
THE FUTURE OF LIBRARY SERVICES WITH IOT AND AI

Innovative technologies transforming
library experiences

AGENDA FOR TODAY'S PRESENTATION

- Introduction to IoT and AI
- Transformation of Library Services with IoT
- AI Integration in Library Services
- User Interaction and Engagement
- Challenges and Considerations
- Future Potential and Vision



Forces driving transformation

CONSUMER EXPECTATIONS ARE RAPIDLY INCREASING

1

42% of consumers are annoyed when content isn't personalized

PREMIUM SERVICES PRESENT A HUGE OPPORTUNITY

3

37% of consumers are willing to pay extra for an enhanced tier of membership

DIGITAL CHANNELS ARE THE PRIORITY

2

62% of M&E revenue will come from digital channels by 2023

LOYAL CUSTOMERS DRIVE REVENUE

4

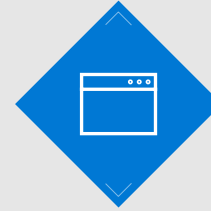
75% of consumers would engage more with loyalty programs that make rewards mobile-friendly



Key objectives



Understand and anticipate audience needs



Quickly create, change, deploy, rework and retire app experiences



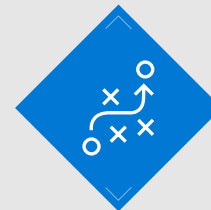
Optimize operations with the use of data insights, automation, and self-service business applications



Utilize the individuals that know the subject matter



Target and personalize your brand for fans and audiences



Explore new business opportunities with confidence

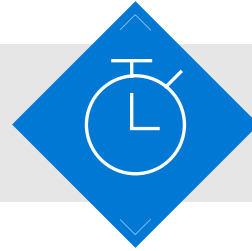
Common barriers



Unknown customers
and guests



Siloed
customer data



Time and resources
for app development



Customer data isolated
from business data

INTRODUCTION TO IOT AND AI



DEFINITION AND OVERVIEW OF IOT (INTERNET OF THINGS)

Interconnected Devices

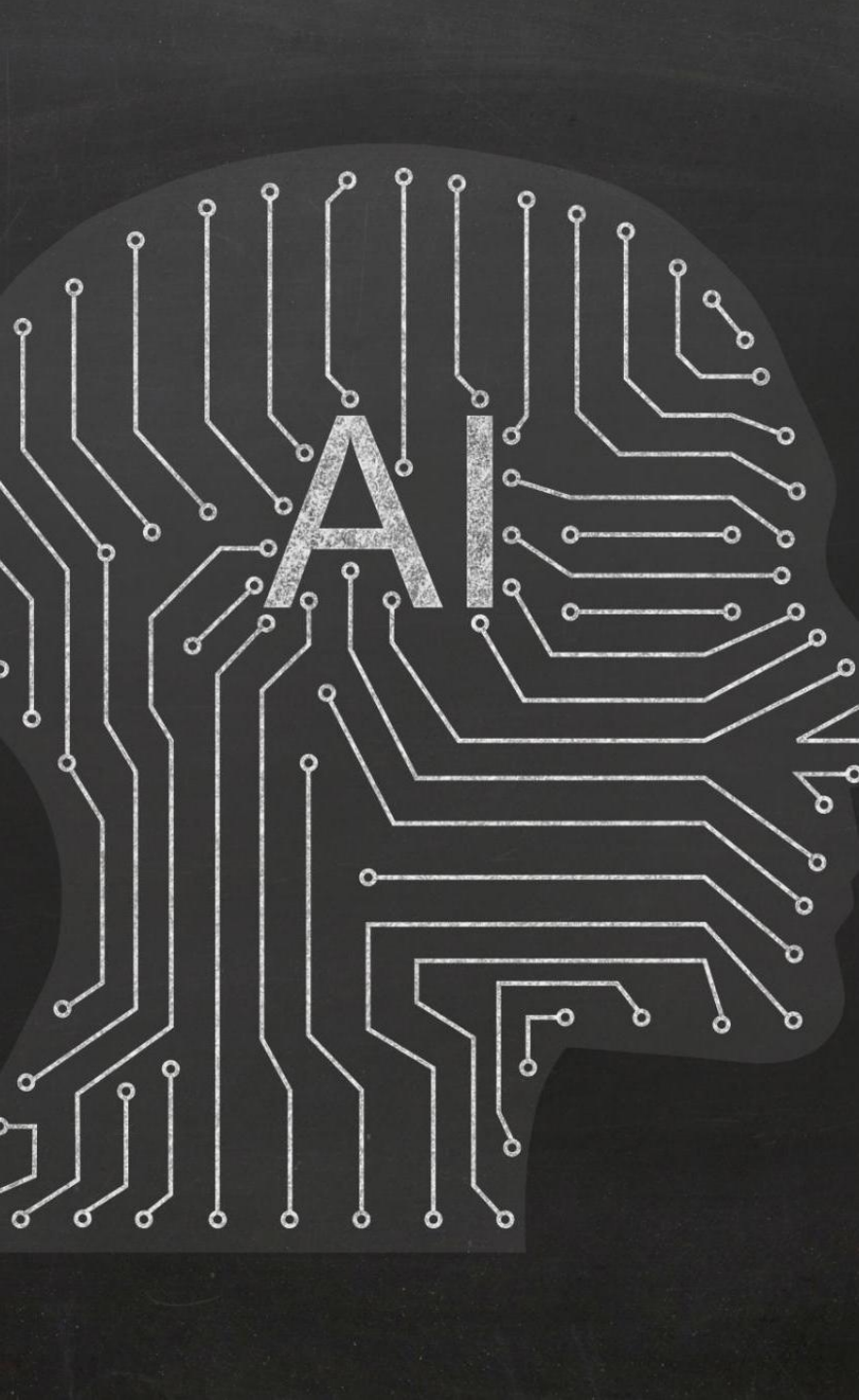
IoT involves the interconnection of various devices and objects via the internet, enabling seamless data exchange.

Data Collection and Exchange

IoT technology allows devices to collect and share data efficiently, improving decision-making processes.

Smart Environments

IoT is crucial in developing smart environments, enhancing functionality and user experience in spaces like libraries.



DEFINITION AND OVERVIEW OF AI (ARTIFICIAL INTELLIGENCE)

Human Intelligence Simulation

AI simulates human intelligence processes such as learning, reasoning, and problem-solving through advanced algorithms.

Learning and Adaptation

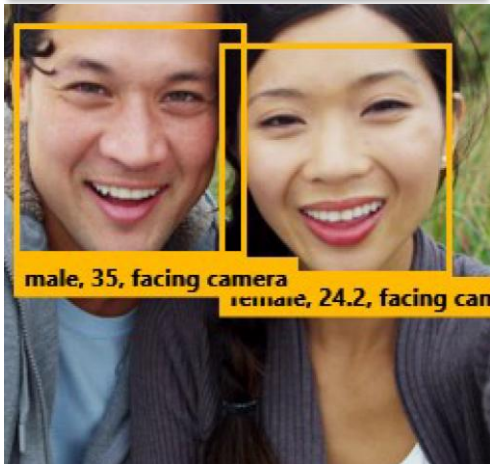
AI systems can learn from data and adapt over time, enhancing their effectiveness and improving user experiences.

Enhancing Library Services

AI is a powerful tool for libraries, improving services like cataloging, user recommendations, and information retrieval.

Key technologies enabling Digital Transformation

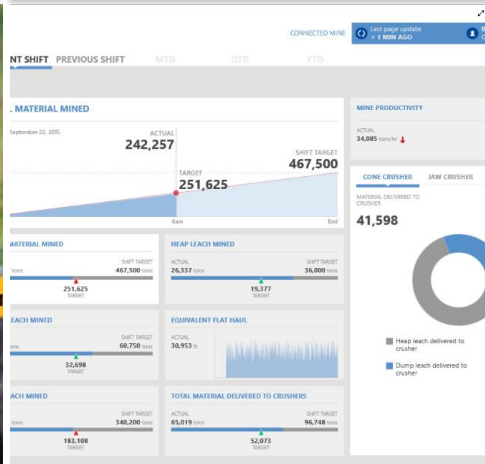
Cognitive Services



Allow your apps to understand images and video

Hear and speak to users and understand their intent

Machine Learning



Manage assets based on operational condition

Anticipate machine downtime and increase yield

Big Data Analytics



Collect, correlate, and analyze different data types from multiple sources

Collaborate across functional silos to avoid operational cost

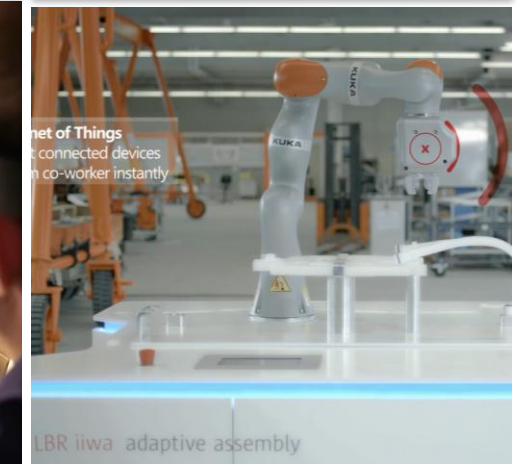
Augmented Reality



Accelerate new product introduction

Improve field services and reduce maintenance cost

IoT



Connect securely to manage data, devices and content

Increase real-time flow of in-operation information



CURRENT USES OF IOT AND AI IN VARIOUS SECTORS

IoT in Healthcare

IoT devices are transforming healthcare by enabling remote monitoring and personalized treatment, improving patient outcomes.

