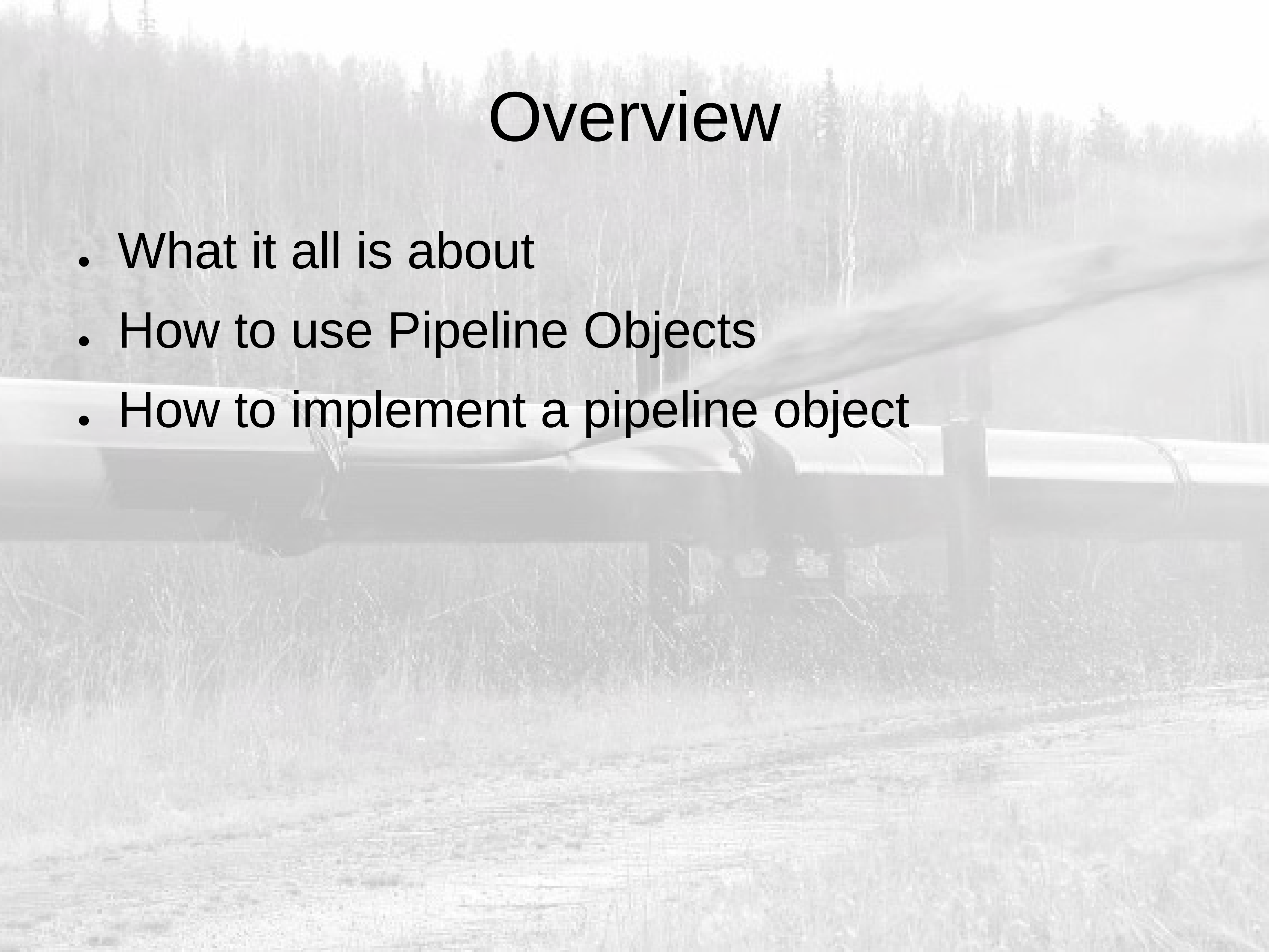
