

VI-HPS

SOFTWARE



FAST SOLUTIONS

BPAP, 11, OCM
BPAP, 11, KCM
BPAP, 12, OCM
BPAP, 12, KCM
BPAP, 12, TCM

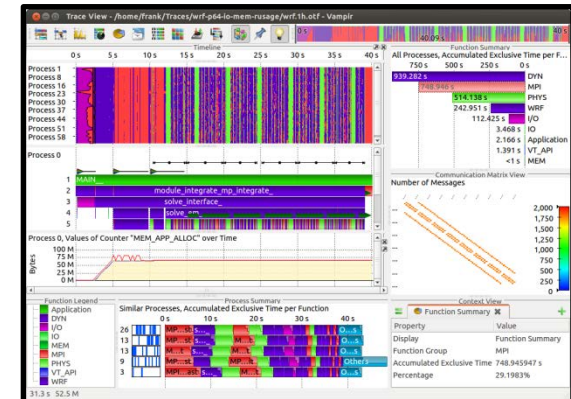
PRODUCTIVITY

Performance Analysis with Vampir

Joseph Schuchart

ZIH, Technische Universität Dresden

- Visualization of dynamics of complex parallel processes
- Full details for arbitrary temporal and spatial levels
- Supplement to automatic analysis

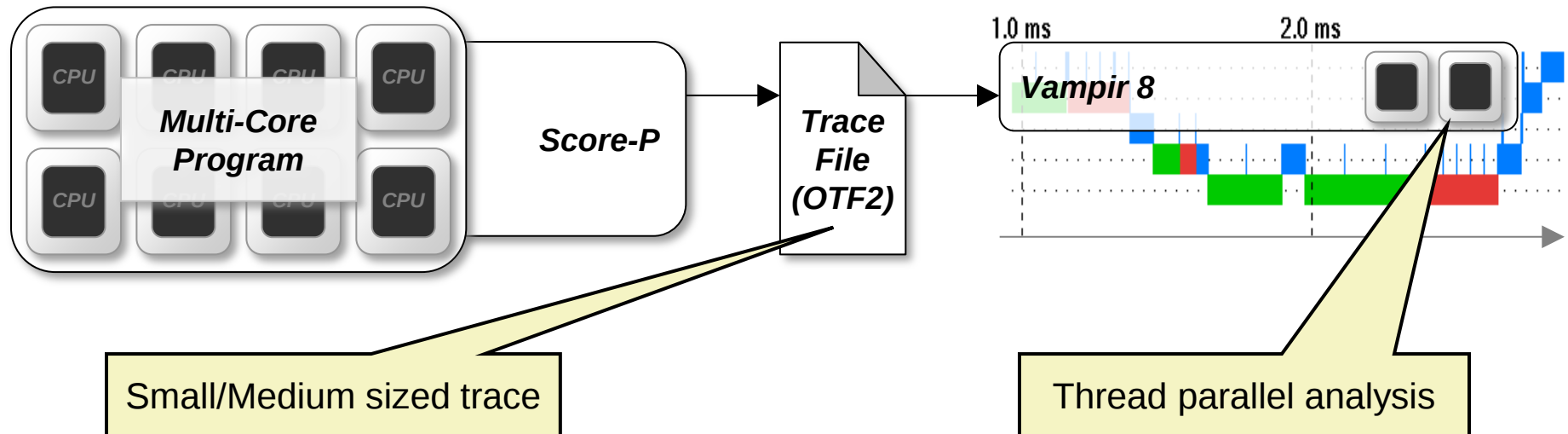


Typical questions that Vampir helps to answer:

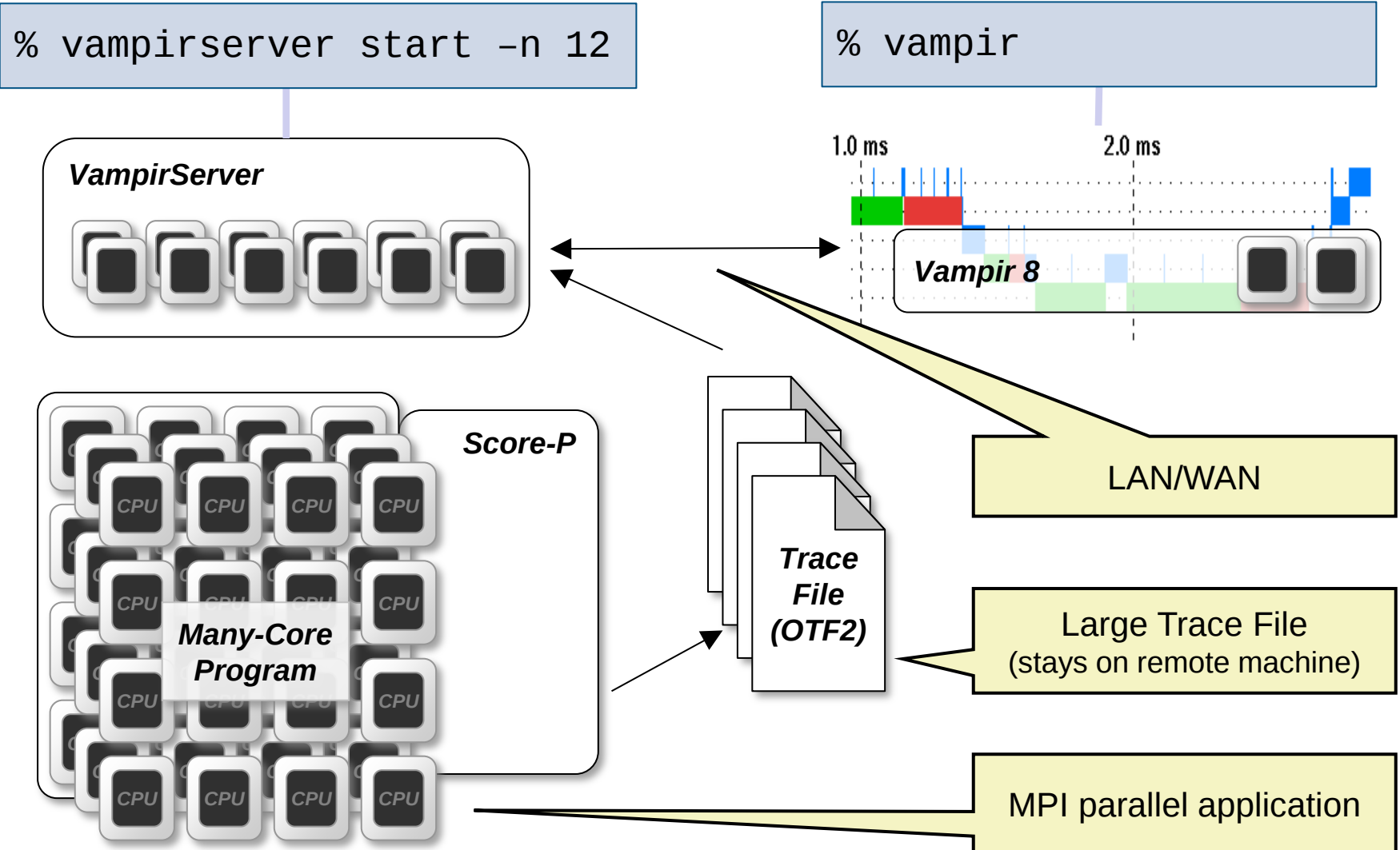
- What happens in my application execution during a given time in a given process or thread?
- How do the communication patterns of my application execute on a real system?
- Are there any imbalances in computation, I/O or memory usage and how do they affect the parallel execution of my application?

