



# The COMET architecture

An approach based on metadata  
to integrate forestry decision  
support components

# Overview

- ◆ Introduction
- ◆ Metadata concept
- ◆ Metadata details
- ◆ Conclusion



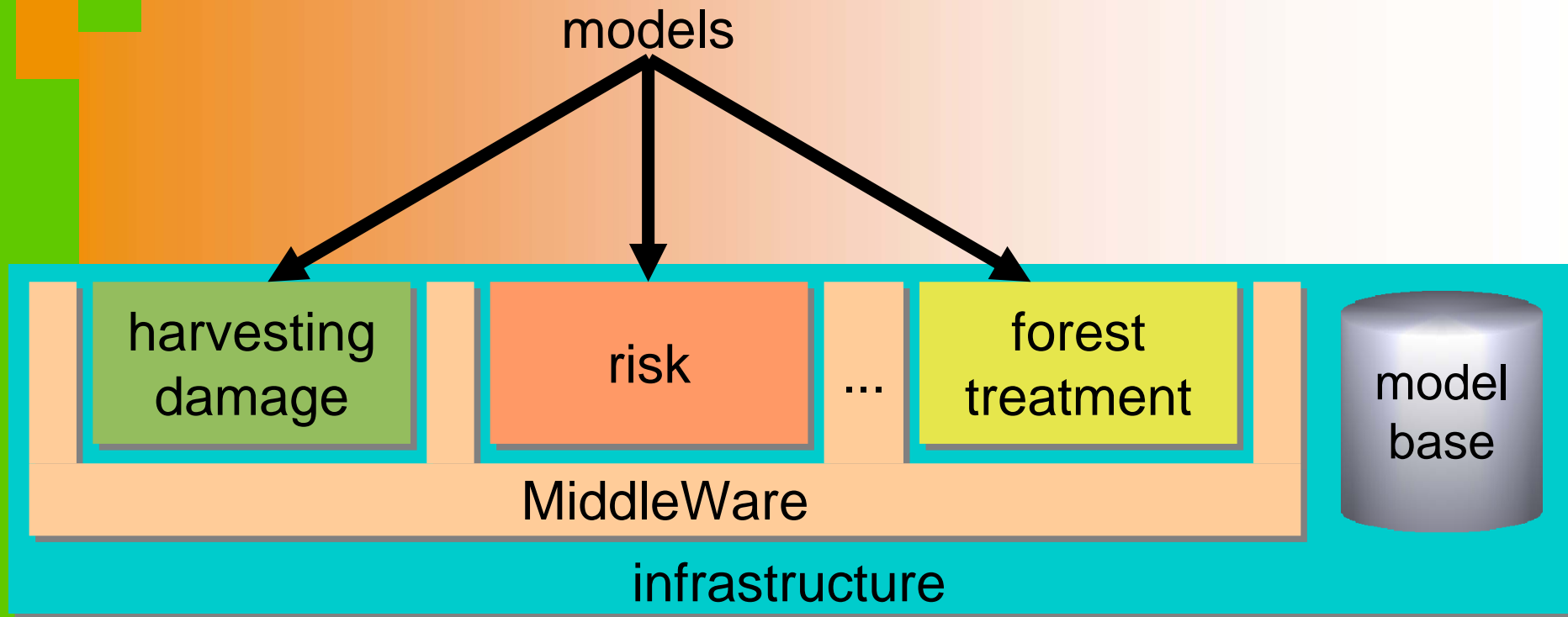
# ◆ Introduction

- ◆ Metadata concept
- ◆ Metadata details
- ◆ Conclusion

# Problems

- ◆ Requirements
  - Technical
  - IT specific
- ◆ Consequences
  - Functionality
  - Interfaces
  - Performance

