

RFID
JOURNAL
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20 **YRS**
2003 - 2022

MAY 17 - 19, 2022
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RFID/IoT for Warehouse and Inventory Management

Linking RFID/IoT to Inventory-Management Best Practices

Presenter: Samad Rostampour

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With the **collaboration of Ygal Bendavid**

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Standard rates end
5/13/22 – Register
now!

2

SPEAKERS

KEYNOTES

INDUSTRY TRACKS

BATTERY-FREE
BLUETOOTH TAGGING
WORKSHOP

FAST-TRACK RFID
TRAINING

CO-LOCATED EVENTS

2022 PRESENTATIONS

35

MINUTE(S)

40

SECOND(S)

REGISTER!

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Save

d Pricing

ENDING 5/13!

REGISTER TODAY!

HEALTH & SAFETY

AGENDA AT A GLANCE

2022 BROCHURE

Register Now

Exhibit /Inquire

Today's Program

- 10:45 AM - 11:30 AM: RFID/IoT in Warehouse & Inventory Management Basics
- **11:30 AM - 12:15 PM : Linking RFID to Inventory-Management Best Practices**
- 12:15 -13h00 PM : Lunch time
- 1:00 PM - 1:45 PM: Targeting the Correct RFID Technology for the Right Project
- 1:45 PM - 2:30 PM : Key Steps in Building an Inventory-Management RFID Solution:
Build Your Own RFID Portal
- 2:30 -2h45 PM : Break time
- 2:45 PM - 3:30 PM: Designing Your RFID Solution
- 3:30 PM - 4:15 PM: Building Your RFID Business Case

Your Presenter

Samad Rostampour

- Professor @ Computer Science Department, Vanier College, Montreal
- IT Director, IoT lab., UQAM University, Montreal(<https://labiot.uqam.ca/>)
- Judge @RFID Journal Award



Objective of the presentation

- **Understand how RFID/IoT ties in with warehouse inventory & SCM**
- Identify how RFID facilitates warehouse best practices
- Position RFID as an enabler of more efficient W&IM



What is Inventory Management

- ***Inventory*** is the stored accumulation of transformed resources (e.g. materials, information, and money)
- ***Inventory management*** is the activity of planning and controlling accumulation of the resources that flow through supply networks, operations and processes

Slack et al., Operations and Process Management, Principles and practice for strategic impact

7

So... RFID's goal is to
reduce inventory?