AI in Manufacturing

AI technologies in manufacturing optimize production processes, enhance quality control, and reduce operational costs.

Transportation Innovations

IoT and AI are revolutionizing transportation through smart logistics, real-time tracking, and autonomous vehicles.

Vision for Retail

Empower customers to define their own shopping journey while enabling retailers to expand the experience beyond obvious



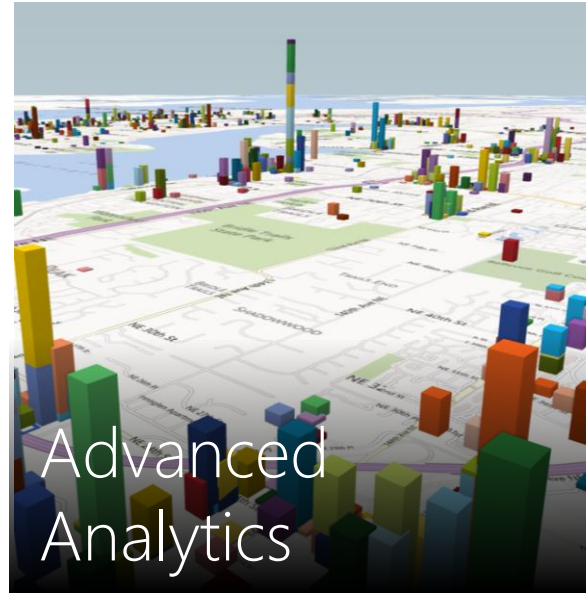
Customer-Centric Journey

Drive a great customer journey across all channels, engaging customers with a personal, relevant, seamless, and differentiated experience.



Empowered Employees

Enable your sales associates to spend more time catering to not just stated but latent needs of the customers, equipped with intelligent sales assistant.



Advanced Analytics

Gain insights to not just personalize the customer experience and support decision-making for operations but also to innovate for future



Operational Efficiencies

Integrate retail operations to manage employees, inventory, and productivity from the store floor or anywhere while imbibing resilience and agility with real-time feedback.

Business Drivers for Retail

Business Drivers

Extremely crowded marketplace

Transforming customer journey and decision making

Customer experience emerging as important differentiator

Shifting geographic balance for retail growth

Increasing focus on transparency, authenticity and sustainability

Digital disruption is here and moving fast



Focus Areas for Key Executives

Differentiating basis customer experience per square foot

Omni-Channel retail experience with flexible fulfillment

Personalized experience based on customer insights

Strong business intelligence to identify expansion opportunities

Product tracking and traceability

Unified digital loyalty management



Business Benefits

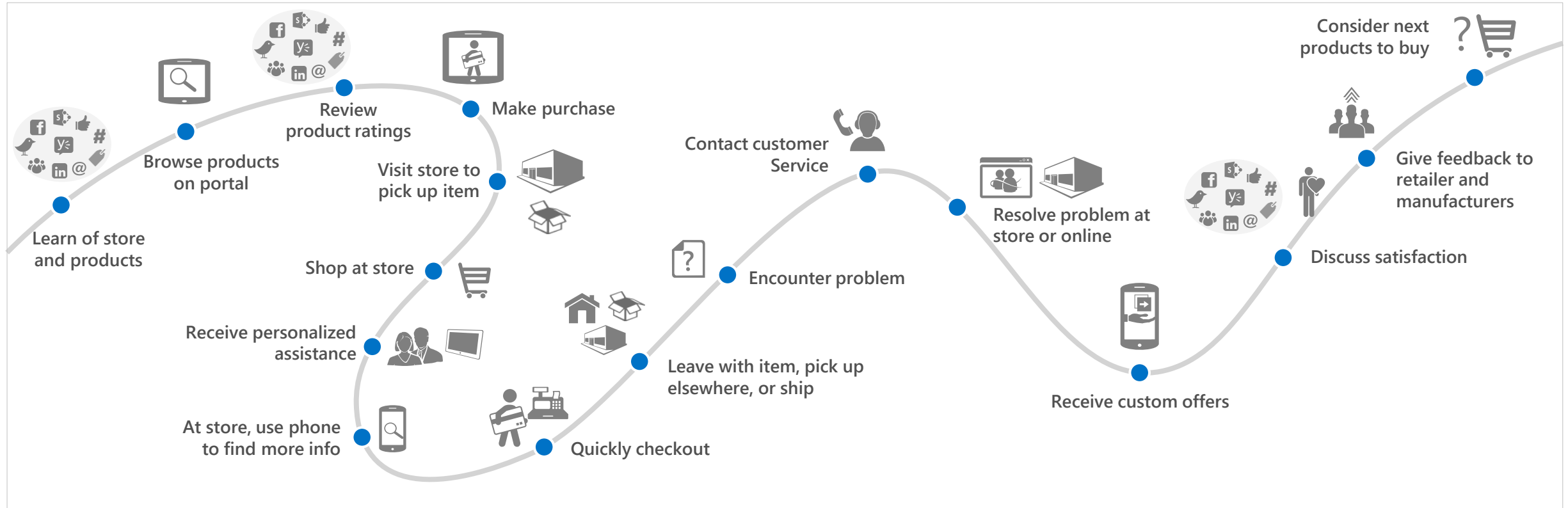
Reduce churn and improve brand loyalty

Improved revenue and better profitability

Lower risk of fraud and counterfeit products

New revenue models

Customer Experience Journey Map



Digital Hotspots

Pre-Purchase

- Learning of products and store
- Researching product online
- Talking to sales associates at store
- Use smartphone while at store to learn more
- Mixed reality based virtual shopping

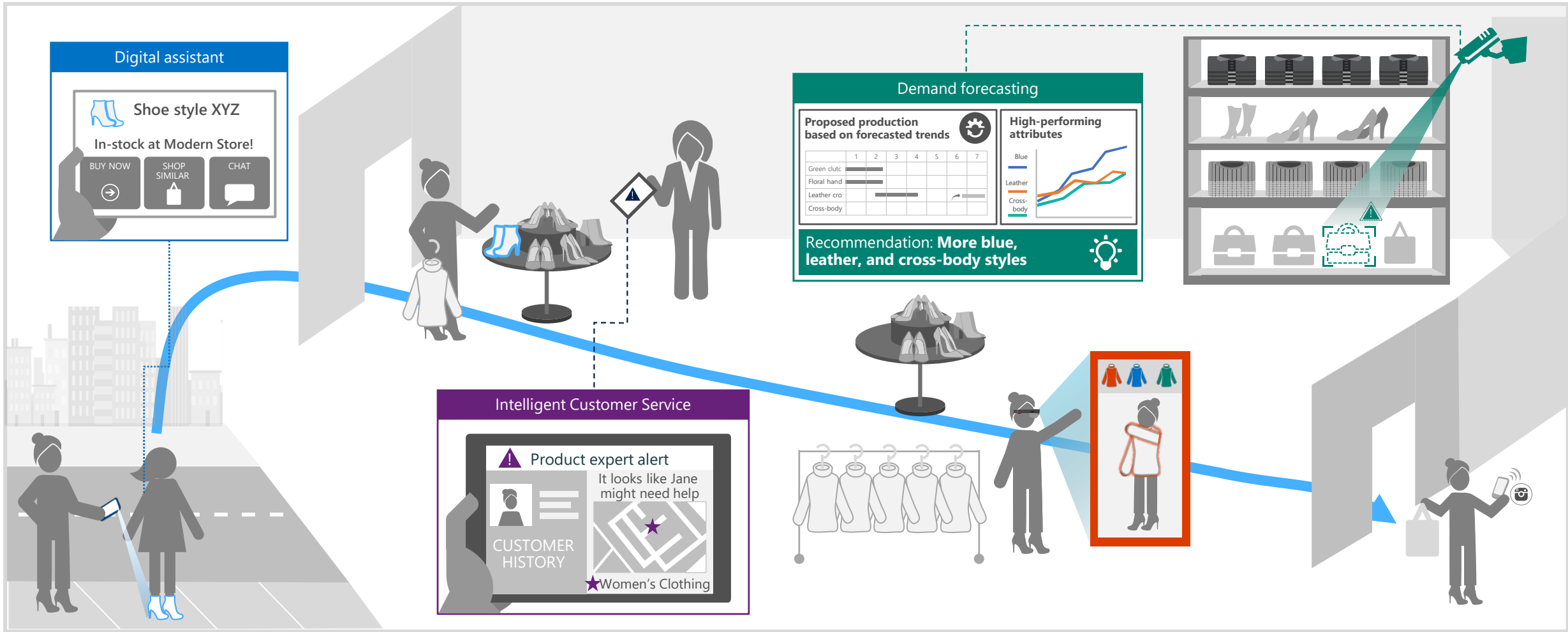
Purchase

- Ordering online
- Purchasing product in store
- Arranging payment
- Tracking shipment
- Click and collect

