



A Process Model for Dashboard Onboarding

EuroVis 2022



JYU
Visual Data
Science Lab

V. Dhanoa, C. Walchshofer, A. Hinterreiter, H. Stitz, E. Gröller and M. Streit



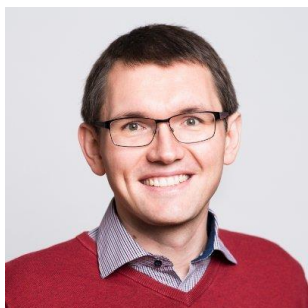
Vaishali
Dhanoa^{1,2}



Conny
Walchshofer^{1,2}



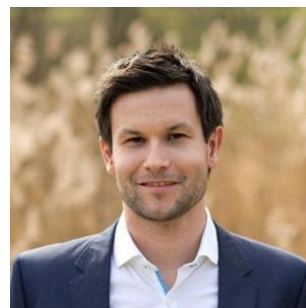
Andreas
Hinterreiter²



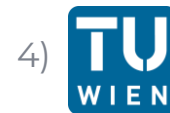
Holger Stitz³



Eduard
Gröller^{4,5}



Marc Streit^{1,2,3}

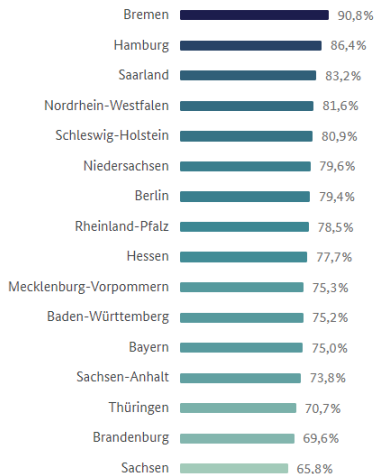
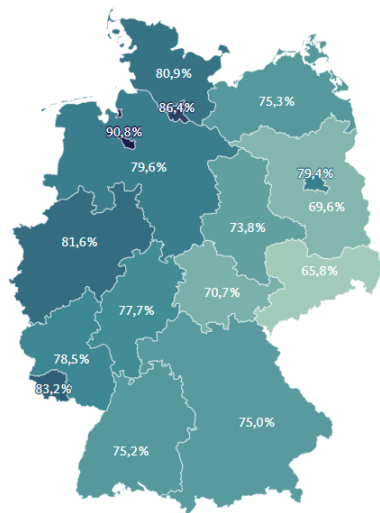


Dashboards

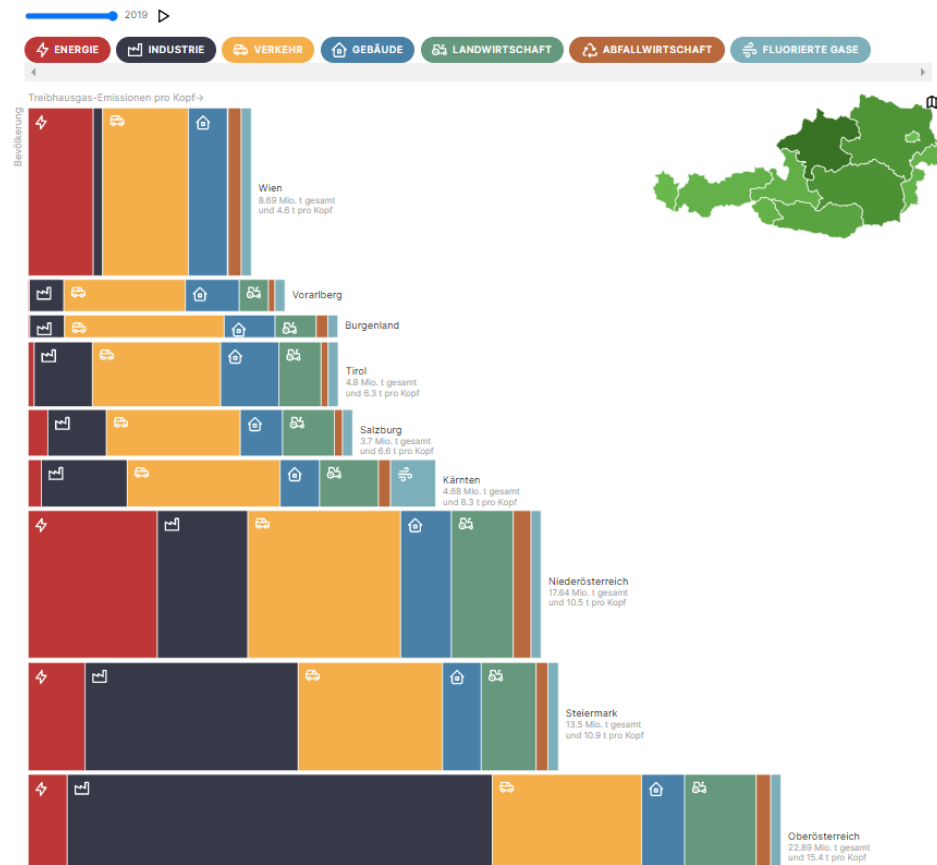
Impf-Fortschritt nach Bundesland

Mindestens einmal Geimpfte Grundimmunisierte Eine Auffrischungsimpfung Zwei Auffrischungsimpfungen

