Driving Efficiency through an Automation Hierarchy

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Summary

podcast

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Driving Efficiency through an Automation Hierarchy

Ivan Portilla, Senior Technical Staff Member, Ricoh North America Customer Experience Centers

Today's graphic enterprise operational floor is a mixture of un-codified dashboards, multiple and bespoke programming languages, human knowledge, generational values, and a rolled-up sleeves approach. We will explore a real-world example of an automation hierarchy that leads to harnessing the promises of AI while delivering higher efficiency in a production environment. Spend a few minutes applying simplicity to an industry that touches the fabric of our nation each and every day.

https://notebooklm.google.com/notebook/79f61ed8-2b7c-40cf-974a-93789ae88d1e

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Agenda

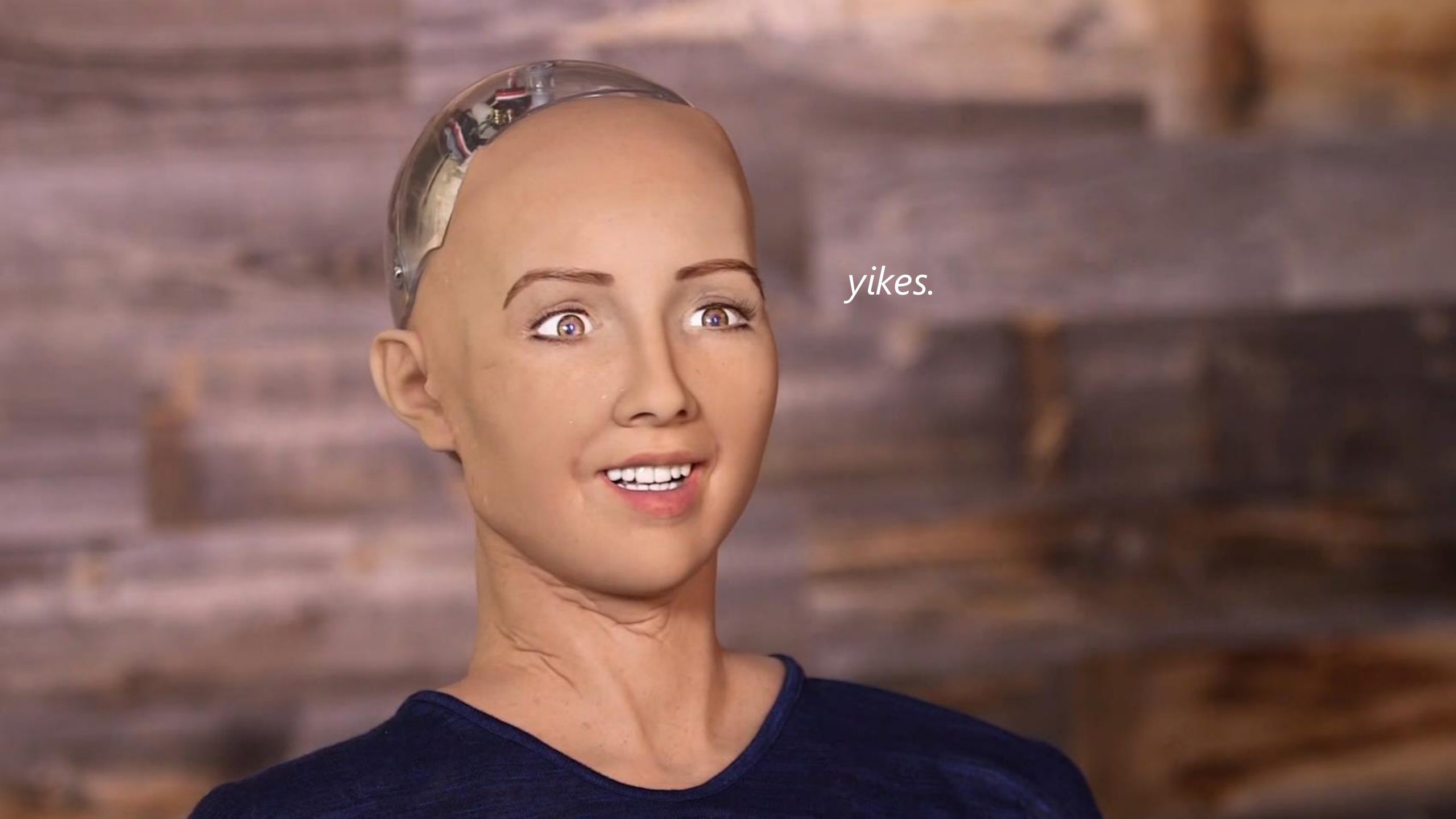
1. AI & GenAI
2. AI at Ricoh
3. Closing thoughts

https://github.com/iportilla/IPN

embodied & autonomous

life partner

Our expectations are out of sync with reality


yikes.

