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Global Logistics

US Perspective

This talk is based on publicly available business facts. This is not an original investigation by the author. The opinions expressed in this document are due to the author alone and does not represent views of the institutions with which the author is affiliated.



Ethically speaking

Is this relevant to you?

The US model of any business operation is generally unfit for the rest of the civil world. It is based on greed and values profit over purpose, without fail.

If you love and crave money, if avarice is your middle name and if your standard operating procedure is schadenfreude, then embrace and mimic US business models & practices.

Is this relevant to you?

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The long read

Why we should bulldoze the business school

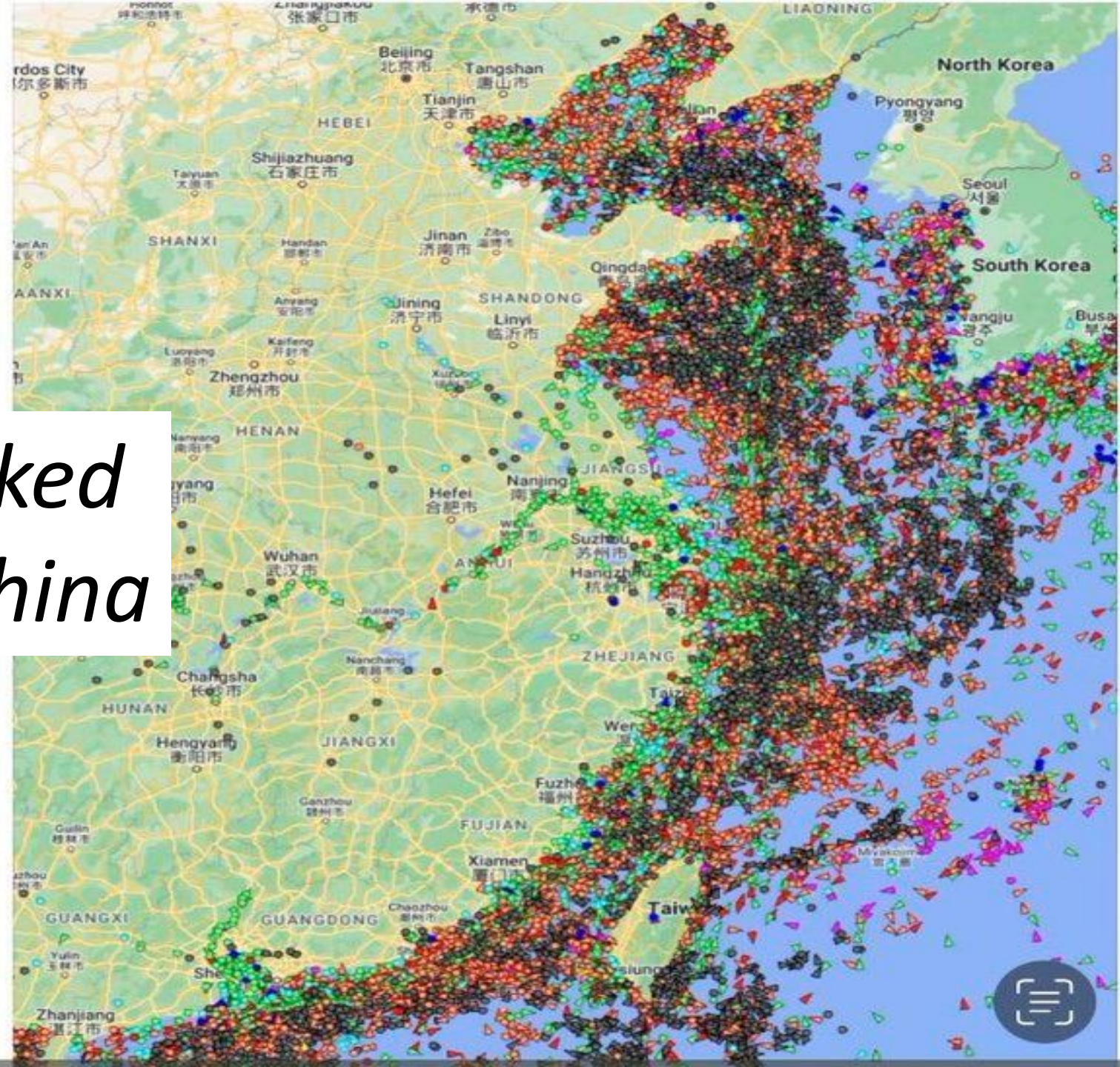
▲ Illustration by Michael Kirkham
Illustration: Michael Kirkham

There are 13,000 business schools on Earth. That's 13,000 too many. And I should know - I've taught in them for 20 years. By [Martin Parker](#) <https://pdfshares.com/?book=0745399169>

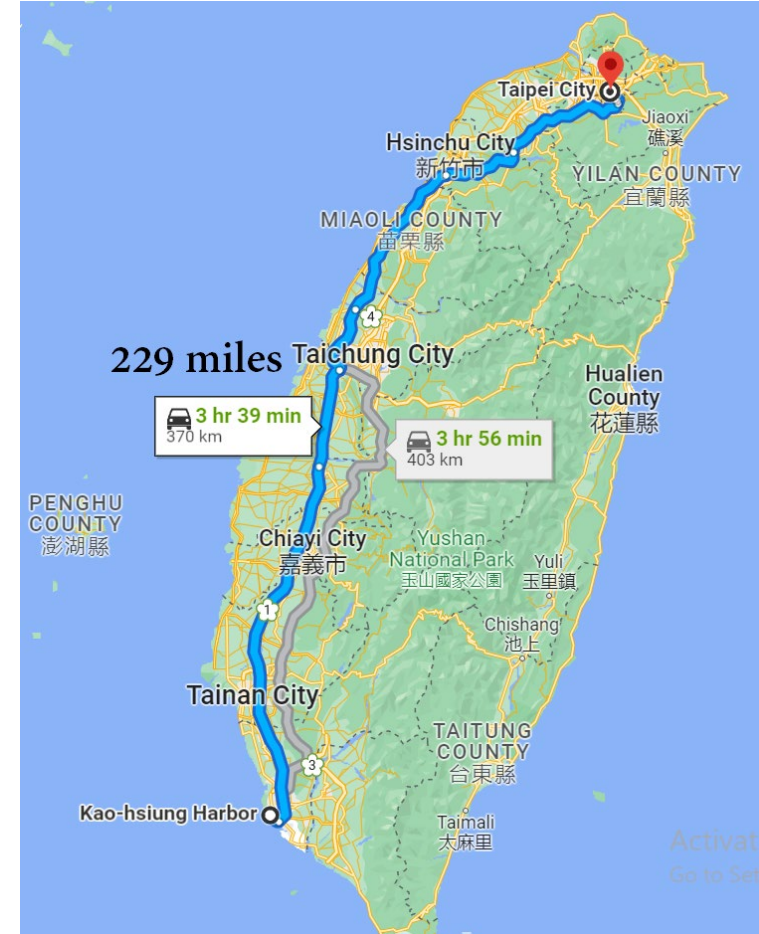
Operations Management

Is this relevant to you?

