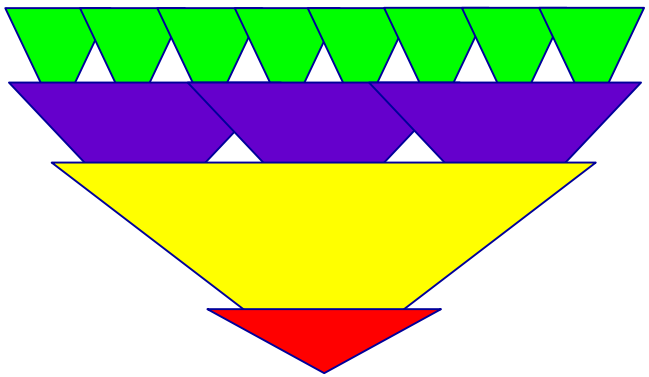
# Frameworks, Environments and Components for Visualization



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# Fundamental Terminology Conundrum

- "Components" for Visualization
  - Basic Building Blocks…
  - What Granularity?
    - Object? Module? Library? Application?
- What is a "Framework"? ("F" vs. "f" ?!)
  - Simple Container/Substrate for Composition?
  - Include Core Functionality…?
  - Application-Specific "Frameworks"…

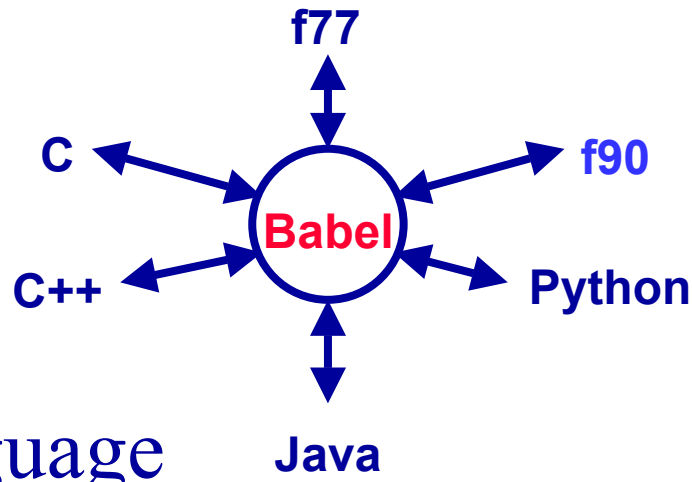
# Terminology Proposal

- **Framework** ≡ Simple Component Container
  - Substrate for Plugging In/Composing Components
  - Basic Run-Time Execution Model (Parallel/Dist)
- **Environment** ≡ Application-Specific Core (Viz)
  - Add *Intrinsic* Functional Modules to "Framework"
  - Main Loop, Data Wrangling, Networking/Compositing
- **Application** ≡ Complete Component Collection
  - Actual Viz & Data Analysis Modules, Composed
  - Isosurface, Volume Render, Feature Tracking…

# Next Step ~ Interface Specification!

- No Implementation (Yet)! ☺
  - Just *Abstract* Interface Spec…
- "Standardize" and "Generalize" Where Possible
  - Decide What Basic Functions are Needed
  - Decide How Methods Should Be Formulated
    - High-Level Functional Blocks, Interaction Patterns, Data…
- Incorporate Existing Tools and Technology
  - Plan Ahead, Make Sure All Existing Models Covered
  - Don't Necessarily Mimic Any *One* Tool ~ "*General*"

# "*Abstract*" Interfaces Using SIDL/Babel




- Not bound to a specific language
  - Use SIDL spec for language interoperability
  - Babel compiles interface for target language
- Still a good idea, even if everything is C++:
  - Scientific simulation probably written in F90
  - Some people actually like Java and Python ☺
- Compatibility with CCA Technology…

# Discussion Topics

- What are the "Intrinsic" or Core Components?
  - What are the Internal Subsystems?
  - Where Do The Key Pieces Go?!
- What are the Main Level Viz Components?
  - At what Granularity should things be defined?
- Actually Start Specifying the Interfaces!
  - Sketch out the Basic Methods…
  - Even if it involves major "hand waving"… ☺