

EFFICIENT UNFOLDING OF COLOURED PETRI NETS WITH INTERVAL DECISION DIAGRAMS

SCHWARICK - ROHR - LIU - ASSAF - CHODAK - HEINER

BRANDENBURG TECHNICAL UNIVERSITY COTTBUS-SENFTENBERG
COMPUTER SCIENCE INSTITUTE

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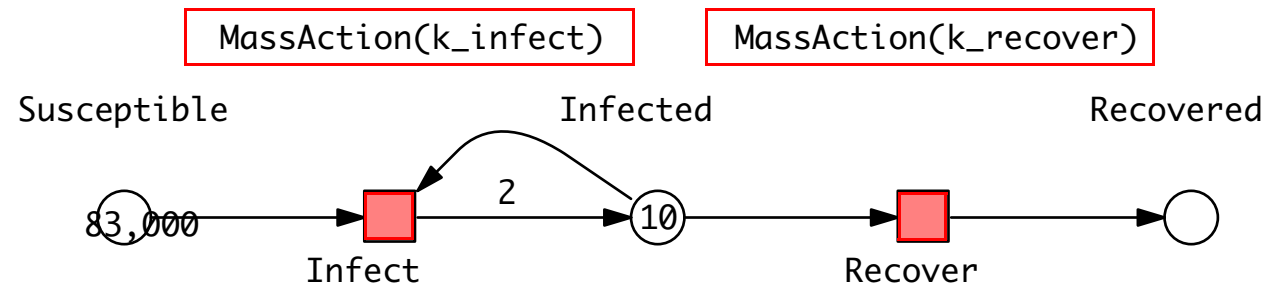
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COLOURED PETRI NETS

WHAT FOR ?