# Idea

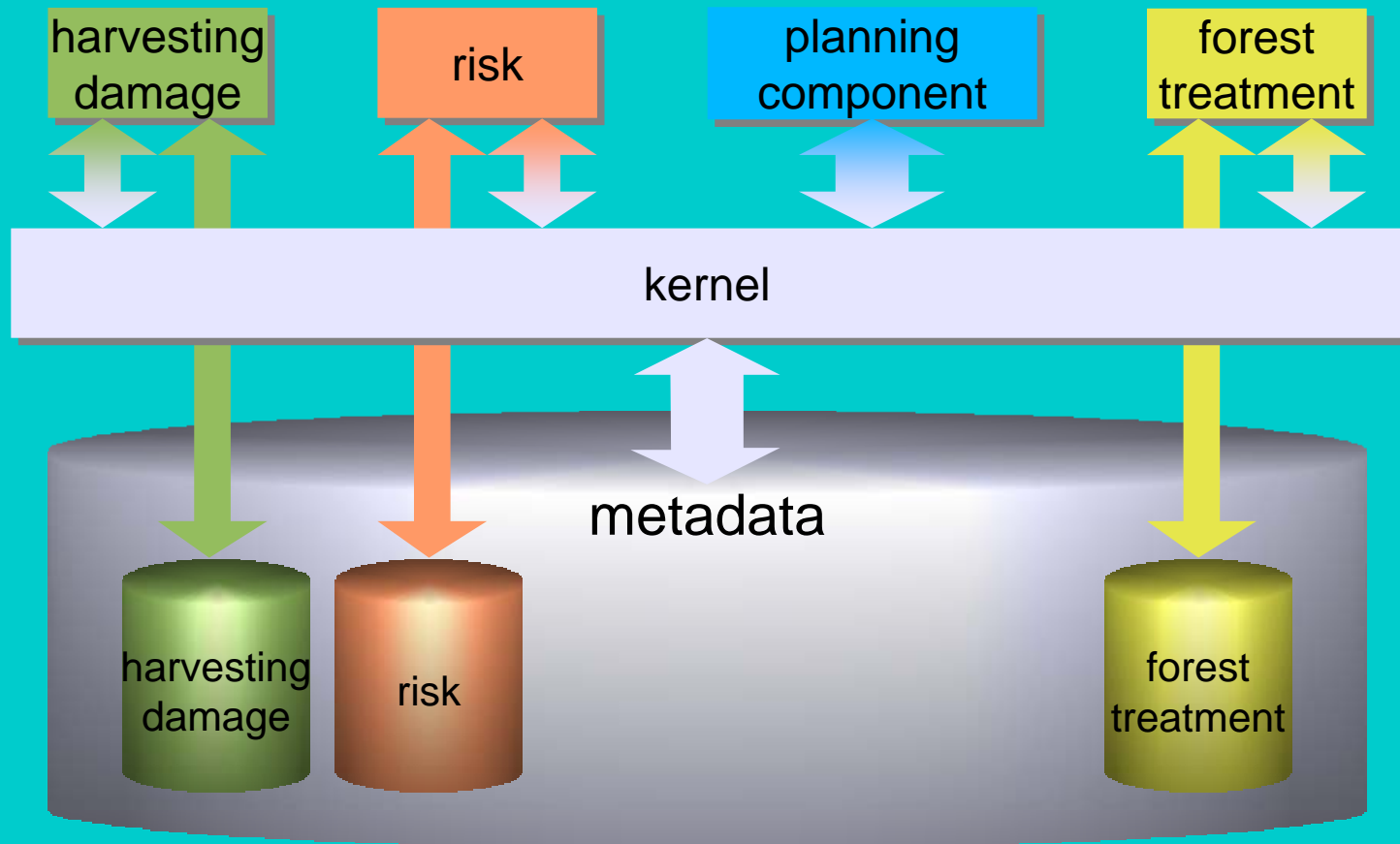


# MiddleWare

- ◆ Java field
  - (Enterprise) JavaBeans
  - Proprietary solutions
- ◆ Common Object Request Broker Architecture (CORBA)
- ◆ (D)COM, ActiveX, .Net