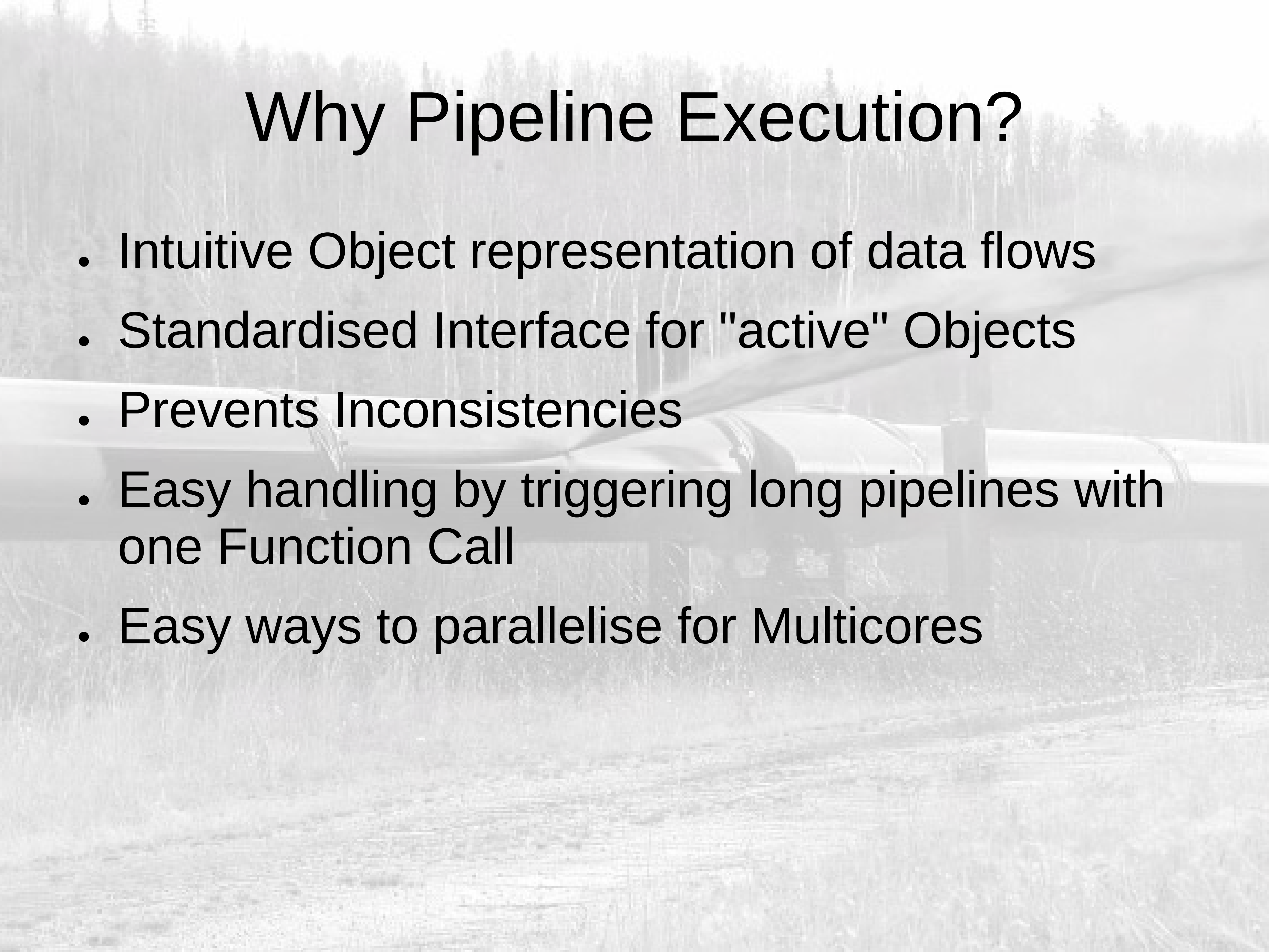
The MITK/ITK Pipeline

