AI vs. Customer Experience

Think beyond recommendations

Pierre Lupi Chen
Data Science Architect

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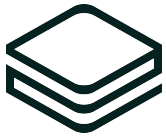
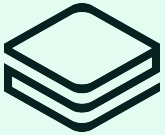
Tomorrow's
technology
delivered today



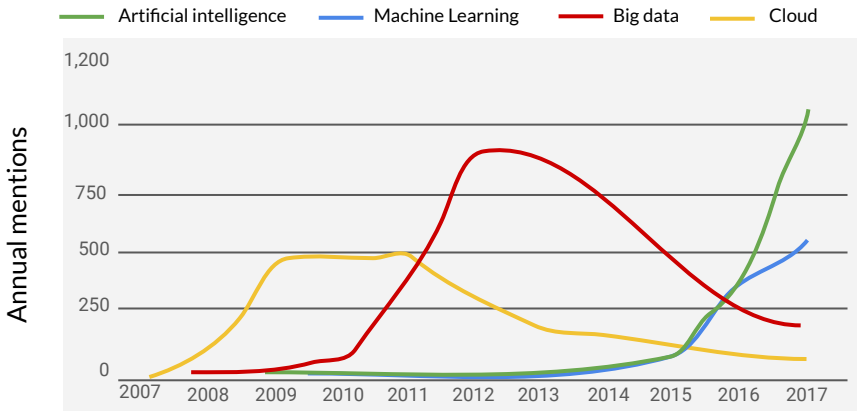
AI: hype or reality?



The hype

Enthusiasm for AI & ML - *at the cost of Cloud & Big Data*

Company earnings calls mentions - IT companies



The graph shows Artificial intelligence (AI) and Machine learning (ML) mentions in company earnings calls, in the IT sector.
This sector has a very large scale of AI and ML mentions.
Big data and Cloud mentions are added to put AI / ML mentions in perspective.

AI and ML mentions have increased since 2015 within the IT sector.
The IT has the most mentions of AI on earnings calls.

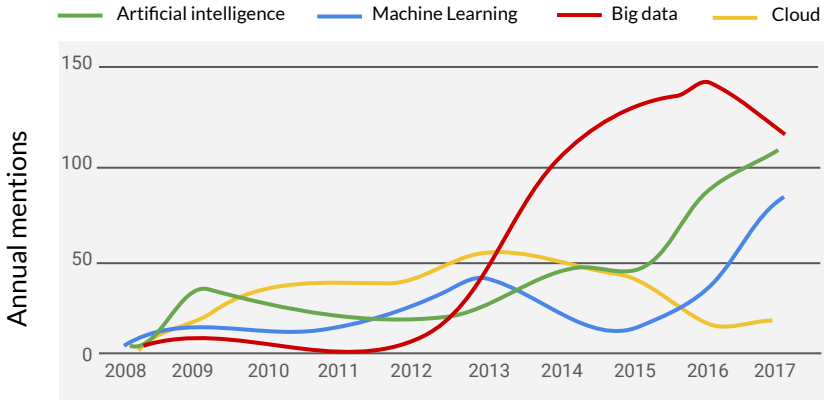
This analysis uses only companies publicly traded on the New York Stock Exchange.

Source: AI Index Report 2018

The hype

Enthusiasm for AI & ML - *at the cost of Cloud & Big Data*

Company earnings calls mentions - Sum of other industries



The graph shows Artificial intelligence (AI) and Machine learning (ML) mentions in company earnings calls, by industries other than IT.
Big data and Cloud mentions are added to put AI / ML mentions in perspective.

For most other industries excluding IT, the increase of AI and ML mentions began in 2016.
The Consumer Discretionary, Financial and Health Care sectors have the most mentions of AI on earnings calls.

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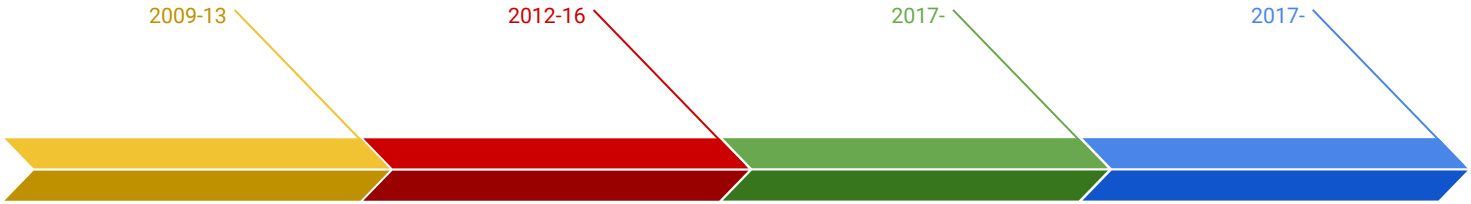
Source: AI Index Report 2018

A logical flow

From Cloud to ML



Cloud

Cloud has been at the origins of a new type of businesses: XaaS's.
Any XaaS provides managed services leveraging storage & computational power of *Cloud* infrastructures.

