beginning on the farm (agriculture) and to the end, the consumer. Each artefact will be categorised by which industry it emerged from.

This map shows that journey in 2040. Autonomy likely coordinated, yet not absolute: people still step in for judgement, policy and the weird edge cases. Some parts of the chain, where money, regulation or urgency demanded it, went full high-tech; others, limited by cost, infrastructure or social friction, settled on grounded, good-enough fixes. The result is more efficient, clearer flows of fruit and data, but still has human input where required.



Swarm drones for crop scanning and disease detection, autonomous irrigation systems using satellite data, soil sensors, satellite-guided crop monitoring and forecasting tools, AI chatbots (e.g. WhatsApp-based) for farmer guidance, automated pest detection and targeted pesticide application, autonomous harvest robots for bunch cutting, smart farm machinery (autonomous tractors, sprayers, planters), on-field autonomous quality scanning units  Robotic de-handers for banana bunch separation, autonomous conveyor sorting systems with computer vision, AI-driven grading machines for ripeness and defects, automated packing arms and palletising robots, warehouse autonomous mobile robots (AMRs) for crate movement, digital twin systems to simulate and optimise packing processes, AI operated ripening chamber control systems  Near-autonomous cargo ships (reefers) with human oversight, satellite-driven route optimisation systems, predictive navigation and steering algorithms, autonomous maintenance and inspection drones (ship-borne), AI-based cargo condition monitoring (temperature, humidity)  Autonomous ship-to-shore gantry cranes, automated guided vehicles (AGVs) for container movement, robot pickers for cargo handling, autonomous inspection and customs scanning systems, AI-optimised scheduling and berth allocation software, autonomous patrol/security units (e.g. robot dogs, drones)  blockchain-enabled cargo tracking for logistics Fully autonomous fulfilment warehouses (Ocado-style grid robots), AI-driven inventory and restocking systems, autonomous delivery trucks for wholesale/retail supply, automated last-mile delivery bots or drones  Smart shelf scanning robots for stock checks, AI-driven dynamic pricing and promotions, autonomous replenishment from backroom to shop floor, automated checkout and payment systems, smart fridges or home inventory systems that auto-order produce, Ocado-style online shops, AI powered and blockchain enabled traceability within produce

Farm

2040. Overview of just some of the autonomous technologies that could potentially be utilised now, and in the future.

Pack house

Port
(Export)

Port
(Import)

Distribution
Centre

Supermarket

Mouth

THE ARCHIVE

2040:

Why explore the future by
looking at artefacts?

When digging into what the future will hold for technology, it is very easy to get stuck thinking about what '*can* be invented' rather than 'what *should* be invented'.

By looking at artefacts (objects) we can get a more human sense of a scenario. With artefacts we get stories, people, sadness, joy, silliness and other emotions that ultimately might make you care to want something to exist or to not exist. We get to be provoked and imagine by the little visual nuances and details of an image that might make us ask, 'who put this there', 'why does it look like this?', 'it would never be made with this material?', 'How would this work?' etc...

By pulling speculations from the future into reality by giving them a visual form within this book, I hope to uncover unintended meanings, questions and opinions that might not otherwise surface within traditional reports or articles.

Swarm Drones

c. 2040

Probable



Autonomy can augment, rather than replace, human labour

The journey of our artefacts begins where all bananas start, in the fields and on a plantation in the Dominican Republic. These farms, ranging from small holdings to large multi-national corporations, are exposed to the many vulnerabilities of tropical agriculture: heavy rains, fragile infrastructure, and outbreaks of pests and diseases that can decimate yields.

In this future however, a fleet of lightweight swarm drones could buzz low over the plantations. Equipped with cameras and AI decision making capabilities, they might work collaboratively to monitor fields in real time, scanning leaves for irregular patterns and identifying early signs of disease.

When discussing autonomy, its often an instinct response to think their applications will simply be to replace the jobs currently being conducted by humans. Whilst this is potential source of tension, (discussed on page 48/49) this artefact suggests that the implementation of autonomy might not replace existing workers but aid them. Rather than mass-spraying chemicals, targeted pesticide treatment might be possible via the use of Swarm Drones. Potentially reducing environmental impact, cutting costs, and crucially, limiting chemical exposure for workers.

Autonomy here could mean augmenting human labour, not removing it entirely.

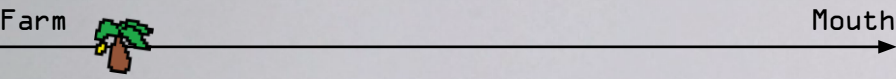


“This set of small drones were used in the Dominican Republic to detect disease in Banana Plantations in 2040”

Drone Operator ID

c. 2040

Plausible



- Autonomous tech could:
- Create new job roles that could democratise access across different price points
 - May deepen inequalities between large and small producers

The second artefact in this archive is a certified ID badge for a freelance swarm drone operator, authorised to work across agricultural regions of the Dominican Republic. In this future, where fleets of autonomous drones could be used to monitor, scan, and support agricultural production, operating such equipment may require specialised training, regulation and oversight. The badge suggests that, like driving a vehicle today, piloting or supervising multiple autonomous drones may involve passing tests and gaining certification. As autonomous technologies spread, new systems of accountability and legality would likely need to emerge alongside them.

Technological feasibility is not the only hurdle to adoption of autonomous tech. In this future, the financial and regulatory landscape may determine who gets access to these technologies. At first, the most advanced tools might be limited to the largest multinational producers who can afford to buy and manage them in-house. This raises concerns of massive discrepancies in the efficiency of the larger, autonomous tech enabled, plantations compared to those smaller holdings. Would the change in efficiency lead to price-points that smaller holdings simply couldn't afford, shutting them out in the process?

As the tech matures, smaller plantations could gain access by hiring certified freelance operators, working on a pay-per-service basis. These new roles and operators could become vital players in democratising the benefits of autonomy, helping level the playing field between industrial giants and local growers, though whether this reduces or reinforces inequality would remain to be seen.

