MATLAB Software Techniques for Large-Scale Data Analysis and Visualisation

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Overview

- Working with large data
- Creating custom graphics
- Building up applications
How much should you care about…

- Performance
- Usability
- Robustness
- Extensibility
Gatwick airport

World’s busiest single runway airport
Air traffic control

Control aircraft separation based on:

- Sequence
- Schedule
- Weather
- Aircraft type
- Aircraft operator
- Airport layout

Final approach
Demonstrations
Technical computing workflow

Access
- Files
- Databases
- Datafeeds

Research and Quantify
- Data Analysis & Visualization
- Modeling
- Application Development

Share
- Reporting
- Applications
- Production

Automate
- Files
- Databases
- Datafeeds

Examples:
- S=31; K=30
- C=blspice
- P=C-S+K*ex
- Option 1, Option 2
- .dll C/C++, Java .NET
Working with large data

Per day:
- 800,000 radar returns
- 2,000 aircraft
- 150 MB
Data class benefits

- Lock down interfaces
- Ensure validity
- Group related functions
- Provide a convenient API
- Avoid repetition

- Robustness
- Usability
- Performance
Creating custom graphics

Access
- Files
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- Datafeeds

Research and Quantify
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- Modeling
- Application Development

Automate

Share
- Reporting
- Applications
- Production

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Files: .xls ( ABC )

Databases

Datafeeds: BZ 71.92 5.332 CL 81.

Expression: S=31; K=30
C=blsprice
F=C-S+K*ex
Graphics class benefits

- Provide a convenient API
- Manage life cycle robustly
- Avoid repetition

- Usability
- Robustness
Building up applications

Access
- Files
- Databases
- Datafeeds

Research and Quantify
- Data Analysis & Visualization
- Modeling
- Application Development
  - $S=31, \ K=30$
  - $C=blsprice$
  - $P=C-S+K*ex$

Share
- Reporting
  - PDF
  - .doc
  - .html
- Applications
- Production
  - C/C++
  - Java
  - .NET

Automate
Model – view – controller architecture

Layout of graphical user interface
Model – view – controller architecture benefits

- Enable GUI flexibility
- Manage life cycle robustly
- Group related functions
  - Extensibility
  - Robustness
Recap

- Working with large data
- Creating custom graphics
- Building up applications

How much should you think about…
- Performance
- Usability
- Robustness
- Extensibility
Thank you.

Questions?