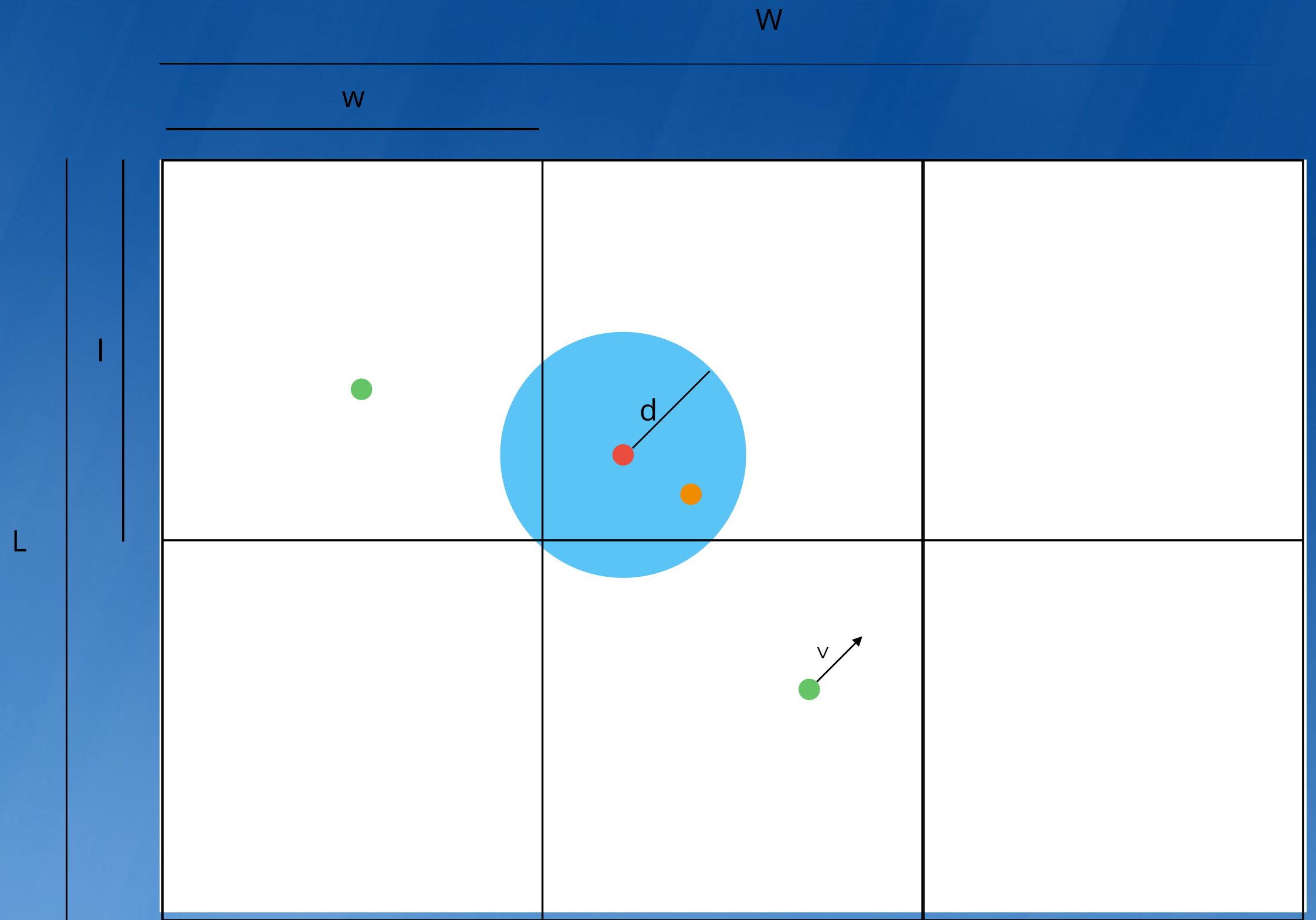


INFECTION ANALYSIS



Approach and assumptions

Parameter	Description
N	#People
I	#Infected People
W	Grid Width
L	Grid Length
w	Country Width
l	Country Length
v	People Max Speed
d	Infection Distance
t	Simulation Granularity

