The programming structure and data requirements for Wetbud

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Concept (1/4)

- Developed for collaborative (office) environment
- Database driven application
  - Database stores primary data
  - Database stores results
- Features multiple projects and multiple scenarios per project

Concept (2/4)

- Climate (precipitation, weather, solar) data can be imported automatically directly from NOAA, NRCS or other sites
- Climate data can be imported manually for private weather stations
- ET data can be calculated using two methodologies:
  - Penman
  - Thornthwaite

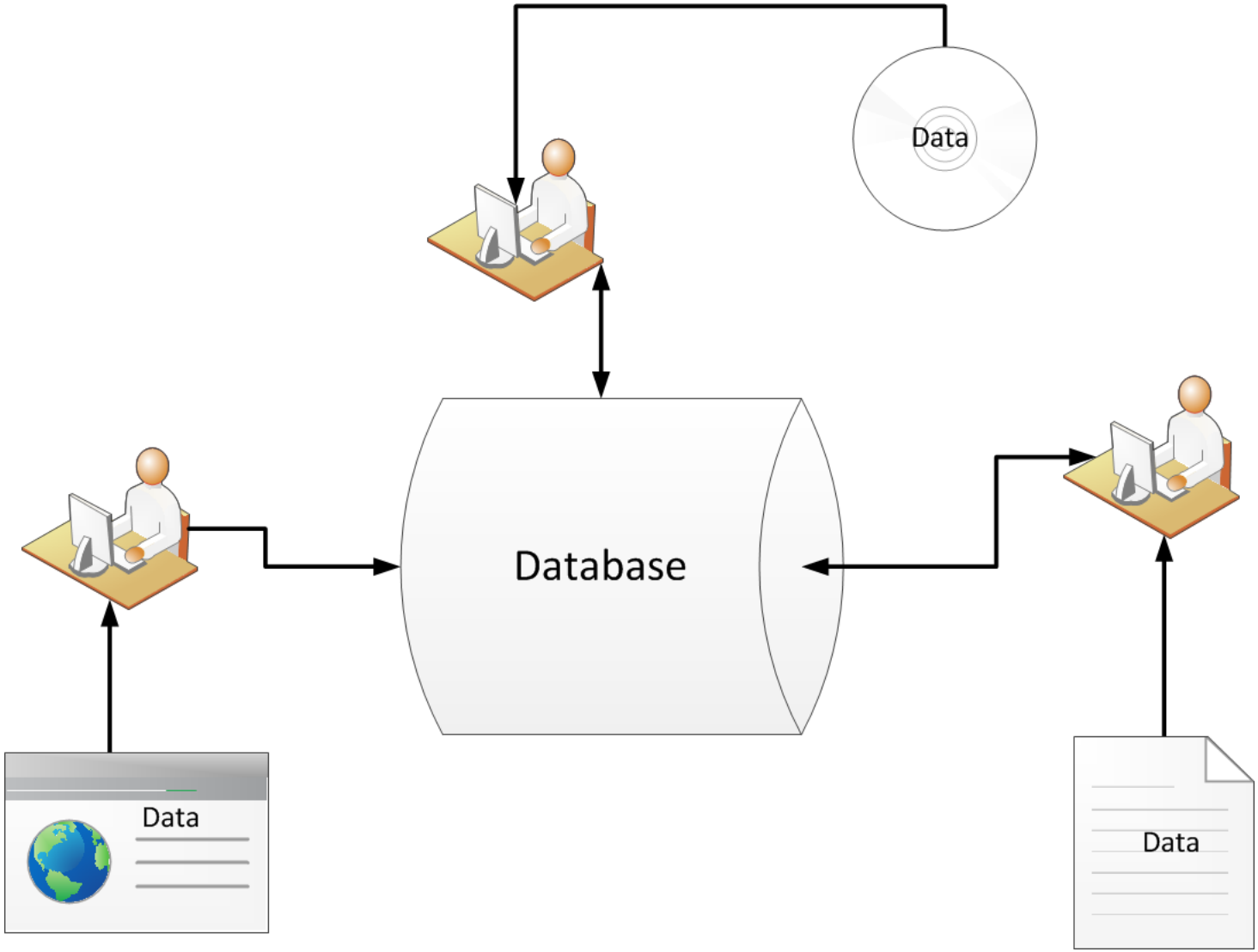
Concept (3/4)

