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Using Eiffel to peek into OpenEmbedded's hierarchical source code structure

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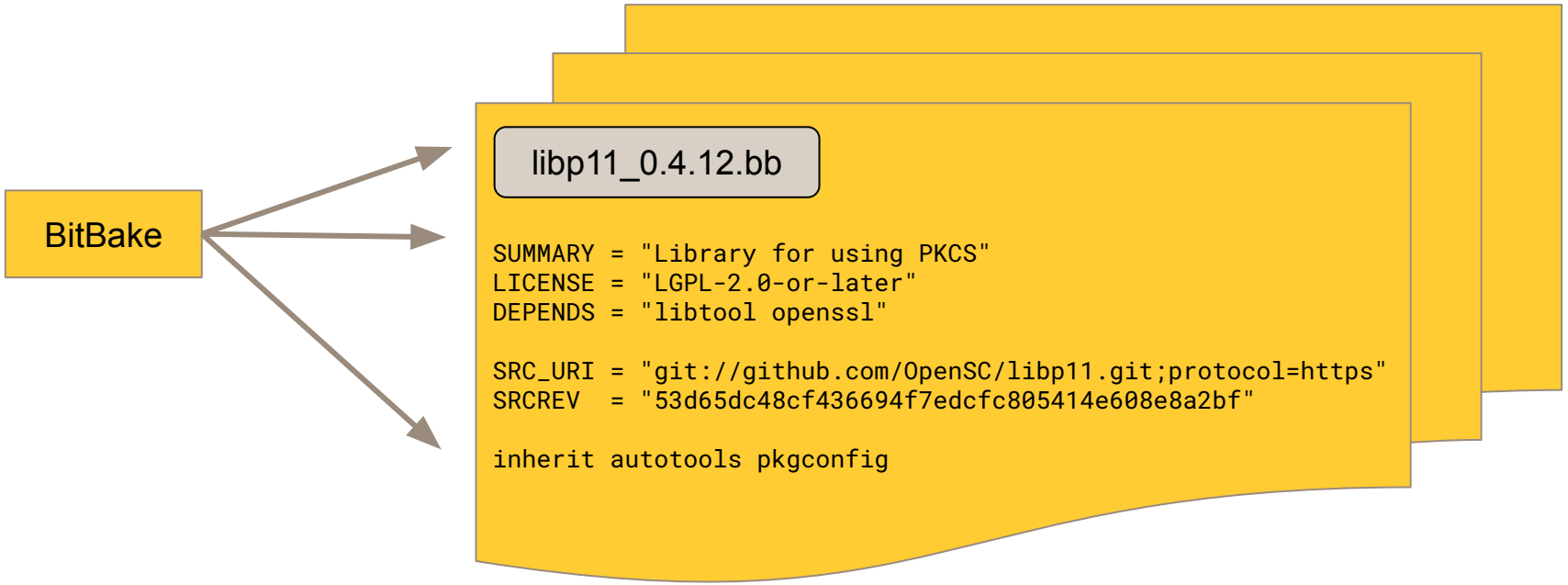
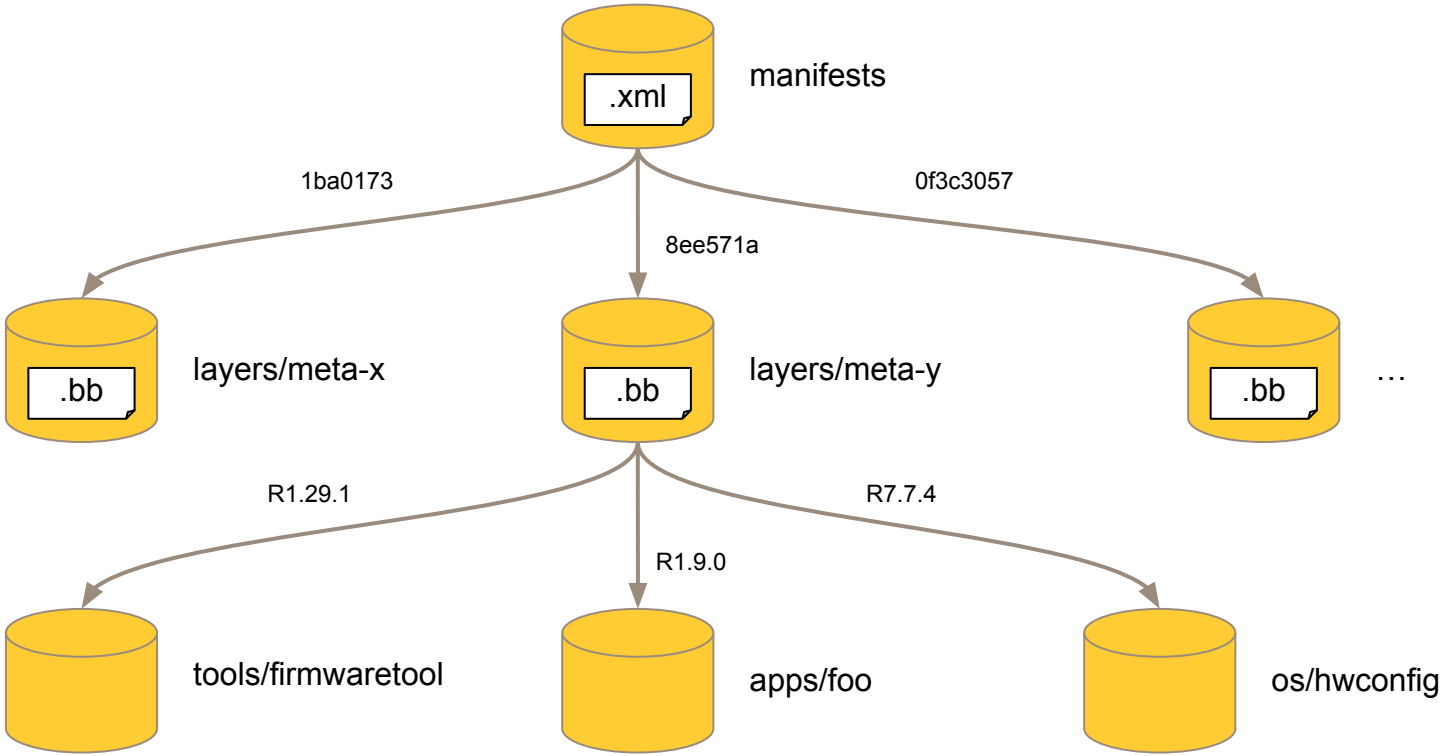
Building Linux distributions with OpenEmbedded (Yocto)



