CIPRes Software Development/Architecture

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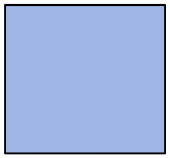
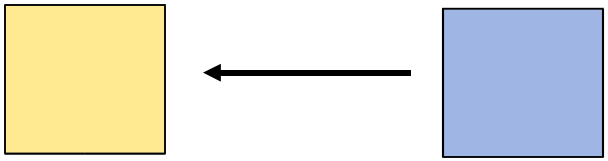
Overview of Architecture

Services

Server modules advertise their services



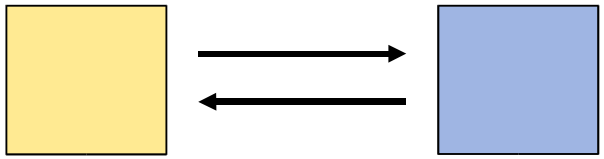
Client modules find and make use of those services



We define various services:
TreeRepository, *TreeSupplier*, *TreeInference*, *TreeEvaluator*, *ImageSupplier*, *MatrixSupplier*, etc.

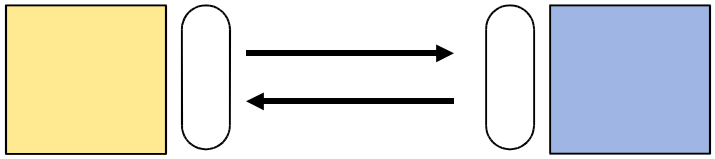
Overview of Architecture

Communication



A communication protocol is specified (currently SOAP). Any CIPRes module must be able to “speak” this. Communication is mediated by Web Services standards (SOAP, WSDL, UDDI).

