

# 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**<sup>1</sup> in an existing online Excel-like table system.

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

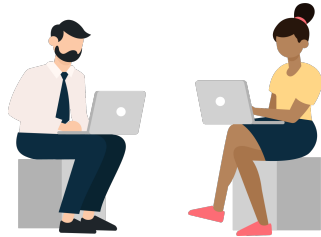
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<sup>1</sup>Ida Larsen-Ledet, and Henrik Korsaard. Territorial functioning in **collaborative writing**. CSCW 2019  
Ida Larsen-Ledet, Henrik Korsaard, and Susanne Bødker. **Collaborative writing** across multiple artifact ecologies. CHI 2020

# 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.?



# 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

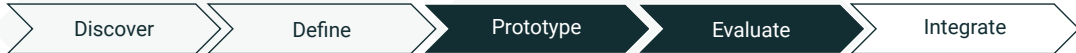
# UX Research – iterate where needed

## 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

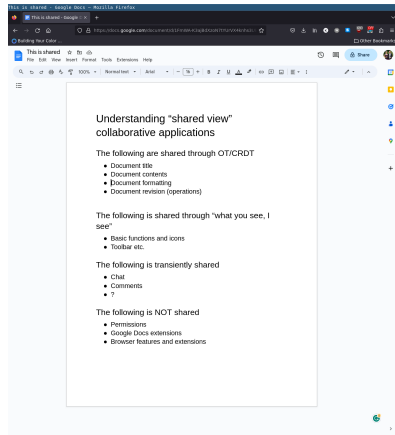
# Results: Key UX qualities

- ▶ 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

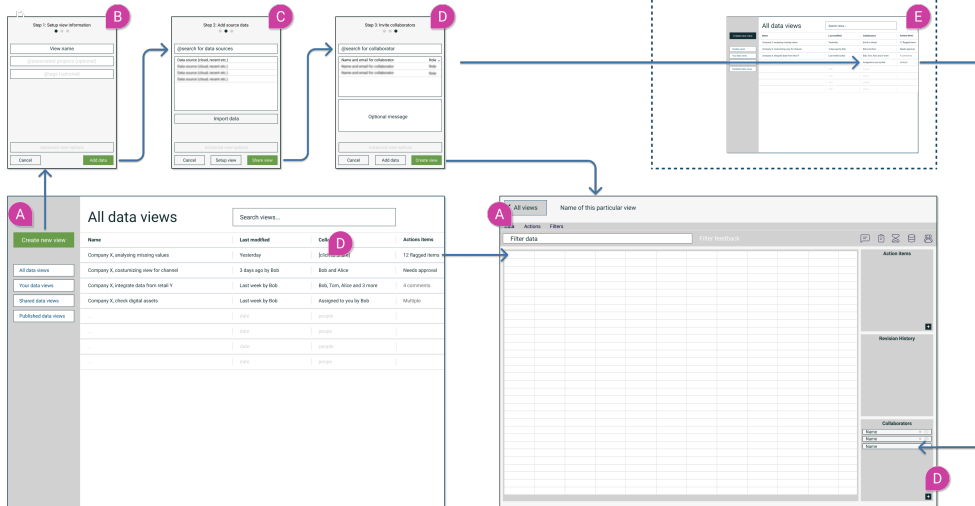
# Making data views first class objects

- ▶ 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 (A) and a list of view categories: 'All data views' (B), 'Your data views' (C), 'Shared data views' (D), and 'Published data views' (E). The main area is titled 'All data views' and contains a search bar (B) and a table of data views.

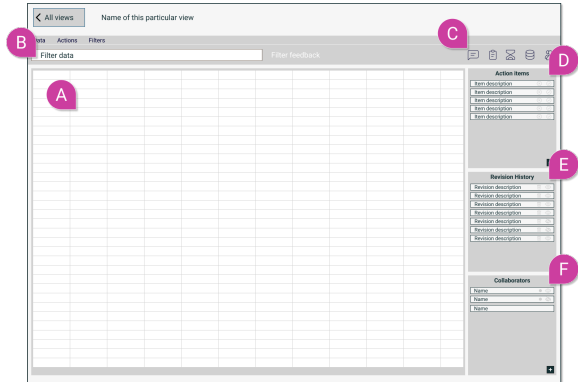
| Name                                    | Last modified     | Collaborators              | Actions items    |
|---|-------------------|----------------------------|------------------|
| Company X, analysing missing values     | Yesterday         | [click to share]           | 12 flagged items |
| Company 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

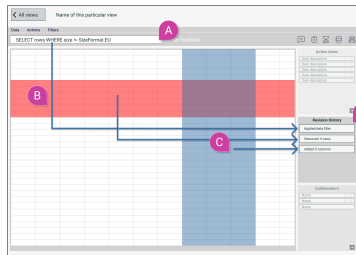
- ▶ Tabular view is the primary synchronized/shared object
- ▶ ...filters cannot be shared until operationalized
  - **Action items** to support different roles
  - **History** to support track changes and accountability
  - **Collaborator** pane for navigation, awareness and mute



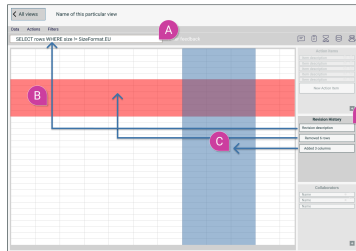
# Revision history as key collaboration support

- ▶ 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



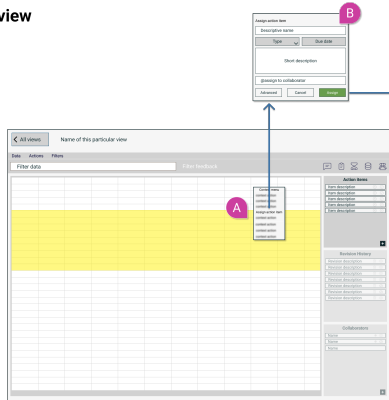
Bob's view



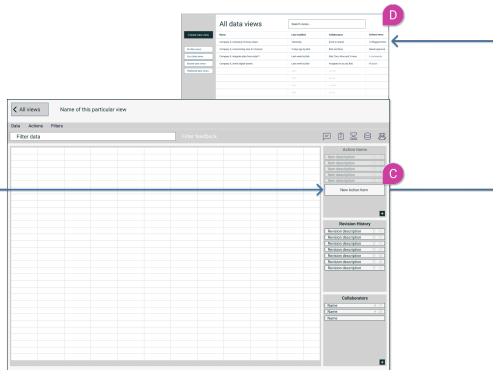
# Collaborating on common tasks:

## Assign action item

Alice's view



Bob's view



THANK YOU