Gesamt ☐ Bevölkerungsanteil



<https://impfdashboard.de/>



<https://klimadashboard.at/>

Example Dashboard

New Hires

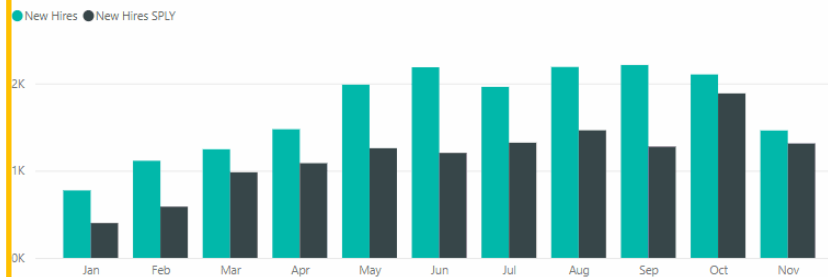
19K

New Hires

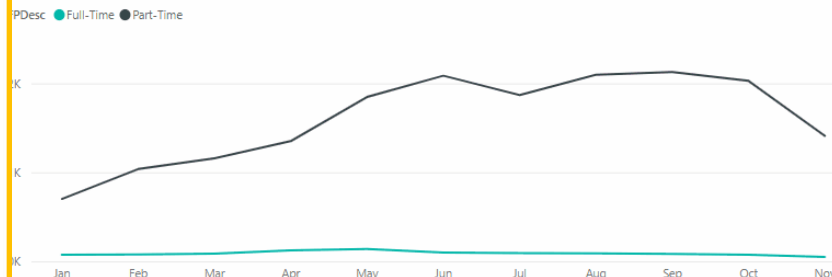
13K

New Hires SPLY

New Hires and New Hires Same Period Last Year

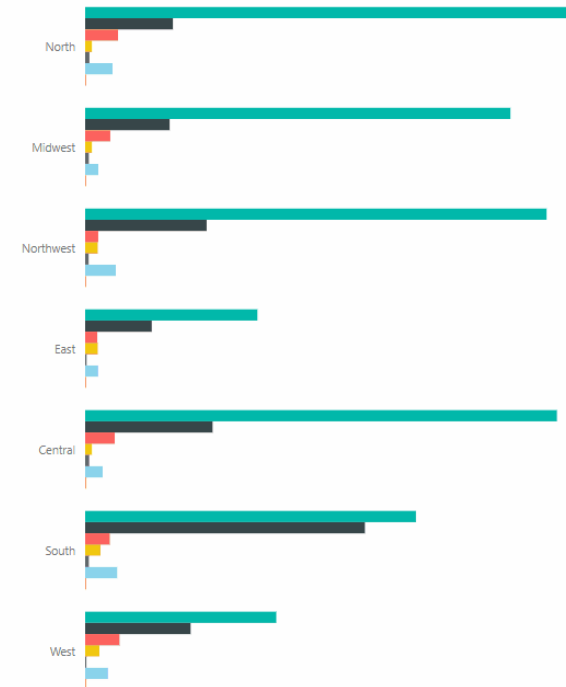


New Hires by Month and FPDsc



New Hires by Region and Ethnicity

Ethnicity: ● Group A ● Group B ● Group C ● Group D ● Group E ● Group F ● Group G



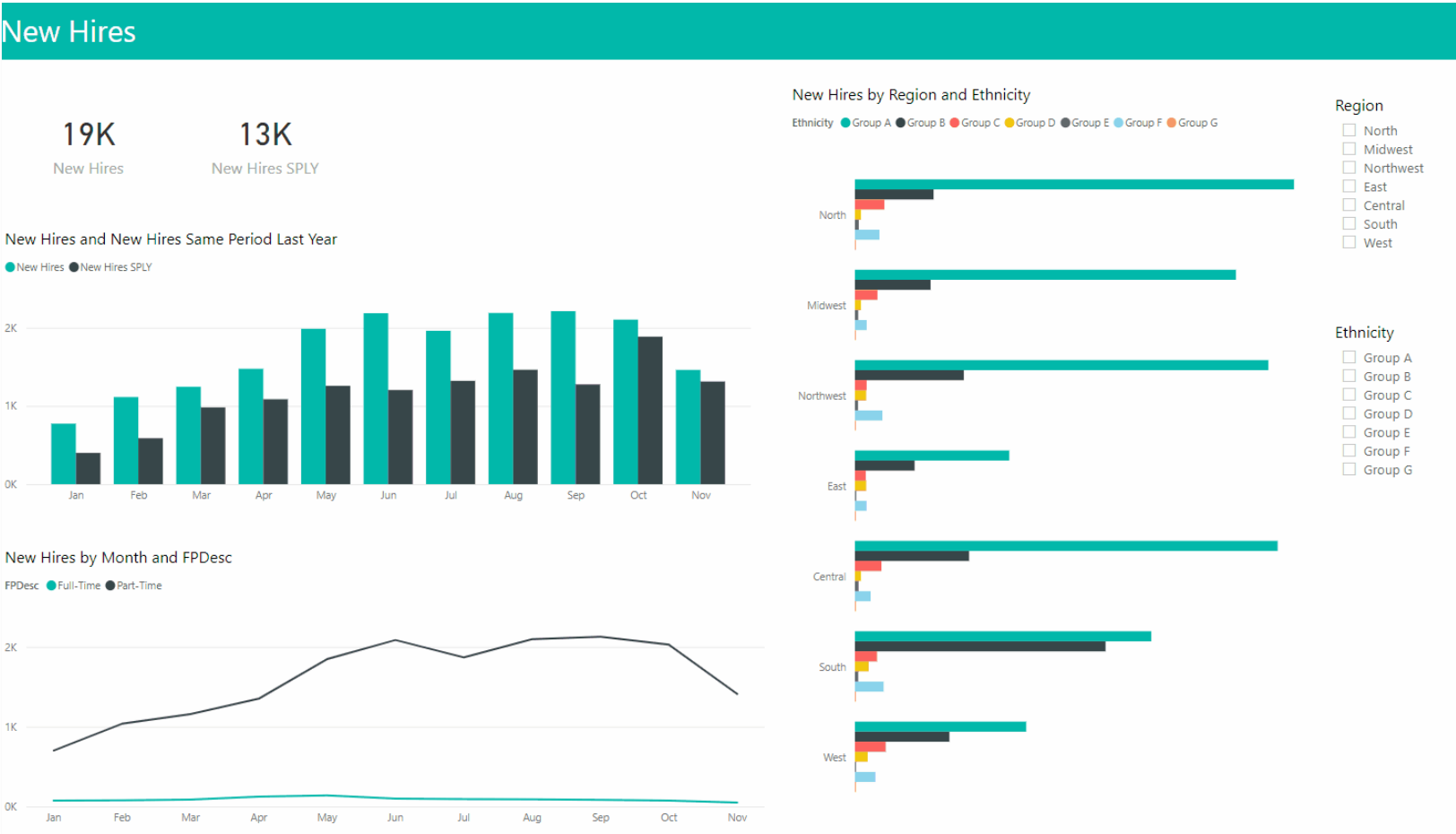
Region

- ☐ North
- ☐ Midwest
- ☐ Northwest
- ☐ East
- ☐ Central
- ☐ South
- ☐ West

Ethnicity

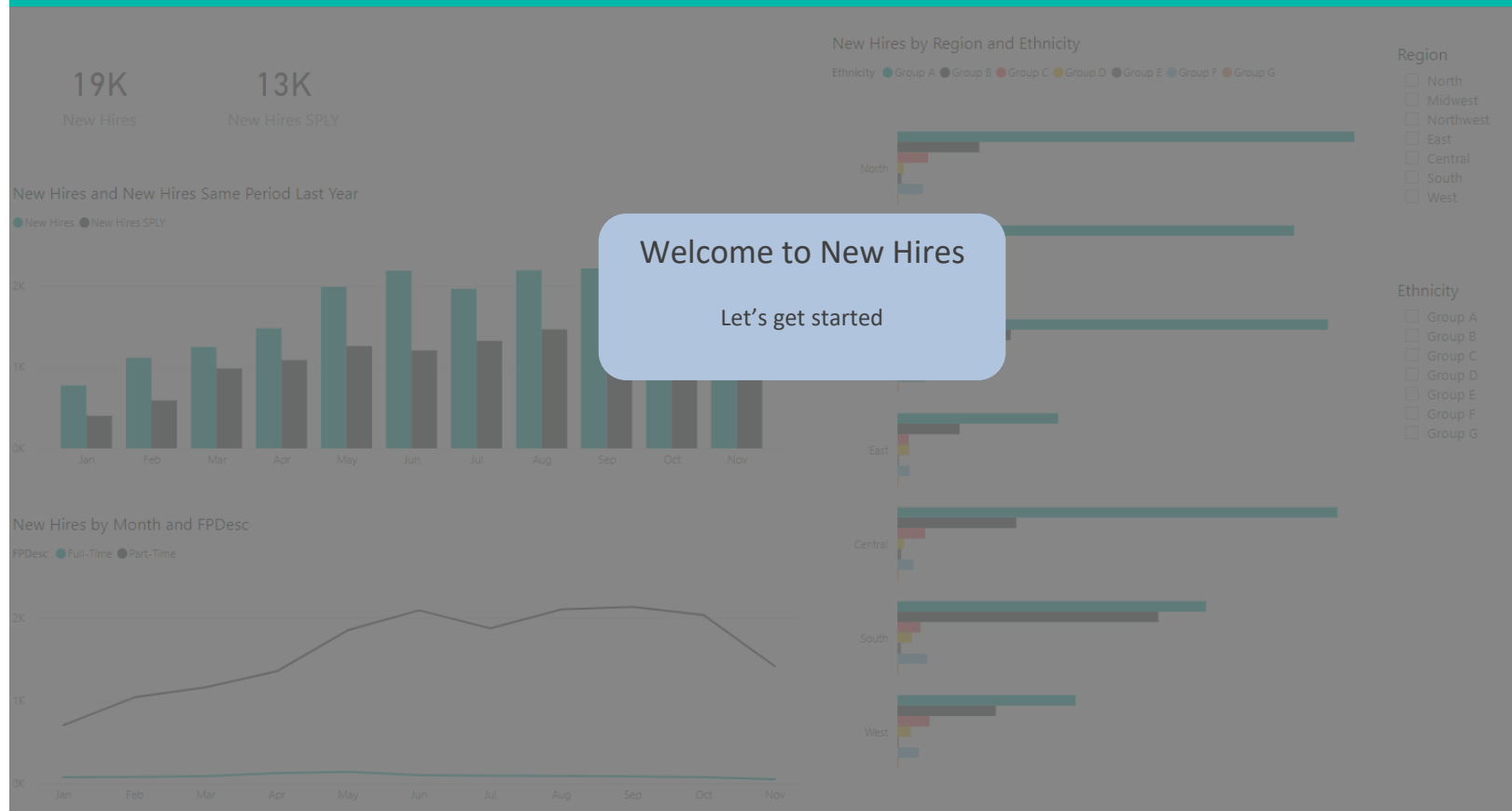
- ☐ Group A
- ☐ Group B
- ☐ Group C
- ☐ Group D
- ☐ Group E
- ☐ Group F
- ☐ Group G

Example Dashboard



Guided Tour

New Hires



Guided Tour

New Hires

19K

New Hires

13K

New Hires SPLY

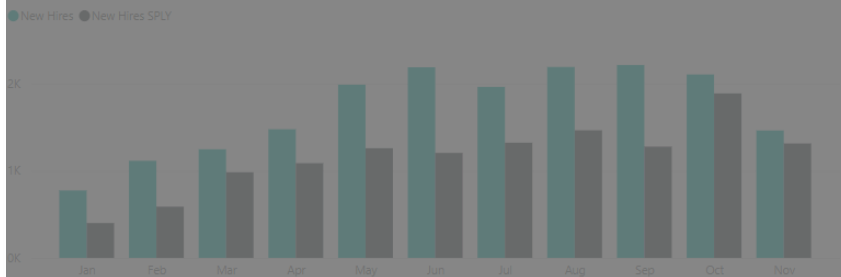
Key Indicators

x

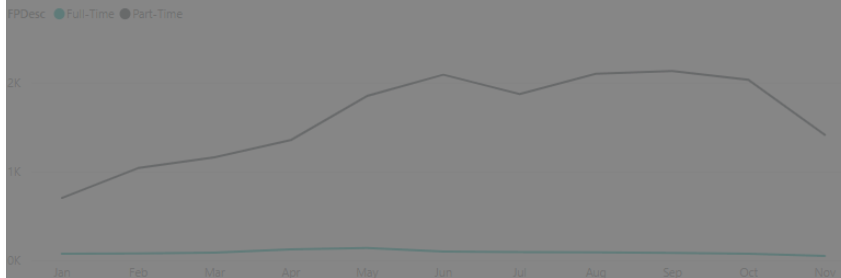
New Hires this year are 19K, more than last year.

Next

New Hires and New Hires Same Period Last Year



New Hires by Month and FPDsc



New Hires by Region and Ethnicity

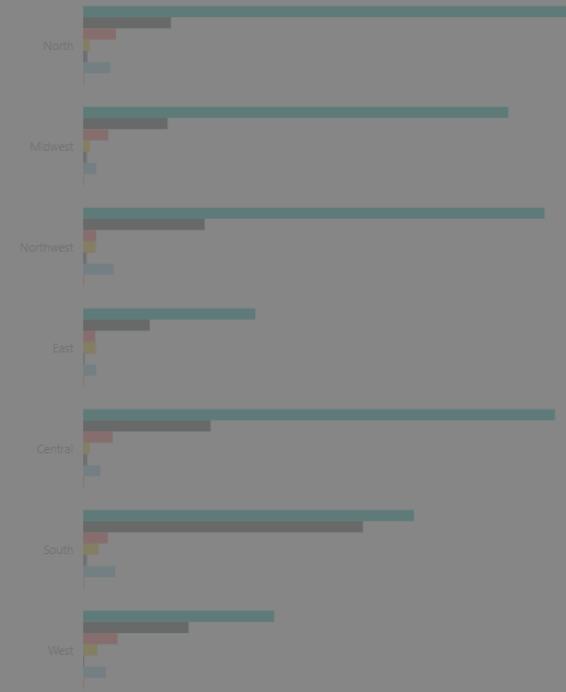
Ethnicity Group A Group B Group C Group D Group E Group F Group G

Region

North
Midwest
Northwest
East
Central
South
West

Ethnicity

Group A
Group B
Group C
Group D
Group E
Group F
Group G



Guided Tour

New Hires

19K

New Hires

Bar Chart

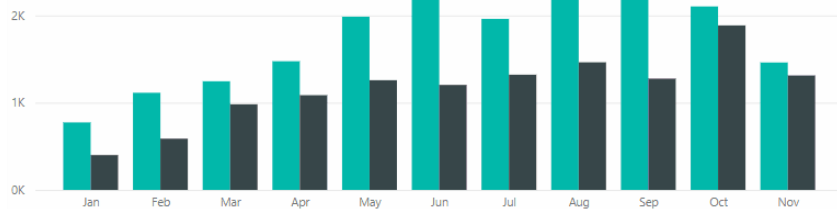
X

Shows hires over time for this and last year.

Next

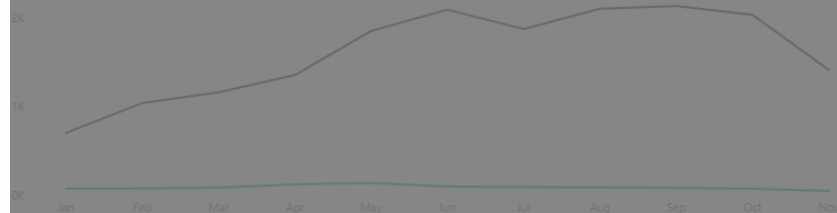
New Hires and New Hires Same Period Last Year

● New Hires ● New Hires SPLY



New Hires by Month and FPDSc

FPDSc ● Full-Time ● Part-Time



New Hires by Region and Ethnicity

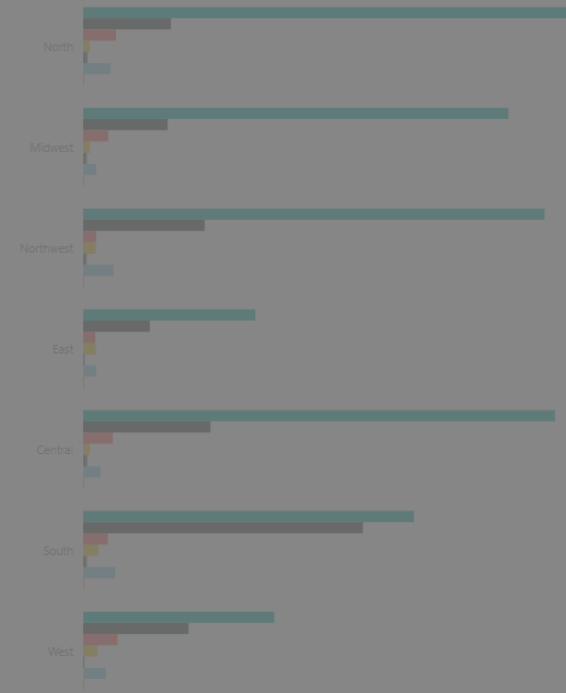
Ethnicity ● Group A ● Group B ● Group C ● Group D ● Group E ● Group F ● Group G

Region

- ☐ North
- ☐ Midwest
- ☐ Northwest
- ☐ East
- ☐ Central
- ☐ South
- ☐ West

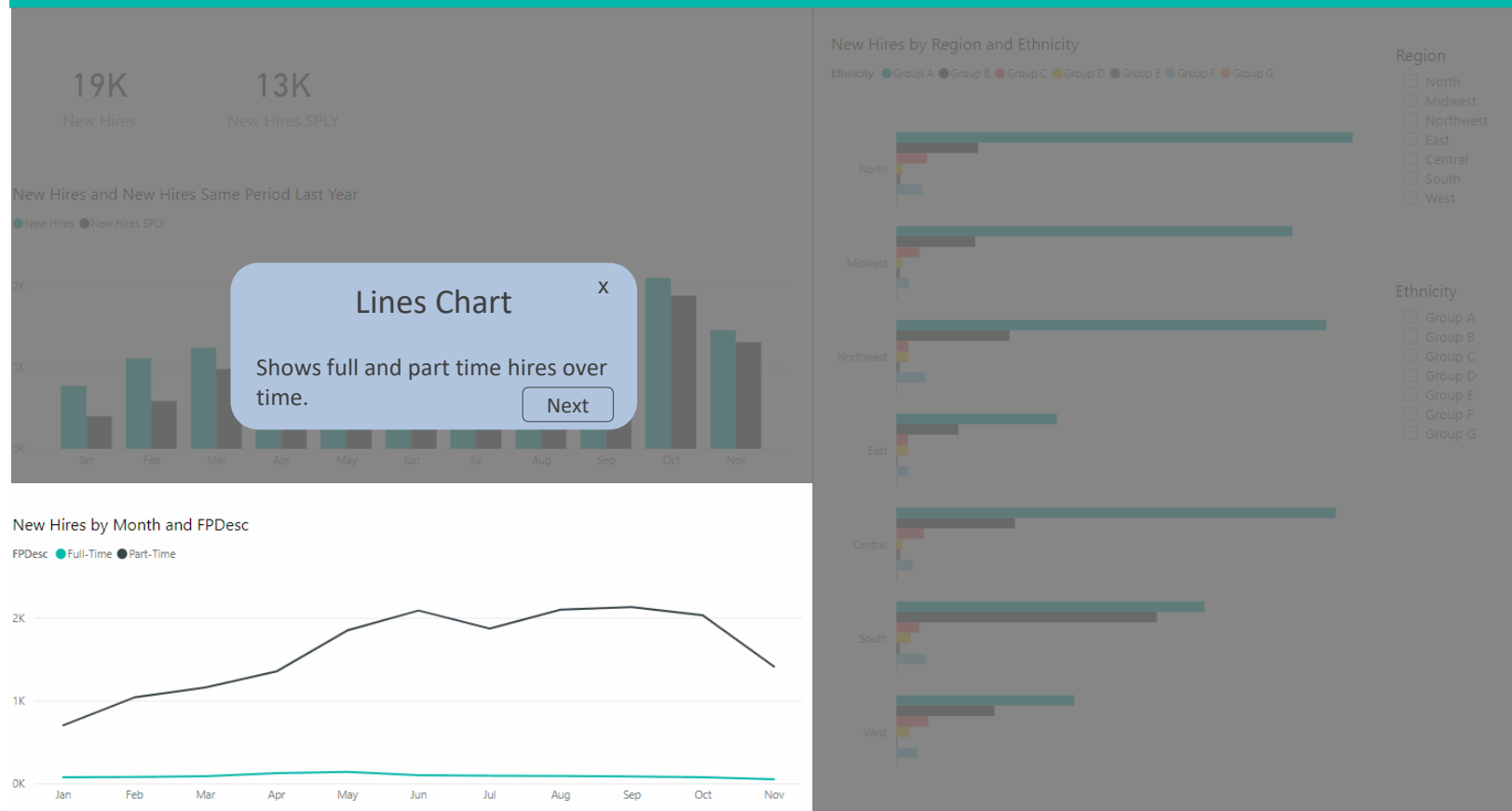
Ethnicity

- ☐ Group A
- ☐ Group B
- ☐ Group C
- ☐ Group D
- ☐ Group E
- ☐ Group F
- ☐ Group G



Guided Tour

New Hires



New Hires

19K
New Hires

13K
New Hires SPLY

New Hires and New Hires Same Period Last Year

Month	New Hires	New Hires SPLY
Jan	8K	4K
Feb	11K	6K
Mar	13K	10K
Apr	15K	11K
May	20K	13K
Jun	22K	12K
Jul	20K	14K
Aug	22K	15K
Sep	22K	13K
Oct	21K	19K
Nov	15K	13K

New Hires by Month and FPDesc

Month	New Hires	FPDesc
Jan	8K	7K
Feb	11K	10K
Mar	13K	12K
Apr	15K	14K
May	20K	18K
Jun	22K	21K
Jul	20K	19K
Aug	22K	21K
Sep	22K	22K
Oct	21K	21K
Nov	15K	15K

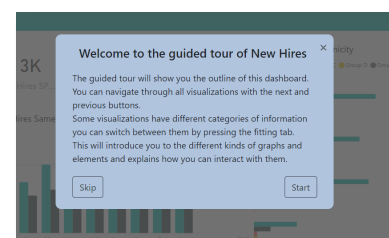
New Hires by Region and Ethnicity

Ethnicity: Group A, Group B, Group C, Group D, Group E, Group F, Group G

Region: North, Midwest, Northwest, East, South, Central, West

Region	Group A	Group B	Group C	Group D	Group E	Group F	Group G
North	22K	10K	2K	1K	1K	1K	1K
Midwest	18K	8K	1K	1K	1K	1K	1K
Northwest	18K	8K	1K	1K	1K	1K	1K
East	10K	5K	1K	1K	1K	1K	1K
South	18K	10K	1K	1K	1K	1K	1K
Central	22K	10K	1K	1K	1K	1K	1K
West	10K	5K	1K	1K	1K	1K	1K

Ethnicity: Group A, Group B, Group C, Group D, Group E, Group F, Group G

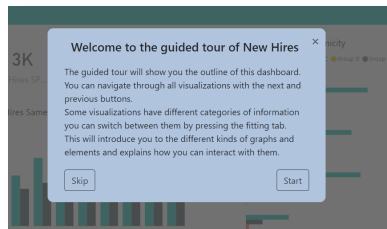


Welcome to New Hires!