Inventory Management is finding the right stock balance

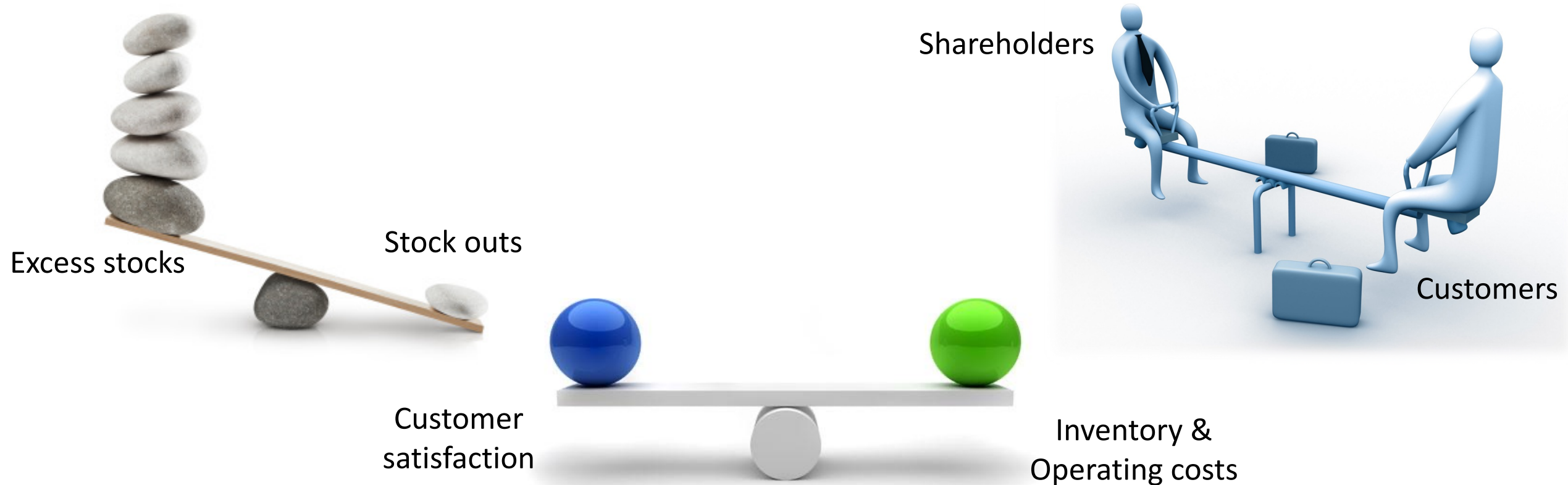


Stock outs = ☹ customer + losses



Excess stocks = costs + waste

Inventory Management is finding a balance between extremes



...but there is a cost to inventory

- Ties up money (working capital)
- Can become obsolete
- Can be damaged or deteriorate over time
- Can be lost...or expensive to retrieve
- Can take up excessive storage space (vs. its value)
- Can involve high admin. & insurance costs
- Etc.

Inventory Management & RFID

The underlying objective of inventory management is to

- Reduce inventory costs
- Reduce operating costs
- Increase customer service
- Increase revenues!

SO... HOW CAN RFID HELP?



What Managers Want...**VALUE**

- They want a **solution to a problem**
- They want **information** they can **use to improve** the way they do business
- They don't care where the information comes from or how it was gathered since it is **accurate**
- They want **visibility** across the warehouse and the SC
- They want **value!**
- They don't want to buy (RFID) technology

**A solution that can deliver
benefits organizations can't
achieve otherwise...**

What Managers Want...Visibility

- **Capture** data (events)
- **Translate** data into information's
- **Access** this information, accurate, precise, updated
- **Analyze** this information (actual and predictive)
- Take **event-based decisions** based on this information (*actionnable insights*)
- **Improve** supply chain business process performance

RFID as an enabler & Visibility is a mean to take better decisions

What is Visibility?

Visibility on events dimensions



RFID Event

EPC (SGTIN) :ACAD00000000000010002543

EPC (SGTIN) :ACAD00000000000010002544

EPC (SGTIN) :ACAD00000000000010002545

...

EPCs (SSCC) :ACAD00000000000010001212

2022-05-17 13:55:00

EPC (GLN): ACAD00000000000010001234

Receiving

From data capture to information management

- From (inventory) data capture to (inventory) information management
- With RFID data, it's not just what you know; it's what you do with what you know

– What: 00098700...
– When: 10h30 AM
– Where: (X, Y, Z)
– Why: Shipping to XX
– How: 17 deg. Cel



What Managers Want...