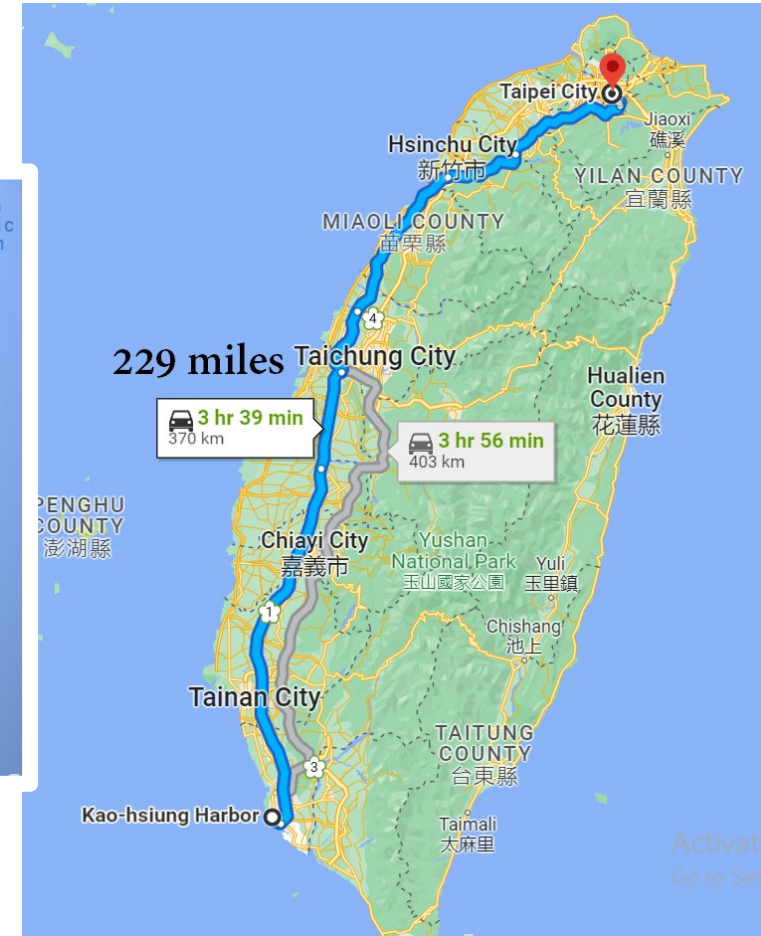
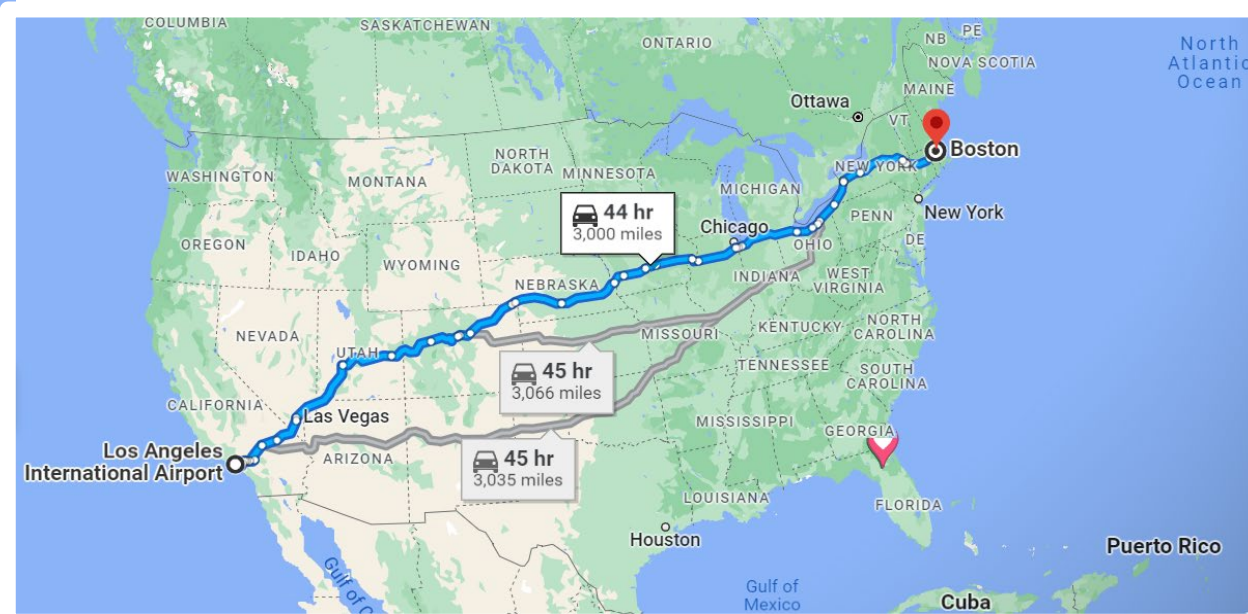
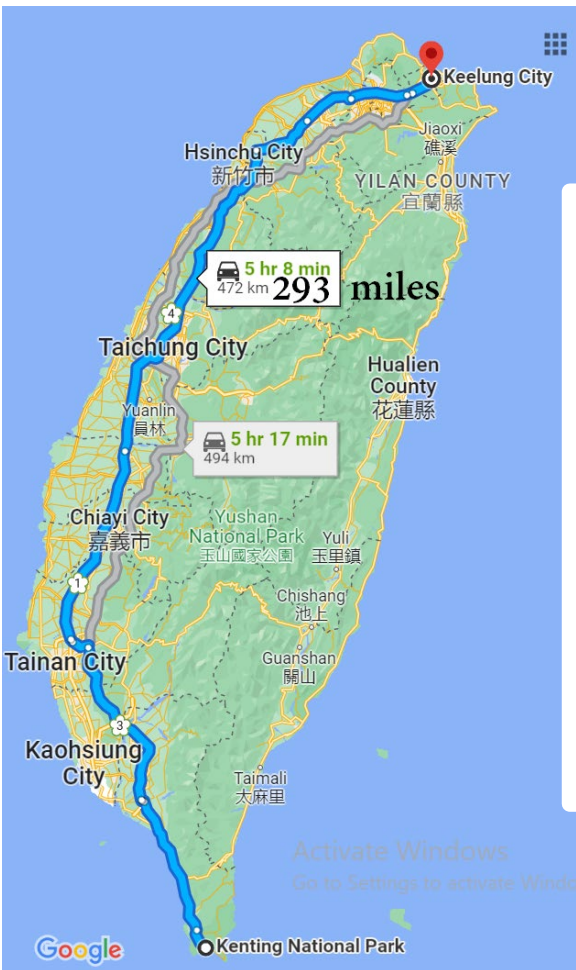
Number of parked ships around China



~300 miles



~300 miles vs ~3,000 miles



The Logic of Logistics: You cannot build an elephant using the mouse as a model.

~300 miles vs ~3,000 miles

Logistics operation for 300 miles is not similar to operations for 3,000 miles.
The supply chain model of baby food cannot be similar to SCM for groceries.
The supply chain model for tires on sedans cannot be replicated for supply chain of tires for earth-moving vehicles. Transporting a human kidney for transplant surgery cannot ever be similar to logistics for tins of kidney beans.

The Logic of Logistics: You cannot build an elephant using the mouse as a model.

SUPPLY CHAIN MANAGEMENT

SUPPLY CHAIN
MANAGEMENT



**SUPPLY CHAIN
FRUSTRATION**



Is it real OOS or store specific

???

Top selling bikes

Rollback



+ Add

\$98.00 ~~\$148.00~~

Dynacraft 26 In. Men's Aftershock Bike

★★★★☆ 58

3+ day shipping

Rollback



+ Add

\$48.00 ~~\$94.00~~

Marvel Avengers 12-Inch Boys Bike for Kids by Huffy,...

★★★★☆ 54

3+ day shipping

Rollback



+ Add

\$68.00 ~~\$84.00~~

Magna 16 In. Girl's Firefly Bike with Handlebar Pad an...

★★★★★ 19

3+ day shipping

Rollback



+ Add

\$68.00 ~~\$94.00~~

Nickelodeon Blue's Clues Kids Bike, 12 - Inch Wheel, Ages ...

★★★★☆ 5

1-day shipping



+ Add

\$78.00 ~~\$98.00~~

Hyper Bicycle 16 In. Authentic Blue Space Jam Graphi...

★★★★★ 4

3+ day shipping

PANDEMIC

US ECONOMISTS PREDICTED
DEMAND WAS GOING TO DROP



READER / CORONAVIRUS

I Don't Feel Like Buying Stuff Anymore

Our economy is built on Americans of all class levels buying things. What happens when ability — and desire — to do so goes away?



Anne Helen Petersen
BuzzFeed News Reporter

Last updated on May 19, 2020, at 11:55 a.m. ET

Posted on May 18, 2020, at 6:01 p.m. ET

Project Syndicate
economists
Business

Wed 25 Mar 2020 02:00 EDT

Coronavirus pandemic has delivered the fastest, deepest economic shock in history

Nouriel Roubini

The financial crisis and Great Depression took three years to play out, this crisis has taken three weeks. The Greater Depression beckons



▲ An electronic board at Kookmin Bank shows the benchmark Korea Composite Stock Price Index in freefall.

As soon as people stopped buying products and services they didn't need, the economy collapsed, in only 3 weeks.



Oil drops below \$1 a barrel

0.99 cents (USD)

PANDEMIC

~~US ECONOMISTS PREDICTED
DEMAND WAS GOING TO DROP~~

PANDEMIC

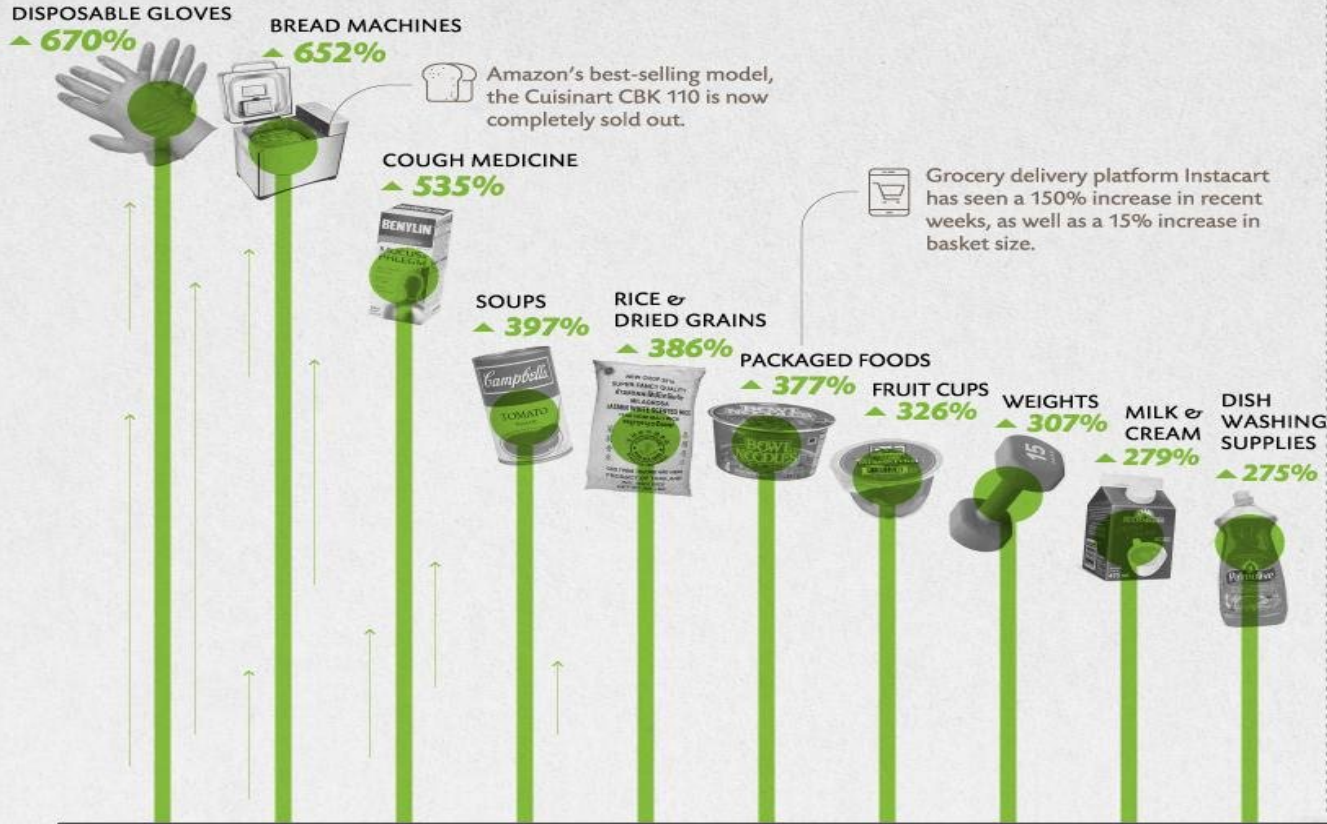
THE OPPOSITE HAPPENED

DEMAND EXPLODED

Albeit, not uniformly ...