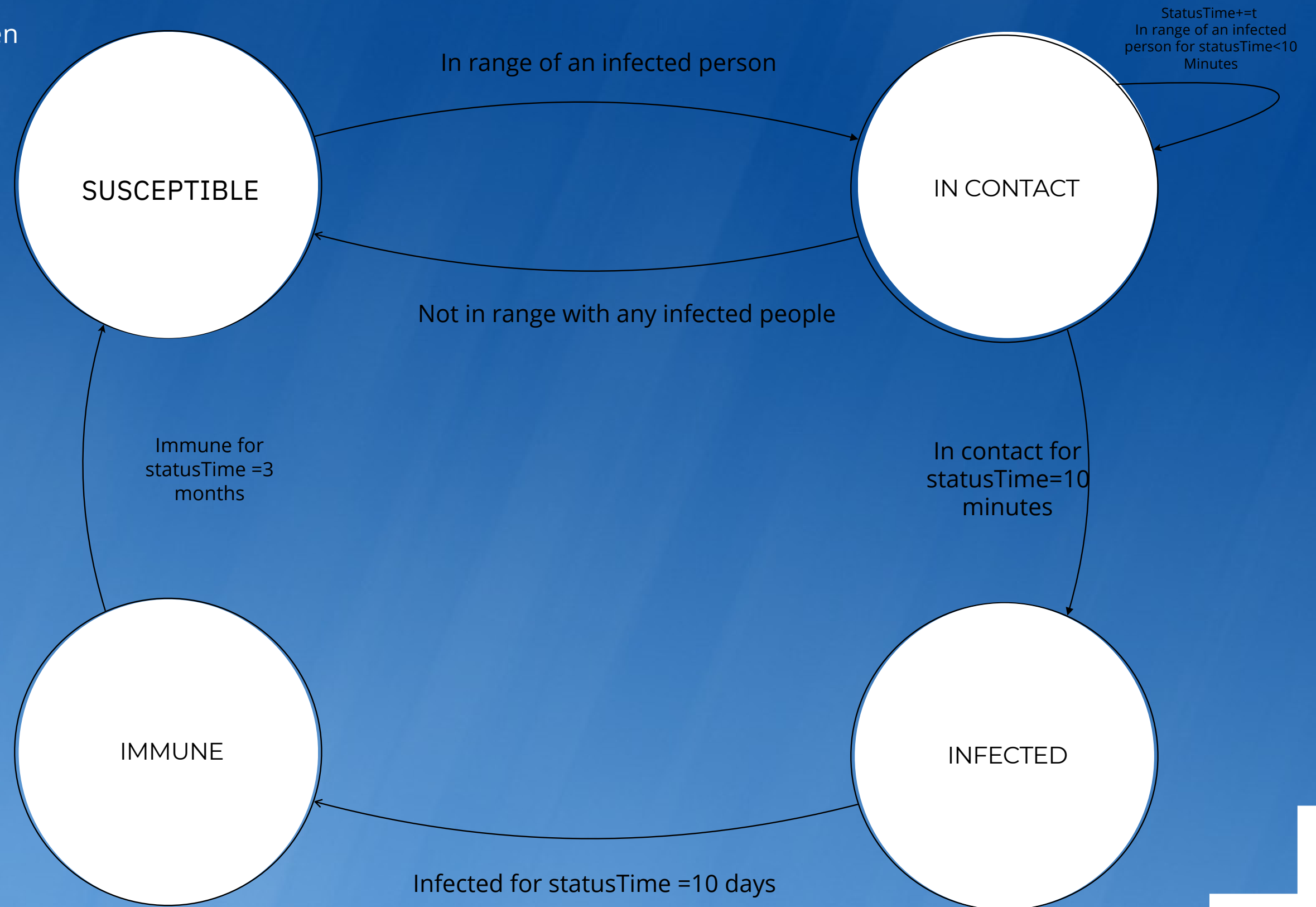


Approach and assumptions - 2

Each Person keeps its status and how long they have been in that status, when status changes statusTime is set to 0 and increases of 't' after each round.