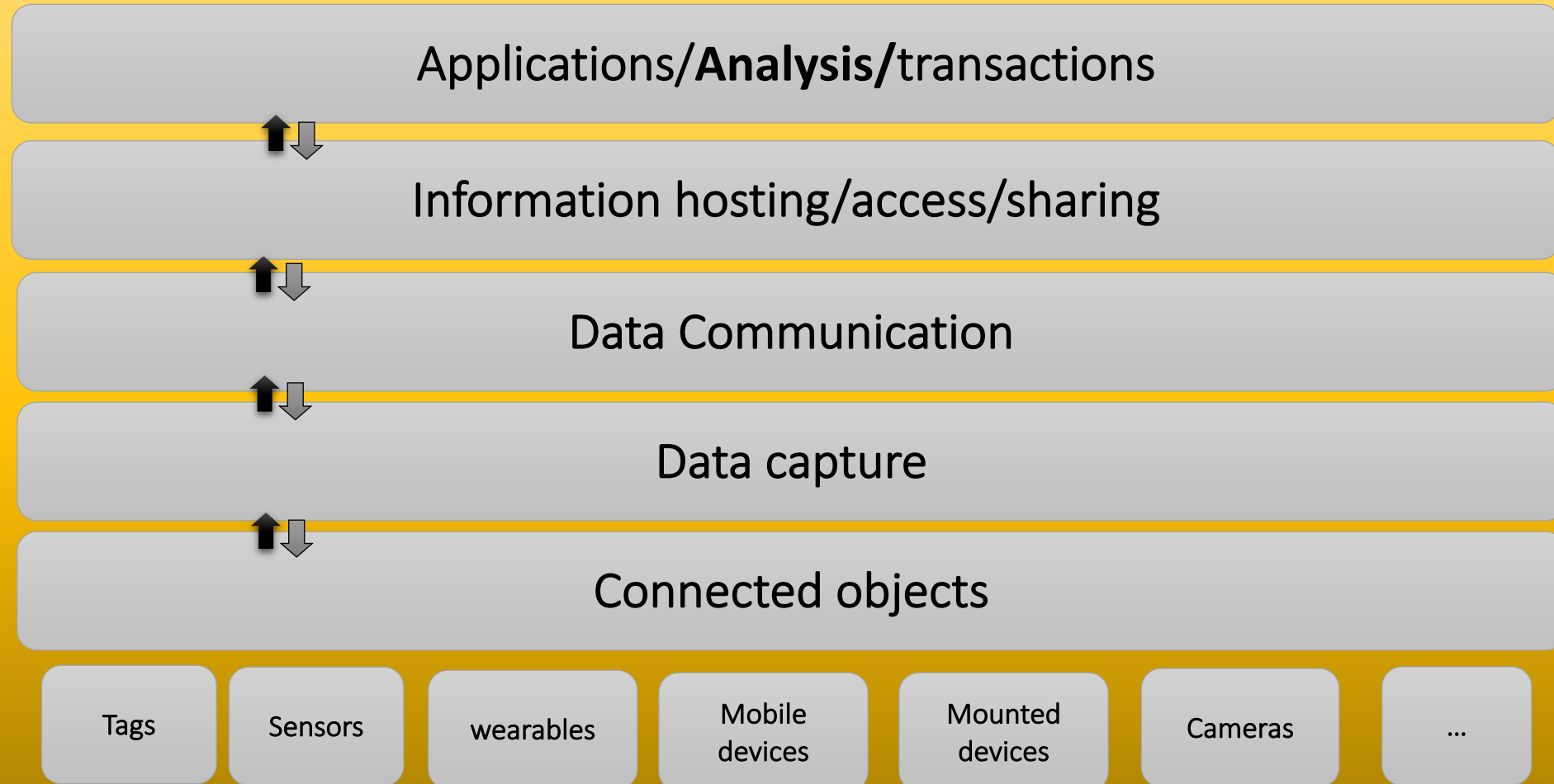
A fully integrated working solution



What Managers hate...



Linking RFID/IoT to W&IM



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Warehouse management design

A solution for your specific needs...



**What problems do you intend
to resolve in your
warehouse?
What products do you need
to track?**

Warehouse Mgt. best practices...

& RFID potential application

- Obtain ASN for inbound deliveries
- Reject unplanned receipts
- Directly enter receipt into computers
- Put away items immediately after receipt
- Eliminate the receiving function (direct delivery to prod.)
- Repackage incoming items into increments ordered by customers
- Assign docks on the minimum warehouse travel time
- etc

See: Bragg, S. Inventory best practices, 2004

WMS applications & RFID

Excel Fichier Édition Affichage Insertion Format Outils Données Fenêtre Aide

2017-WMS-Enterprise-RFP-Template.xlsx

Rechercher dans la feuille

Accueil Mise en page Tableaux Graphiques SmartArt Formules Données Révision

Modifier Police Arial 16 Texte Normal 19 Normal 2 Normal 2.2 Normal 21 Normal 21.2 Normal 22 Normal 22.2

Coller Effacer G I S Renvoyer à la ligne automatiquement Fusionner Mise en forme conditionnelle

A184 5.1 User-configurable rotation rules

	A	B	C	D	E
	Functionality	R: Required D: Desired F: Future	S: Standard Configuration M: Source Code Mod N: Not possible	If (M) is required, what is the cost?	Comments
1					
2	Yard & Appointments				
3	1. Ability to schedule inbound and outbound docks				
4	2. Ability to manage electronic appointment requests				
5	3. Ability to allow carriers to set their own appointments through a portal				
6	4. Manage dock door assignments and exceptions (i.e., late)				
7	5. Support for RF/PC yard gate check in/out				
8	6. Ability to direct yard moves via RF or paper				
9	7. Ability for system to direct yard tasks by priority and/or proximity				
10	8. Ability to track demurrage/detention by owner or carrier				
11	9. Configurable rules for assigning dock doors and yard locations				
12	10. Trailer visibility				
13	10.1 Trailer position in yard or dock				
14	10.2 Trailer contents				
15	10.3 Pending trailer moves				
16	11. Alerts to yard activities				
17	12. Visibility and reporting of full history of a trailer from gate check-in to it leaving the yard				
18	13. Visibility and reporting on all yard activities (i.e., driver tasks)				
19	Receiving				
20	1. RF Receiving Types				
21	1.1 Receive against Purchase Orders, Transfer Orders or other inbound order types				
22	1.2 ASN receiving				
23	1.3 Shipment (Load)-based receiving				
24	1.3.1 Define expected shipment contents before receiving				
25	1.3.2 Shipment reconciliation				
26	1.4 Blind receipts (Receipt without PO)				
27	1.5 Unknown receipts (no item or PO available)				
28	1.6 Receive returns w/out a disposition				
29	1.7 Ability to determine if returns should be received into inventory				
30	1.8 Receive returns with a disposition				
31	1.9 Receive transfers without host originated orders				
32	1.10 Production Receipts				