Top 10 fastest growing e-commerce product categories

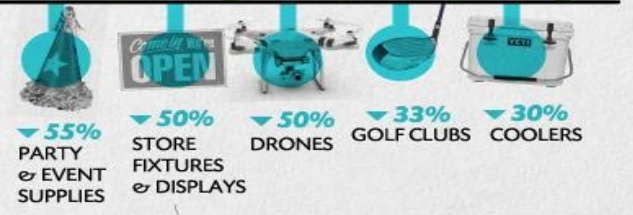
March 2020 vs March 2019



Top 10 fastest declining e-commerce product categories

Source: Stackline, Amazon, Business Insider, Euro news, CNBC

Other fast-growing categories



Other fast-declining categories

As small businesses around North America remain shuttered, sale of items like signage and supplies have seen a steep drop in sales.

In a

Post-

COVID

World?

Amazon had 4bn visitors in March, more than eBay, Apple, Walmart, Rakuten combined

By [Indiaretailing Bureau](#)- April 30, 2020

[eBay](#), [Apple](#), [Walmart](#), [Rakuten](#), [Samsung.com](#), and [Apple.com](#) had cumulative visitors of 3.85 billion. eBay registered 1.2 billion unique visitors followed by Rakuten (0.8 billion), Samsung (0.6 billion). Walmart came 5th with 0.61 billion visitors, Apple.com (0.56 billion), Aliexpress (0.53 billion), Etsy (0.4 billion), Homedepot (0.29 billion), and Allegro.pl (0.27 billion).

SUPPLY CHAINS CHOKED

*Almost everyone experienced
not being able to get something
and paying more for something*

E-commerce

*gave us the illusion
that everything was
right at our doorstep*



US Retail E-commerce

5.6% to 16% in 10 years

16% to 27% in ~8 weeks

27%

~8 WEEKS

5.6%

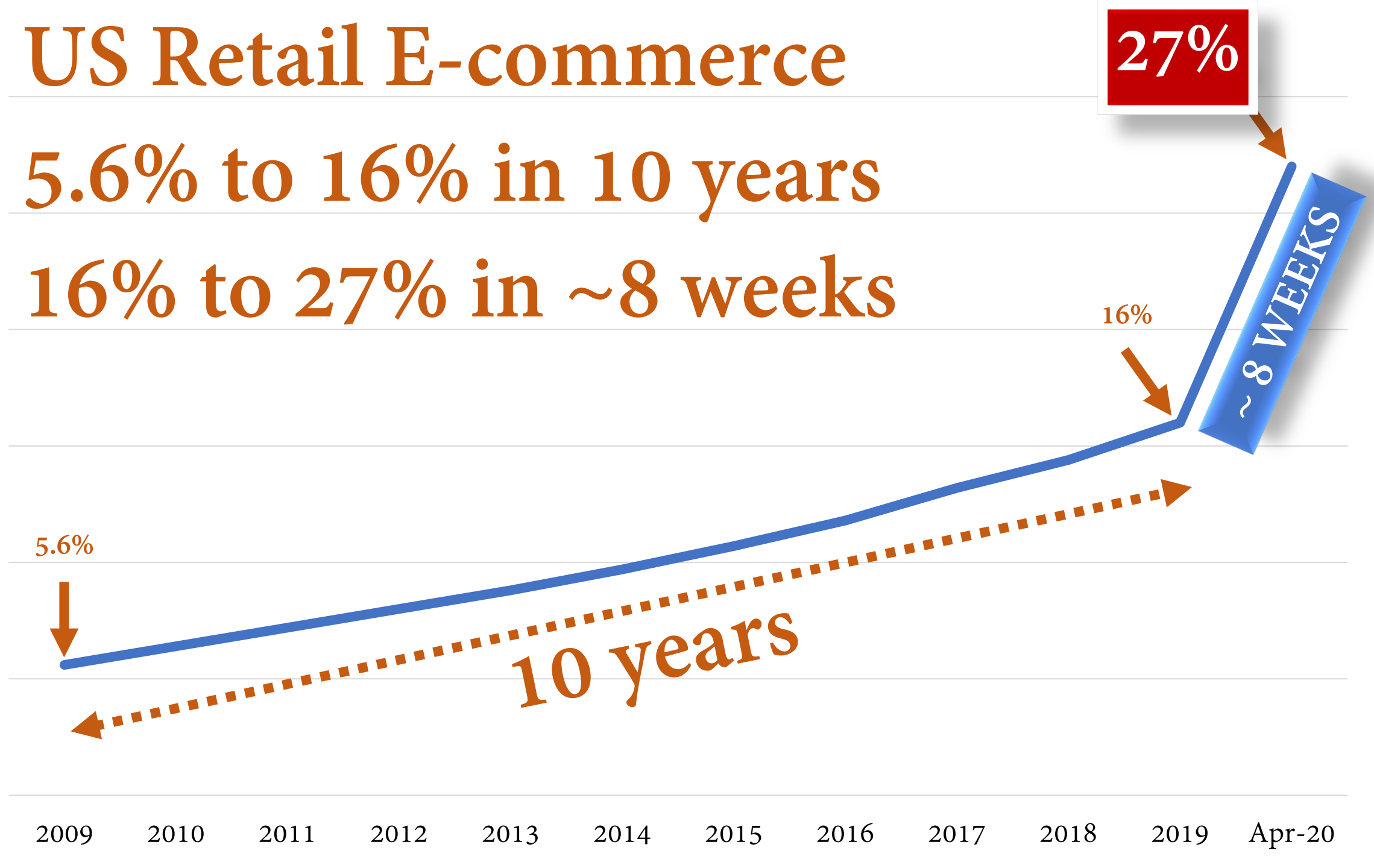
16%

10 years

30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%

2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 Apr-20

Post-Pandemic Paradigm? Source: Bank of America, US Department of Commerce, ShawSpring Research



E-commerce

obscured the fact it was often a 14,000 mile journey halfway around the world and it took months even with automation, algorithms and millions of people who touched those goods or transported them in some way to meet that last mile logistics to the doorstep of the customer.

E-commerce

*covered up all of this
behind the convenience
of “one-click” shopping*

CityLab
Economy

The Dark Side of 15-Minute Grocery Delivery

Mini-warehouses dubbed “dark stores” are quietly taking over urban retail space. Left unregulated, the insatiable demand for faster delivery will only hasten the erosion of community life.



This may look like an ordinary grocery store. But the only shoppers at this Getir warehouse in Istanbul, Turkey, are delivery workers. *Photographer: Chris McGrath/Getty Images Europe*

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Lev Kushner and Greg Lindsay
December 7, 2021, 11:01 AM EST

PANDEMIC

showed us how unsustainable and unrealistic are our expectations of e-commerce

Why Global Supply Chains May Never Be the Same | A WSJ Documentary



GLOBAL SUPPLY CHAIN CRISIS

September 20, 2021
72 container ships at anchor
waiting to unload at the Port
of Los Angeles, California, USA

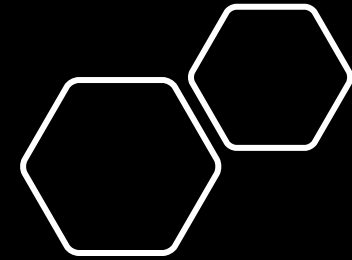




TARGET

Parents hunting for baby formula as shortage spans US

By MATTHEW PERRONE and HEATHER HOLLINGSWORTH 18 minutes ago



In Taiwan?



President Biden  @POTUS · 1h

United States government official

I'm taking two new steps to increase baby formula supply:

- Invoking the Defense Production Act to increase domestic production
- Launching Operation Fly Formula to use federal planes to fly formula in from abroad

We're making sure safe formula gets to all who need it.



5/18/2022

YOU KNOW THE SUMMARY: OVERALL PROCESS

- Product Assembly / Manufactured Goods
- Shipping
- Trucking
- Distribution
- Last Mile Delivery

CASE: USB CHARGER

readily available

next day delivery

relatively cheap

must have: lowest labor cost

must have: high efficiency

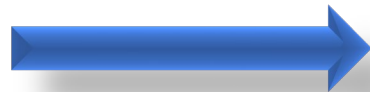
invention of shipping container

made it cheaper

outsource manufacturing

global supply chain products

local doorstep* delivery



****end of a journey that may have begun a year ago in a factory that might be half a world away***

You know the facts & sequence of operations

- Assembled in a factory e.g. Vietnam
- Trip across Pacific Ocean (20 to 30 days)
- Ships carry ~10,000 containers with ~20 crew
- Solitary life of crew invisible to consumers (20-30 days of relentless pounding on ship similar to living inside an airplane in constant turbulence 24/7)
- Catastrophe / bottleneck - problem with containers falling off or disruptions due to rough weather
- 400m EVERGREEN caused havoc after it got stuck in the Suez Canal (registered in Panama, owned by Shoei Kisen Kaisha of Japan and leased to Taiwan-based Evergreen Marine for operation)
- Backlog of ships waiting with goods worth \$9 billion (representing loss of \$400 million per hour for days)
- Port of Los Angeles - gateway to US economy (40% imports, 30% exports) is the single point of failure which handles ~900,000 TEU (twenty-foot equivalent units) per month.
- 3-5 days to unload but now it takes 2 weeks using humans and robots (15,000 workers in LAX port)
- 3 steps: pick containers off ship, take to location for sorting and transfer goods to pick-up zone for truckers
- LA 24 hr operation: schedules truck pick-up at 3am.
- Why will a trucker arrive at 3am for pick-up?
- LA operation is now 24/7 but pick-up, warehousing, sorting and distribution services are not 24/7 causing huge backlogs, traffic congestion, minor and major accidents, highway delays and labor shortages.