- Directly on front end or local machine

```
% vampir
```



- On local machine with remote VampirServer



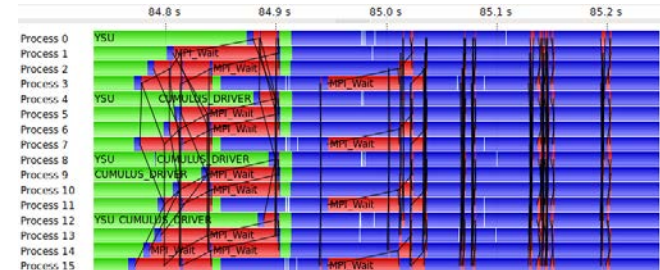
- Vampir & VampirServer
 - Interactive trace visualization and analysis
 - Intuitive browsing and zooming
 - Scalable to large trace data sizes (20 TByte)
 - Scalable to high parallelism (200000 processes)
- Vampir for Linux, Windows and Mac OS X

- **Timeline Charts:**

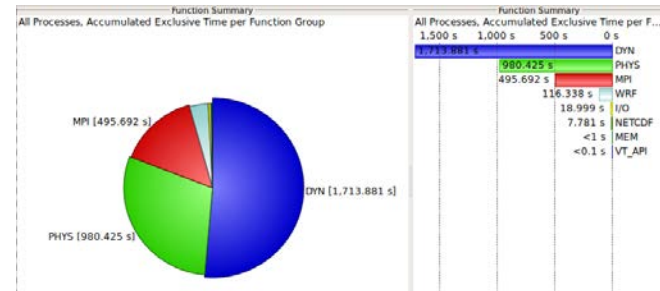
-  Master Timeline
-  Process Timeline
-  Counter Data Timeline
-  Performance Radar

- **Summary Charts:**

-  Function Summary
-  Message Summary
-  Process Summary
-  Communication Matrix View



Show application activities and communication along a time axis



Provide quantitative results for the currently selected time interval

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Vampir hands-on

Visualizing and analyzing NPB-MZ-MPI / BT

- Load modules

```
% module use /work/y14/shared/modules
% module load vampir
vampir/8.2.1 loaded
```

- Write down the host on which the server runs

```
% vampirserver start -n 23 -t 600 -- -A=y14
Launching VampirServer...
VampirServer 8.2.1 (r8876)
Licensed to VI-HPS Tools Workshop 05/2014
Running 23 analysis processes... (abort with vampirserver stop 28725)
VampirServer <28725> listens on: localhost:30015
Please run:
    ssh -L30001:localhost:30015 <user>@login1.archer.ac.uk
on your desktop to create ssh tunnel to VampirServer.
```

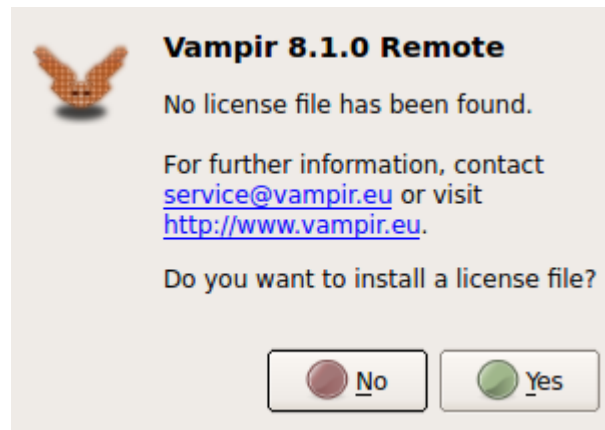
- Start a new shell on you laptop
- Copy the vampir-remote.zip package from JUQUEEN to your laptop

```
% scp login.archer.ac.uk:/work/y14/shared/tutorial/vampire-remote.zip .
```

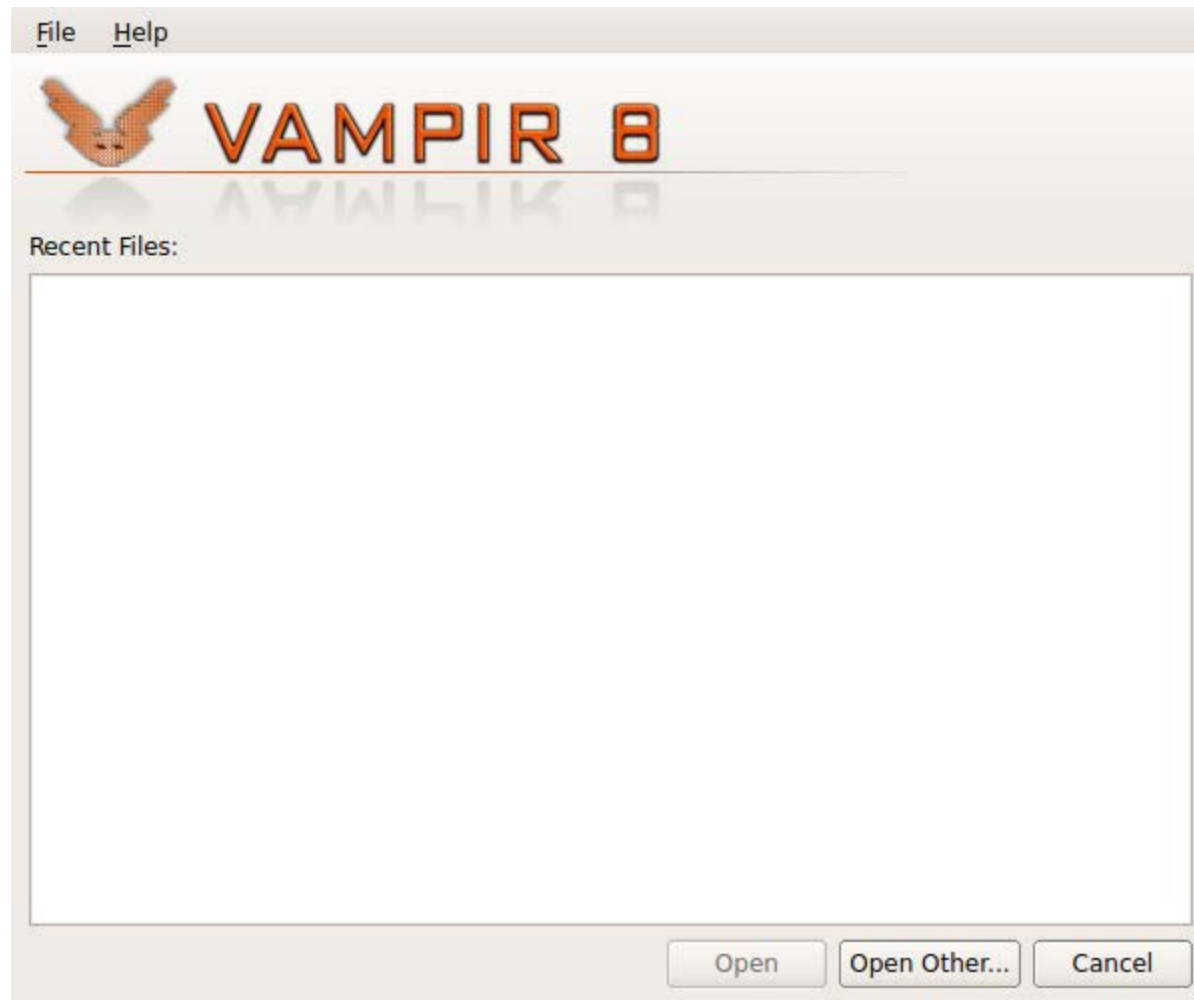
- Extract the archive and chose an appropriate package for your platform

