

# RFID

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## JOURNAL

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# Digital Product Passport Reinforces the Power of Smart Packaging

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# About this Session

# Digital Product Passport (DPP)

- European Union (EU) is running a Circular Economy plan
- The plan is based on the Digital Product Passport (DPP)
  - Created in 2020, DPP has a timeline for adapting companies
  - All products to be sold in Europe will need a DPP
    - Circular Economy status will be mandatory to all production lines
    - Only a few sectors are exempted -- for now
      - Food
      - Feed
      - Medicinal products

# In this Session...

- Learn why DPP reinforces the power of smart packaging
- What is DPP and its goals
- What is the role of Circular Economy on DPP
- How DPP changes products to be sold in the European Union
  - The European Union plan impacts the whole world
- Why smart packaging and smart supply chains are key to DPP
- What is the role played by RFID on DPP

# What is DPP

# Digital Product Passport (DPP) 1/2

- DPP is a policy instrument from the European Union
  - Aims to support the transition to a Circular Economy
  - European Union plan
    - Starts NOW!
    - Ends by 2050, achieving all targets
  - Provides information on sustainability of products and supply chains
  - A set of data to enable circular products and circular business models
  - Creates consistent digital representation of a physical product
- The European Union plan will impact the whole world

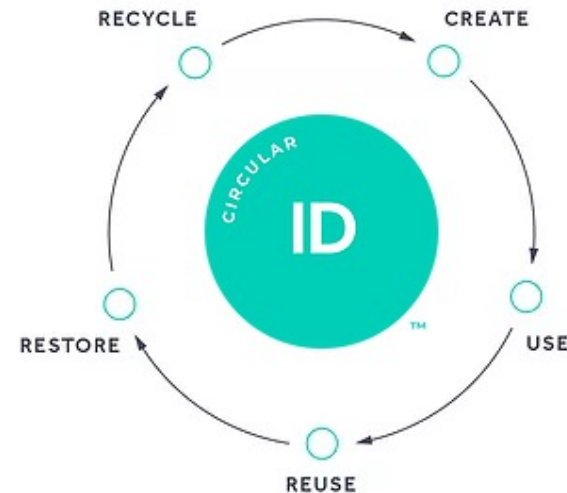
# Digital Product Passport (DPP) 2/2

- DPP aims to impact in a positive way
  - Businesses
  - Consumers
  - Regulators
- DPP impacts all ecosystem
  - Verify and manage products sustainability
  - Extend products lifetimes
  - Optimize products use
  - Comply with legal obligations

# Circular Economy by 2050

# Circular Economy Definition

- According to the European Union
  - Circular Economy is a system which maintains the value of products, materials and resources in the economy for as long as possible
  - Minimizes the generation of waste
  - Products are
    - Reused
    - Repaired
    - Remanufactured
    - Recycled



Source: World Economic Forum

# Circular Economy

- European Union aims a total transition to a circular economy
  - There is a timeline till 2050
  - It is one of the main building blocks of the European Green Deal
  - Outlines various measures and initiatives to support the circular transition
  - DPP is a key part of the Circular Economy Action Plan (CEAP)
- Again!
  - The European Union plan will impact the whole world

# Back to DPP

# Digital Product Passport (DPP)

- Part of the Ecodesign for Sustainable Products Regulation
  - European Commission approved in March 2020
- DPP must be in at least three key markets by **2024!**
  - Textiles
  - Construction
  - Industrial and Electric Vehicle Batteries

And at least one other of the key value chains identified in the Circular Economy Action Plan (CEAP)

# How DPP changes products

# Opportunities & Threats 1/2

- The key to DPP process is to plan
  - It starts today
- Should begin with appointing someone to lead the initiative
  - Each company must have a Circular Economy or DPP team
  - Stakeholder groups need to consist of those responsible for
    - Procurement
    - Supply chain
    - Marketing

# Opportunities & Threats 2/2

- Relationship with suppliers must change
  - It must be assessed and taken to a different level
  - Requires for them to reveal the exact source of raw materials
  - DPP and transparency with suppliers are mandatory
  - Circular Economy is the final target
    - Verify and manage products sustainability
    - Extend products lifetimes
    - Optimize products use
    - Comply with legal obligations

# DPP Main Needs 1/2

- Consistent digital representation of a physical product
  - Create an improved information exchange along the supply chain
  - Smart Supply Chain and Smart Packaging
    - Products can be tracked from raw material production to recycle
    - Each part of any process has its data recorded
    - Anyone in its life cycle can access the history of the product
- Reliable and secure way of gathering and sharing data
  - Product supply chain across the entire value chains
  - Smart Packaging can be the media to exchange information

# DPP Main Needs 2/2

- Product across its life cycle
  - Transparent way of assessing its environmental impact
  - Smart packaging can bring information to
    - Consumers
    - Recycle operations
    - Inspection authorities
- Flexible and scalable way of implementing DPP
  - Different product categories and sectors