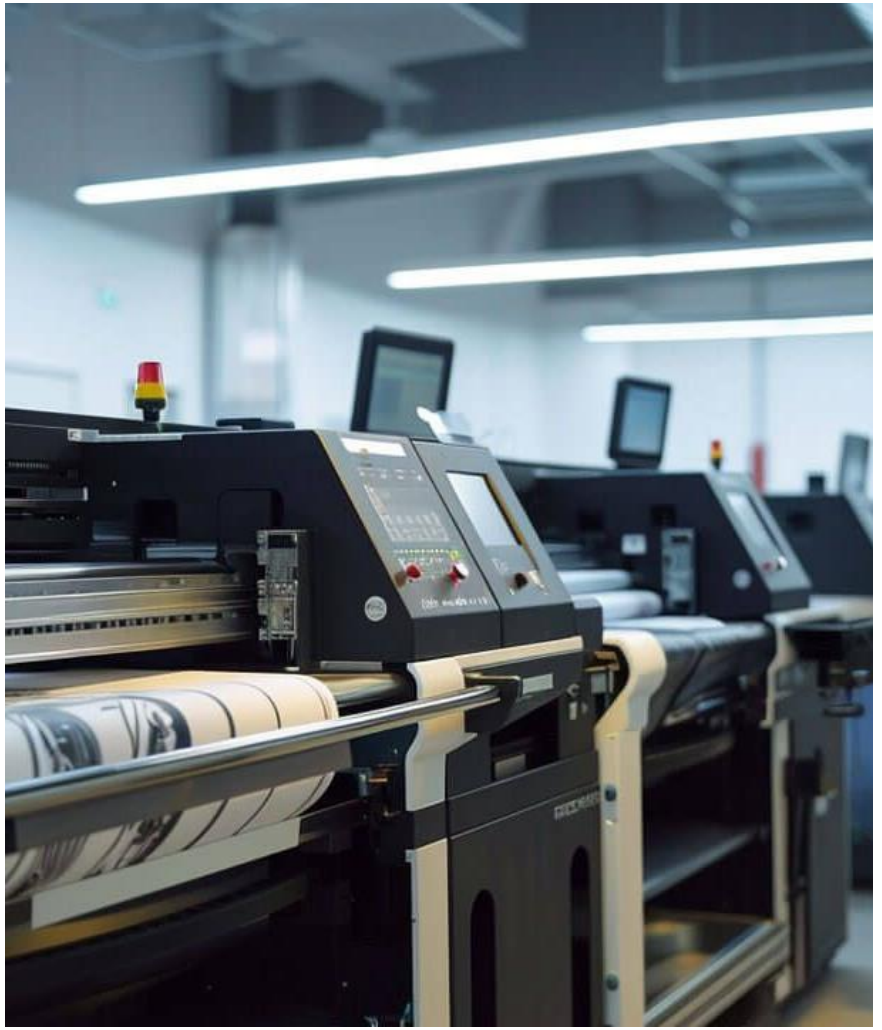
Why AI in Digital Printing?

- Printing is everywhere: from packaging to government documents.
- Commercial digital printing is a massive operation that still relies heavily on manual systems.
- AI offers a chance to streamline, simplify, & scale.

https://www.ricoh-usa.com/en/products

The Current Operational Floor

- Unstructured dashboards
- Multiple, sometimes obscure programming languages
- Reliance on human knowledge & experience
- Strong generational habits and a “hands-on” culture



