EXPERIMENT: Introducing peers with varying top-k strategies into an existing rational network  
  
DESCRIPTION: Given a network that has been established, see how various top-k strategies perform when added at different “ages” of the network. Ages refers to how old the network is (how many ticks has it been established for). The networks will initially be populated with peers using a random top-k strategy and a random top-m strategy. This experiment will be simplistic, documents and peers will have only one of two possible tags; this will limit the usefulness of some top-k strategies.

The top-k strategies being tested:

* document popularity,
* peer popularity
* peer distance
* peer similarity
* follow similarity

The different of the ages of the network that will be tested are:

* Starting Network: the network is brand new (ticks = 0)
* Morning Network: the network has had few turns (ticks = number of peers / 2)
* Noon Network: most peers have had a turn (ticks = number of peers \* 2)
* Evening Network: almost all peers are connected (ticks = number of peers \* 8)
* Established Network: the network should be fully established (ticks = 1000)

Network Info:

* All peers:
  + Will have 1 of 2 tags.
  + The top-k will be of size 5, and will exclude files that have been in the top-k before.
  + A like strategy where, if the file shares at least one taste in common with the peer (and has not been liked before), it will be liked.
  + The top-m will be of size 3, and will randomly select peers that liked documents from the top-k.
  + A follow strategy that follows everyone who appeared in the top-m.
  + A score strategy which will increment the score of the user by one for every document in the top-k that shares at least one tag in common with the user, and has not been seen by the user before.
* The network will start with 20 peers who are using the random top-k strategy, and 60 documents (with one of 2 tags).
* Only one peer of the new strategies will be added to the network.
* After a peer has been added to the network, they will run their turns consecutively (the original 20 peers will not have turns), after 5 turns they will stopped and their utility analyzed.

HYPOTHESIS:

The peer and document popularity strategies should be successful in the first turn, as they are not required to be connected to the existing network.

The peer distance, peer similarity, and follow similarity strategies