Transportation & Logistics: US Trucking Facts

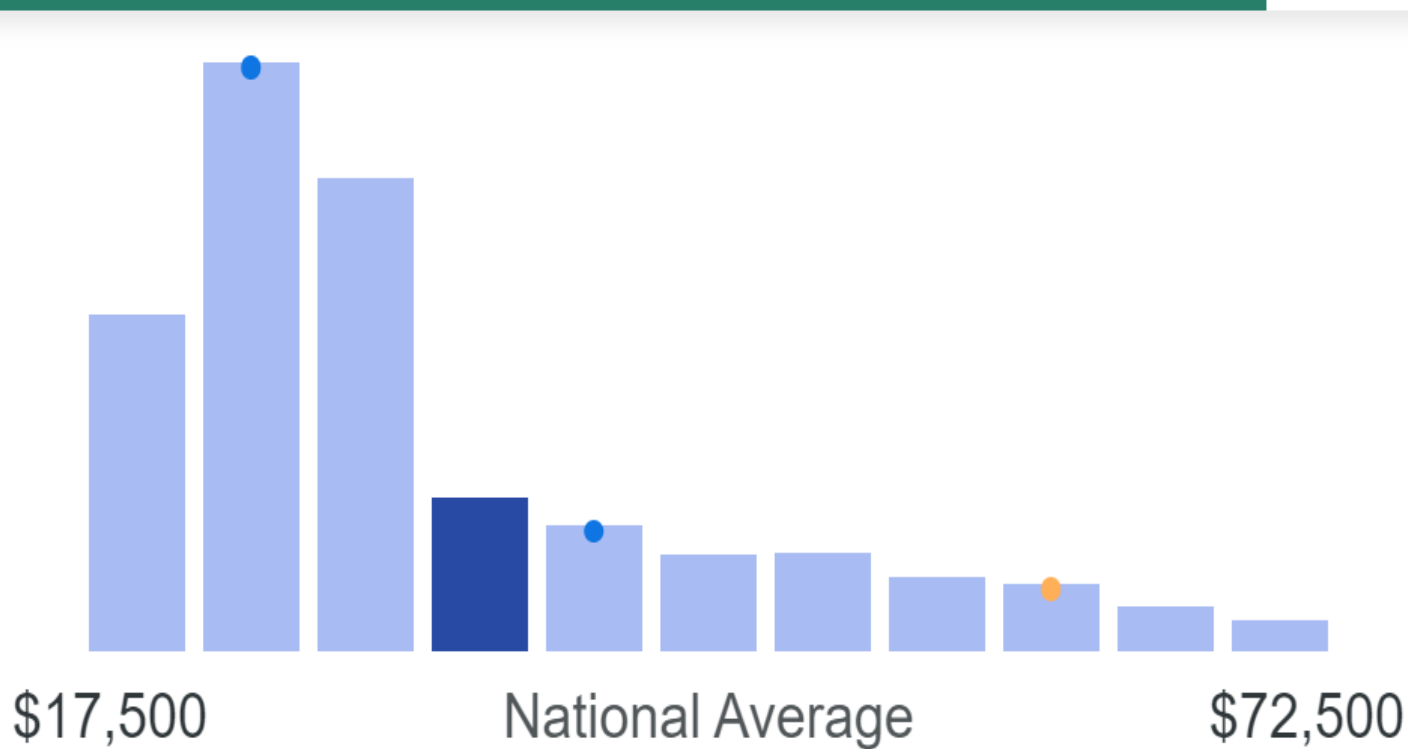
- Truck from port goes to warehouse where goods are checked, counted, unpacked and repacked.
- Package loaded on long distance domestic trucks: loading time may be 2-3 hours to 6-7 hours.
- Trucker not paid for waiting time.
- Hauls load over 3,500-4,000 miles per week (where can they do that in Taiwan?) \$1000-\$2400 per week
- Driving two weeks/month (~\$40K per annum average starting salary)
- Trucking: \$800 billion industry moving >70% of goods in the US
- Driver shortage since deregulation in 1980. Currently 10 million CDL drivers but ~ 3.5 million is working.
- Must rest 10 hrs/day (14 hour work day). If 6-7 hours waiting to load then driving time 8-7 hours/day.
- Only time truck driver is making money is when the truck is driving (US 30c-60c pay per mile)
- Starting \$40K, experienced ~\$100K

US CDL truck drivers do not
want to work (drive trucks)

WHY ?

GROCERY STORE

Salary



\$35,329 /year
\$17 /hour

To earn ~\$40K per year truck drivers must be away from home for ~50% per year. While they are on the road they spend money to eat. What if you can earn ~\$35K staying at home with the family?

The trucking problem in the US
is so acute that President Biden



BRIEFING ROOM

[Administration](#) [Priorities](#)

FACT SHEET: The Biden Administration's Unprecedented Actions to Expand and Improve Trucking Jobs

APRIL 04, 2022 • STATEMENTS AND RELEASES

Since Day 1, the Biden-Harris Administration has taken on the supply chain disruptions and price increases resulting from the decades-long lack of investment in the nation's goods movement supply chain. The Administration enacted the Bipartisan Infrastructure Law to bring our infrastructure to the 21st century, worked with ports to [clear the docks](#) and gets good moving, launched [a pilot initiative](#) to create the digital infrastructure to connect key stakeholders in the supply chain, and more. The result is a modern goods movement system that boosts American competitiveness and cuts families' costs.

Trucking moves 72 percent of goods in America

Industry forecast: ~160,000
truck driver shortage by 2028

The truth is somewhere in the middle, but the trucking problem is definitely a key economic inhibitor.

Truck drivers are forecasting:
paralysis of US trucking, 2030

US trucking and its financial problems are one of many poor working conditions.

Trucks bring goods to local distribution centers but then the goods must be delivered to end customers.

Distribution Centers

How big are DCs? ~4,000,000 square feet or ~37,000 square meters

Compare with National Palace Museum, Taipei ~9,000 square meters

Distribution Center

4,000,000 square feet ~ 37,000 square meters

National Palace Museum X 41 = 1 Distribution Center



X

41

Distribution Centers Require Human-Robot Interactions

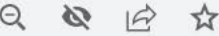


Distribution Centers: where retail nightmare happens

- Relentless pressure from e-commerce mandatory “next day shipping”
- Picking, packing, sorting is a non-stop 12 hour per shift operation with low pay [e.g., advanced category \$22 per hour but much lower in most entry level DC jobs]
- 4 million square foot of space makes physical work exhausting and often unsafe
- Amazon annual turn over 150%
- 3% leave each week
- <https://www.nytimes.com/interactive/2021/06/15/us/amazon-workers.html>

Distribution Centers: where retail nightmare happens

salon.com/2022/03/16/walkout-dozens-of-warehouse-workers-low-pay-and-working-conditions/



NEWS & POLITICS CULTURE FOOD

salon

SCIENCE & HEALTH LIFE STORIES VIDEO

Search...

Amazon walkout: Dozens of warehouse workers protest low pay and bad working conditions

Roughly 60 workers across New York and Maryland are demanding a \$3 raise and two twenty-minute work breaks

By **JON SKOLNIK** PUBLISHED MARCH 16, 2022 5:34PM (EDT)



Boxes travel on conveyor belts at the Amazon Fulfillment Center on August 1, 2017 in Robbinsville, New Jersey. (Mark Makela/Getty Images)

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https://belonging.berkeley.edu/sites/default/files/warehouse_employment_as_a_driver_of_inequality_in_the_inland_empire-the_experiences_of_young_amazon_warehouse_workers.pdf

The Last Mile

The Greatest Challenge?





Photo courtesy of Amazon

YOU

DSP
Delivery Service Partner

No legal liability for
Amazon

Avg. Pay \$18.57 / hour

◆ You buy/lease the van, you get the workers, you maintain the operations & **deal with 100% turn-over.**

➔ Amazon will insert its logo but not legally liable.

➔ Amazon dictates what is loaded and where to go.

● Time between deliveries ~ 3 min (20 stops / hour).

● Some deliveries can arrive at 9pm or 10pm.

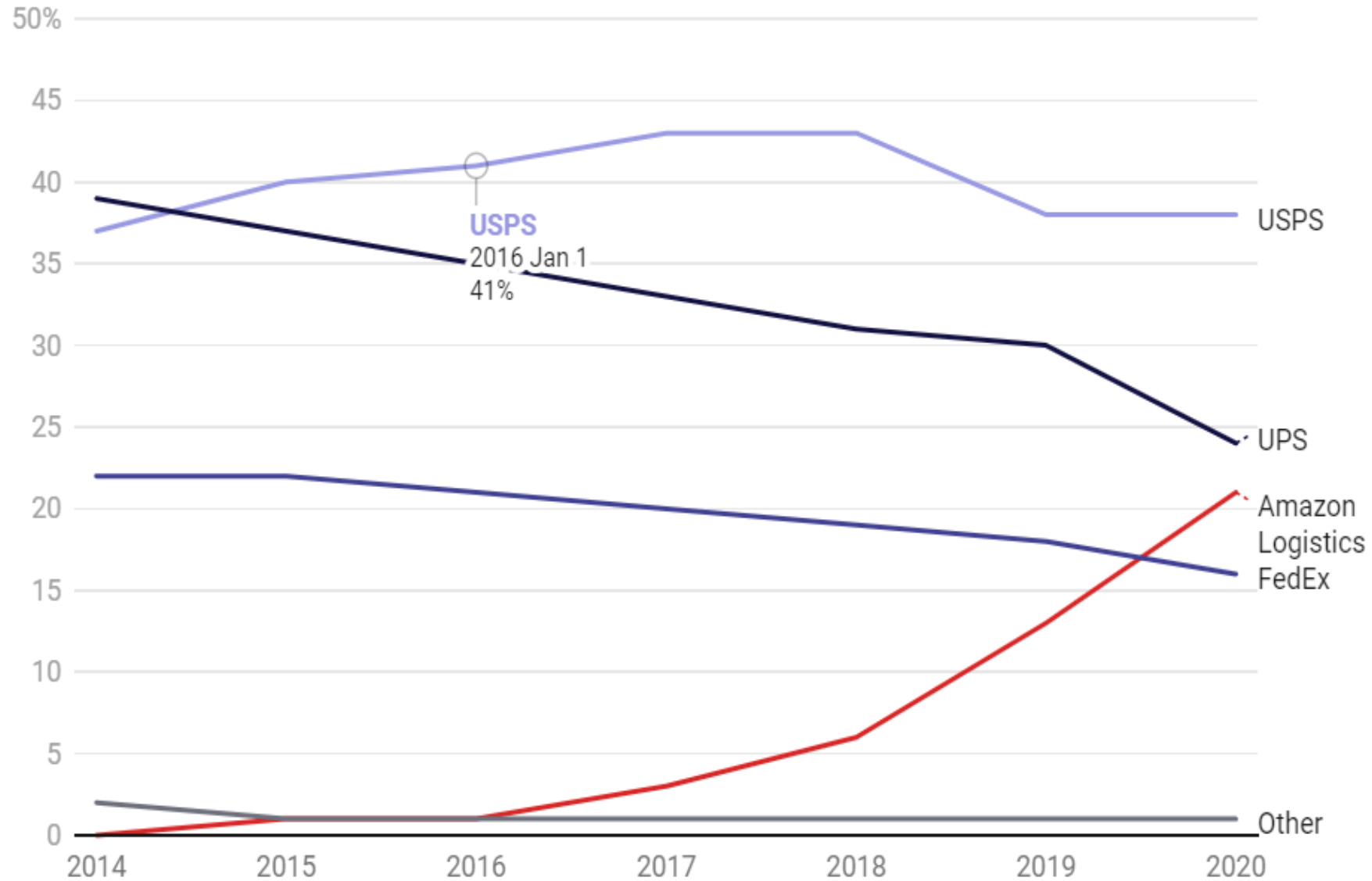
● The driver/worker doesn't receive any extra pay.



