



Strategies to Save Energy of Mobile Devices and Increase Performance of Mobile Apps Using Cloud Computing

PhD Proposal

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PhD Contributions Plan



What Apps?



***Offload or
not offload?***



SmartRank 1.0



SmartRank 2.0

PhD Contributions Plan



What Apps?

***Offload or
not offload?***

SmartRank 1.0

SmartRank 2.0



cin.ufpe.br/~faps/mapping/

PhD Contributions Plan



↓
What Apps?

↓
*Offload or
not offload?*

↓
SmartRank 1.0

↓
SmartRank 2.0



PhD Contributions Plan

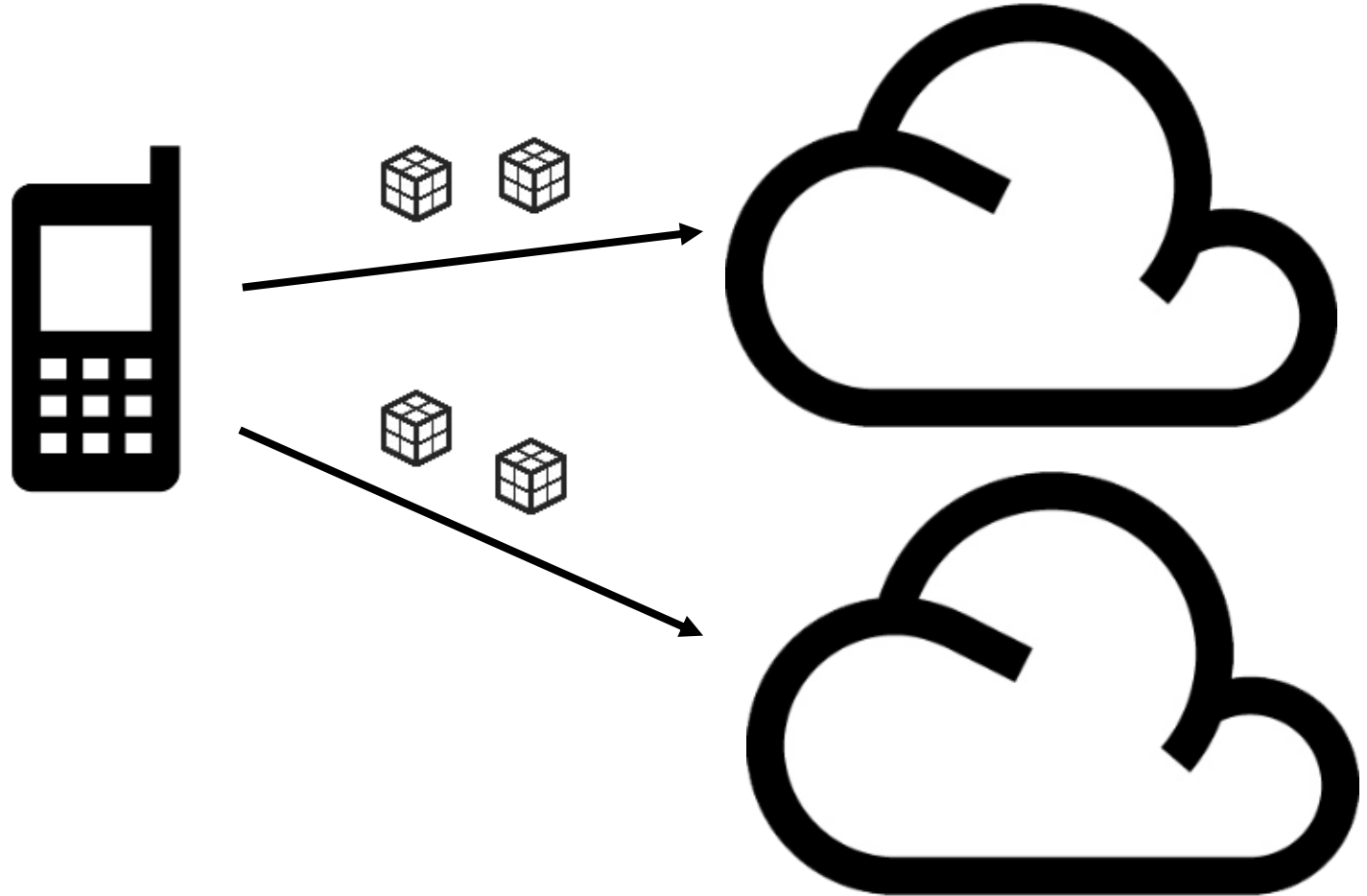


↓
What Apps?

↓
*Offload or
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↓
SmartRank 1.0

↓
SmartRank 2.0



PhD Contributions Plan



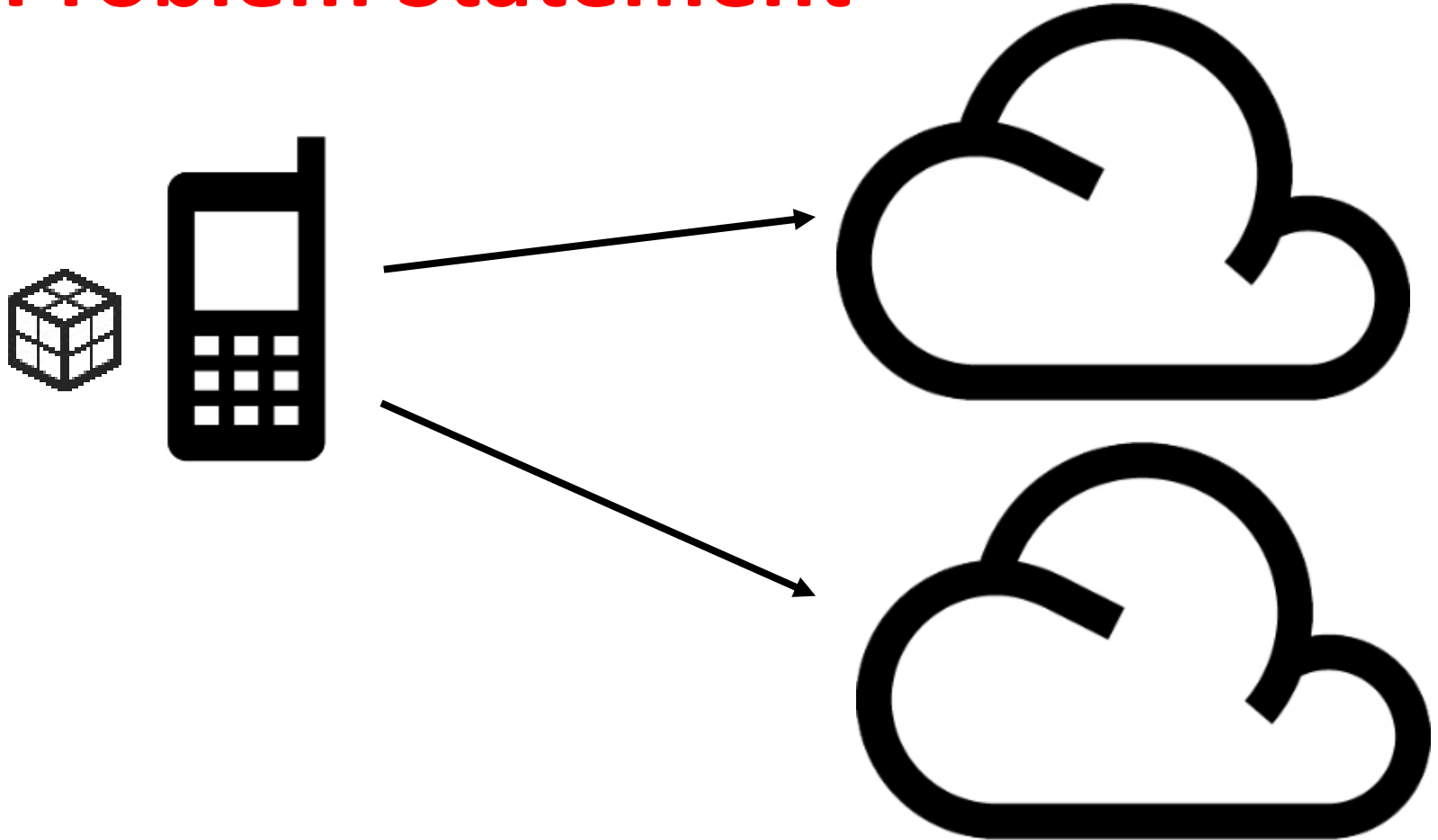
↓
What Apps?