Post-Purchase

- Receiving customer service
- Resolving problems anywhere
- Providing ideas to store and manufacturers
- Sharing experience with others

Harnessing business intelligence in the retail space



Delight your customers with personalized experiences



Empower your workforce to provide differentiated customer experiences

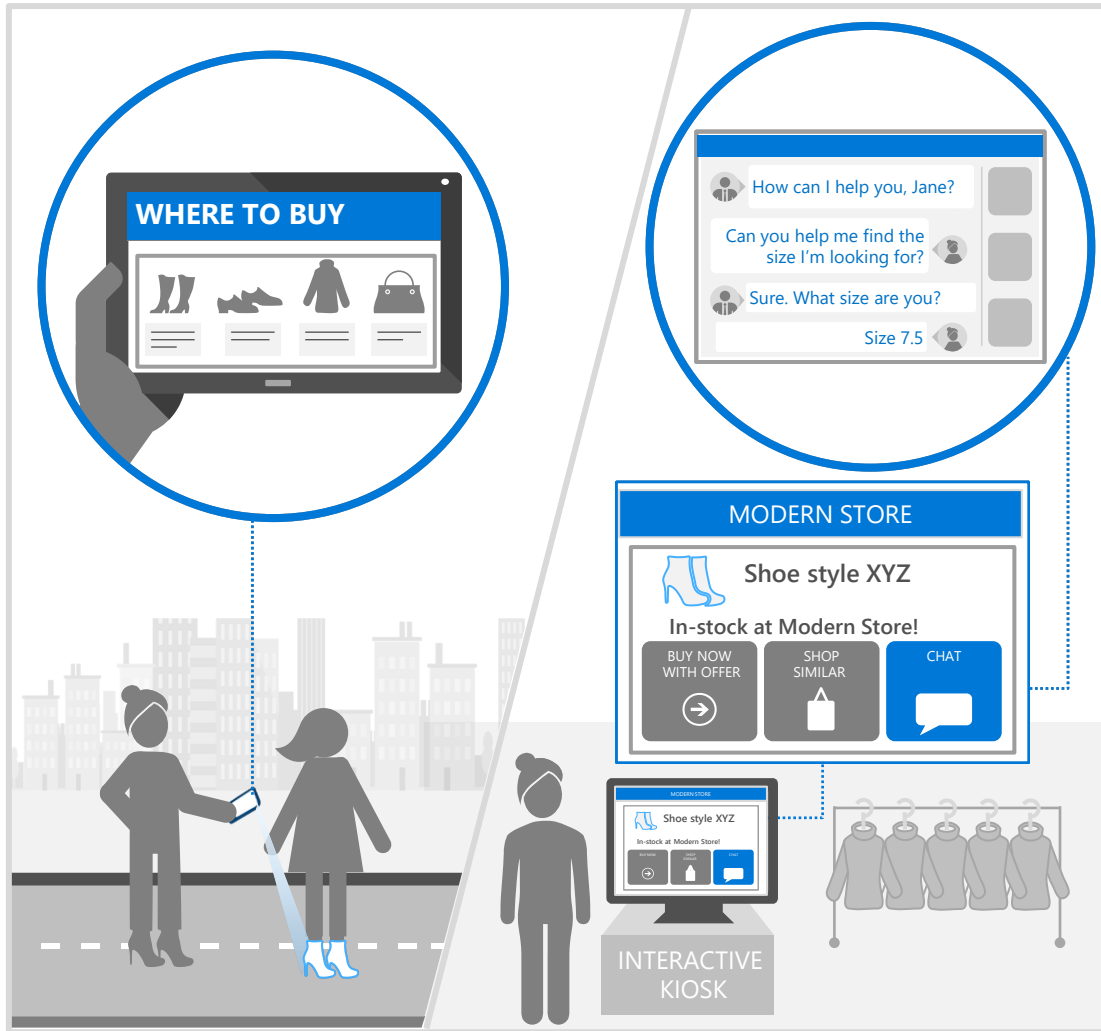


Optimize your supply chain with intelligent operations



Transform your products and services

Delight your customers with personalized shopping experiences

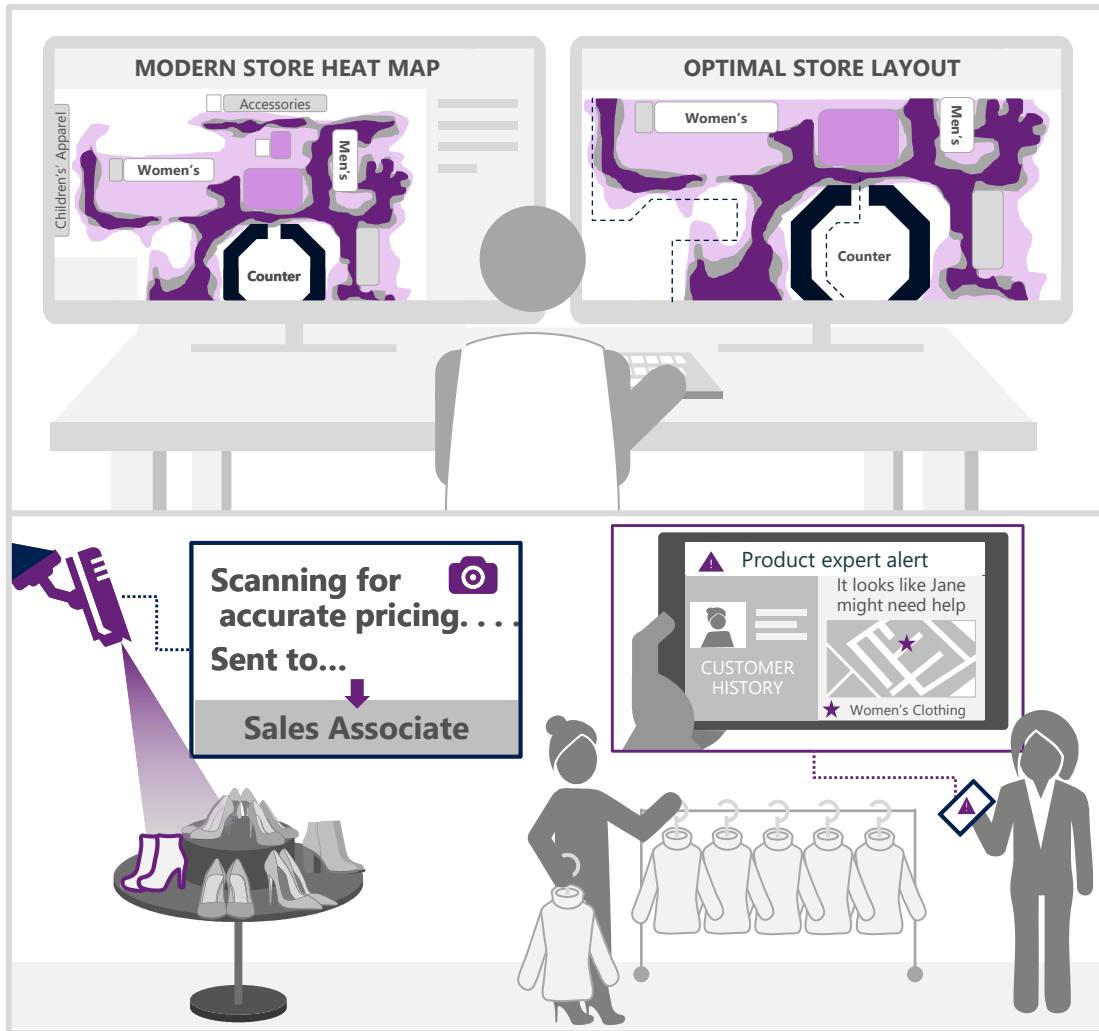


Transform the way customers begin the buying journey and use automated engines to help them take the next best step

Analyze customer behavior and sentiment and automatically deliver highly relevant product and service offers

Provide customers with a digital personal assistant to guide their decision-making and shorten the conversion cycle