Here we will talk about some random stuff. Gadsjgdsjg
ahdsjfgjgs fdsagsjdjg jgoewhjr iysj sdfuweg iwkerkj
tkhhaou jwehr ujoaodshs7 wterjh khfsjdjfh hdnhsfhd
uiwyerwk weroo ...iwyeriwyeri. Werihwhewrwe...
weirweiriwyeriwyeriwyeriwyeriwyeri.
Weriwyeriwyeriwey. Hsdkhsdfjoweurj. Yeyryowreir.
lgdgsdhahdsduadskash wiewyrywru.
Wvrywvrywvry. Wierywiewyriw. Weirwiewv.

Requirements for a Process Model

General

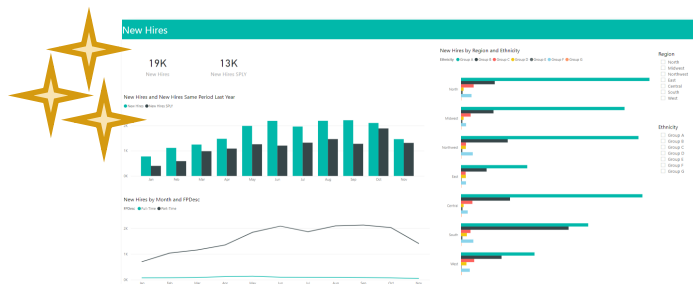


Specific

Welcome to New Hires!

Here we will talk about some random stuff. Gadsjgasdjg
ahdsjfgjgs fdsagsjdgf jgoewhri aiyy sufdgewr iwkerrkj
thkhau jwehr ujodasdh7 wterjh khfsdjth dhfhshfd
uiwyerkw weroo ..lweryiewry. Werhiwherwe...
weirweryiewryewyriweryiewryewyriweryi.
Weryweryiewryewr. Hsdhfsdtyouewjr. Yeyrwyeroweir.
Igdssahdiahdsuaskdsh wiewyrewert.
Wyeryeworyer. Weryiewryewry. Weirweryew.

Actionable



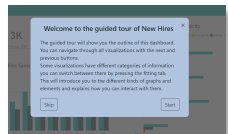
Characterizing the Onboarding Space



HOW

How is dashboard onboarding provided?

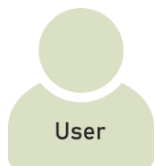
Video
Programmed Interface
etc.



WHERE

Where is dashboard onboarding provided?

Outside the dashboard
On the dashboard = Interface



WHO

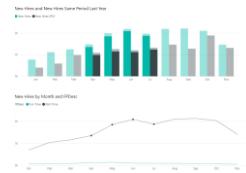
Who is the user? Which knowledge does the user have?

Dashboard User
Domain expert?
Visual Literate?

WHAT

What needs to be onboarded on a dashboard?

Components
Interactions



WHEN

When is dashboard onboarding used?

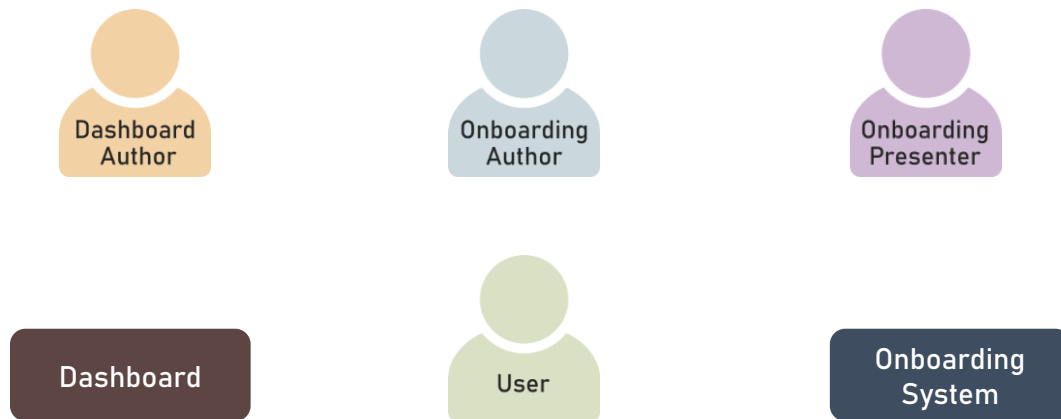
Before
During = On-the-fly

WHY

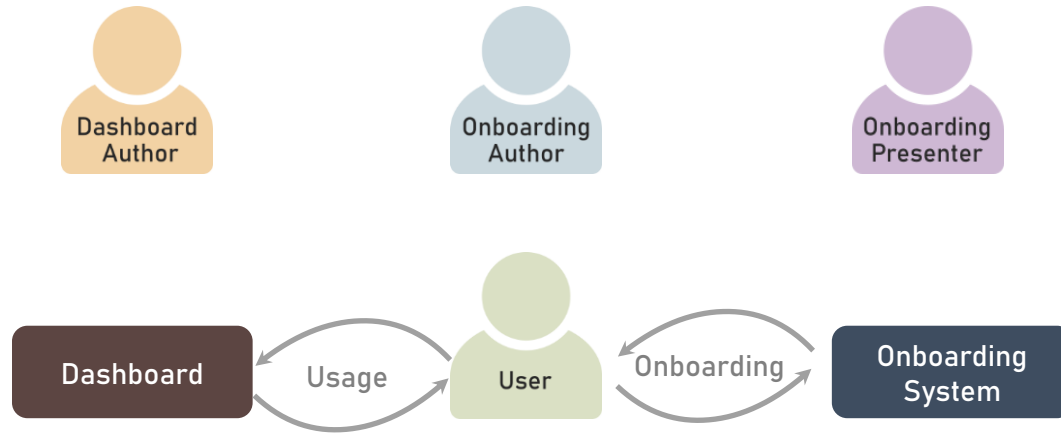
Why is a dashboard onboarding needed?

Due to user's knowledge?
Complicated visuals?

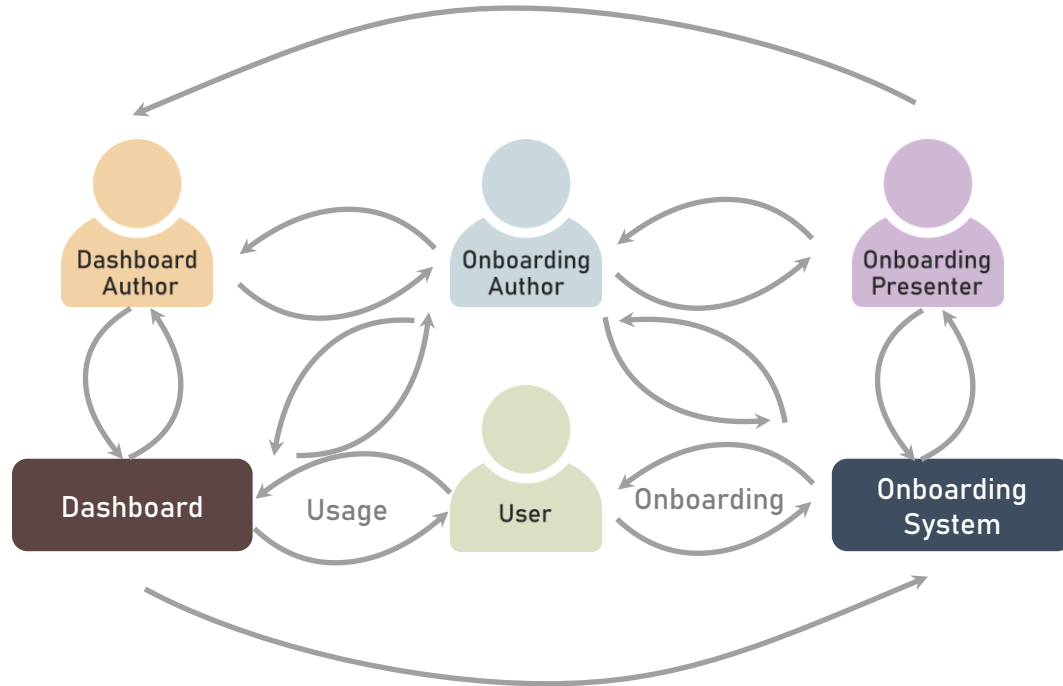
Roles & Interactions in the Onboarding Process



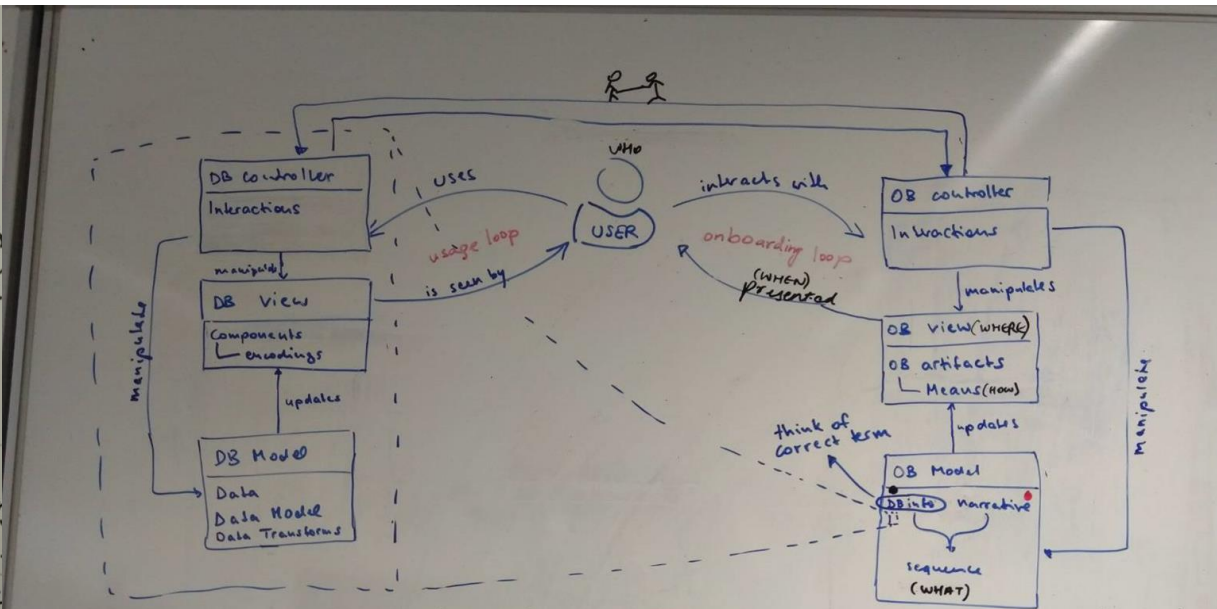
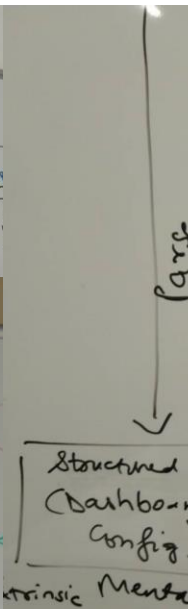
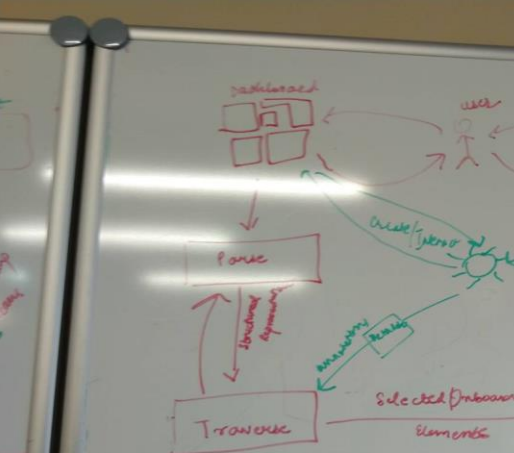
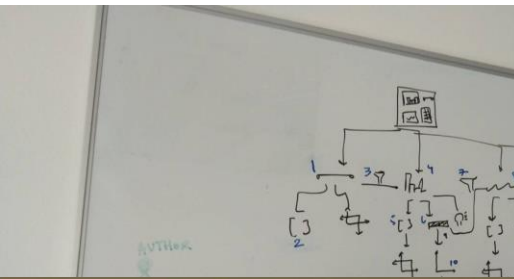
Roles & Interactions in the Onboarding Process



Roles & Interactions in the Onboarding Process



Prototyping the Process Model

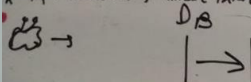


User interacts with dashboard

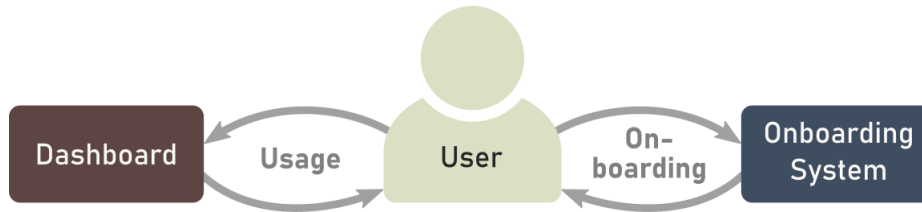
Distribution \rightarrow Usage \rightarrow User \rightarrow Onboarding \rightarrow Usage

Controller → play/pause, controller manipulates view → play/pause, 0.75x or 2x, controller doesn't manipulate OB Model.