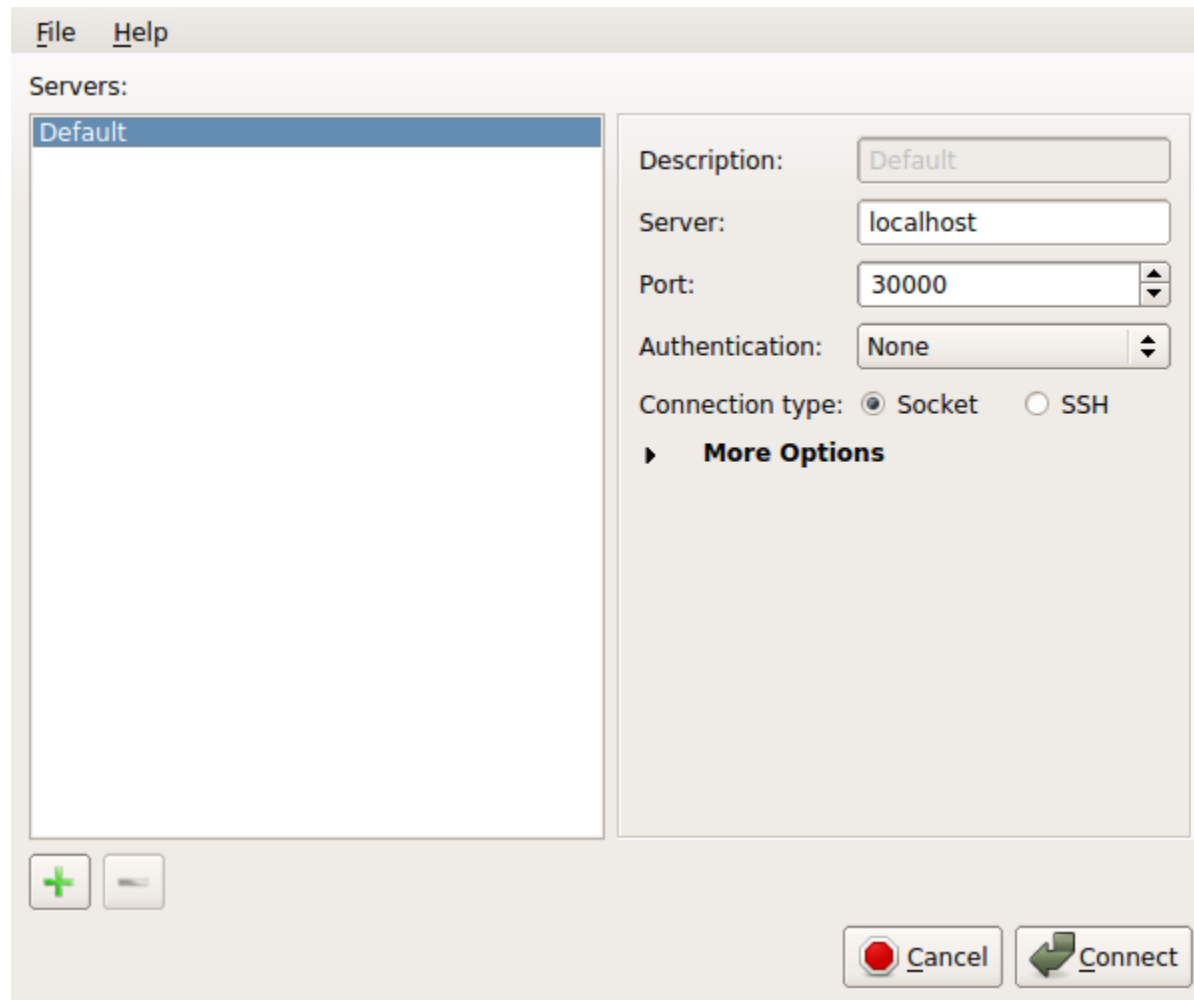
```
% unzip vampir-remote.zip
% cd vampir-remote
% ls
vampir-8.2.1-linux-ia32-setup.bin
vampir-8.2.1-linux-x86_64-setup.bin
Vampir-8.2.1-mac.dmg
Vampir-8.2.1-mac-x86_64.dmg
Vampir-8.2.1-x64-setup.exe
Vampir-8.2.1-x86-setup.exe
vampir-remote.license
```