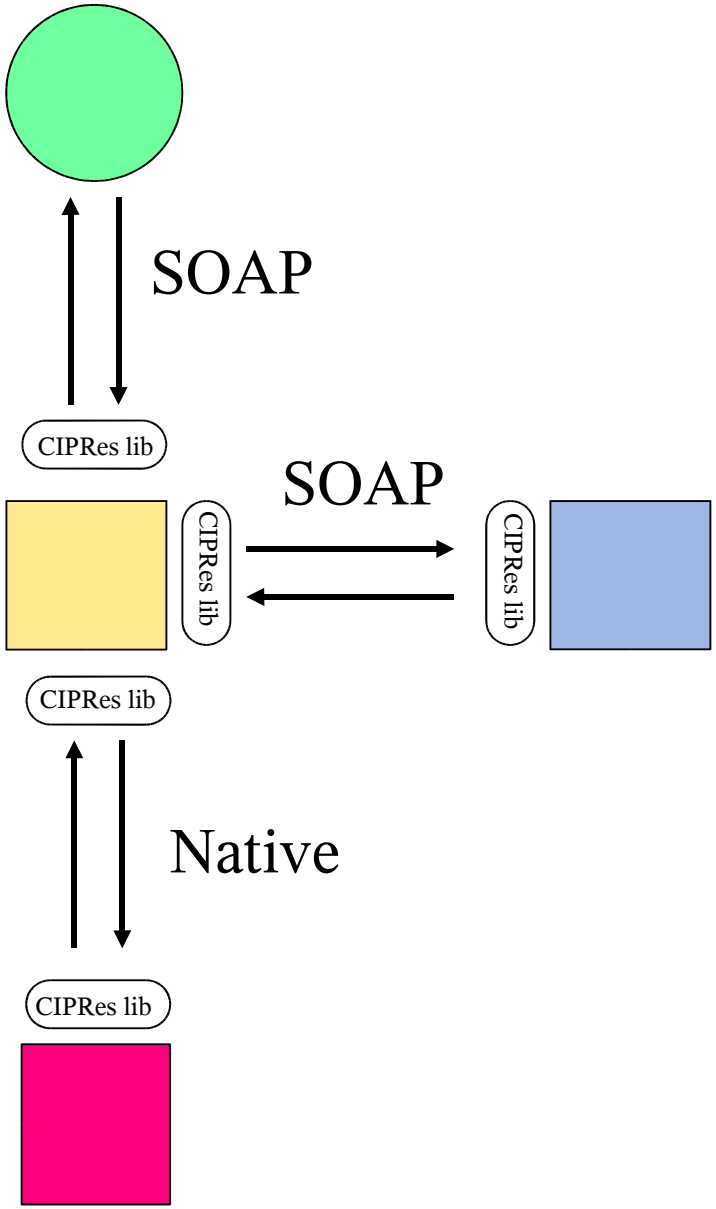
Overview of Architecture



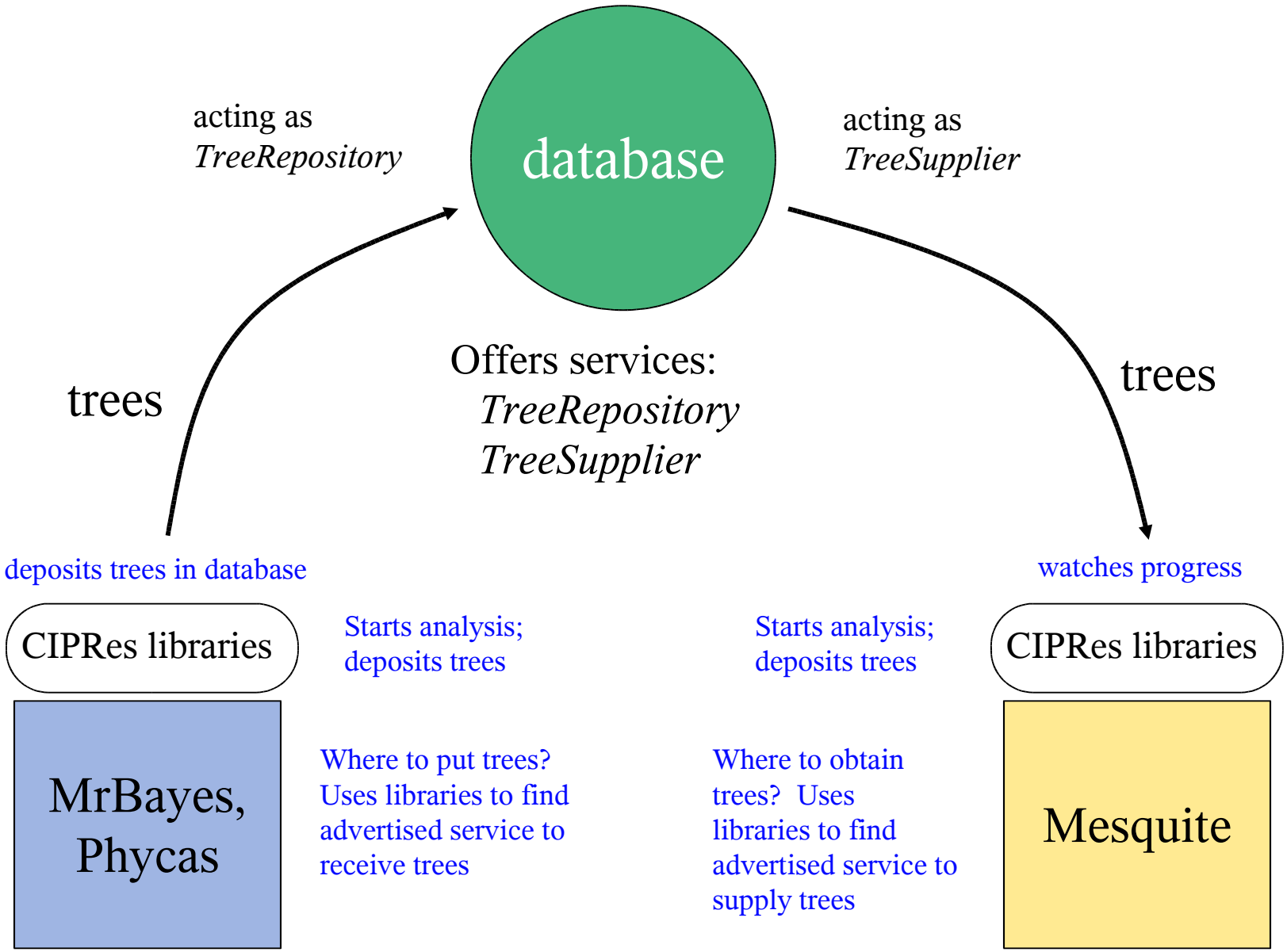
Java, C++, etc., libraries act as glue between programs and the CIPRes module communication system

- Libraries find services, speaking to one another via low level communication protocols
- Libraries can communicate with programs via native C++ or Java objects like *Trees* (as opposed to their XML representation)
- When possible, libraries pass information between modules not via XML but via native memory structures (C++, Java) for speed

