

Industry 4.0 Exceler8 and The Digital Supply Chain

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LATAM Supply Chain Operations



HP Today

- Fortune 100 company
- \$48.2B revenue in FY16
- 250K+ channel partners
- 18K+ patents
- Operations in 170 countries
- ~50,000 employees
- Fortune Most Admired #7 in technology

Market Share Q1'17

Print & PC leadership



HP's Personal Computing
rank #1 WW



HP ships 1.7 PCs
every second



HP's Printing
rank #1 WW
(ink + laser)



HP ships 1 printer
every second



Powering 430
of the Global Fortune
500 companies

Brazil - Integrated E2E Manufacturing Operation

flex Industrial Park

Top Level Mfg

Ink and Laser Hardware Mfg
Personal Systems Mfg
Reman/Reconfig

PCBA Mfg

Multi Client PCBA Lines
SMD & Wave Soldering
Robotic & Automated Process
In Circuit & Functional Testing
Automated Optical Inspection
X-Ray

FIT

RFID Lab
Customization
Eng'g Services
Mat'l's Qualification

Smart Hub

Flex Multi Client Model
HP Distribution Center
Logistics Services
Co-Location

Supplies PCC Ops

Toners & Ink Supplies

Bonded Warehouse

Recycling Ops

Closed loop PCR Material
Circular Economy

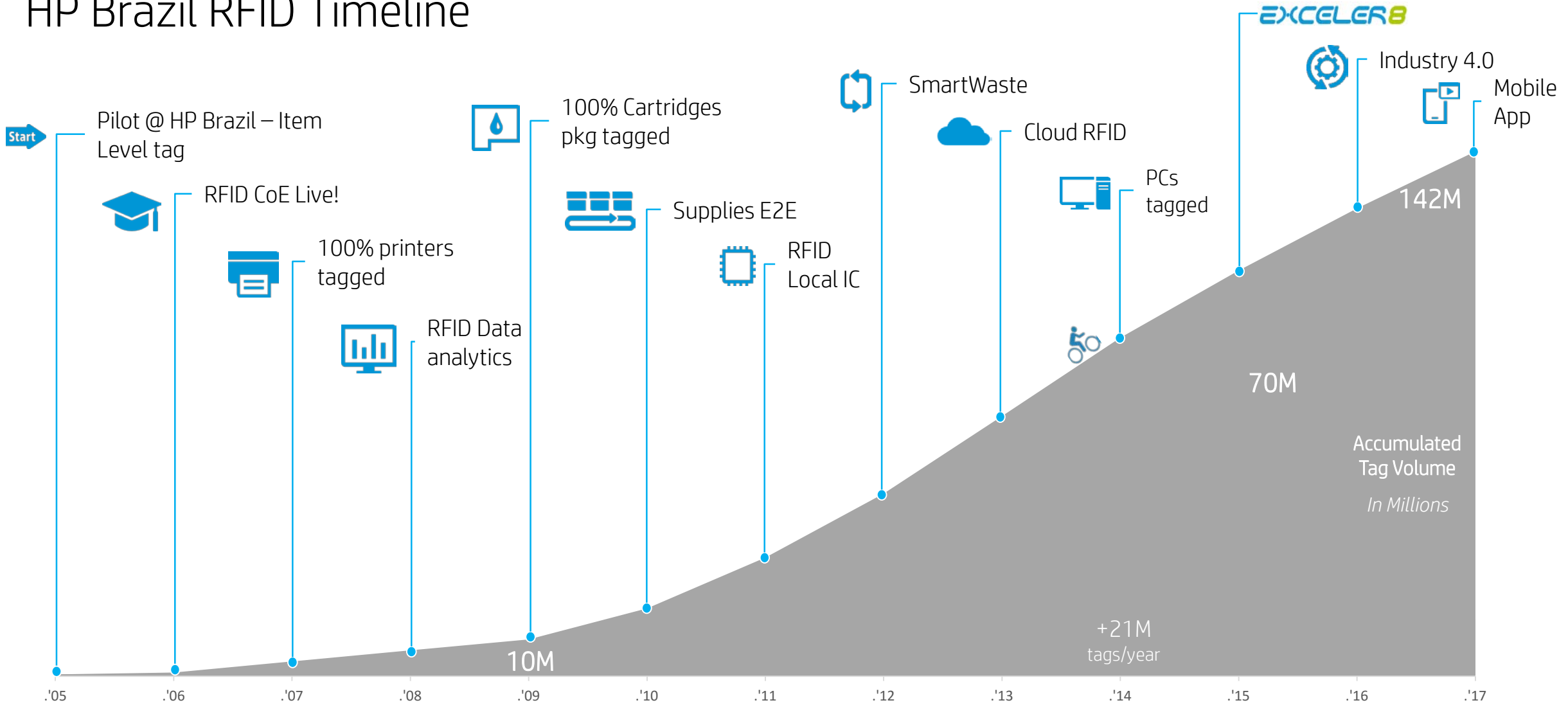


A photograph of two children, a girl on the left and a boy on the right, looking at a digital display. The girl is wearing a light blue hoodie and a purple and white striped shirt. The boy is wearing a blue hoodie and a plaid shirt. They are both looking intently at the screen, which shows some colorful graphics. The background is slightly blurred, suggesting an indoor setting like a classroom or a museum.