Big Data

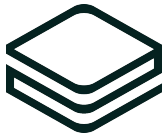
Field that treats ways to extract information from tremendous amount of data. Currently are considered as *Big Data* petabyte-sized datasets.

Artificial Intelligence

AI refers to any machine with intelligence.
This does not mean that the machine is self-aware or similar to human intelligence; it only means that the machine is capable of solving a specific problem.

Machine Learning

Machine learning refers to a specific type of AI that learns by itself.
And as it gets more data, it gets better at learning.



AI is the new standard

Involvement in a social & societal revolution - *beyond industry perspectives*

Web 1.0

First stage of the World Wide Web.
According to *Tim Berners-Lee*, it is a "read-only web" allowing us to search for information & read it.
Poor user interaction or content generation & static pages.

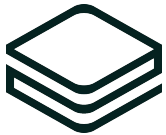
Web 3.0

New paradigm where machine usage organizes the information better and improves the user experience & interactions.

AI is a fundamental pillar in the web evolution - *still on-going*.

Web 2.0

Term invented by *Darci DiNucci* in 1999 then popularized by *Tim O'Reilly* & *Dale Dougherty* in late 2004.
Use of new technologies (primarily Ajax for interfaces) focusing on front-end.
Web users contribute to the information: they share perspectives, opinions, thoughts & experiences via podcasting, blogging, tagging, curating, web content voting, social bookmarking, networking or media, etc.



AI is the new standard

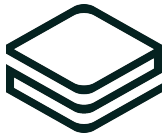
Involvement in a social & societal revolution - *beyond industry perspectives*

Web 1.0	Web 2.0	Web 3.0
Mostly Read-Only	Wildly Read-Write	Portable and Personal
Company Focus	Community Focus	Individual Focus
Home Pages	Blogs / Wikis	Live-streams / Waves
Owning Content	Sharing Content	Consolidating Content
Web Forms	Web Applications	Smart Applications
Directories	Tagging	User Behaviour
Page Views	Cost Per Click	User Engagement
Banner Advertising	Interactive Advertising	Behavioural Advertising
Britannica Online	Wikipedia	The Semantic Web
HTML/Portals	XML / RSS	RDF / RDFS / OWL

Differences between Web 1.0, Web 2.0 & Web 3.0

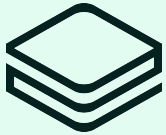
Here are some considerations regarding the main features involvement in each web paradigm, including KPIs and technologies.

Here are some areas where AI has a prominent involvement.