The Last Mile – only human contact in e-com

- Demands high quality of work
- Must be rapid paced with good PR
- Manage traffic / routing / QoS
- 200-300 times getting up/down truck (during each 8 hour shift)
- UPS pays \$40/hour or ~80K/year
- WORST THINGS BY AMAZON
- Flex delivery workers paid ~\$18 / hour (no other expenses) but may go up to ~\$45 / hour during peak season (max 30 hour per week to avoid contracts)
- DSP – Delivery Service Partners carry all the liability while Amazon profits.

Market share of U.S. parcel volume, 2014-2020



Solutions ?

Nothing is a panacea

Outsourcing out: Re-shoring in?

Pandemic exposed inability to rapidly shift to adapt/meet changing demand patterns in the semiconductor industry

Challenges for TSMC?

Samsung

\$17 billion semiconductor fab in Texas

Intel

\$20 billion semiconductor fab in Ohio

Trust

Almost absolute loss of trust between mega-employers & employees at all job categories



hbr.org/2017/01/if-employees-dont-trust-you-its-up-to-you-to-fix-it

**Harvard
Business
Review**

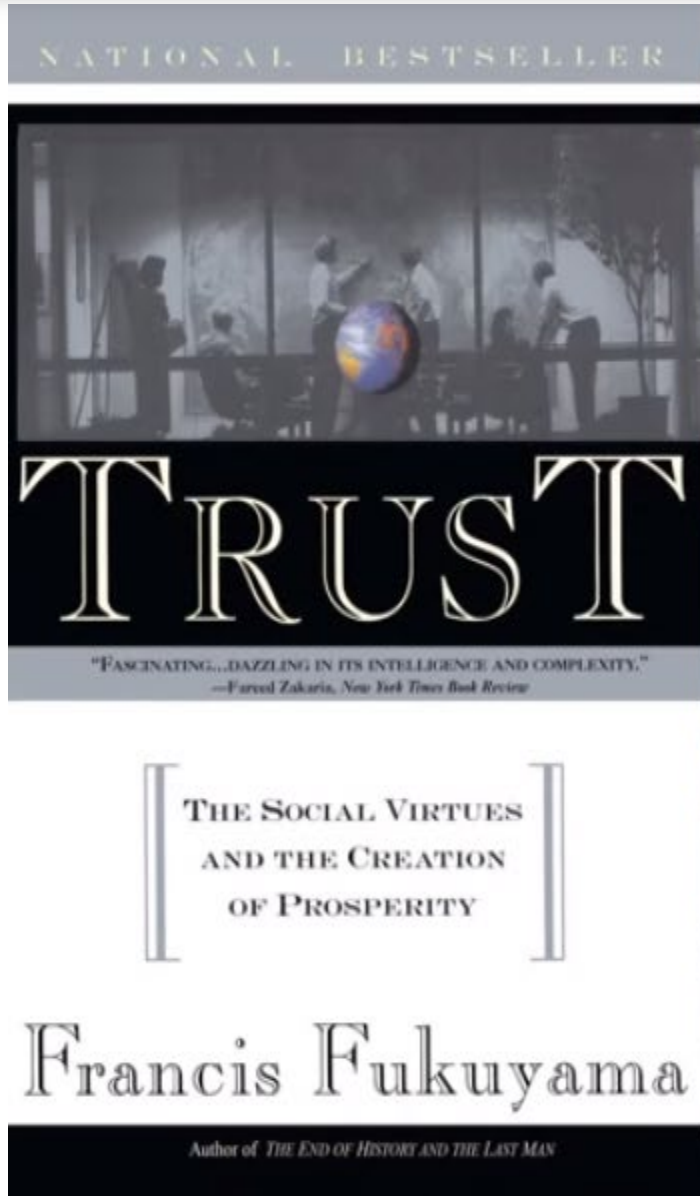
Business Ethics

If Employees Don't Trust You, It's Up to You to Fix It

by Sue Bingham

January 02, 2017

The social glue has become unglued ...



What unglued the social glue?

CORPORATE GREED

◆ **Gallon of baby formula
costs \$154 in US
costs \$0.31 to manufacture.**

◆ **Gallon of IV fluid (0.9% NaCl)
costs \$178 in US
costs \$0.28 cents to manufacture.**

◆ **Gallon of Insulin
costs \$123,000 in US
costs \$0.68 cents to manufacture, currently.**

*Is
this
true?*

What happened to

RFID and data transparency?

Supply Chain visibility?

Adaptive & Agile?

Bullwhip returns

with a vengeance



Nobel Prize in Economics 2001 >> Stiglitz, Spence, Akerloff

Information Asymmetry between Demand and Supply

The Bullwhip Effect



Source: Tom McGuffog, Electronic Commerce and Value Chain Management

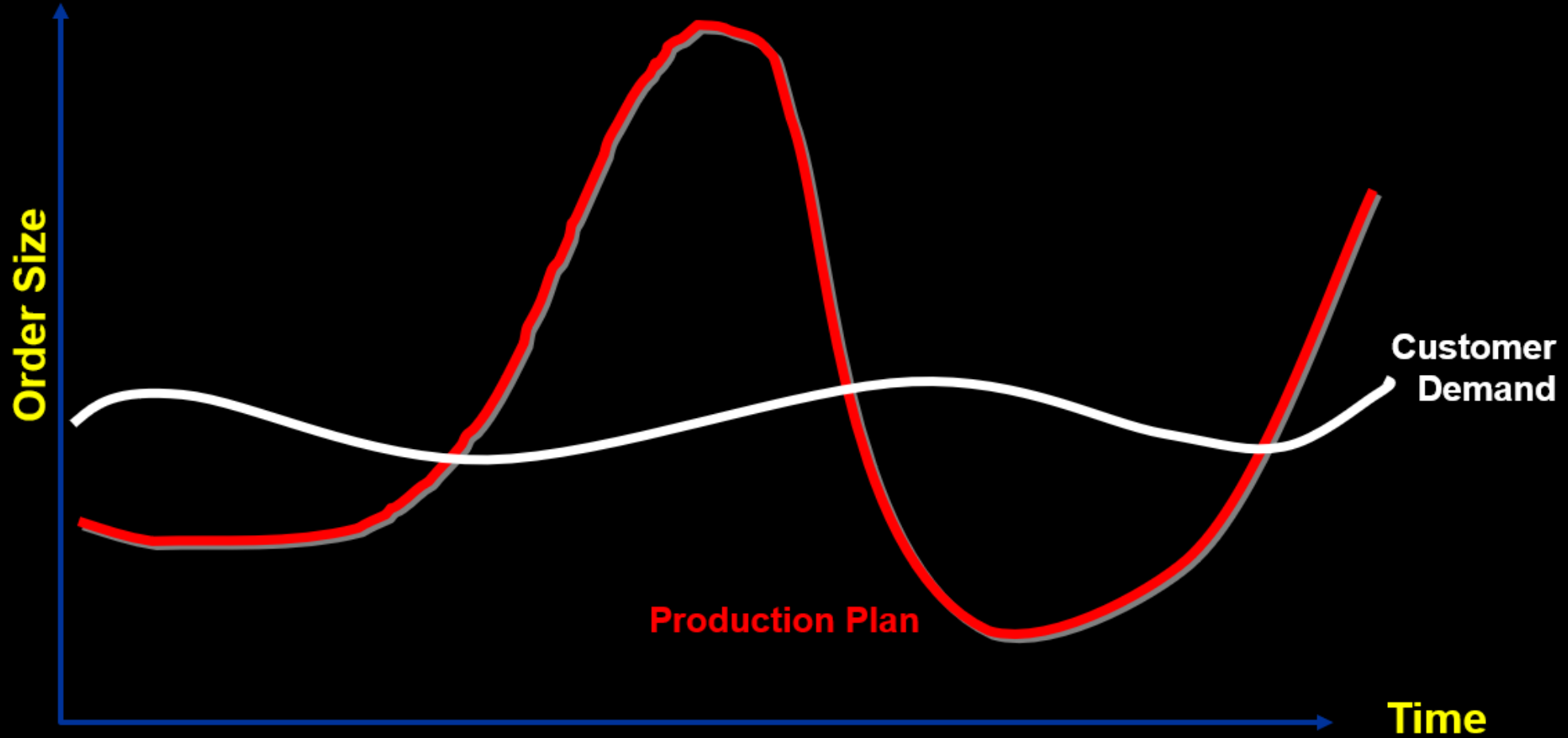
Visibility, Transparency, Agility, ...

Very difficult to accomplish even with all the tools and technologies...