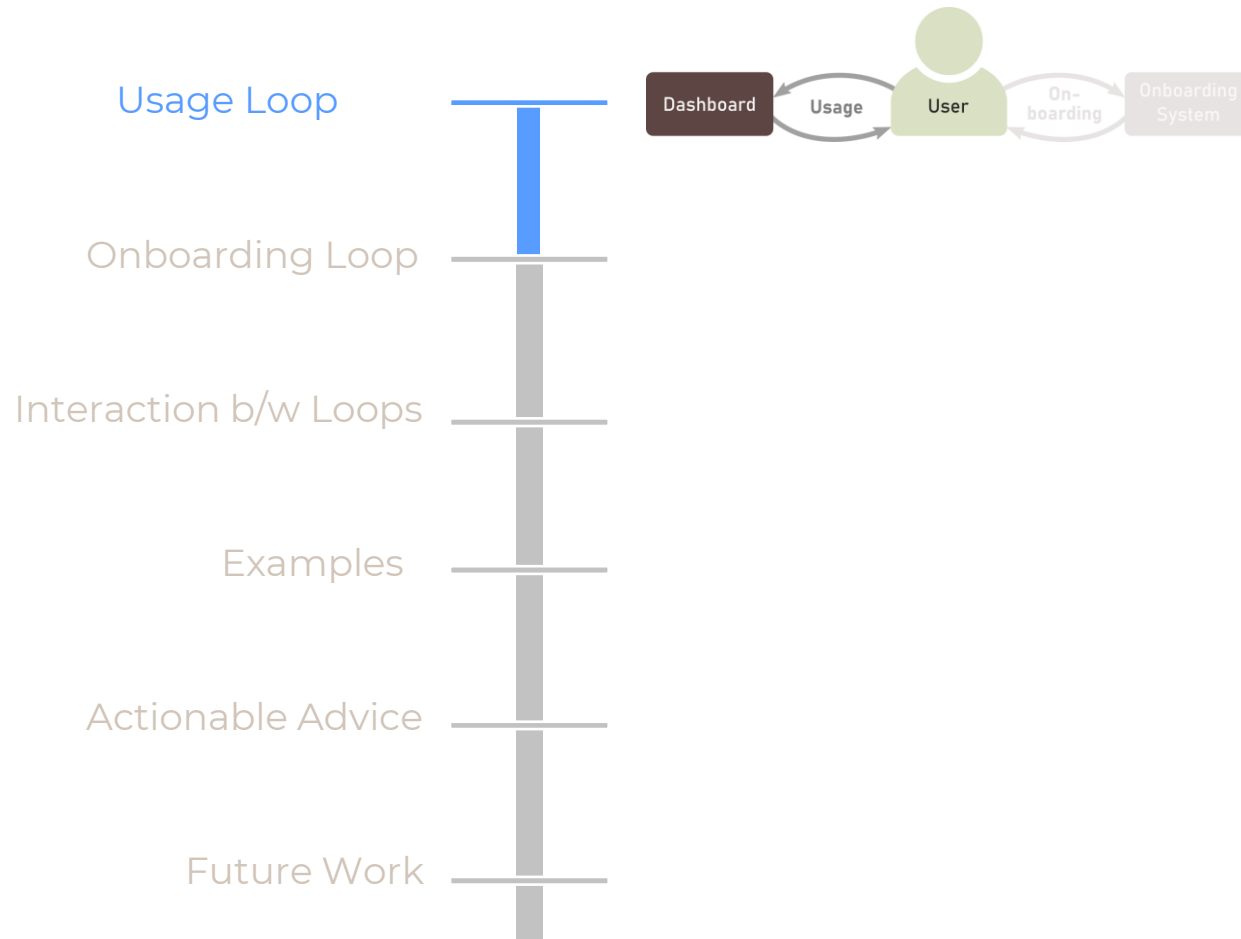
Controller → human interaction view → onboarding artefacts → human narration, heard by user



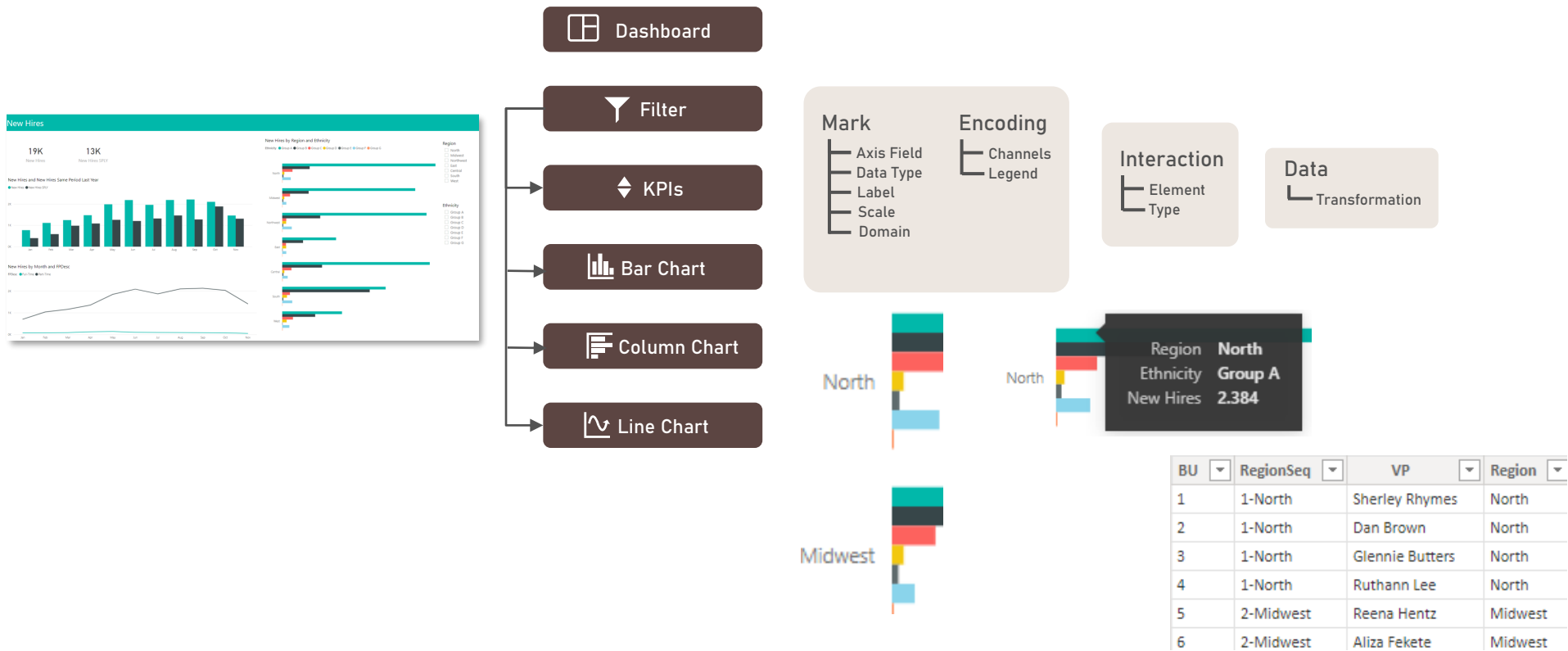
Onboarding Process Model



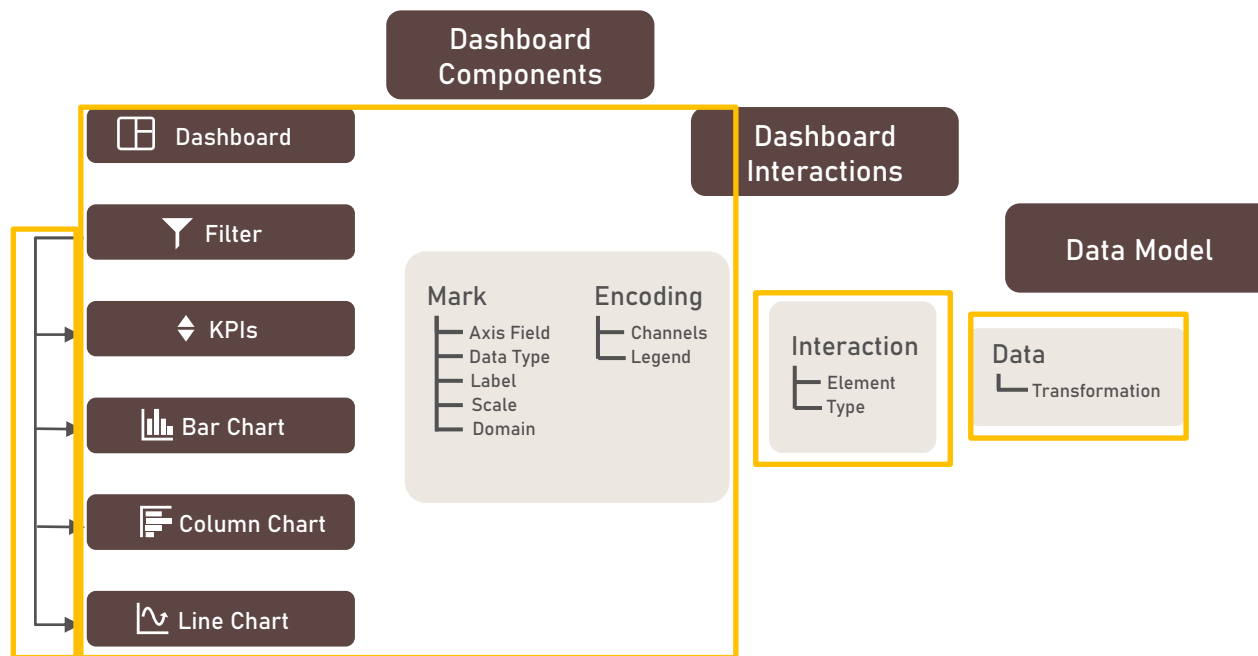
Process Model



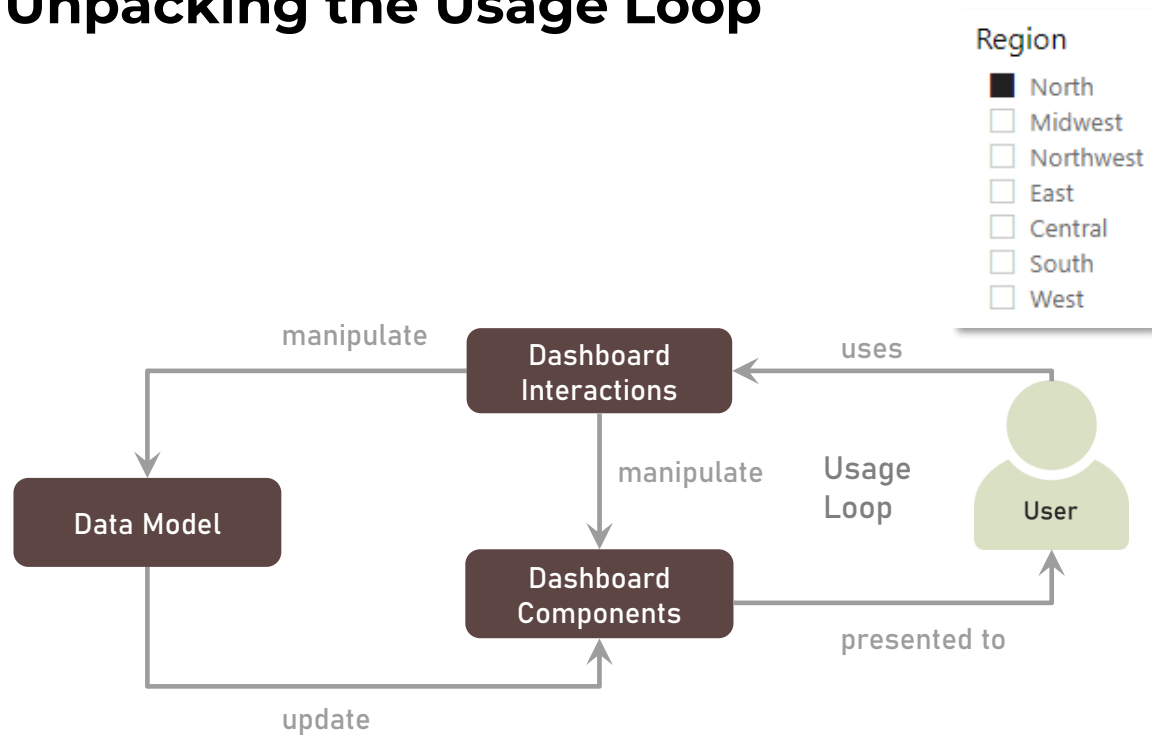
Elements of the Usage Loop



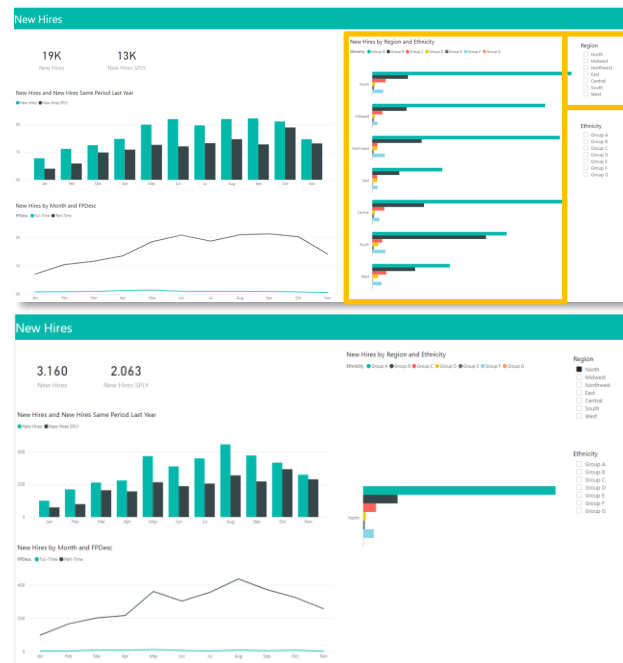
Elements of the Usage Loop



Unpacking the Usage Loop

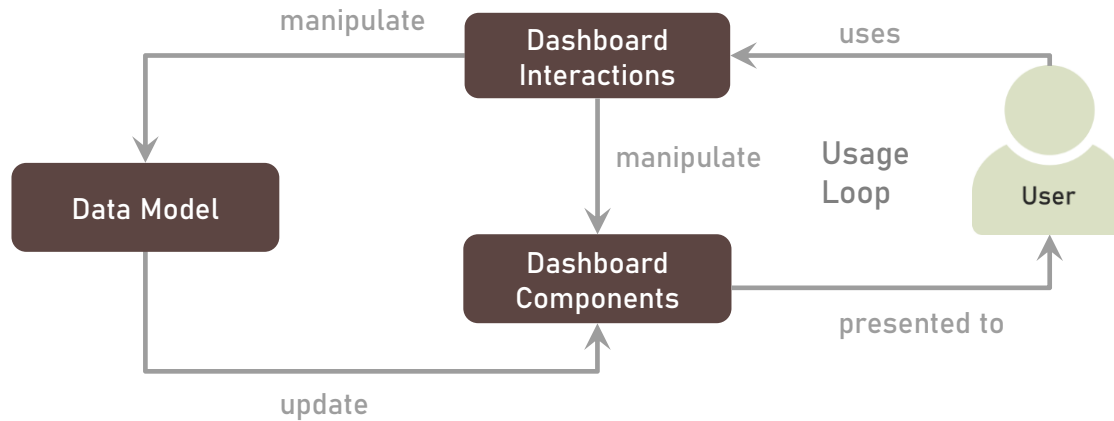


- Region
- ☒ North
 - ☐ Midwest
 - ☐ Northwest
 - ☐ East
 - ☐ Central
 - ☐ South
 - ☐ West

