

Pack to the Future

AI in Plastics Packaging

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“AI will be the most transformative technology of the 21st century. It will affect every industry and aspect of our lives.”

Jensen Huang CEO at NVIDIA, 2021

AI and Plastics Packaging

- AI tools can vastly speed up processes, but they do not replace human creativity
- New tools are appearing at a rapid pace and companies find it difficult to keep up (Investment, Skills, System redundancy)
- Concerns remain (energy usage, cost to implement, security of data, Regulatory oversight)

Design



Manufacture



Consumers



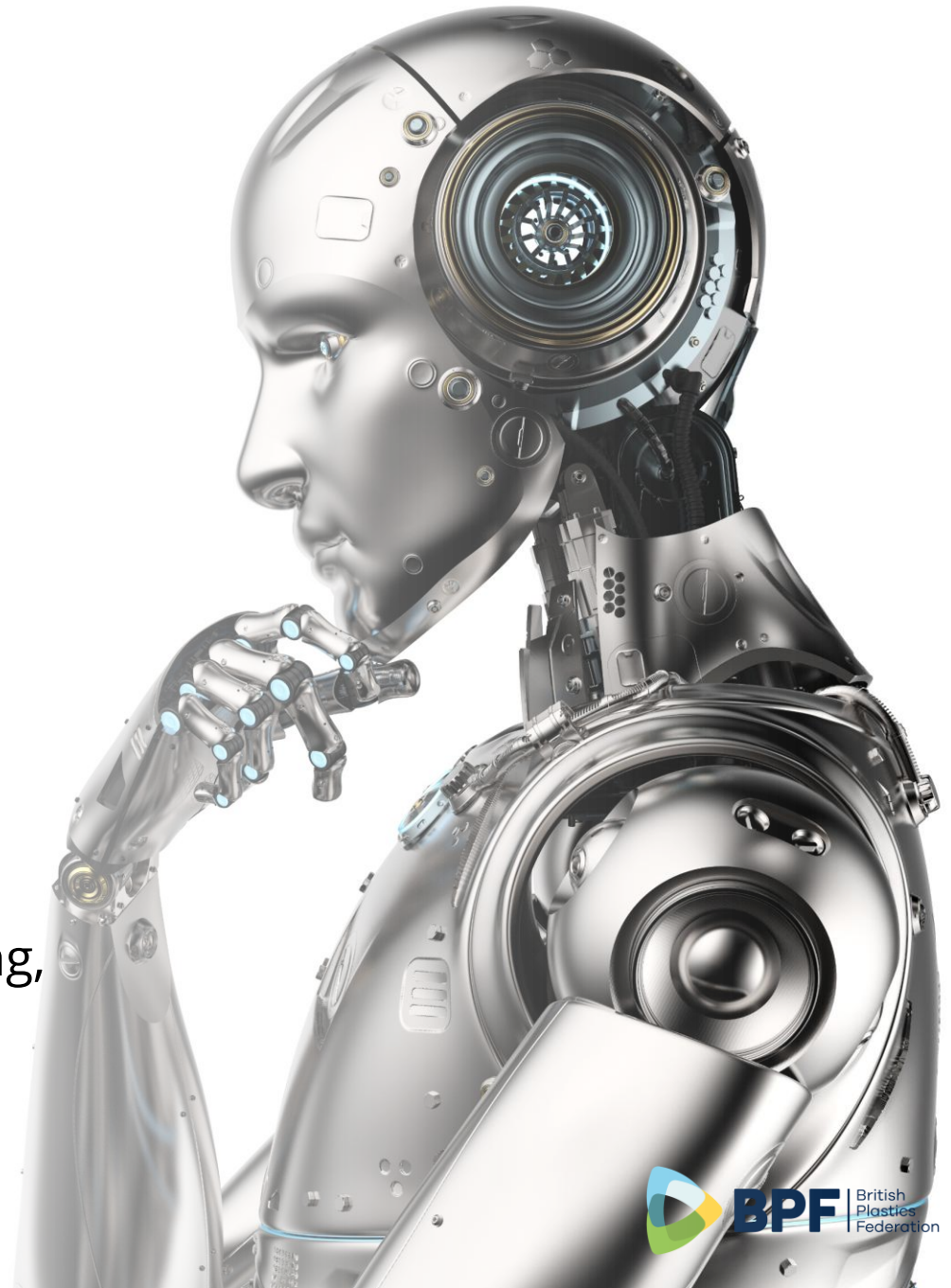
Recycling

AI and Plastics Packaging - Design

- Enhancing creativity (Generative design, Visualisation, Optimisation, Variations)
- Streamlining processes (Faster to market, Reduce development time, Cost reduction)
- Improving sustainability (Optimising material usage, Design for recyclability, Environmental impact assessment)
- Enhancing consumer experience (Predictive analytics driving personalisation, Interactive / Smart packaging)