Concept, Usage, Pitfalls



Overview

- What it all is about
- How to use Pipeline Objects
- How to implement a pipeline object



Why Pipeline Execution?

- Intuitive Object representation of data flows
- Standardised Interface for "active" Objects
- Prevents Inconsistencies
- Easy handling by triggering long pipelines with one Function Call
- Easy ways to parallelise for Multicores

What does Update() do?

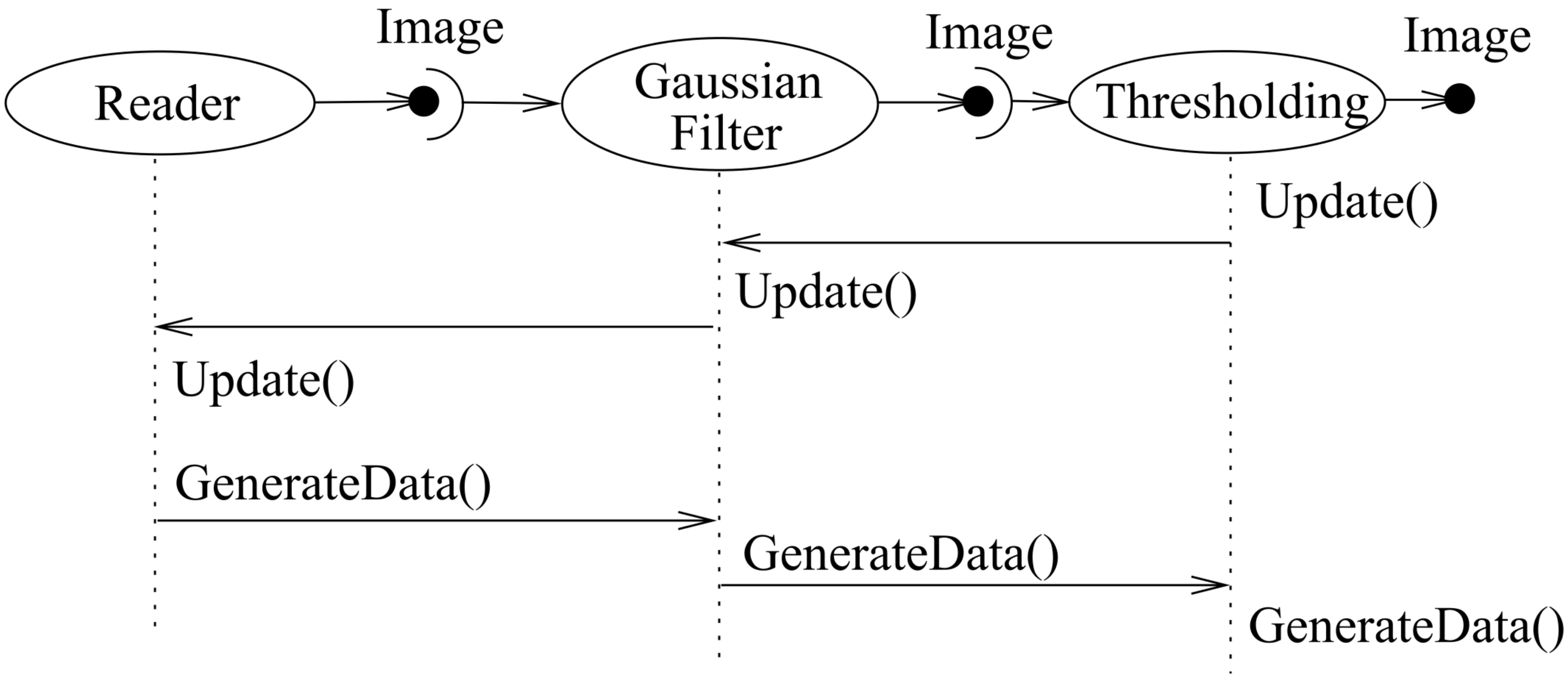
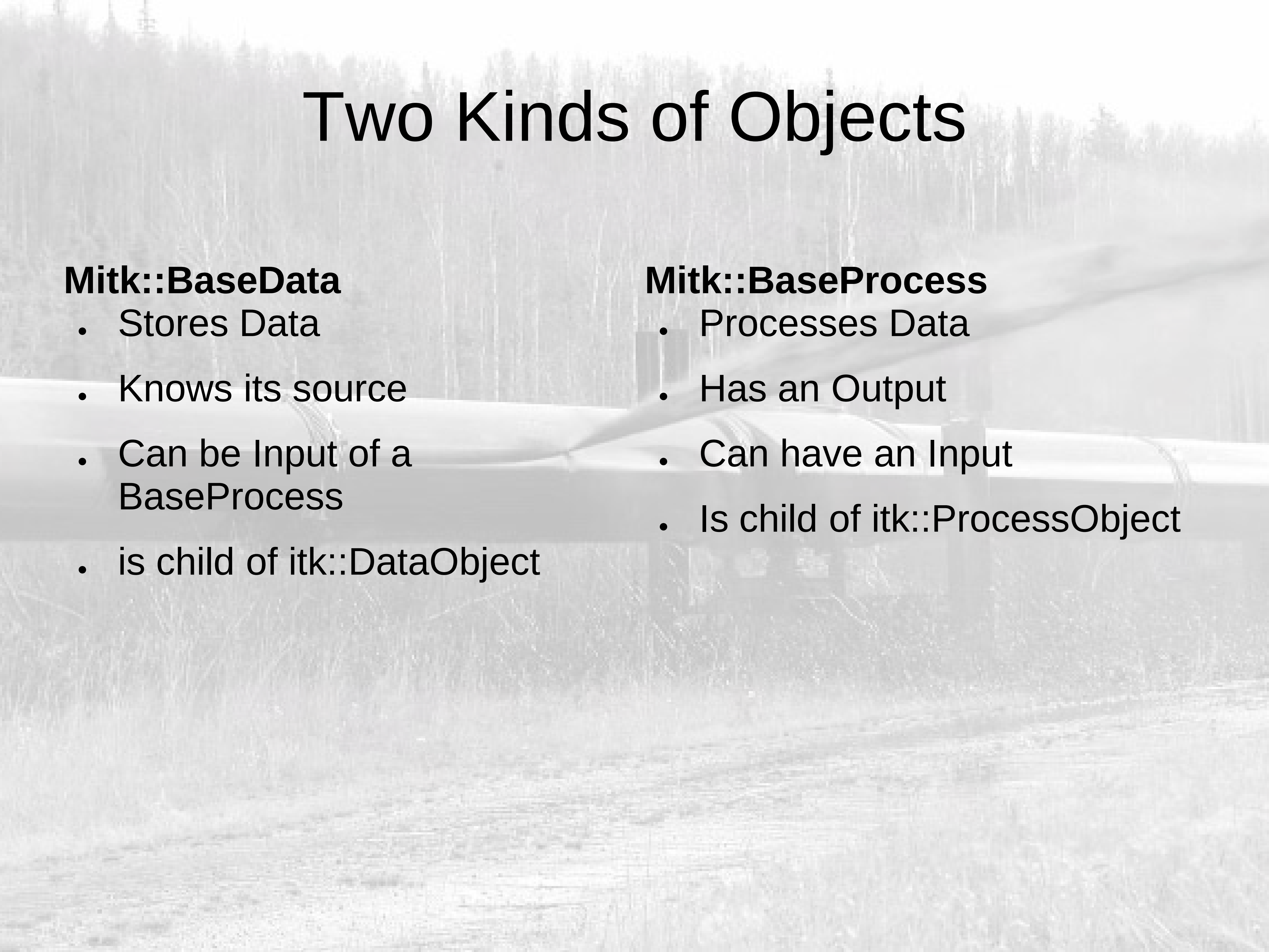


