An Empirical Evaluation of Collapsible Panel Interfaces
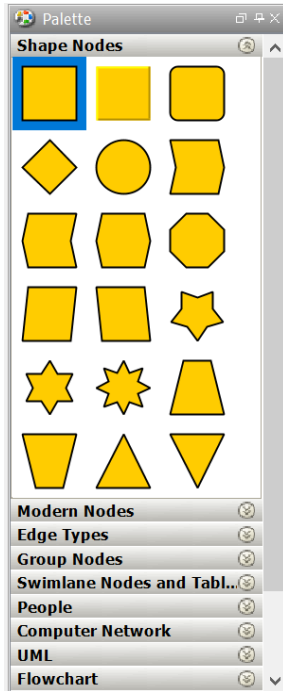
Dr Joshua Leung

Prof Andy Cockburn
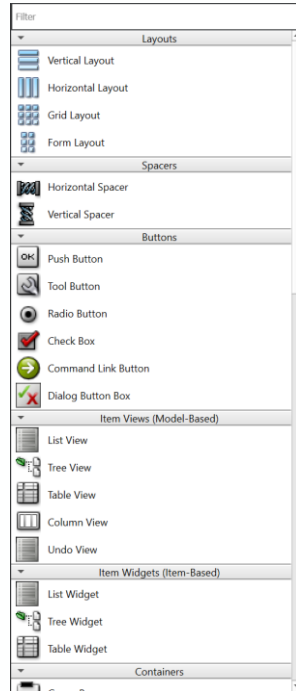
Department of Computer Science and Software Engineering

UC
UNIVERSITY OF CANTERBURY
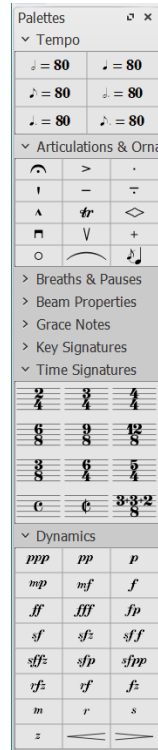Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

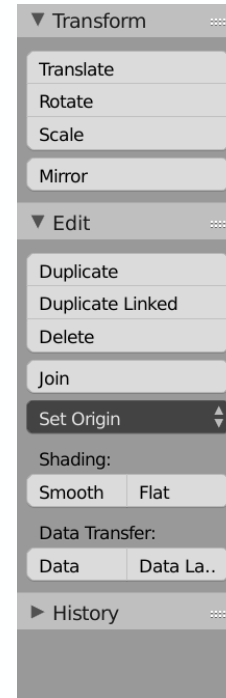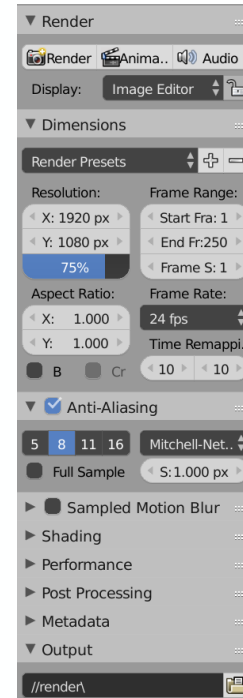# Collapsible Panel UI Examples