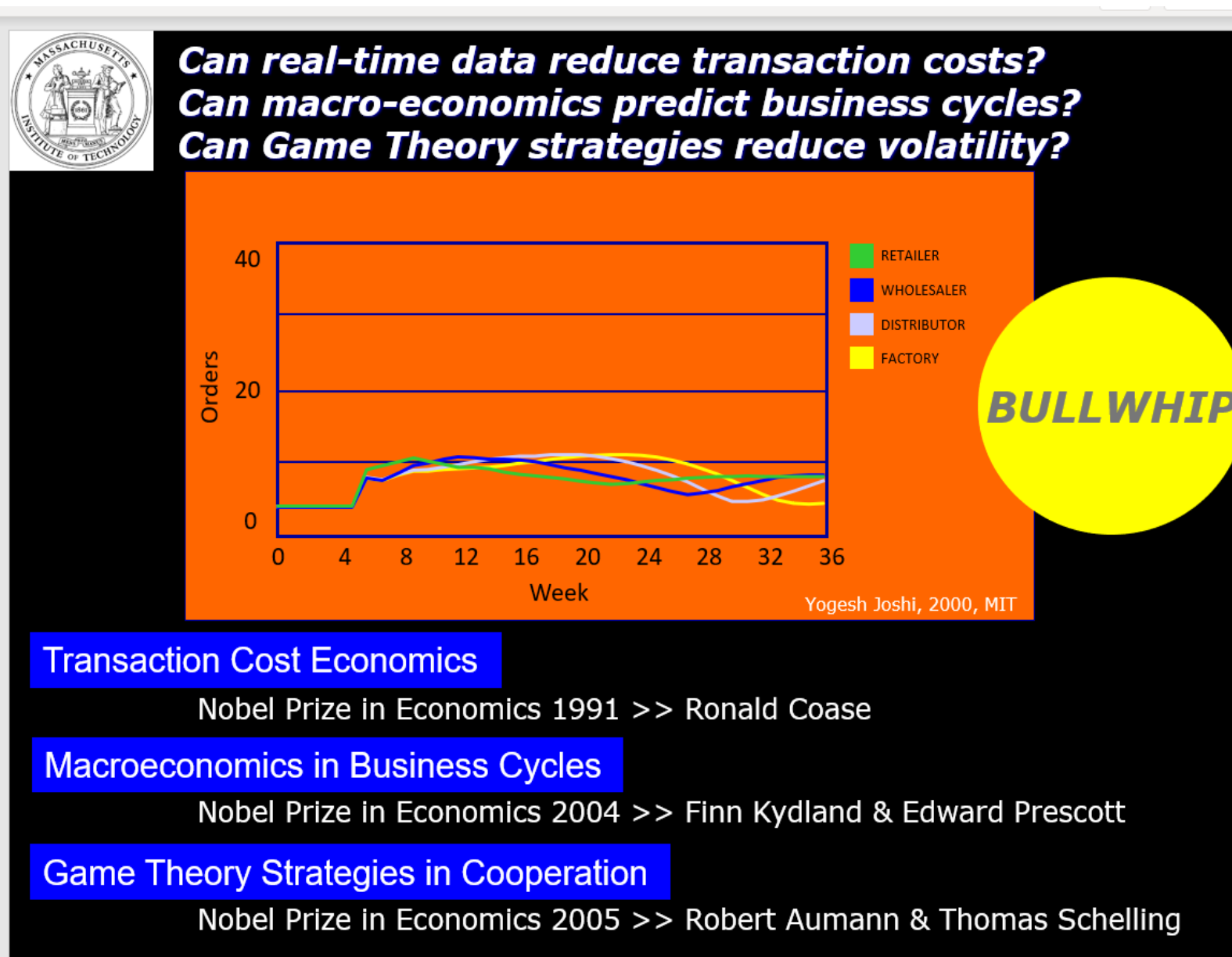
Nobel Prize in Economics 2002 >> Daniel Kahneman & Vernon Smith

Uncertainty



The Revenge of Uncertainty Returns

Technologies, Strategies & Business Practices failed to tame the Bullwhip Effect



Transaction Cost Economics

Nobel Prize in Economics 1991 >> Ronald Coase

Macroeconomics in Business Cycles

Nobel Prize in Economics 2004 >> Finn Kydland & Edward Prescott

Game Theory Strategies in Cooperation

Nobel Prize in Economics 2005 >> Robert Aumann & Thomas Schelling

Businesses optimize profit, nothing for the common good, i.e., systemic performance

Patchwork of solutions

it does not work, it may never work

We haven't even addressed
manufacturing constraints

raw materials, labor, machine tools, maintenance, repair, quality control

Logistics is inextricably
connected to supply vs
demand, education and
economics, war and peace.

A volatile series of dynamic interrelationships between a plethora of very complex parameters.

Transport

suggestions

In 2008

in a journal published in Taiwan by Professor JrJung Lyu (NCKU, Tainan)

WiFi Meets FuFi: Disruptive Innovation in eBusiness Management Catalysed by Energy and Logistics

Shoumen Palit Austin Datta

Keywords: Logistics , Supply Chain , eBusiness Management , Nuclear Energy , Metabolic Engineering , ITER , STAR , carbon footprints

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Abstract:

Cost of energy per unit of goods or services may evolve as a key differentiator of economic growth. The debt of nations will be re-structured. Corporations, big or small, may not escape from managing their energy supply chains or their carbon footprints. Energy supply chains may disrupt traditional physical and financial value networks so much so that different business models with quite diverse revenue streams may evolve and dissolve at a 'clockspeed' hitherto unimaginable. Eurasia may lead the storm and Africa may be the ultimate economic prize for strategic visionaries. This paper suggests why this scenario may be plausible.

ISSN: [2333-9721](#)

Transport is
a key
parameter

WiFi Meets FuFi: Disruptive Innovation in eBusiness Management Catalysed by Energy and Logistics

Shoumen Palit Austin Datta

Keywords: Logistics , Supply Chain , eBusiness Management , Nuclear Energy , Metabolic Engineering , ITER , STAR , carbon footprints

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Abstract: <https://dspace.mit.edu/handle/1721.1/41897>

Cost of energy per unit of goods or services may evolve as a key differentiator of economic growth. The debt of nations will be re-structured. Corporations, big or small, may not escape from managing their energy supply chains or their carbon footprints. Energy supply chains may disrupt traditional physical and financial value networks so much so that different business models with quite diverse revenue streams may evolve and dissolve at a 'clockspeed' hitherto unimaginable. Eurasia may lead the storm and Africa may be the ultimate economic prize for strategic visionaries. This paper suggests why this scenario may be plausible.

Rail Transport
using mobile
nuclear energy
2008

FuFi
Fu – Fusion
Fi – Fission

I remember who supported
me

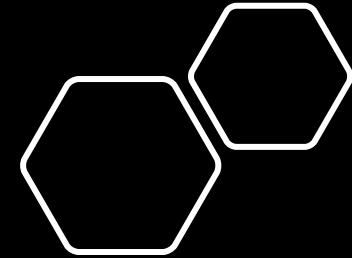
Professor JrJung Lyu, NCKU

President of the e-Business Management Society, 2008

I remember who laughed at
me

MIT CTL

<https://ctl.mit.edu/>

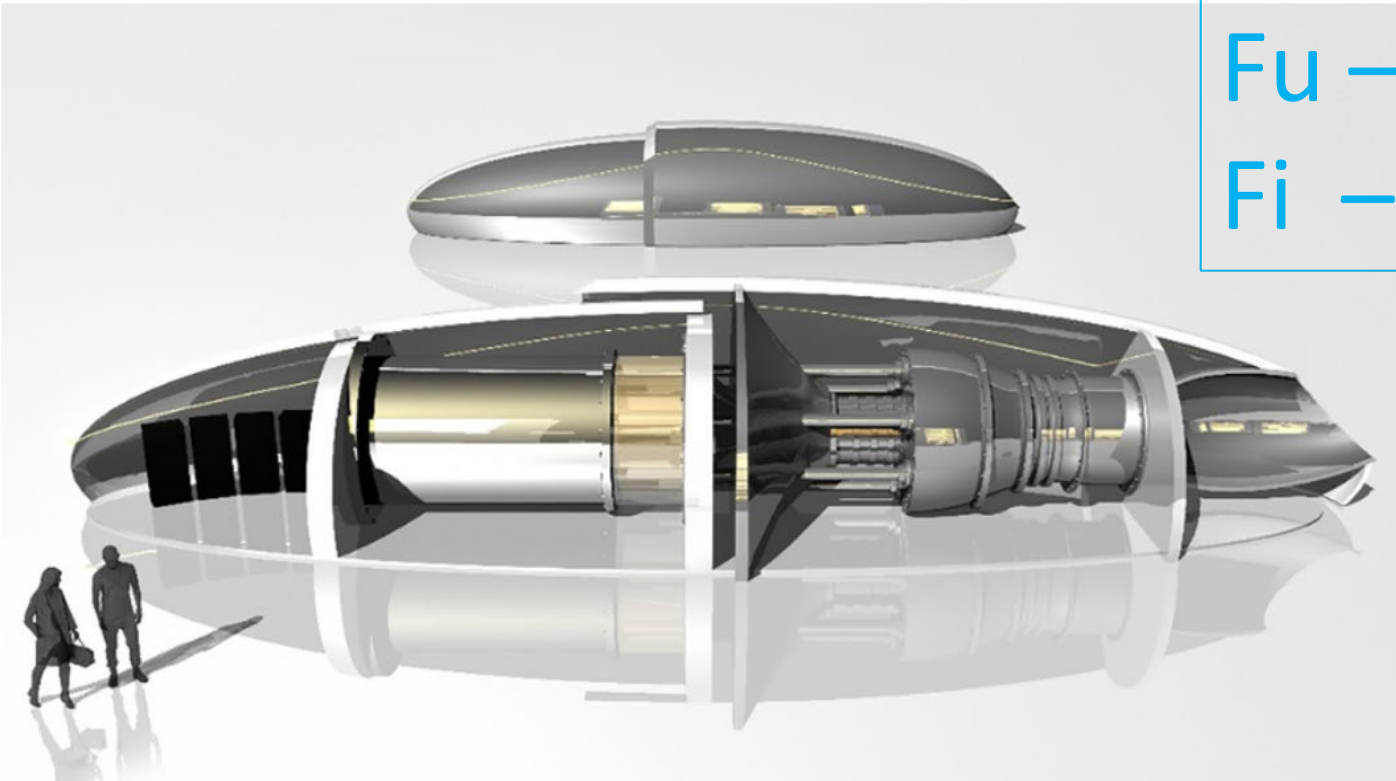


3Q: Why “nuclear batteries” offer a new approach to carbon-free energy

Jacopo Buongiorno and others say factory-built microreactors trucked to usage sites could be a safe, efficient option for decarbonizing electricity systems.