↓
*Offload or
not offload?*

↓
SmartRank 1.0

↓
SmartRank 2.0

Problem Statement



PhD Contributions Plan

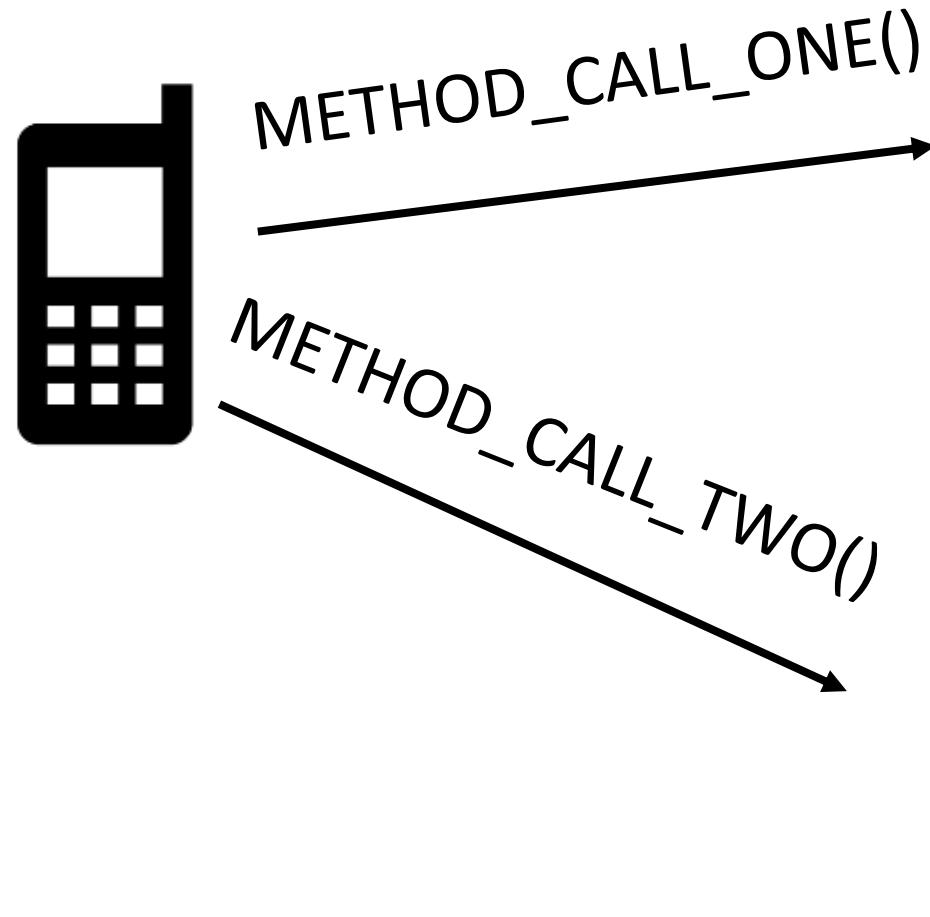


↓
What Apps?

↓
*Offload or
not offload?*

↓
SmartRank 1.0

↓
SmartRank 2.0





Method-Call Offloading

```
@Remotable  
rootMethod () {  
    a = method_1 ( ) ;  
    method_2 ( a ) ;  
    method_3 ( ) ;  
}
```



Method-Call Offloading

```
@Remotable  
rootMethod () {
```

```
  a = method_1 ();  
  method_2 ( a );
```



```
}
```

```
method_3 ();
```





Method-Call Offloading (The Process)





Proof of Concept

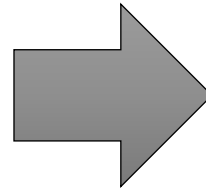
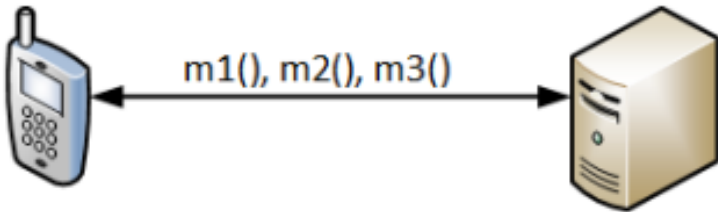


Image reduceColor(Image);



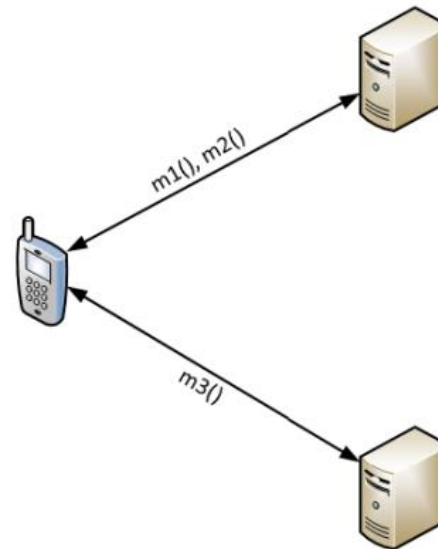
Proof of Concept

```
public List<Image> method_A (Image image) {  
    Image image2 = reduceColor ( image );  
    Image image3 = reduceColor ( image2 );  
    Image image4 = reduceColor ( image3 );  
    results.add ( image4 );  
    return results;  
}
```