yEd Palette

QtCreator Palette

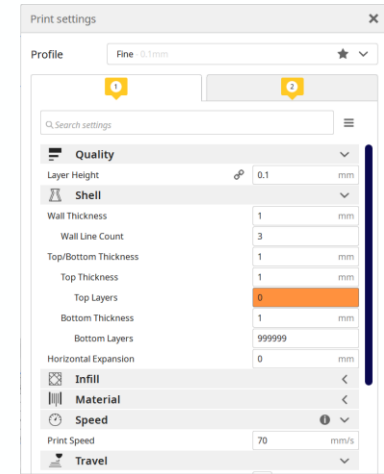MuseScore Palette
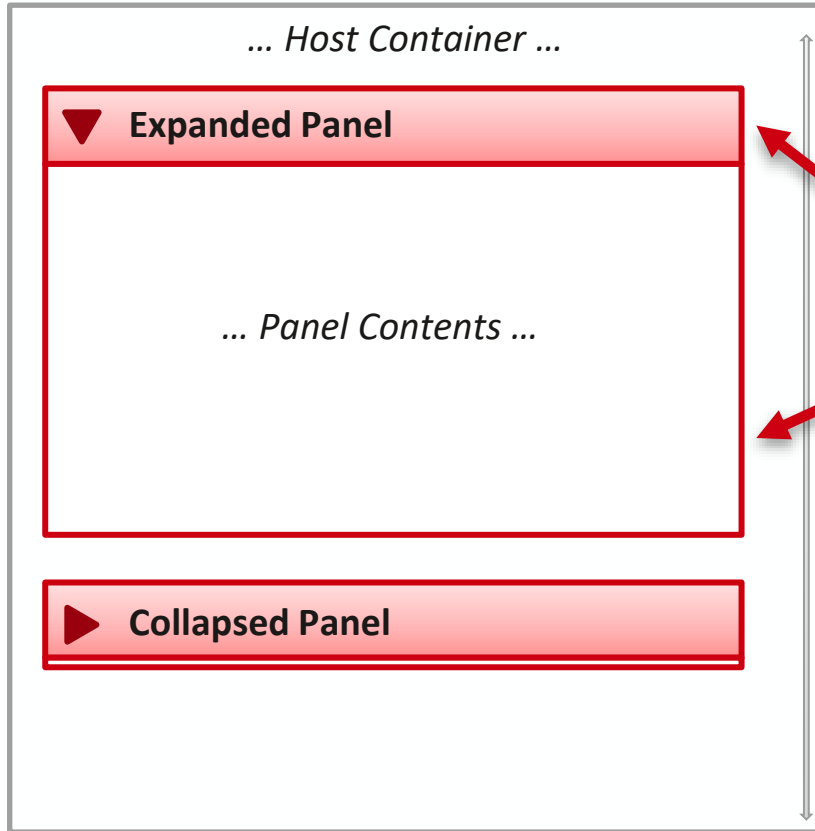
Blender 2.7 Toolbar

Blender 2.7 Properties

Cura Print Settings

Collapsible Panel Anatomy

Panels have 2 parts:
1) Header (e.g. "Category Label")
2) Contents Region

Contents can be hidden by "collapsing" the panel, reducing clutter in the UI.
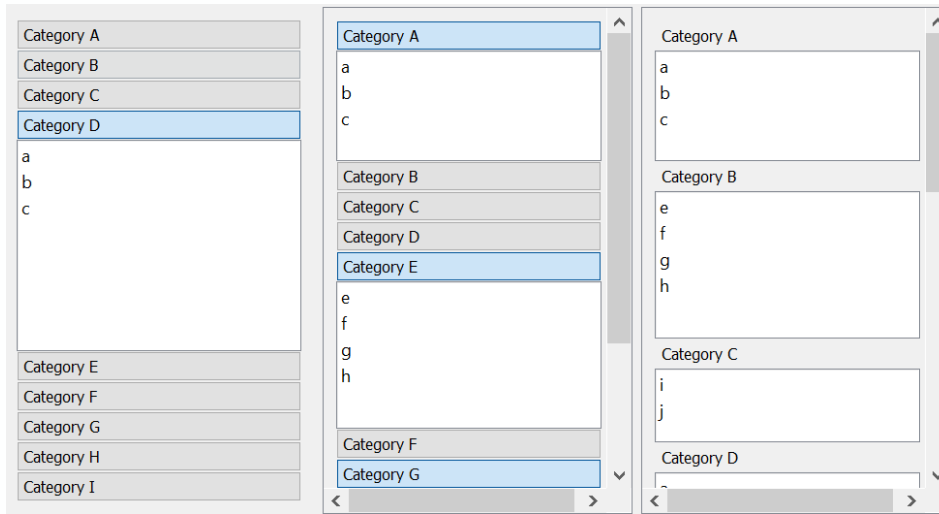
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Research Questions

- Which ones work the best?

- When should one design be preferred over another?