David L. Chandler | MIT News Office
June 25, 2021

FuFi
Fu – Fusion
Fi – Fission



We are on the brink of a new paradigm for nuclear power. Much as large, expensive, and centralized computers gave way to the widely distributed PCs of today, a new generation of relatively tiny, inexpensive factory-built reactors, designed for autonomous plug-and-play operation similar to plugging in an oversized battery, is on the horizon. Think nuclear rail transportation and logistics.

A Strategy to Unlock the Potential of Nuclear Energy for a New and Resilient Global Energy-Industrial Paradigm

MONDAY, JUNE 14, 2021

AUTHOR: [JACOPO BUONGIORNO](#), [ROBERT FREDA](#), [STEVEN AUMEIER](#), AND [KEVIN CHILTON](#)

” *Advantages of nuclear batteries include low-enriched fuel, simple design, mass manufacturing, minimal site preparation, and semiautonomous fleet operation.*



NATIONAL ACADEMY OF ENGINEERING

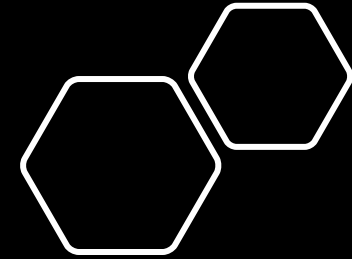
NATIONAL ACADEMIES
Sciences
Engineering
Medicine

“Experts would be mobilized to apply atomic energy to the needs of agriculture, medicine, and other peaceful activities. A special purpose would be to provide abundant electrical energy in the power-starved areas of the world.... Thus the contributing Powers would be dedicating some of their strength to serve the needs rather than the fears of mankind.” – Dwight D. Eisenhower, Atoms for Peace speech, United Nations, December 8, 1953

POWER & OPERATIONS

What are the key cost drivers for microreactors?

Microreactors defy the economics of nuclear power plants by shifting the paradigm from economies of scale (large reactors) to economies of multiple (mass production). While shrinking power output per unit may increase costs per kilowatt compared to large plants, offsetting gains can be expected from standardized designs, factory fabrication, lower radionuclide inventories, rapid installation and inherent safety. The lower power density in a microreactor core leads to a greatly reduced decay heat source, simplifying emergency cooling needs. These design aspects can lead to innovations including substantial simplifications to safety and control needs, minimized human operational requirements, compact balance of plant, the ability to fabricate almost every component in a factory, shortened construction time, and less daunting financing.



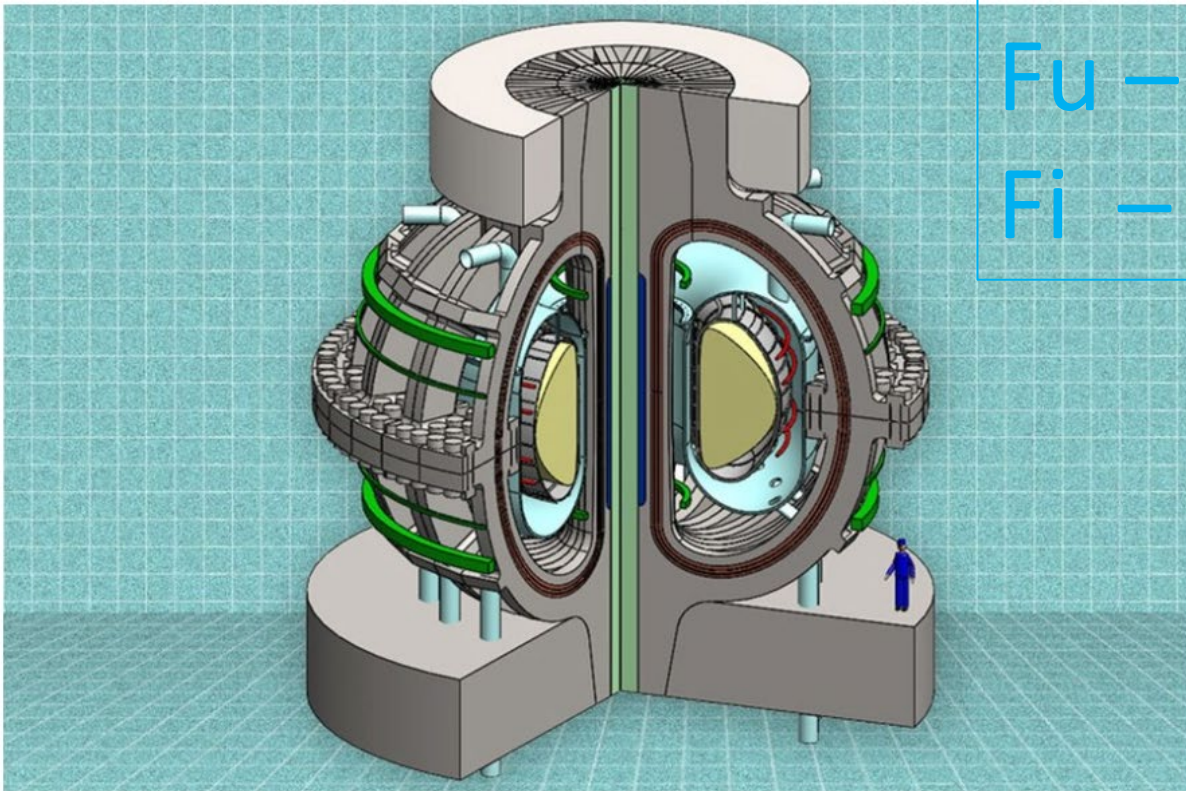
Advances in magnet technology have enabled researchers at MIT to propose a new design for a practical compact tokamak fusion reactor. The era of practical fusion power, which could offer a nearly inexhaustible energy resource, may be real.

FuFi
Fu – Fusion
Fi – Fission

A small, modular, efficient fusion plant

New design could finally help to bring the long-sought power source closer to reality.

David L. Chandler | MIT News Office
August 10, 2015



It's an old joke that many fusion scientists have grown tired of hearing: Practical nuclear fusion power plants are just 30 years away — and always will be.

2015

Version of Record: <https://www.sciencedirect.com/science/article/pii/S0920379615302337f2cd319c081e86678a353cfb7ead0ab7>

ARC: A compact, high-field, fusion nuclear science facility and demonstration power plant with demountable magnets

B.N. Sorbom, J. Ball, T.R. Palmer, F.J. Mangiarotti, J.M. Sierchio, P. Bonoli, C. Kasten, D.A. Sutherland, H.S. Barnard, C.B. Haakonsen, J. Goh, C. Sung, and D.G. Whyte

Plasma Science and Fusion Center, Massachusetts Institute of Technology, Cambridge, MA 02139, USA

<https://doi.org/10.1016/j.fusengdes.2015.07.008>

Is “FuFi” necessary ?

FuFi

Fu – Fusion

Fi – Fission

FuFi : BEIJING to CAPE TOWN by RAIL



(The Washington Post)

As suggested in 2008, Yiwu to Madrid is a prelude to the next phase in freight transportation: Beijing to Cape Town.

On Nov. 18, an 82-container freight train left the eastern Chinese industrial city of Yiwu. It was embarking on a landmark journey that is supposed to end 21 days later, in December, in Madrid. The distance the train covers — more than 6,200 miles — marks the longest route taken by a freight train, longer still than Russia's famed Trans-Siberian Railway, as the map above shows.

Yiwu is the largest wholesale center for small consumer goods in China, making it home to a curious mix of foreign businessmen and petty traders, including a large community of Arabs. Now it's plugged into a far larger project: China's zeal to deepen the links between its booming economy and markets in Europe.

Asia-Africa Goods Transport • South-South Business Development



FuFi
Fu – Fusion
Fi – Fission

Xinhuanet.com To Cape Town, South Africa

<http://dspace.mit.edu/bitstream/handle/1721.1/41897/WiFi%20Meet%20FuFi%20%20MIT%20ESD%20WP.pdf?sequence=1>

Invasion of Ukraine by Putin – Death of the Iron Silk Road ?