The Current Operational Floor

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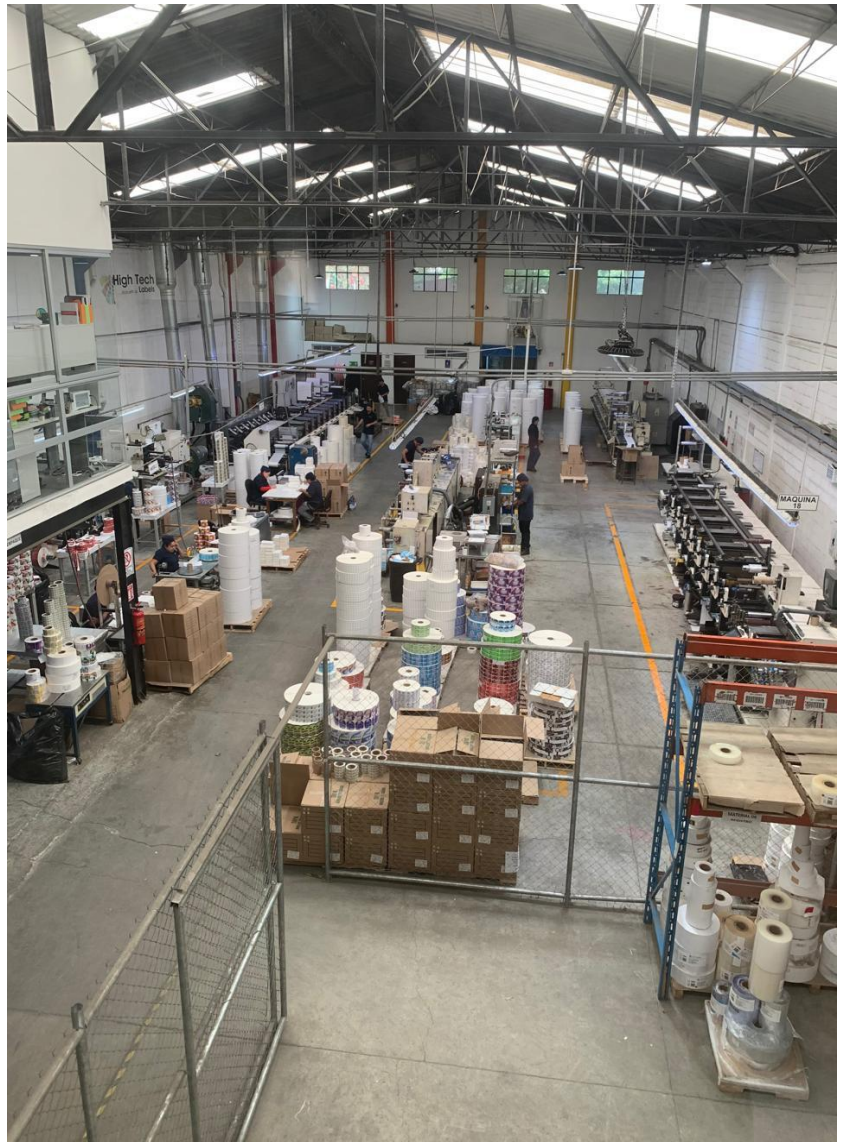

What Is an Automation Hierarchy?

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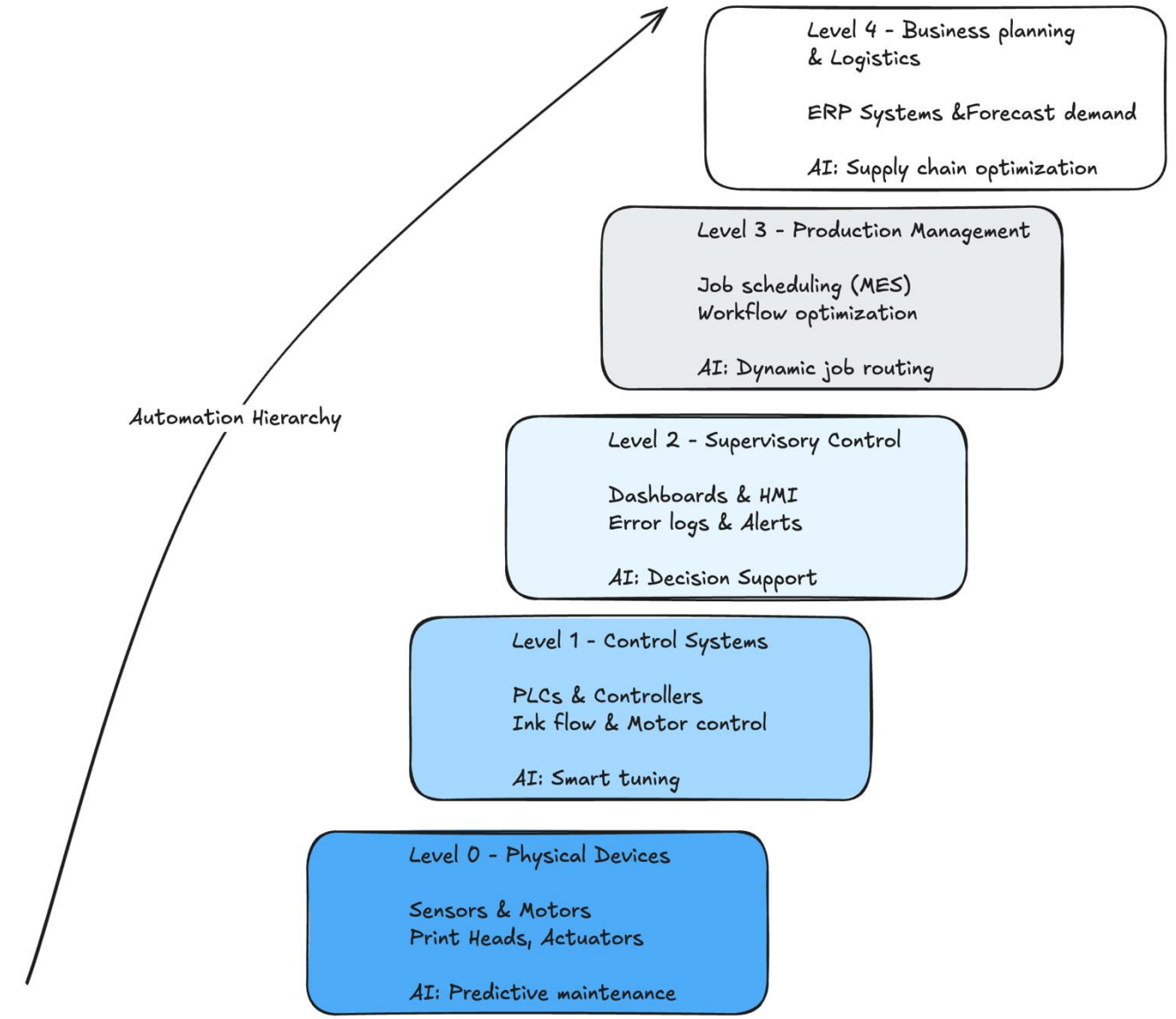
How AI Enhances Each Layer of Production