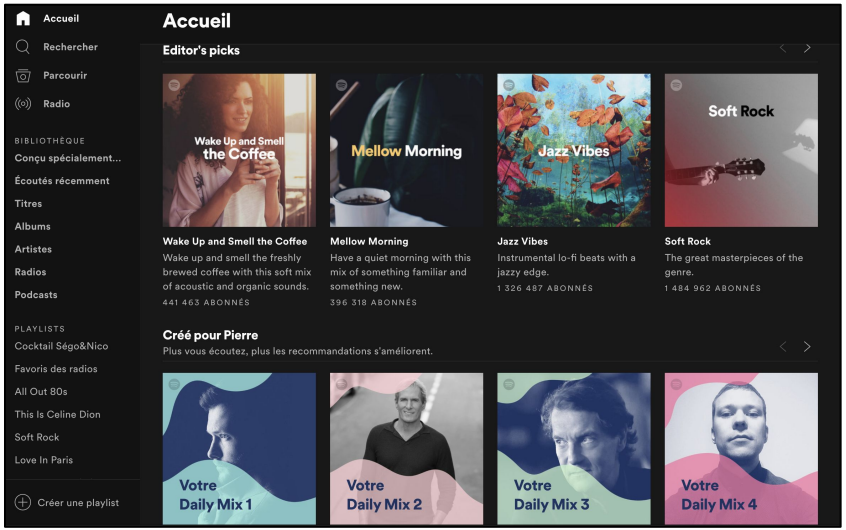
AI improves customer experience

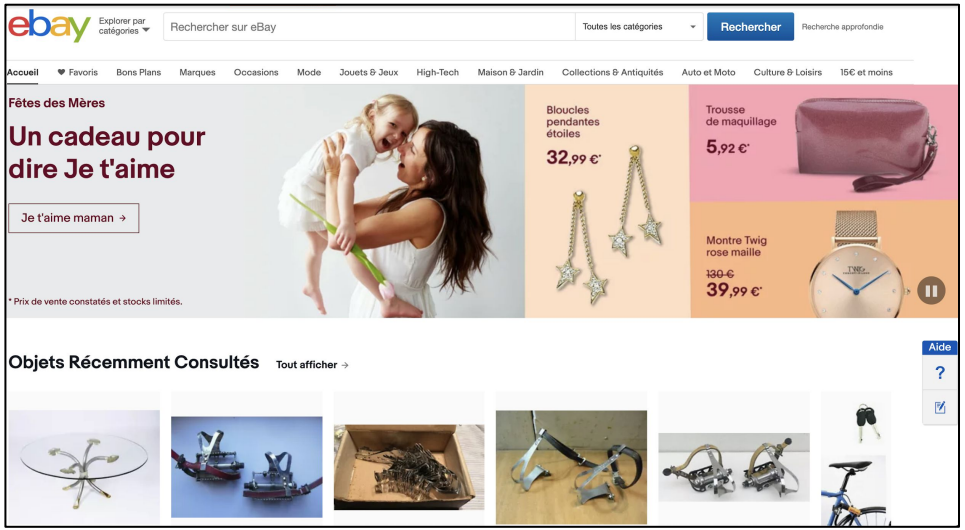
which let companies retain customers and boost revenues



AI serves customer experience

Focus on recommendations

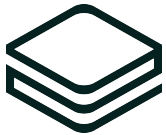




Fast-moving vs. durable goods

Which type of products do companies offer to customers?

How quick does it take to sell the product?
How much does the product cost?
How long does the product last?



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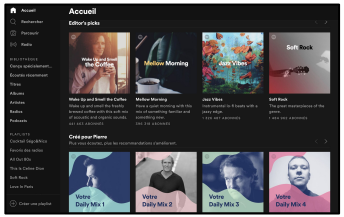
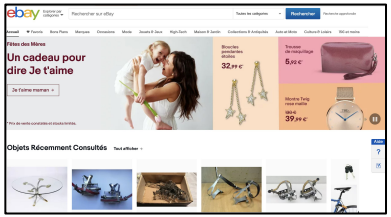


Fast-moving goods
inexpensive

Food
Drinks
Videos (streaming)
Music (streaming)

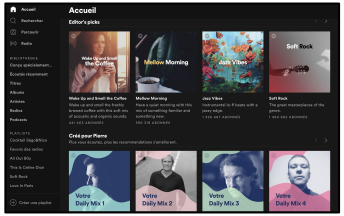


Durable goods
costly

Electronics
Videos (sale)
Music (sale)

Fast-moving vs. durable goods

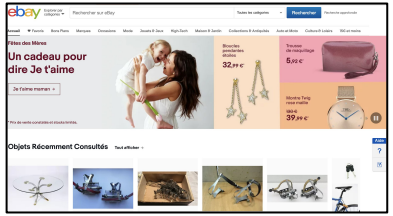
Customers face with different dilemmas



Fast-moving goods

Inexpensive
Fast consumption

Open to experimentation of new products



Durable goods

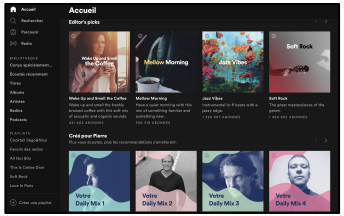
Costly
Long consumption

Not intended to be replaced in a short notice

Fast-moving vs. durable goods

Customers face with different dilemmas

Fast-moving goods



Inexpensive
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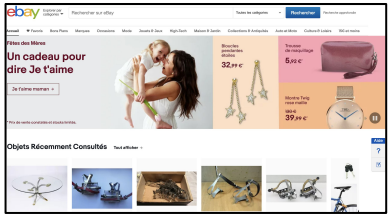
Durable goods