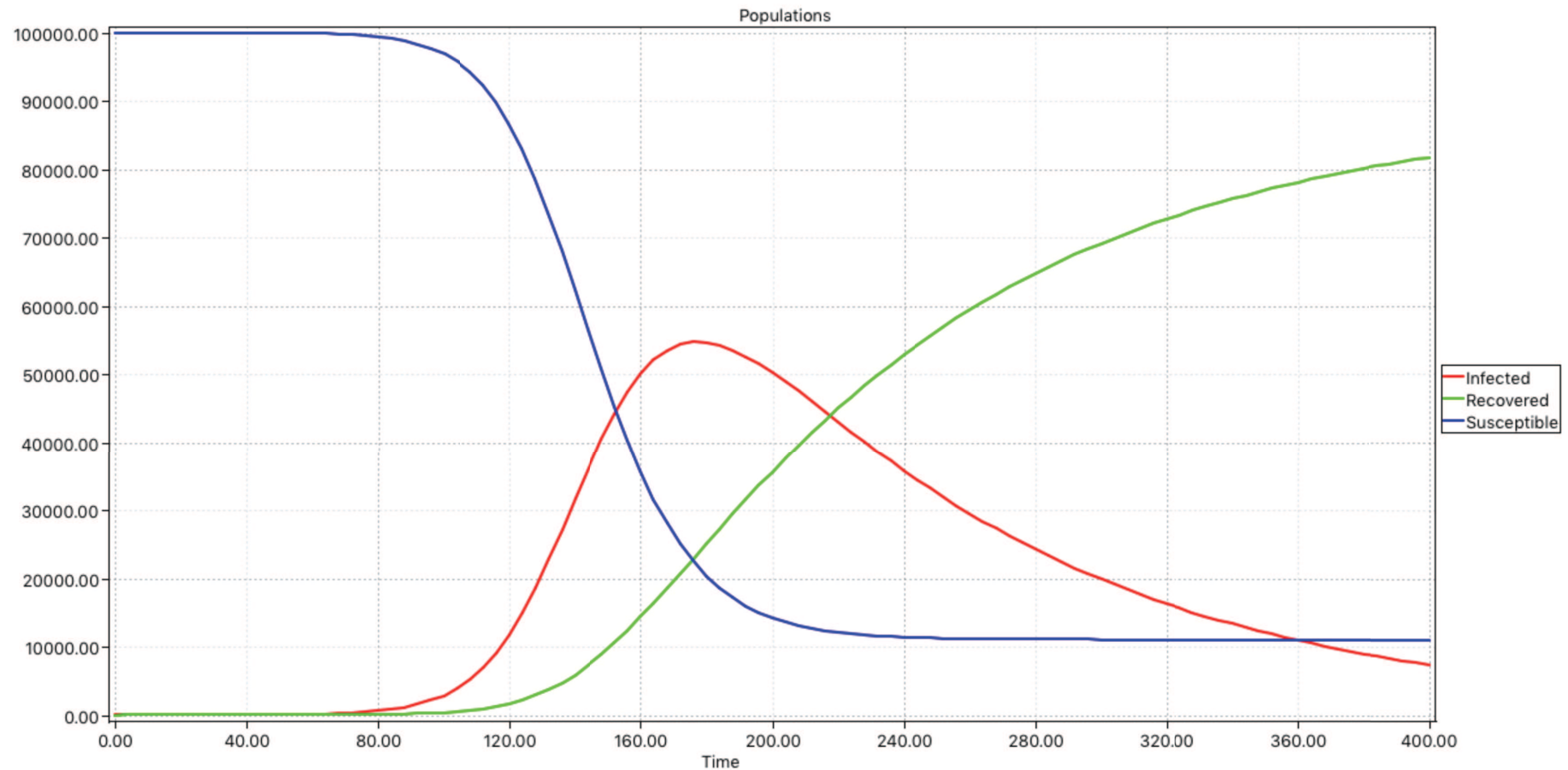
THE SIR MODEL

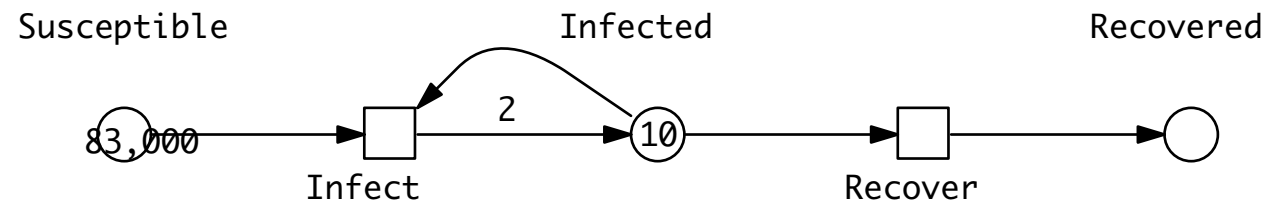
[https://en.wikipedia.org/wiki/Compartmental_models_in_epidemiology#The_SIR_model]



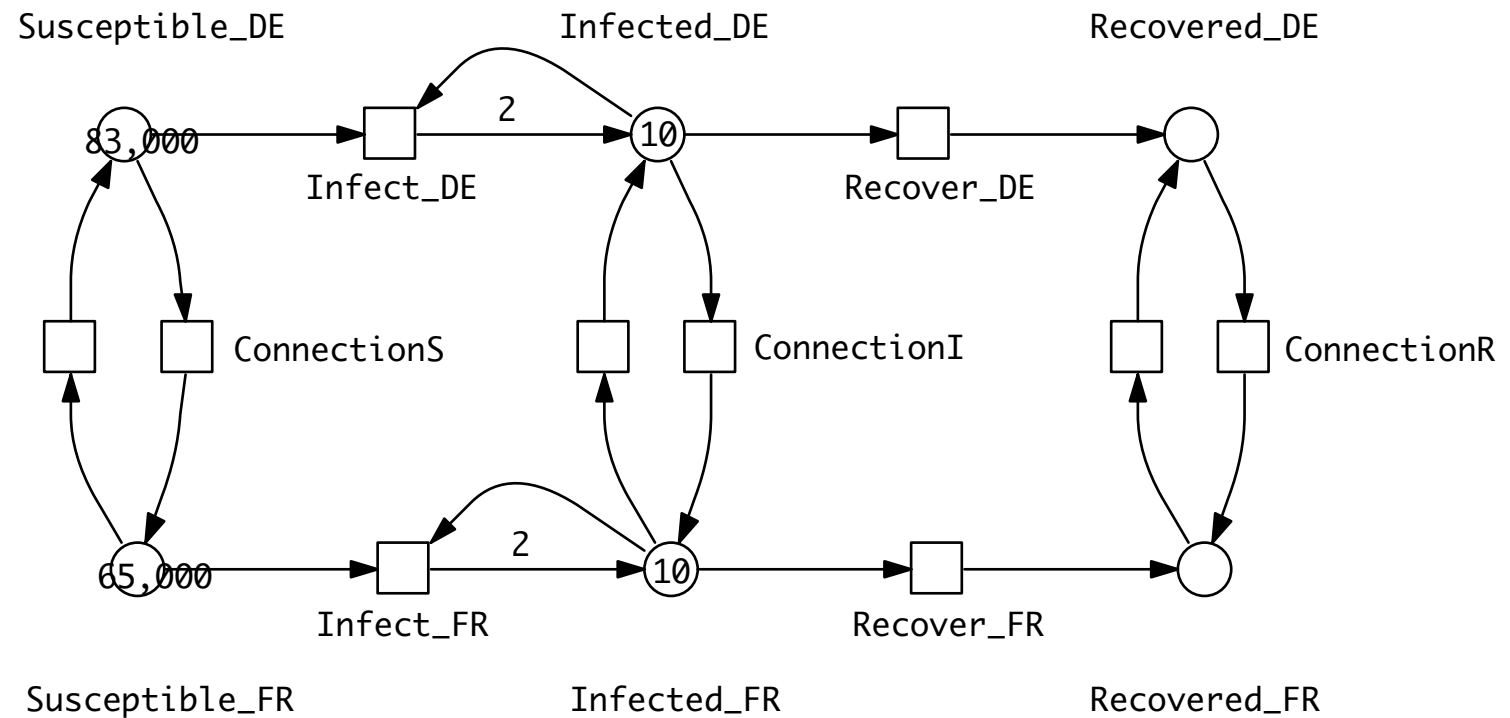
THE SIR MODEL

[https://en.wikipedia.org/wiki/Compartmental_models_in_epidemiology#The_SIR_model]