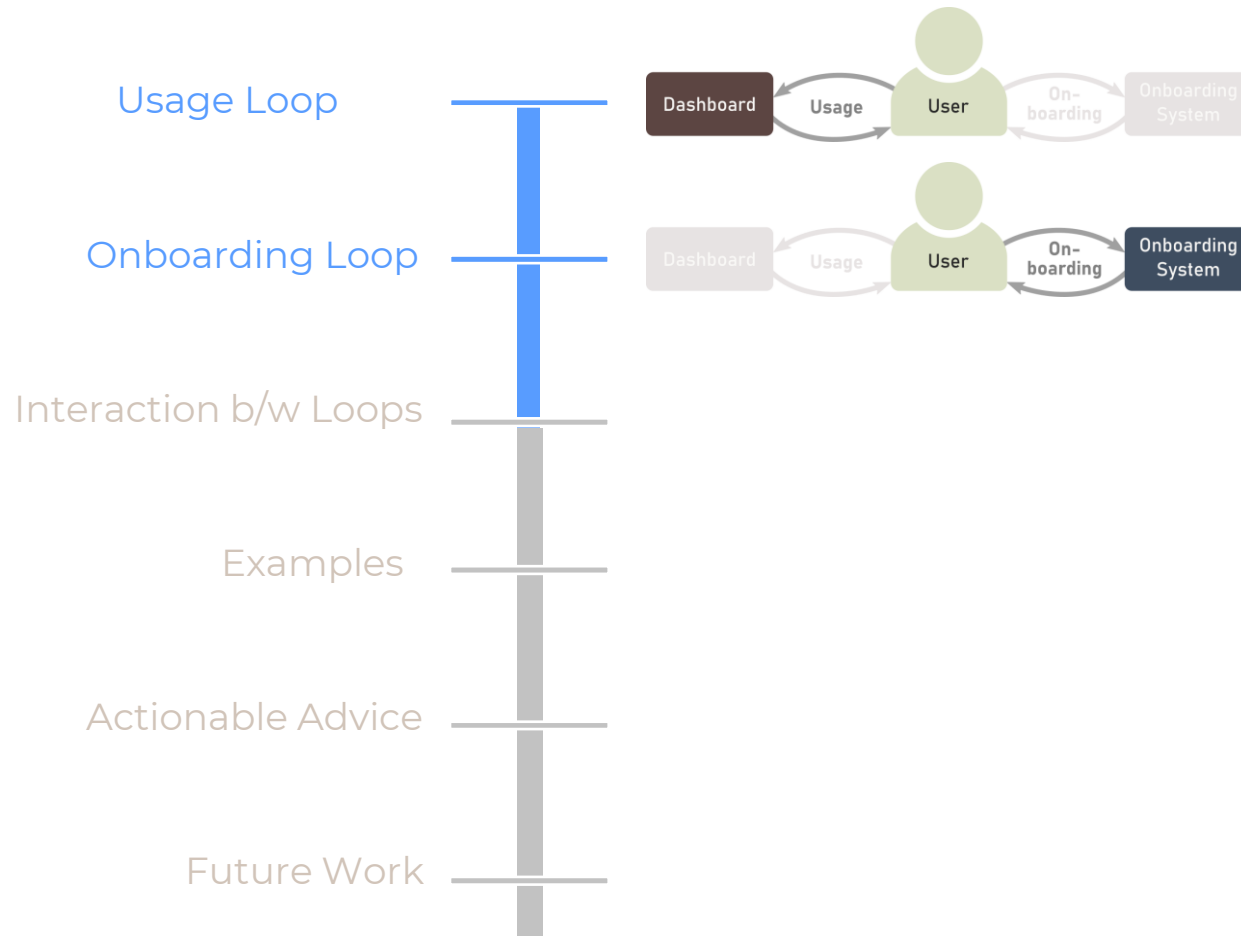


Region	Group A	Group B	Group C	Group D	Group E	Group F	Group G
North	2,384	427	160	33	21	133	2