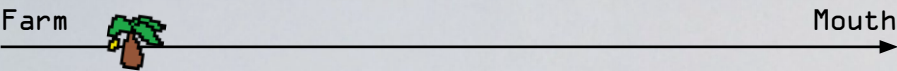


“Identification of one Juan Carlos Mendez that showed his qualification in operating multiple drones (swarm drones) simultaneously.”

Smart Phone Chat-bot

c. 2040

Probable

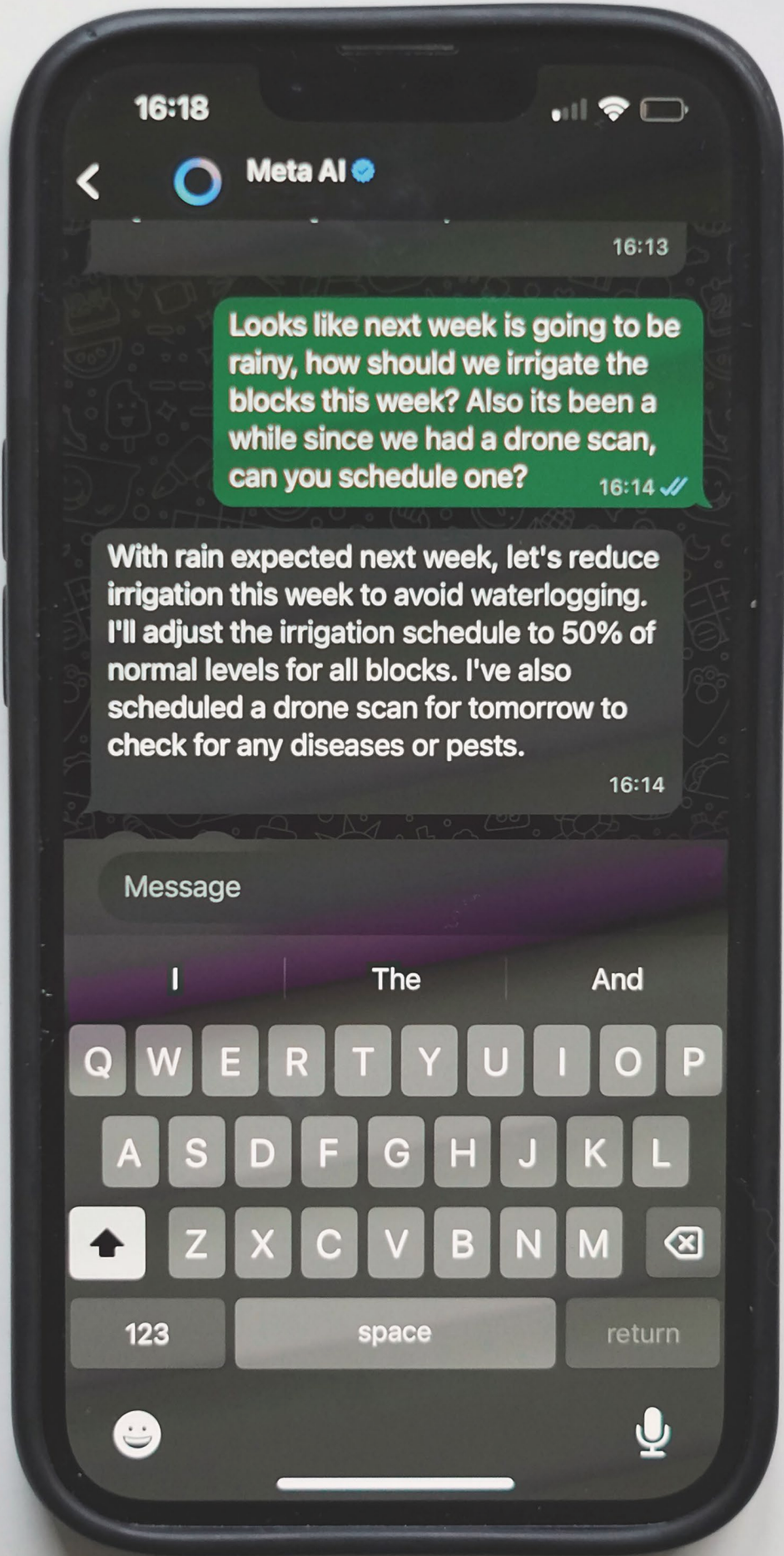


The most impactful autonomous tools are those designed to meet users where they are, culturally and technically, rather than assuming the best solution is the high-cost, high-tech one

Our next artefact takes the form of a modest smart phone, running a WhatsApp based AI chat-bot designed to support farmers in the field. In this future, the chat-bot interprets satellite data (on weather, soil moisture, crop health, and potentially more) and converts it into simple, local-language instructions. Instead of delivering data in complicated charts that can only be analysed by specialists, or requiring an internet dashboard, it sends messages (or even speaks aloud) through a familiar app, guiding farmers with specific, daily actions like when and how much to irrigate or whether to treat for disease.

This artefact reflects the idea that the most “advanced” technology isn’t always the most useful. High-tech, high-cost solutions like robotic field systems or fully autonomous fleets might offer incredible efficiencies, but they often require skilled operators, digital infrastructure, and ongoing maintenance, all of which can be scarce or non-existent in rural farming regions.

It’s critical to design autonomy with the end users in mind. In some cases, even literacy itself can’t be assumed. A voice-enabled chat-bot on a device that farmers already own and trust could be far more impactful than a sleek, complex system that never makes it out of the demo phase. In the future, practical tools that meet people where they are ; culturally, technically, and economically may define what meaningful innovation really looks like.