Costly
Long consumption

Not intended to be replaced in a short notice

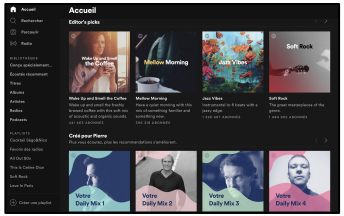
Scenario 0

Customer is open to new products suggestions to broaden his experience

Fast-moving vs. durable goods

Customers face with different dilemmas

Fast-moving goods



Inexpensive
Fast consumption

Open to experimentation of new products

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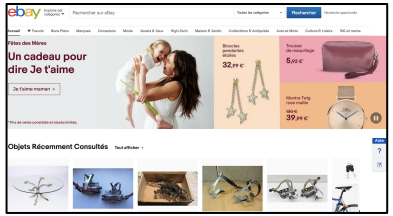
Durable goods



Costly
Long consumption

Not intended to be replaced in a short notice

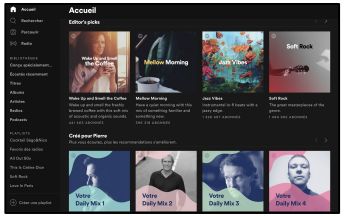
Scenario 1

Customer may be intended to buy a product but does not know yet any specifics

Fast-moving vs. durable goods

Customers face with different dilemmas

Fast-moving goods



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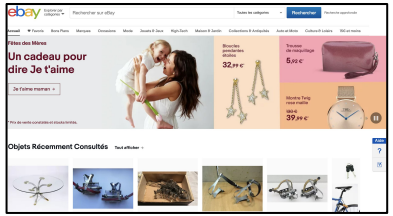
Durable goods



Costly
Long consumption

Not intended to be replaced in a short notice

Scenario 1

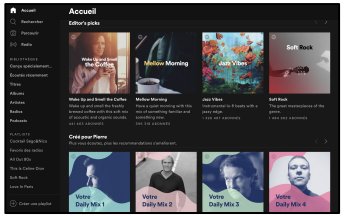
Customer may be intended to buy a product but does not know yet any specifics

Scenario 2

Customer has made his decision about buying a specific product but has still not completed his purchase

Product recommendations

Is it what matters most?



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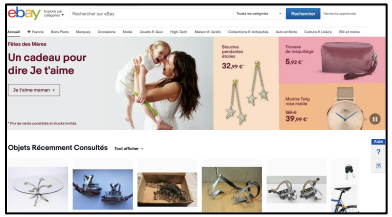


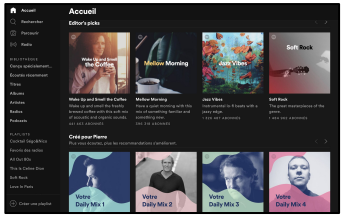
Durable goods

WHAT

Recommend new products which should fit the customer's tastes & needs.

Product recommendations

Is it what matters most?



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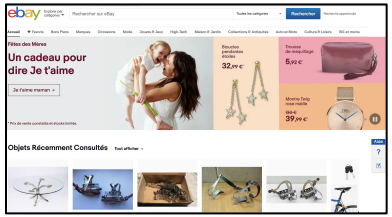


Durable goods

WHAT

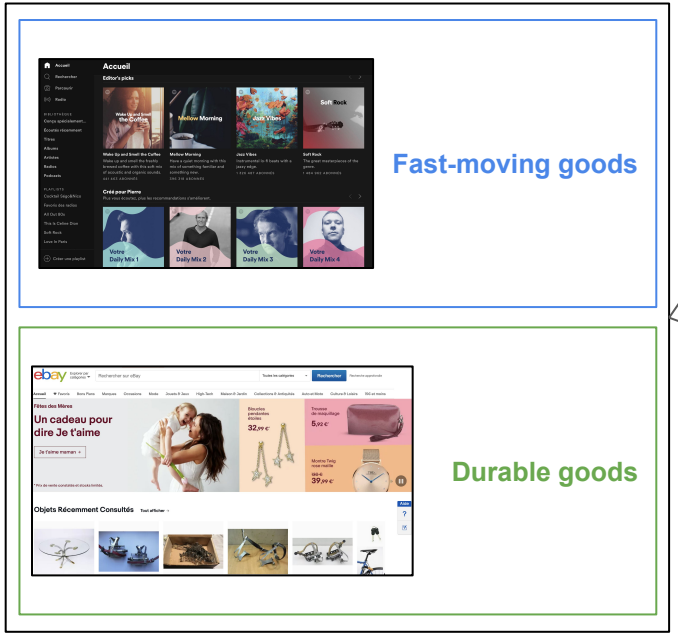
Recommend new products which should fit the customer's tastes & needs.