- What considerations should designers take into account?
  - Scalability? (e.g. with regard to number of items / categories)
  - User Preferences?
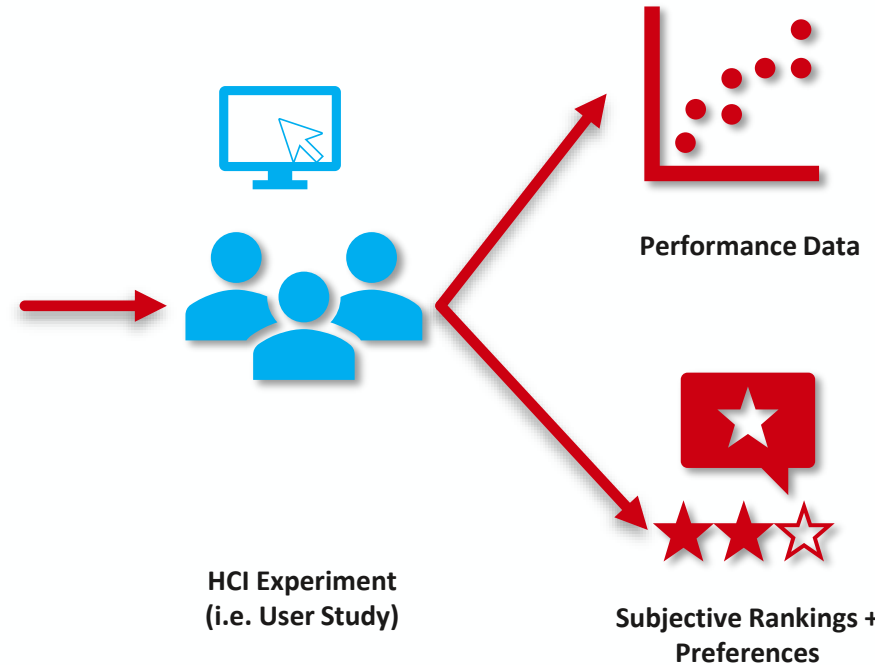
Overview of Our Work

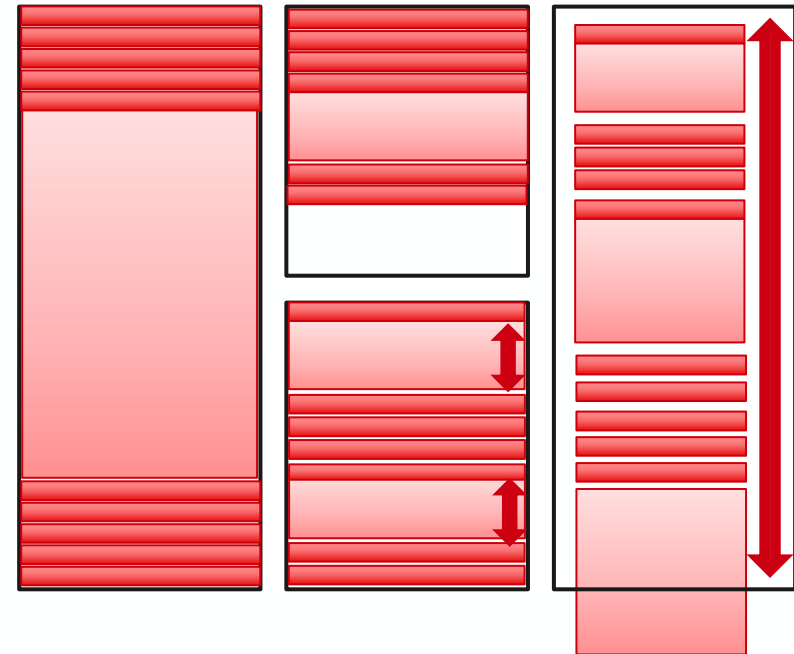*"Accordion"*   *"Collapsible Panels"*   *"Flat"*

Collapsible Panel Interfaces

**HCI Experiment
(i.e. User Study)**

Performance Data

**Subjective Rankings +
Preferences**

Collapsible Panels Design Space

Collapsibility of Panels	• Flat, • Collapsible Panels
Panels Expandable	• Single, • Multiple
Category Placement	• Fixed, • Non-Scrolling, • Scrolling

Category Placement

Fixed   Non-Scrolling   Scrolling

Survey of Palette UI's

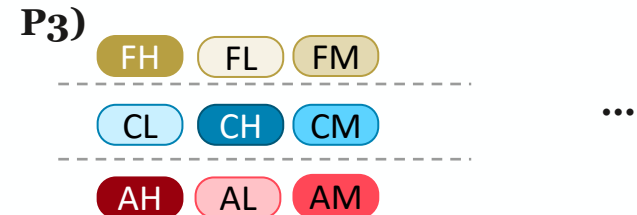| Application	Interface Type	Num Open	Num Panels	Mean Items	Min	Max	Total Items
yEd	Multi Scroll	1	12	15.63	2	36	172
LucidCharts	Multi Scroll	All	10	8.1	1	23	81
MuseScore	Multi Non-Scrolling	0	20	10.85	1	35	217
QtCreator	Multi Scroll	All	8	6.5	2	15	52