“This smart phone was used by a banana farmer who uses Whatsapp to access complex data in simple language by communicating with AI powered chat-bots”

Satellite Antenna

c. 2040

Probable



Adoption of autonomy has to be adaptive by being location and user aware

Following directly from previous artefact (smart phone chat-bot) , our next artefact is a satellite internet antenna. It is a small but powerful tool that could make a huge difference.

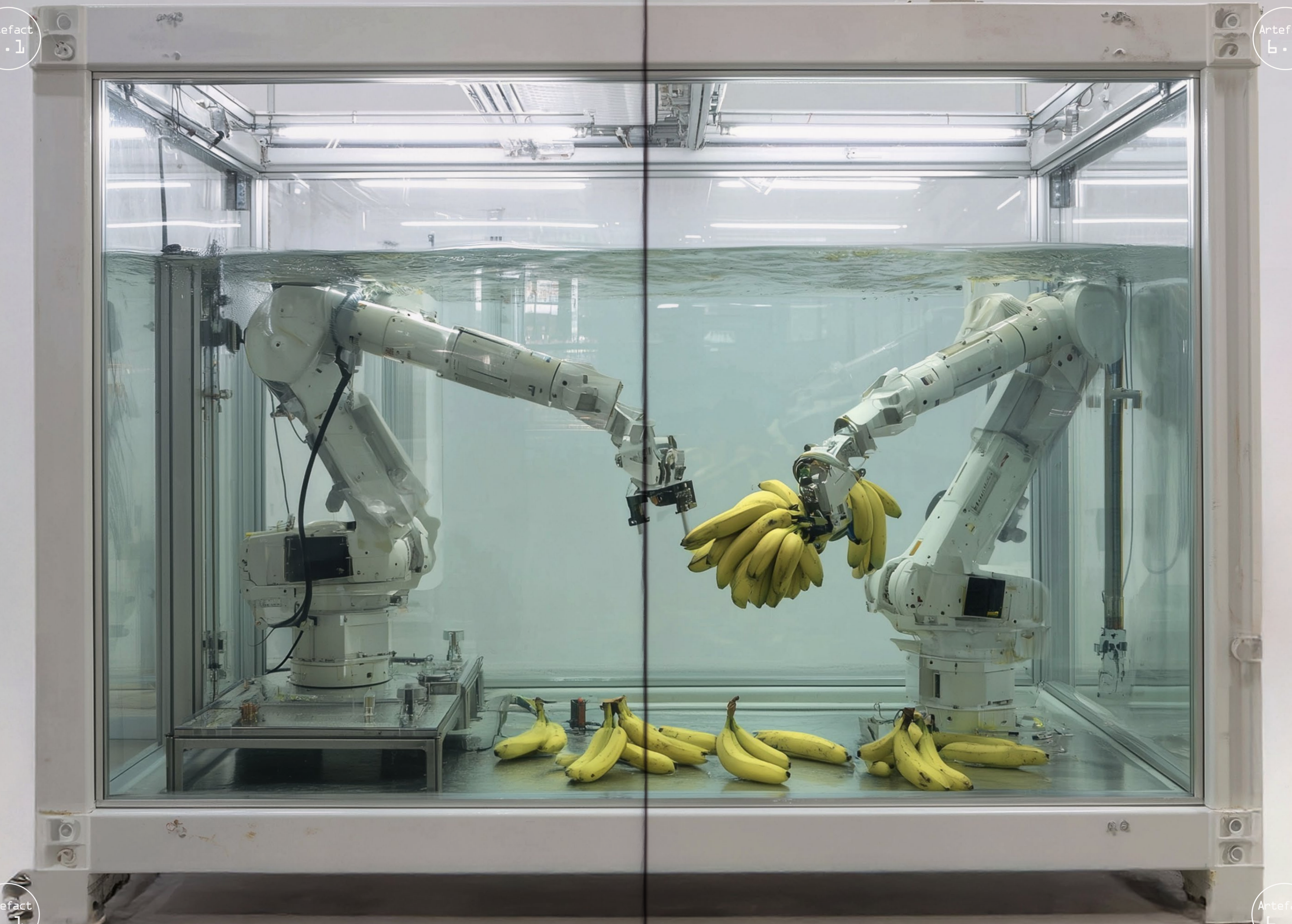
In this future, rural banana plantations may rely on these devices to access the internet when traditional, ground-based infrastructure falls short. With no cables to run or signal towers in sight, satellite connectivity could enable even the most remote farms to tap into the benefits of autonomous technologies: AI-driven tools, live weather updates, and real-time support.

This artefact highlights a key tension in the adoption of smart farming systems: connectivity. A WhatsApp chat-bot might be a brilliantly accessible tool, but without an internet signal, it's useless. Satellite antennas fill that gap... But they're not cheap, and they don't install themselves.

Their presence here emphasises that the adoption of autonomous tech isn't uniform. What works in one region may not work in another. Autonomy in agriculture must be location-aware, designed with the infrastructural realities of its context. This antenna doesn't just bring internet: it brings the possibility of participation.



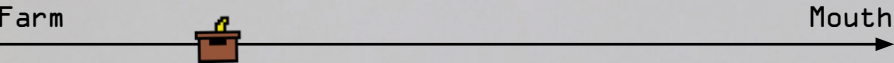
“This antenna was used in the Dominican Republic by a small banana plantation to enable internet connectivity in an isolated, rural area”