- Layered approach to automating complex systems
- From basic mechanical processes → smart decision-making with AI
- Provides a roadmap for where & how AI fits



Artificial Intelligence

Slido.com

2203203

AI Perception

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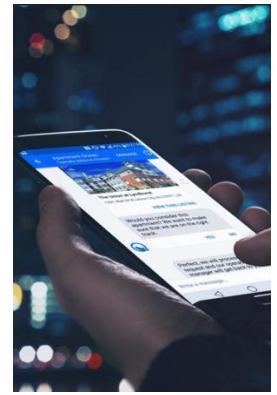
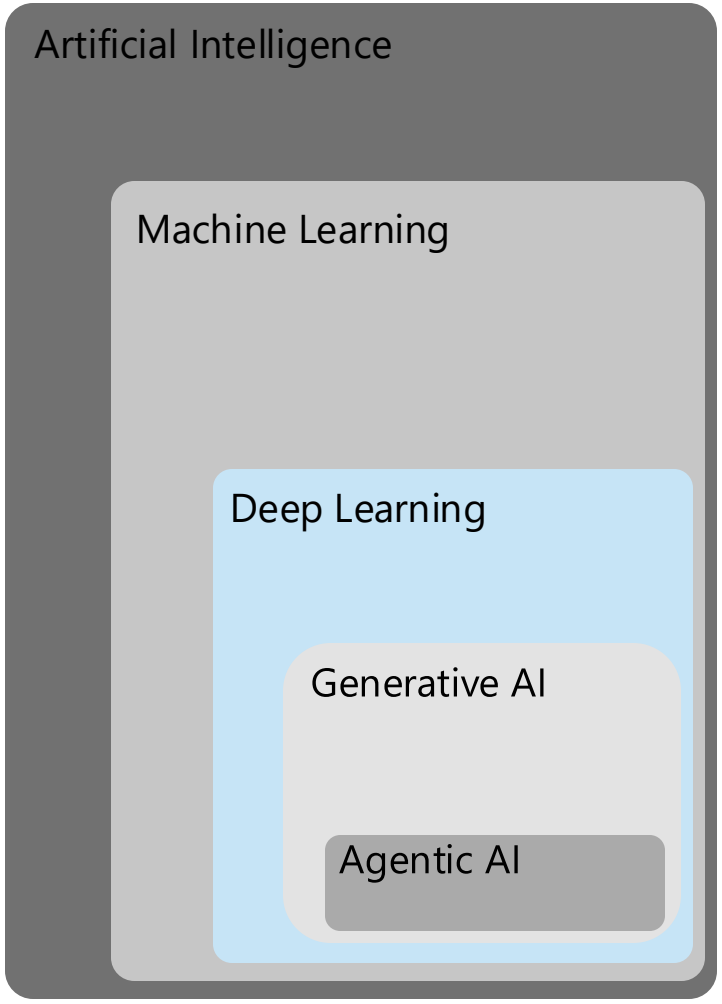
What do people feel about AI?

Fearful
Skeptical
Fascinated
Understood

Exposed
Apprehensive
Excited
Well-served



Brief history of artificial intelligence



1956

Artificial Intelligence

Intelligence demonstrated by machines

1997

Machine Learning

Learn from data

2017

Deep Learning

Model after the human brain (Neural Networks)

2021

Generative AI

Create new written, visual, and auditory content

2025

Agentic AI

Can set goals, make decisions, & take actions to achieve those goals

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GenAI

Generative AI

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The best thing about AI is its ability to ...

learn	4.5%
predict	3.5%
make	3.2%
understand	3.1%
do	2.9%

http://localhost:8501/

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OpenAI Microsoft

Generative AI

GPT-x

Prompt:

Write a tagline for an ice cream shop.

Response:

We serve up smiles with every scoop!