- Climate data is reusable
- Data generated based on climate (e.g., ET) are also reusable
- Climate data are tied to weather stations, i.e. by location
- Multiple units (e.g., in, cm, m) are supported (and more in the future)

Concept (4/4)

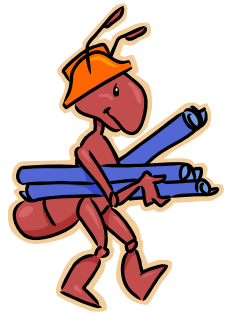
- Supports multiple projects and multiple scenarios per project
- Supports Basic and Advanced models
- All input data for both scenarios/models are stored the database
- All output data for Basic models are stored in the database
- Supports a custom report generator

Multi-User (Client/Server) Environment by Design

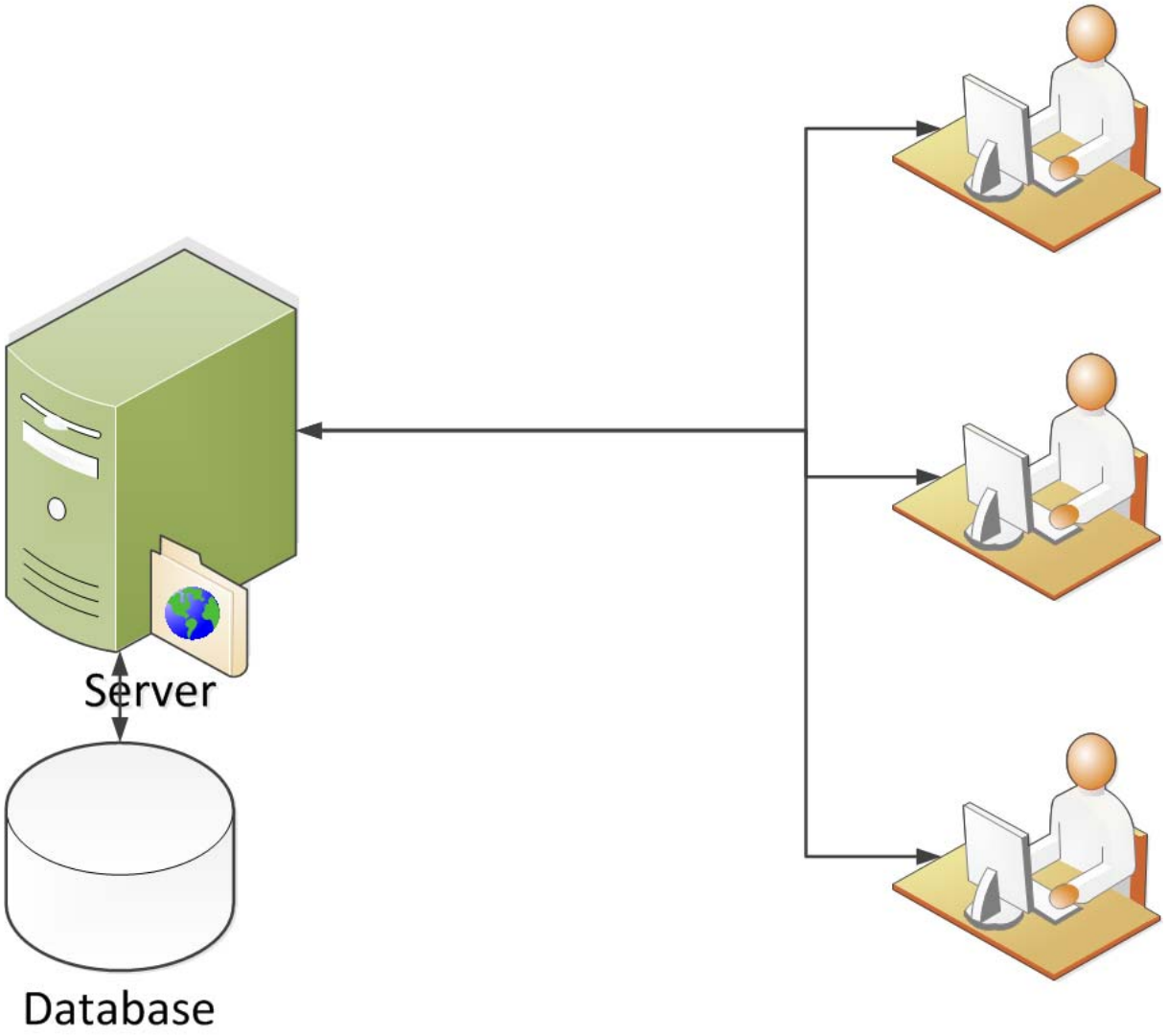


Working with in a Client / Server Environment

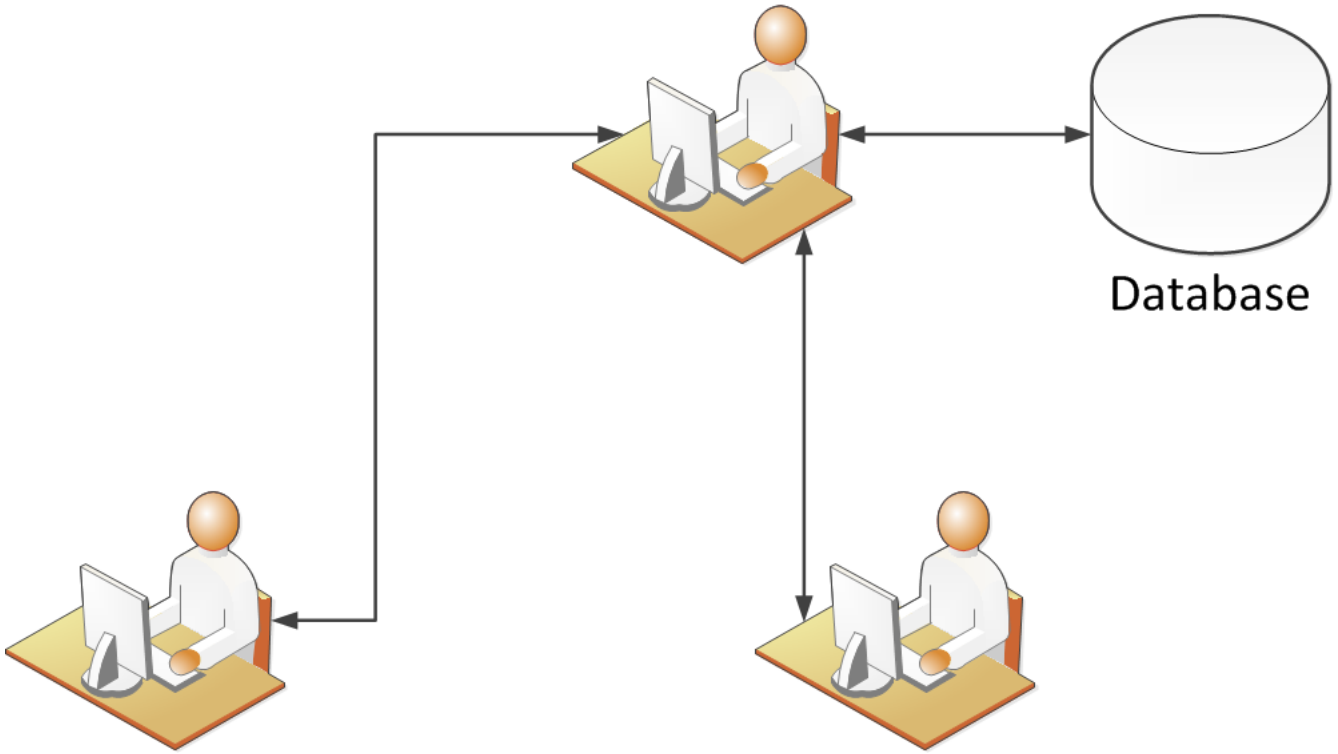
- Information is shared (Work is not “lost” in Excel or Doc files hiding in individual computers)
- Centralized data keeping – simplifies managements and backup
- User Tracking available
- Any PC unit can act as a server; even a desktop computer
- Sets the background for web reporting of data