This is not enough...

The four primary questions

WHAT | WHEN | WHY | HOW

Beyond product recommendations



WHAT

Recommend new products which should fit the customer's tastes & needs.

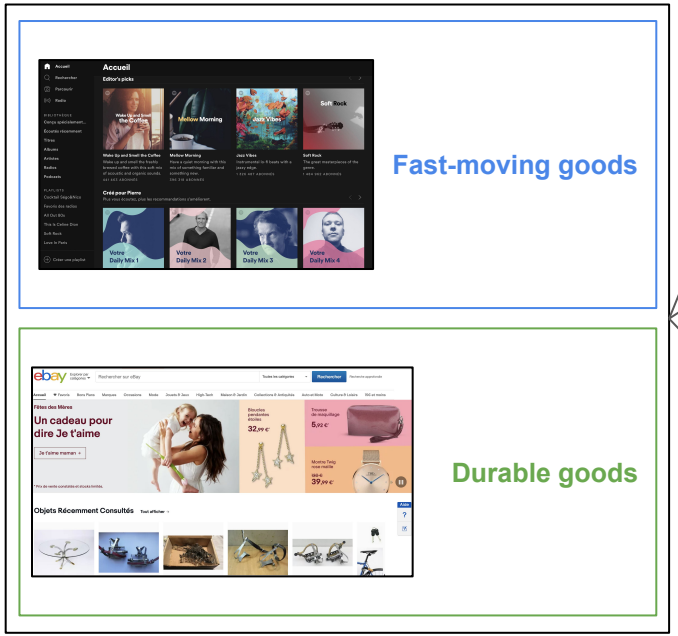
WHEN

Know the right time to reach your customer.

The four primary questions

WHAT | WHEN | WHY | HOW

Beyond product recommendations



WHAT

Recommend new products which should fit the customer's tastes & needs.

WHEN

Know the right time to reach your customer.

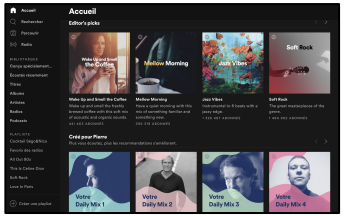
WHY

Find the reasons why your customer might be churning.

The four primary questions

WHAT | WHEN | WHY | HOW

Beyond product recommendations



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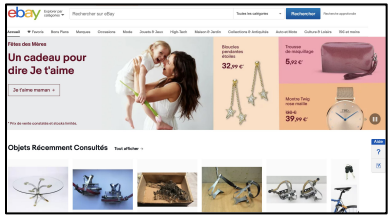


Durable goods

WHAT

Recommend new products which should fit the customer's tastes & needs.

WHEN

Know the right time to reach your customer.

WHY

Find the reasons why your customer might be churning.

HOW

Recommend new products in a non-confusing fashion.
Curate your website/app layout.

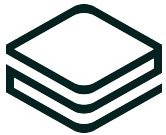
Help your customer to make his decision to purchase.

The four primary questions

WHAT | WHEN | WHY | HOW

The tools to apply

	Question	Tools
1	WHAT	dedicated Recommendation Engines *e.g. collaborative-filtering models*



The four primary questions

WHAT WHEN WHY HOW

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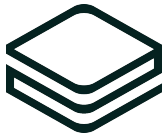
2	WHEN	Propensity-to-Churn models *Is your customer still loyal or likely to churn?*