Figure 13.3: Sequence of the Data Pipeline updating mechanism

Two Kinds of Objects



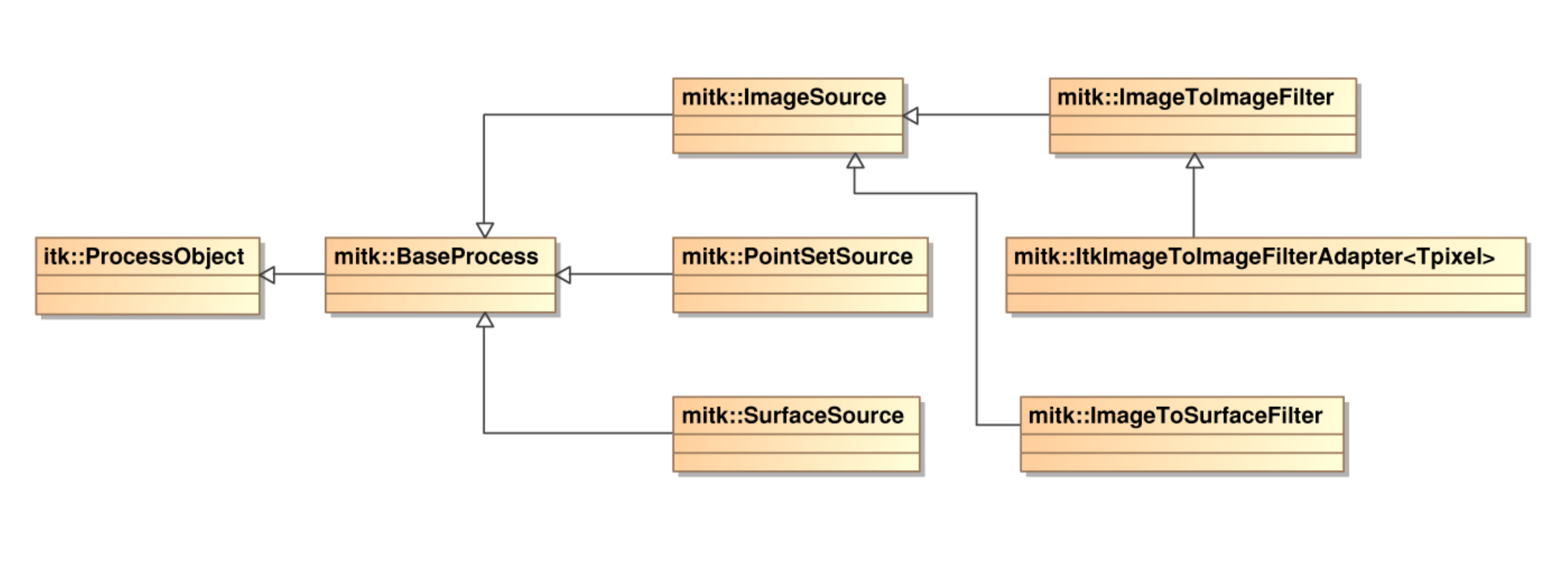
Mitk::BaseData

- Stores Data
- Knows its source
- Can be Input of a BaseProcess
- is child of itk::DataObject