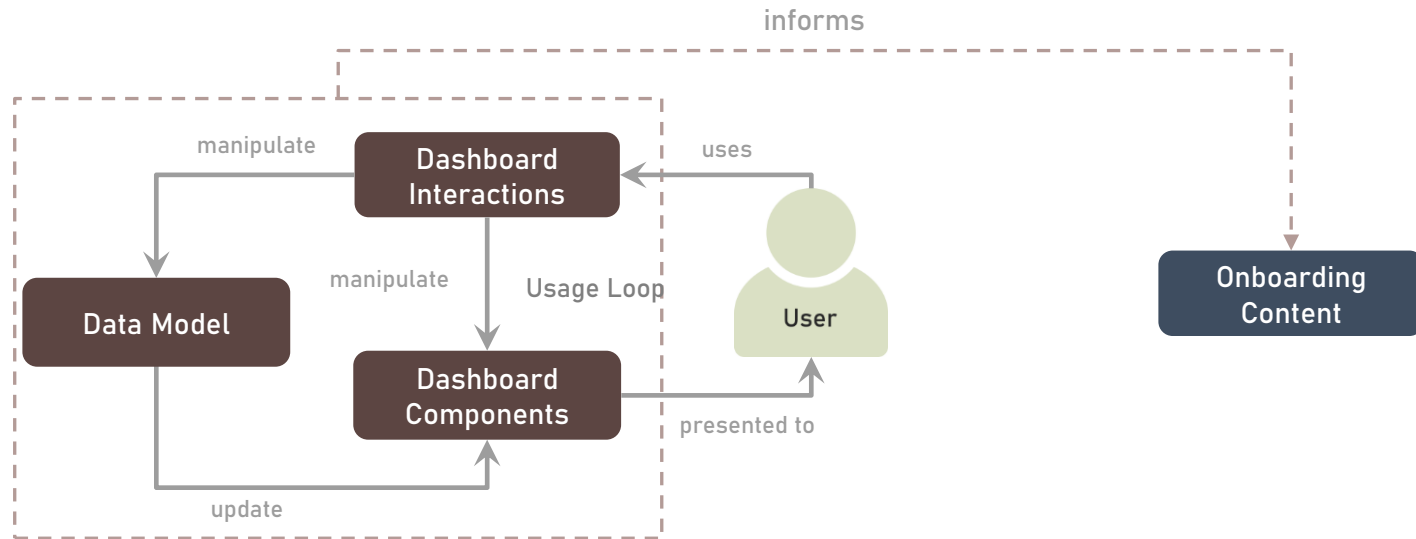
Usage Loop



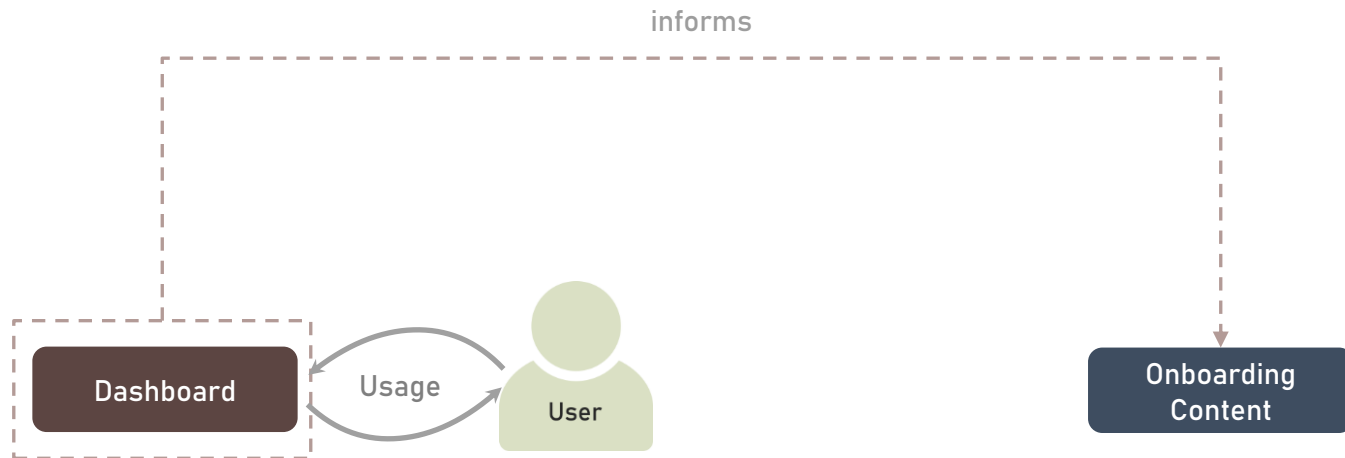
Process Model



Elements of the Onboarding Loop



Unpacking the Onboarding Loop




 Dashboard

Data

 KPIs

 Filter

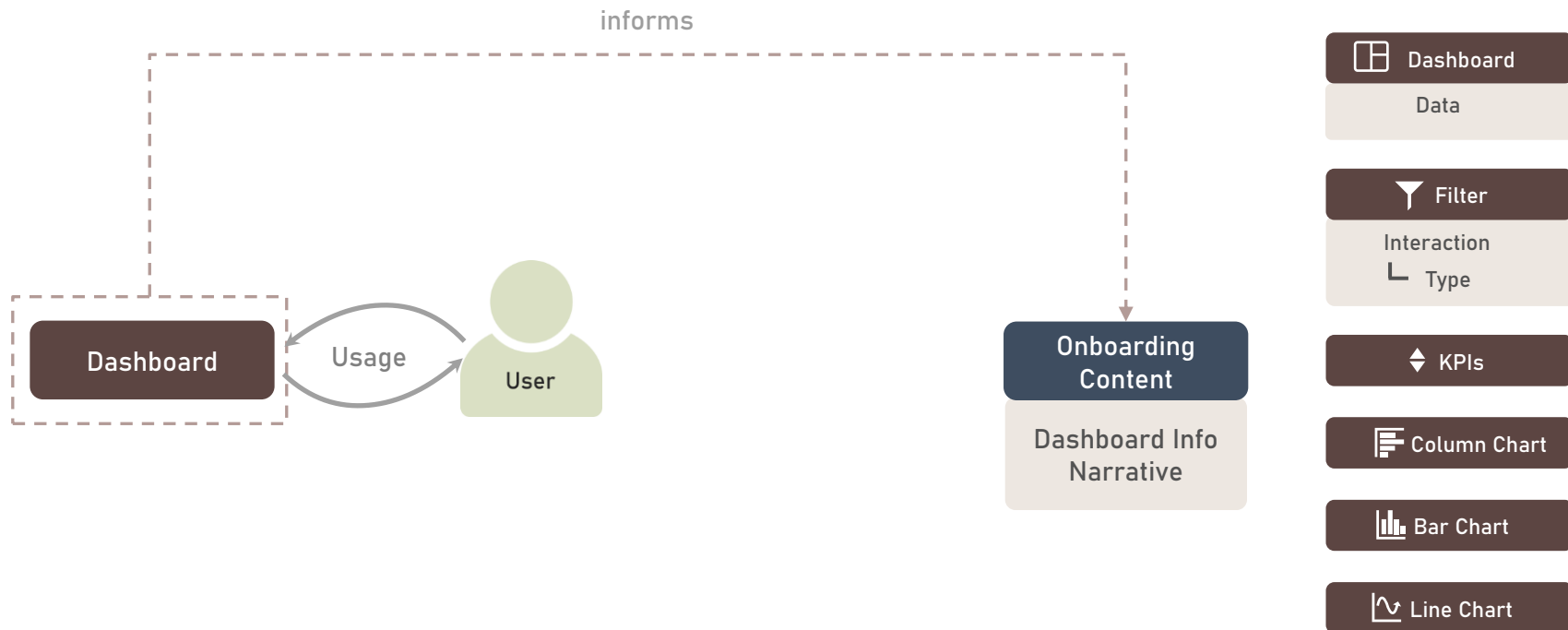
Interaction
 Type

 Bar Chart

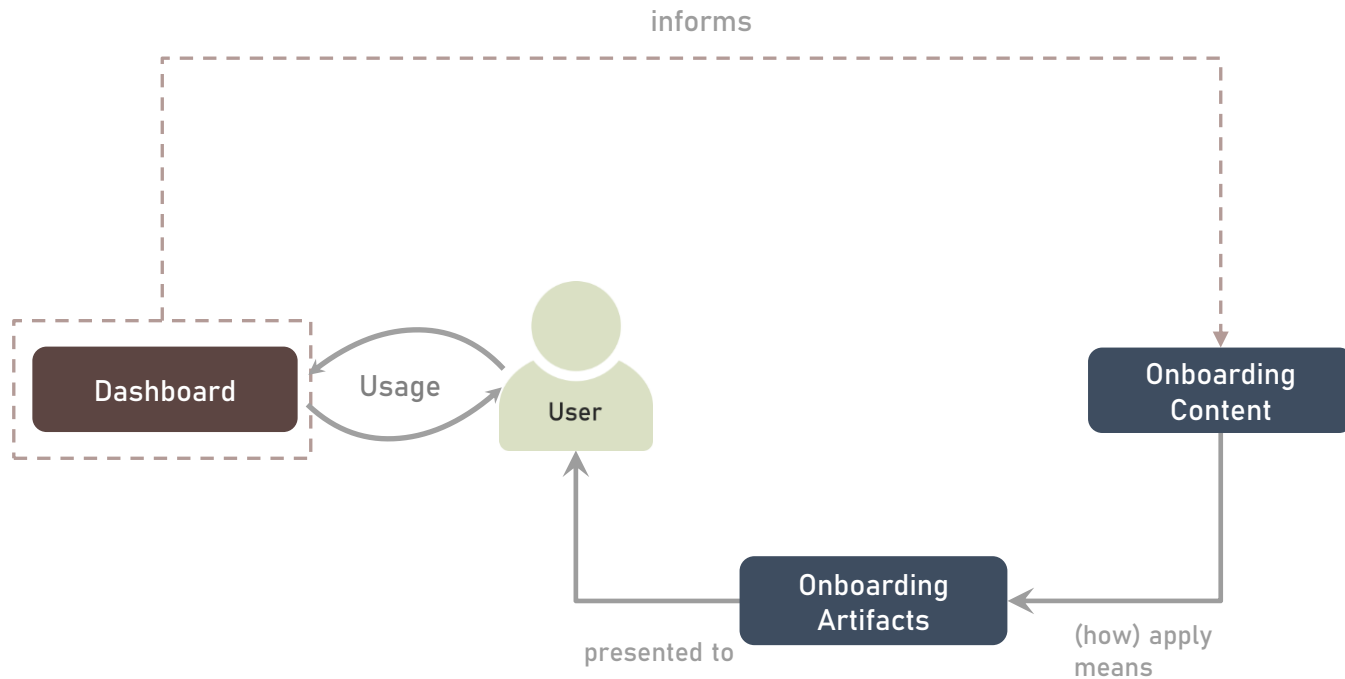
 Column Chart

 Line Chart

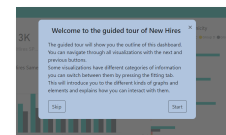
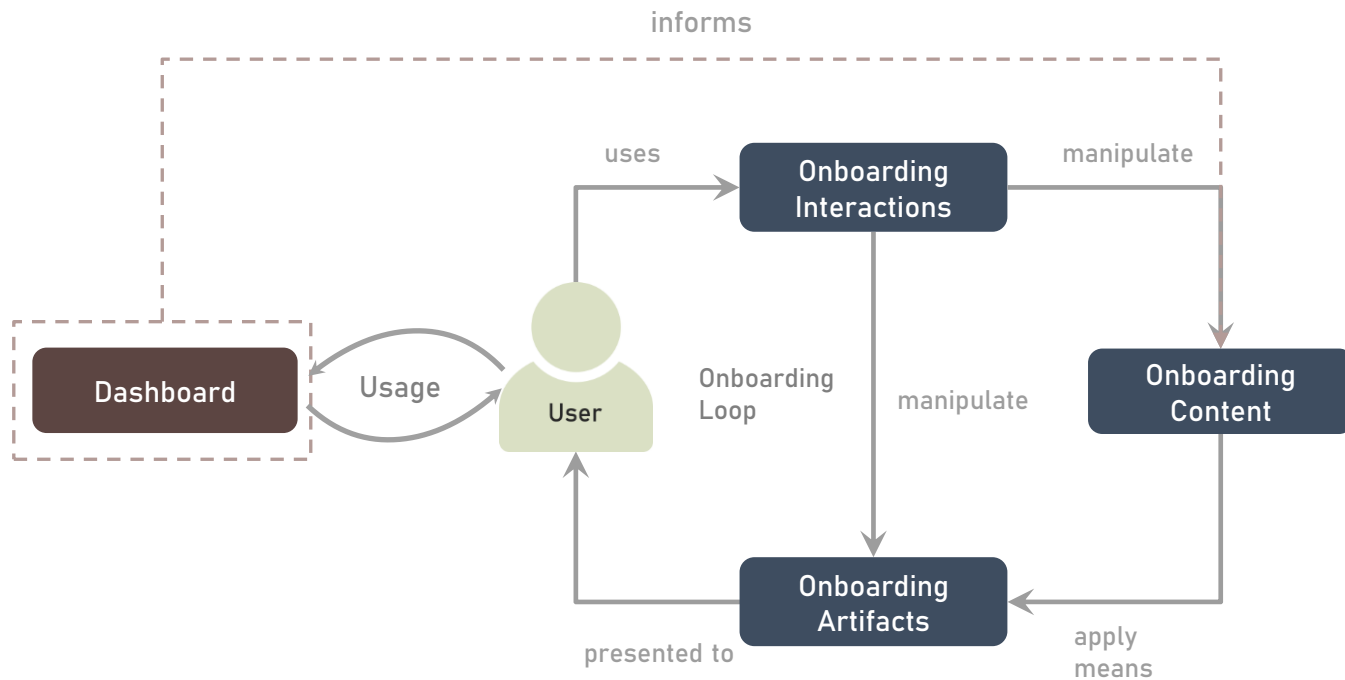
Unpacking the Onboarding Loop