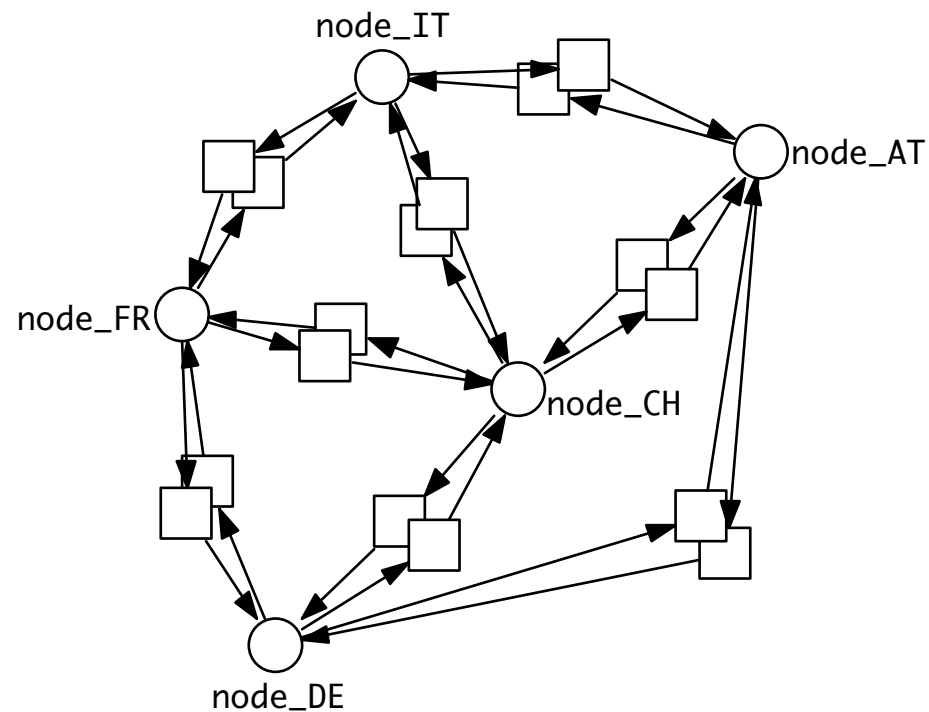




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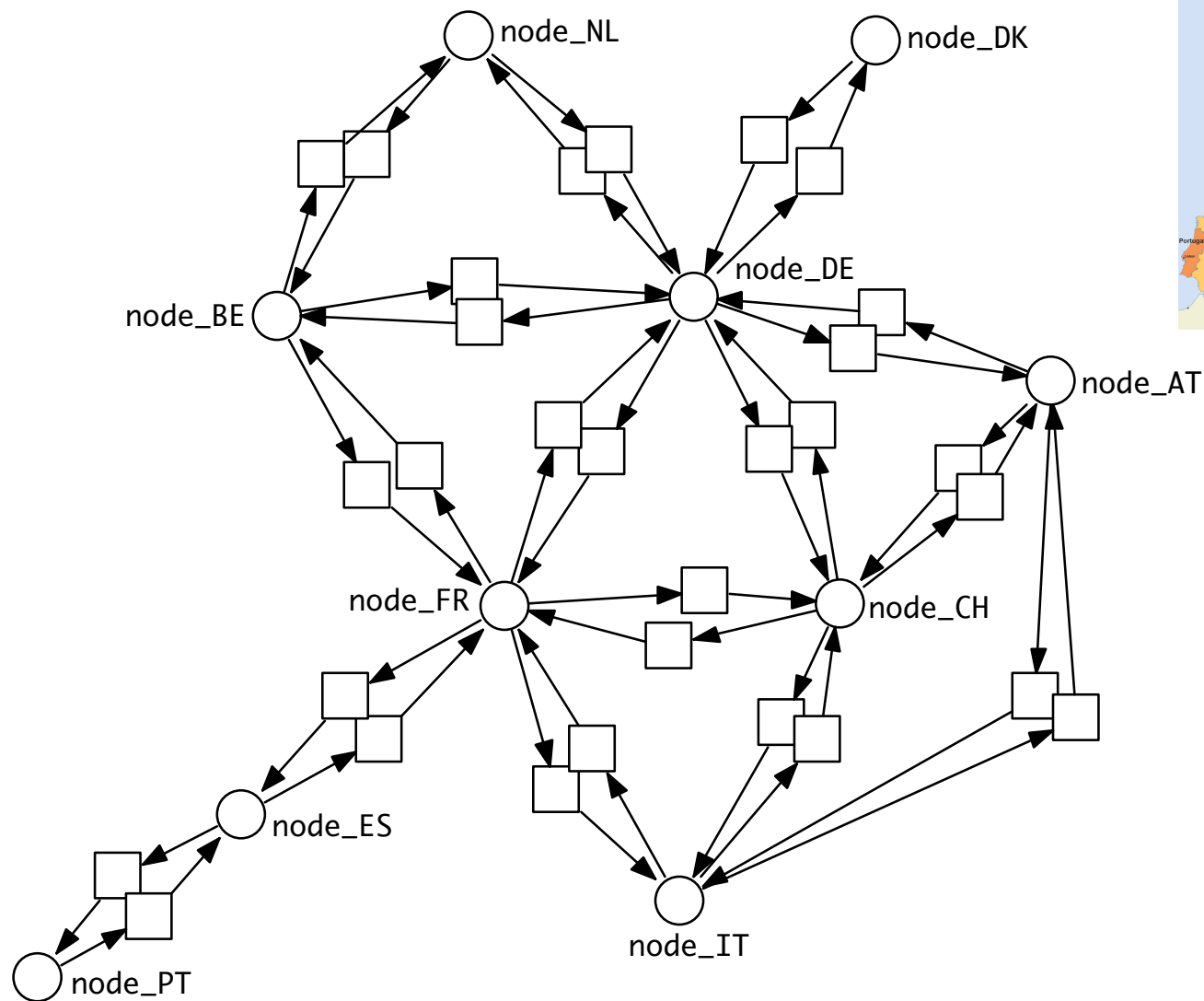