Study Design

Interface Type ∈ { Accordion , Collapsible Panels , Flat }

×

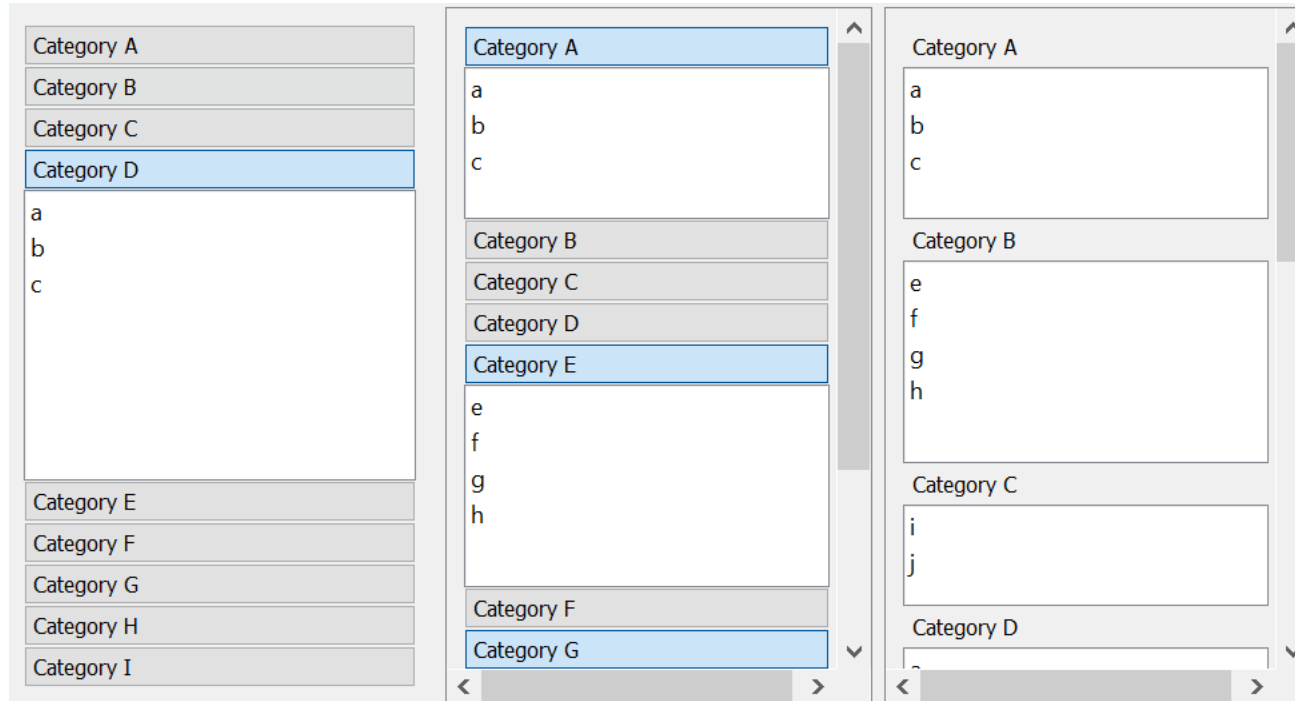**Category Density** ∈ { Low (*5*) , Medium (*11*) , High (*20*) }

- 3 × 3 Within Subjects Design
- 6 Repetitions Per Condition

- 9 Participants (8 Male, 1 Female)

Example Task Ordering:

6x   CL CL CL CL CL CL   *6x*   CM CM CM ... *<break>*

P1)
AH AM AL
CL CM CH
FM FL FH

P2)
CH CL CM
AM AL AH
FL FH FM

P3)
FH FL FM
CL CH CM
AH AL AM

...
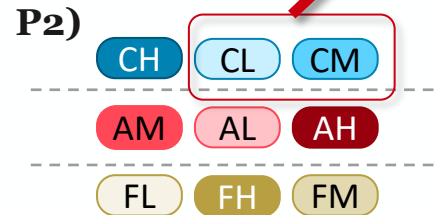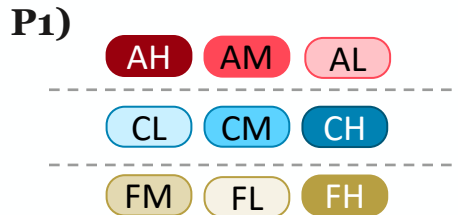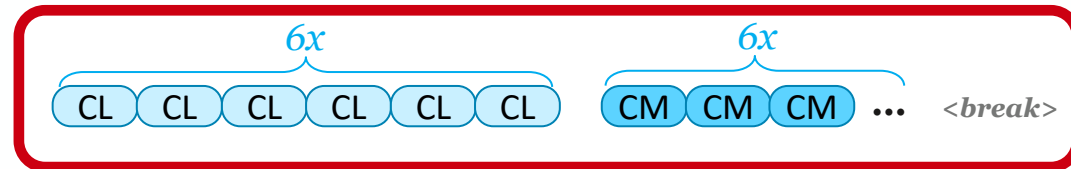
Experiment Conditions
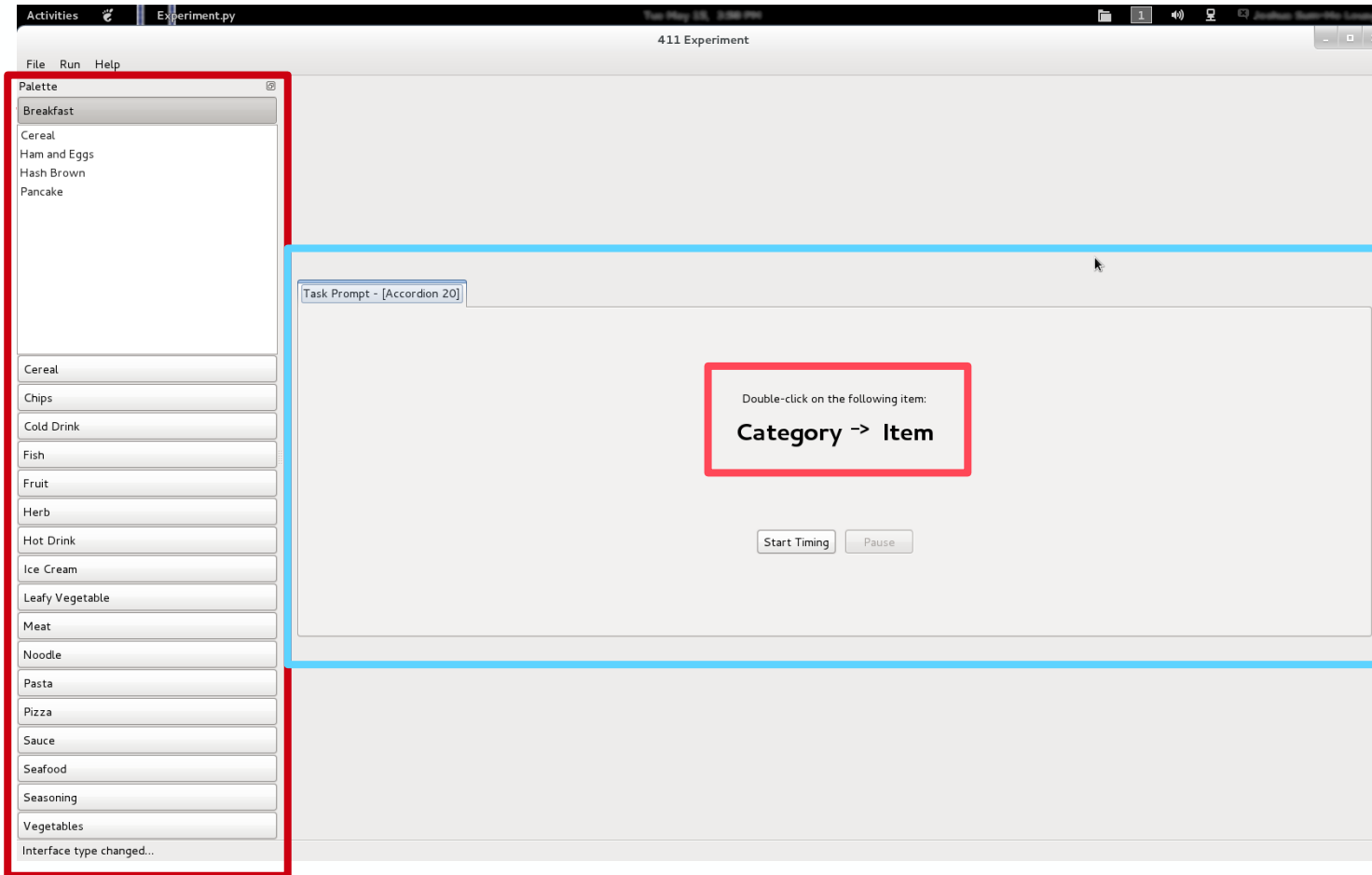