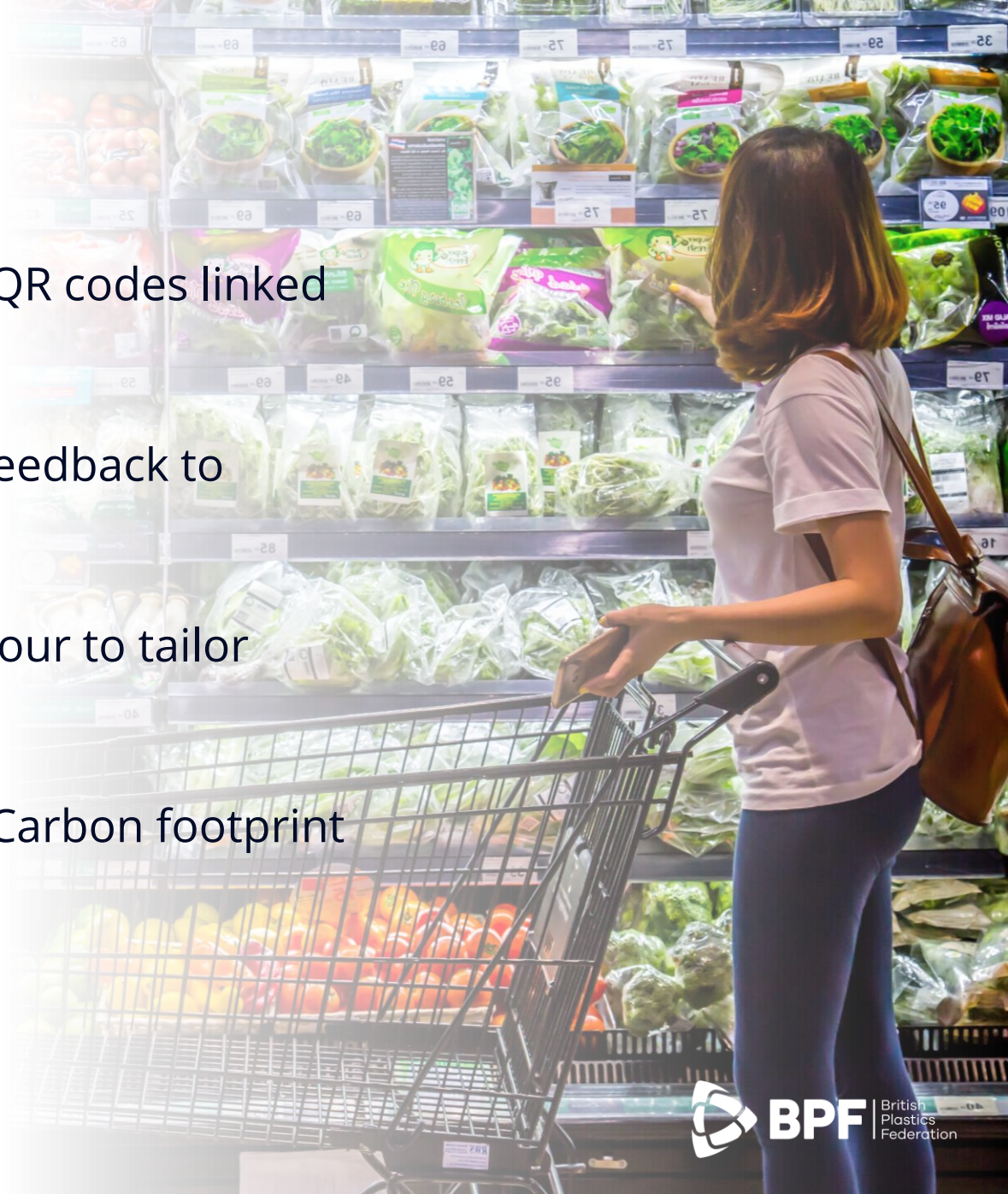
AI and Plastic Packaging - Manufacture

- Mould Flow and predicting manufacturing processes (Process optimisation, Reject reduction)
- Material properties
- Energy usage
- Predictive maintenance
- Vision systems for QC / QA
- Supply chain management (Demand forecasting, Inventory control, Monitoring conditions for food safety, Emission reduction for transport)