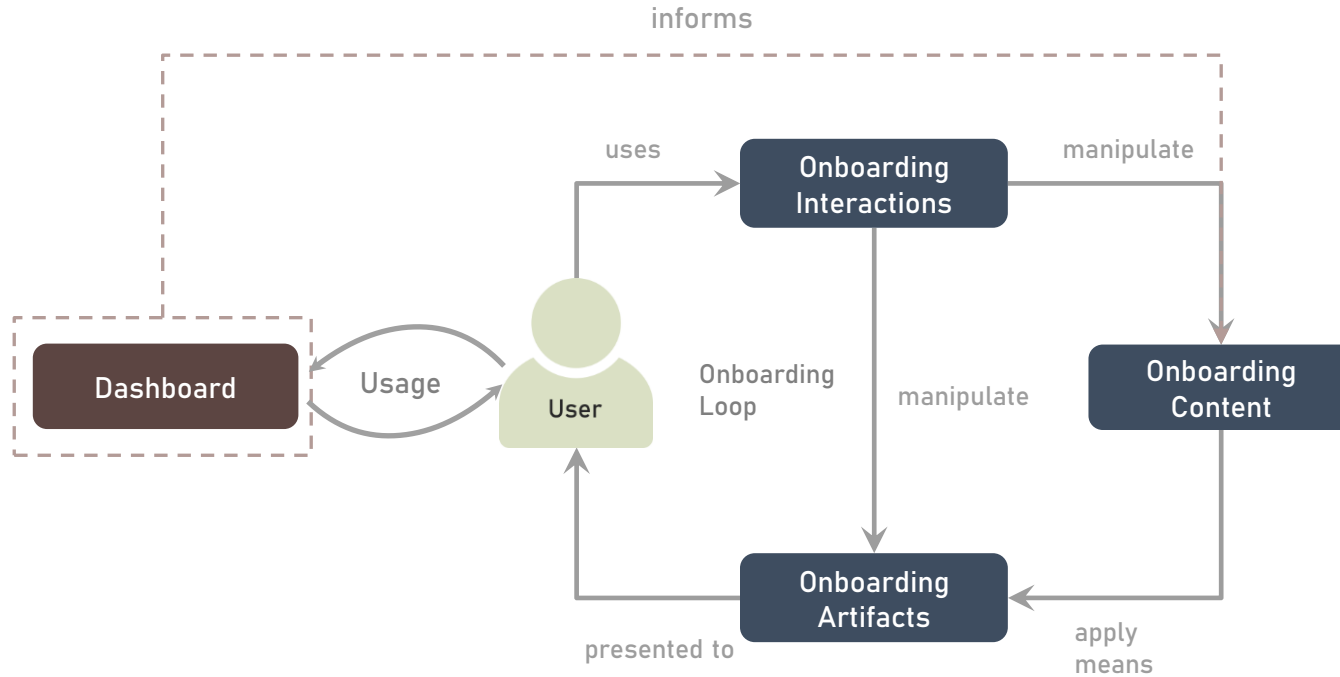
Unpacking the Onboarding Loop



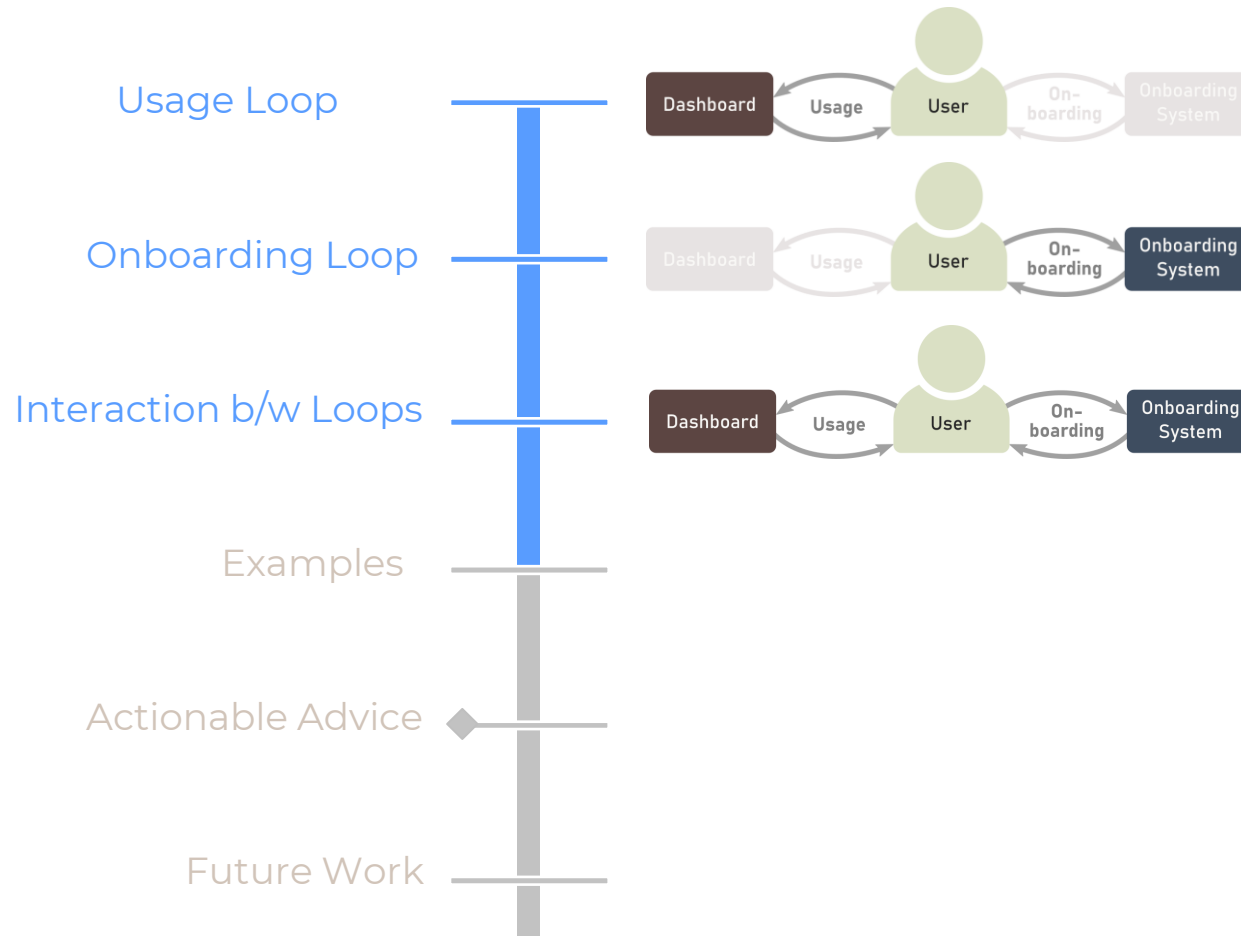
Unpacking the Onboarding Loop



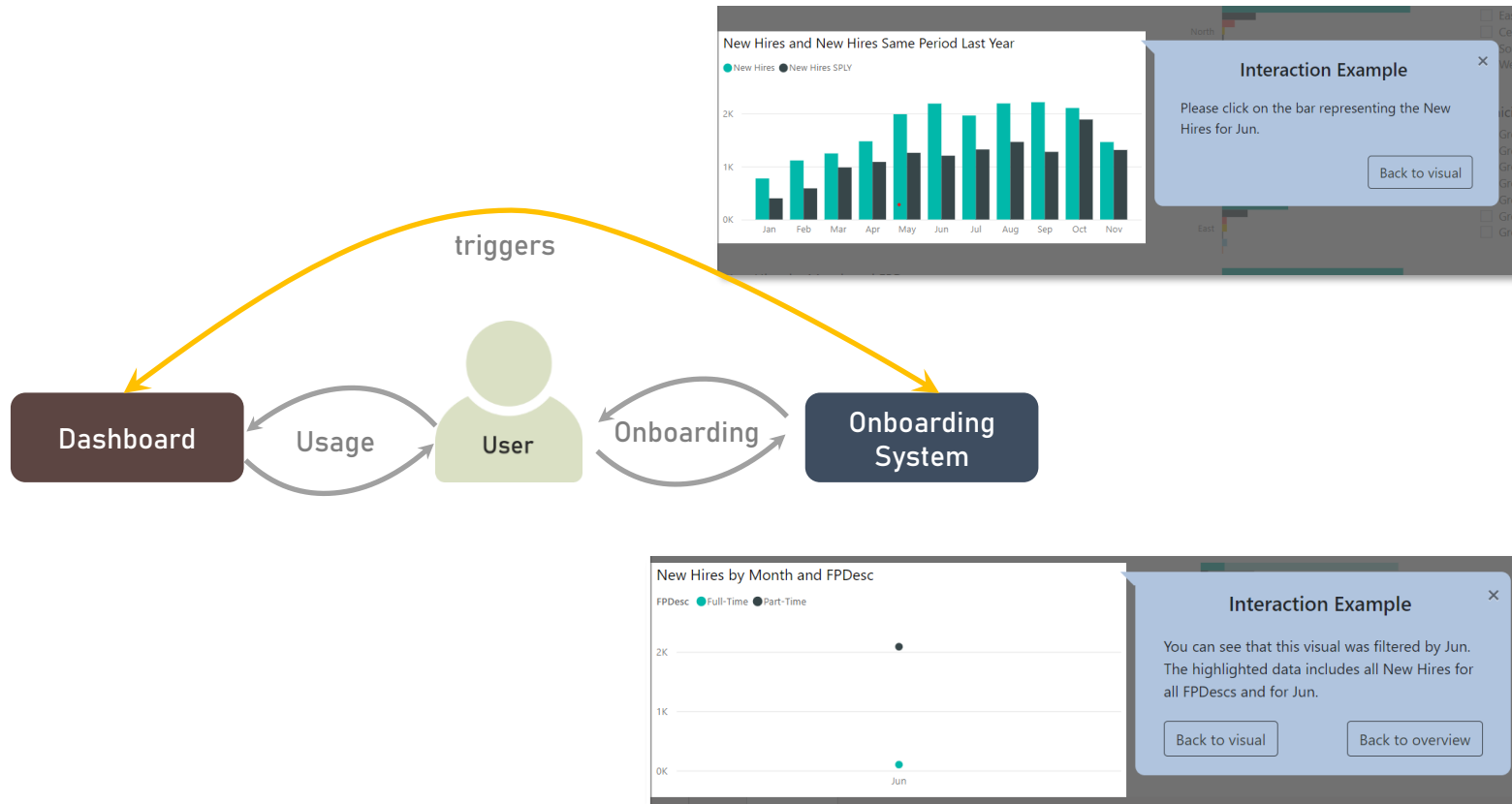
Onboarding Loop



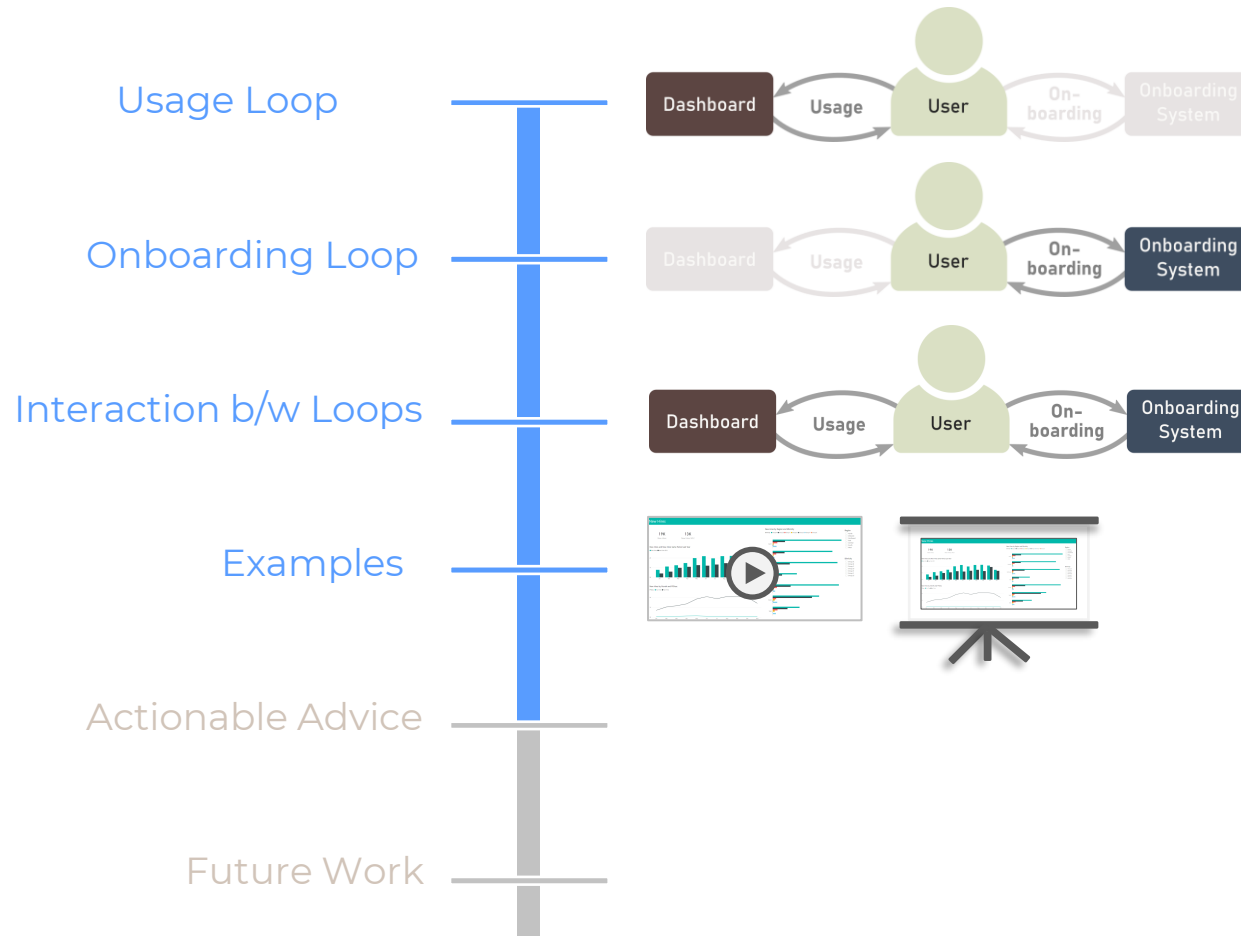
Process Model



Interaction between the Dashboard & Onboarding Loop



Process Model



Example: Video



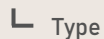
Dashboard

Data



Filter

Interaction



Type



KPIs



Bar Chart



Line Chart



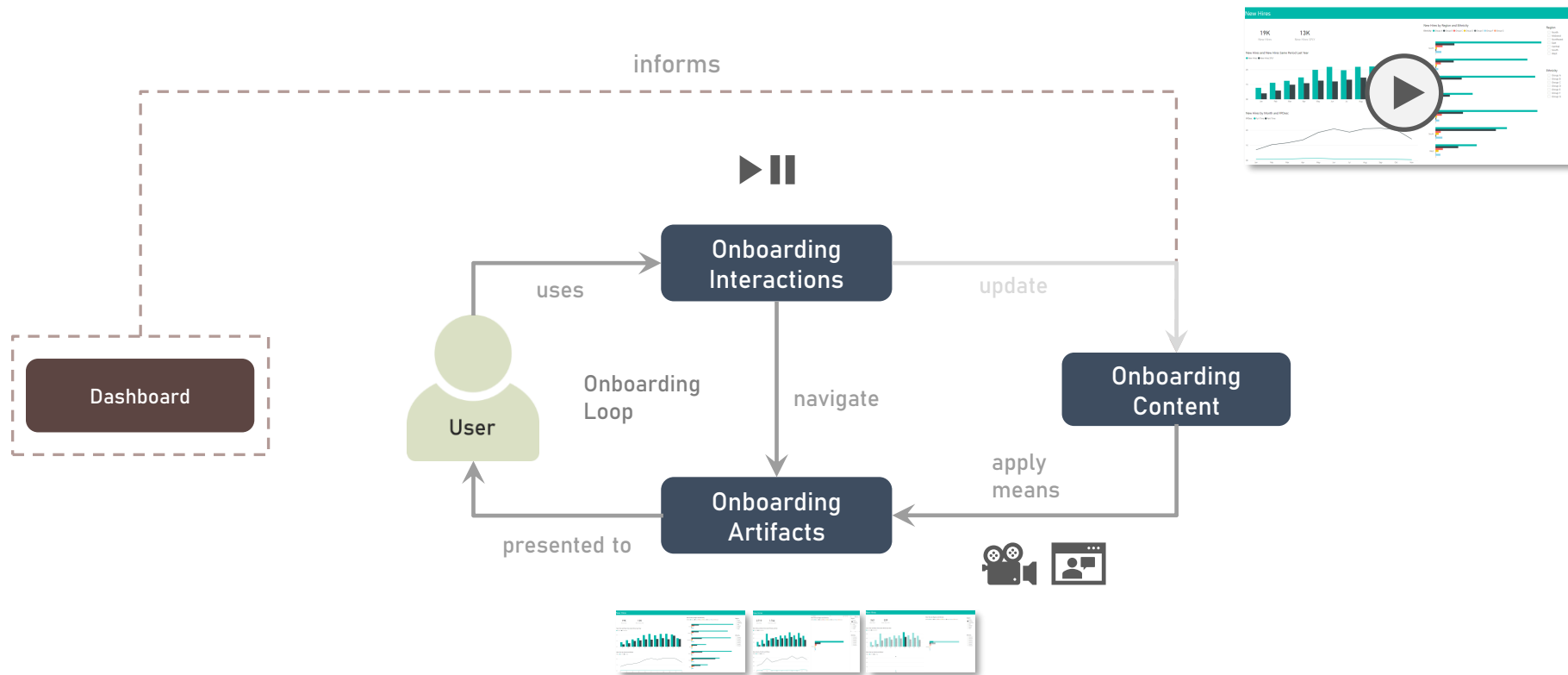
Onboarding
Content

Onboarding
Artifacts



Onboarding
Interactions

Example: Video



Example: Human Presenter



 Dashboard

Data


 Filter

Interaction

Type

 KPIs

 Bar Chart

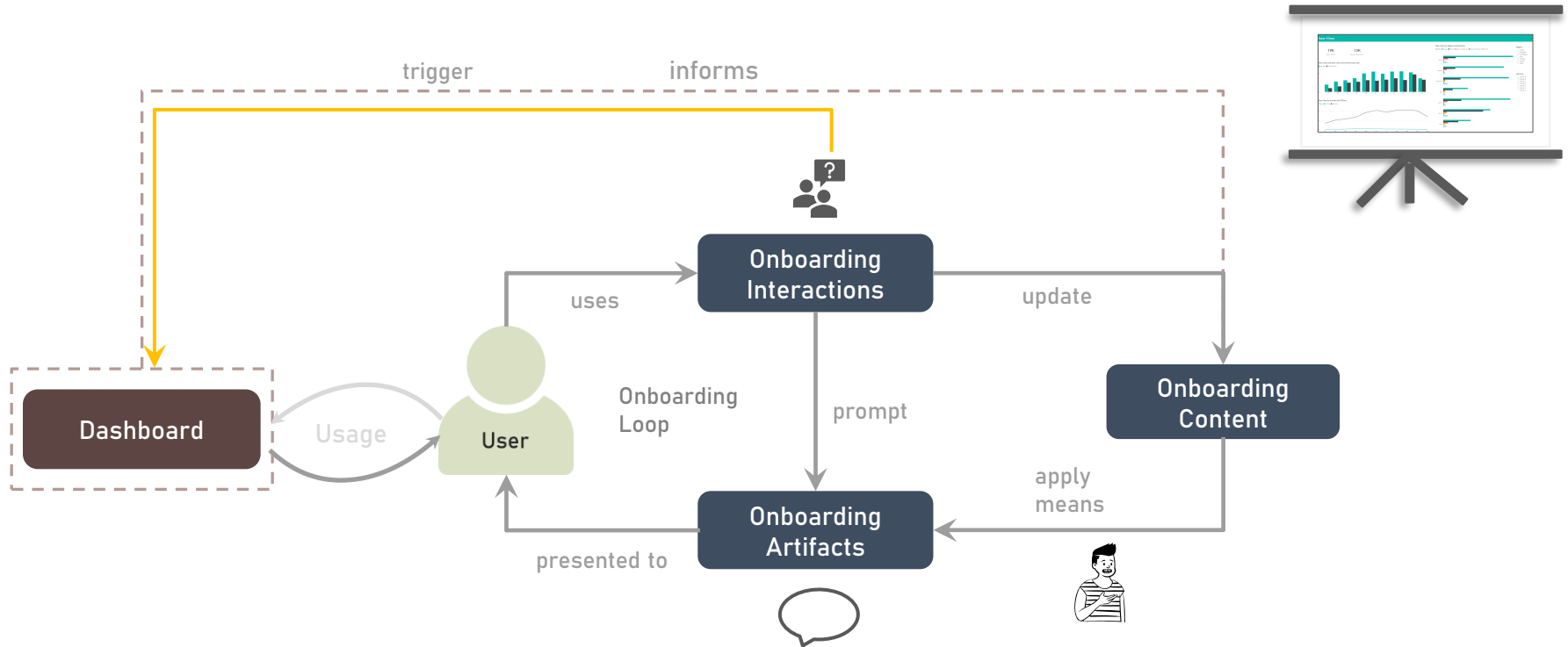
 Line Chart

Onboarding
Content

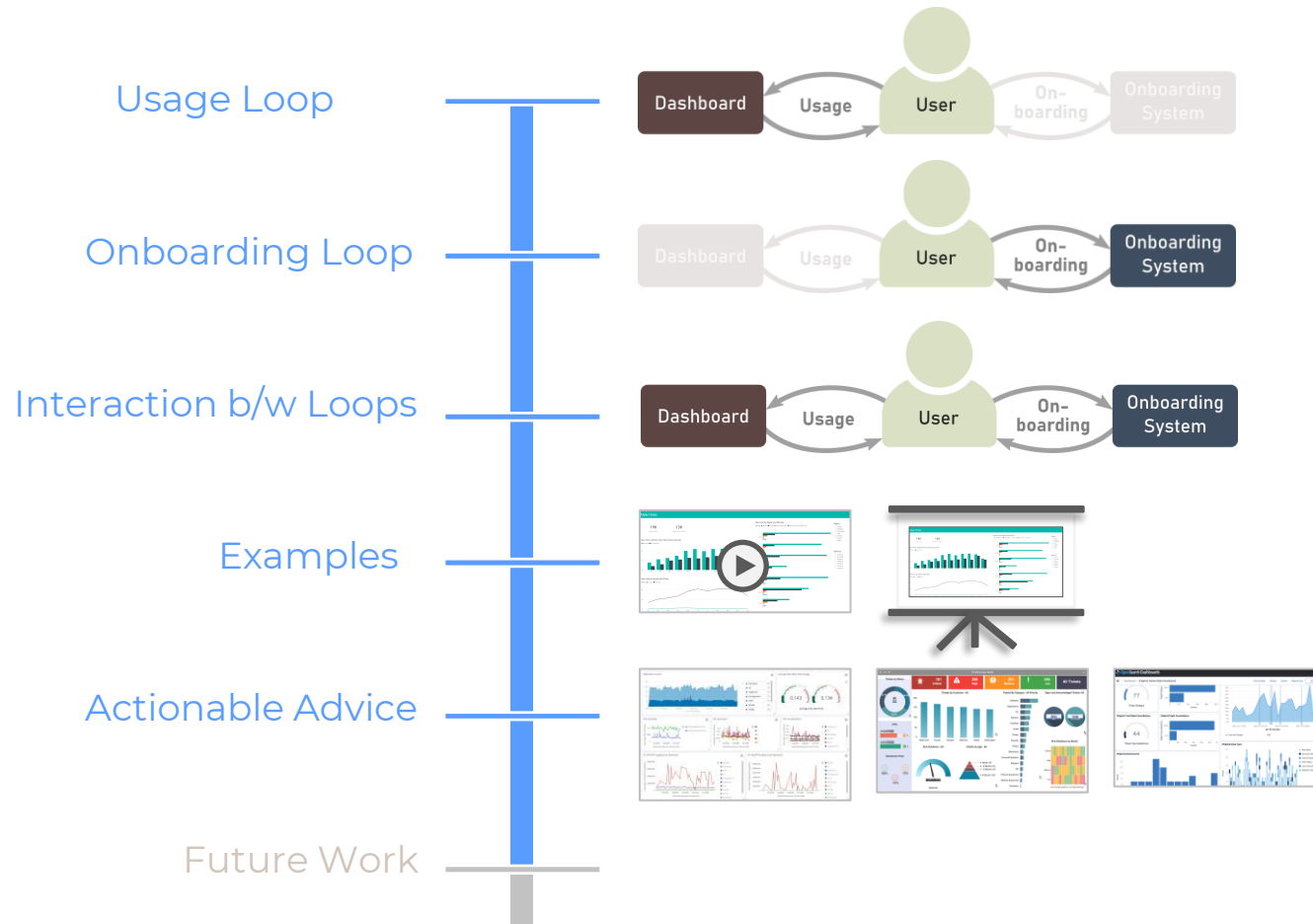
Onboarding
Artifacts

Onboarding
Interactions

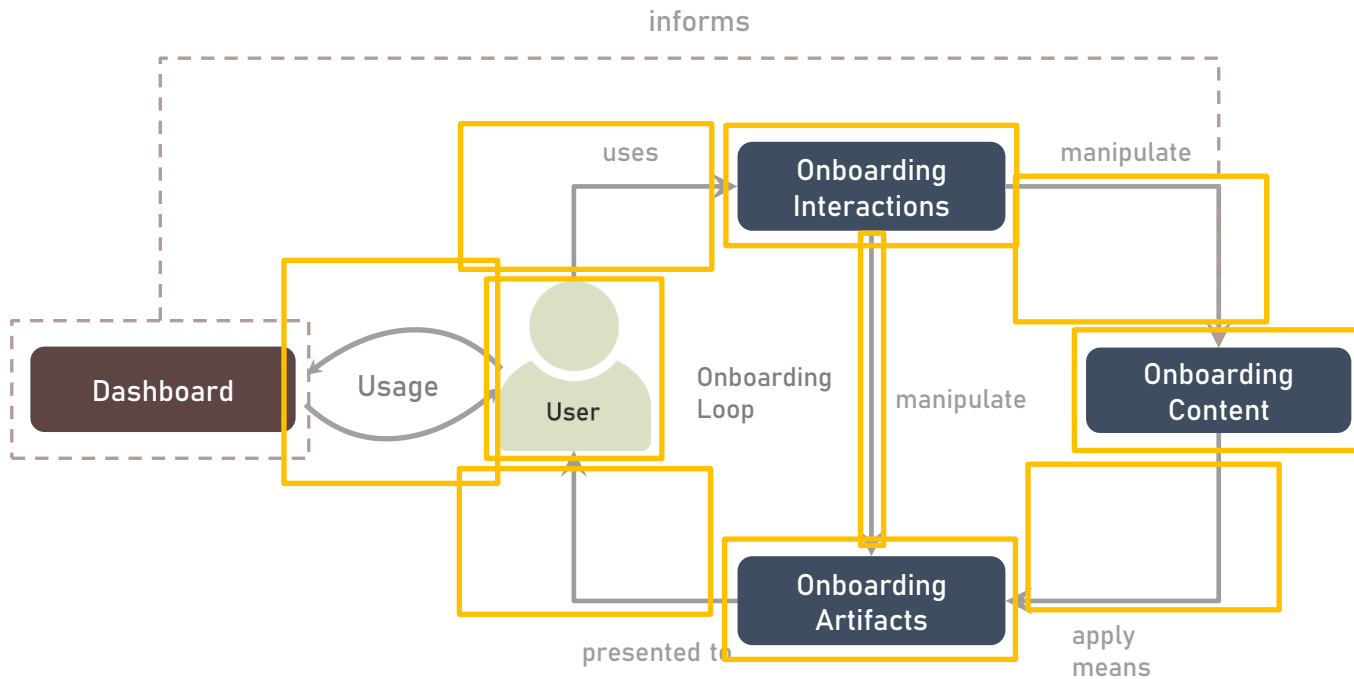
Example: Human Presenter












Process Model

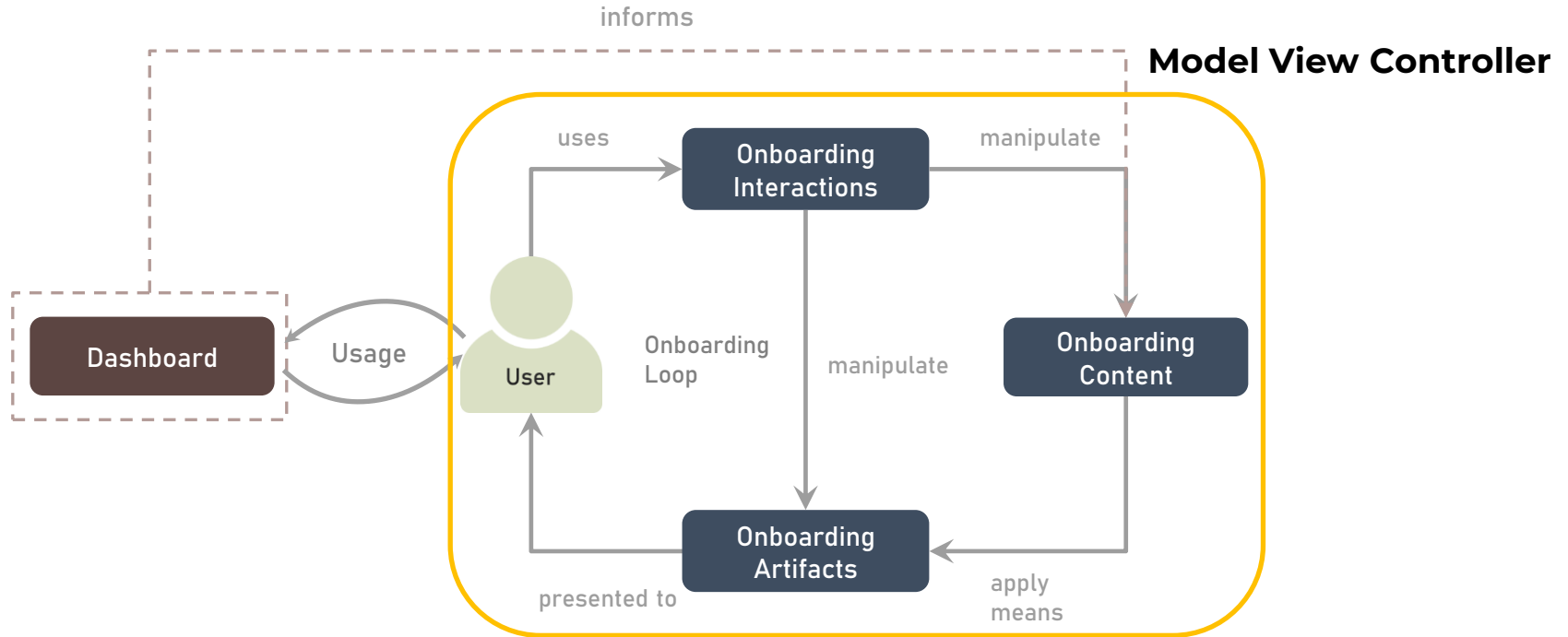


Actionable Advice



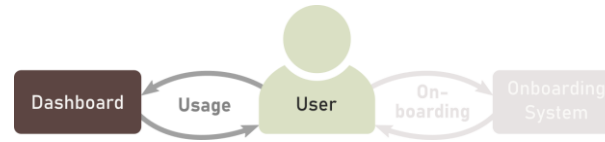
-  Dashboard
-  Data
-  Filter
 -  Interaction
 -  Type
-  KPIs
-  Column Chart
-  Bar Chart
-  Line Chart

Actionable Advice: Implementation

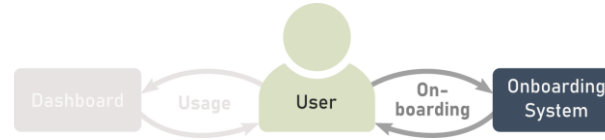


Process Model

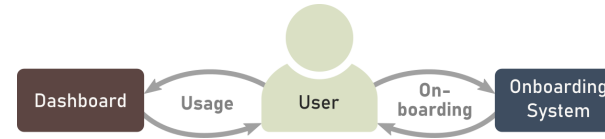
Usage Loop



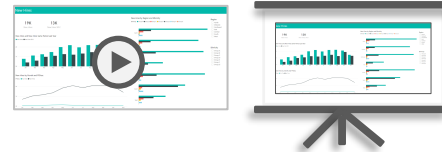
Onboarding Loop