Robotic 'De-Handler'

c. 2040

Possible



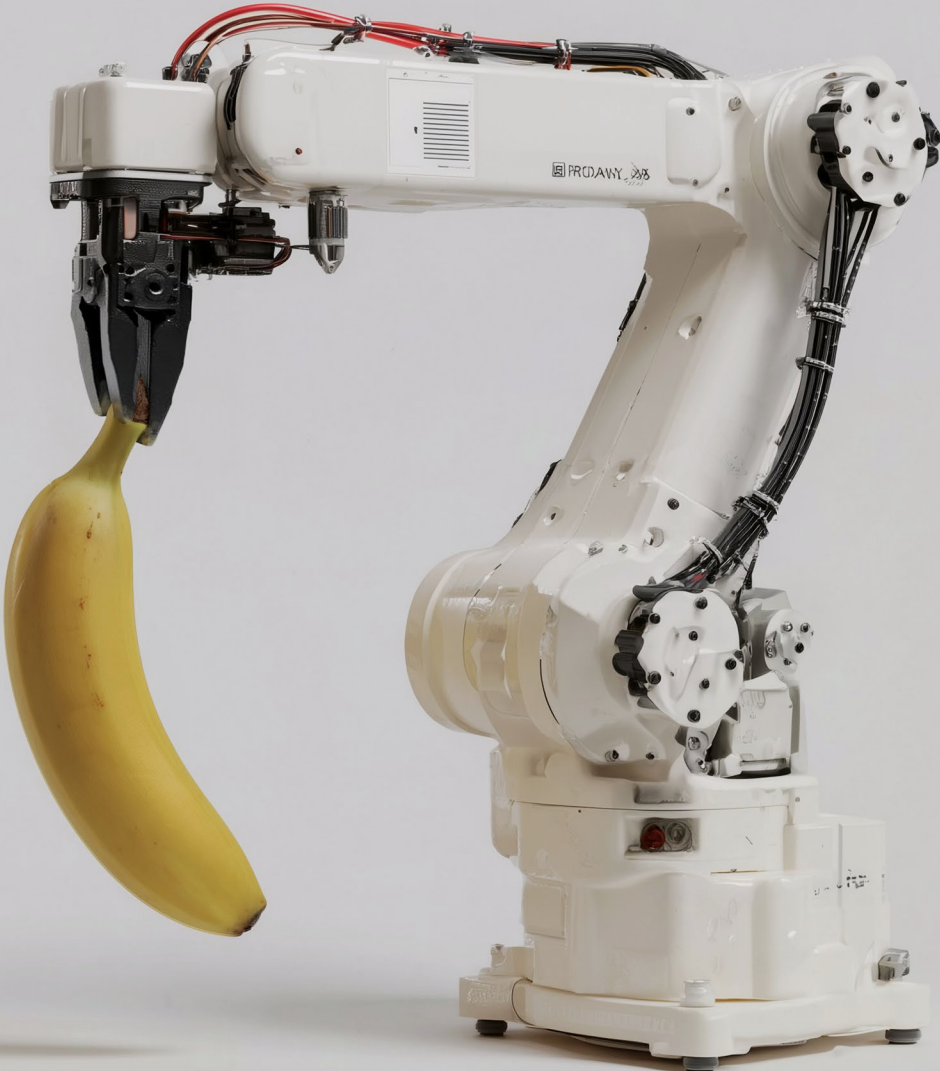
High-cost solutions can improve safety and efficiency but could widen the efficiency gap between large-scale and smallholder operations

In the next stage of our banana’s journey, we shift to the packing house, where bunches are separated into smaller hands in a process known as de-handing. This is traditionally a manual task that involves cutting banana hands from the stalk using sharp knives, a repetitive, physically demanding job that carries the risk of injury.

Our artefact here is a robotic de-handler, an autonomous device designed to safely and efficiently carry out this task without human input.

This artefact draws directly from real-world research led by Hort Innovation and Queensland University of Technology (QUT) in Australia, who are actively developing robotic systems capable of de-handing bananas⁹. In a future shaped by coordinated autonomy, such technology could become common in high-tech packing facilities, reducing workplace injuries and tackling labour shortages. Where finding workers to perform repetitive and hazardous tasks has become a growing issue, automation could offer a consistent, round the clock alternative.

However unlike lower-cost tools like chat-bots or sensor kits, this kind of high-end robotics represents a much steeper investment making it far more unlikely on a large scale. The financial, spatial, and infrastructural requirements mean it may only be viable for large-scale operations or newly built packing facilities. Retrofitting such systems into existing smallholder set-ups would be prohibitively expensive and complex. So while robotic de-handers could drive efficiency and productivity, they may also deepen divides between plantations that can afford to adopt such tech and those that cannot.

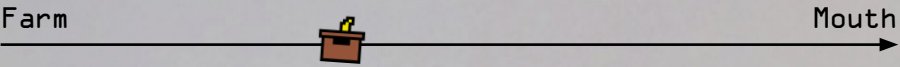


“This robotic arm was used in a large, multinational owned plantation pack-house to ‘De-Hand’ banana bunches from their stalks”

Newspaper Headline

c. 2040

Probable



Public attitude toward autonomous systems could be negative, with minor failures sparking outsized backlash shaped by cultural narratives