Codex

Prompt:

Table customers, columns = [CustomerId, FirstName, LastName, Company, Address, City, State, Country, PostalCode]

Create a SQL query for all customers in Texas named Jane
query =

Response:

```
SELECT *
FROM customers
WHERE State = 'TX' AND FirstName = 'Jane'
```

DALL·E

Prompt: A white Siamese cat

Response:

Demo

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FLUX.1 [dev]

12B param rectified flow transformer guidance-distilled from FLUX.1 [pro]
[non-commercial license] [blog] [model]

a cowboy on a horse in mars

Run

https://huggingface.co/spaces/black-forest-labs/FLUX.1-dev

Image Generation

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Image Generation

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https://blog.google/products/google-cloud/sphere-wizard-of-oz/

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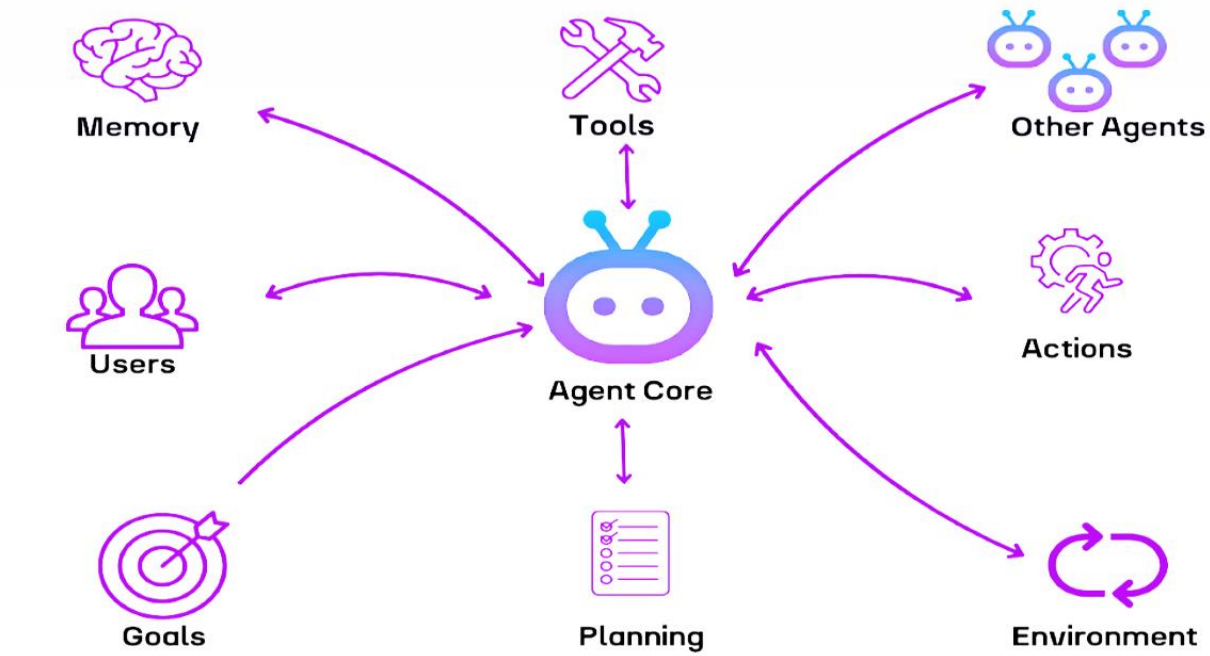
Agentic AI

The Role of GenAI, Agents, and AI-Driven Coding

- **GenAI**: Simplifies coding, UI generation, troubleshooting
- **Intelligent Agents**: Monitor, react, and optimize processes
- **AI-driven coding**: Translates goals into efficient programs (vibe coding)



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AI assisted coding (vibe coding)

Fast, intuitive coding with AI assistance

What's Changing?

