



# Coordinated Editing of Versioned Packages in the JP Programming Environment

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**The Forest Project**  
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# Overview

- The Forest Project & JP
- Versioning & CM in JP
- The Coordinated Editing Problem
- The PartHandler Interface
- How Coordination works
- Conclusions

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# Background: The Forest Project

- **JP Programming Environment**
  - Scalable development model for Java programming
  - Enhance code reuse by JP-compliant environments
  - “write once, build anywhere, run anywhere”
- **Orthogonal Persistence for Java (OPJ)**
  - Extend Java programming model to storage
  - Make object lifetime independent of type, code, etc.
  - “write once, run anywhere” for data-centric apps.

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# JP: Key Technologies

- **Versioned Packages (after Vesta)**

- **Modular system construction**
- **Storage**
- **Building**
- **Versioning/CM**

- **OO Repository**

- **Java objects in OPJ**
- **Strong use of interfaces**

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# JP: Versioning & CM

- **Uniform Granularity**
- **Package Version Content**
  - **Orthogonal**
  - **Immutable**
  - **Hierarchical**
  - **Buildable**
  - **Aggregation through build imports**
- **Version Accretion**

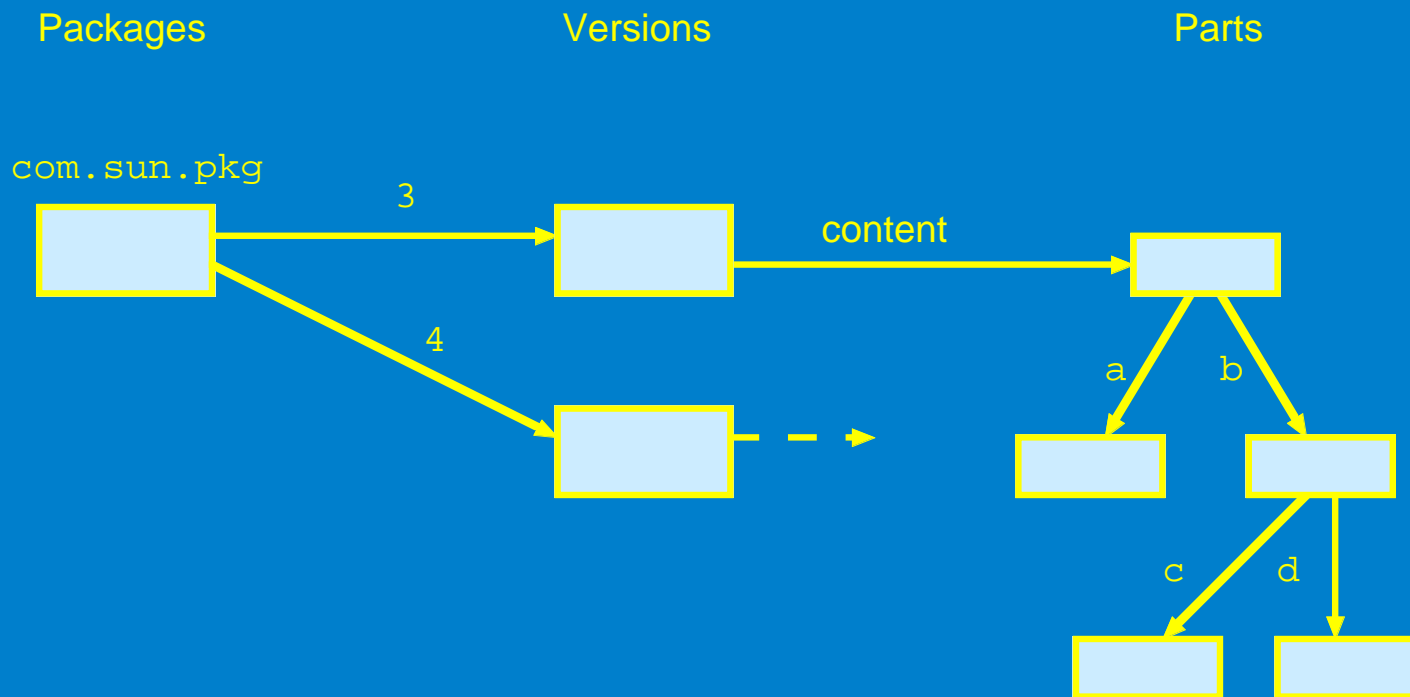
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# Example 1: Repository Components





