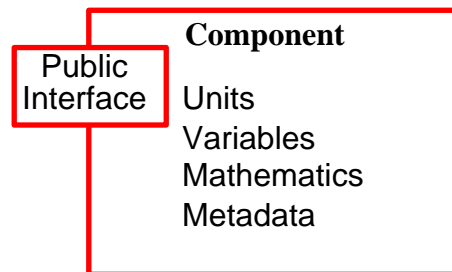


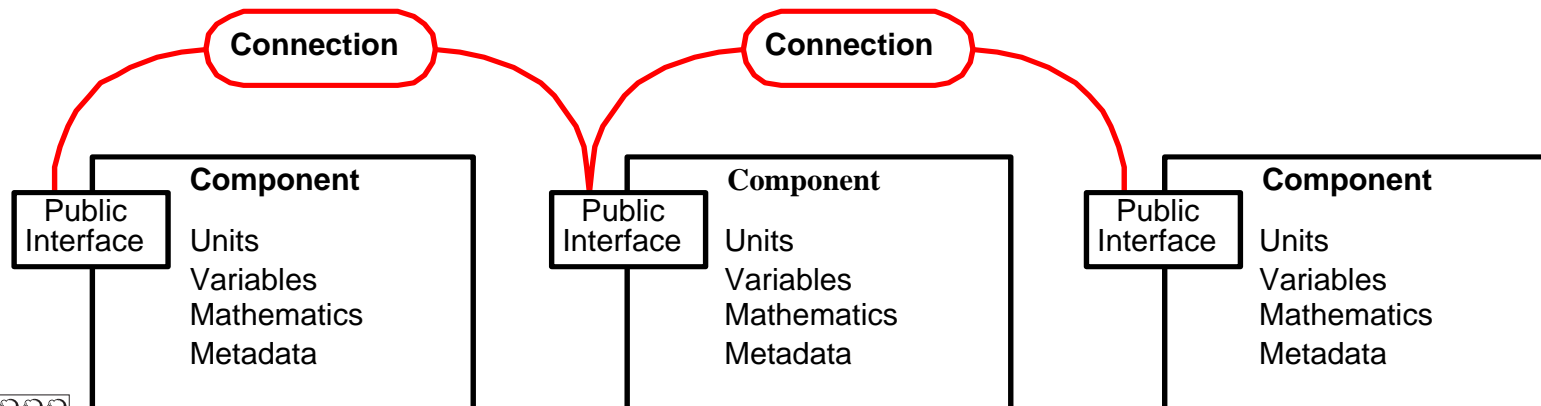
# CellML components

- CellML has a simple structure based upon connected *components*.
- Components abstract concepts by providing well-defined interfaces to other components.
- Components encapsulate concepts by hiding details from other components.



