How To Optimize the User Experience of Your MATLAB Apps

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Share the EXPO experience
#MATLABEXPO
Skyhogg Data Analyzer

Welcome! This application allows to analyze DCOM data from a Skyhogg test campaign.

Load Flight Data  Get Started
Welcome! This application allows to analyze Datcom data from a Skyhogg test campaign.

Load Flight Data  Get Started
By the End of This Presentation...

**Learn:**
- Tools and techniques to create user friendly apps in MATLAB

**Remember:**
- Great apps come from a great user experience  
  **(BUT NOT ONLY, see handout)**
Documentation, Ease of Use

SOLVE

END USER
END USER

SOLVE

???
How Can You Optimize the User Experience of Your MATLAB Apps?
In a Nutshell...

1. **Choose the correct position and size**
2. Set the expectations
3. Provide feedback to the user
4. Anticipate user errors
5. Provide documentation
6. Enhance the appearance
Choose the Correct Position and Size
Choose the Correct Position and Size
Choose the Correct Position and Size
TOOLBAR - `uitoolbar`

TABS – `uitab` in `tabgroup`
TILED LAYOUT - tiledlayout
GRID LAYOUT - uigridlayout
Use Grid Layout to Enable Dynamic Positioning

More details in the handout.
How To Optimize the User Experience of Your MATLAB Apps

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Set the Expectations

...What data do I need to provide?

...What is this app going to calculate?

...Can I shut this down safely?
Set the Expectations – Tooltips and Icons
Set the Expectations – Tooltips and Icons

“Icon” and “Tooltip” are properties of the UI component; set these using «dot» notation, e.g.:

```matlab
obj = uibutton;
obj.Icon = "myIcon.png";
obj.Tooltip = "Description";
```
Set the Expectations – Dialog Windows

Set expectations with dialog windows using:
- `uialert`
- `uiconfirm`
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We Need Feedback
Feedback Is Needed Also in Software
Provide Feedback to the User – Progress Bar

uiprogressdlg
Feedback Should Be Mutual

Advanced Logger for MATLAB – File Exchange
Provide Positive/Negative Feedback
Provide Positive/Negative Feedback
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Anticipate User Errors
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Anticipate User Errors

STARTUP:

button.Enable = "off";
menu.Enable = "off";

LOAD DATA...

button.Enable = "on";

ANALYZE DATA...

menu.Enable = "on";
Anticipate User Errors – Try/Catch Block

```matlab
try
    saveResults(app)
catch error
    if error.identifier == "app:missingData"
        uialert(app.Figure, "No data loaded!", "Error")
    end
end
```

`doc: try/catch`
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Provide Documentation
Provide Documentation

DEVELOPER

APP

WITH

DOCUMENTATION

END USERS
Provide Documentation

LIVE SCRIPTS ➔ HTML ➔ uithml

uitree
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6. **Enhance the appearance**
Enhance the Appearance

- HTML
- CSS
- JavaScript
- uihtml
In Summary

USER EXPERIENCE

tabs  menu  grid layout  tiled layout  dialog windows  feedback  try/catch  documentation  aesthetics

STEPS
Conclusion

- **Key takeaways:**
  - Develop professional-grade apps with a great user experience in MATLAB
  - A user-friendly app will result increased productivity

- **Call to action:**
  - Use the tools and techniques learned in this presentation to optimize the user experience of your MATLAB apps
Learn More

- Download the handout

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**How To Optimize the User Experience of Your MATLAB Apps**

This document provides some recommendations to improve the user experience of applications developed with MATLAB. Note: The content of this document should not be intended as an exhaustive list of actions to take to create an app with an optimal user experience.

1. **Choose The Correct Position and Size**

   - **uimenu** – use as an API for loading and saving data, and to provide access to unfrequently-used app functionalities.
   - **uitab, uitabgroup** – separate different parts of the workflow, convert multi-window apps to single-window apps, avoid concentrating all the UI components into a single panel.
   - **uioolbar** – alternative for menu, use as an API for functionalities that always need to be readily accessible.
MATLAB EXPO

Thank you