# The Coordinated Editing Problem

- **How to create new versions:**
  - quickly and unobtrusively
  - in a heterogeneous hierarchy of parts
  - using type-specific editors
  - collaborating through generic interfaces

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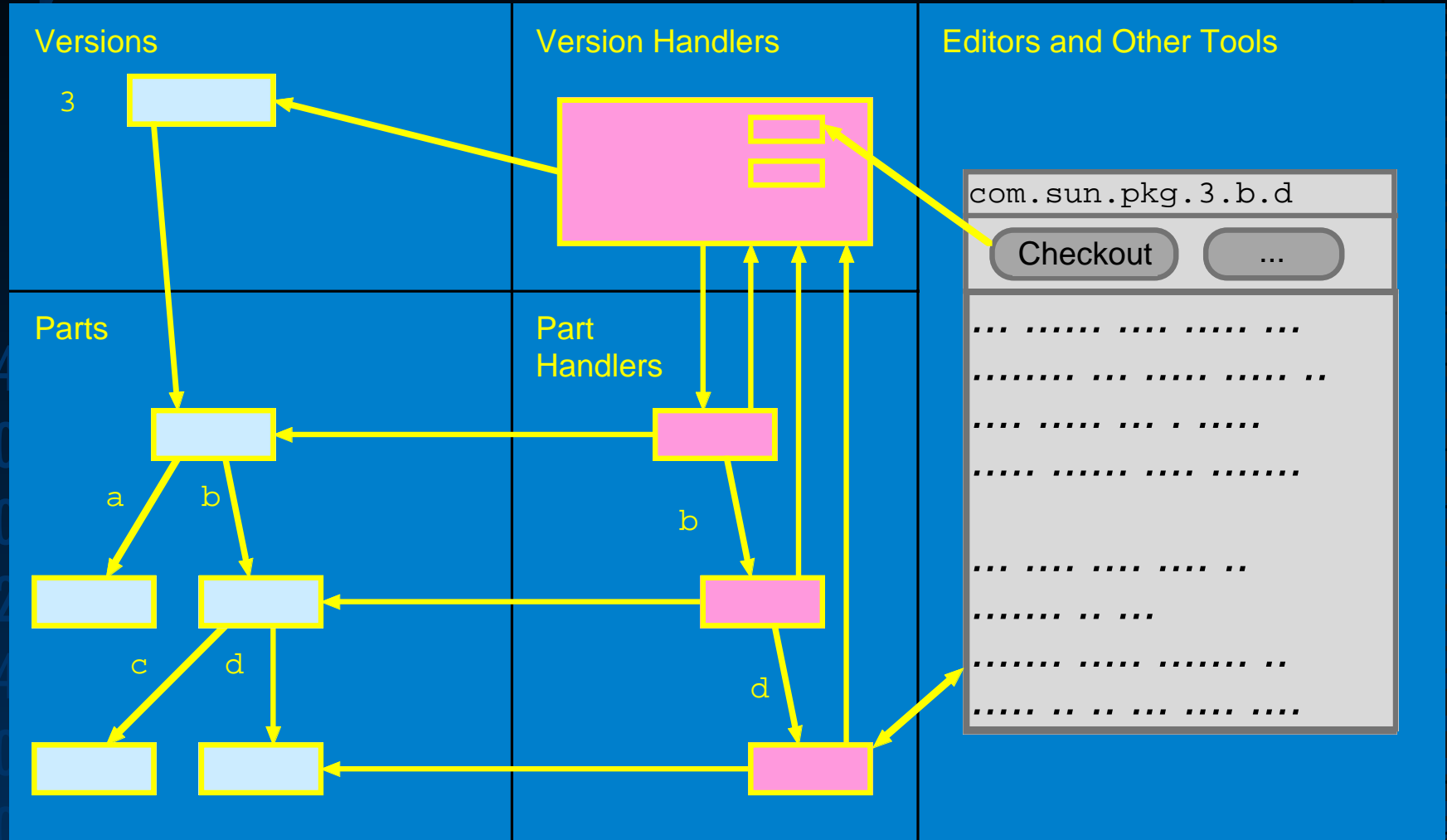
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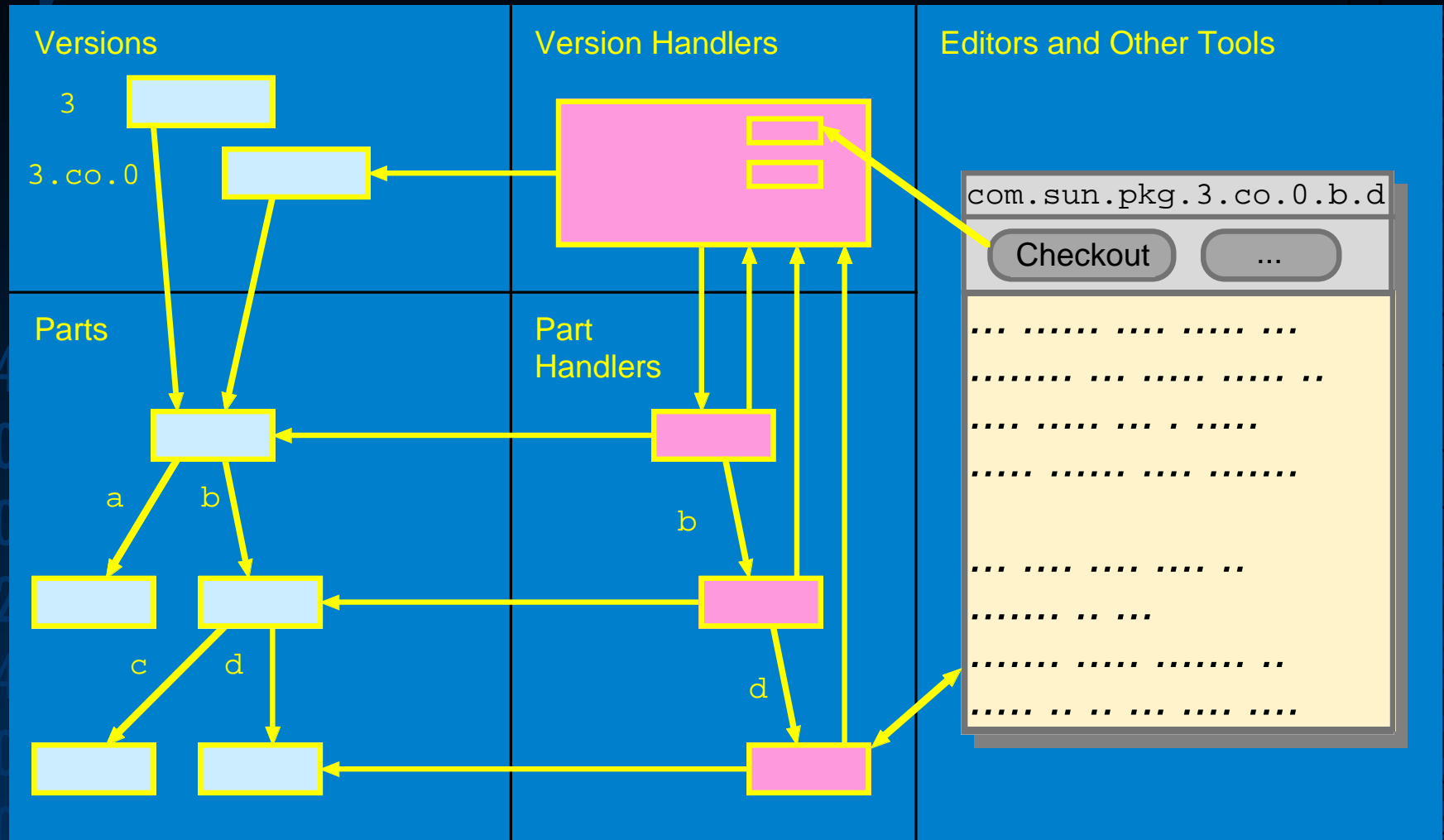
# The Key Interface

```
public interface PartHandler {  
    // Context and Coordination methods  
    void initialize(VersionHandler vh);  
    boolean setPart(Mutability part);  
    void edit();  
    PartHandler getPartHandler(Path name);  
    // Versioning methods  
    Mutability advance();  
    void revert();  
    // Usability methods  
    void setEditable(boolean isEditable);  
    void setModified(boolean isModified);  
    void setVersionName(String name);  
    void setPartName(String name);  
}
```