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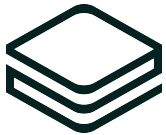
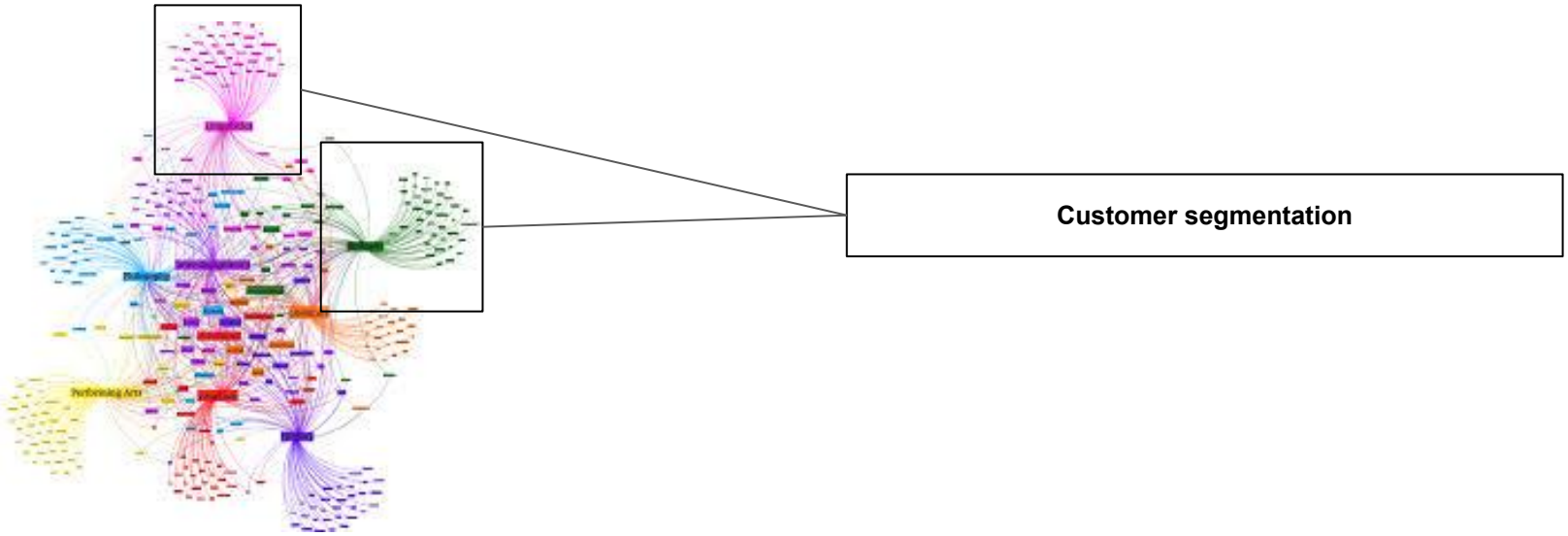


The four primary questions

WHAT | WHEN | WHY | HOW

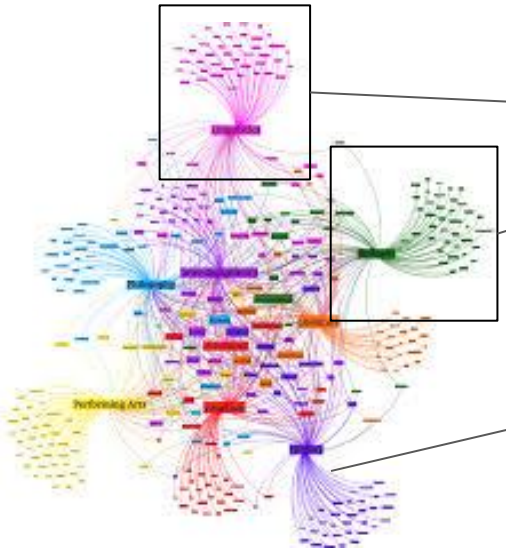
Actionable insights - *what they actually provide*



The four primary questions

WHAT | WHEN | **WHY** | HOW

Actionable insights - *what they actually provide*



Customer segmentation

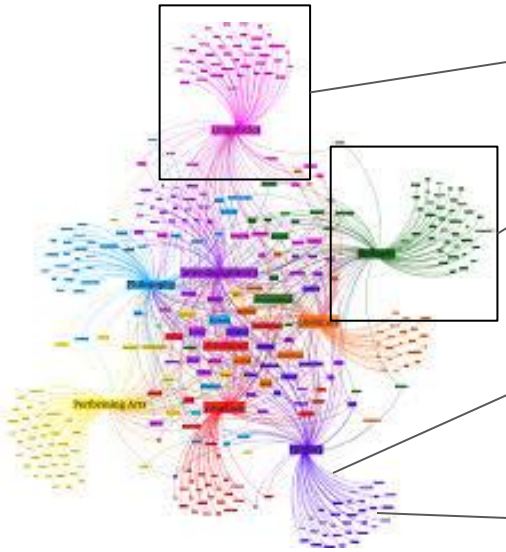
Trends for each segment

- *common purchase behaviors of loyal customers*
- *behavioral characteristics of churning customers*