Person

```
int id
int x
int y
float vx
float vy
InfectionStatus Status
int statusTime
```



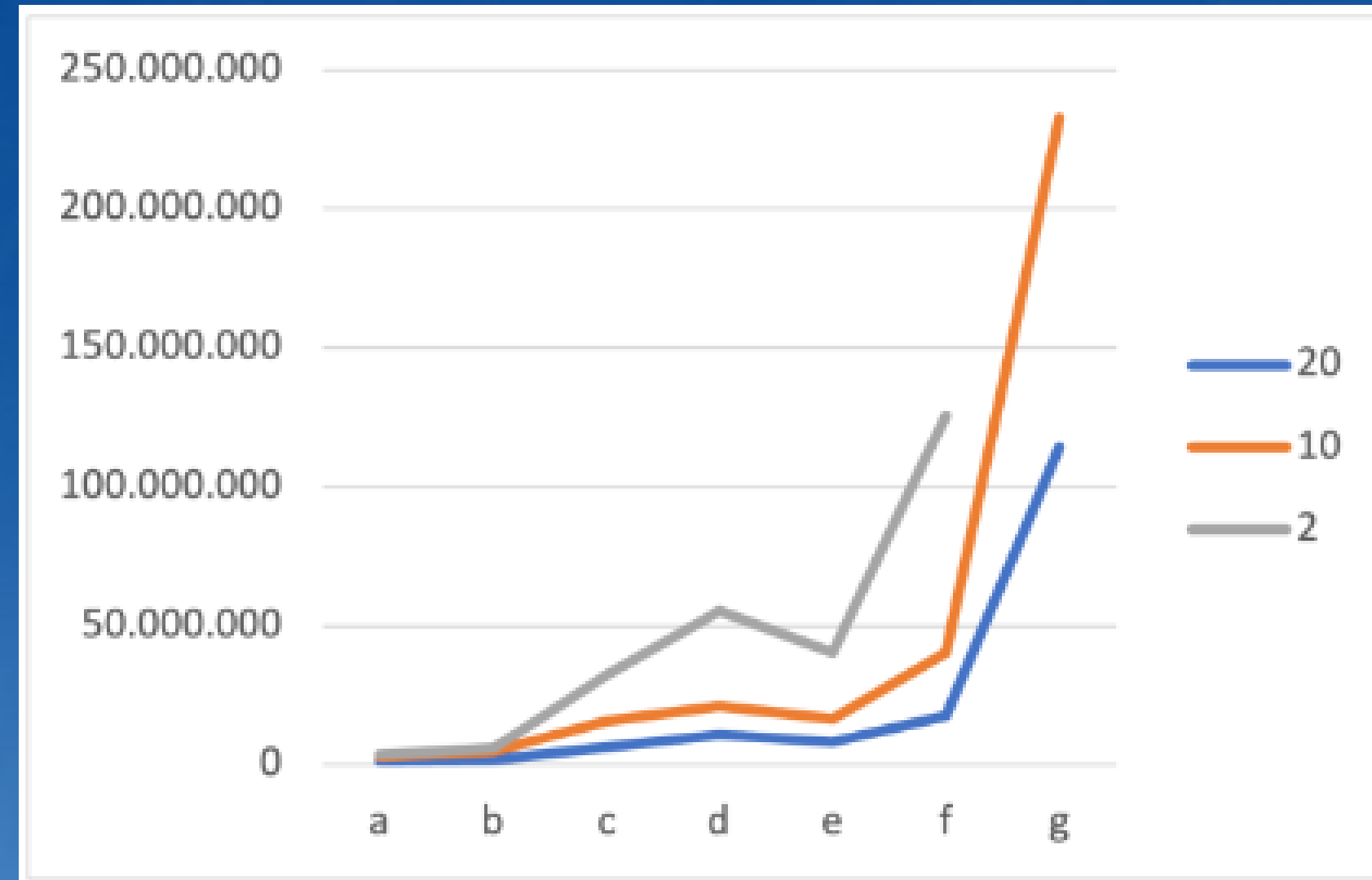
Algorithm

After each time steps every process:

- Moves its people
- Increases people internal time and check if an infected person should become immune or if an immune person should become susceptible
- Fills an array with the positions of its infected and sends them to the process rank 0 which will broadcast all infected positions to every one
- Updates infection status of their people comparing with infected positions
- At the end of the day computes statistics for each nation and process 0 gather (reduce) them and prints

Test

- 7 Parameter configurations
- 3 different cores configurations
- X-axis test type
- Y-axis seconds * 10⁶



N	I	W	L	w	l	v	d	t	Test
39872	10	10000	10000	2000	5000	2	25	100	a
39872	10	10000	10000	2000	5000	2	50	100	b
398720	10	10000	10000	2000	5000	2	5	100	c
398720	10	10000	10000	2000	5000	2	25	100	d
398720	10	10000	10000	5000	5000	2	25	100	e
398720	100	10000	10000	2000	5000	2	5	100	f
398720	100	10000	10000	2000	5000	2	50	100	g