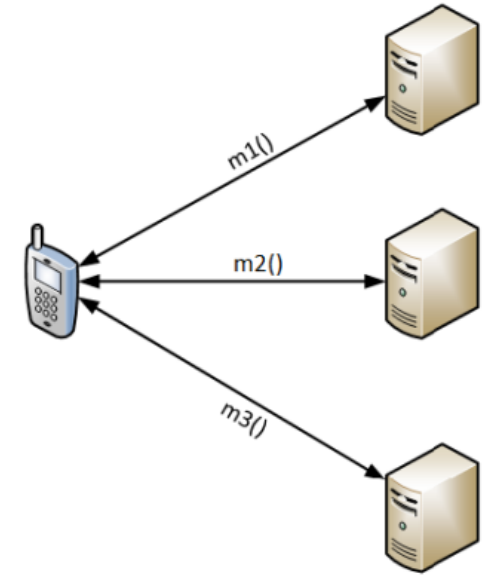


method_A

(a)



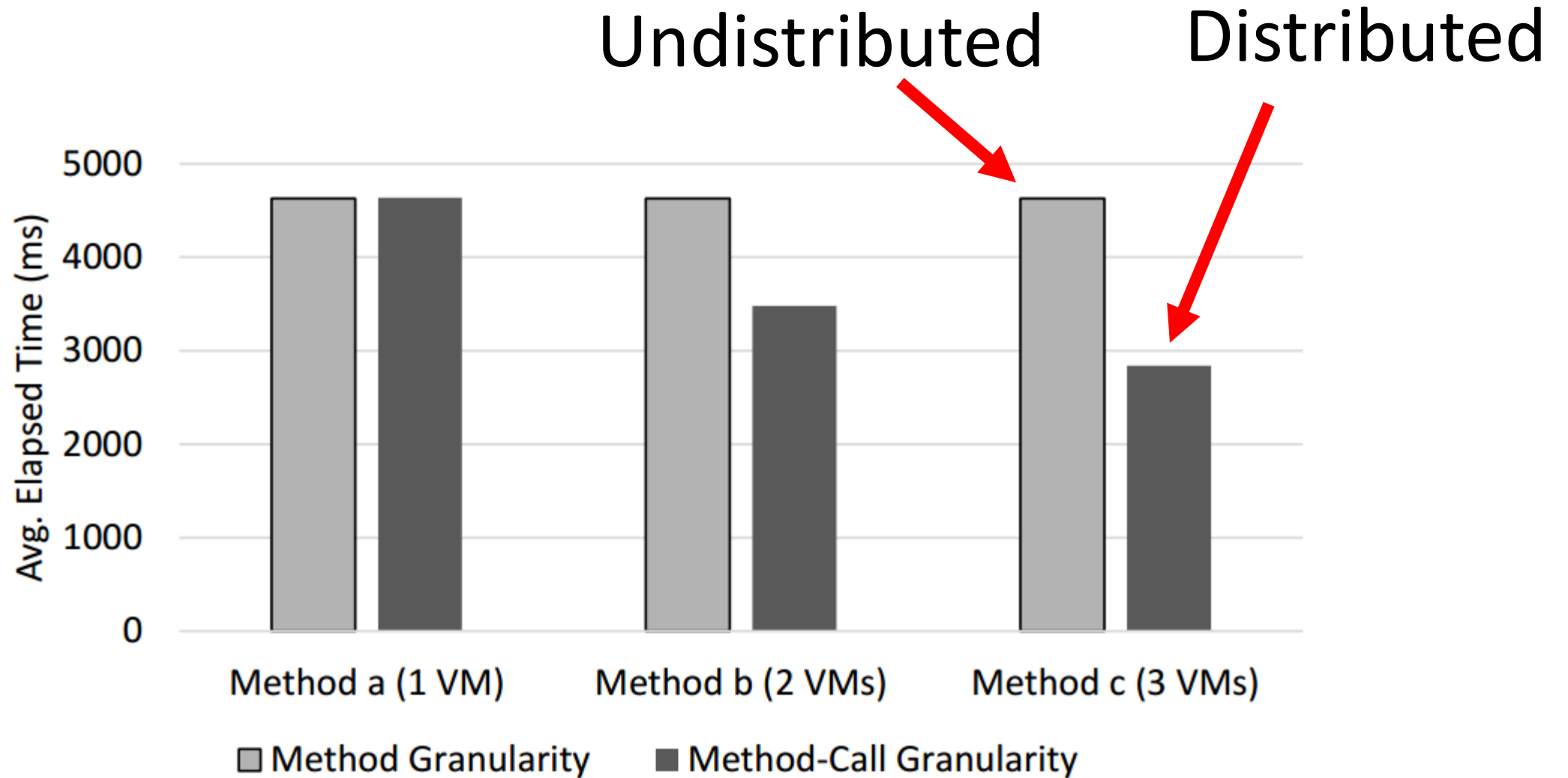
(b)



(c)