HP RFID Experience

LATAM Supply Chain Operations

HP Brazil RFID Timeline



HP Brazil RFID in Numbers



+25M RFID tags consumed per year

+1000 SKUs tagged

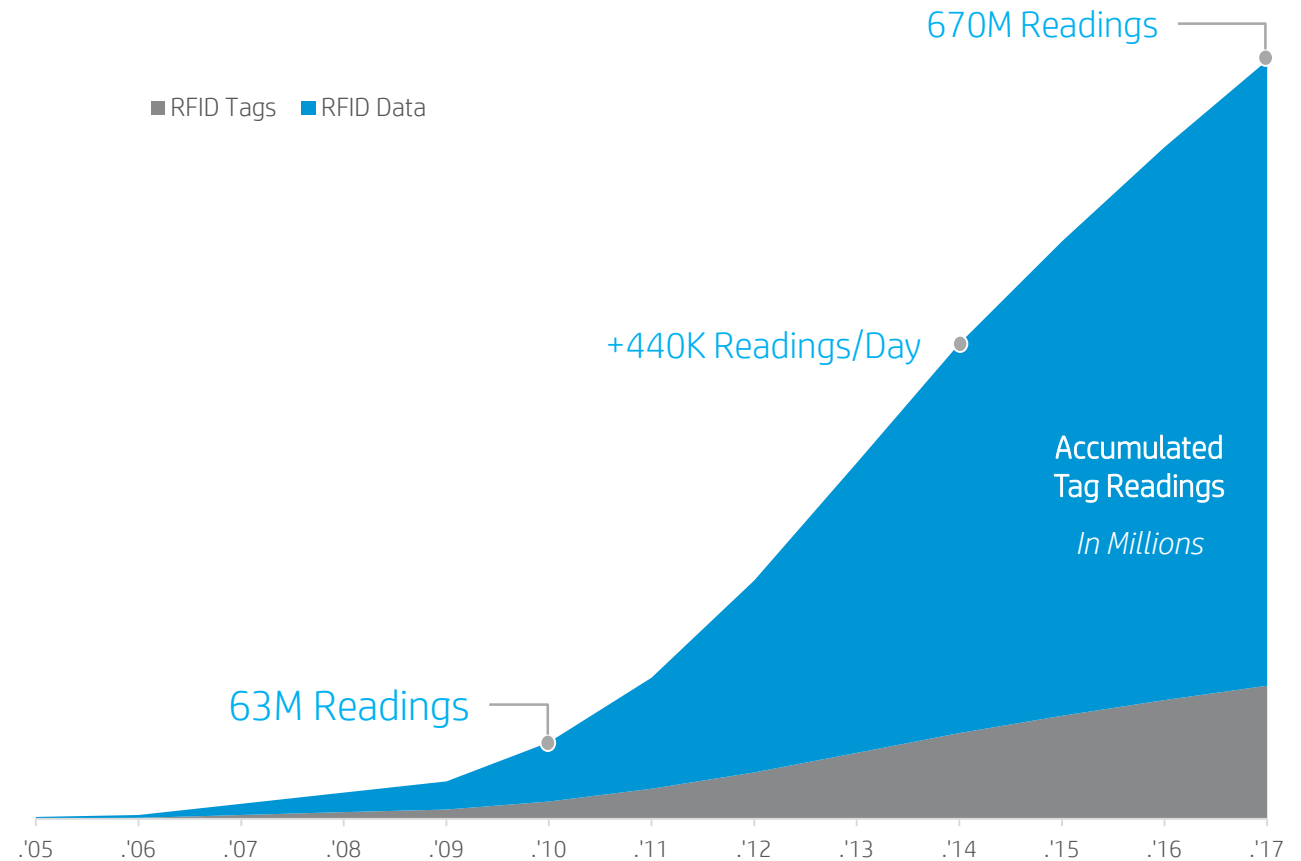
+400K RFID readings per day

+150K EPCs generated per day

+1TB per day

+100 RFID readers

+200 RFID antennas

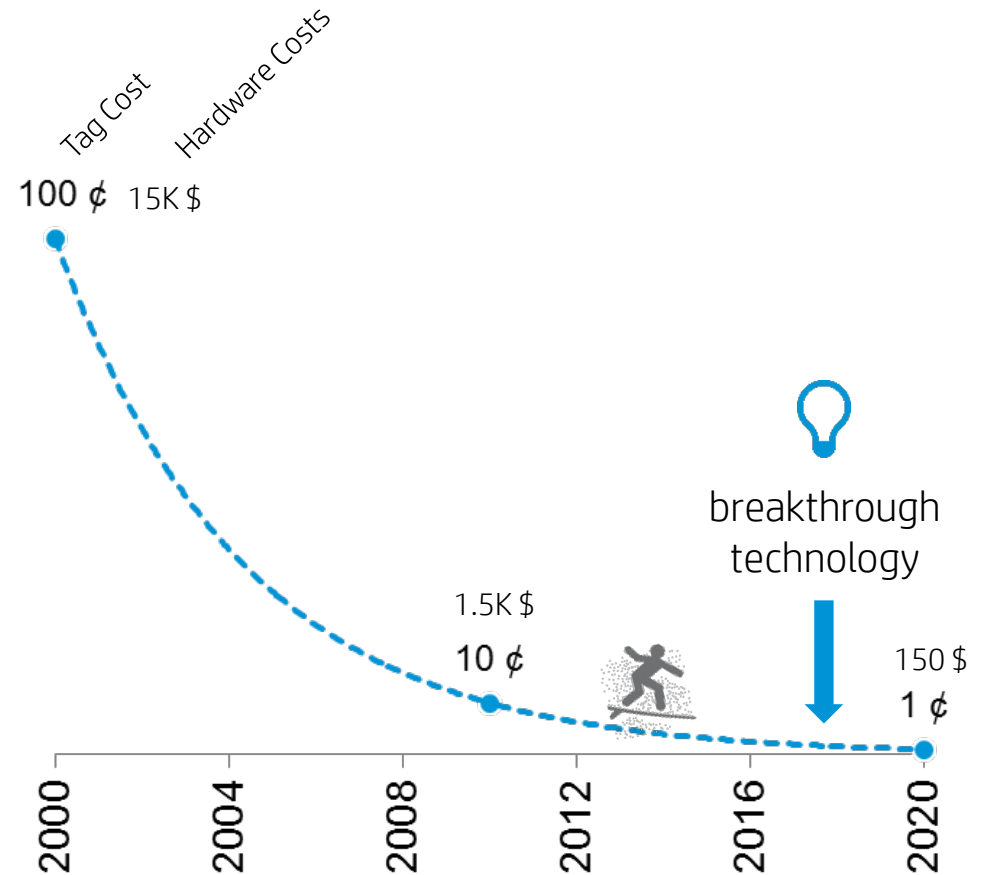


HP Brazil Awards

	<p>The Best RFID Implementation RFID Journal Awards - 2007</p>		<p>RFID Green Award RFID Journal Awards - 2012</p>	
		<p>XIV Prêmio Automação Inovação e Capacitação em RFID - 2011</p>		<p>XV Prêmio Automação Caso de Destaque - 2012 and 2016</p>
	<p>TOP 25 Brazilian Innovation Project Monitor Group / Exame Magazine</p>		<p>TOP 100 Best IT Projects of 2007 2007 InfoWorld 100</p>	
		<p>Technology Excellence SCOR Excellence Award - 2007</p>		<p>2008 PM 50 Award Winners Progressive Manufacturing - Innovation Mastery</p>