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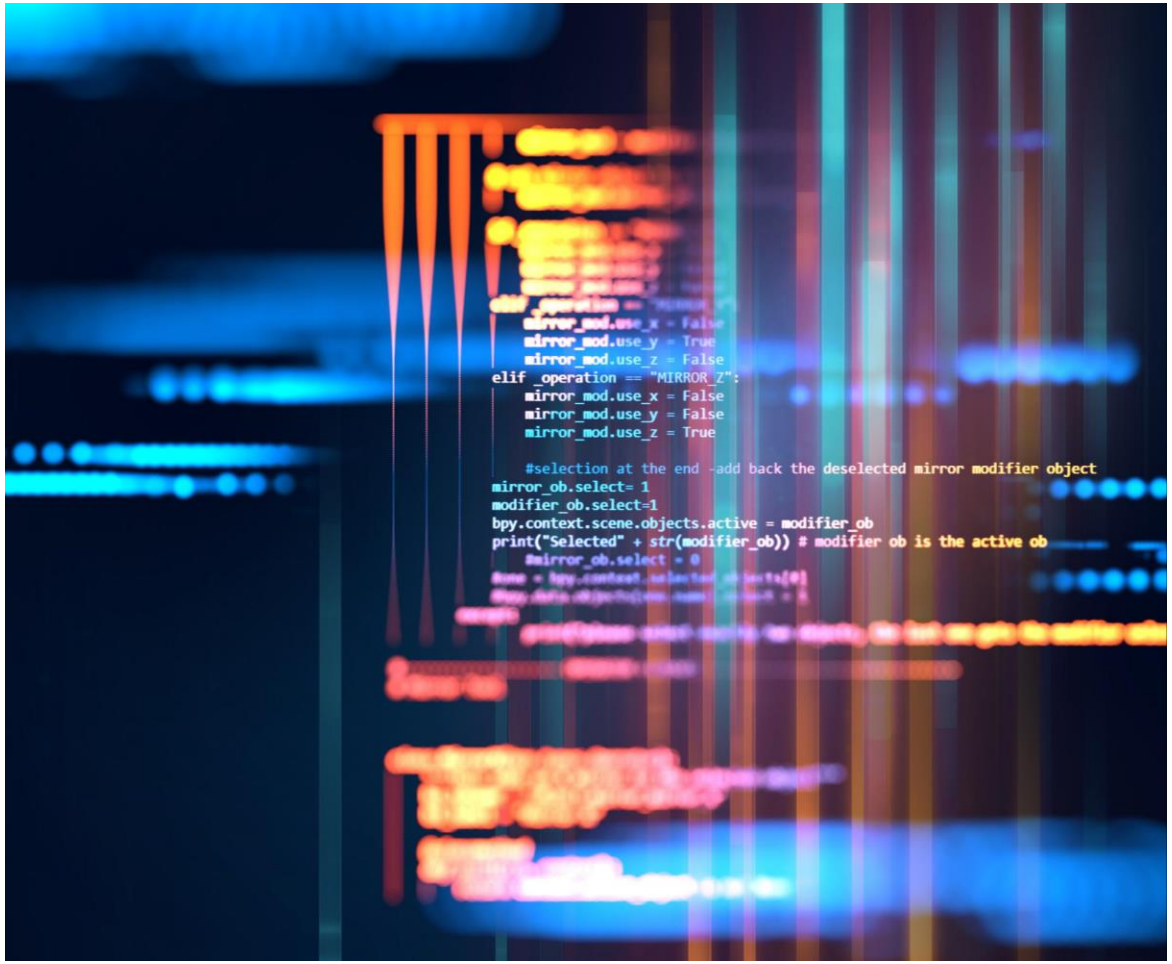
AI tools now co-write code, design systems, & offer intelligent suggestions



- Generation
- Completion
- Explanation
- Translation
- Testing
- Documentation

Code generation

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Write a Python script that connects to a MongoDB database, retrieves documents from a 'users' collection, and prints usernames and their corresponding email addresses.

watsonx

```
# Assisted by watsonx Code Assistant
import pymongo

# Connect to MongoDB
client = pymongo.MongoClient("mongodb://localhost:27017/")

# Access the 'users' collection
db = client["mydatabase"]
collection = db["users"]
```

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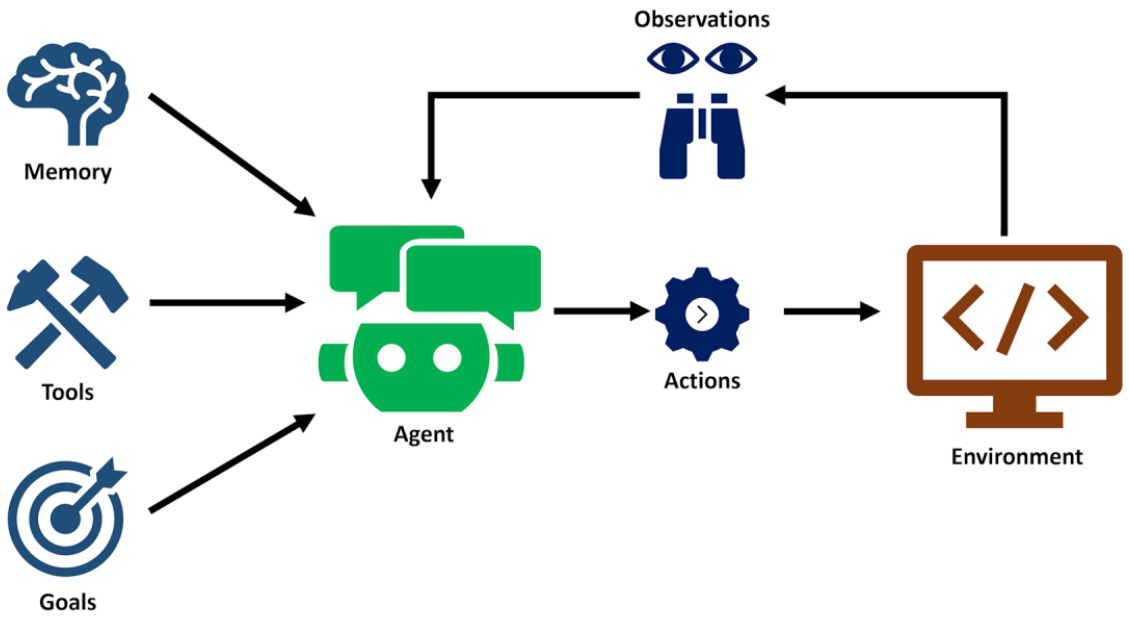
Demo