AI in Plastics Packaging - Consumers

- Smart packaging (NFC, Embedded sensors, QR codes linked to information)
- Sentiment feedback (Assessing consumer feedback to guide design and branding)
- Personalisation (analyses purchasing behaviour to tailor product packaging)
- Sustainability monitoring (LCA modelling, Carbon footprint tracking, Eco-label automation)

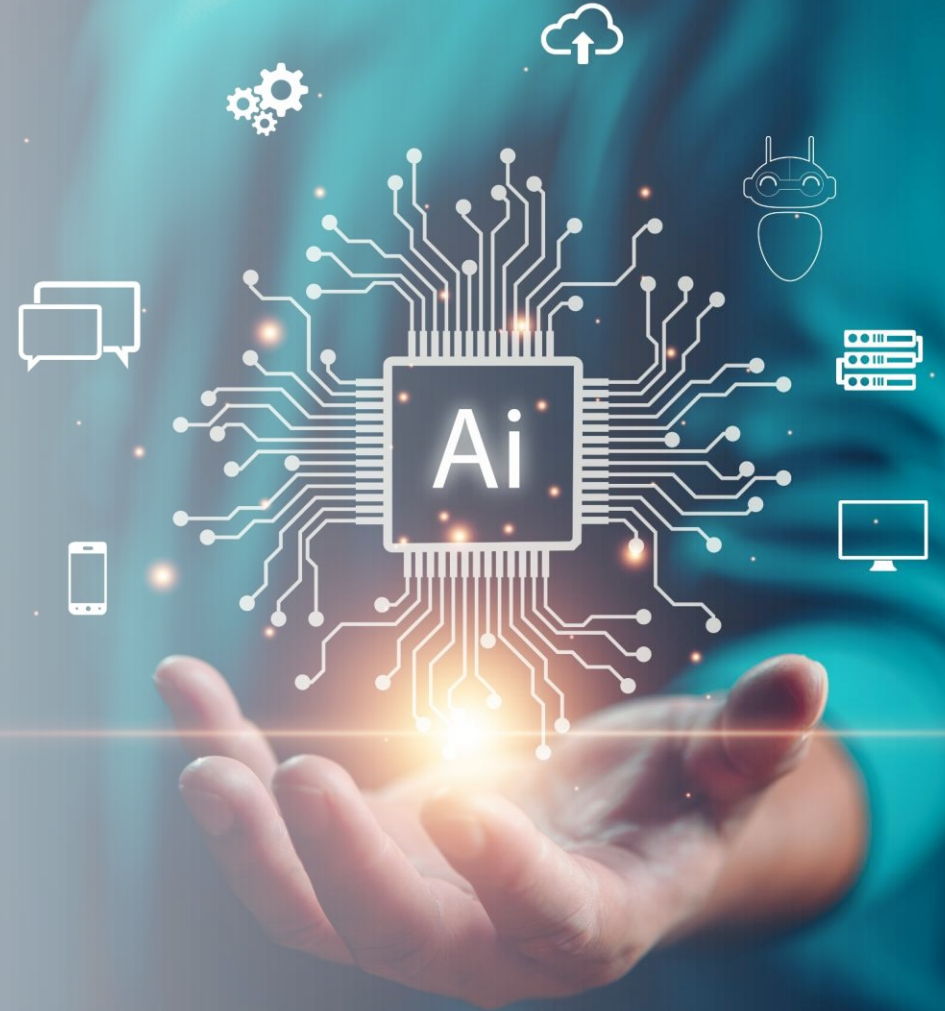


AI and Plastic Packaging - Recycling

- Tracking and verifying waste collection (Digital waste tracking, Digital product passports)
- Advanced recognition systems (Separating material flows, Identification of key packs, Food contact)
- Contamination detection (Spotting impurities that degrade recyclates)
- Optimising chemistry for converting into granules (material properties)

Emerging technologies

- AI for bio-based polymers (Predictive modelling helping develop new materials)
- Digital twins (Virtual simulations)
- Monitoring regulatory compliance



“ Mitigating the risk of extinction from AI should be a global priority alongside other societal-scale risks such as pandemics and nuclear war.”

The Bletchley Declaration, signed by 28 countries, including all AI leaders, and the EU.



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