Proof of Concept

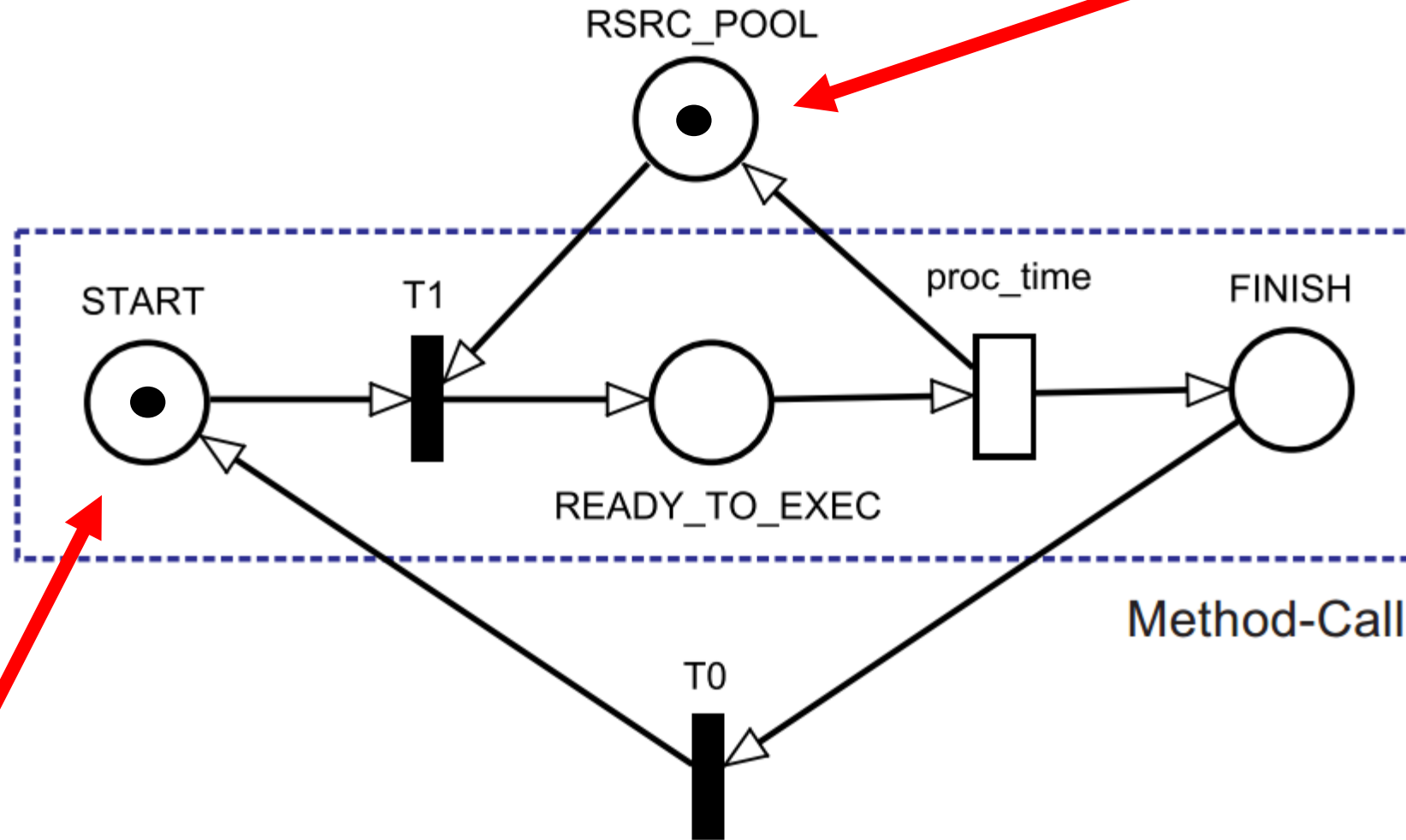




Modelling

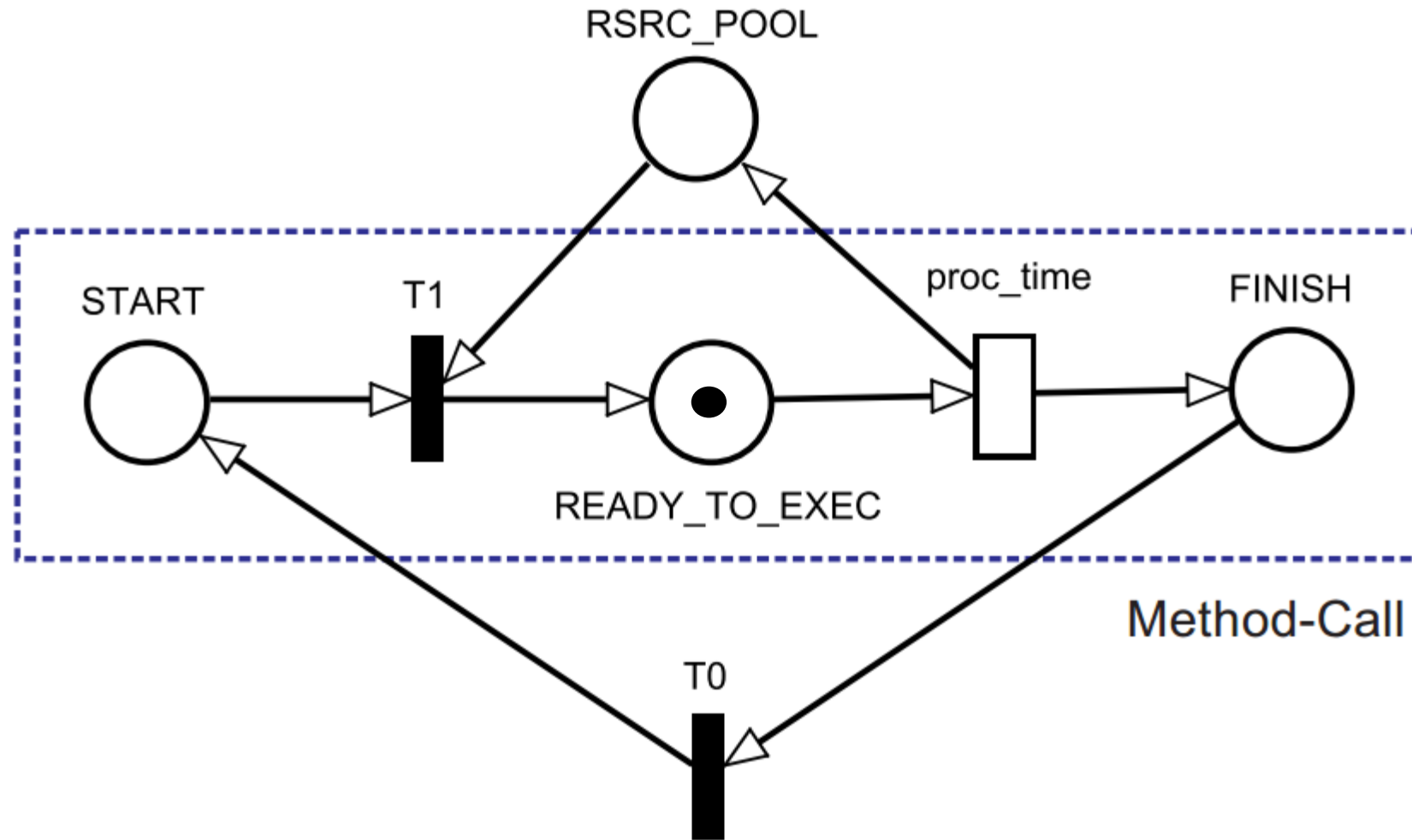