Real-World Example – AI in Action

- A production environment before vs. after automation hierarchy
- Measurable gains: fewer errors, faster turnaround, reduced waste
- Human-machine collaboration: not replacement, but augmentation



Real-World Example – AI in Action

VC80000 Maximizes Productivity through Automation

- Ricoh's VC80 customer calculated a 56% increase in productivity over their prior system.
- System wide architecture redesign to promote advanced automation to maximize OEE with minimal operator skills.
- Fully automated press and substrate setup with continual real time monitoring and correction to ensure consistent output over time.

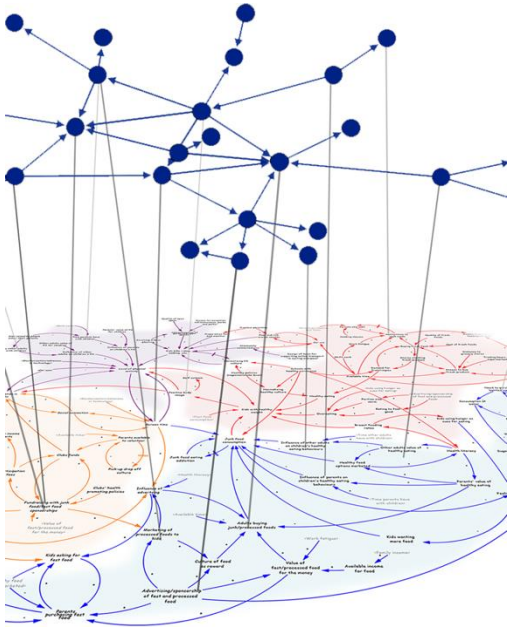
Human Factors Still Matter

- Why human expertise is still essential
- Designing with generational knowledge in mind
- AI as a *partner* in operations, not a replacement