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RFID as an enabler of more efficient Inventory Management

- Provide information to support-automate key decisions (e.g. order quantity)
- Ensure better inventory management (e.g. FIFO, inventory turnover, product location, product condition, etc.)
- Facilitate physical counting (from hand-held reader to passive RTLS)
- Facilitate reordering approaches
- Reduce the impact of probabilistic demand (real time information on the supply chain)
- ...

An example - Automated replenishment

Low value (Medical supplies)



Source: Tecsys/Logi-D – case of Concord Hospital

An example - Automated replenishment

Bixis – same concept different context



An example - Automated replenishment

Suchis - – same concept different context



Source: <https://www.pre-motion.nl/lopende-band-food-serveren/sushiband-restaurant>

An example - Automated replenishment

Martini Smart Cube- — same concept different context

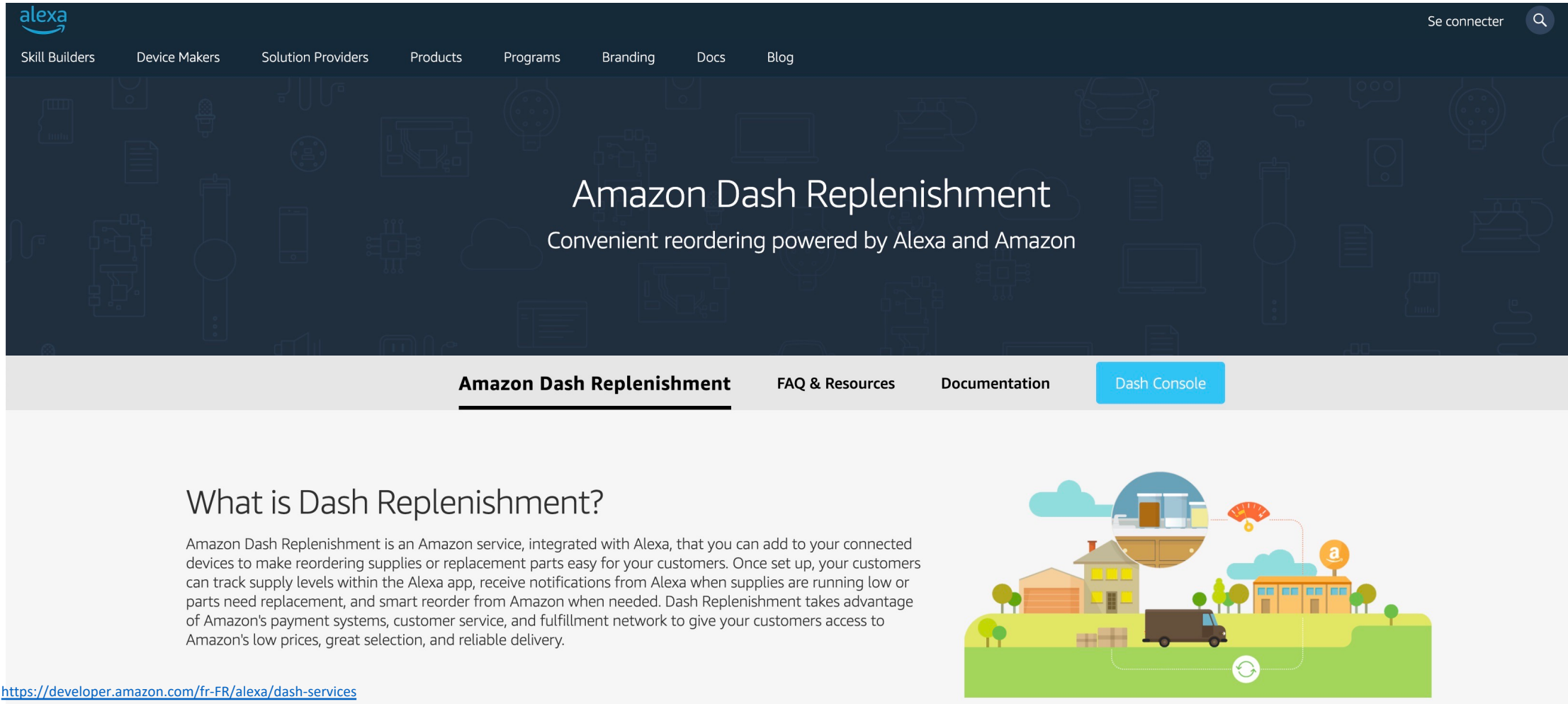
- Intelligent ice cube containing a Bluetooth beacon and sensor that could not only cool their beverage, but also order the next one for them»