	<p>Innovation Award of Excellence APICS 2007</p>		<p>The Asset Tracking Forum Award ID World - 2013</p>	

RFID Cost Wave Challenge

- Adoption is largely limited by tag cost
- RFID scalability is limited by asset investments (servers, readers,...)
- Needs competitive ROI to be scalable
- Solutions:
 - ✓ Cloud based devices & Big Data
 - ✓ Tag cost: Organic IC; Printed Electronics
 - ✓ PCB/A embedded Tags
 - ✓ Low Cost Cloud PoE Reader

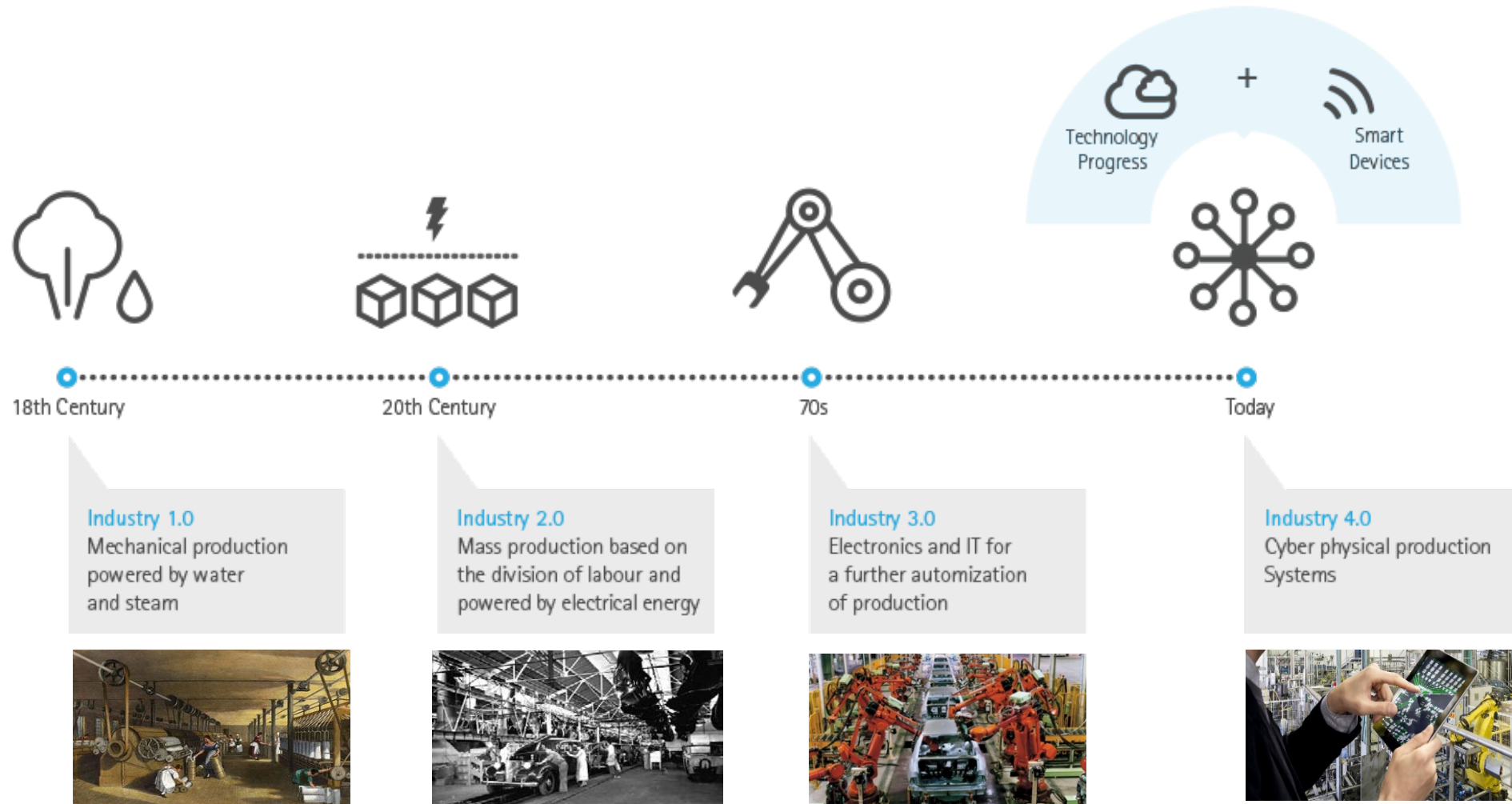


An aerial view of a city skyline at sunset. The sky is a mix of deep blue and bright yellow-orange, with scattered clouds. A full moon is visible in the upper left. The city is densely packed with skyscrapers, many of which are illuminated with warm lights. The Empire State Building is prominent in the center. The water of a harbor or bay is visible in the distance.