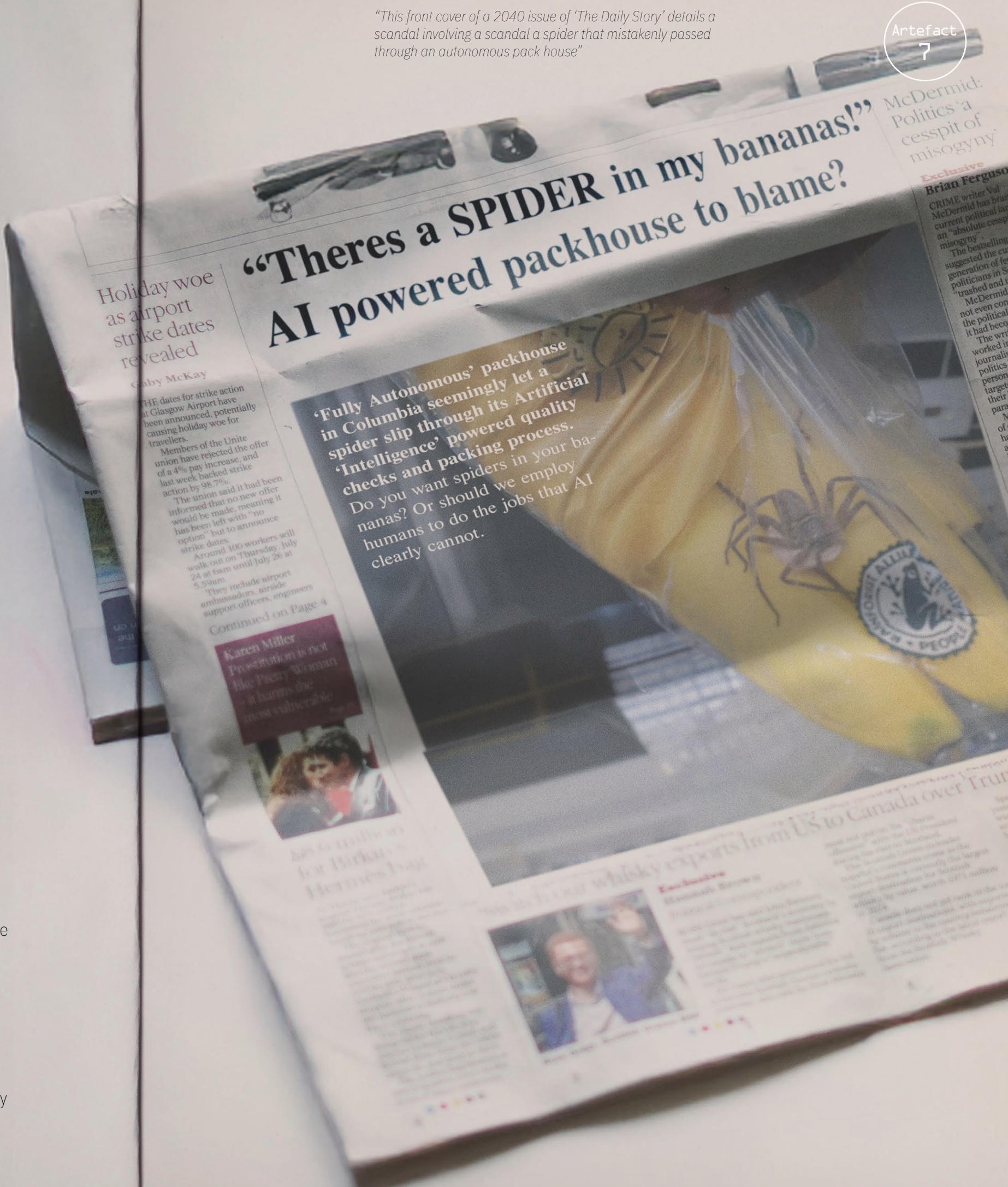
This artefact is a newspaper with a headline that screams about a spider found in a bunch of bananas, quickly blaming an AI-powered packing system. Whether the fault truly lies with autonomous tech or not, this kind of knee-jerk reaction could become common place.

By 2040, there may be an increased sense of public anxiety around AI that could reach a point where any minor incident, be it an accidental arachnid passenger or a bruised sticker, might trigger media backlash against “rogue robots” or “out-of-control systems.”

Influenced by decades of sci-fi portrayals and real-world uncertainty, many people remain uneasy with invisible systems making decisions. In response, some begin to place more value on human-to-human interactions within the food system, even if those systems are objectively slower or less efficient. This artefact represents how autonomy might not only transform physical systems but could reshape public trust, perception, and ultimately the relationship people have with the food they consume and things that they purchase.

“This front cover of a 2040 issue of ‘The Daily Story’ details a scandal involving a scandal a spider that mistakenly passed through an autonomous pack house”

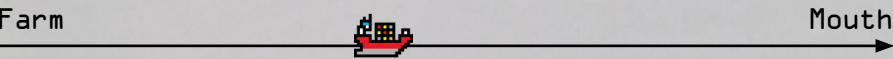
Artefact
7



Shipping Dummy

c. 2040

Possible



Fully autonomous systems could have trust, legal, and safety challenges that make hybrid operations more likely than human-less systems in the near term

As our bananas move out of the plantations, into their crates and onto the next stage of their journey we find them sailing out to sea. Onto huge cargo vessels that, if refrigerated, are called Reefers.

In this future, a life-sized dummy, dressed in a worn high-vis vest and holding a fake weapon, might stand watch on the deck of a *near*-autonomous cargo vessel. It’s not a crew member, but a decoy: a low-tech attempt to give the visual impression that the ship is still fully staffed.

As autonomous systems become standard across large shipping operations, handling tasks like route optimisation through satellite data, autonomous navigation, and predictive steering, the need for human presence on-board diminishes. However, reduced human visibility raises new risks, especially from piracy. These makeshift scarecrows could act as deterrents, compensating for the growing absence of flesh-and-blood crews.

Despite rapid innovation and shifting maritime policy, it’s unlikely that by 2040 large reefers and cargo ships will sail entirely without humans. The physical and financial scale of these vessels still demands a degree of human oversight, even if that presence is minimal. Recent policy moves by the International Maritime Organization (IMO) have opened doors to autonomous maritime operations, but fully unmanned vessels will likely remain limited to smaller ships or experimental fleets¹⁰. The long lifespan of cargo vessels (often 20 to 30 years) means widespread change might not just depend not just on innovation, but on fleet turnover. Until then, hybrid operations combining human instinct with autonomous precision will dominate.

Legal and regulatory frameworks further complicate the full removal of human crews. For instance, Article 98 of the United Nations Convention on the Law of the Sea¹¹ (UNCLOS) imposes a responsibility on ships to provide aid to other vessels in distress, something difficult to guarantee without a human crew on board to assess and respond in real time. Similarly, conventions like COLREGS¹² and STCW¹³ stipulate processes such as keeping a proper lookout by sight and hearing, and ensuring that the bridge is never left unattended. These requirements were written with human seafarers in mind, and their assumptions about crew presence create friction with the idea of fully autonomous vessels. In this future, the presence of a human-like decoy, such as a dummy dressed in a high-vis vest, serves as both a piracy deterrent and a symbolic nod to compliance with maritime laws that remain, for now, firmly rooted in human oversight. Until international conventions are re-evaluated and adapted, full autonomy at sea may remain legally out of reach for larger vessels.