- Start the Vampir GUI

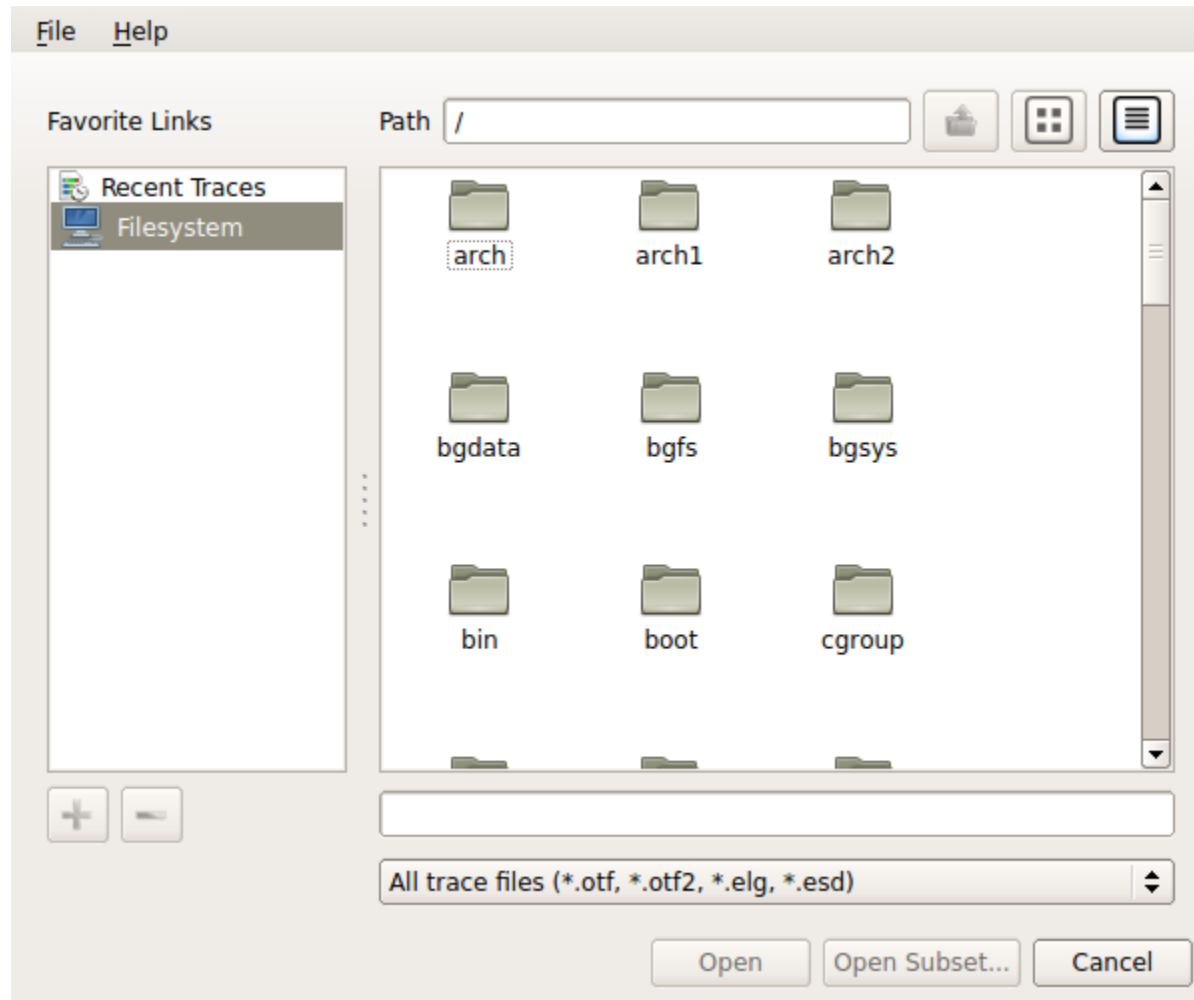


- Select the [vampir-remote.licence](#) from the archive file when asked

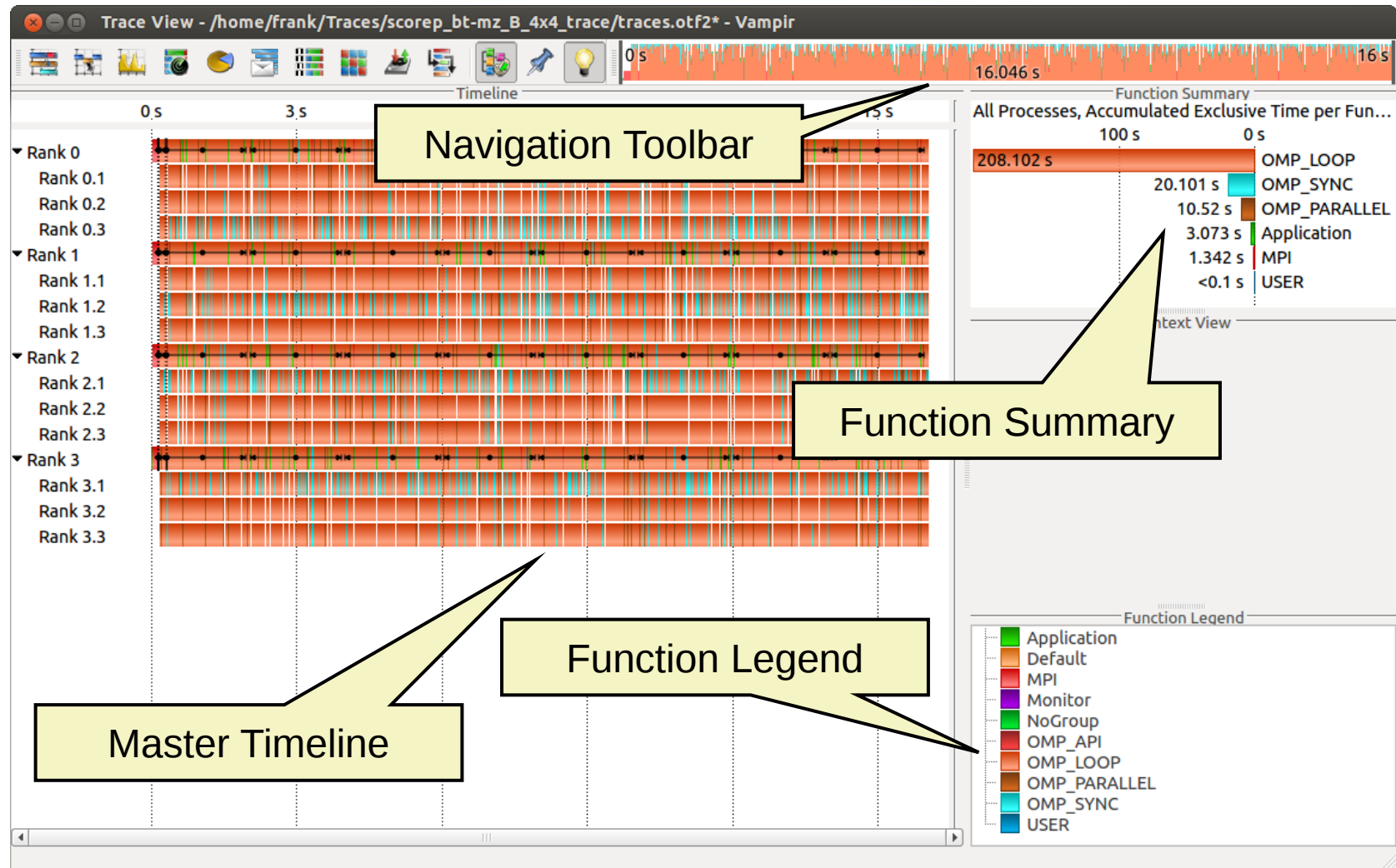




Select trace to open from remote Server

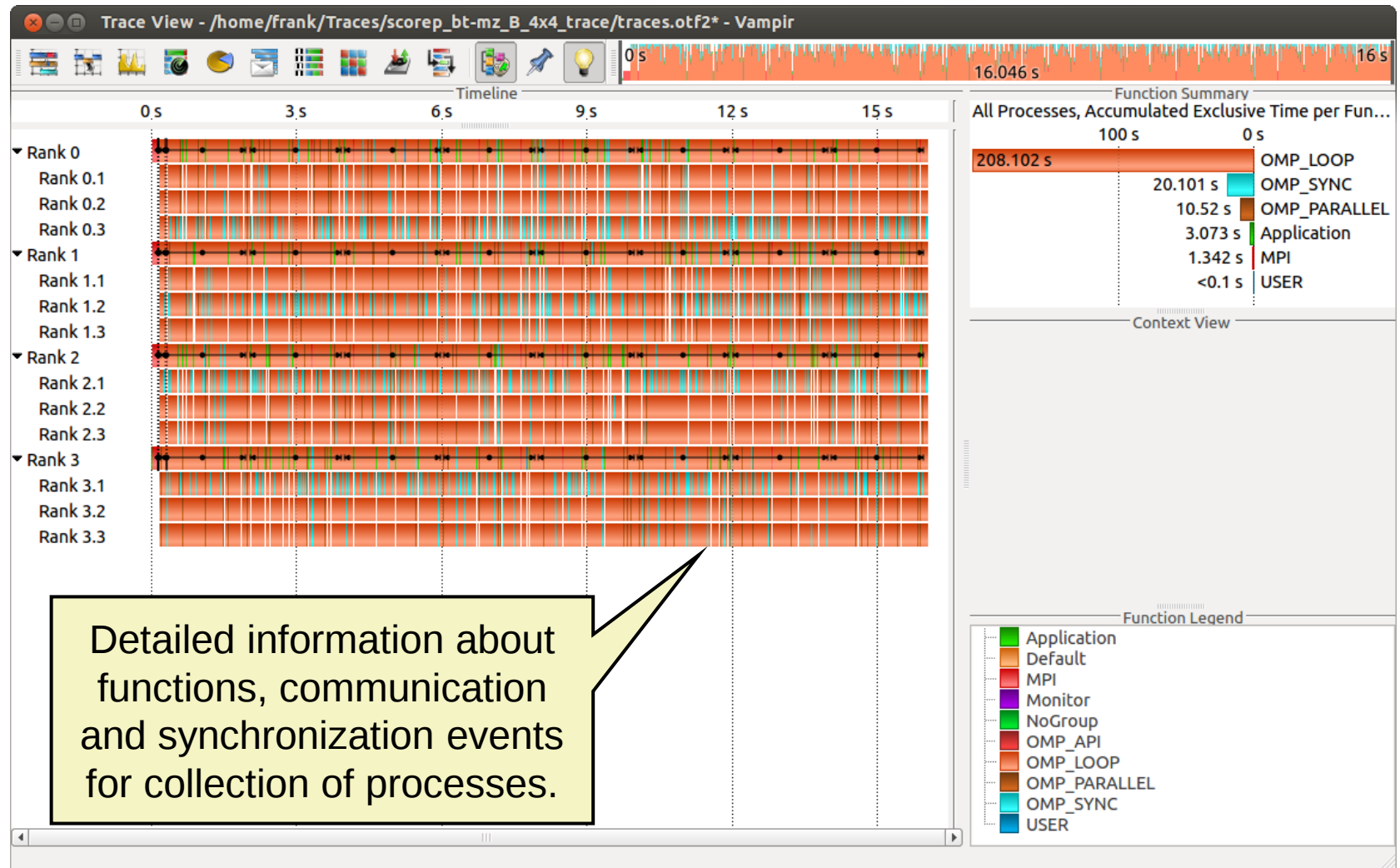


```
% vampir scorep_bt-mz_B_4x4_trace
```