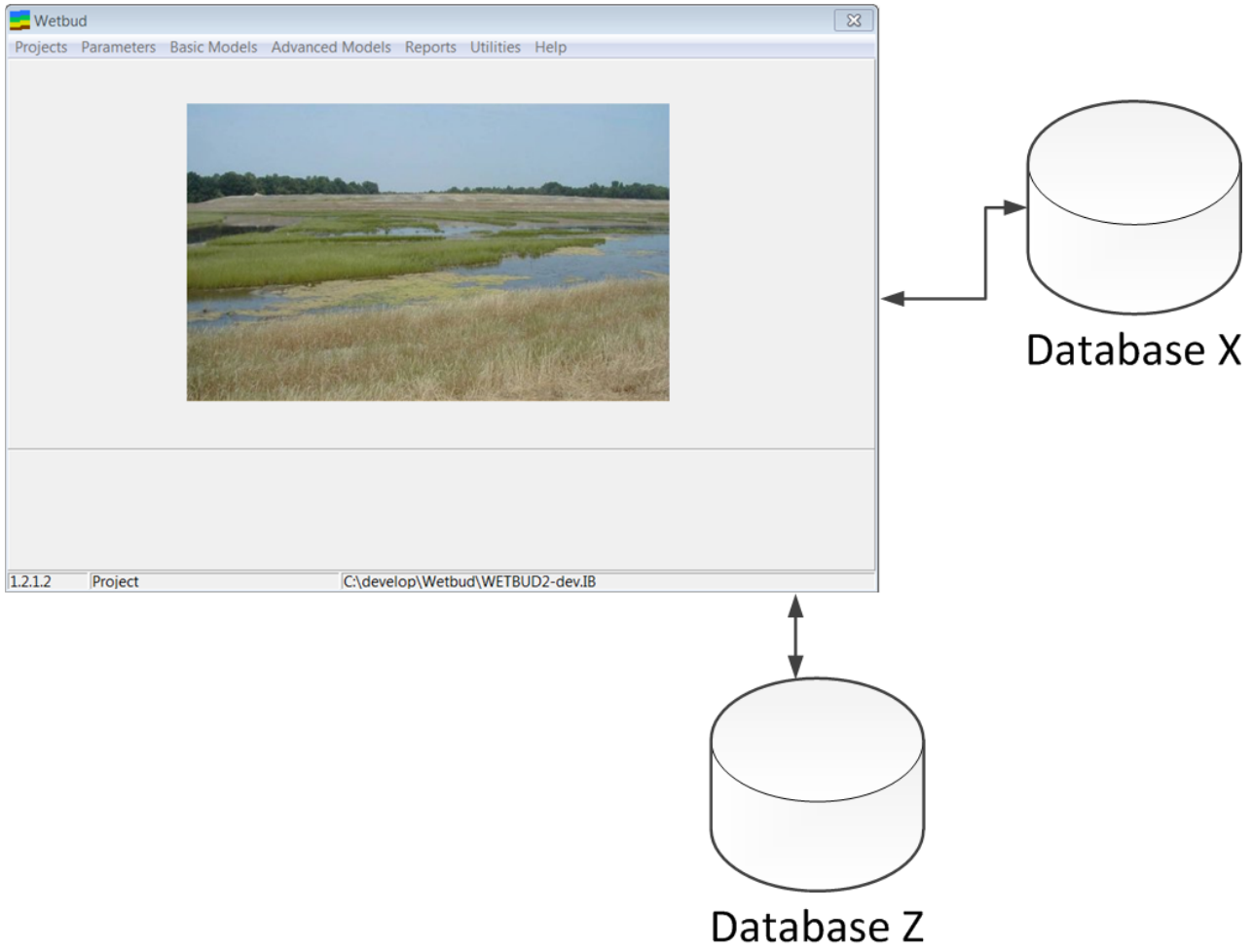
Large Office Environment



Small Office Environment

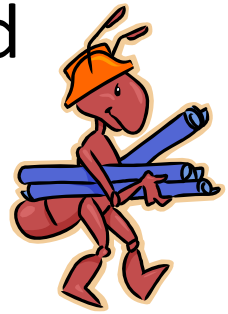


Support of Multiple Databases (not recommended for beginners)



Working with a Fully Parametric Application

- Definition of data sets is independent of the current use (e.g. download and clean up precipitation data – this can be used by multiple projects)
- Comments are allowed in most areas to document actions
- Reporting is (will be) fully parametric
- Individual users (with login and password) with different roles and permissions are supported (not implemented yet)