nº Available VMs

Input



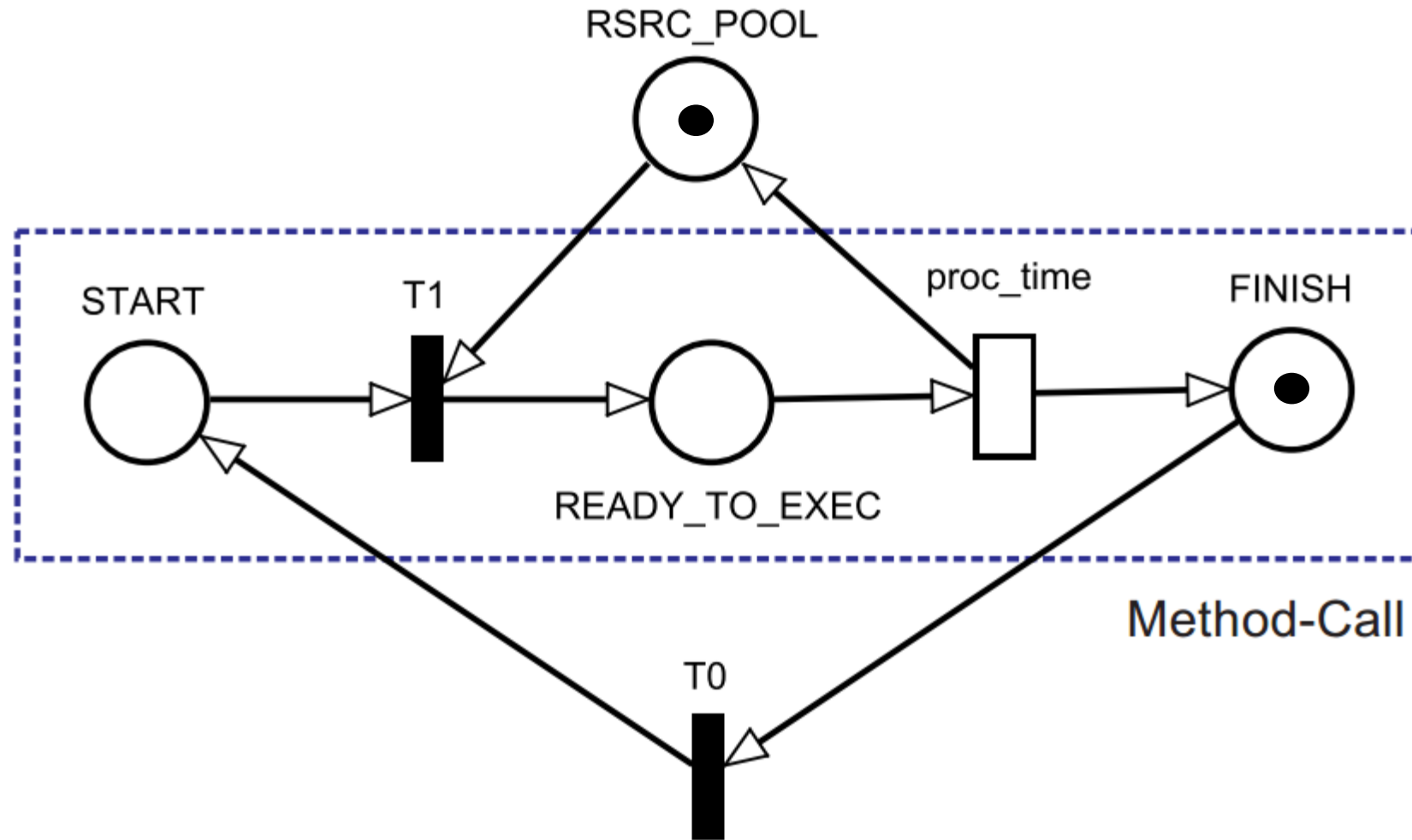


Modelling



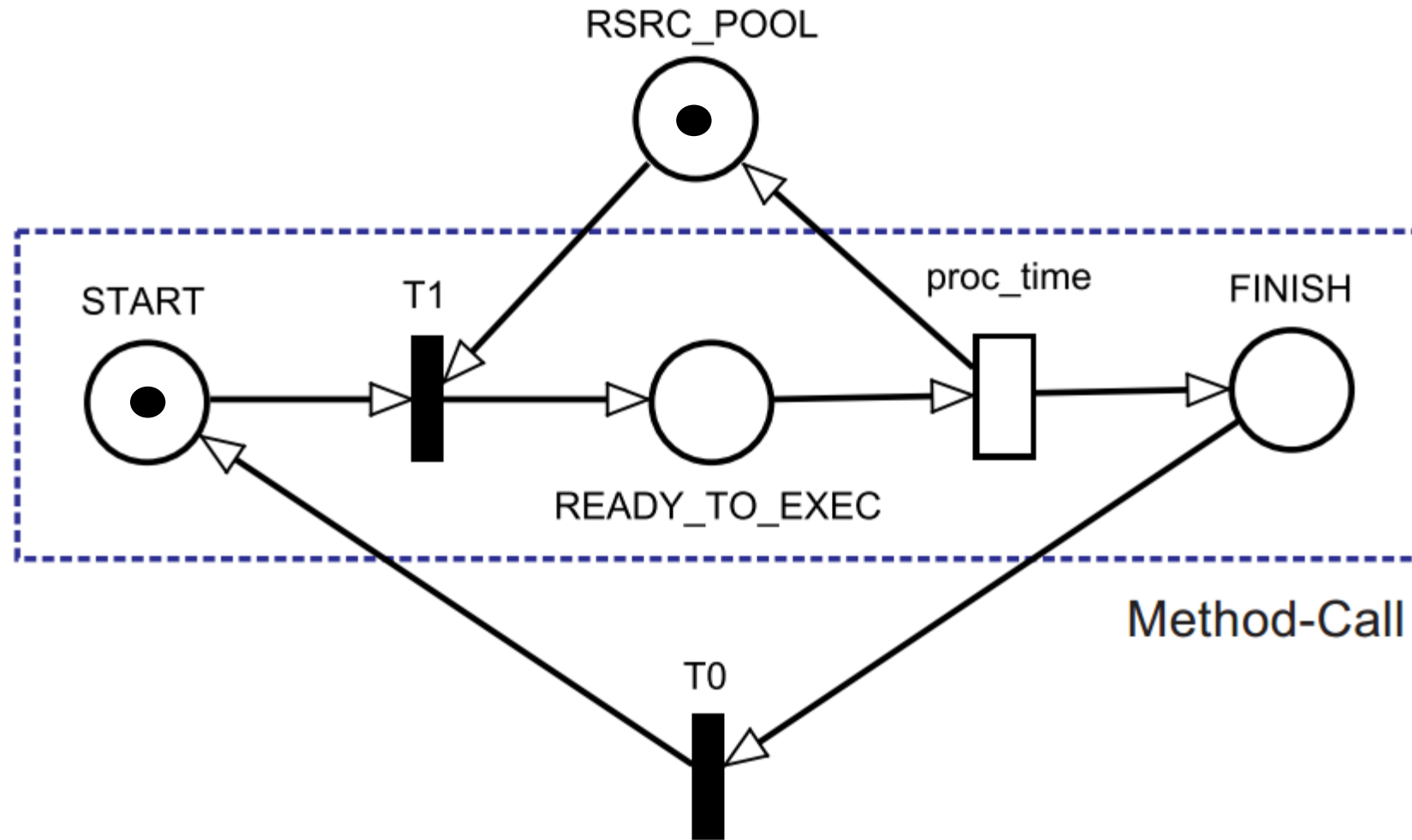


