

UX ARCHITECTURE FOR DATA COLLABORATION

Stiby Systems Case Presentation

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Outline and focus¹

- ▶ UX research process
- ▶ “Results” and assumptions
- ▶ Information design for shared views
- ▶ Interaction design for collaborative features

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** in an existing online Excel-like table system.

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

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

UX Research

- Discovery:** Why, how, and when do users collaborate?
- Define:** What are the main user scenarios, information concepts and features?
- Prototype:** User flows, wireframes, key interfaces and features
- Evaluate:** User testing and evaluation
- Integrate:** Plan integration and delivery



UX Research

Discover

- ▶ Internal research and analytics
- ▶ Contextual interviews with users (task sessions)
- ▶ State-of-art on collaborative applications (CRDT)
- ▶ Workshops!

Define

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

Discover

Define

Prototype

Evaluate

Integrate

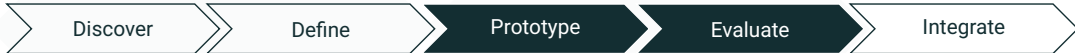
UX Research

Prototype

- ▶ User- and collaborative flow
- ▶ Information architecture and layout
- ▶ Data and view operations
- ▶ Real-time collaboration

Evaluate

- ▶ Internal review and testing
- ▶ (informal) user feedback
- ▶ Think aloud evaluation
- ▶ Review UX quality criteria and KPIs



Collaborative data scenarios

1. Collaborative projects

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

2. Real-time collaboration

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

3. Training

- ▶ Expert user provide training or help to one or more trainees, e.g. onboarding
- ▶ Focused on learning the application and/or data
- ▶ Tailored data views and exercises

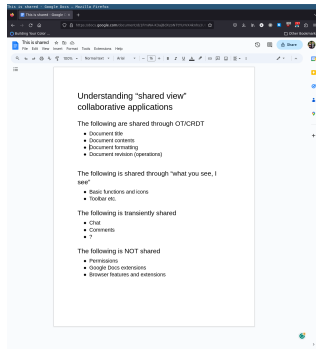
UX qualities

- ▶ 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 analyses before publishing or merging to master
- ▶ Collaborative features should not overshadow existing task features



Sharing in collaborative applications

- ▶ Work object is shared by replication (content and formatting)
- ▶ Communication is transient (chat)
- ▶ Tools are individual, but similar across users (UI)
- ▶ Environment is not shared (browser/extensions)



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

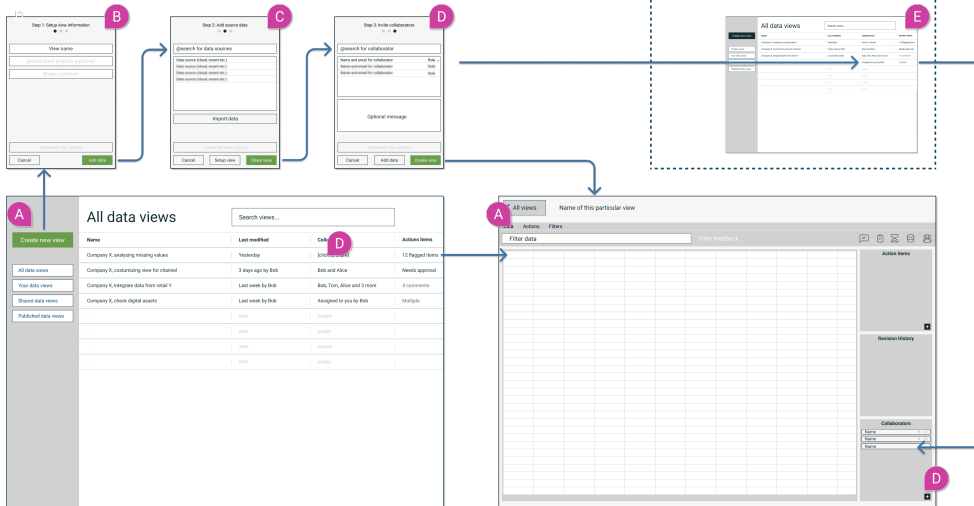
Making 'views' first class objects

- ▶ Data views as the main work object – it's what is shared 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'. The main area is titled 'All data views' and contains a search bar and a table of existing views. Annotations A through E highlight specific UI elements: A points to the sidebar, B to the title, C to the search bar, D to the 'Collaborators' column, and E to the 'Actions' column.