# DPP Main Benefits 1/2

- For organizations
  - Help build trust and credibility with stakeholders
  - Streamline internal processes
  - Comply with regulations and standards
  - Track and trace products throughout the supply chain
- For consumers
  - Make more informed purchasing decisions
  - Access more information on product quality and durability
  - Participate in circular economy practices such as repair, reuse, and recycling

# DPP Main Benefits 2/2

- For policy makers
  - Monitor and enforce compliance with legal obligations
  - Promote sustainable product production and consumption
  - Support the transition to a circular economy
- For recyclers
  - Increase the efficiency of material recovery and the reduction of waste
  - Access more information on product composition and disassembly
  - Verify the origin and authenticity of products

# Keep in Mind

# Keep in Mind

- Digital Product Passport (DPP) is a set of sustainability data
  - Enables circular products and circular business models
  - Digital profile given to an individual product
  - Includes information such as
    - Origins and supply chain history
    - Sustainability of production
    - Authenticity
    - Other business information such as warranty registration
  - Based on Smart Packaging and Smart Supply Chains

# DPP needs Smart Packaging and Smart Supply Chains

# Digital Product Passport (DPP)

- DPP reinforces the power of smart packaging
  - DPP needs are met by smart packaging and smart supply chain achievements
    - Tracking
    - Authenticity
    - Sustainability
    - Customer Experience
  - Smart packaging and smart supply chain have a set of tools to integrate global technological solutions

# DPP Technologies

# Technologies

- Smart supply chain and smart packaging are based on
  - Barcodes
  - QR Codes
  - RFID
  - Digital Printing
- Those technologies can be used to create and access the Digital Product Passport
- They provide unique product identifiers that link to the DPPs of the products

# Technologies 1/2

- **Barcodes** carry product information
  - Such as manufacturer, product type, serial number, etc.
  - Are scanned by optical devices: cameras or scanners
- **QR Codes** or two-dimensional barcodes
  - Can store more information than a standard barcode
    - URLs, texts, images, etc.
  - QR Codes can be scanned by smartphones to access the product data or link to a website

# Technologies 2/2

- **RFID** uses radio waves to identify and track objects
  - RFID tags are small electronic devices
  - Can be attached to products and contain a unique identifier
  - RFID readers are devices that communicate with RFID tags and access their data wirelessly
- **Digital Printing** can print variable data on products or labels
  - Such as barcodes, QR codes, serial numbers, etc.
  - Create unique identifiers for products and link them to their DPPs

# Concepts and Standards 1/2

- **Blockchain**

- Distributed technology
- Store and verify product data
- Secure and transparent

- **Internet of Things (IoT)**

- Network of connected devices
- Collect and transmit product data
- Works in real time

# Concepts and Standards 2/2

- **Artificial Intelligence (AI)**
  - Technology that can analyze and optimize product data
  - Can be used on circularity and sustainability
- **GS1 Standards**
  - Set of global standards for identification
  - Data capture and data sharing
  - Enable interoperability and traceability

# DPP Platforms

# DPP Platforms must have 1/2

- Data collection and management
  - Collect and store product data from manufacturers, suppliers, distributors, consumers and recyclers
  - Ensure quality, accuracy and security of the data, as well as comply with the relevant standards and regulations
- Data sharing and access
  - Share and provide access to product data to different stakeholders
    - Regulators, auditors and customers
  - Ensure transparency, traceability and verifiability of the data, as well as respect the privacy of data owners

# DPP Platforms must have 2/2

- Data analysis and optimization
  - Analyze and optimize product data for circularity and sustainability
  - Provide insights, feedback and recommendations to improve product design, production, consumption, reuse, repair and recycling
- Data visualization and communication
  - Visualize and communicate product data in a user-friendly way
  - Provide interactive features
    - Scan barcodes or QR codes
    - Access websites or apps

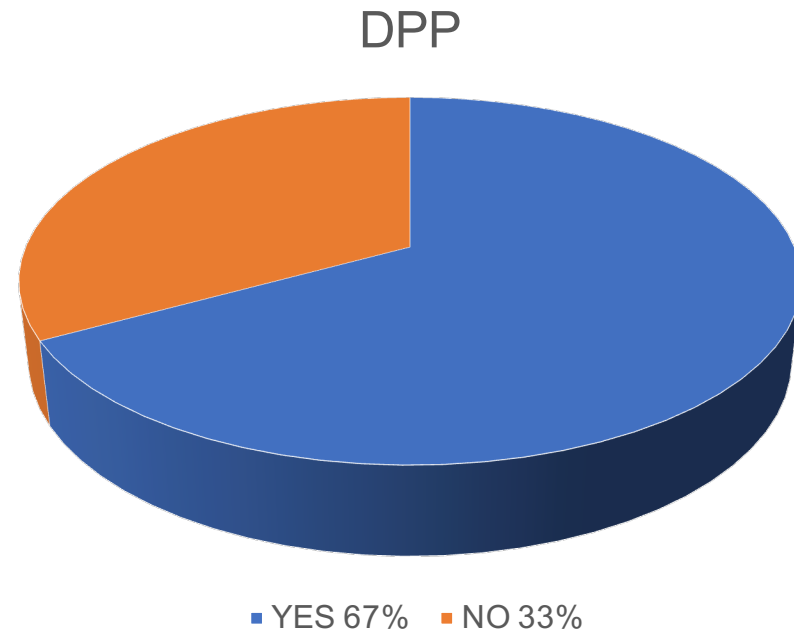
# Global DPP Survey by IoP Journal

# DPP Survey 1/4

- Answered by 137 executives from
  - Australia
  - Brazil
  - China
  - European Union
  - United States
- Survey period
  - 12 days

