
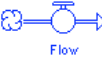



## Tips for Stock/Flow Maps


**Stock/Flow (S/F) Maps:** Stock/Flow (S/F) maps can show interdependencies and feedback within a system by identifying major accumulations and the factors that increase and decrease them over time.

### 1. Definitions:

 **stock:** an accumulation of “stuff,” either concrete (e.g., dollars) or abstract (e.g., anger), that can increase or decrease over time. Stocks are the “nouns” in the system and should be named (and labeled) as such. Stocks can only be modified through flows.

 **flow:** action or process that transports “stuff,” directly adding to (inflow) or taking away from (outflow) the accumulation in the stock. A flow is always a rate and is defined in terms of units of the stock per unit of time (“stuff” in the stock per time). Flows are the “verbs” in the system and it’s best that they be labeled to reflect that—e.g., “dollars added/ing (per month)” or “anger released/ing (per hour).” The “cloud” at the end of the flow symbol represents the boundary of the system.

 **converter:** holds information about the system that affects the rate of the flows, or that affects the value of another converter, e.g., allowance affects the rate of dollars added per month.

 **connector:** moves information from one element of the system/map to another. You can think of a connector as a “wire” that carries information (in contrast to a flow that carries “stuff”). It originates at the point where it “picks up” that information and terminates (the arrowhead end) at the place the information is delivered. (Remember, stocks can only be affected through flows, therefore you should not attach a connector directly to a stock.)

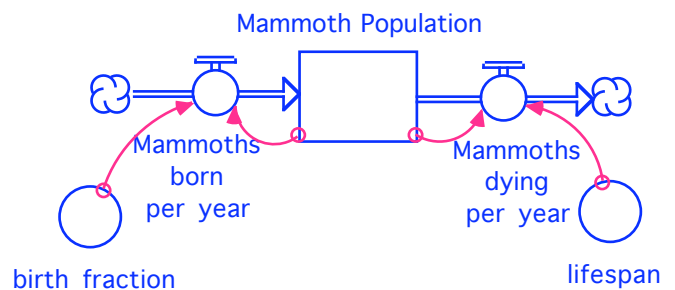
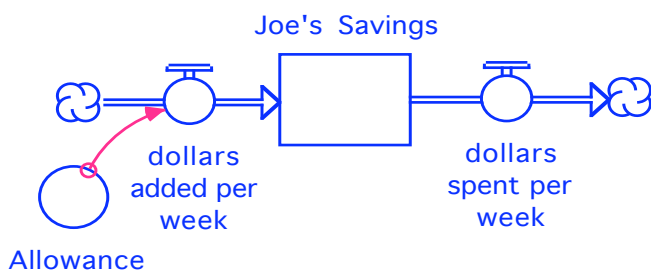
### 2. A “bathtub” analogy may help to explain the concept of stocks and flows.

- A stock is like the water in a bathtub, the level of which can change over time.
- An inflow represents water being added through a faucet; an outflow represents water flowing out through a drain.
- Converters and connectors determine how quickly the water flows in and/or out.

3. Stock/flow mapping (and computer modeling, for that matter) proceeds by identifying the critical stock(s), then determining what flows are important in changing the amount of the stock, and finally by defining what elements in the system influence the rate of the flow(s).

4. To identify which **stock(s)** to include in a map, first identify the critical behaviors of the system and create and discuss BOTGs that reflect those behaviors.

- When choosing a name for any element in a Stock/Flow Map, keep comparative words such as more or less out of the name, e.g., Level of Stress is preferable to More Stress. (See #5 in Tips for CLDs.)
- Labeling parts of the map clearly is critically important. The labels make the story clear to others.



5. Converters contain information that, ultimately, affects the flows that affect the stocks. Work outward from the flows in identifying those converters. What converter(s) will affect each flow? What converter(s) will affect those original converters?

6. Once you have drawn your stock(s), flows, converters, and connectors, make sure you look for the **feedback** from the stock(s) that makes a system dynamic. Ask questions such as: Does the accumulation in the stock affect its inflow? outflow? converters? other stocks’ inflow/outflow/converters?