Empower your workforce to provide a differentiated customer experience

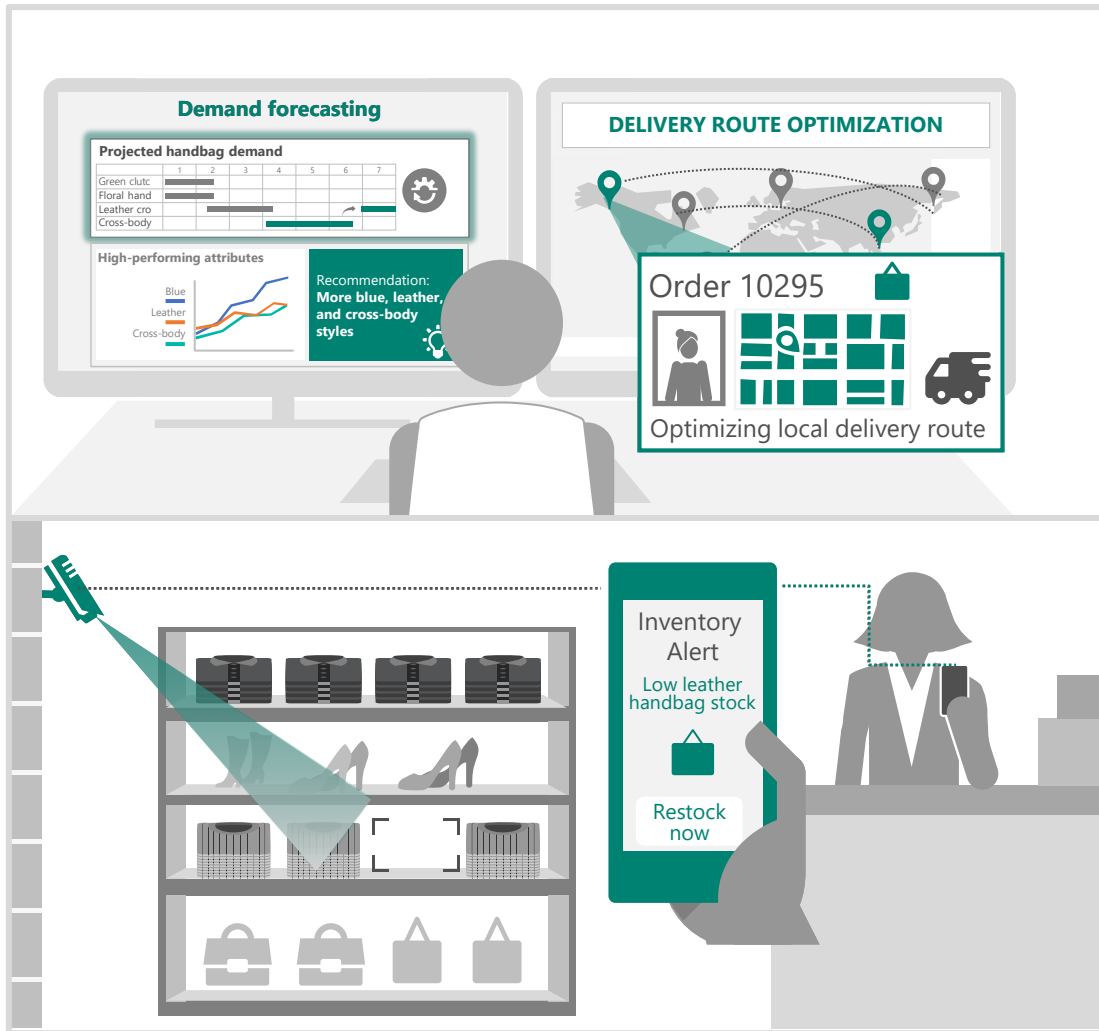


Develop heatmaps based on in-store customer behavior to understand which store layouts drive conversions and increase sales

Optimize shelf space and ensure items are always labeled with accurate prices and promotions

Alert expert staff automatically when customers have specific concerns about a product or service

Optimize your supply chain with intelligent operations



Generate more accurate demand forecasting and pricing insights based on public and customer data automatically

Optimize order deliveries and cut costs by using customer location and predicted traffic to plan distributed order fulfillment

Automate stock replenishment processes and optimize inventory management

Transform your products and services to deliver new value to customers



Identify customer preferences from multiple sources and match them to the most relevant piece of inventory

Enable customers to test, model, and customize products on the sales floor

Aggregate and analyze sentiment collected throughout the buying process to further fine-tune the customer journey

Demo

Retail experiences example

Spring essentials

Spring range in store now!

[Shop now](#)



Recommended for you



Litware Casual Brogue
\$69.99



Harlequin Aviators
\$89.99



Lambskin Cheesecutter
\$74.99

New in stock

Live Chat



Hi Andy! How can I help you today?

¿Qué vendes?



Tenemos todo que lo necesario, desde la última moda a los electrodomésticos!



Type a message...



[Sale](#)[Women](#)[Men](#)[Fashion](#)[Shoes](#)[Accessories](#)[Bags](#)[Electronics](#)[Jewelry](#)[Timepieces](#)[Homeware](#)

The latest *Timepieces*

Shop the latest in timepieces

[Shop now](#)

Products **1 - 8** of 72

Display: **8** 16 32

Live Chat



Tenemos todo que lo necesario, desde la última moda a los electrodomésticos!

I want a new watch



I can help you with that! Let me see what I can find.



What do you think of these?

Not what I'm looking for

These look great!



Type a message...



[Sale](#)[Women](#)[Men](#)[Fashion](#)[Shoes](#)[Accessories](#)[Bags](#)[Electronics](#)[Jewelry](#)[Timepieces](#)[Homeware](#)

Search results for: **Visual Match**



Description: Women's luxury watch

Format: JPG

Size: 132 x 129 pixels

Products **1 - 4** of 4

Display: **8** 16 32



Contoso Manhattan
\$99.99



Litware Superb
\$999.99



Contoso Classic
\$299.99

Sort By:

Best Match

Live *Chat*



I can see the watch. Let me see what we have in stock.



I found these similar watches. Let me know if you have any questions.



Type a message...



[Sale](#)[Women](#)[Men](#)[Fashion](#)[Shoes](#)[Accessories](#)[Bags](#)[Electronics](#)[Jewelry](#)[Timepieces](#)[Homeware](#)

Contoso Manhattan

PRICE
\$99.99

AVAILABILITY
In Stock

RATING (2,834 CUSTOMER REVIEWS)



Add To Cart

MORE INFO

Certified Movement
Water Resistant
10 year warranty

SHIPMENT

Self wind
10 ft. gold
New for 2



Customers who bought this item also bought



Live Chat

what we have in stock.

I found these similar watches. Let me know if you have any questions.

What's your returns policy?

You can return unworn items within seven days for a full refund.

What about after that?

After seven days, you can return unworn items for store credit.

Type a message...

[Sale](#)[Women](#)[Men](#)[Fashion](#)[Shoes](#)[Accessories](#)[Bags](#)[Electronics](#)[Jewelry](#)[Timepieces](#)[Homeware](#)

Contoso Manhattan

PRICE
\$99.99

AVAILABILITY
In Stock

RATING (2,514 CUSTOMER REVIEWS)



Add To Cart

MORE INFO

Certified Movement
Water Resistant
10 year warranty

SHIPMENT

Self wind
18 ct. gold
New for 2

Customers who bought this item also bought



Live *Chat*

during the following time slots.
Traffic is worst between 9:00 a.m. - 10:00 a.m. I recommend avoiding this time.

8:00 a.m. - 9:00 a.m.

9:00 a.m. - 10:00 a.m.

10:00 a.m. - 11:00 a.m.

11:00 a.m. - 12:00 p.m.

12:00 p.m. - 1:00 p.m.

1:00 p.m. - 2:00 p.m.

11:00 a.m. - 12:00 p.m.



Type a message...



[Sale](#)[Women](#)[Men](#)[Fashion](#)[Shoes](#)[Accessories](#)[Bags](#)[Electronics](#)[Jewelry](#)[Timepieces](#)[Homeware](#)

Contoso Manhattan

PRICE
\$99.99

AVAILABILITY
In Stock

RATING (2,654 CUSTOMER REVIEWS)



Add To Cart

MORE INFO

Certified Movement
Water Resistant
10 year warranty

SHIPMENT

Self wind
10 ft. gold
New for 2



Customers who bought this item also bought

Live Chat

Thanks Sonya!

Here's how to get to the closest store, see you tomorrow!



Type a message...

Furniture **SALE**

Up to 40% off selected items*

*While stocks last



HEY THERE!

I can make recommendations
based on your outfit





HEY THERE!

I can make recommendations
based on your outfit.

New in Beauty

Save 20% or more on a range
of your favourite brands!



WANGZ.COM

This is

AGE

27



HEY THERE!

I can make recommendations
based on your outfit

*Ma
Bea*

Save 20% or more
on all items
of your favourite brands

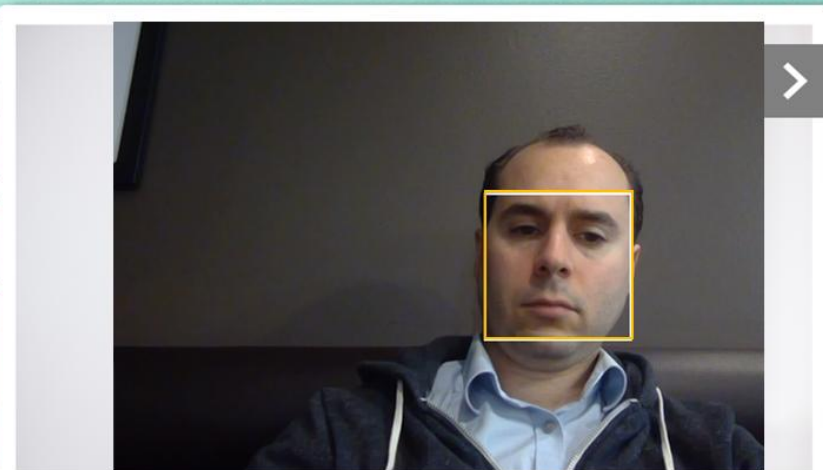


IMAGE CONTENT:

This is a tag

Tag here

Tag

AGE:

27

EMOTION:

Happy

ATTRIBUTES:

Beard

Hi Tom

How can I help you today?