Artefact

“This life size dummy, adorned in a make-shift shipping uniform, was utilised by a mostly autonomous cargo vessel in 2040 to give the impression to pirates that there were more humans on board than there was in reality.”



Automation may create new human roles focused on oversight and judgement, but who takes liability when things go wrong?

As ships become more autonomous in 2040, new roles will emerge to manage and supervise these complex systems. Roles such as ‘Autonomous Systems Supervisor’ which could see someone responsible for overseeing the operation of on-board autonomous infrastructure, ready to intervene in the rare event of a malfunction.

Our next artefact is a job posting for a ‘Human Instinct Expert’. These could be workers with decades of seafaring experience, hired not to steer the ship, but to bring a human layer of judgement to the bridge. In an era of automation, these individuals are valued for their “gut feeling”, the kind of situational awareness that’s hard to programme into a system. They may only act in the rarest of circumstances, but their presence helps to maintain confidence in the vessel’s operations.

This artefact reflects the idea that autonomous systems might not simply erase human roles, but could reshape them. Similar to modern airline pilots who spend a much of their time monitoring systems rather than flying the plane, these maritime roles represent a future where humans might be put into roles where they only have to step in when things go wrong.

However, as automation becomes more deeply embedded in maritime operations, the question of liability and insurance grows more complex. According to IMA CORP existing insurance frameworks are not yet fully equipped to handle the ambiguity around accountability when AI-driven vessels are involved in accidents or failures. In a future where autonomous systems take over navigation and decision-making, assigning fault, whether to the vessel operator, the system developer, or the technology itself, remains a legal and ethical challenge. The insurance industry is beginning to adapt, but a clear, standardised framework does not yet exist. This raises important questions for 2040: Will insurers prefer operations that retain human presence? Will new types of liability products be needed for AI-based operations? And how will insurance premiums be affected by an industries level of autonomy? This artefact invites us to consider how trust in human judgement may remain a vital component, not just culturally but also contractually, in the future of shipping and other sectors.

24.06.2040

HIRING

Human instinct expert

Join Oceanic Logistics Corp. – Shaping the Future of Smart Shipping

Your Mission

- Be the “gut check” for our semi-autonomous fleet: sense when something’s off beyond what sensors report
- Override or pause AI-driven manoeuvres when your intuition flags risk
- Partner with our Autonomous Systems Supervisors to weave human judgment into decision loops

What You’ll Do

- Monitor live bridge video feeds, sensor dashboards, and your own instinct signals
- Conduct regular “heartbeat” calls with onboard crews—calibrate AI Confidence against human insight
- Lead post-voyage debriefs, documenting instinct-led interventions and feeding them back into our AI training data
- Develop an “Instinct Codebook” of patterns, visuals, sounds or environmental cues that consistently precede issues

Must Have Skills & Experience

- 20+ years at sea as a master mariner, pilot or senior deck officer
- Proven track record of making split-second safety calls under ambiguity
- Deep understanding of ship operations—both old-school seamanship and modern autonomy
- Exceptional observational skills and a high-stakes “sixth sense” for maritime anomalies

Send your sea-story portfolio, instinct case studies, and a 60 s “Gut Check Demo” video to instinct@safeharbor.ai (mailto:instinct@safeharbor.ai)

Apply by September 15, 2040

“This poster, found in Portsmouth in 2040, details a vacant position for a ‘Human Instinct expert’ within the shipping industry”

Protest Sign

c. 2040

Probable



What is the social cost of coordinated autonomy?

After the journey at sea, our bananas arrive at a port. Ports around the world are in the middle of a transition into what's known as 'Smart Ports'. These are a vision of the future which are already being trialled in places like Tianjin, China, home to the Huawei Smart Port. In this near-autonomous terminal, driver-less electric trucks, robotic cranes, and AI-enabled logistics systems operate with astonishing efficiency, guided in part by satellite-enabled infrastructure that feeds real-time data into a central digital brain¹⁴. The space sector plays a critical role in enabling this seamless orchestration: satellite positioning, connectivity, and weather monitoring power many of the automated decisions made on the ground. While this might sound far-fetched, elements of this future are already beginning to appear in the UK. At the Port of Tyne, for example, digital twins and autonomous logistics pilots are underway¹⁵ but physical and financial barriers remain. The sheer cost of infrastructure upgrades, retrofitting ageing yards, and integrating new digital systems means that change is slow and uneven. Many UK ports operate within tight spatial constraints, where the room to test and scale autonomous vehicles or robotic cranes is limited. The leap from pilot to full implementation is steep.

This artefact is a protest sign that might found at the gates of one such transitioning port. In 2040, as autonomous tech spreads, port workers could stage demonstrations, demanding that their roles not be erased in the name of efficiency. Union leaders might argue that behind every autonomous crane or connected vehicle is a displaced worker. These protests become flashpoints for broader tensions between innovation and employment, between space-sector-enabled infrastructure and the people it disrupts.

The counter argument to this speculation is that the removal of workers from polluted and dangerous spaces is largely positive and that finding a workforce to occupy these dangerous spaces is problematic in itself. Whilst the future is uncertain for the fair implementation of these techs its a possibility that automation might not just shift containers: it could displace bodies, livelihoods, and local economies. This protest sign is a reminder that sometimes efficiency comes with social costs.