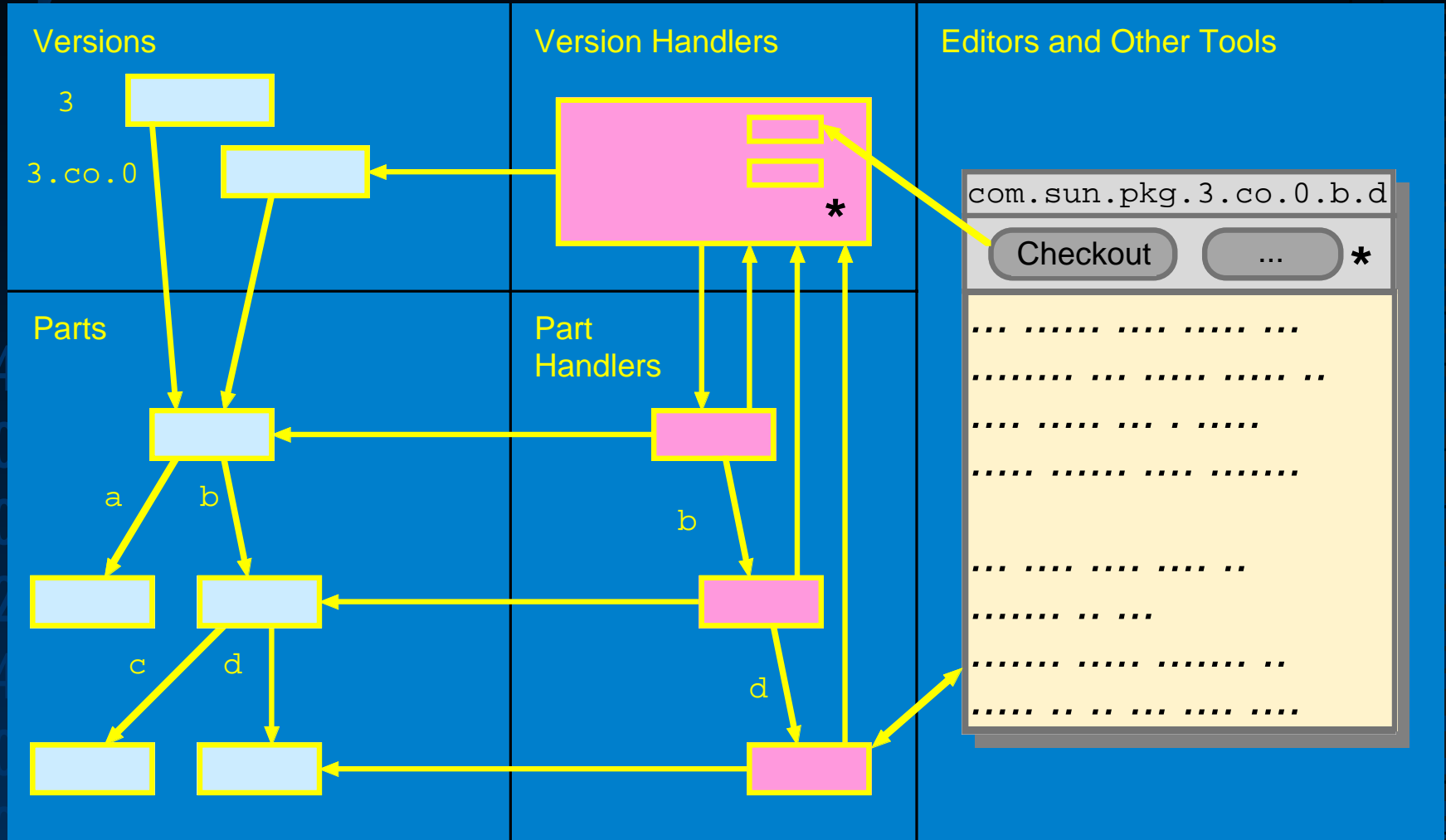
# Example 2: Handler Relationships



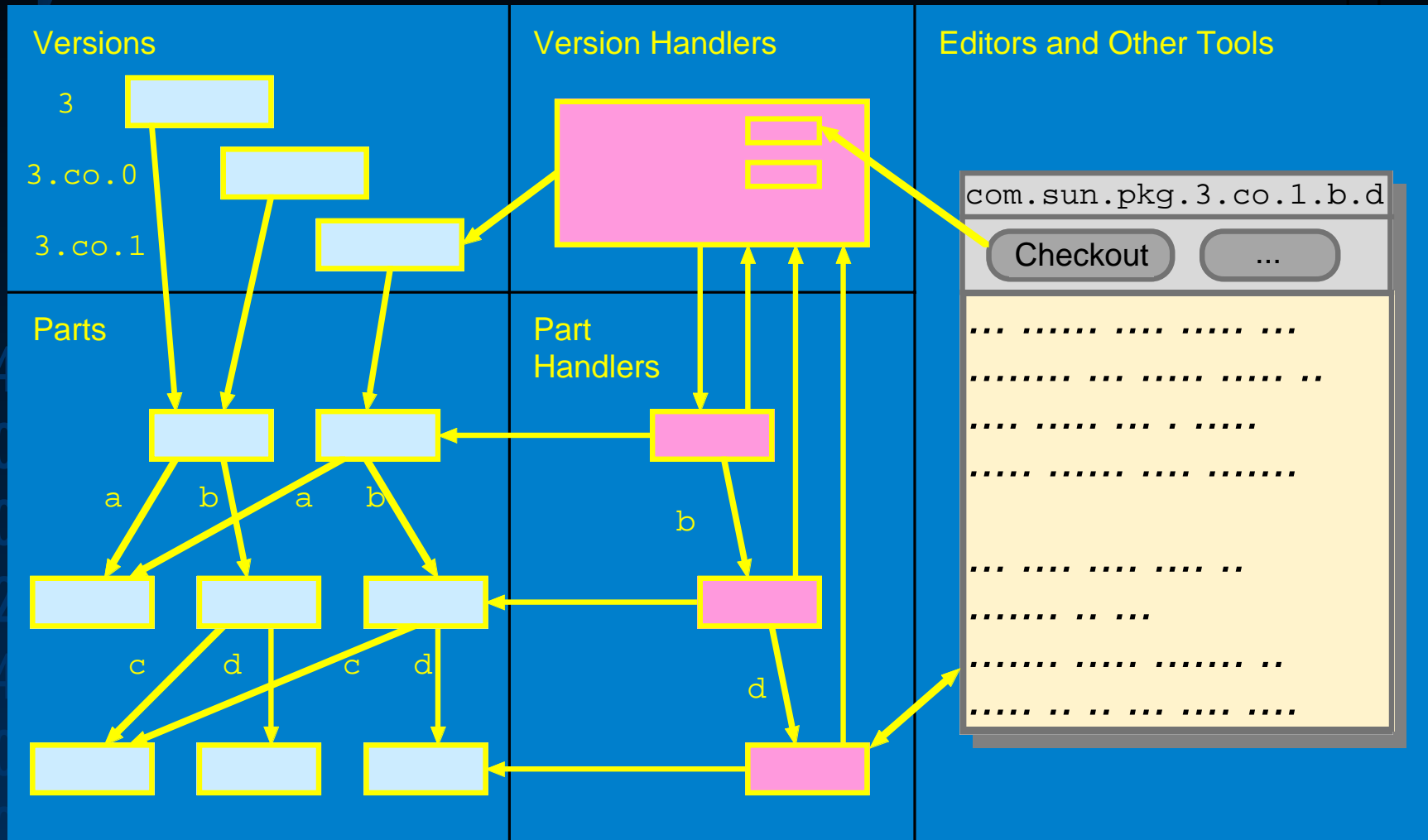
# Example 3: Versioning-Checkout



# Example 4: Editing



# Example 5: Versioning-Advance





# Conclusions

- A simple, build-oriented CM system
- Simplicity through Orthogonality
  - versioning
  - storage
- Translates to a simple user model