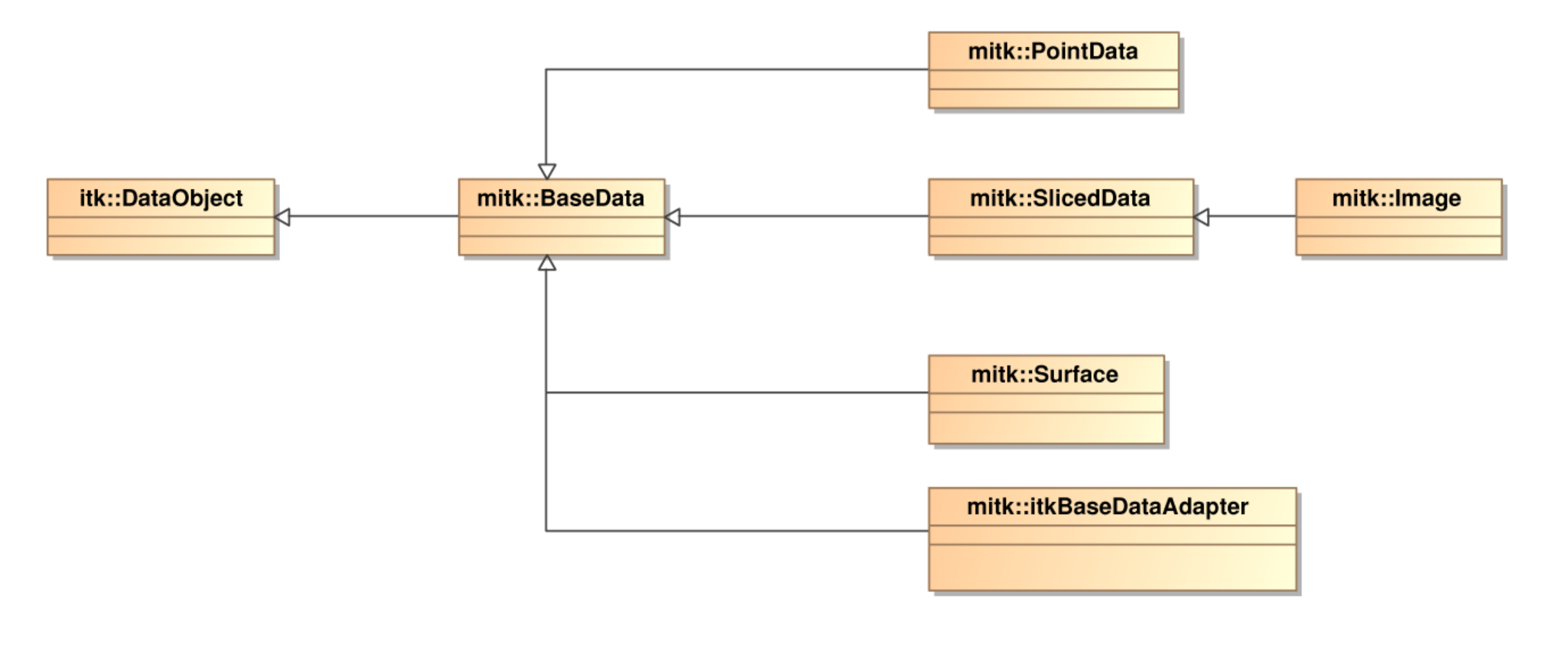
Mitk::BaseProcess

- Processes Data
- Has an Output
- Can have an Input
- Is child of itk::ProcessObject