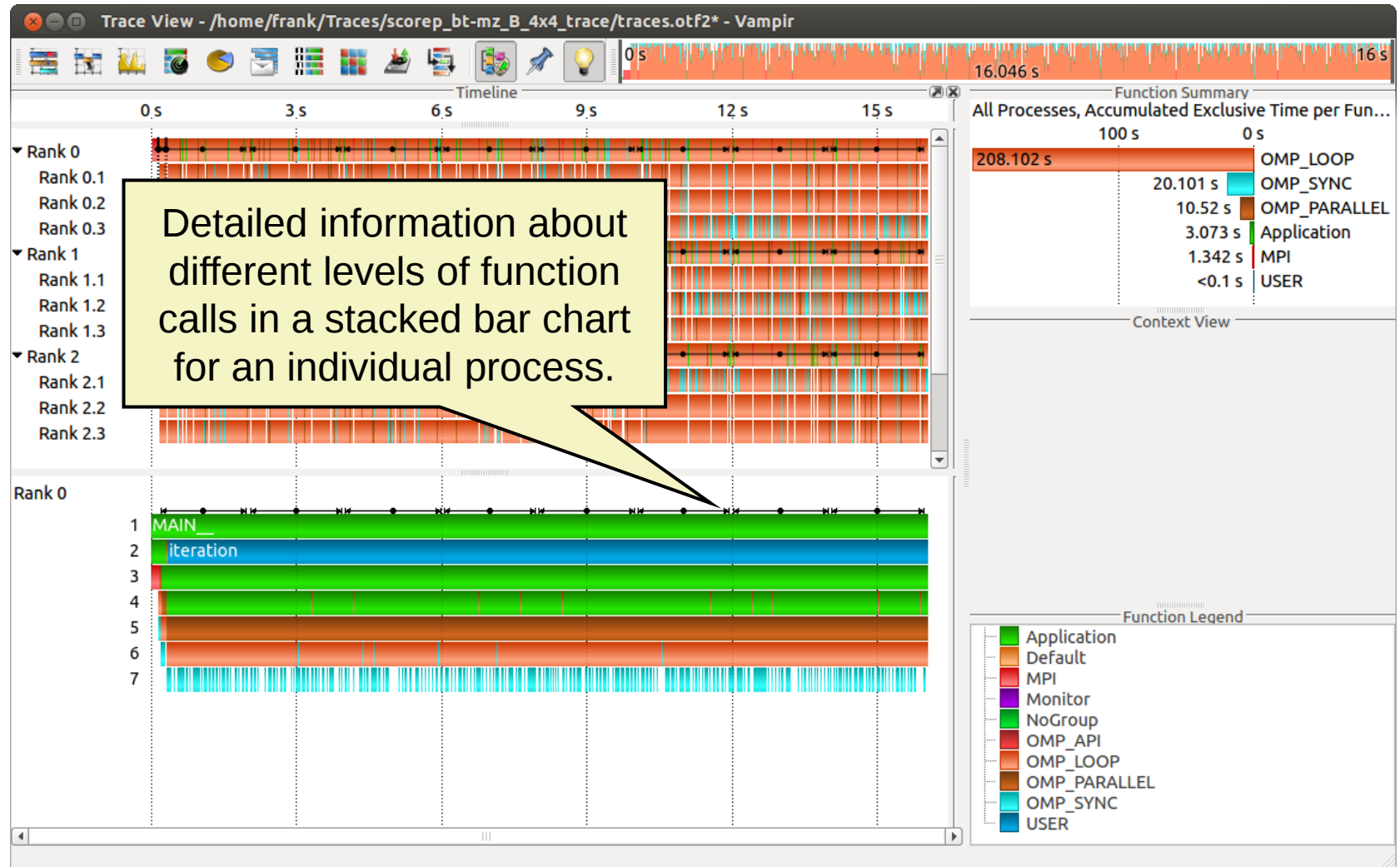


Master Timeline

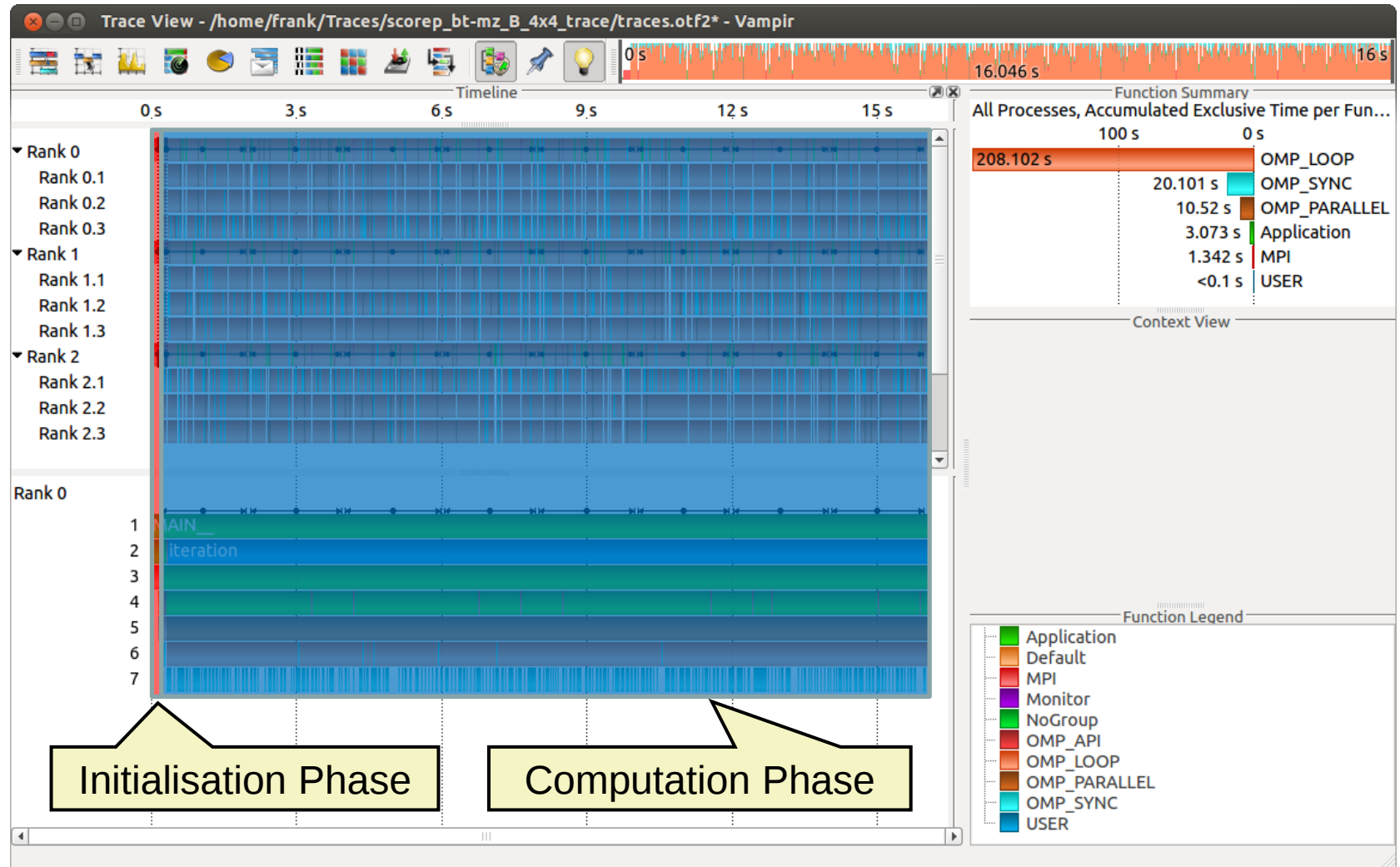




Process Timeline

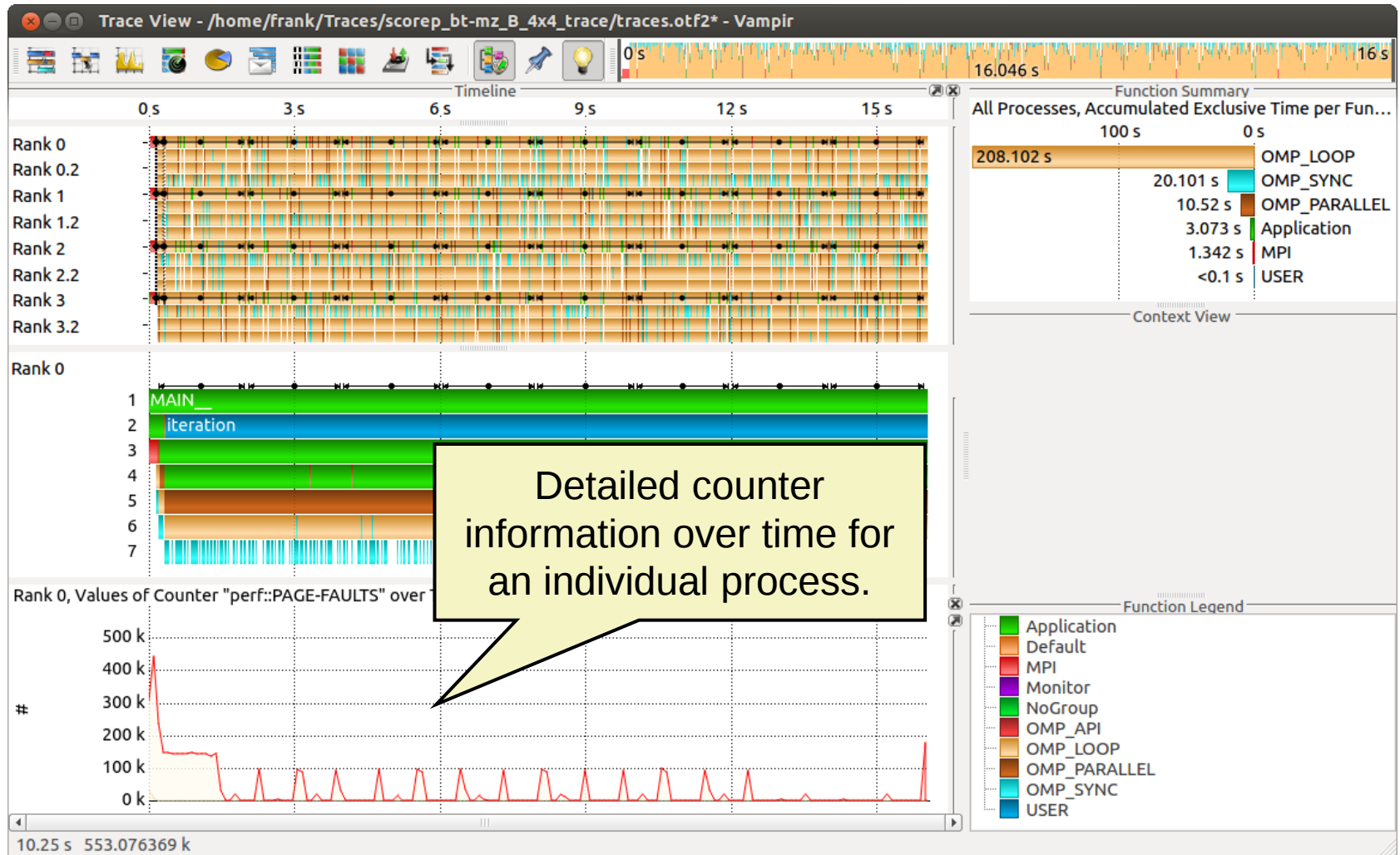