2022

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iron silk road

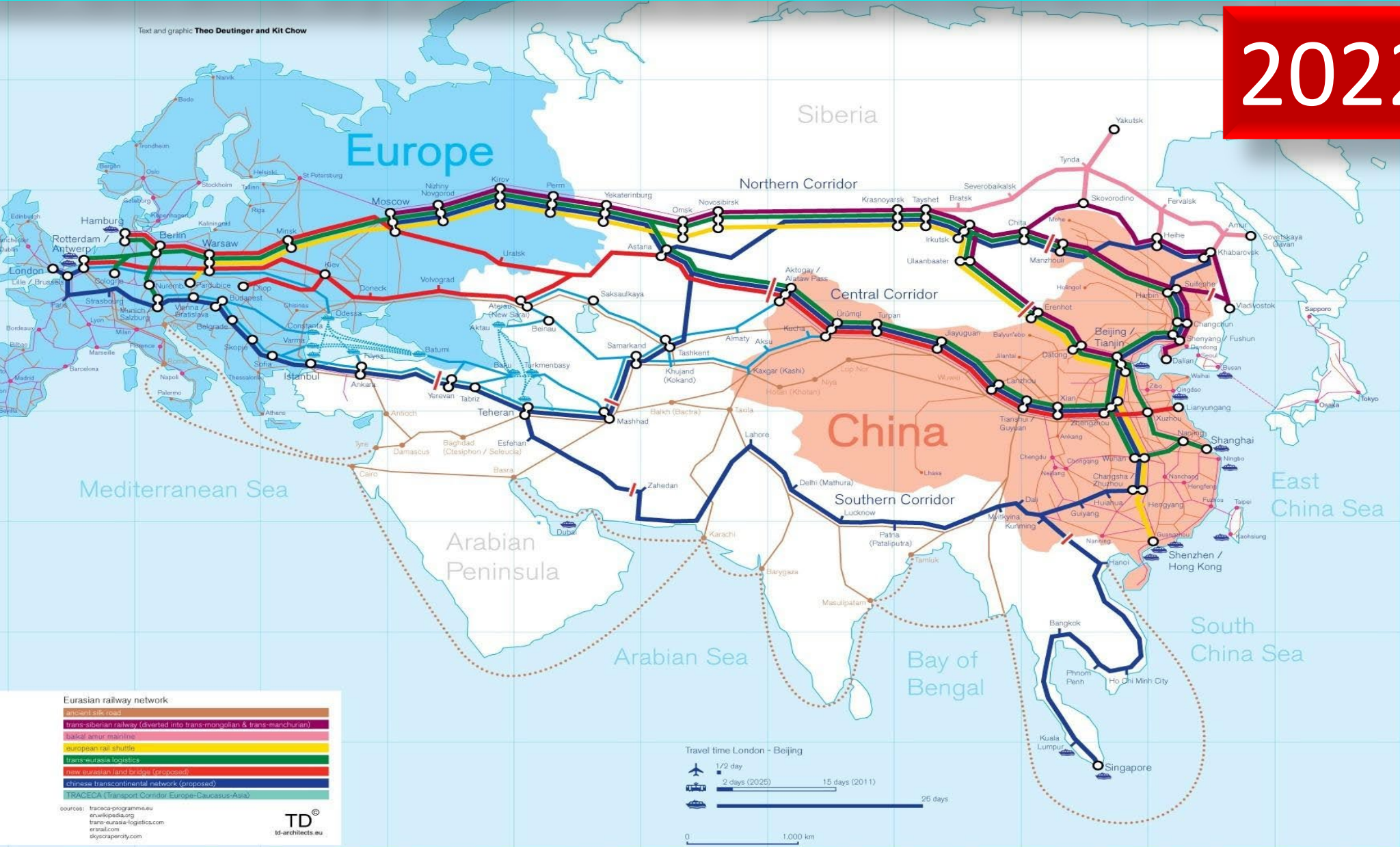
Text and graphic Theo Deutinger and Kit Chow

With China on the rise and Europe standing strong, Eurasia is rapidly becoming the world's new economic centre. Clogged seaports and a vulnerable air-transport system have shifted the focus to a network of railways – also known as the Iron Silk Road – intended to shrink today's supercontinent in the coming years. The project is aimed at shortening the time of bulk consumer-goods transport between China and Europe and, at the same time, unlock the cities at the heart of Eurasia. Thanks to their strategic position, creating better access to these cities will greatly facilitate the ability of their inhabitants to travel and do business throughout the vast area served by the new network.

The Northern Corridor of the Iron Silk Road largely follows the existing Trans-Siberian Railway, while the Central Corridor mainly traces the route of the ancient Silk Road to Beijing. The Southern Corridor faces political barriers but will eventually connect the highly populated countries of Turkey, Iran, Pakistan and India with Europe and China.

Pressing ahead enthusiastically with the Iron Silk Road project, China is not only establishing a high speed train network inside the country but also planning and building railways along the routes as far as Turkey (a contractual agreement was signed at the end of 2010), an operation that will turn Turkey into Europe's gatekeeper.

The Iron Silk Road will interlink about 75 per cent of the world's population in more than 40 countries in Asia and Europe. China hopes to complete its massive infrastructure project within ten years. It will include at least one line running 320 km/hour and will shorten land-transport time between London and Beijing from 15 to only two days – if Europe is willing to connect, that is.



Legend

- break-of-gauge
- rail gauge sizes: Standard (Europe, China, Turkey & Iran): 1435mm, South East Asia: 1000mm, Former Soviet Union: 1520mm, India & Pakistan: 1075mm
- Black Sea & Caspian Sea harbour
- world's top 15 busiest container ports
- important city on the ancient silk road
- important city on the new silk road

Eurasian railway network

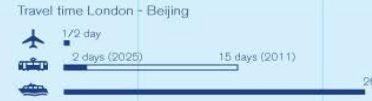
- ancient silk road
- trans-siberian railway (diverted into trans-mongolian & trans-manchurian)
- baikal amur mainline
- European rail shuttle
- trans-eurasia logistics
- new eurasian land bridge (proposed)
- chinese transcontinental network (proposed)
- TRAFSEA (Transport Corridor Europe-Caucasus-Asia)

major local railway network (Europe & China)

- high-speed railway network by 2020 (>250 km/h)
- existing major railway network

sources: traceca-programme.eu, en.wikipedia.org, trans-eurasia-logistics.com, erail.com, skyscrapercity.com

TD
td-architects.eu



A B C D E F G H J K L M N

Putin may be dead but the idea of compact (and safe) nuclear energy for long-distance rail transportation may be real, soon, in the 22nd century.

In 2013

suggestion with respect to one sub-factor
TRANSPORT OF GOODS ON US HIGHWAYS

SAFTI proposal was submitted to the US Department of Transportation. SAFTI proposal was created within the Industrial Internet Consortium (IIC). During 2013-2016, I was the founding Senior Vice President of the IIC. The Consortium was spearheaded by Dr Joseph Salvo of GE Global Research.

In 2013-2014 we proposed

SAFTI

Semi-Autonomous Freight Transportation Initiative

Proposal was submitted in 2015 but was ignored by the US Department of Transportation

Circa 1998 we (MIT Auto-ID Lab, MIT) created the next generation of RFID standards (EPC). We introduced the general concept of Internet of Things (IoT). The term IoT was coined by MIT Auto-ID Center. See “HIP” <https://dspace.mit.edu/handle/1721.1/123984>



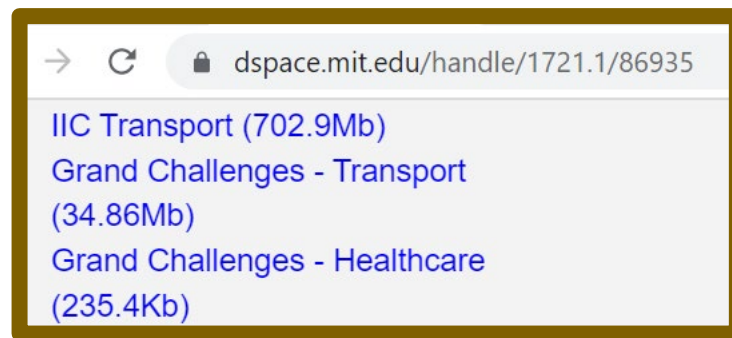
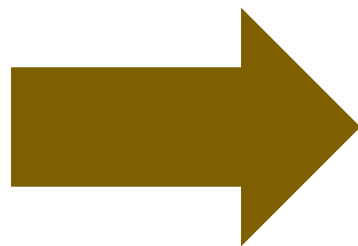
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Internet of Systems (IoS) - Economic Re-equilibration Catalyzed by Internet of Things (IoT)

Author(s)
Datta, Shoumen



→ ↻ dspace.mit.edu/handle/1721.1/86935

- [IIC Transport \(702.9Mb\)](#)
- [Grand Challenges - Transport \(34.86Mb\)](#)
- [Grand Challenges - Healthcare \(235.4Kb\)](#)



“IIC Transport” and “Grand Challenges - Transport” are zipped folders that contain materials relevant to the ideas and proposal for SAFTI. Download from the MIT Library – please use this URL: <https://dspace.mit.edu/handle/1721.1/86935>

SAFTI proposal was submitted to the US Department of Transportation. SAFTI proposal was created within the Industrial Internet Consortium (IIC). During 2013-2016, I was the founding Senior Vice President of the IIC. The Consortium was spearheaded by Dr Joseph Salvo of GE Global Research.

SAFTI

A simple idea ?

Semi-Autonomous “remote supervision by wire” proposes that goods vehicles may travel autonomously on US highways from point A to point B where both points are highway locations in non-urban zones. US highways are generally well maintained, often well marked (road markings) and low risk due to unidirectional travel. SAFTI enables us to avoid urban congestion (collision avoidance). After loading, Driver X (local driver, stays at home, close to A) drives vehicle to point A on the highway and enables SAFTI operation. Vehicle arrives at point B on the highway. Driver Y (a local driver, stays at home, close to B) disables SAFTI. Drives vehicle to warehouse or DC in an urban or semi-urban location. SAFTI reduces driver burn-out on long stretches.

SAFTI

PRESENTATION

is in a separate document marked "PART-TWO"

Download "PART-TWO" from the MIT Library

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Additional **Curated** Information
is available from the MIT Library
marked as “PART-ZERO”

ZIPPED FOLDER “PART-ZERO” in the MIT Library

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Reality Check

Homelessness is up 10% in San Diego County, LA, CA.



www.latimes.com/california/story/2022-05-19/despite-more-shelters-outreach-programs-homelessness-on-rise-in-san-diego

Los Angeles Times

Location	2020 Total	2022 Total	% Total change
Alpine (Crest-Dehesa)	1	1	0
Carlsbad	148	118	-20.3%
Chula Vista (Sweetwater)	330	309	-6.4%
Coronado	16	1	-93.8%
El Cajon	775	1,308	+68.8%
Encinitas (San Deiguito, Solana Beach & Del Mar)	65	113	+73.8%
Escondido (NC Metro & Hidden Meadows)	447	354	-20.8%
Fallbrook	51	25	-51.0%
Imperial Beach	16	25	+56.3%
La Mesa	52	53	+1.9%
Lakeside	24	63	+162.5%
Lemon Grove	18	31	+72.2%
National City	125	158	+26.4%
Oceanside	408	514	+26.0%
Poway	15	23	+53.3%
Ramona	20	21	+5.0%
San Diego	4,870	4,801	-1.4%
San Marcos	8	12	+50.0%
Santee	25	147	+488.0%
Spring Valley (Casa de Oro)	97	60	-38.1%
Vista (Bonsall)	100	117	+17.0%
Unincorporated	27	173	+540.7%
Total	7,638	8,427	+10.3%



"Sometimes our fate
resembles a fruit tree in
winter. Who would
think that those
branches would turn
green again and
blossom?" ~ Johann
Wolfgang von Goethe

THANK YOU !!

Shoumen Datta

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