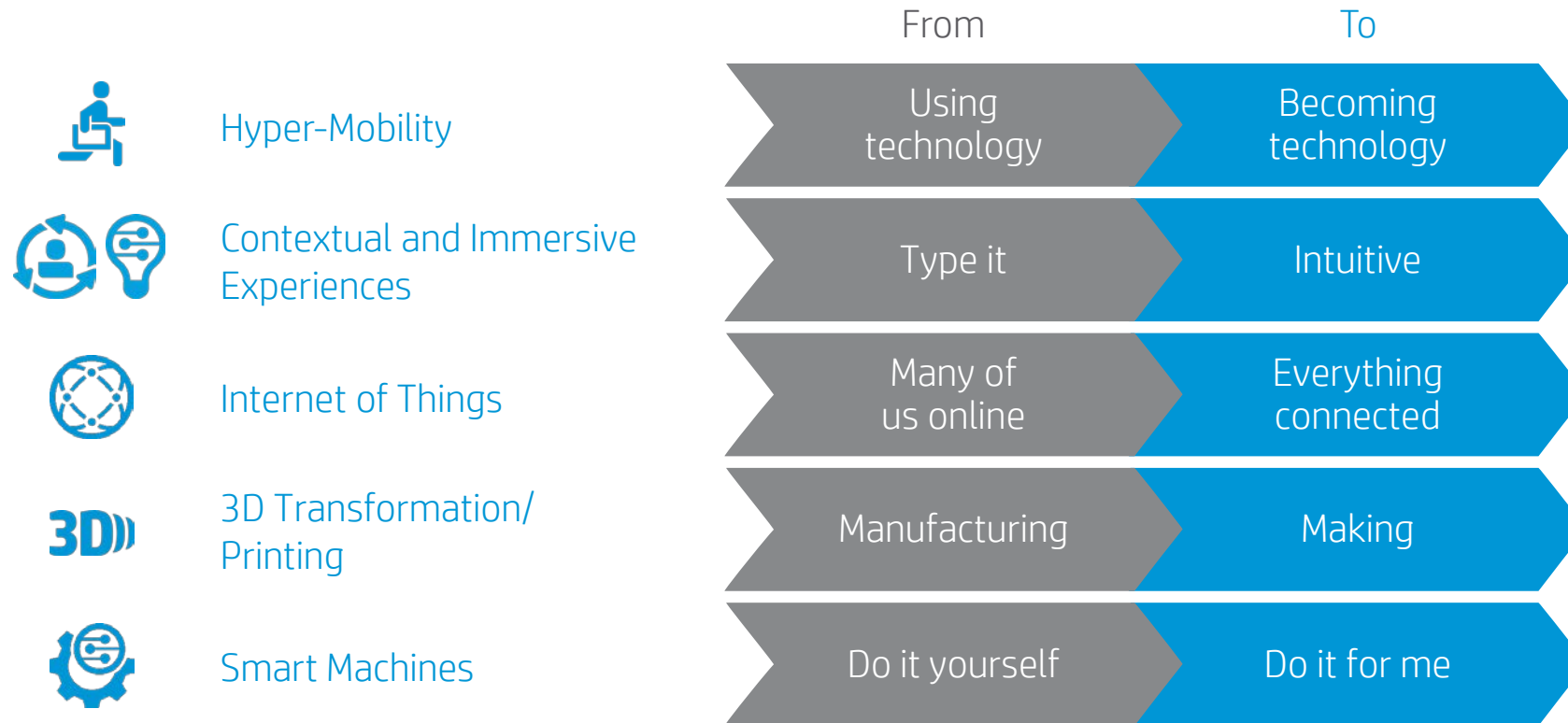
Supply Chain 4.0

LATAM Supply Chain Operations

Industry 4.0

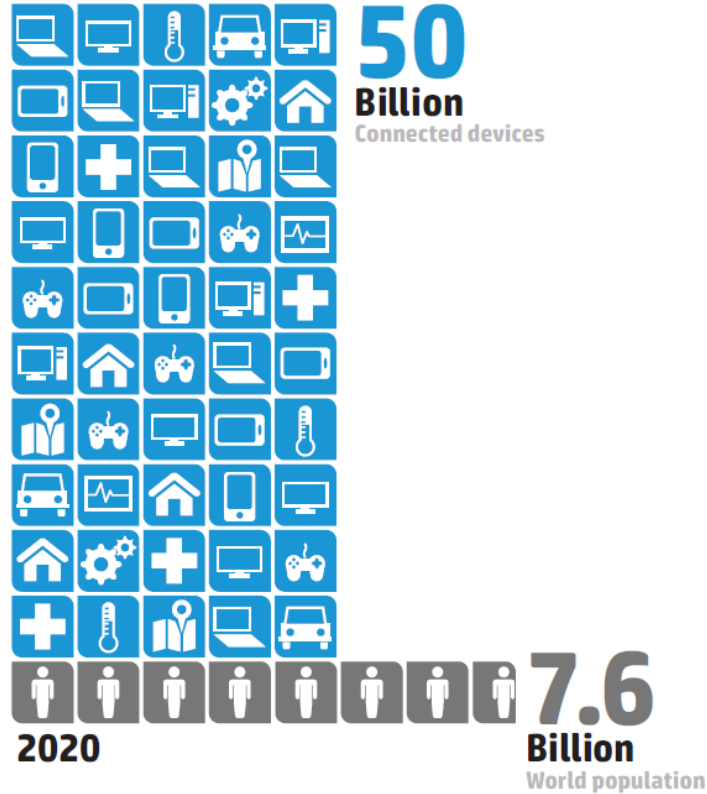
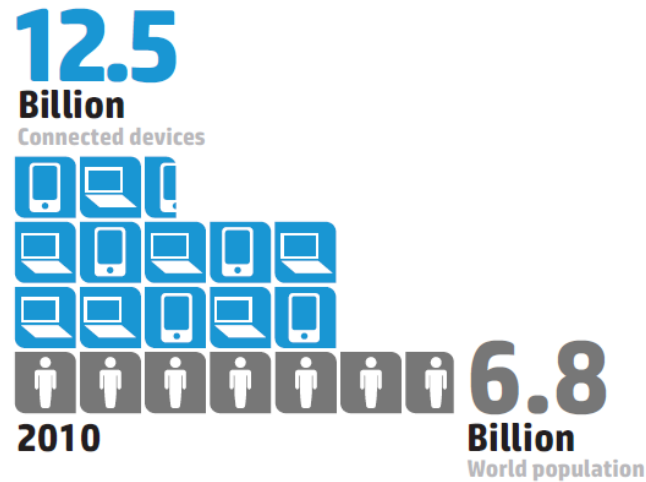