Interaction b/w Loops



Examples



Actionable Advice



Future Work



Future Work

Welcome to the guided tour of New Hires

The guided tour will show you the outline of this dashboard. You can navigate through all visualizations with the next and previous buttons.

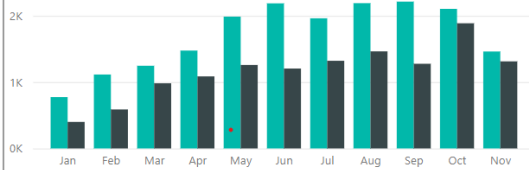
Some visualizations have different categories of information you can switch between them by pressing the fitting tab. This will introduce you to the different kinds of graphs and elements and explains how you can interact with them.

Skip

Start

New Hires and New Hires Same Period Last Year

● New Hires ● New Hires SPLY



Interaction Example

Please click on the bar representing the New Hires for Jun.

Back to visual

Card

New Hires by Region and Ethnicity

General

Data

Interaction

With clicking on a bar you can filter the report by Region and Ethnicity.

When clicking on one of the y-axis-labels you can filter the report by Region.

When clicking on one of the labels in the legend you can filter the report by Ethnicity.

You can hover over a bar to get detailed information about its data.

Try it out

Previous

Next

New Hires by Region

Ethnicity ● Group A ● Group B

North

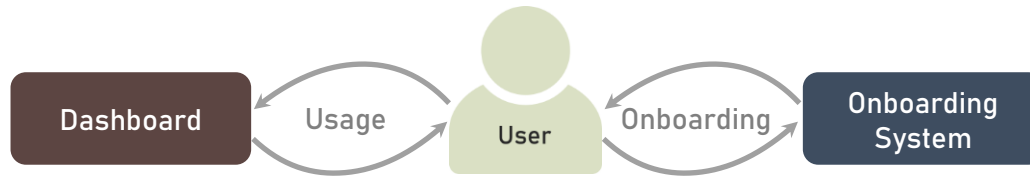
Midwest

Northwest

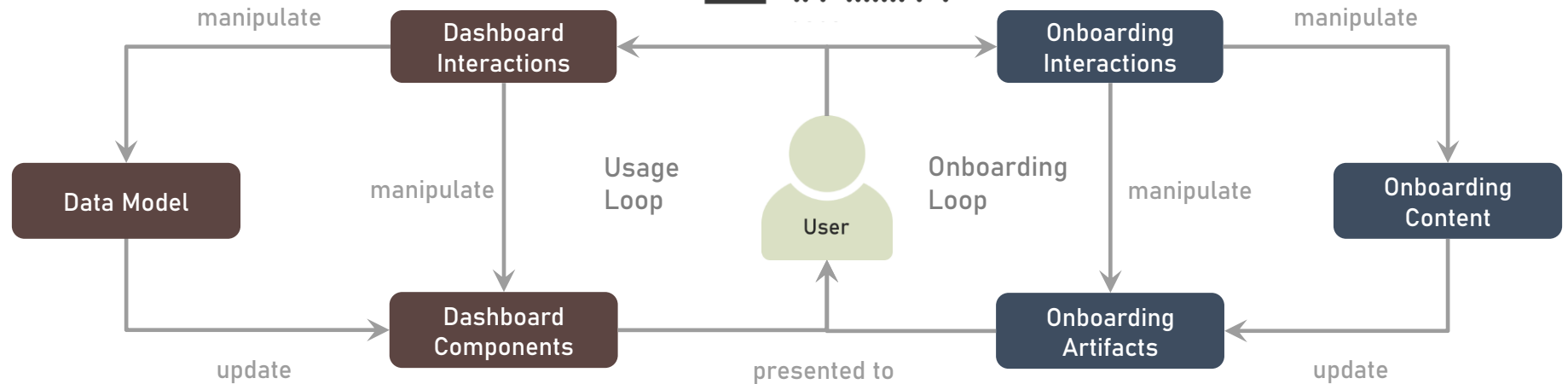
East

Central

Conclusion



Conclusion



Link to the paper: <https://osf.io/gux9w/>