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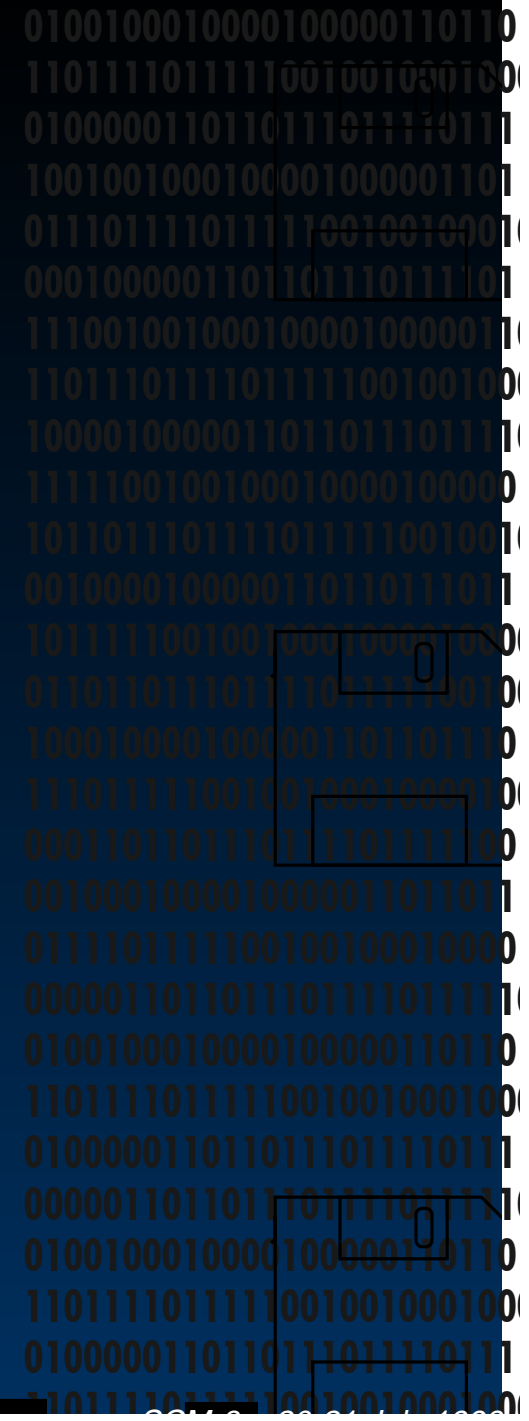


# Related Work

- Vesta
- Poem
- Compound Document Editing
- COOP/Orm
- ClearCase

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# Project Status

- **Implemented in JP predecessor**
  - Limited experience
  - Integrated with two editors
  - Based on C++/ObjectStore
- **Being reimplemented in OPJ-based JP**
  - Pure Java implementation
  - All tools run in OPJ "store"

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# Current Goals

- Complete JP in OPJ implementation
- Represent sources at finer granularity
- Language-based editing
- Add process-oriented information

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