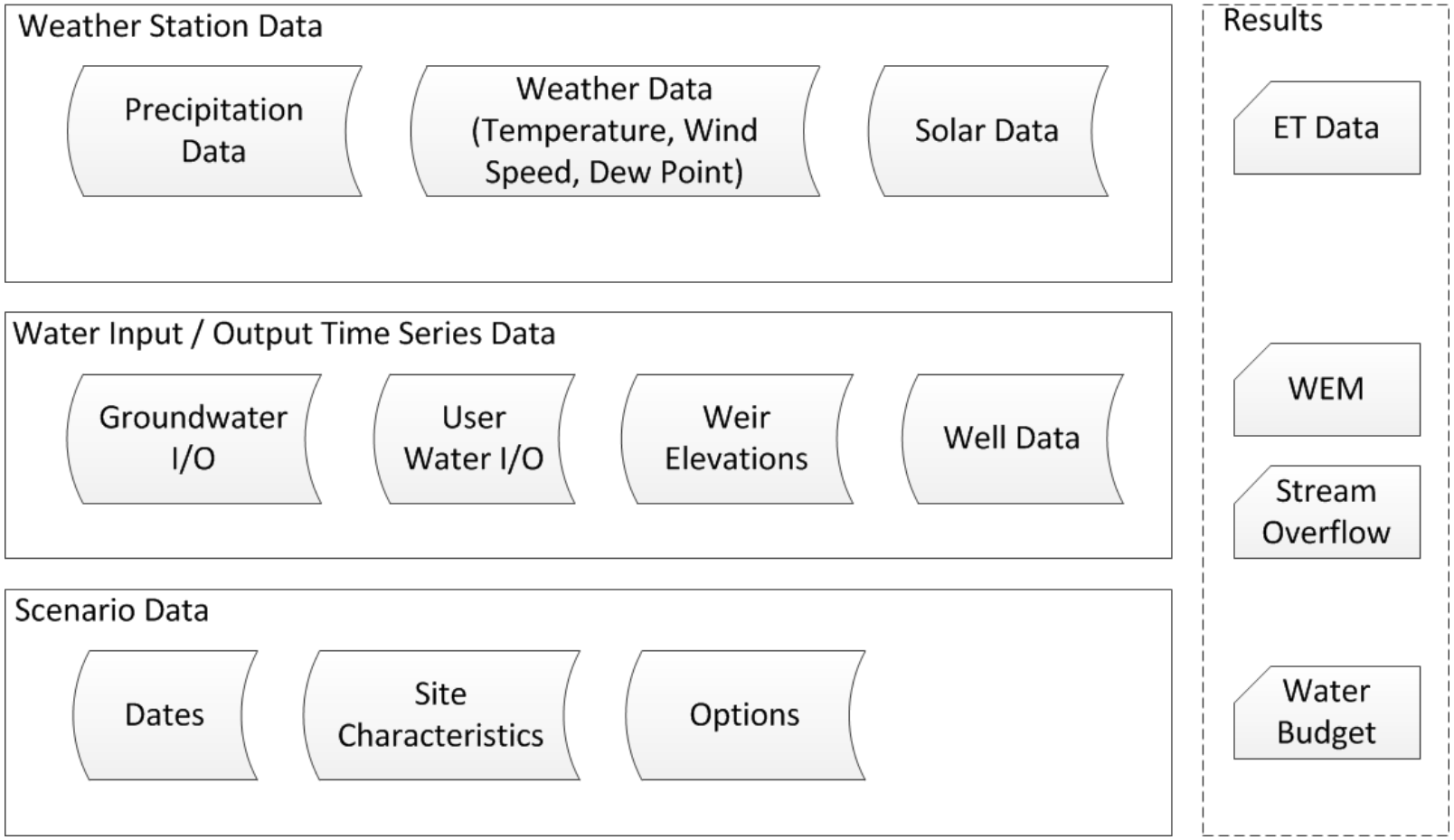
Projects and Scenarios

- Projects may contain basic and/or advanced scenarios
- Scenarios are linked to projects and share weather stations and other site specific data (wells, etc.)
- Basic scenarios can be simplistic or sophisticated depending on the level of analysis
- Advanced scenarios are solved using Modflow. Modelling is more complicated since data need to be “translated” to be Modflow compatible

Basic Scenarios (1/2)

- Calculate water budget for three typical years (WDN) or for given range
- Calculations are done on a monthly basis
- Data may be constants or time series (precipitation, ET, groundwater I/O, weir elevations, etc.)
- Groundwater time series may be generated via WEM
- Stream overbank time series may be generated via built in algorithm