The traceability challenge



Traceability challenges

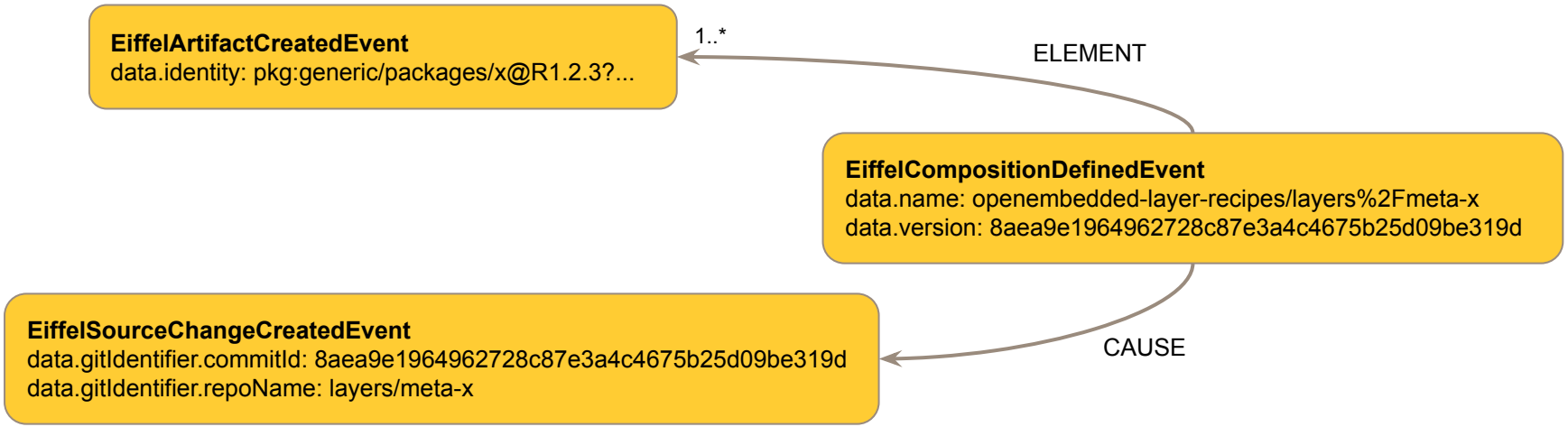
- Source code references nested Matryoshka doll-style.
- Recipes can reference variables from other OpenEmbedded layers.
- Recipes can “shadow” recipes from layers further down the stack.
- BitBake can help out resolving these references, but
  - it evaluates the recipes for a particular configuration
  - it’s slow

Eiffel compositions to the rescue

We’ve built a custom service that listens to source code merges, parses all recipes, and produces Eiffel compositions that describe all referenced source code (and potentially non-source code artifacts).

Eiffel composition type: openembedded-layer-recipes

Models the source code tags found in the recipes of a single OpenEmbedded layer at a particular commit.



Eiffel composition type: openembedded-recipes

Models the source code tags found in the recipes of an OpenEmbedded source code workspace (i.e. all layers).