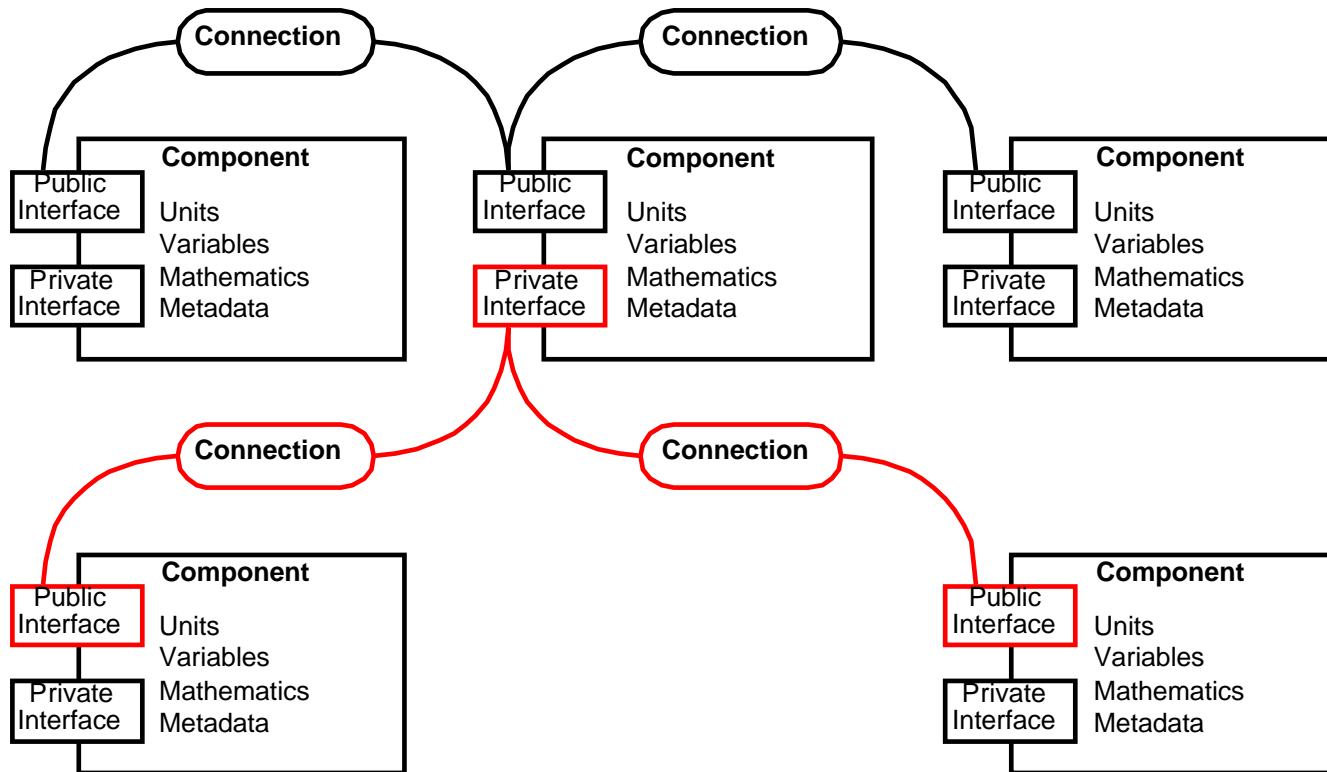
# CellML connections

- *Connections* provide the means for sharing information by associating variables visible in the interface of one component with those in the interface of another component.
- Consistency is enforced by requiring that all variables be assigned appropriate physical *units*.



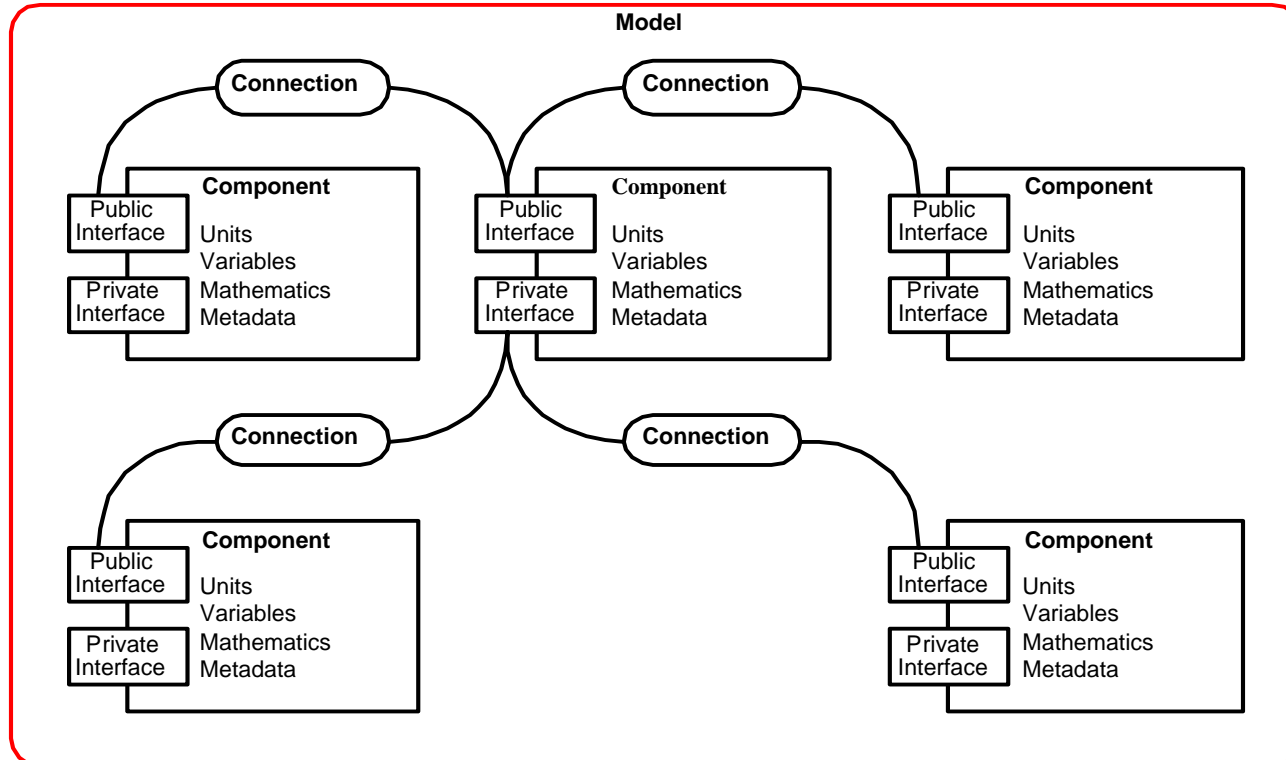
# CellML encapsulation

- Encapsulation hierarchies are enabled using *private interfaces*.



# CellML model

- A *model* is the root element for a CellML document. It is a container for components, connections, units, and metadata.

