

UX ARCHITECTURE FOR DATA COLLABORATION

Stibo Systems Case Presentation

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Outline

- ▶ UX research process
- ▶ Results and observations
- ▶ Information design
- ▶ Interaction design

As a newly hired UX architect, your initial task is to create an outline for the UX work in a project aimed at improving the UX of the **collaboration tooling**¹ in an existing online Excel-like table system.

...assume that you have the necessary budget for it.

¹Ida Larsen-Ledet, and Henrik Korsaard. Territorial functioning in **collaborative writing**. CSCW 2019
Ida Larsen-Ledet, Henrik Korsaard, and Susanne Bødker. **Collaborative writing** across multiple artifact ecologies. CHI 2020

UX Research - key questions

Why, how, and when do users collaborate?

- ▶ What are the primary tasks and objectives?
- ▶ What are the different roles and responsibilities in collaboration?
- ▶ How do remote work impact the user experience?
- ▶ What other tools do they use to support the tasks – communication, analysis etc.?



Discover

Define

Prototype

Evaluate

Integrate

UX Research

Discover

1. Observe collaborative session
2. Contextual interviews
3. Internal/external research
4. Analytics and in-app surveys
5. Workshops

Define

- ▶ Collaborative task objectives
- ▶ Scenarios, personas and user journeys
- ▶ Information concepts and architecture
- ▶ UX quality criteria and KPIs

Discover

Define

Prototype

Evaluate

Integrate

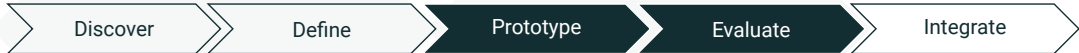
UX Research – iterate where needed

Prototype

- ▶ User- and collaborative flow
- ▶ Information architecture and UI design
- ▶ Key interfaces and technical features

Evaluate

- ▶ Internal review and testing
- ▶ User feedback (informal/think aloud)
- ▶ Review UX quality criteria and KPIs



Results: Collaborative scenarios

1. Collaborative projects

- ▶ Peers collaborate on a larger project
- ▶ Different responsibilities and expertise
- ▶ Mixed focus collaboration with a high degree of coordination
- ▶ Multiple data views

2. Real-time collaboration

- ▶ Peers collaborate on smaller (urgent) tasks
- ▶ Real-time collaboration
- ▶ Shared task focus
- ▶ Few data views

3. Training

- ▶ Expert user provide training and onboarding of novices
- ▶ Focused on learning the application and/or data
- ▶ Tailored data views and exercises

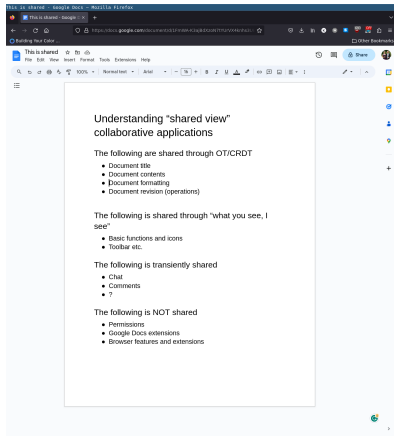
Results: Key UX qualities

- ▶ Sharing with collaborators should be easy and include task assignment and notes
- ▶ Important to know who did what in a shared view (awareness, track changes, accountability etc.)
- ▶ Support sandbox experimentation and analysis before publishing
- ▶ Collaborative features should not overshadow existing task features



Results: State-of-the-art collaborative UX

- ▶ Work object is shared by replication (content and formatting)
- ▶ Communication is transient (chat)
- ▶ Tools are individual, but similar across users ('what-you-see-I-see')
- ▶ Environment is not shared (browser/extensions)
- ▶ Not perfect, e.g. 'the jumping text problem' and 'cursor wars'



Interaction Design features

- ▶ The user can save changes as individual **views** (sheets) of data
- ▶ **The user can share their saved views with other users**
 - The user can add or remove columns from the **view**
 - Users can filter and order the table content
- ▶ **Multiple users must be able to work on the same views simultaneously**
 - The users of the system may be located on multiple locations