# Infrastructure

Decision support system

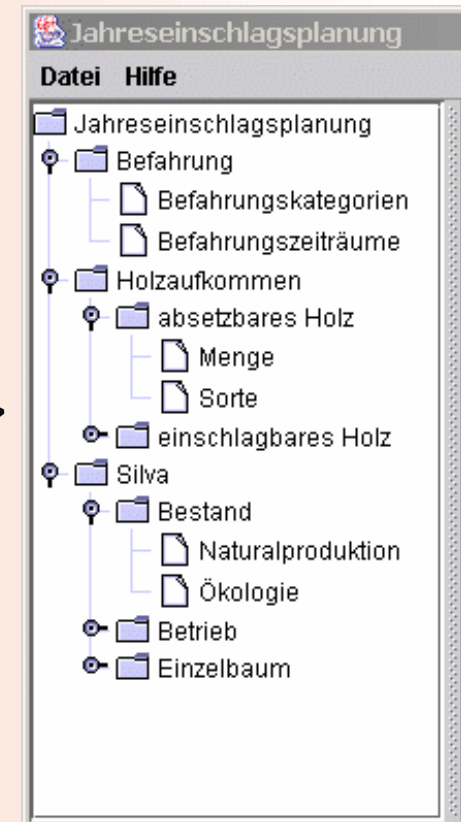
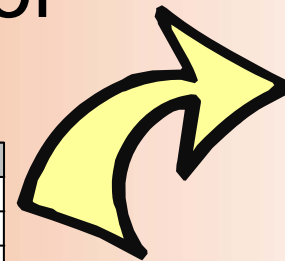
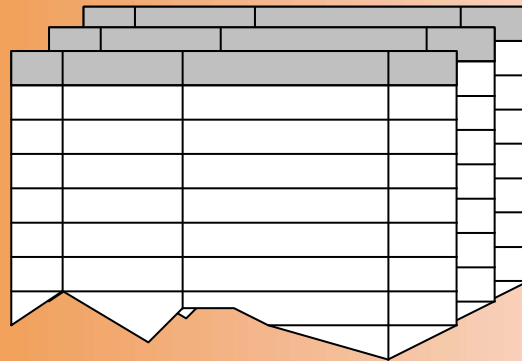


- 
- ◆ Introduction
  - ◆ **Metadata concept**
  - ◆ Metadata details
  - ◆ Conclusion