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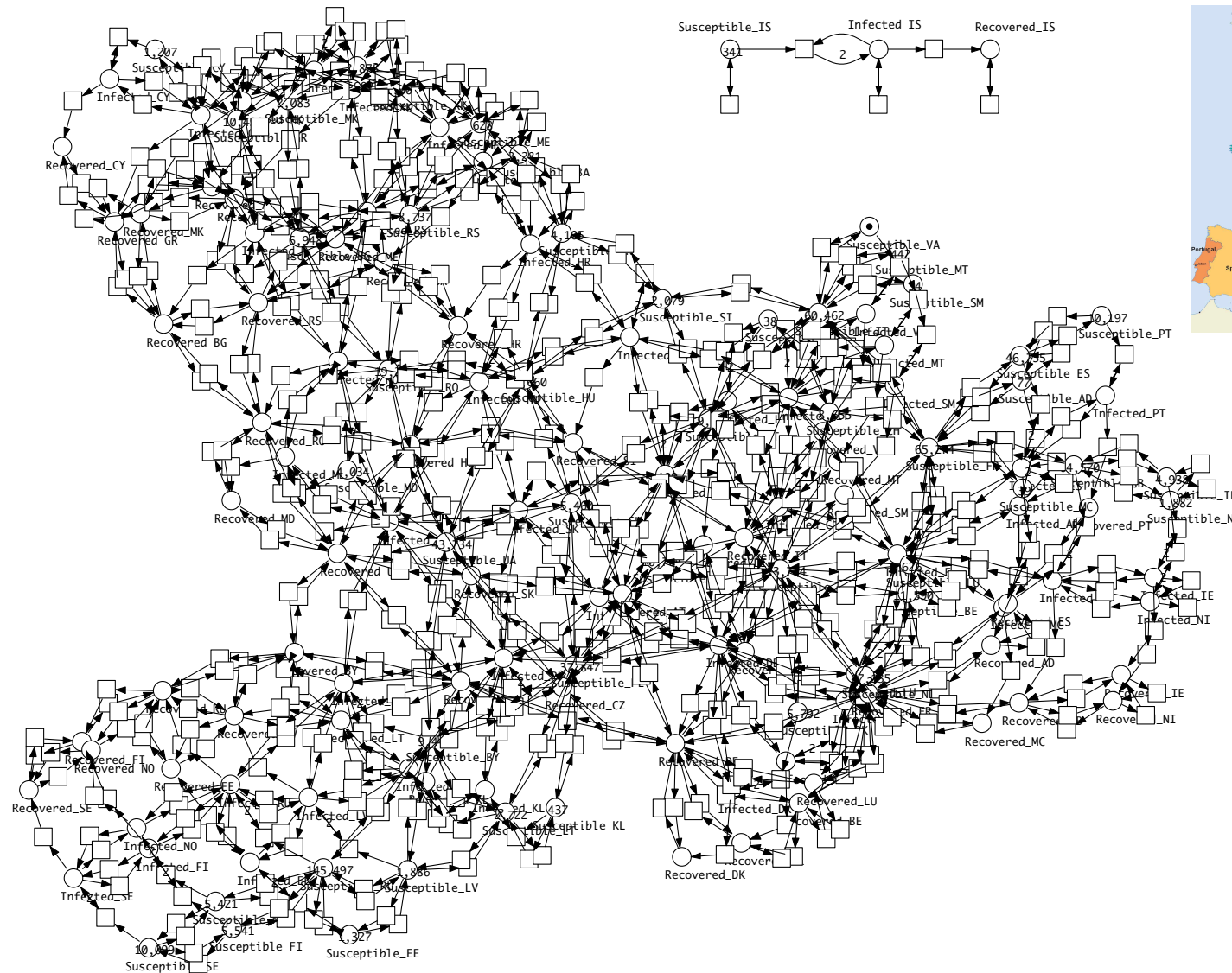
AT,
CH,
DE,
FR,
IT

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**WESTERN
EUROPE**

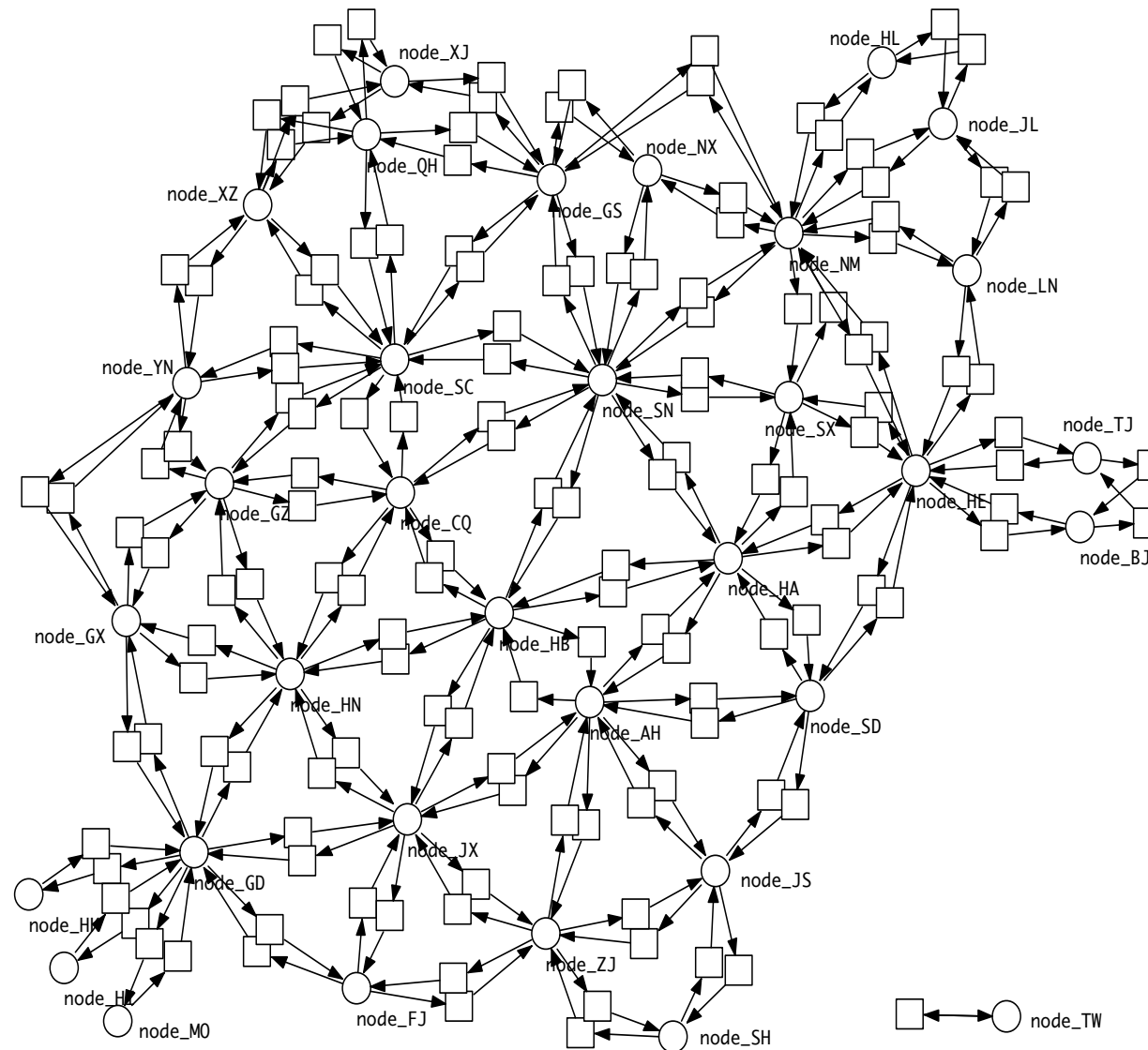
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EUROPE