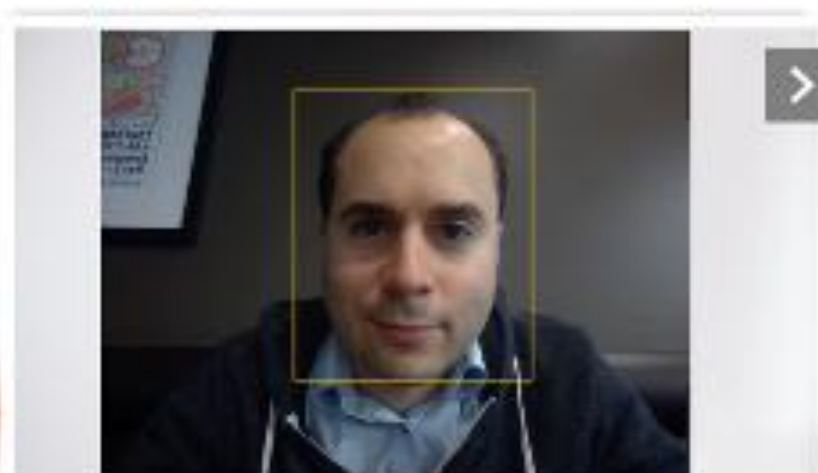


IMAGE CONTENT:

This is a tag

Tag here

Tag

AGE:

27

EMOTION:

Happy

ATTRIBUTES:

Beard

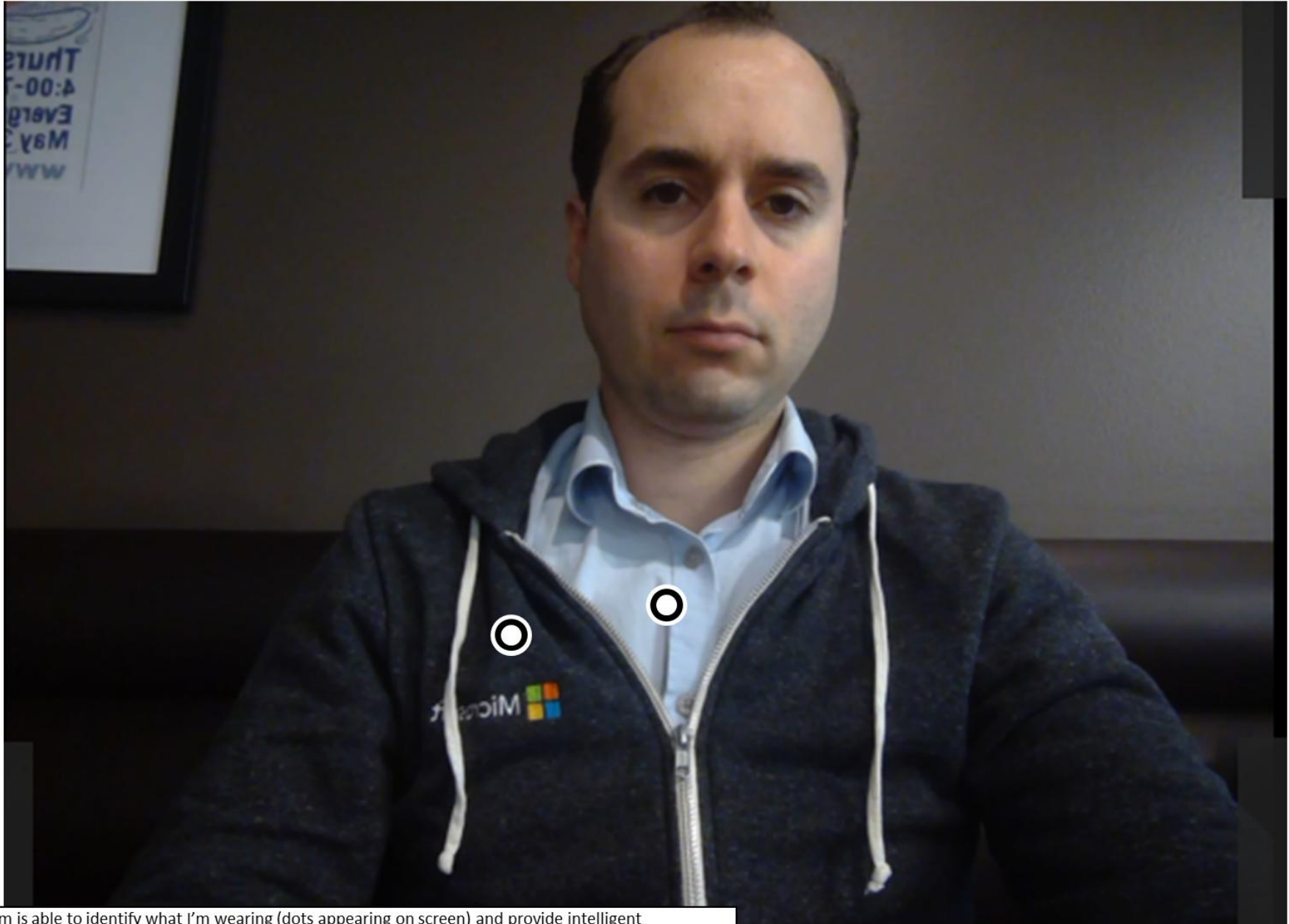
Identification

Tom

< Back

Hi Tom

I can help you
with that!



Flow: By making a step back (Click) , the system is able to identify what I'm wearing (dots appearing on screen) and provide intelligent recommendations (click).

< Back

Hi Tom

Something like
this perhaps?



Matching Garments



Product name
\$109.99



Product name
\$149.99



Product name
\$149.99



Product name
\$99.99

Suggested Pairings



Product name
\$169.99



Product name
\$149.99



Product name
\$149.99



Product name
\$99.99



Litware *Lifestyle*

● Beauty and Hair
10 - Beauty Products

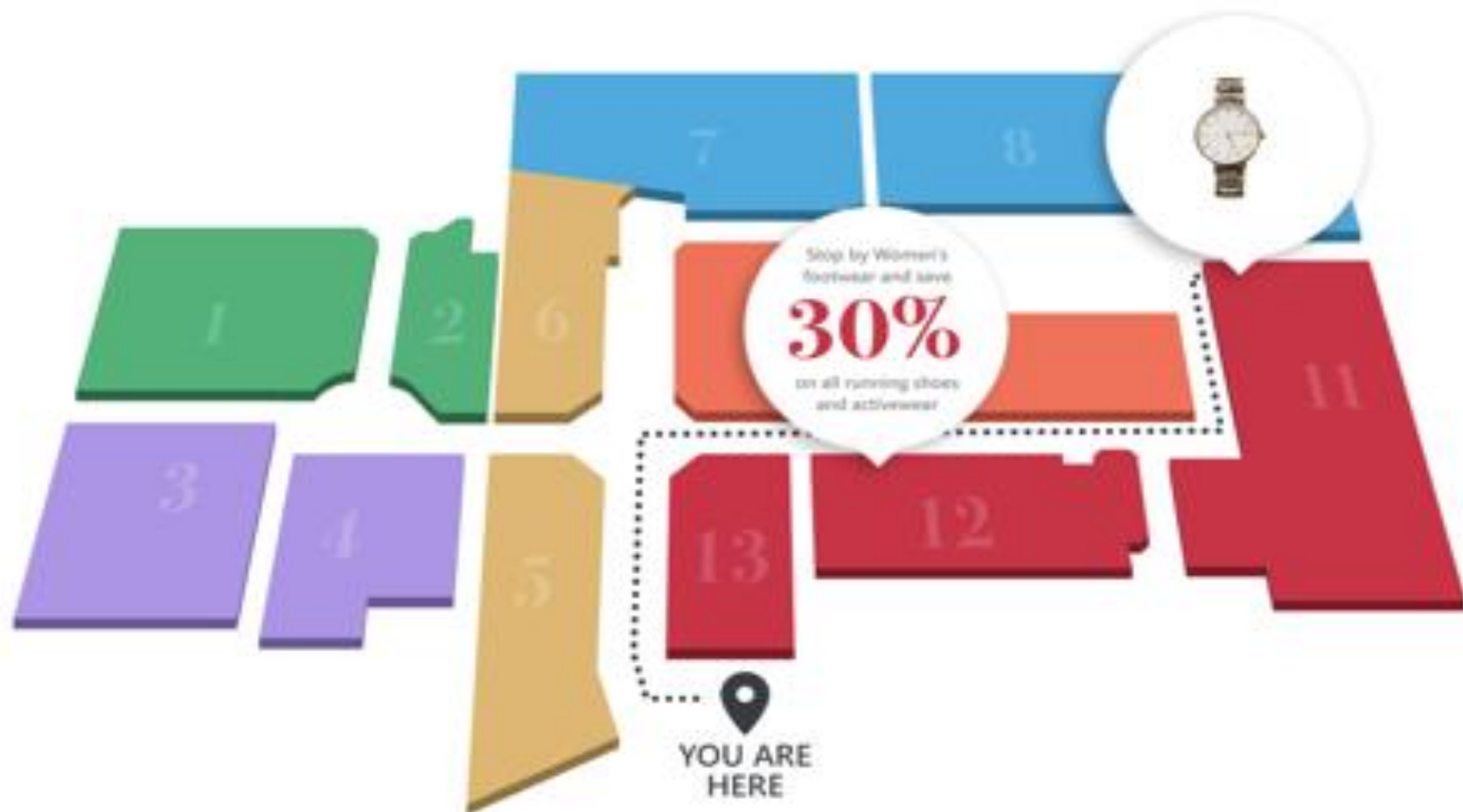
● Women's
13 - Accessories
12 - Footwear
11 - Fashion