The four primary questions

WHAT | WHEN | **WHY** | HOW

Actionable insights - *what they actually provide*



Customer segmentation

Trends for each segment

- *common purchase behaviors of loyal customers*
- *behavioral characteristics of churning customers*

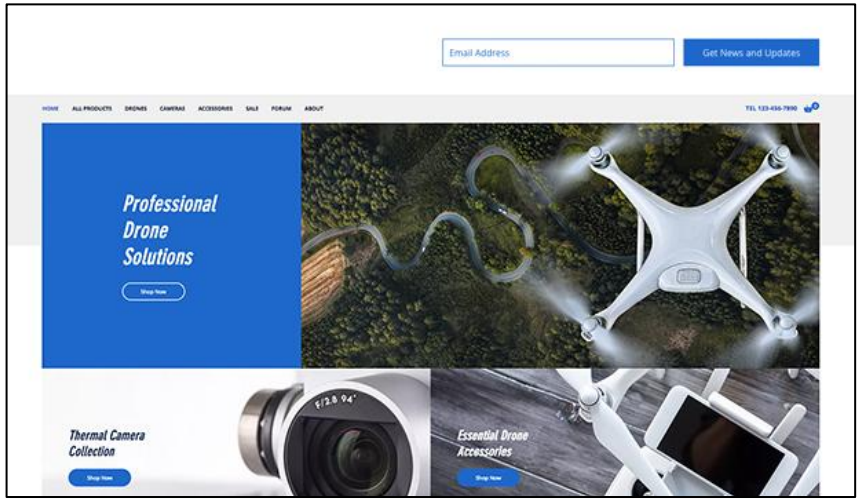
Personalized diagnosis of each customer

- *what is the specific customer behaviour conducting him to churn or to stay loyal*

Actionable insights

WHAT | WHEN | **WHY** | HOW

Leverage Shapley values



Let’s take the example of an electronics website.

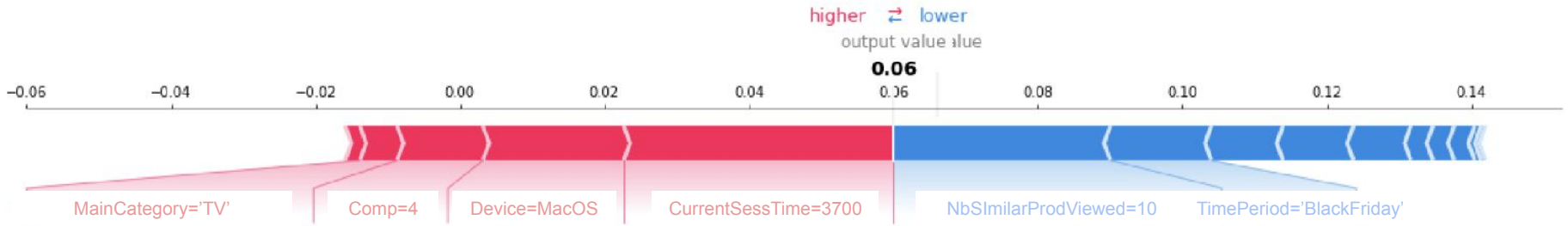
Problem statement
Black Friday sales
Discover which customers are likely to churn while they are still on the website and take actions to uplift sales.

Actionable insights

WHAT | WHEN | WHY | HOW

Leverage Shapley values

Customer A: non churning
Likelihood to churn: 0.06
Driver feature values: Black Friday & high number of similar products viewed