IoT - Technology Shift



....and Mobility

The number of connected devices will double every 5 years



More business opportunities



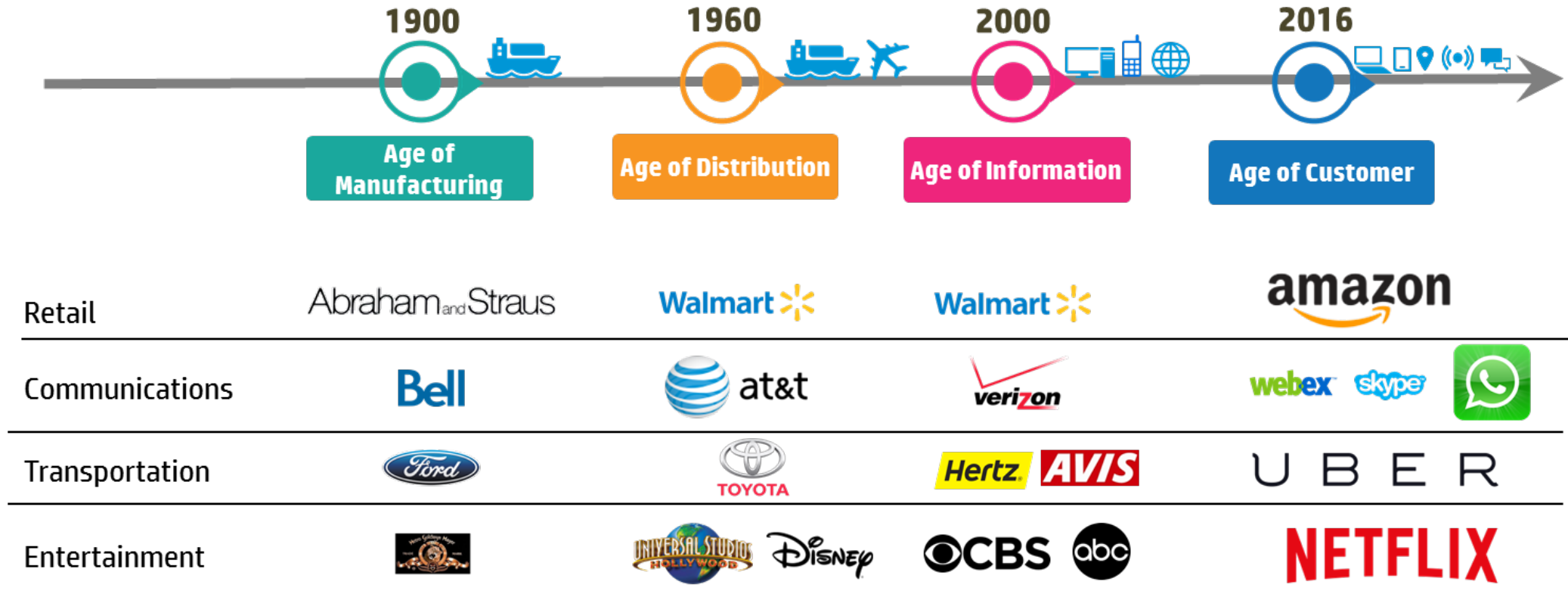
73% of global CIOs believe Mobility will impact their business more than the Internet²



Mobile retail purchases to exceed **\$707bn**³ by 2018.