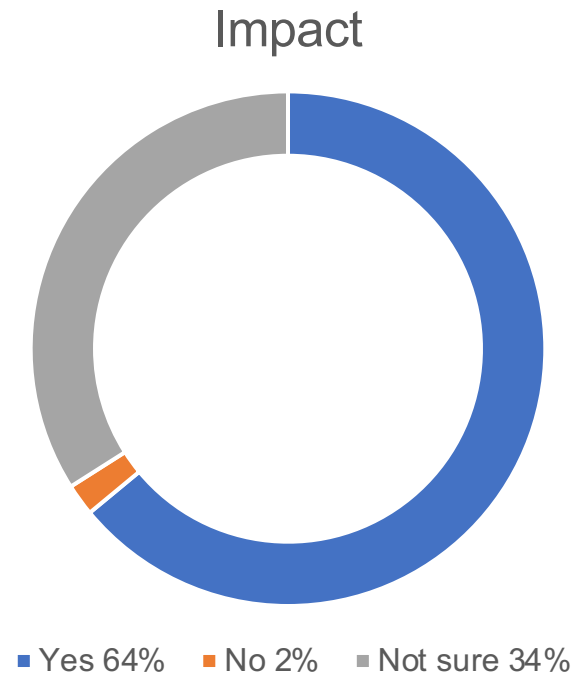
# DPP Survey 2/4

- Do you know what is Digital Product Passport (DPP)?



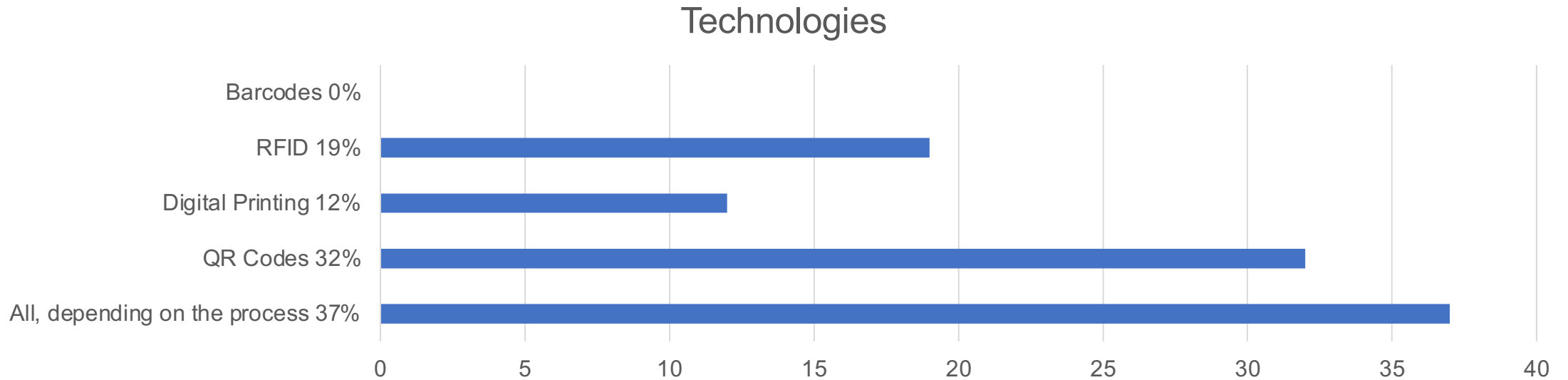
# DPP Survey 3/4

- Will DPP impact your business?



# DPP Survey 4/4

- If you must select a technology to add DPP to your product, which one would you consider?



# Sincpress and DPP

# Sincpress and DPP

- The first smart packaging center of excellence in Brazil
  - The first smart packaging center in the Southern Hemisphere
- Is pioneering the way companies adopt smart packaging
- Create conditions and disseminate ideas to implement circular economy solutions
- Supports implementation of circular economy solutions and the Digital Product Passport

# Takeaways

# Takeaways

- European Union plans to achieve Circular Economy by 2050
  - The European Union plan will impact the whole world!
- Digital Product Passport (DPP) is in the core strategy
  - All products must have a Digital Product Passport (DPP)
  - Products will be Reused, Repaired, Remanufactured and Recycled
- DPP needs smart packaging and smart supply chain tools
  - RFID is a key technology to DPP

# THANK YOU



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