● Men's
7 - Fashion
8 - Footwear
10 - Accessories

● Electronics
5 - Home & Kitchen
6 - Entertainment

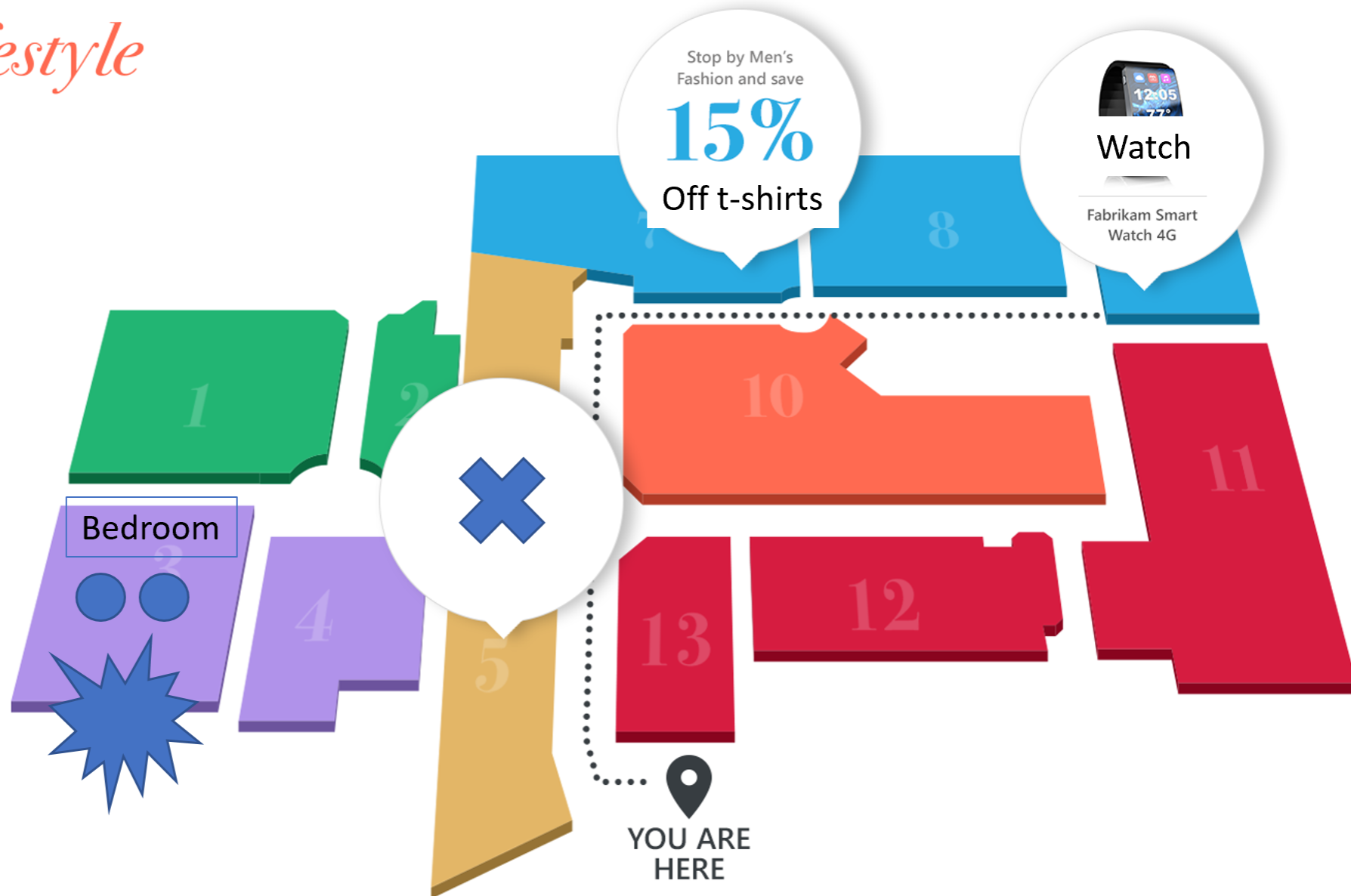
● Homewares
3 - Bedroom
4 - Home & Kitchen

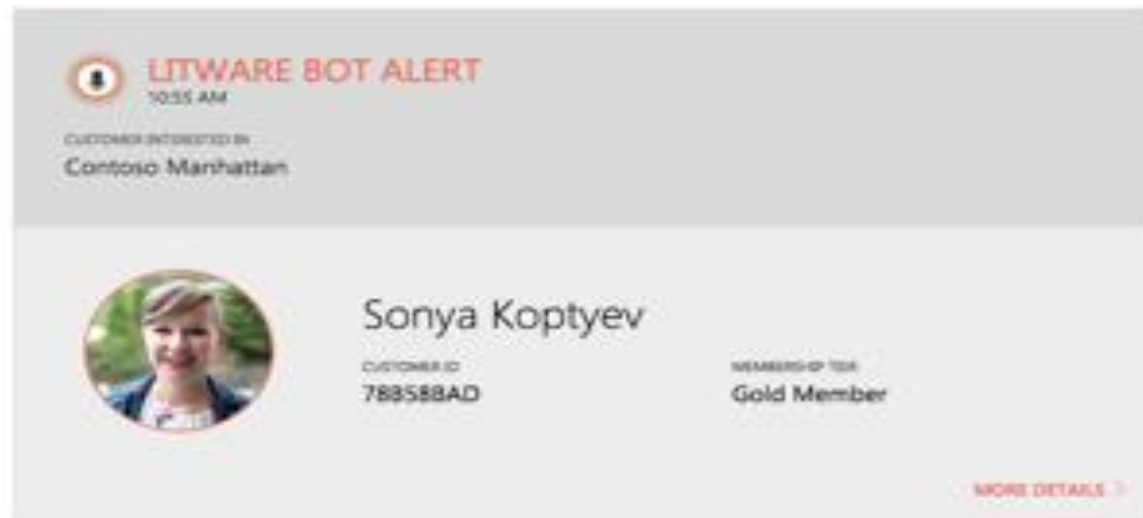
● Kids
1 - Clothing
2 - Toys



Litware *Lifestyle*

- Beauty and Hair
 - 10 - Beauty Products
- Women's
 - 11 - Accessories
 - 12 - Footwear
 - 13 - Fashion
- Men's
 - 7 - Fashion
 - 8 - Footwear
 - 10 - Accessories
- Electronics
 - 5 - Entertainment
 - 6 - Home & Kitchen
- Homewares
 - 3 - Bedroom
 - 4 - Home & Kitchen
- Kids
 - 1 - Clothing
 - 2 - Toys





Litware *Lifestyle*

< Swipe to unlock >

Friday, 27 Apr
2018

8:00AM
APPOINTMENT

9:00AM
APPOINTMENT

10:00AM
APPOINTMENT

10:30AM
SCHEDULED BREAK

11:00AM
APPOINTMENT

12:00PM
APPOINTMENT

1:00PM
APPOINTMENT

2:00PM
APPOINTMENT

2:30PM
SCHEDULED BREAK



Sonya Koptjev

EMAIL
sonya@contoso.com

Send Sonya

LOCATION
Bellevue, WA

CUSTOMER ID
788588AD

MEMBER SINCE
08/24/1997

MEMBERSHIP STATUS
Gold Member

LAST PURCHASE
Tabrikam Jacket



Contoso Manhattan

PRICE
\$99.99

AVAILABILITY
In Stock

RATING (2,854 CUSTOMER REVIEWS)



Add To Cart 

MORE INFO

Certified Movement
Water-Resistant
10-year warranty

SHIPMENT

Self-winding
10 ct. gold
New for 2018

Upsell products



TRANSFORMATION OF LIBRARY SERVICES WITH IOT

AUTOMATED BOOK TRACKING AND INVENTORY MANAGEMENT



IoT in Libraries

IoT technology enhances library operations by automating book tracking, leading to more efficient inventory management.

Improved Accuracy

Automation improves accuracy in tracking library books, reducing errors and discrepancies in inventory records.

Cost Reduction

Automating inventory processes reduces labor costs, allowing libraries to allocate resources more effectively.

Better Resource Availability

With improved inventory management, libraries can enhance resource availability for patrons, improving their experience.



SMART ENVIRONMENT CONTROL (LIGHTING, TEMPERATURE, ETC.)