Accordion
"Collapsible: Single Fixed"

Collapsible Panels
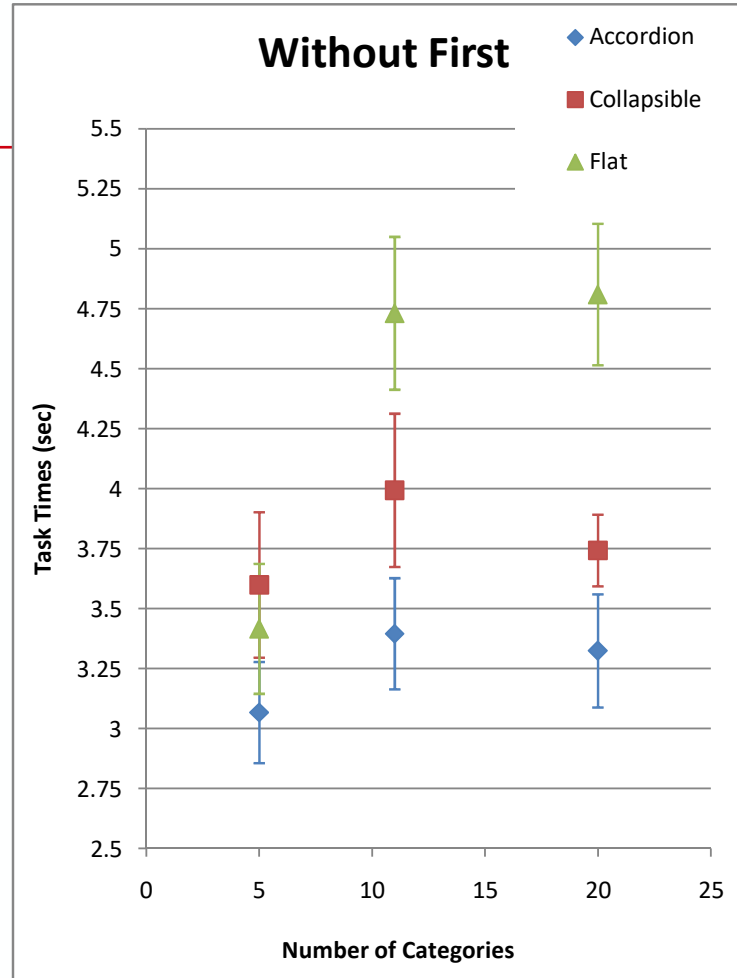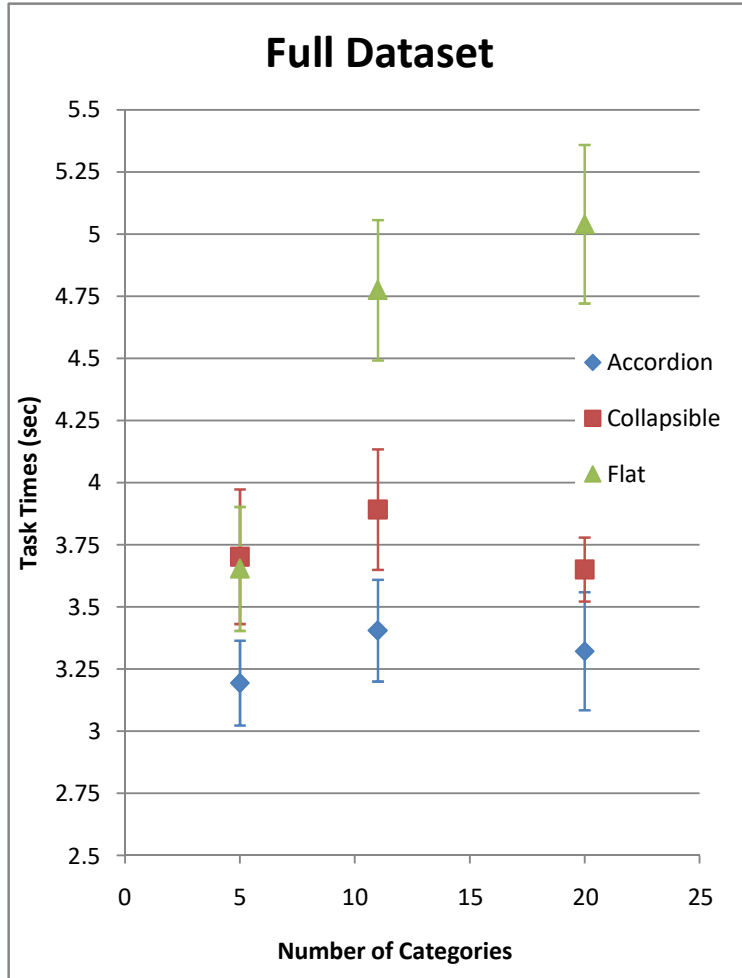*"Collapsible: Multi Scrolling"*