Modelling





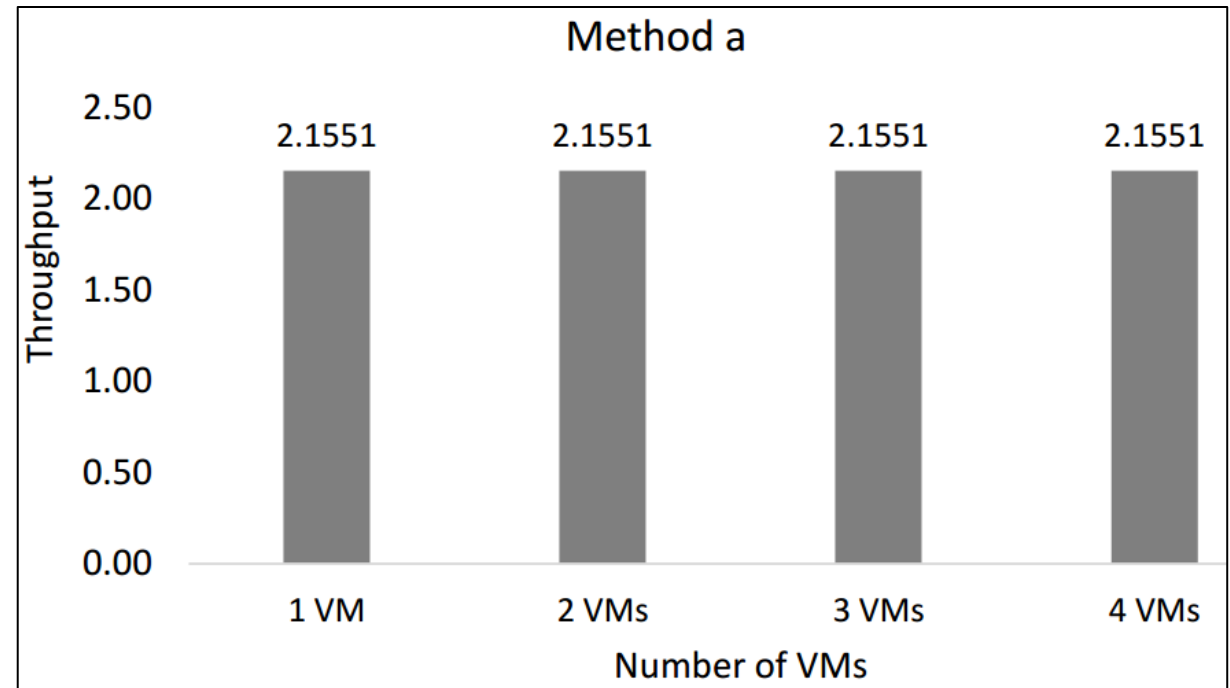
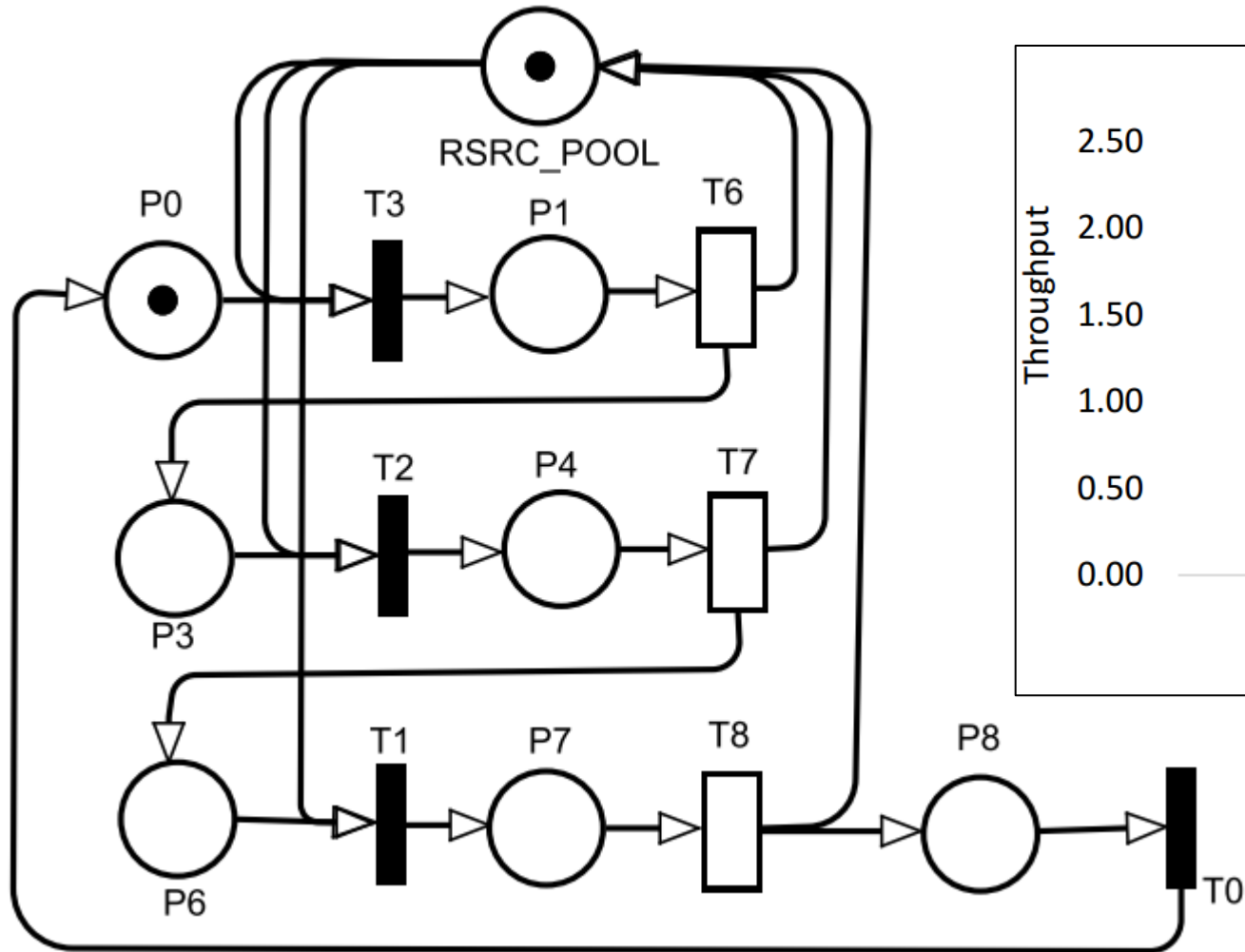
Modelling





method_A()