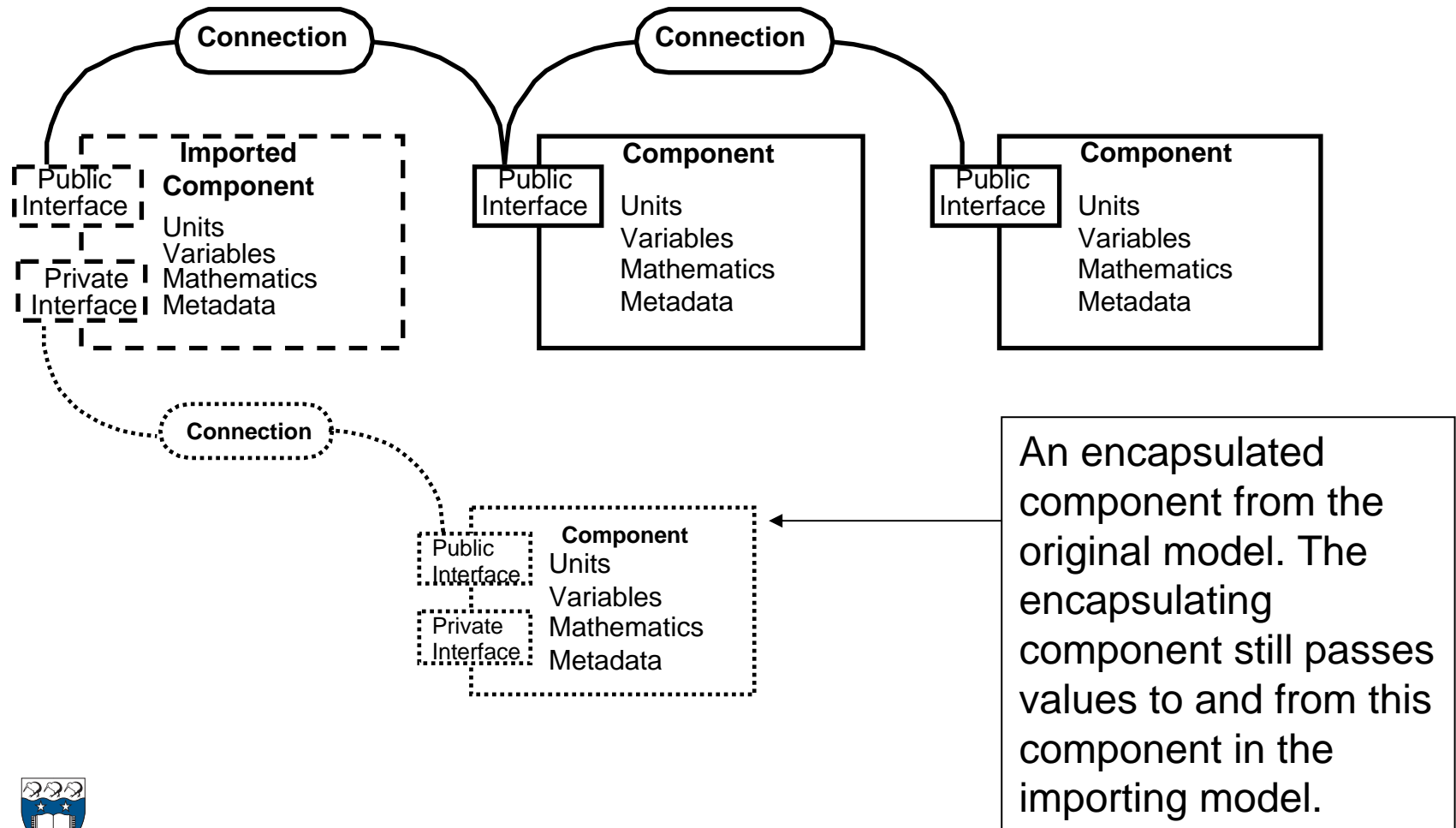


# CellML import

- Model reuse is enabled by the *import* element.
- New models may thus be constructed by combining parts of existing models into other models.
- Models can import components and units from other models, creating new instances of the respective objects.
- Components are resolved from the encapsulation hierarchy in which they appear in the original model. Therefore, imported components that depend on values from encapsulated components retain their original meaning in the importing model.



# CellML import



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# Possible Use-cases

- Keeping parameter values in a separate file where they can be easily updated or added as they become known.
- Further breaking down of complex network models for better storage options.
- Building on existing pathways.
- For models of cell interactions in which you have the same *type* of cell with slightly different parameter values for each one.



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# CellML Model Repository

- [http://www.bioeng.auckland.ac.nz/physiome/php/repository\\_search.php](http://www.bioeng.auckland.ac.nz/physiome/php/repository_search.php)
- Allows you to search a repository of over 200 models by
  - Citation information
    - PubMed ID
    - Author
    - Title
    - Date



Model information