Flat
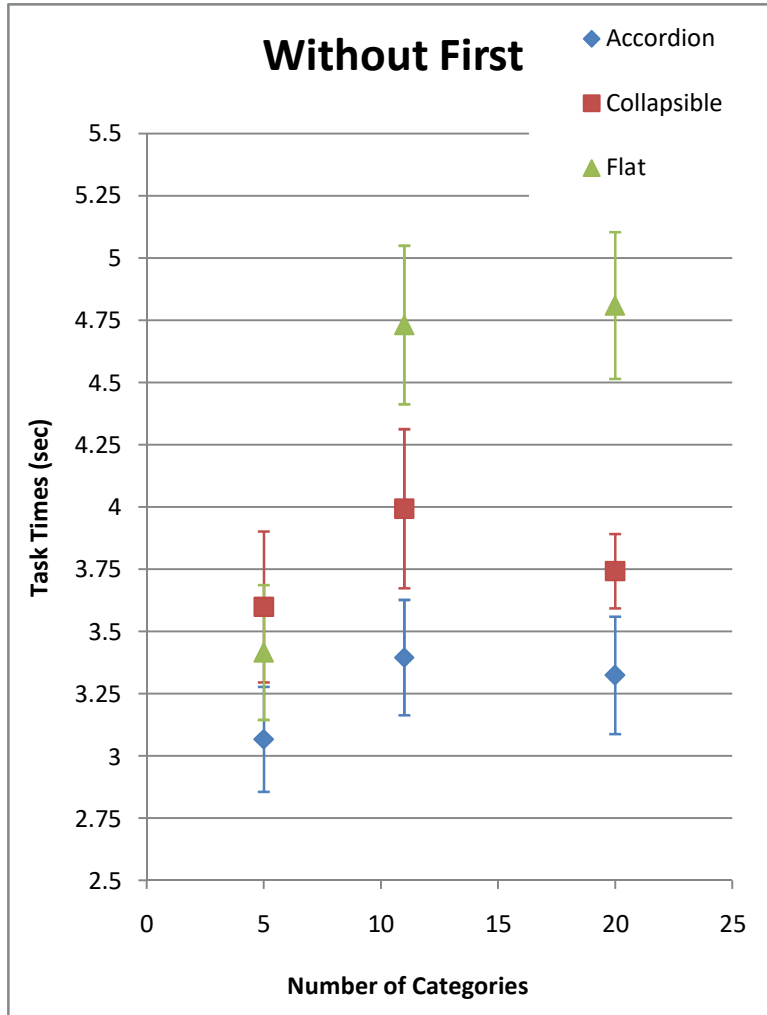*"Flat: Multi Scrolling"*

Experiment Setup

Task Prompter

Palette UI

Results

Without First

Conclusions

- "Accordions" are the fastest overall

- "Flat" (i.e. everything visible) has worst performance overall (logarithmic?)

  - BUT, may be acceptable for < 6-7 panels/categories

- Accordions > Collapsible > Flat

  - As per performance (task time) results + participant preferences

- More experiments needed for rest of design space

Thank you