Typical program phases



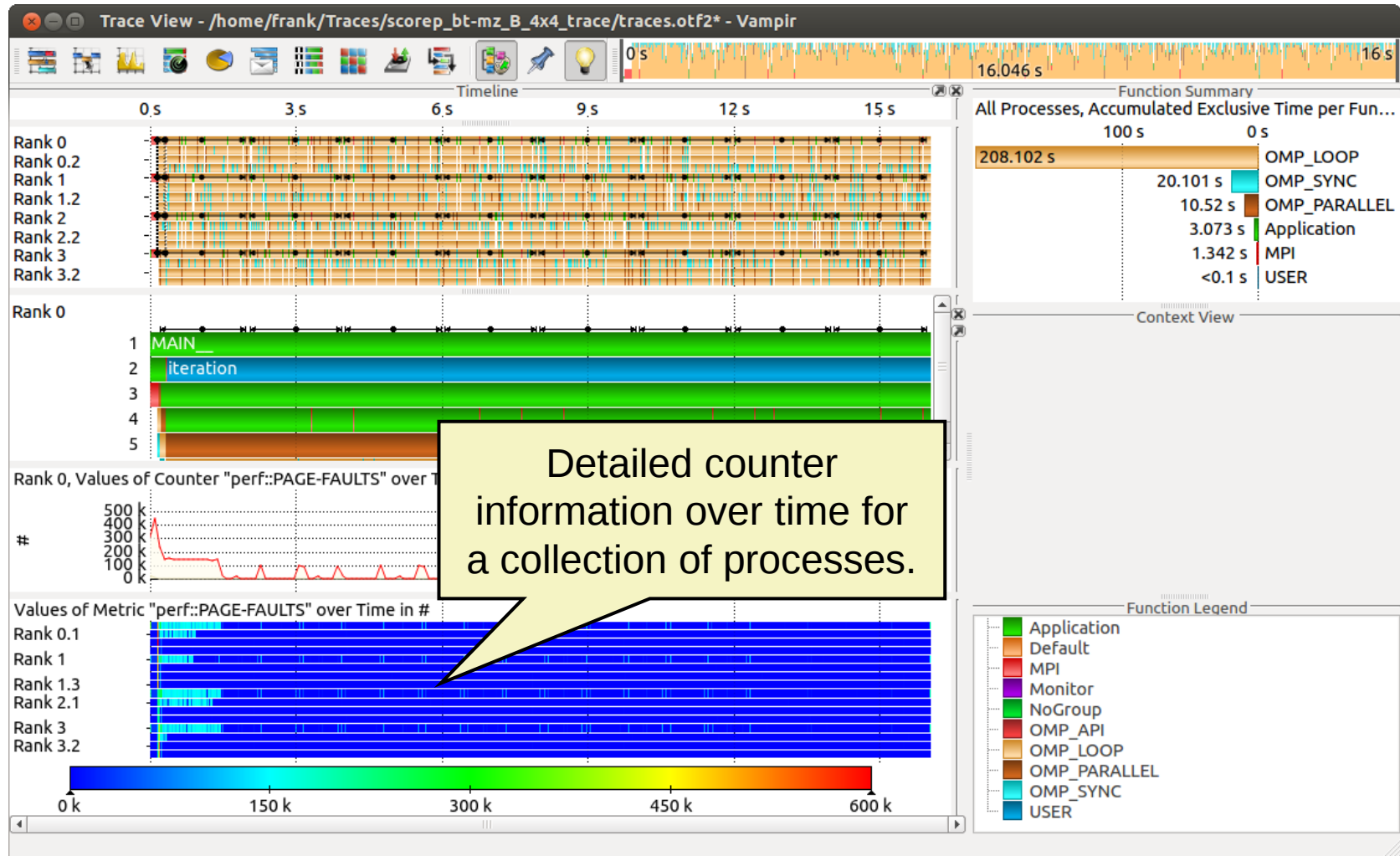


Counter Data Timeline

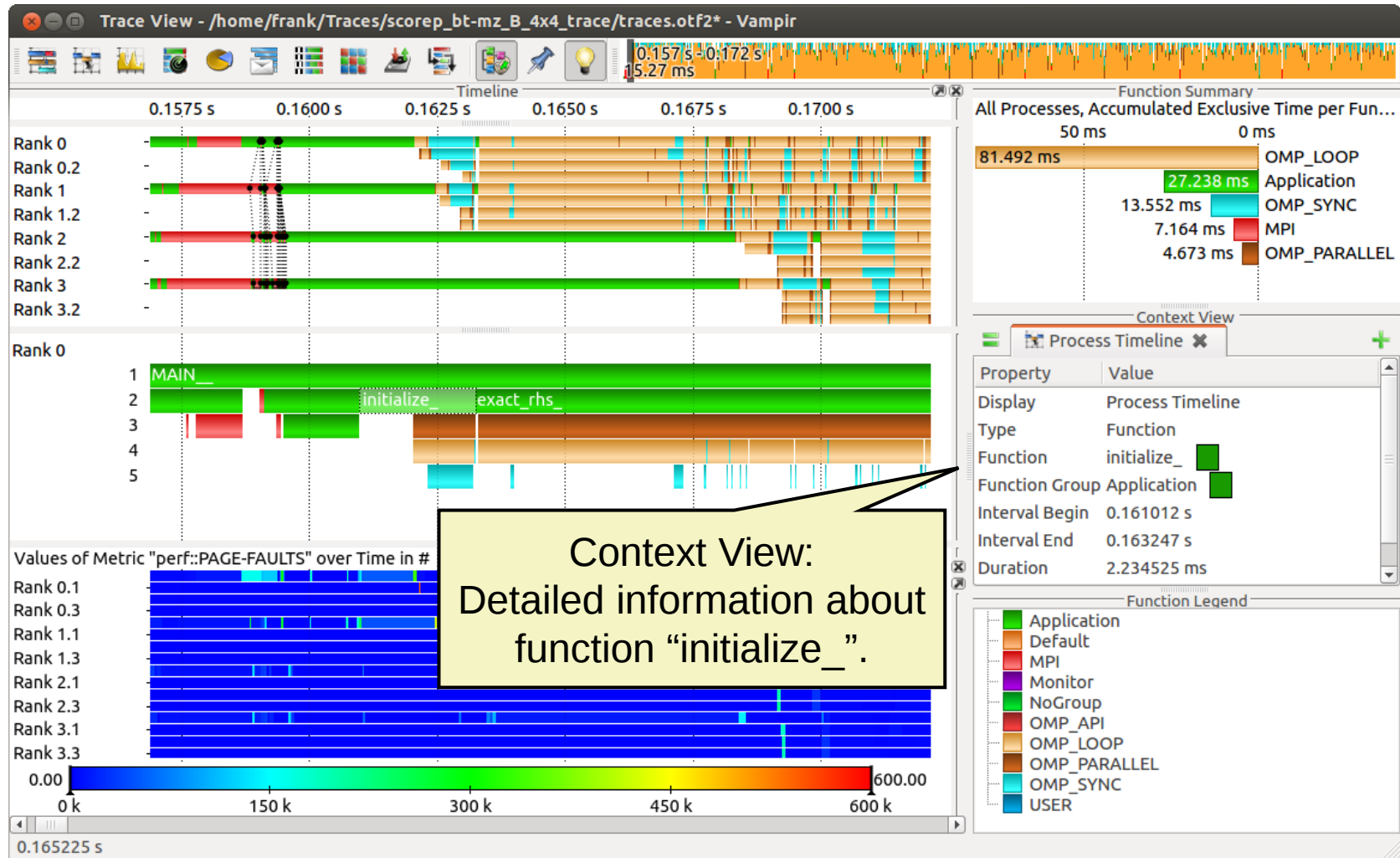