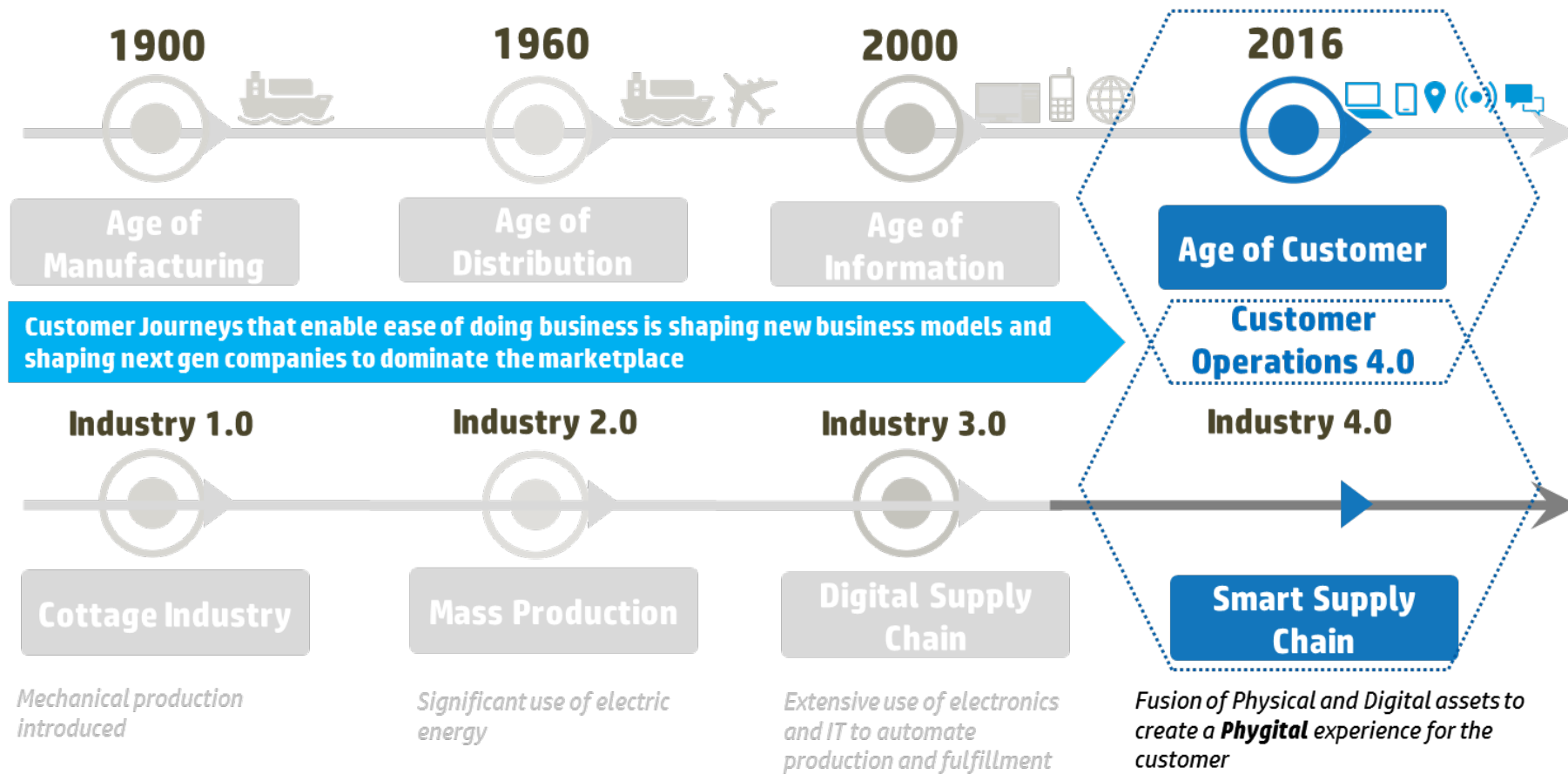
Sources: ¹ Cisco 'Internet of Things, July 2011 ² Accenture 2013 CIO Mobility Survey - ³ Juniper Research - Jan. 2014

The Age of Customer



Fundamentally, the products somehow remained similar, however the overall experience of shopping, delivery and usage by the customer has transformed the industry

The Age of Customer



HP - Industry 4.0 Outcome



Drop in Average cost of Sensors over last 10 years¹



60x Reduction in cost of processing over last 10 years¹



40x Reduction in cost of bandwidth over last 10 years¹



Big Data is doubling every 18 months²

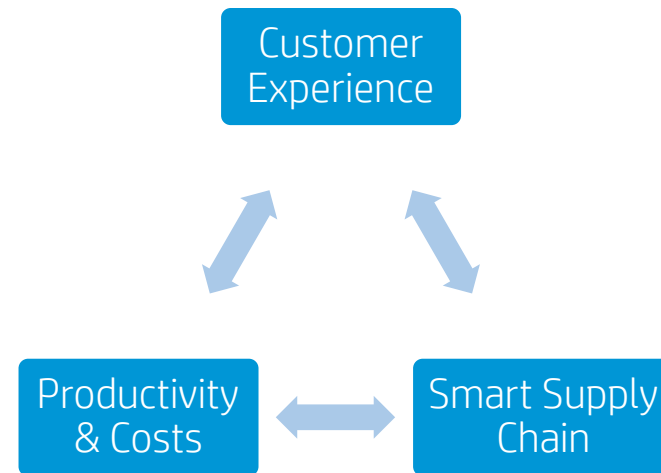


1.87 billion

Global Shipments of smartphones by 2018³



- Advanced Robotics
- Additive Manufacturing (3D printing)
- Augmented Reality
- Mass customizations
- Smaller factories, fast and agile
- Local/Regional Factories
- Productivity, Productivity!!



The Supply Chain at the Center of the Digital Enterprise

Digital Workplace	Digital Manufacturing	Digital Supply Chain	Digital Products and Services	Digital Customer and Channel
E-finance	Vertical integration	Integrated planning and execution	Digitally enhanced products	B2B2C customer interaction
Digital HR	Big data process optimization	Logistics visibility	Intelligent and connected products and solutions	Digital customer experience
Internal knowledge sharing	Predictive maintenance	Procurement 4.0	Automated and data-based services	Omnichannel sales integration
	Condition monitoring	Smart warehousing	Digital business models	Omnichannel marketing
	Augmented reality	Efficient spare parts management		Point-of-sale-driven replenishment
	Integrated digital engineering	Autonomous and B2C logistics		Customer lifetime value management
	Digital factory	Prescriptive supply chain analytics		
Digital Enablers: Technology, Processes, Organization				

Sources: PwC - Strategy& analysis - Industry 4.0 How digitization makes the supply chain more efficient, agile, and customer-focused

Exceler8 Solution

EXCELER8



Accelerating Industry 4.0

Brazil E2E Ecosystem






- LATAM supply chain Operation manages E2E Brazil Ecosystem.
- All supply chain nodes in one place. Perfect test ground for new supply chain developments

Business Opportunity

- Back and Front end seamless integration
 - Orders Prioritization
 - Increase response time
- Increase Productivity & Speed
 - Business Collaboration
 - Efficiency & Real time Visibility
- Faster Business Decision Making
 - Improve business performance
 - Increase Revenue and margins