mitk::BaseProcess



mitk::BaseData



Roadmap to a mitk::BaseProcess

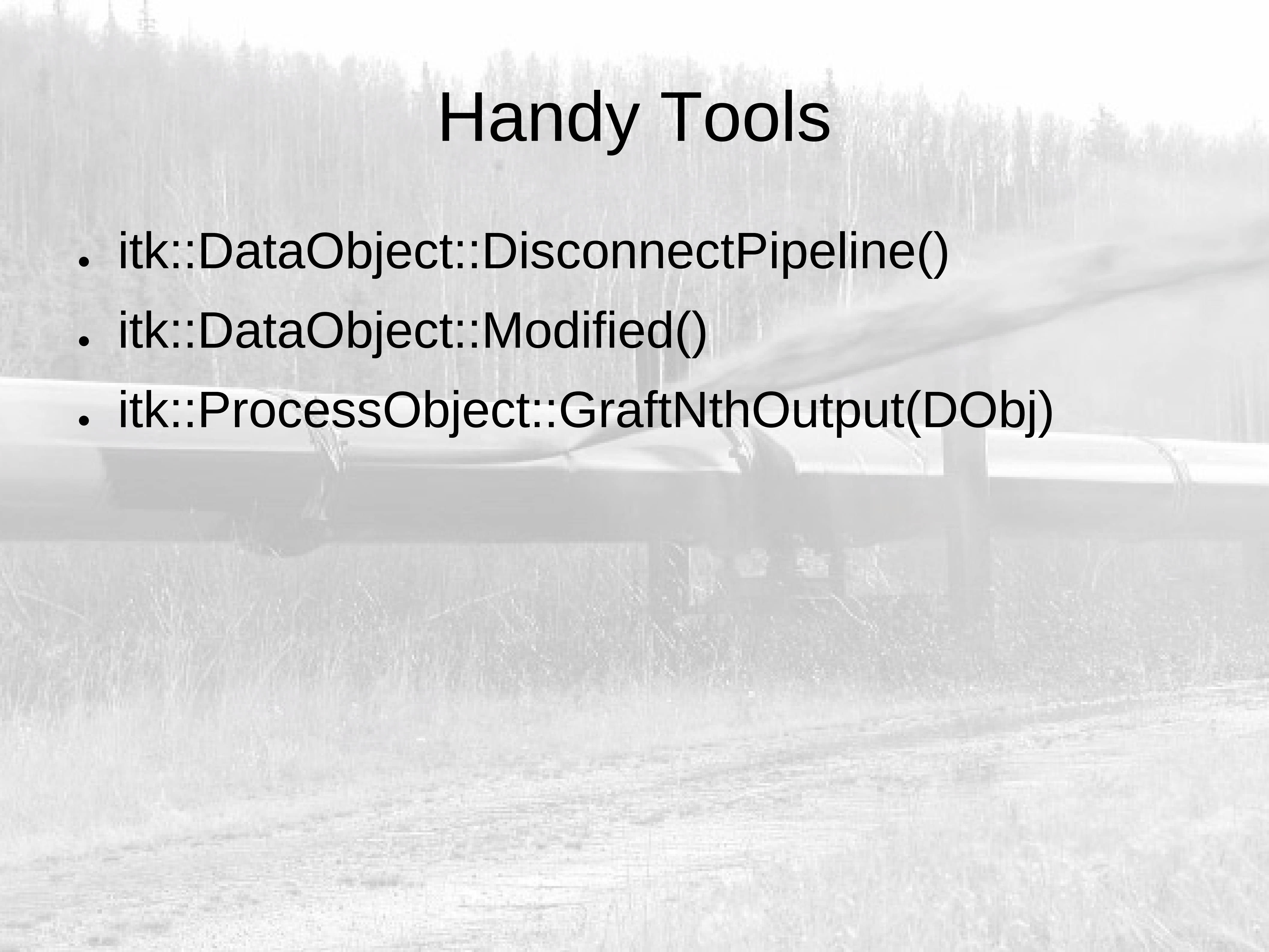
- Find a base class (i.e. mitk::ImageSource)
- Implement the following metods:
  - GenerateData()
  - MakeOutput()
  - GetOutput()/SetInput()

Optional Methods to reimplement

- GenerateInputRequestedRegion()
- GenerateOutputInformation()
  - Vital if InputType != OutputType
- AllocateOutputs()

Handy Tools

- itk::DataObject::DisconnectPipeline()
- itk::DataObject::Modified()
- itk::ProcessObject::GraftNthOutput(DObj)



The End

Thank you for your attention.