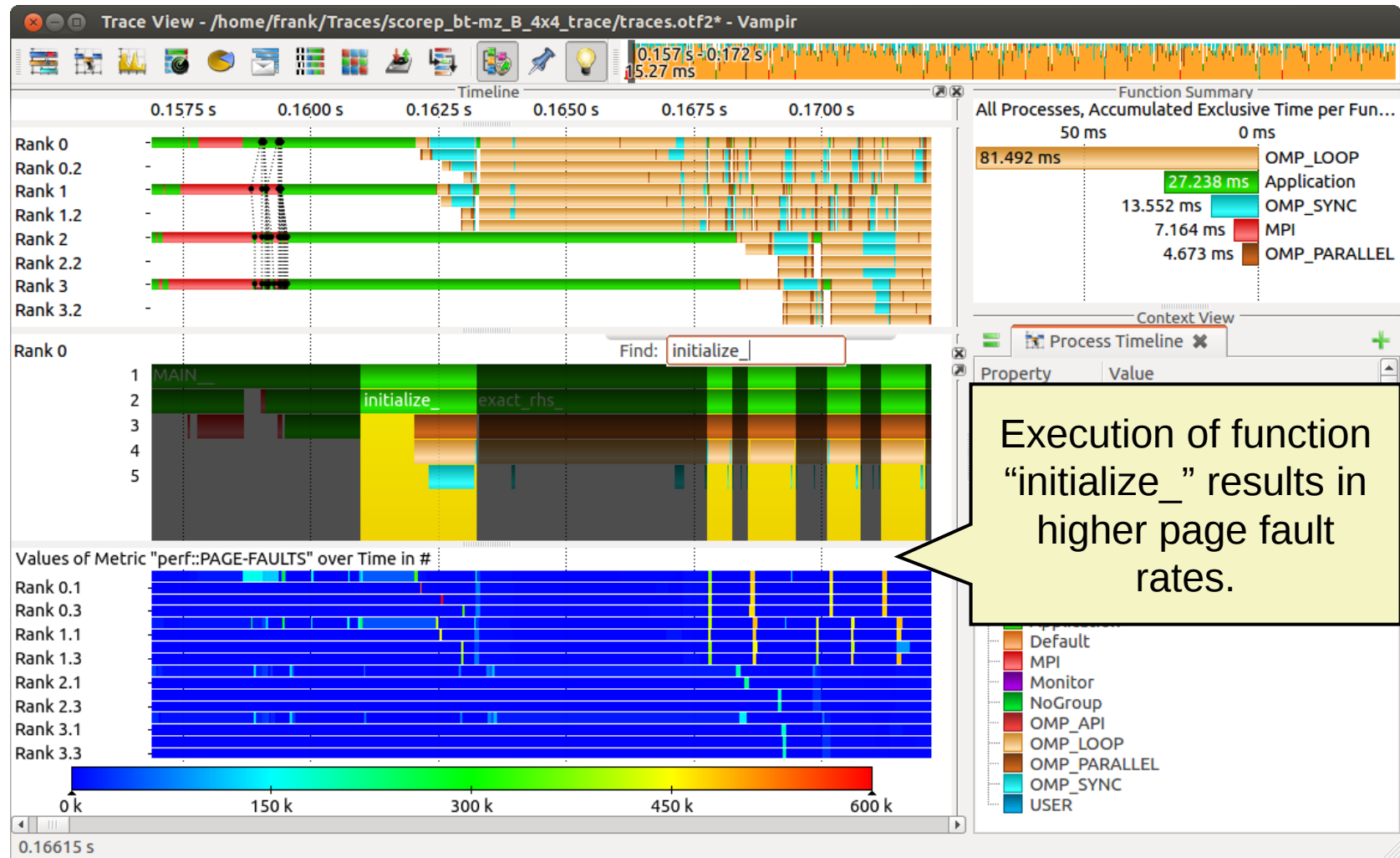
Performance Radar



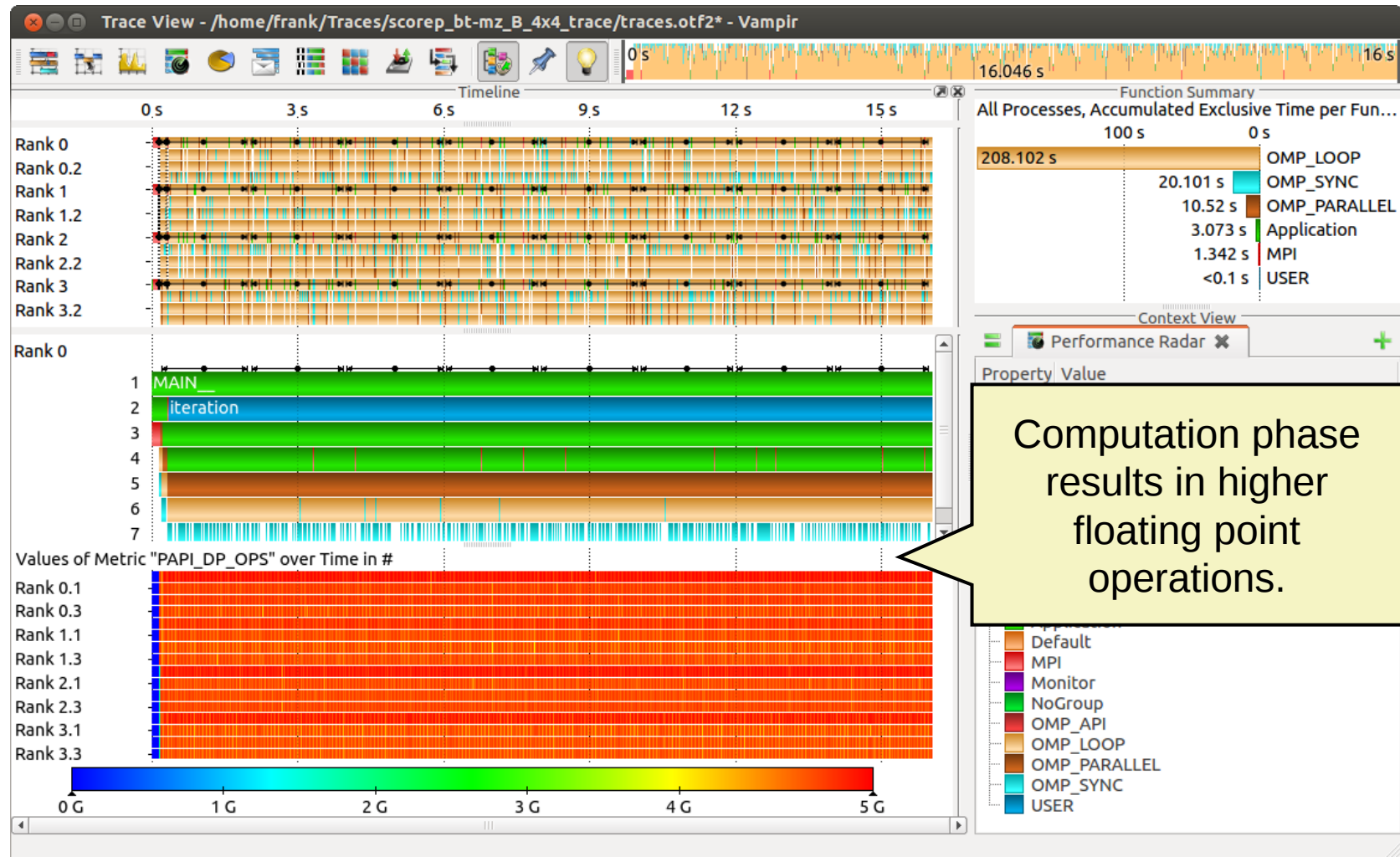
Zoom in: Initialisation Phase