IoT in Libraries

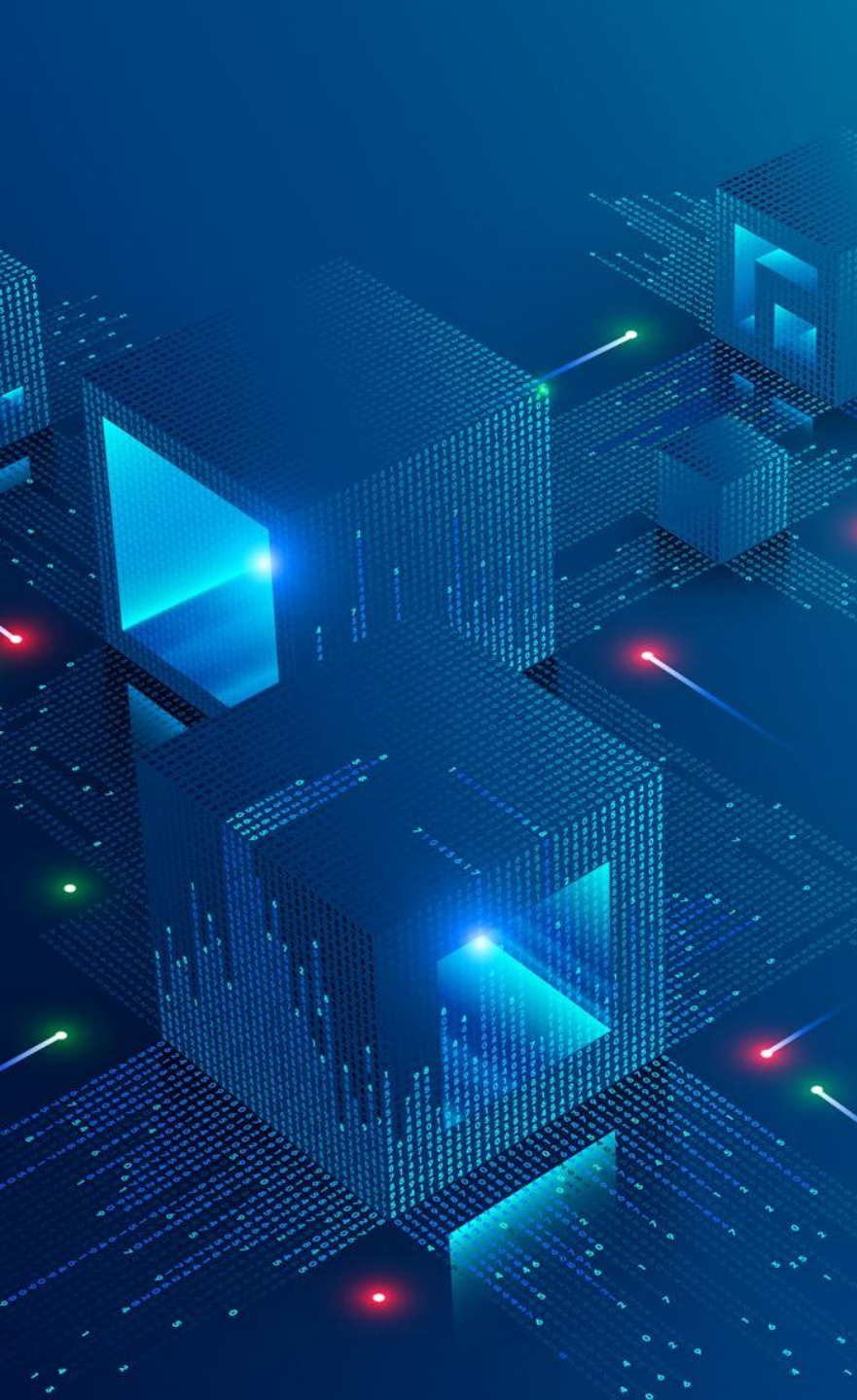
IoT systems are increasingly being implemented in libraries to manage environmental conditions efficiently.

Enhanced User Comfort

By optimizing lighting and temperature, libraries can significantly enhance user comfort and satisfaction during their visits.

Energy Optimization

Utilizing smart controls helps libraries reduce energy consumption while maintaining a pleasant environment for patrons.



ENHANCED SECURITY AND SURVEILLANCE SYSTEMS

IoT in Security

The Internet of Things (IoT) enables libraries to utilize smart surveillance systems for enhanced security.

Real-time Monitoring

Smart surveillance systems allow for real-time monitoring of activities, ensuring immediate response to incidents.

Safer Library Environment

Implementing advanced security measures creates a safer environment for both staff and patrons in libraries.



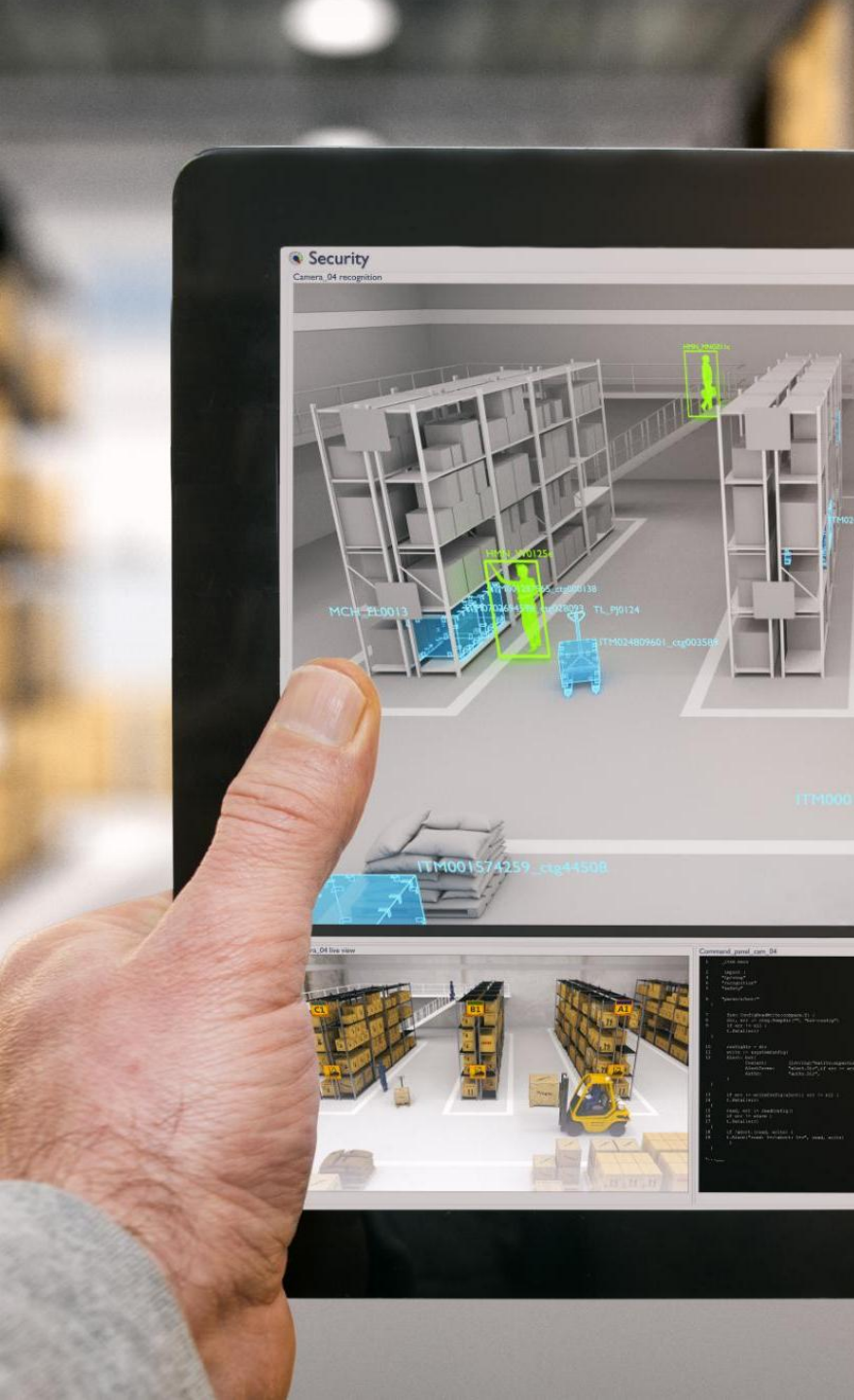
PERSONALIZED RECOMMENDATIONS AND VIRTUAL ASSISTANTS

Personalized Recommendations

AI-driven systems analyze user data to provide tailored recommendations for books and resources, improving user satisfaction.

Role of Virtual Assistants

Virtual assistants enhance user experience by guiding patrons through library services, making information more accessible.