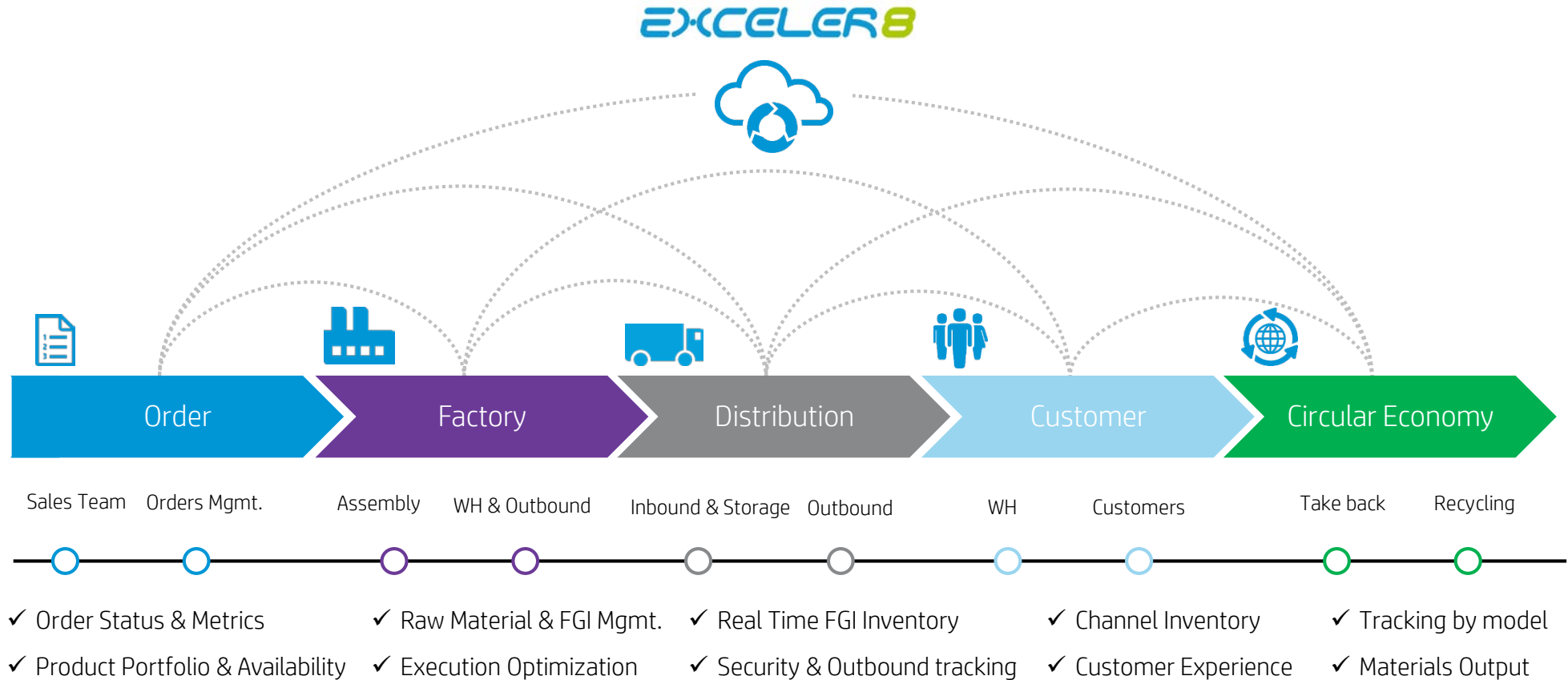


Exceler8 Solution

- Cloud & Big Data
 - Capture data from legacy systems
- “One-stop-shop” platform
 - Industry 4.0 operation benchmark
- Engagement apps
 - mobile interactions, faster engagement

Digital Supply Chain

Best Customer Experience and Optimized E2E Inventory



Exceler8 – PC/Web Platform



EXCELER8

Material Availability by SKU. **Live!**

PCs
Printers
Supplies

– Production Orders done. **Live!**
– **in progress**
– Production Orders done. Metrics **in progress**

Metrics done. **Live!**
Factory Cycle Time
POs Aging
Inventory



Exceler8 – PC/Web Platform



admin

EXCELER8. The first step to industry 4.0, an integrated system end to end.

LIVE TRACKING
Track different operations in real time.

BUSINESS REPORTS
Charts and reports to many areas.

Clevercheck
Smart planning based on stock and production.

Distribution Center
Comming or going, check all the inventory.

SOON

HP Maker
Smart sales based on stock and production.

Sintronics
New products with old materials.

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Choose the operation you want to track:
(filter by Purchase Order, Work Order, SKU and more..)

COMPUTING
HP Operation
Manufacturing

SUPPLIES
hp

PRINTERS

SOON

admin

TRACKING > COMPUTING OPERATION

ETS Filter: [] SKU: [] Customer: [] PO Number: [] Apply Filters [] Reset Filters []

31
WAITING COMMIT

196
COMMITTED

79
TO BE INVOICED

106
INVOICED

412 ORDERS **24.634** UNITS

SEARCH [] Show 10 entries []

HP PO DATE	HP PO	SO	SKU	PL	FAMILY	LAST ETS	TOTAL	PENDING	AGING	CUSTOMER	STAGE
11-Nov-2016	4700328424	124492	Z2G12LT#AC4	BPC	4005FF - ENZO	FGI OK	100	100	80	Pre-Build	TO BE INVO
11-Nov-2016	4700328393	124471	X5N44UC#AC4	BNB	640G2 - CIRCUS	25-Nov-2016	22	12	80	217061912-4100 ROW SERVICES DE DAOS	COMMITTED
17-Nov-2016	4700328699	124539	G0K53AV#038	BPC	7055FF - BATGRIL	FGI OK	192	3	74	APT 6603 STUDIO INFO-FCT	TO BE INVO
18-Nov-2016	4700328034	124502	Y0L2TEC#AC4	BNB	840G3 - CAESARS	FGI OK	50	0	67	217083820-HP FINANCIAL SERVICES BRASIL - FCT	INVOICED

admin

TRACKING > MANUFACTURING

ETS Filter: [] SKU: [] WO Number: [] PO Number: [] Apply Filters [] Reset Filters []