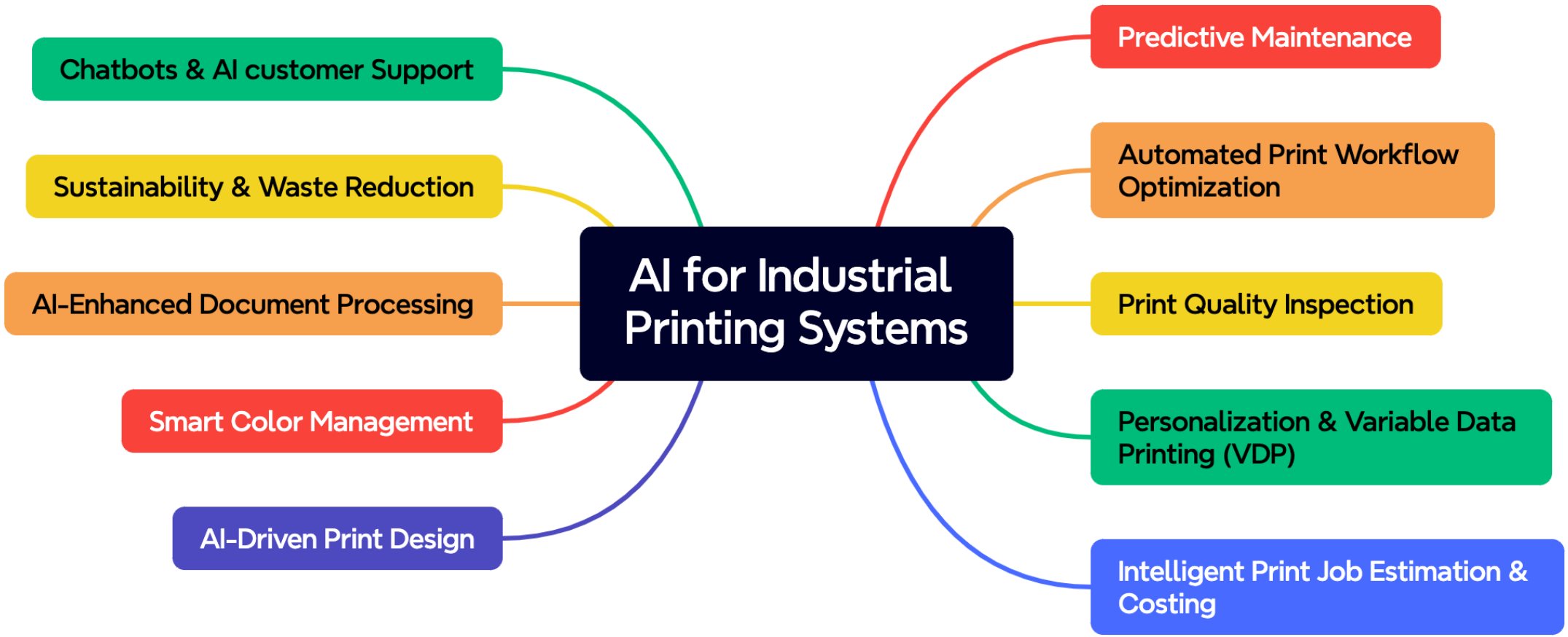
Simplicity is Key

- Even complex systems can be made simple with good design and AI
- Automation doesn’t mean complexity — it means clarity

- **Adoption wins:** Fewer knobs & screens → faster onboarding & less retraining.
- **Fewer errors:** Clear defaults & guardrails reduce handoffs, rework, and scrap.
- **Faster decisions:** One status, one next step → lower “time-to-action” on the floor.
- **Trust & control:** Explainable automations with a clear manual override.



Uses cases of AI for Digital Printing

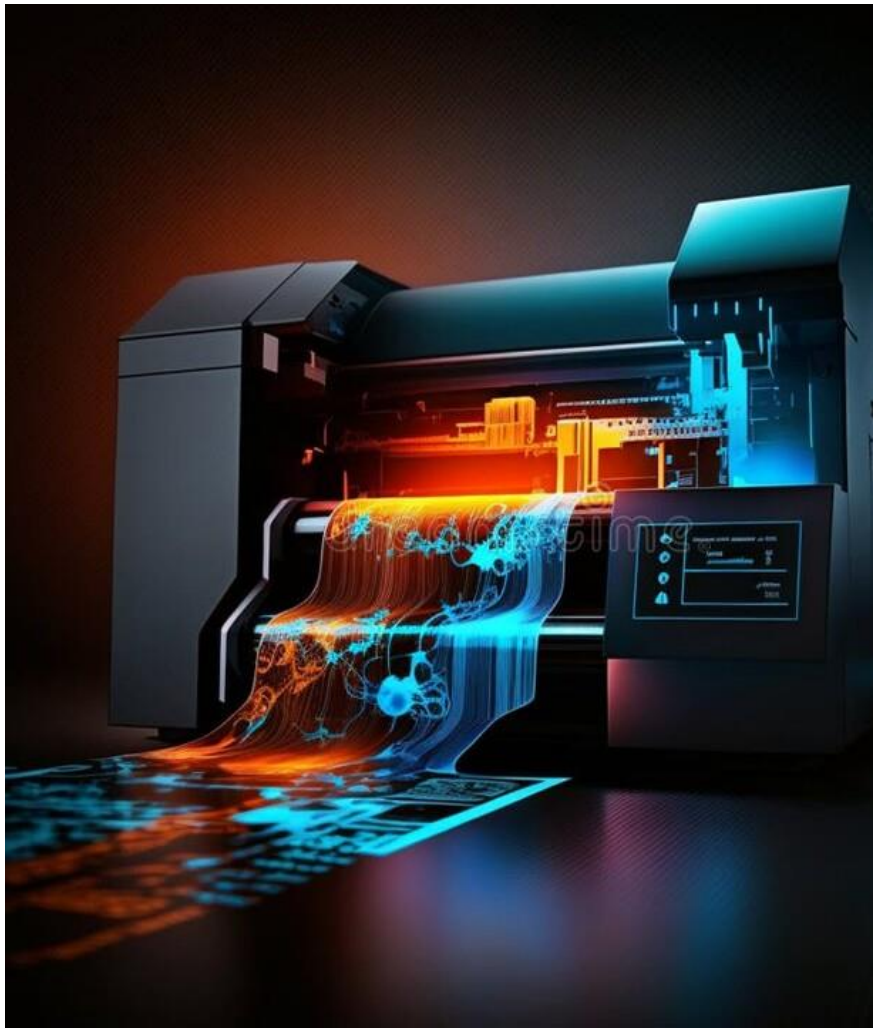


Why This Matters to You

- **More profit per hour:** cut makeready, scrap, and rework; keep presses running.
- **Happier customers:** tighter color, fewer defects, better on-time delivery.
- **New revenue:** smarter, personalized VDP that lifts response rates.
- **Less chaos:** copilots and checklists that help operators solve problems fast.
- **Future-proofing:** standards-based data and compliance your brand clients expect.

Takeaways

- Digital printing is a living lab for AI transformation
- Automation hierarchy (AI) helps structure change
- You can be part of this revolution



Closing

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Slides:

https://github.com/iportilla/IPN

Contact info

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