AI-DRIVEN CATALOGING AND CLASSIFICATION

Automation of Cataloging

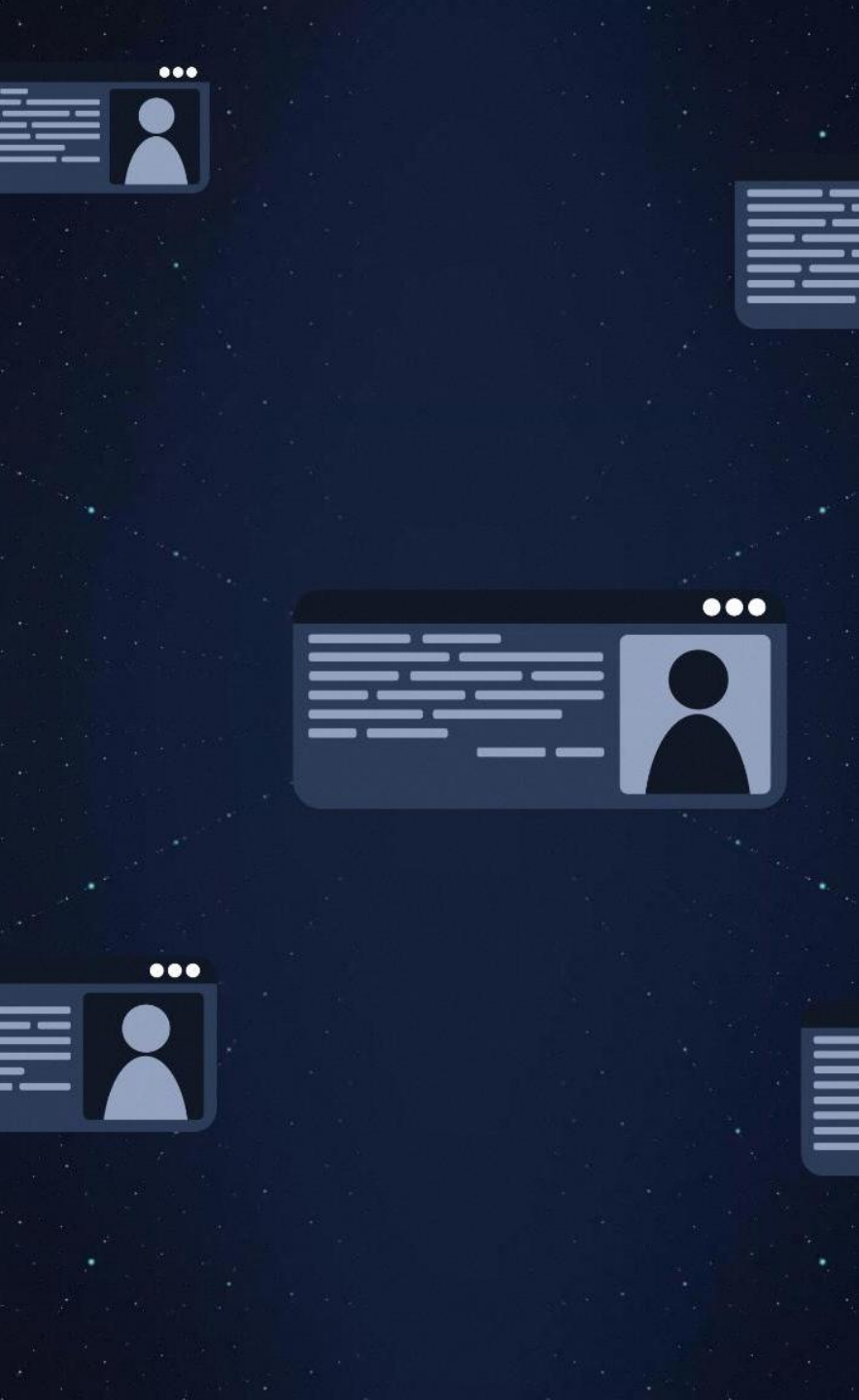
AI technologies automate the cataloging process, ensuring high accuracy and efficiency in managing library materials.

Improved Accuracy

The use of AI in classification improves the accuracy of resource allocation and minimizes human errors.

Librarian Focus

With automated systems in place, librarians can concentrate on complex tasks that require human insight and creativity.



IMPROVED USER EXPERIENCE THROUGH NATURAL LANGUAGE PROCESSING

Intuitive Search Queries

NLP allows users to input queries in natural language, making searches more conversational and user-friendly.

Enhanced Information Retrieval

AI-driven NLP improves the accuracy and relevance of search results, making information retrieval swift and efficient.

Accessibility for All Users

By enabling natural language queries, NLP makes information access easier for users of all backgrounds and technical skills.



INTERACTIVE AND IMMERSIVE LEARNING SPACES

Transformation of Libraries

Libraries can evolve into interactive learning environments by integrating IoT and AI technologies, enhancing user engagement.

Immersive Experiences

Interactive spaces provide immersive learning experiences that attract diverse users, fostering creativity and exploration.

Attracting Diverse Users

These innovative environments cater to users of all ages and backgrounds, promoting lifelong learning and inclusivity.



COMMUNITY ENGAGEMENT THROUGH AI-DRIVEN EVENTS AND ACTIVITIES

Tailored Events

AI technology enables libraries to plan events that resonate with community interests, enhancing attendance and engagement.

Increased Participation

By utilizing AI, libraries can boost participation rates among users by offering personalized activities that meet their needs.

Vision for Library

Empower library visitors to define their own knowledge and discovery journey while enabling libraries to expand the experiences beyond traditional Services



Visitor-Centric Journey

Drive a great visitor journey across all channels, engaging patrons with a personalized, seamless and differentiated experience



Empowered Librarians

Enable Librarians to spend more time catering to not just stated but latent needs of the visitors, equipped with advanced tools and technologies



Advanced Analytics

Gain insights to not just personalize the visitor experience but also support decision-making for library services while innovating for the future



Operational Efficiencies

Integrate library operations to manage staff, inventory, and productivity seamlessly, fostering resilience and agility with real-time feedback

Business Drivers for Library Service

Business Drivers

Increasing demand for **digital library resources** and online access

Evolving visitor expectations for **seamless, modern experiences**

Personalized visitor journeys becoming key to engagement

Expanding outreach to **underserved and remote communities**



Focus Areas for Key Executives

Digital and physical integration to enhance visitor experiences

Building a **multi-channel library system** with flexible access

Offering **personalized recommendations** based on visitor data

Leveraging **advanced analytics** for resource planning and expansion



Business Benefits

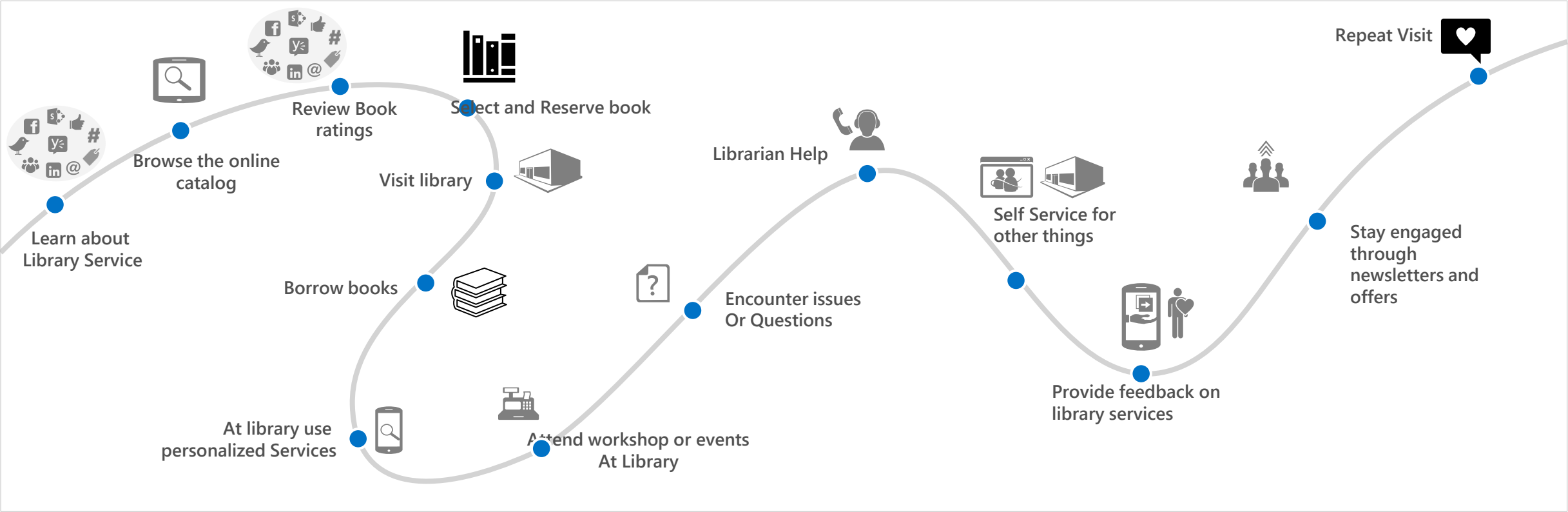
Increased visitor engagement and satisfaction through modernized experiences

Improved operational efficiency, reducing resource waste and cost

New funding and collaboration opportunities, ensuring long-term sustainability

Better resource utilization driven by data-informed decisions

Customer Experience Journey Map



Digital Hotspots

Pre-Visit

- Online catalog search
- Book reservation system
- Virtual library tour with Mixed reality based virtual visit

Visit

- Self-Service kiosks
- Digital navigation systems
- Access to e-resources
- On-Site event

Post-Visit

- Automated notifications
- Feedback systems
- Library newsletter
- Community engagement

Q&A