Different modes of communication may coexist

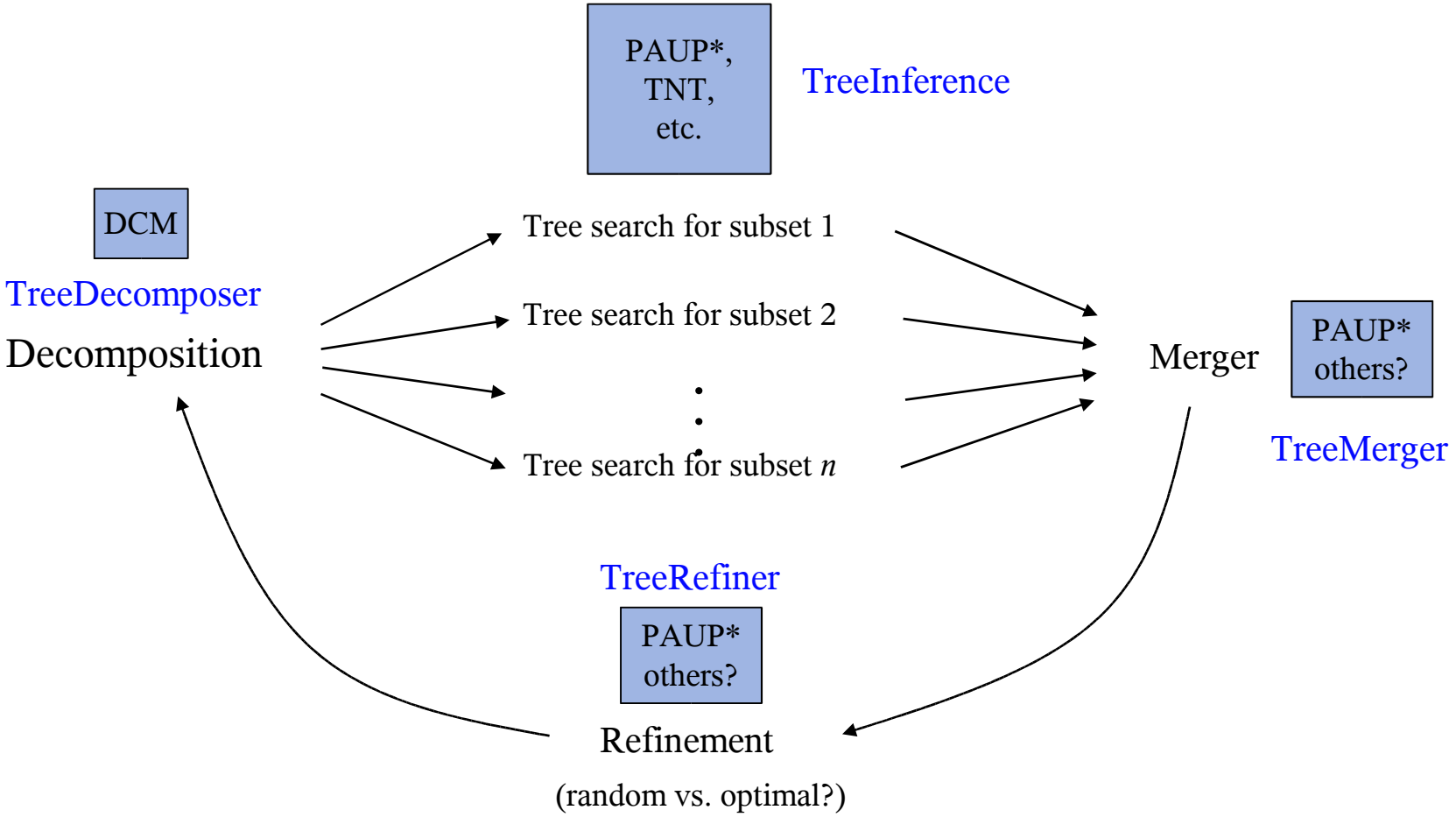


Overview (Example 1)



Overview (Example 2)

DCM (Divide & Conquer)



Other issues/plans

- Notebook/snapshotting/journaling

  Analysis commands and results stored permanently in database; analyses can be “replayed” using different data, updated service modules, etc.

- Choice between alternate service providers

  A system will be designed to “shop” for more specific services (preferences among otherwise equivalent providers & specific compatibility demands)

- “RAD”-style analyses

  Users can design analyses by choosing services from a palette and drawing arcs to illustrate the program flow. Once designed, these analyses can then be bundled as “double-clickable” applications.