247
CHASING MATERIAL

5.857
SCHEDULING

179
MANUFACTURING

541
WAREHOUSE

6.824 ORDERS **432.615** UNITS

SEARCH [] Show 10 entries []

STATUS	STAGE	WORK ORDER	SKU	PL	FAMILY	LAST ETS	TOTAL	PENDING
●	MANUFACTURING	713606	L1XG1AW#958	BPC	705DM - WILIER	16-Jan-2017	173	173
●	MANUFACTURING	794900	L9K51LAR#AC4	WS	2240 - ABORIGENES	17-Dec-2016	10	10
●	MANUFACTURING	330319	XBQ30LT#AC4	BNB	240G5 - PITAGU	ETS not Available	2	2
●	MANUFACTURING	330320	XBQ28LT#AC4	BNB	240G5 - PITAGU	ETS not Available	2	2



Exceler8 – PC/Web Platform



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EXCELER8. The first step to industry 4.0, an integrated system end to end.

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APPS > REPORTS

What kind of report do you want?

(we are constantly working to add more reports)

Analyse Only Open PO's

Business Steps, Status, Aging, ETS Reschedule

Check If Production Is On Time

Based on ETS FIRST Commit

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APPS > REPORTS > OPEN PO'S

Open PO's

OPEN ORDERS: 402 TOTAL UNITS: 685.594

DATA VIEWING: PO Qty • PO % • Units

BUSINESS STEP

STATUS

AGING

ETS RESCHEDULE (CHANGES)

ETS RESCHEDULE (DAYS)

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APPS > REPORTS > SHIP TO FIRST COMMIT

Ship to First Commit

• Last 6 Months • Last 6 Weeks • PO Qty • Items

Last 6 Weeks

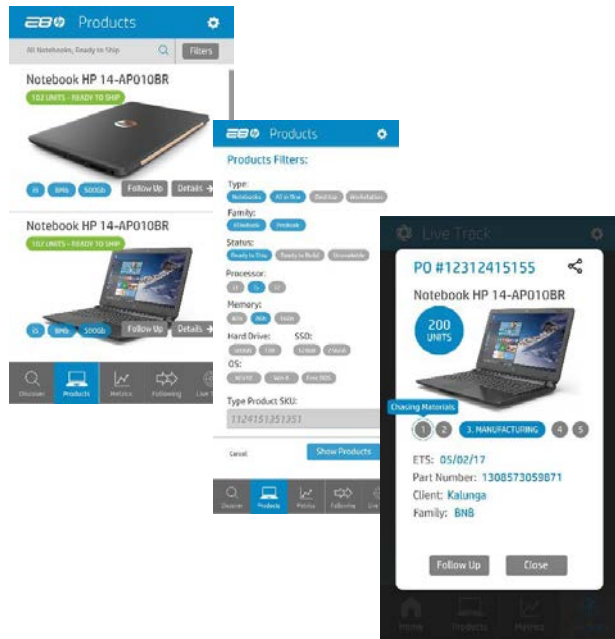
Status	PO	SKU	Total	First Commit	Release Date
🟢	4700331160	L1G75AUW014	22	18/02/2017	25/01/2017
🟢	4700331026	L1Q37AWP997	3	17/02/2017	17/01/2017
🟢	4700330767	MGE07AWH002	7	17/02/2017	19/01/2017
🟢	4700331355	L9K50LTBA04	1	17/02/2017	24/01/2017
🟢	4700331384	L9K14L1BA04	3	17/02/2017	20/01/2017



Exceler8 - Mobile app

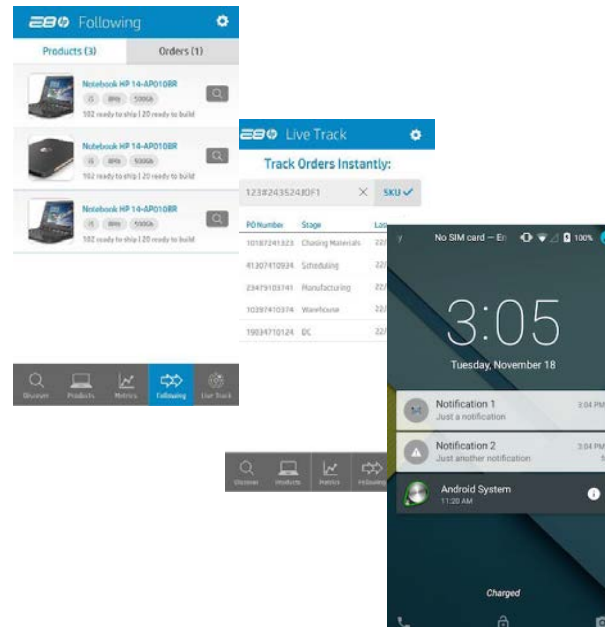
Portfolio Offering

Easy search and visibility about what we have



Orders tracking

Live Tracking and notifications @favorites



Execution Reports

Executive Metrics for Latin America HQ



Summary

What we have today

- E2E Ecosystem visibility (back and front end)
- Mobile app for front end data
- Users across 3 different companies
- Live tracking System powered by RFID
- Industry 4.0 with Dynamic Demand Planning based on inventory

Next Steps

- Mobile app LA deployment
- Distribution Center outbound with SNs tracking and Geo location
- Daily Inventory Control across all regions
- Smart machines – Availability!!



keep reinventing