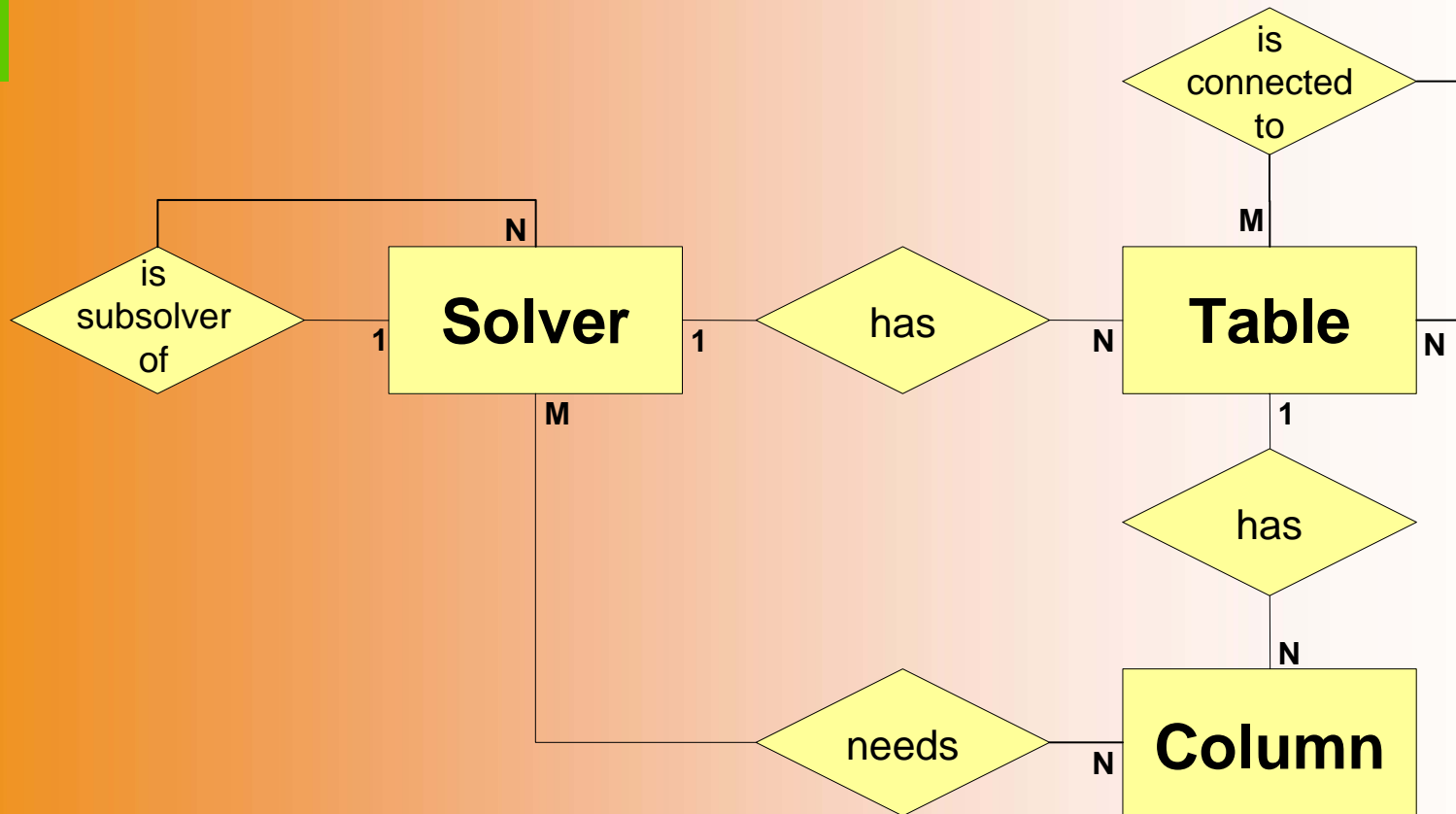


# Metadata concept

- ◆ Extensible abstract data model
- ◆ Logical view on top of tables and columns



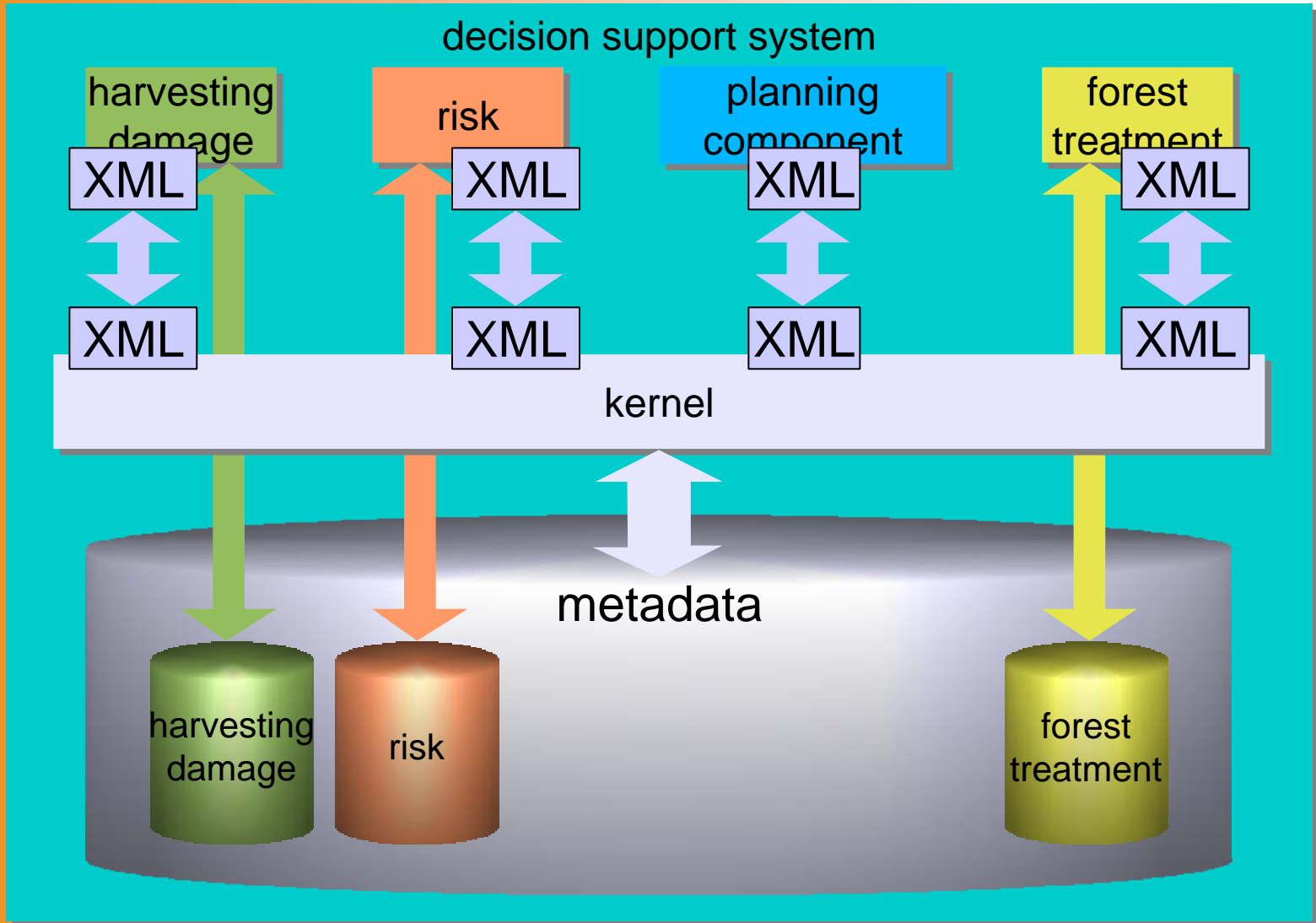
# Metadata organisation



# Metadata services

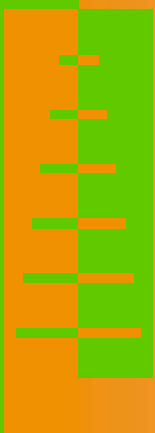
- ◆ solver registration
- ◆ data presentation
- ◆ result presentation
- ◆ solver start sequence

