Agent attributes

|  |  |  |
| --- | --- | --- |
| Agent type | Attribute | Attribute Data Type |
| Firm | Capital | Char. (high, medium, low) |
|  | Staff number | Int. |
|  | Age | Int. |
|  | Major investor | Char. (array / list) |
|  | Technical domain | Char. (array / list) |
|  | Number of products in pipeline | Int. |
|  | Absorptive capacity | Char. (high, medium, low) |
|  | Current collaborators | Char. (array / list) |
|  | Previous collaborators | Char. (array / list) |
|  | Friend circle radius | Int. |
| University | Capital | Long (NT, in 10 thousands) |
|  | Staff number | Int. |
|  | Age | Int. |
|  | Technical domain | Char. (array / list) |
|  | Reputation | Char. (high, medium, low) |
|  | Research maturity level | Int. |
|  | Current collaborators | Char. (array / list) |
|  | Previous collaborators | Char. (array / list) |
|  | Friend circle radius | Int. |
| Intermediary | Capital | Long (NT, in 10 thousands) |
|  | Staff number | Int. |
|  | Age | Int. |
|  | Technical domain | Char. (array / list) |
|  | With lab | Boolean (Y/N) |
|  | Friend circle radius | Int. |

Agent Behaviour

|  |  |
| --- | --- |
| Agent type | Behaviour |
| Firm | Request\_for\_Research\_Collaboration  Request\_for\_Development\_Collaboration  Accept\_ Research\_Collaboration\_from  Accept\_ Development\_Collaboration\_from  Teminate\_collaboration |
| University | Request\_for\_Research\_Collaboration  Request\_for\_Development\_Collaboration  Accept\_ Research\_Collaboration\_from  Accept\_ Development\_Collaboration\_from  Teminate\_collaboration |
| Intermediary | Teminate\_collaboration  (For proactive intermediaries)  Screening\_for\_technology\_with\_potential  Screening\_for\_potential\_actors  Matching  (For proactive intermediaries)  Request\_for\_Research\_Collaboration  Request\_for\_Development\_Collaboration  Accept\_ Research\_Collaboration\_from  Accept\_ Development\_Collaboration\_from |

Basic rules:

1. Firms do not conduct research collaboration with other firms.
2. Universities do not conduct development collaboration with other universities.
3. Intermediaries and firms will try to find collaborators at every tick.
4. University will try to find collaborator when it’s “research maturity level” reach certain threshold (user define). “research maturity level” increase or not is depend on a user defined probability.
5. Actors will look for partners within its friend circle, when it comes to friend circle, Intermediaries > Firms = Universities. User should be able to define friend circle radius.
6. If A and B have partner relationship, B will not ask A to be partner again.
7. When Firm considers partnering with another Firm or not,

previous partner? + Have same major investor? + capital + Number of products in pipeline. If candidate firm’s calculated value (from the above equation) reach certain threshold (again, user define), firm who initiates collaboration will ask for partnership with that candidate firm.

1. When Firm considers partnering with another University or not

previous partner? + Reputation + Research maturity level

1. When University considers partnering with another Firm or not

previous partner? + capital + Number of products in pipeline + Absorptive capacity

1. When University considers partnering with another University or not

previous partner? + Reputation + Research maturity level