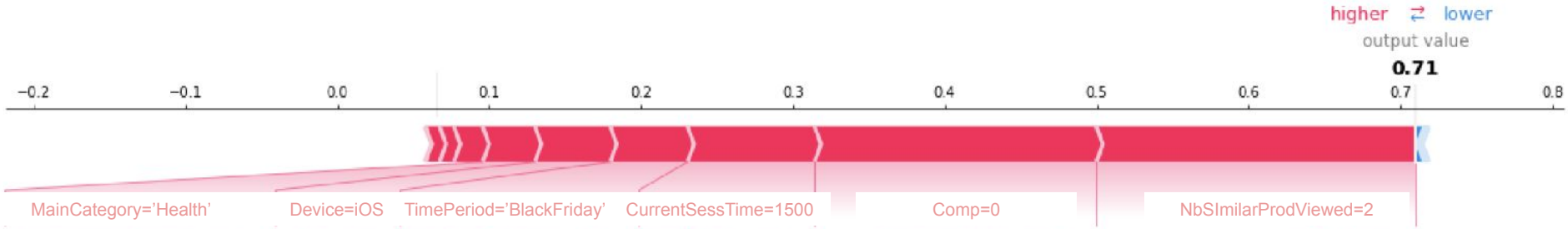


Actionable insights

WHAT | WHEN | WHY | HOW

Leverage Shapley values

Customer B: churning
Likelihood to churn: 0.71
Driver feature values: low number of similar products viewed, low number of comparisons made, short time spent in session



Actionable insights

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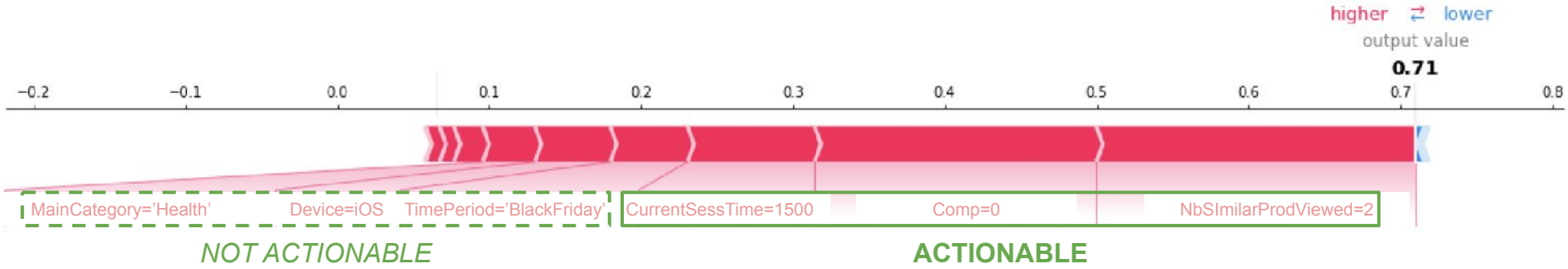

Actionable insights

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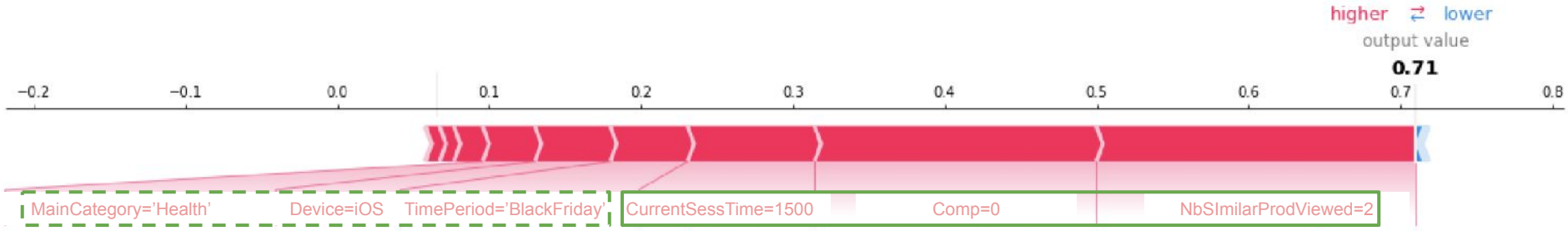

NOT ACTIONABLE

ACTIONABLE

change the website layout
suggest similar products to compare

The four primary questions

WHAT WHEN WHY HOW

The tools to apply

	Question	Tools
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2	WHEN	Propensity-to-Churn models *Is your customer still loyal or likely to churn?*
3	WHY	Actionable insights *Interpretability of models (e.g. churn models)*
4	HOW	Follow-up actions *ex: products comparison, flash discount*

The four primary questions

WHAT | WHEN | WHY | HOW

Quantitative vs. qualitative impact on customer experience

dedicated Recommendation Engines

→ **Quantitatively** improve the customer experience by product diversification

→ **Personalized** recommendations

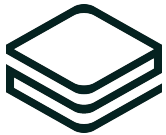
Propensity-to-Churn models

Actionable insights

Follow-up actions

→ **Qualitatively** improve the customer experience by:

- targeting the **right moment** to make the product recommendation
- applying a **personalized strategy** to encourage the customer to purchase



Thank you.