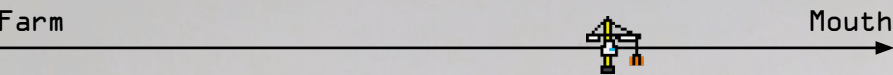


"This sign, which was used during a port workers protest in 2040, is critiquing the use of autonomous machinery instead of human labour"

(Vandalised) Robot Dog

c. 2040

Possible



Potential public rejection of autonomous tech could stem from cultural fears, poor communication and linguistics as much as the technology itself

Our next artefact is found at the edge of a port in England. A robotic patrol dog, dented and spray-painted in an act of public protest. This artefact originates from The Port of Tyne, where ‘robotic dogs’ could be trialled to patrol unmanned areas, equipped with sensors and cameras for security and maintenance surveillance. While the tech itself could offer clear functional value, its presence might sparked backlash. (This is a speculation based on the inclusion of ‘Robot Dogs armed with cameras’ in The Port of Tyne’s real-world 2050 strategy document¹⁶)

In this future, the community’s rejection of the robot dog is tied not to its technical capabilities but to cultural perception. For years, popular media has cast robotic dogs and similar devices in dystopian roles: most notably in Black Mirror’s “Metalhead”¹⁷, where an autonomous dog hunts humans through bleak landscapes. That fear, seeded through fiction, bleeds into reality. The presence of these machines, regardless of intent, can evoke unease, or in this case, open hostility.

There is a linguistic dimension at play. The Port of Tyne’s 2050 strategy document uses the words “robot dogs armed with cameras”, language that, while technically accurate, inadvertently conjures militarised imagery. In a sensitive environment like public space or transport infrastructure, the phrasing used to describe emerging technologies can shape public response as much as the tech itself. As autonomy spreads, it becomes increasingly important to not just design for function, but to communicate with care.

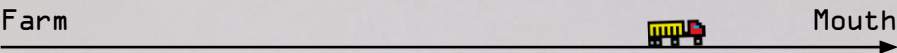


“This robot dog was deployed by Portsmouth as a patrol unit. After much public backlash about the use of robotic guards this ‘dog’ was damaged and vandalised with the word ‘killer’ in an act of protest”

AMR carrying Bananas

c. 2040

Probable



While highly automated systems already exist, achieving full coordinated autonomy across supply chains requires overcoming regulatory, social and trust barriers

This artefact takes us out of the port and into the next stage of a bananas journey, into distribution centres and warehouses across the country. This artefact allows us to reflect on the journey of a banana and think about ‘coordinated autonomy’...

The artefact is an Autonomous Mobile Robot (AMR) transporting a crate of bananas through a distribution centre. Unlike some of the more speculative futures in this archive, this one is grounded in reality, these robots already exist and are in use today. Warehouses and factories have been automating their processes for decades, and some can now operate with very limited human involvement.

But by 2040, could we see full autonomy? Entire distribution centres running for days, weeks, or even months without a single human entering the space? That might still be unlikely. While the tech is here, and progress is fast, there will likely remain a human in the loop for oversight, exception handling, or simply for trust. Still, the leap from today’s advanced automation to tomorrow’s fully autonomous coordination may be smaller than we imagine.

The question that follows onto that, and what this book considers by laying out the different industries, is could we see coordinated autonomy between sectors? The idea that this AMR wouldn’t be operating in isolation by human command, but connected to every other stage of the bananas journey that is powered by autonomy. The fruit; grown in a smart farm, packed by robots in a smart port, sailed across the ocean by a mostly autonomous vessel, unloaded by an autonomous crane, and taken to a distribution centre by a CAV where it is organised by AMRs. Through each artefact we discover some of the gaps and intervention needed to allow the adoption of coordinated autonomy to happen which are often not technical innovations but regulatory, social, linguistic and much more.

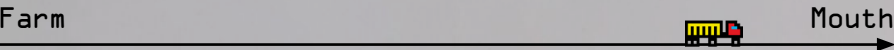


“This Autonomous Mobile Robot(AMR) among hundreds of others was found in a Distribution Centre in England carrying a box of bananas”

Autonomous Vehicle Warning Sign

c. 2040

Plausible



Trust, as well as technology or law, may be a key barrier to widespread adoption of autonomous technologies

This artefact exists between the distribution centre and the supermarket. A road sign warning drivers that autonomous delivery trucks are in operation nearby. It marks a tangible signpost of automated logistics entering everyday life.

In cities like Milton Keynes, Starship Technologies robots are already delivering groceries on pavements, saving CO₂ and gaining cautious public acceptance through over seven million deliveries globally¹⁸. Meanwhile, Kar-go, built by the UK’s Academy of Robotics, has been road-tested as a self-driving delivery vehicle in trials across the UK, for example, delivering medicines to care homes in London¹⁹.

Though UK legislation is advancing... The 30th of May 2024 saw the Automated Vehicles Act receive Royal Assent, legally paving the way for Level 4 autonomous vehicles on public roads by 2026²⁰. fully driver-less delivery trucks remain largely confined to controlled trials. Public trust remains a significant barrier: surveys indicate that over two-thirds of Brits feel uneasy about getting in, sharing roads or even walking besides autonomous cars²¹. This highlights that beyond legislation and technology, the real roadblock to adoption may be societal perception. As this sign suggests, whether autonomous vehicles pose actual danger, or simply represent unfamiliarity, depends largely on how quickly and confidently people learn to trust them.

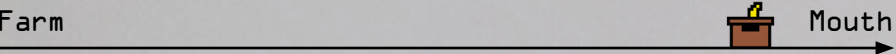


“This road sign, found in Bracknell in 2040, indicated to road users that there were autonomous vehicles in operation in the area”

Abandoned Trolley

c. 2040

Possible



How important are the emotional and social value of in-person, physical experiences and how will that impact the adoption of digital and autonomous systems?

This artefact is found within the retail industry, or rather, outside of it... An abandoned shopping trolley represents a future where physical, in-person shopping is slowly pushed aside by the rise of autonomous technology and digital retail systems.

