

# OpenSpace Software Architecture

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“I see this as the essence of open source projects: The energy and creativity of many people with diverse goals together can work miracles”

-Guido van Rossum

# Topics

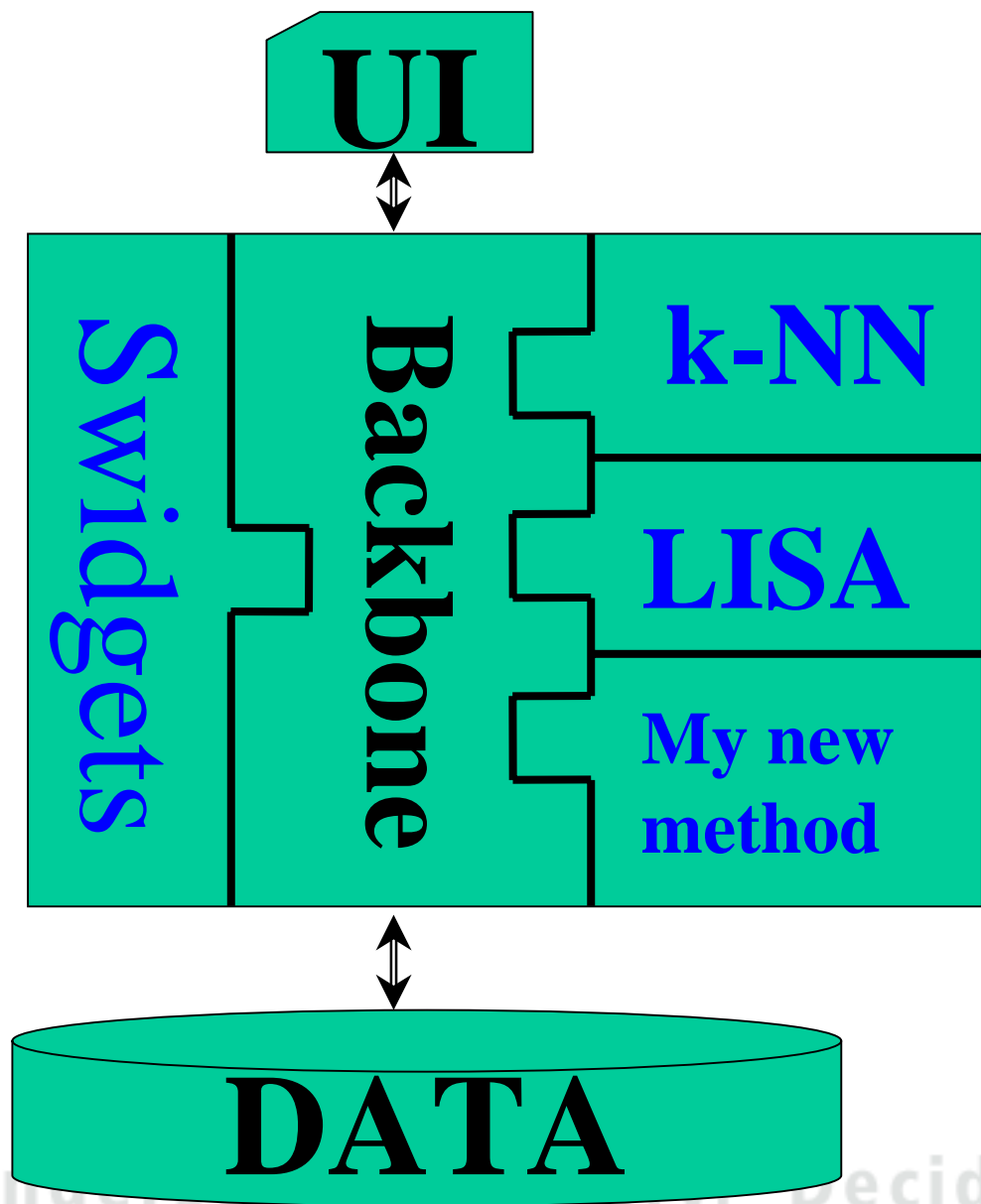
- Software design process
- Desired characteristics
- Application schematic
- Spatial method definitions
- Tasks

# Design process

- Define software vision
- Define requirements
- Write specifications
  - Use case
  - Scenarios
- Generate object design
- Write and test code
- Task Architect role

# Desired characteristics

- Data standards compliant (OGIS, etc.)
- Multiplatform (hardware, OS)
- Multilingual (output & prog. languages)
- Scalable (problem size; desktop <> distributed)
- Modular
- Process-standards compliant (testing, coding, documentation, metadata)



Understand. Decide.

# Swidget Library

- Provides common functionality
- Optimized for speed
  - Procedural rather than OO?
- Multilingual (C++, Fortran etc.)
- Gateway for existing libraries?

# Spatial methods definition



Adobe Acrobat  
Document



# Tasks

- The swidgets library
- Spatial methods space
- Standards
- Interfaces
- The OpenSpace process

# Define Swidgets library

- What is a swidget?
- Enumerate types of swidgets
  - Linear algebra
  - Distributions, statistical building blocks
- How to link to existing swidgets?
- What languages are supported?
  - Fortran, C++, Pascal, Java?

# Define spatial methods space

- What types of methods will be supported?
  - Geostatistical
  - Spatial econometric
  - Inferential
  - Clustering
  - Visualization
  - Etc.
- What level of abstraction? E.g. `plot(model.obj)`?
- Enumerate known methods for each type
- Define data and I/O reqs for each method

# Standards

- Define the characteristics of coding, documentation and testing standards
- Metadata definition
  - Swidgets
  - Spatial methods
- Standards for representing and propagating uncertainty

# Interfaces

- Define the generic interface for
  - Swidgets
  - Spatial methods
- Define the interface to GIS, decision support, and statistical software systems

# The OpenSpace process

- GOAL: put in place a self-monitoring and self-sustaining OpenSpace process & repository
- Rigorous definition of Scope!
- What is the process for adding a Swidget?
- What is the process for adding a method?
  - Peer review process? OpenSpace methods board?
- What models exist for the OpenSpace site?
- What license should be used?
- How best to prepare for the “handoff”?