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EPIDEMIC -> PANDEMIC MODELLING



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PN & BioModel Engineering



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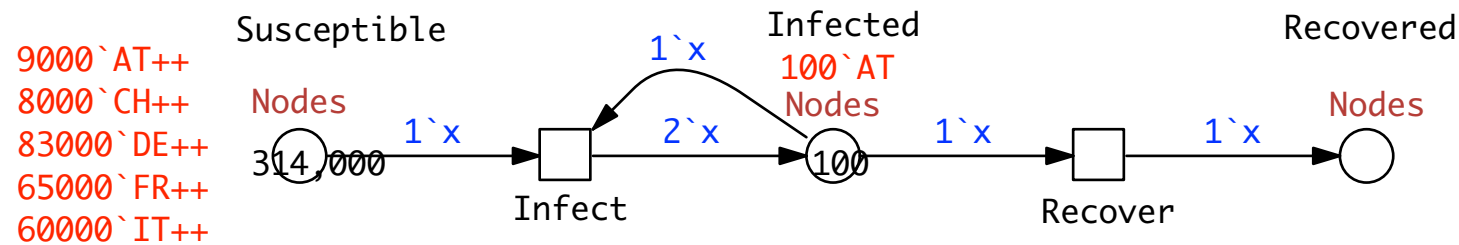
AND THEN THERE WAS COLOUR

colorsets:

enum Nodes = {AT, CH, DE, FR, IT};

variables:

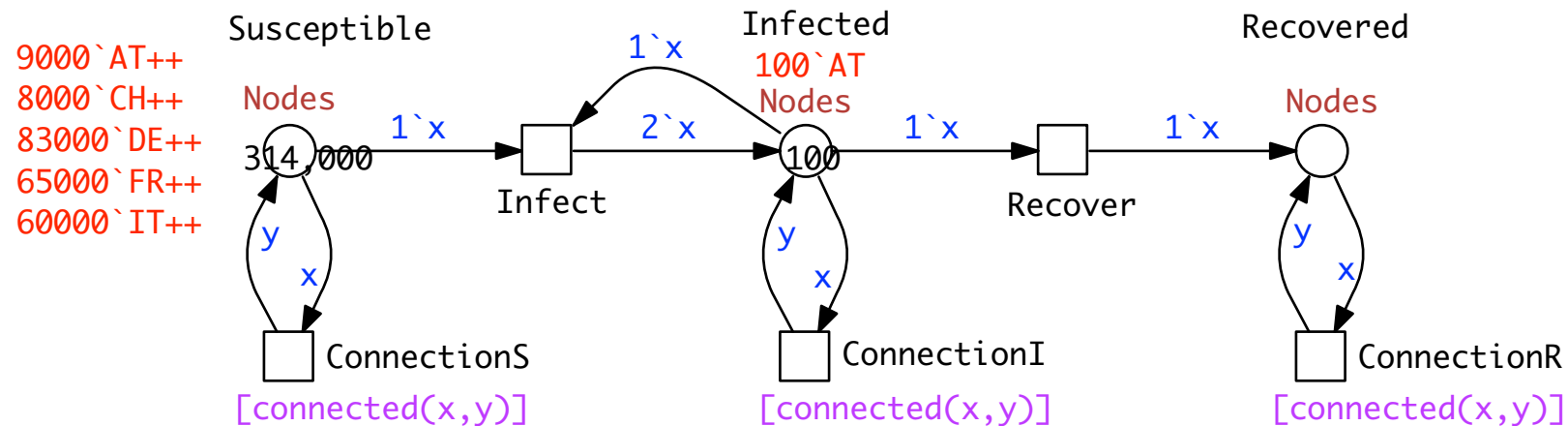
Nodes : x, y;



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colorsets:

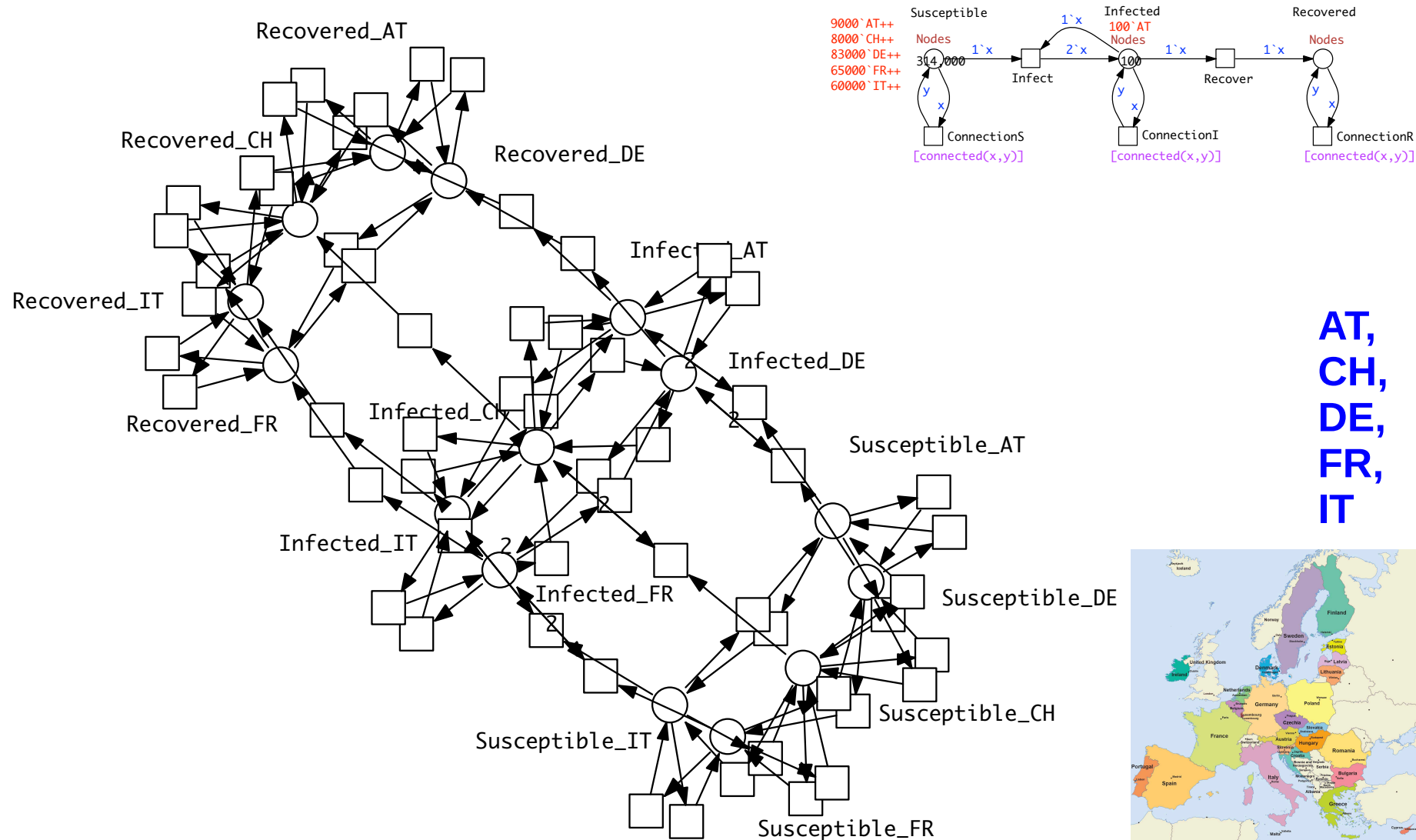
```
enum Nodes = {AT, CH, DE, FR, IT};
Matrix = PROD (Nodes, Nodes);
Connections = Matrix [ (x=AT & (y=CH | y=DE | y=IT) |
                       (x=CH & (y=AT | y=DE | y=FR | y=IT) | ... )];
```



colorfunction:

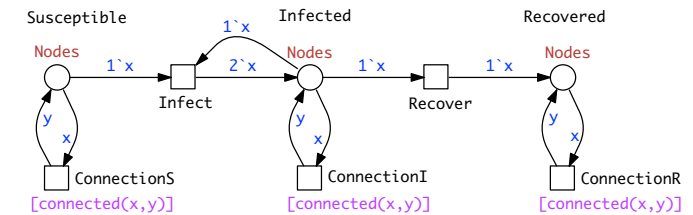
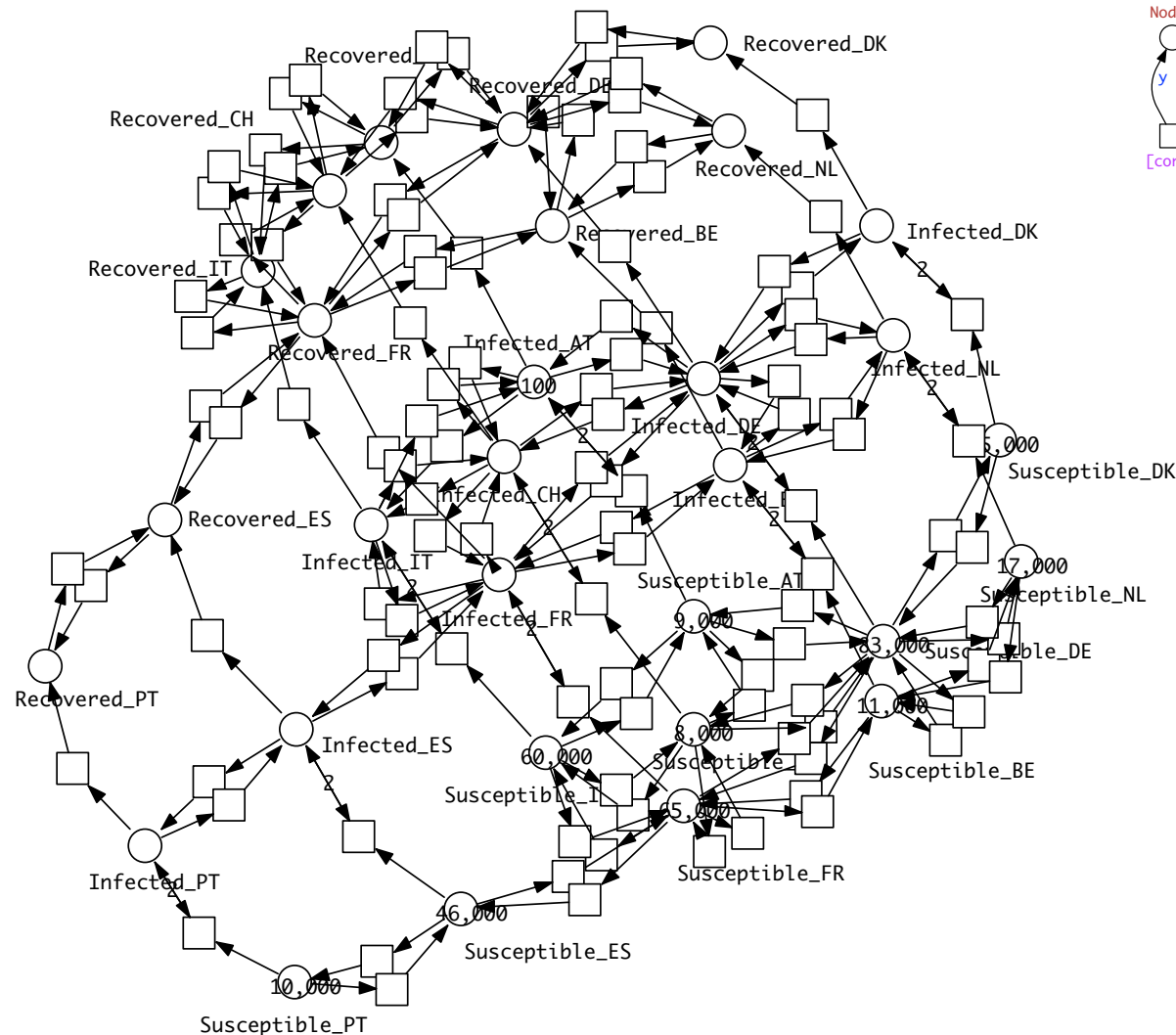
```
bool connected (Nodes p, Nodes q) { (p,q) elemOf Connections };
```

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AT,
CH,
DE,
FR,
IT

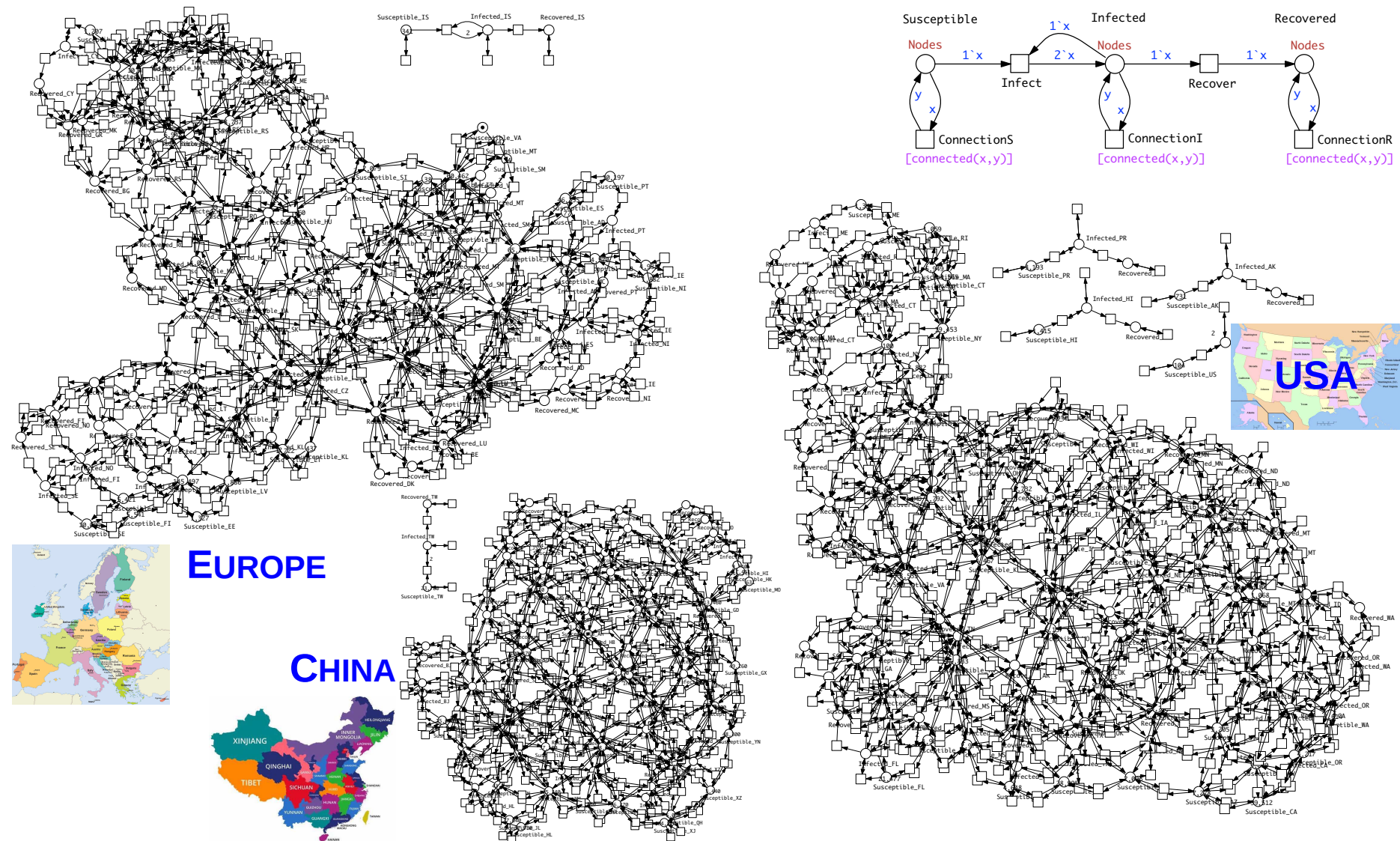
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**WESTERN
EUROPE**