# Metadata transfer

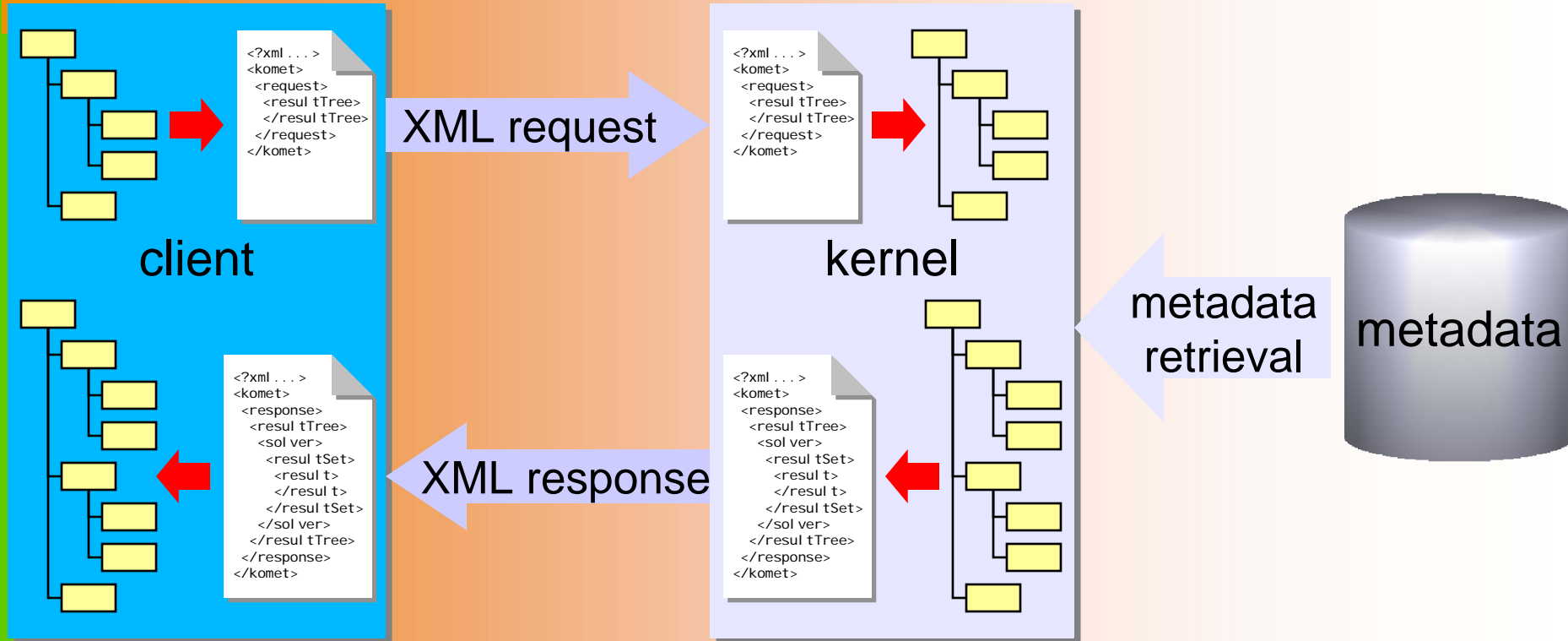


# Advantages of XML

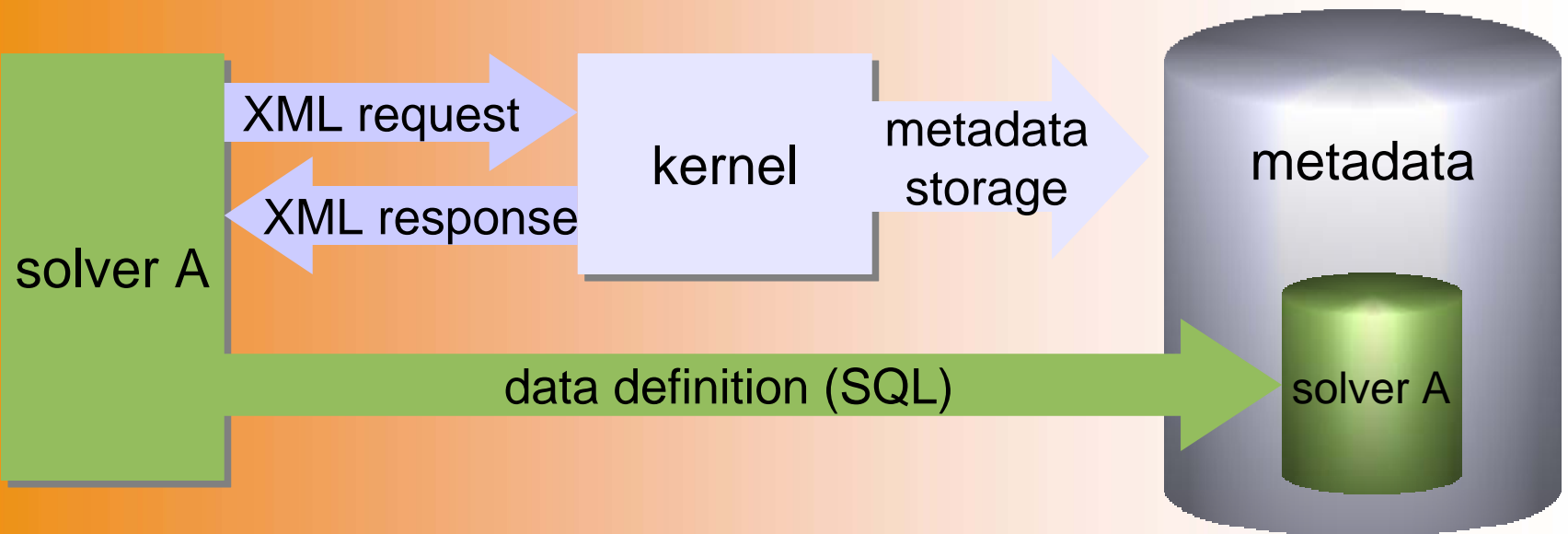
- ◆ Transportation of plain character strings
- ◆ Programming language independence

- 
- ◆ Introduction
  - ◆ Metadata concept
  - ◆ **Metadata details**
  - ◆ Conclusion