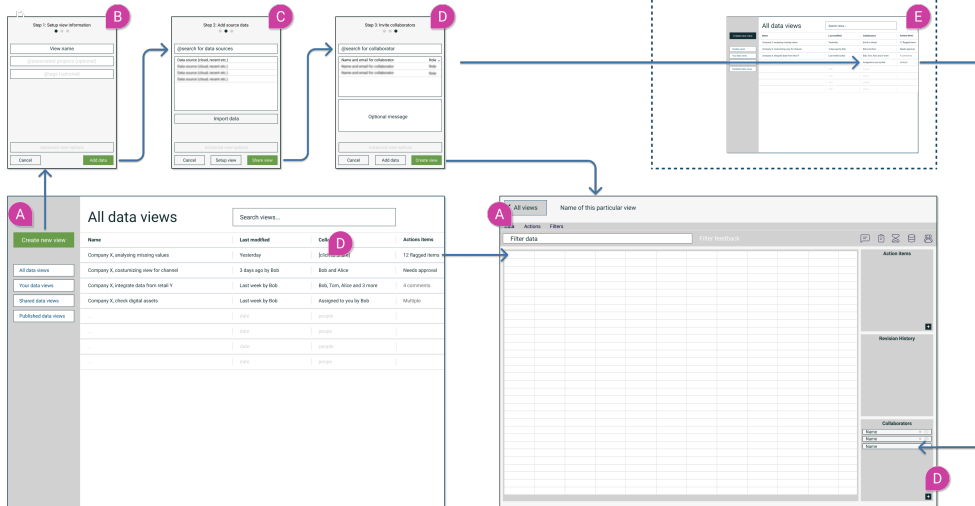
Making data views first class objects

- ▶ Data views are the main work objects – they are what we share when collaborating
- ▶ Views can be published in formats fitting the consumer needs
- ▶ A data view encapsulate a data source, users, and the revision history

The screenshot shows a web interface for managing data views. On the left is a sidebar with a 'Create new view' button and a list of view categories: 'All data views', 'Your data views', 'Shared data views', and 'Published data views'. Callout A points to the 'All data views' category. The main area is titled 'All data views' and contains a search bar (callout B) and a table of data views. Callout C points to the search bar, D points to the 'Collaborators' column, and E points to the 'Actions items' column. The table lists several data views with their names, last modified dates, collaborators, and actions.

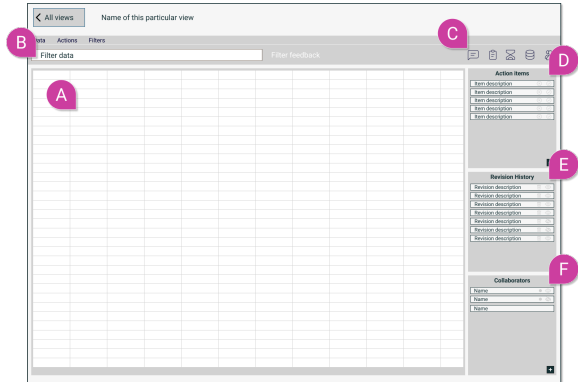
Name	Last modified	Collaborators	Actions items
Company X, analysing missing values	Yesterday	[click to share]	12 flagged items
Company X, customizing view for channel	3 days ago by Bob	Bob and Alice	Needs approval
Company X, integrate data from retail Y	Last week by Bob	Bob, Tom, Alice and 3 more	4 comments
Company X, check digital assets	Last week by Bob	Assigned to you by Bob	Multiple
...	date	people	
...	date	people	
...	date	people	
...	date	people	

Creating a new data view



Collaborative tooling with tabular data

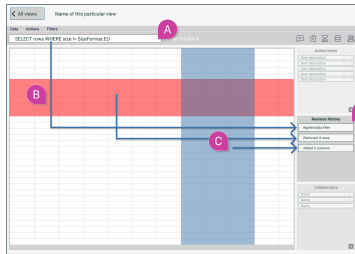
- ▶ Tabular view is the primary synchronized/shared object
- ▶ ...filters cannot be shared until operationalized
 - **Action items** to support different roles
 - **History** to support track changes and accountability
 - **Collaborator** pane for navigation, awareness and mute



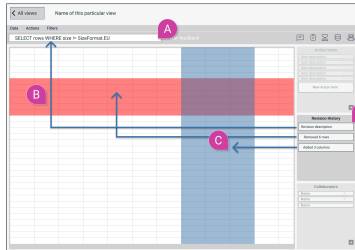
Revision history as key collaboration support

- ▶ Data operations as the replicated objects (CRDT)
- ▶ Support task resumption, accountability and finding stuff
- ▶ Support experimentation – you can always roll back changes
- ▶ A set of operations can be applied to other data views (macros)

Alice's view

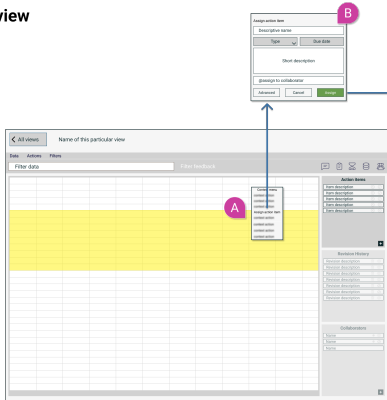


Bob's view

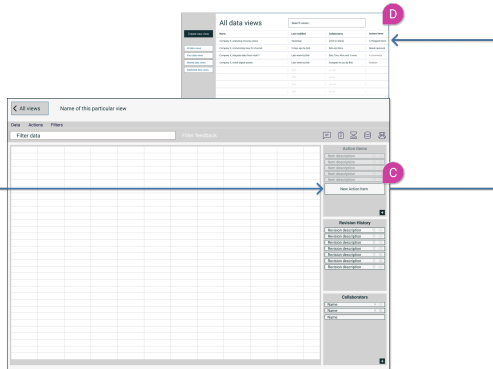


Collaborating on common tasks: Assign action item

Alice's view



Bob's view



THANK YOU