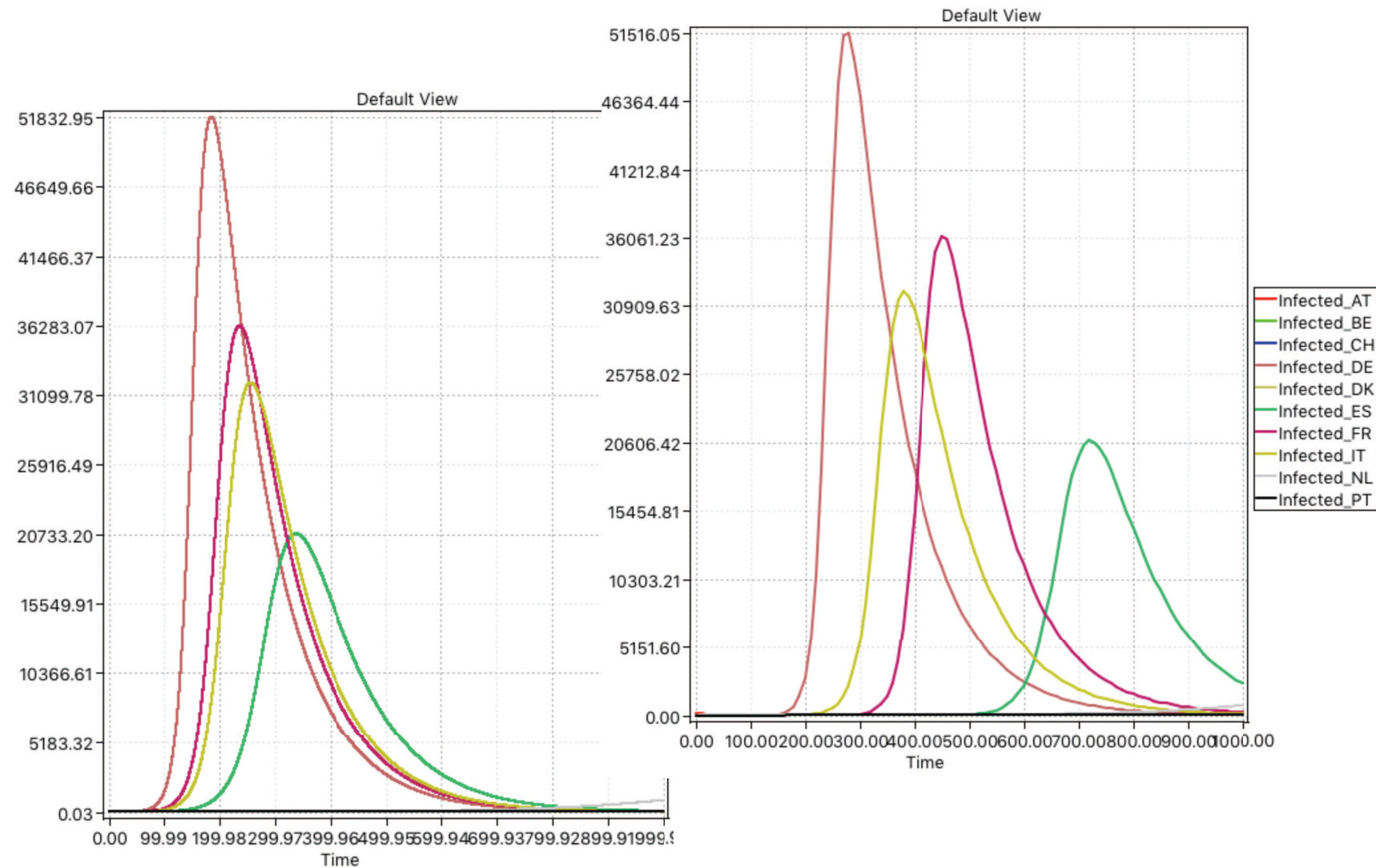


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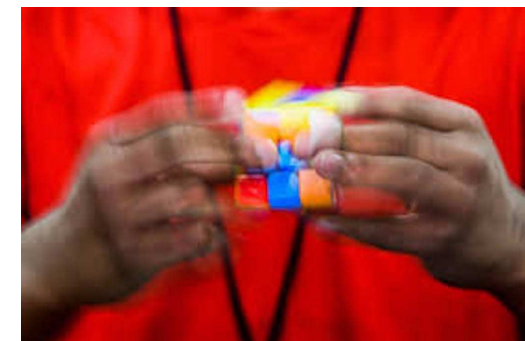
WHAT NEEDS TO BE CHANGED: COLOUR SETS + INITIAL MARKING



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**SNOOPY
MARCIE
SPIKE**



HOW TO UNFOLD EFFICIENTLY ?

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