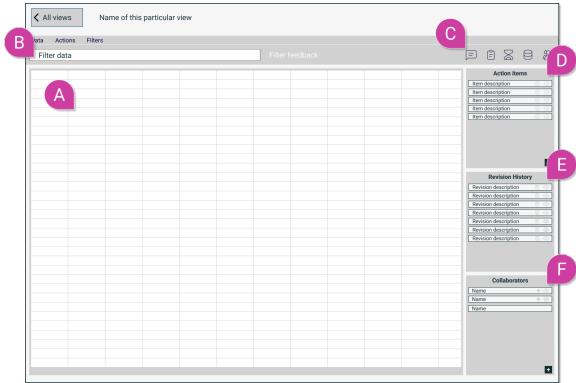
Name	Last modified	Collaborators	Actions
Company X, analysing missing values	Yesterday	[click to share]	12 flagged items
Company X, customizing view for channel	3 days ago by Bob	Bob and Alice	Needs approval
Company X, integrate data from retail Y	Last week by Bob	Bob, Tom, Alice and 3 more	4 comments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

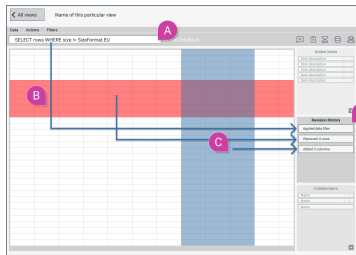
- ▶ Tabular view is the primary collaborative object
- ▶ ...filters cannot be shared until operationalized
 - **Action items** to support different roles
 - **History** to support track changes and accountability
 - **Collaborator** pane for navigation, awareness and mute



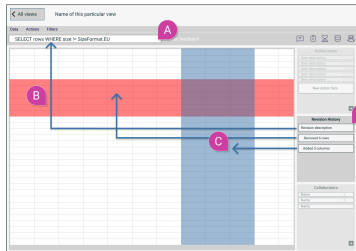
Collaborating in a shared view

- ▶ Data operations as the replicated objects
- ▶ Supports ensures locatability and accountability
- ▶ Rolling back changes
- ▶ A set of operations can be exported to other views

Alice's view

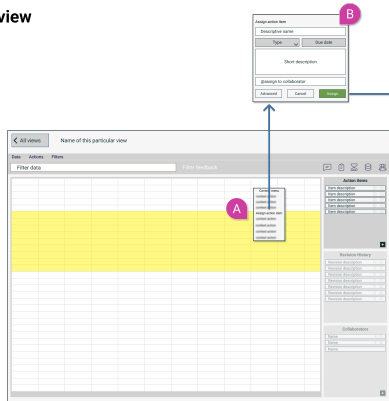


Bob's view

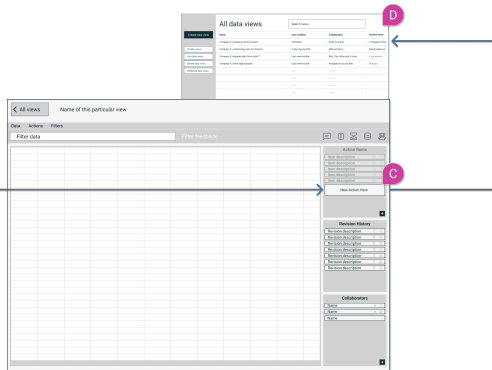


Collaborating on common tasks: Assign action item

Alice's view



Bob's view



Key IA/IxD challenges

- ▶ 'Views' might be a difficult concept to grasp
- ▶ Revision history is powerful tool, but a difficult concept to get right
- ▶ Remote collaboration **require** additional communication channels
- ▶ Developing and prototyping collaborative features pose different requirements than single user applications:
 - Require more contextual user research and co-design activities
 - Hard to study from application analytics
 - Require some technical infrastructure to prototype collaboration

Thank you!