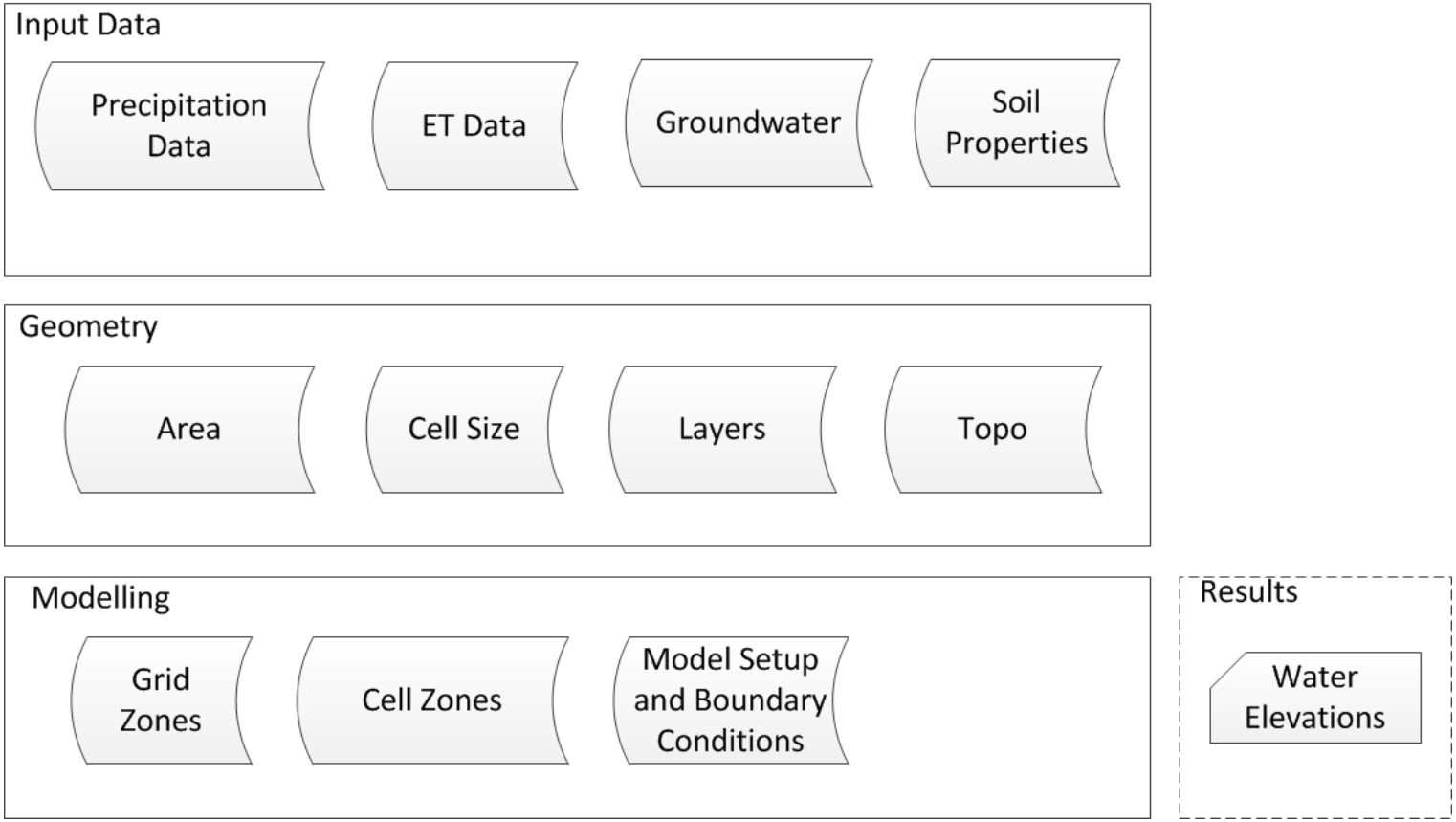
Basic Scenarios (2/2)



Advanced Scenarios (1/2)

- Solution is generated via the publically available Modflow code
- Wetbud will seamlessly generate the input required for Modflow
- Due to the model types considered, input to Modflow (and solution times) is greatly simplified
- Calculations may be done on a daily basis
- Data for precipitation and ET can be used directly from the Wetbud databank
- Results are not stored in the database. In the future, Wetbud will support internal storage of selected advanced scenario results

Advanced Scenarios (2/2)



Questions?