By 2040, as robotic warehouses like those pioneered by Ocado²² reach new levels of speed and accuracy, and AI-driven delivery services become faster and more intuitive, the traditional act of wandering supermarket aisles may feel outdated. To push that idea even further there could be a futures full of smart homes or fridges that could take on the full responsibility of ordering monitoring stock, predicting cravings, and syncing with delivery systems, effectively removing the human from the loop entirely. But will this future actually come to pass? Well... The majority of UK consumers today still choose to shop in person²³. Is this purely out of habit, or does it reflect a deeper, more emotional value in the physical shopping experience; the smell of fresh bread, browsing for bargains, choosing your own “little treat”? Even if the tech allows it, full automation of the shopping experience may struggle to displace the rituals and pleasures of physical retail.

There’s also a question of class here. While smart homes and seamless delivery systems may be accessible to wealthier consumers, however the majority will likely continue to rely on traditional shops for the foreseeable future. This artefact invites us to ask: will the shopping trolley ever truly be abandoned, or will it remain as a symbol of our human desire for tactility, and presence?

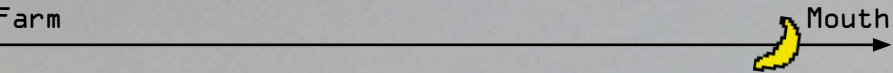


“This shopping trolley was found in a stream in 2040, an abandoned relic of in-person shopping experiences that were long replaced by online practices”

Smart Banana.2

c. 2040

Plausible



Coordinated autonomy in supply chains could hinge on the alignment of the many disparate industries involved

Our final artefact is a simple, single banana. It might sit on a shelf, no wires, sensors or blinking lights. Just a small, stamped-on QR code near the stem. This is a more grounded, plausible version of an earlier artefact, the overly ambitious “Smart Banana.1” filled with circuitry, imagined to offer full, end-to-end traceability. While that artefact played into a more speculative vision of the future, this second version is stripped back, reflecting how supply chain digitisation might actually appear to the public.

By 2040, technologies like block-chain, AI, and digital logistics systems will likely be embedded throughout supply chains. But whether that results in complex tech embedded in fruit, or just a simple QR code, is beside the point. The real insight here is about perception. Do consumers really want to trace their banana back to the exact field it was grown in? And if they do, would they even bother scanning a code in the supermarket? This artefact suggests that traceability might be far more important for industry stakeholders than for the end customer.

It also hints at a deeper challenge: supply chains are not singular, linear systems. They are made up of many disparate industries, infrastructures, and actors. Coordinated autonomy, the vision of all these parts working together seamlessly is only possible if those industries are actually aligned.

The QR-stamped banana reflects a step in that direction, but also signals the systemic complexity still ahead.



“This banana, stamped with a QR code, was capable of being scanned with a smart phone and being traced back to its exact field of origin within seconds”

Conclusion

This book has traced the speculative journey of a banana in 2040, not just as fruit, but as a proxy for something much larger: the future of coordinated autonomy across global supply chains. From swarm drones scanning plantations to QR codes stamped on skin, the artefacts in these pages aim to show that even the most ordinary object carries with it a web of technologies, infrastructures, decisions, and human hands.

What becomes clear through this process is that supply chains are not singular, streamlined entities. They are vast, messy ecosystems made up of multiple sectors, actors, tools, and policies often disconnected and operating on different time lines, with different incentives. Trying to overhaul or revolutionise these systems isn’t as simple as introducing a new technology or flicking a switch. Every layer, from the field to the port, is a negotiation between legacy infrastructure and future possibilities. This complexity is what makes supply chains so difficult to coordinate and even harder to automate end-to-end.

As this project has explored, satellite and space technologies are increasingly essential in enabling these future systems. From satellite-powered connectivity in remote farming regions to earth observation tools for monitoring crops, ports, shipping routes and weather systems, these technologies act as the invisible scaffolding that supports a future of autonomy. If we are to build smarter, more resilient global systems, we must recognise that the sky above is just as much a part of the supply chain as the road beneath.

No object exists in a vacuum. Each banana, bottle, shirt, or device is shaped by policies, powered by invisible forces, checked by algorithms, and moved by machines. But also by people: workers, regulators, engineers, farmers, and you. Autonomy doesn’t erase this complexity, it reorganises it. As we move toward a future filled with AI, automation, and hidden systems, it becomes even more important to understand the visible and invisible forces shaping the things we consume.

As mentioned in the introduction, coordinated autonomy can deliver efficiency, safety, transparency, and sustainability if implemented with the appropriate methods and consciousness. It might hold the key to the growing food demand, autonomous systems ploughing the seed that could let future generations benefit from a bountiful and sustainable yields. This is an exciting point in the advancement of humanity’s systems and technologies and we all play a part, no matter how small, in ensuring it advances toward a preferred future.

If this book leaves you with anything, it’s the reminder that the future isn’t just arriving, it is being built. By remaining conscious of the things we buy, the systems we support, the technologies we use, and the values we embed in them, we all play a part in shaping that future.

Even if it starts with something as simple as a banana



END

NOTES

With Thanks to

My supervisor:

> Pete Swanton
for trusting me with this opportunity
and guiding me through the space sector
and user centred design (UCD)

The UCD team:

> Catherine Greene
> Richard Harlow
> Nidhi Tiwari
> Giulia Bencini
> Simon Halls
> Hemul Goel
for being so welcoming, continuously
helpful and supporting throughout

Internship Convenor:

> Vicky Jewell
for all the hours organising the
SPINterns and answering all my queries
and requests

Workshop Participants:

> Chris Brook
> Wilf Prasher
> Isabelle CrozierMorris
> Electra Panagoulia
> Nidhi Tiwari

And with mention to:

> Alex Szymborski
> Steve Brewer
> Mark Jarman
> Electra Panagoulia
> Chris Brook
> Kirsty Gouck
> Tom Marsh
for having conversations with me and
answering my many questions

Endnotes

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A project by Luke Aitken as part of
the SPINternship programme within
the Satellite Applications Catapult