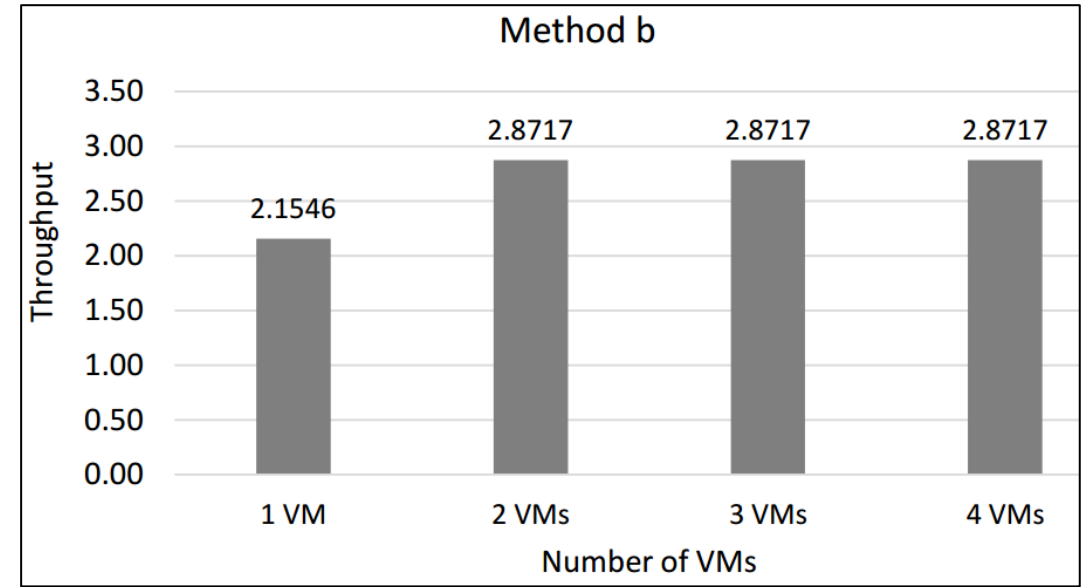
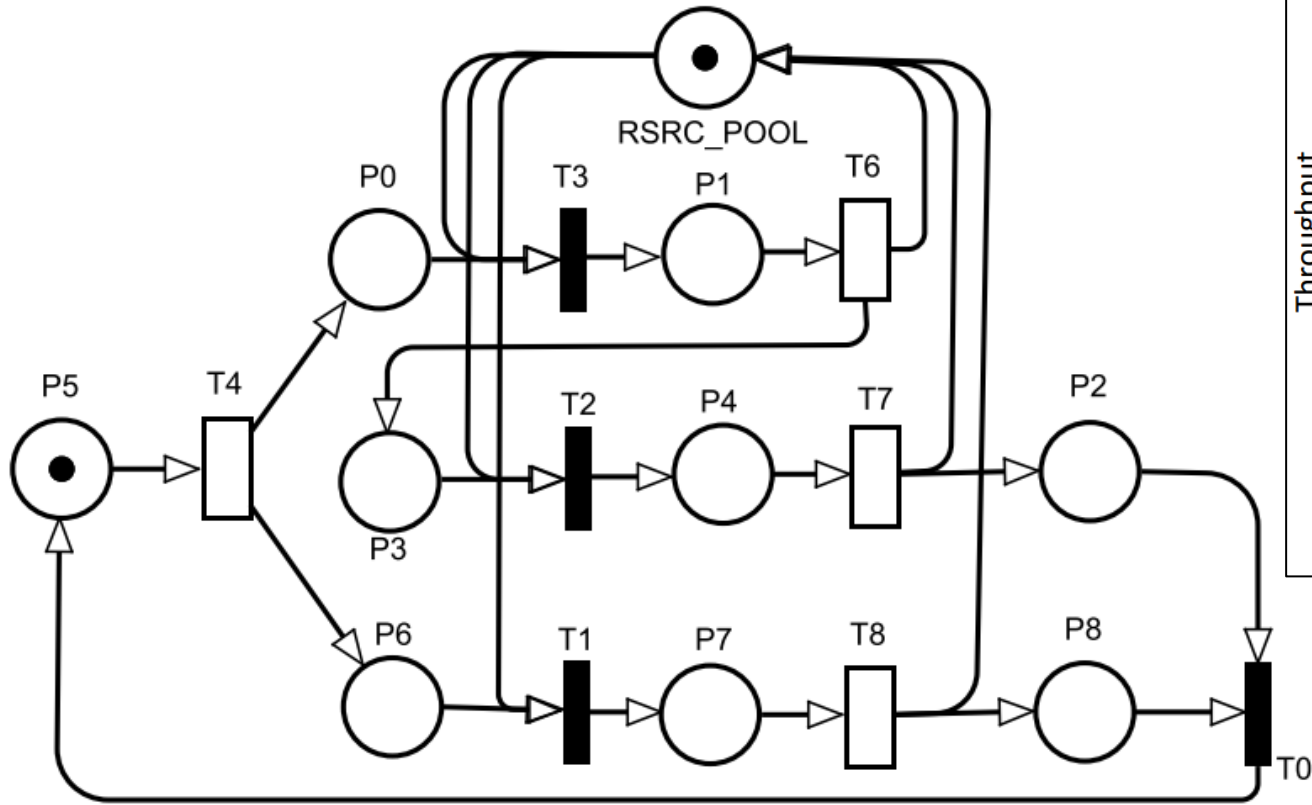
Totally Sequential





method_B()