# Metadata retrieval process



# Solver installation process





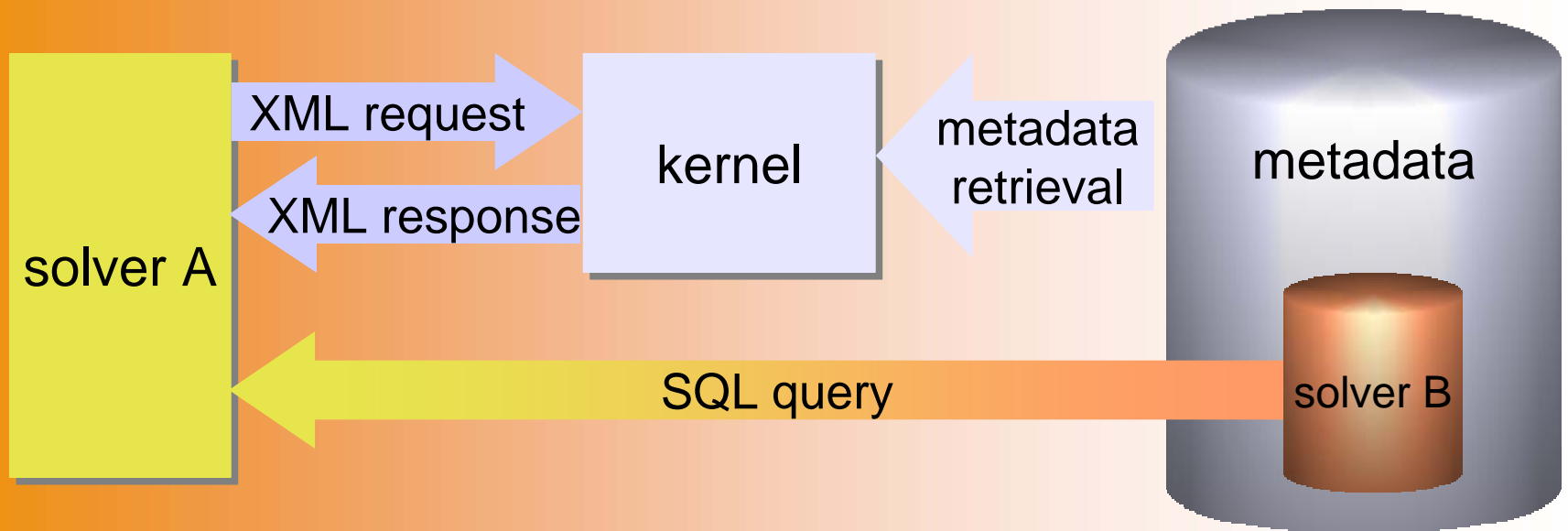
```

<?xml version='1.0' encoding='utf-8'?>
<!DOCTYPE komet SYSTEM 'komet.dtd'>
<komet>
  <request>
    <register>
      <regSolver id='SILVA' name='growth model Silva 2.2'>
        <regSubSolver id='SILVA.sort' name='assortment' solverID='SILVA'>
          <regResultSet id='SILVA.SORT.best' name="stand" solverID='SILVA.sort'>
            <regResult id='SILVA.SORT.BEST.bkz' name="stand_key"
              resultSetID='SILVA.SORT.best' key='true' />
            <regResult id='SILVA.SORT.BEST.so' name='sort' resultSetID='SILVA.SORT.best'
              key='true' />
            <regResult id='SILVA.SORT.BEST.me' name='amount' resultSetID='SILVA.SORT.best'
              key='false' />
          </regResultSet>
        </regSubSolver>
        <regSubSolver id='SILVA.prod' name='production' solverID='SILVA'>
          <regResultSet id='SILVA.PROD.best' name='stand' solverID='SILVA.prod'>
            <regResult id='SILVA.PROD.BEST.bkz' name='stand_key'
              resultSetID='SILVA.PROD.best' key='true' />
            <regResult id='SILVA.SORT.BEST.dbh' name='diameter'
              resultSetID='SILVA.PROD.best' key='false' />
            <regResult id='SILVA.SORT.BEST.hgt' name='height' resultSetID='SILVA.PROD.best'
              key='false' />
          </regResultSet>
        </regSubSolver>
        <regRelation id='SILVA.Rell' sourceResultSetID='SILVA.SORT.best'
          destinationResultSetID='SILVA.PROD.best'>
          <regForeignKey id='SILVA.PROD.SORT.bkz' />
        </regRelation>
      </regSolver>
      <regSolver id='HOLZ' name="Timber amount">
        <regResultSet id='HOLZ.eh' name='cuttable timber' solverID='HOLZ'>
          <regResult id='HOLZ.EH.bkz' name='stand_key' resultSetID='HOLZ.eh' key='true' />
          <regResult id='HOLZ.EH.so' name='sort' resultSetID='HOLZ.eh' key='true' />
          <regResult id='HOLZ.EH.menge' name='amount' resultSetID='HOLZ.eh' key='false' />
        </regResultSet>
        <regRequiredSolver solverID='HOLZ' requiredSolverID='SILVA' />
      </regSolver>
    </register>
  </request>
</komet>

