pose also that the technological innovative system of the territory operates by a more or less advanced regime of open innovation (Chesbrough 2003), and that technology innovation is carried out following a more or less advanced distributed innovation system (Haour 2004). That means that actors carrying out R&D projects are not limited to industrial R&D laboratories but also by contract research laboratories, private or public research laboratories, start up, etc. exchanging in a certain measure the generated GRDK in the territory (Bonomi 2017). The R&D activity is seen in term of projects and, although normally a new technology is generated by a sequence of R&D projects, for simplification in our application we consider that a new technology may be generated by a single project. Actually, generation of R&D project proposals, starting of new R&D projects and formation of new technologies are a continually in action, however, in our application, for simplification of computation, we consider the R&D activity in term of cycles, each fed by a certain number of R&D projects, and generating or not new technologies. That means that duration of generation of R&D project proposals followed by carrying out of R&D projects is the same for all projects and equal to the cycle time. As knowledge may be partly lost with time by a fading effect, we have assumed a percentage of loss of knowledge, in term of number of information packages, occurring at each cycle and concerning all remaining knowledge of previous cycles. Concerning the socio-economic growth of the territory, we have considered, in a simplified view, that it is proportional to the resulting number of new successful technologies that are in fact a part of all new technologies entering in use.

For the definition of parameters of the model, we may separate those concerning the flux of capitals from those concerning the flux of knowledge. In the case of flux of capitals, instead of return of investments, we have considered simply the generated number of new and possibly successful technologies using two rates in term of percentage of R&D projects that generates new technologies, and percentage of new technologies that are successful. Considering N the number of R&D projects carried out in a cycle, the number T of new technologies entering in use will be determined by a selection rate *v* following the formula:

$$T = vN \quad (1)$$

Considering now the successful number of new technologies S, they will be the result of a selection rate *r* on the number T of new technologies entering in use following the formula:

$$S = rT \quad (2)$$

Concerning the flux of knowledge, we have, first of all, to define a measure of knowledge generated by R&D projects in term of number of information packages.

For this purpose we consider that each R&D project generates an average number *p* of information packages and that total available information packages result of the sum of packages generated by the cycle plus the information packages of previous cycles reduced by the fading rate effect *f*. Such total number of packages shall be increased by a contribution taking account of information packages coming from scientific, technical and other information composing an external available knowledge estimated as a fraction *E* of available information from projects.

The total number of information packages coming from carried out R&D projects, reduced by fading effect on number of packages generated in past cycles, and added with number of external information packages of scientific or technical nature, represents all the available packages for the generation of innovative ideas, and then R&D project proposals.

This number, indicated as I_T, may be calculated mathematically by the formula:

$$I_T = \left(N_L p + \sum_{i=1}^{n} I_i(1-f) \right)(1+E) \quad (3)$$

in which we have:

I_T : total number of information packages available for new innovative ideas after the last cycle

N_L : number of R&D projects in the last considered cycle