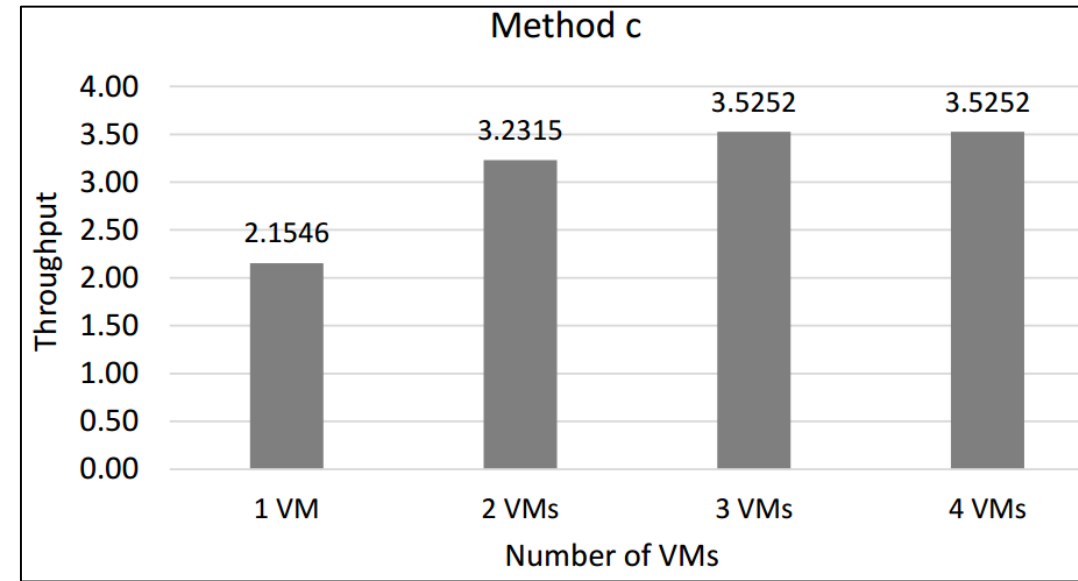
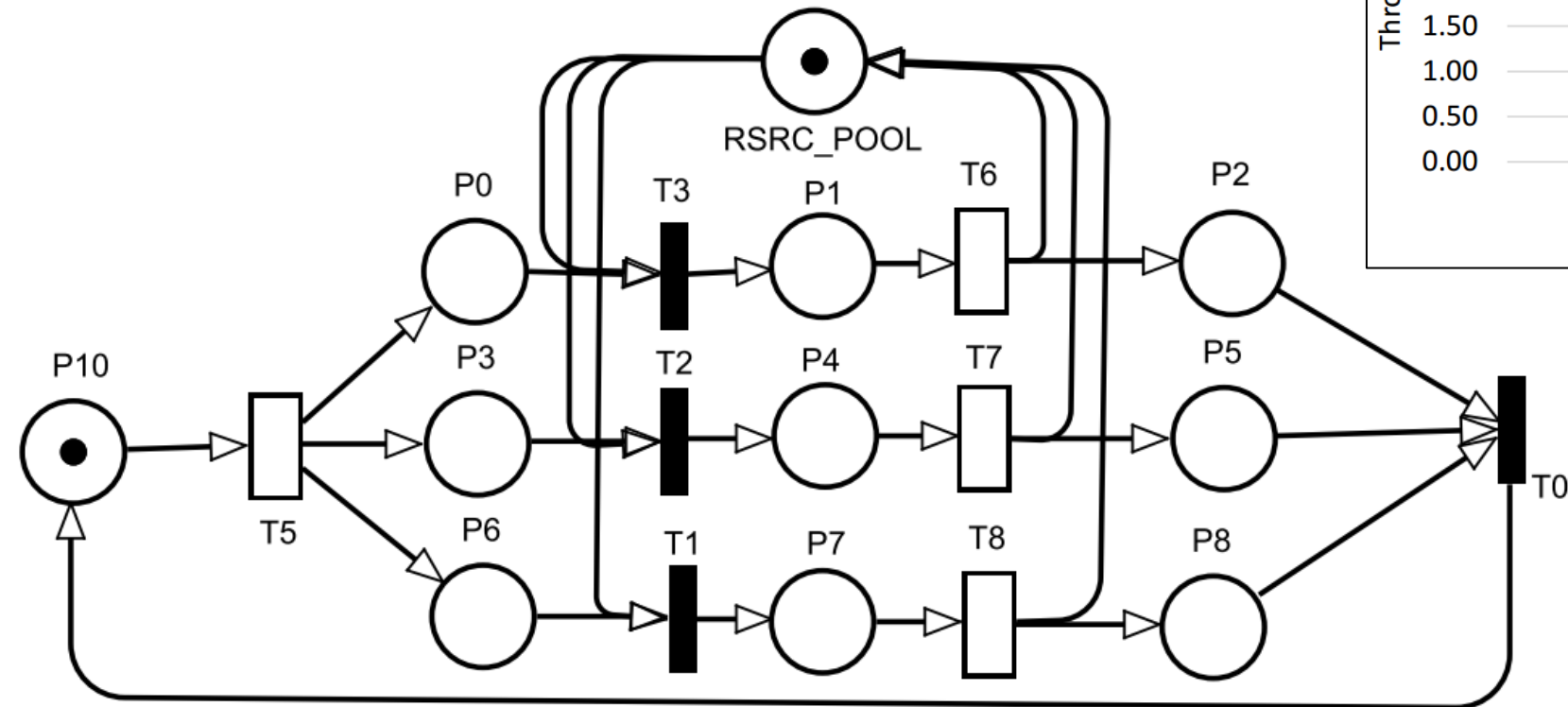
Partially Parallel





method_C()

Totally Parallel

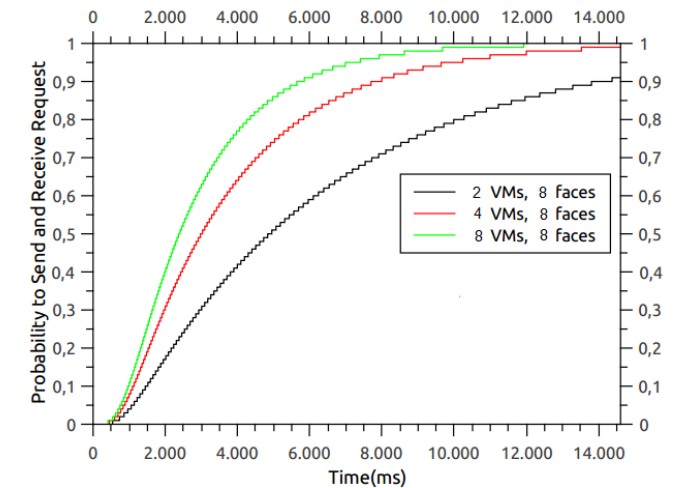
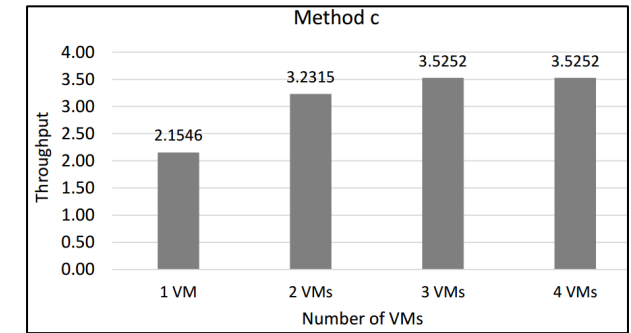
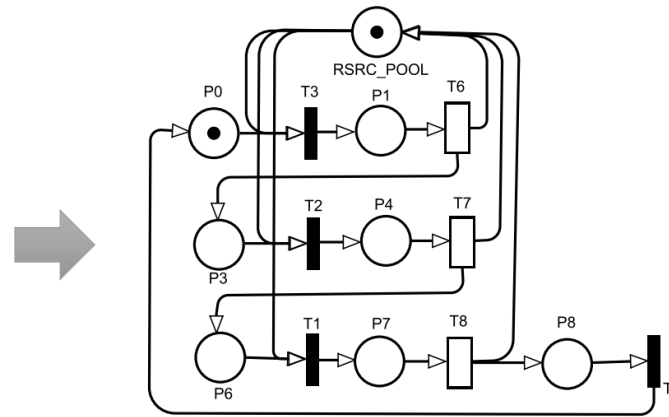




Work in Progress (Code Analyzer)

How many VMs I need?

```
public List<Image> method_A (Image image){  
    Image image2 = reduceColor ( image );  
    Image image3 = reduceColor ( image2 );  
    Image image4 = reduceColor ( image3 );  
    results.add ( image4 );  
    return results;  
}
```



What probability of processing in 2 seconds?



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