```

```
<?xml version='1.0' encoding='utf-8' ?>
<!DOCTYPE komet SYSTEM 'komet.dtd'>
<komet>
  <response>
    <success id='2' name='Registration succeeded' />
  </response>
</komet>
```

# Solverdata retrieval process



```
<?xml version='1.0' encoding='utf-8' ?>
<!DOCTYPE komet SYSTEM 'komet.dtd'>
<komet>
  <request>
    <dataTree>
      <item id='am.output.hv.trees.brkdwn'>
      </item>
      <item id='am.output.hv.trees.cut'>
      </item>
      <item id='am.output.stock.trees.volume'>
      </item>
    </dataTree>
  </request>
</komet>
```

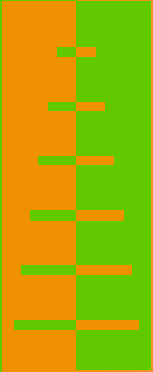
```

<?xml version='1.0' encoding='utf-8' ?>
<!DOCTYPE komet SYSTEM 'komet.dtd'>
<komet>
  <response>
    <dataTree>
      <table id='am.output.hv.trees' name='Baumarten' DBname='am_output_hv_baumart'>
        <keyColumn id='am.output.hv.trees.bkz' name='Bestandeskennziffer'
          DBname='bkz' key='true' />
        <keyColumn id='am.output.hv.trees.age' name='Alter' DBname='b_alter'
          key='true' />
        <keyColumn id='am.output.hv.trees.run' name='Durchlauf'
          DBname='durchlauf' key='true' />
        <keyColumn id='am.output.hv.trees.species' name='Baumart'
          DBname='buamart' key='true' />
        <column id='am.output.hv.trees.brkdwn' name='Stillstand' DBname='stillstand' />
        <column id='am.output.hv.trees.cut' name='Faellen/Aufarbeiten'
          DBname='faellen' />
      </table>
      <table id='am.output.stock.trees' name='Baumarten'
        DBname='am_output_lager_baumart'>
        <keyColumn id='am.output.stock.trees.bkz' name='Bestandeskennziffer'
          DBname='bkz' key='true' />
        <keyColumn id='am.output.stock.trees.age' name='Alter' DBname='b_alter'
          key='true' />
        <keyColumn id='am.output.stock.trees.run' name='Durchlauf'
          DBname='durchlauf' key='true' />
        <keyColumn id='am.output.stock.trees.species' name='Baumart'
          DBname='baumart' key='true' />
        <keyColumn id='am.output.stock.trees.sort' name='Sortiment'
          DBname='sortiment' key='true' />
        <column id='am.output.stock.trees.volume' name='Volumen' DBname='volumen' />
      </table>
    </dataTree>
  </response>
</komet>

```

# Used technologies

- ◆ Programming language: JAVA
- ◆ Communication: RMI over IIOP
- ◆ XML processing: SAX



- ◆ Introduction
- ◆ Metadata concept
- ◆ Metadata details
- ◆ **Conclusion**

# Integration platform

- ◆ Flexible software architecture with client/server capabilities
- ◆ Uniform data management
- ◆ Parallel computing is possible
- ◆ Components that conform to the specifications can be interchanged



Thank you...



...for your attention!