<http://www.rfidjournal.com/articles/view?15044>

An example - Automated replenishment

Amazon Dash



The screenshot shows the Amazon Dash Replenishment developer page. At the top is the Alexa logo and a navigation bar with links: Skill Builders, Device Makers, Solution Providers, Products, Programs, Branding, Docs, and Blog. A 'Se connecter' link and a search icon are in the top right. The main header area has the title 'Amazon Dash Replenishment' and the subtitle 'Convenient reordering powered by Alexa and Amazon'. Below this is a navigation bar with links: Amazon Dash Replenishment (underlined), FAQ & Resources, Documentation, and a blue 'Dash Console' button. The main content area starts with the heading 'What is Dash Replenishment?' followed by a paragraph: 'Amazon Dash Replenishment is an Amazon service, integrated with Alexa, that you can add to your connected devices to make reordering supplies or replacement parts easy for your customers. Once set up, your customers can track supply levels within the Alexa app, receive notifications from Alexa when supplies are running low or parts need replacement, and smart reorder from Amazon when needed. Dash Replenishment takes advantage of Amazon's payment systems, customer service, and fulfillment network to give your customers access to Amazon's low prices, great selection, and reliable delivery.' To the right of the text is an illustration of a house with a delivery truck and a circular inset showing a shelf with various household items.

alexia

Se connecter

Skill Builders Device Makers Solution Providers Products Programs Branding Docs Blog

Amazon Dash Replenishment

Convenient reordering powered by Alexa and Amazon

Amazon Dash Replenishment FAQ & Resources Documentation **Dash Console**

What is Dash Replenishment?

Amazon Dash Replenishment is an Amazon service, integrated with Alexa, that you can add to your connected devices to make reordering supplies or replacement parts easy for your customers. Once set up, your customers can track supply levels within the Alexa app, receive notifications from Alexa when supplies are running low or parts need replacement, and smart reorder from Amazon when needed. Dash Replenishment takes advantage of Amazon's payment systems, customer service, and fulfillment network to give your customers access to Amazon's low prices, great selection, and reliable delivery.



<https://developer.amazon.com/fr-FR/alexa/dash-services>

An example - Automated replenishment

Amazon Dash



	Level sensor	Usage sensor	Level Usage sensor
Use When	You know the total value contained in the device	You know the relative consumed value	You don't know the total value or a relative consumed value
Example Device	Printer	Coffee machine, washing machine, dishwasher	Robovacuum, air purifier
Example Consumable	Ink, toner	Coffee pods, detergent, tabs	Brushes, filters
Example Sensor Data	50%, 100g, 2.5L left	1 unit, 1 oz, 30 ml used	-20% lifespan used
Description	This device type stores the consumable internally and measure the remaining amount	This device type only knows when a certain amount is consumed	This device type stores the consumable internally but doesn't know the current level, only the delta of lifespan used

<https://developer.amazon.com/fr/docs/dash/dash-replenishment-overview.html#understanding-device-sensors-inventorysensors>

Any opportunities?



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Inventory / Warehouse Management

How Riachuelo Improves Its Inventory Management

Mar 30, 2022 ▸ by Edson Perin

Stefanini Group's Mozaiko RFID solution enables the company to monitor the quantities and locations of products in real time throughout the supply chain.



[Which one do you prefer](#)

THANK YOU