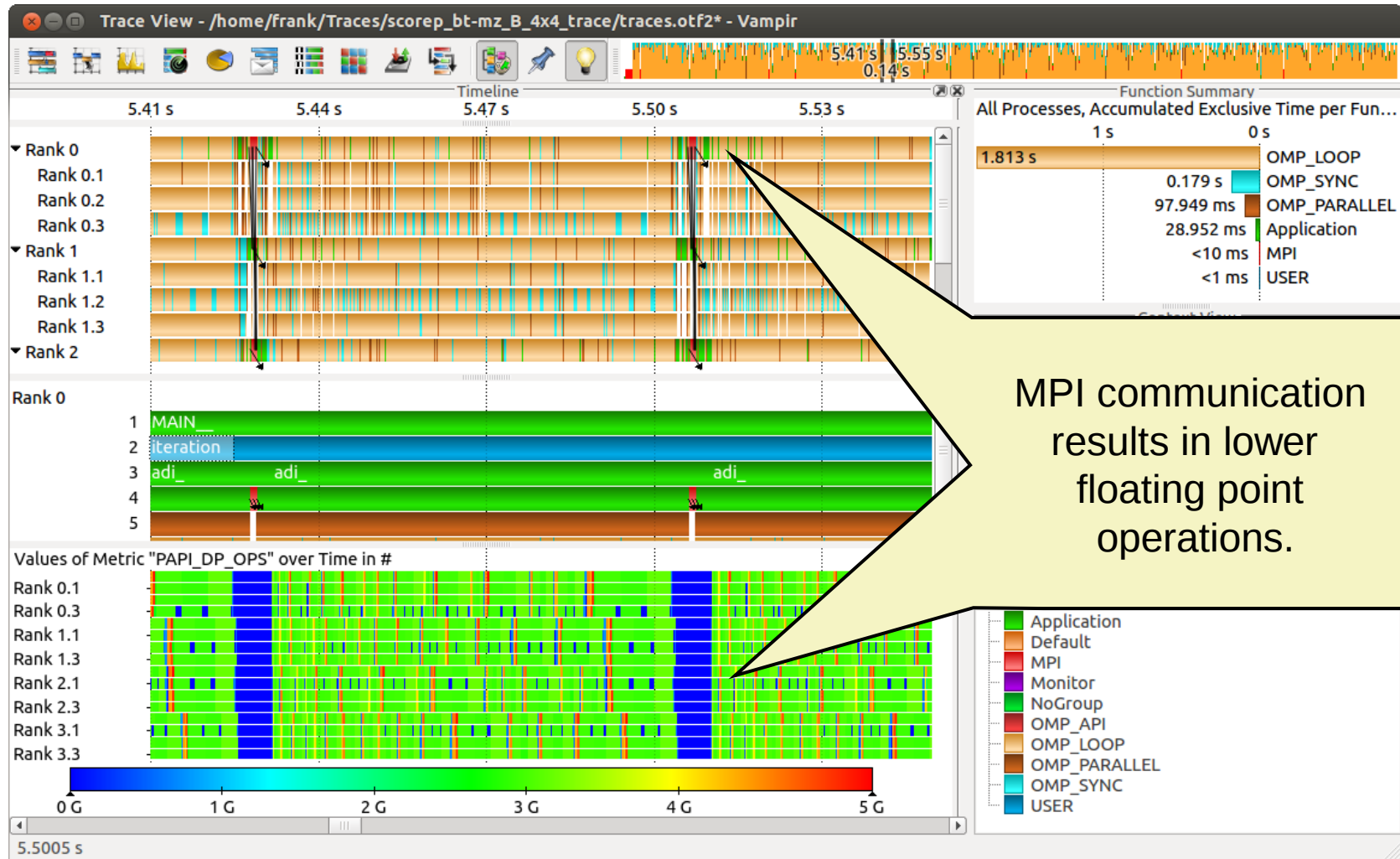
Feature: Find Function



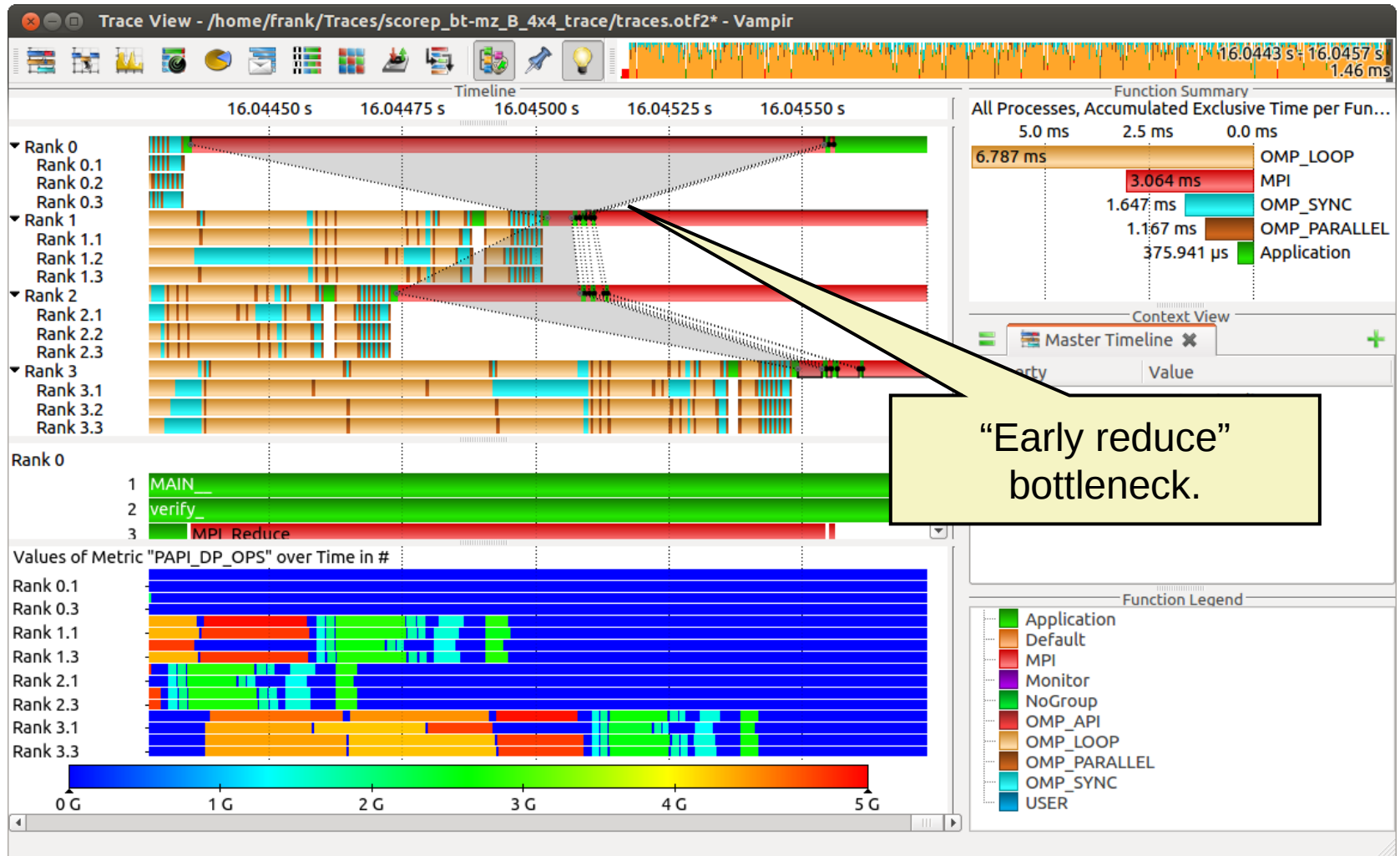
Computation Phase



Zoom in: Computation Phase

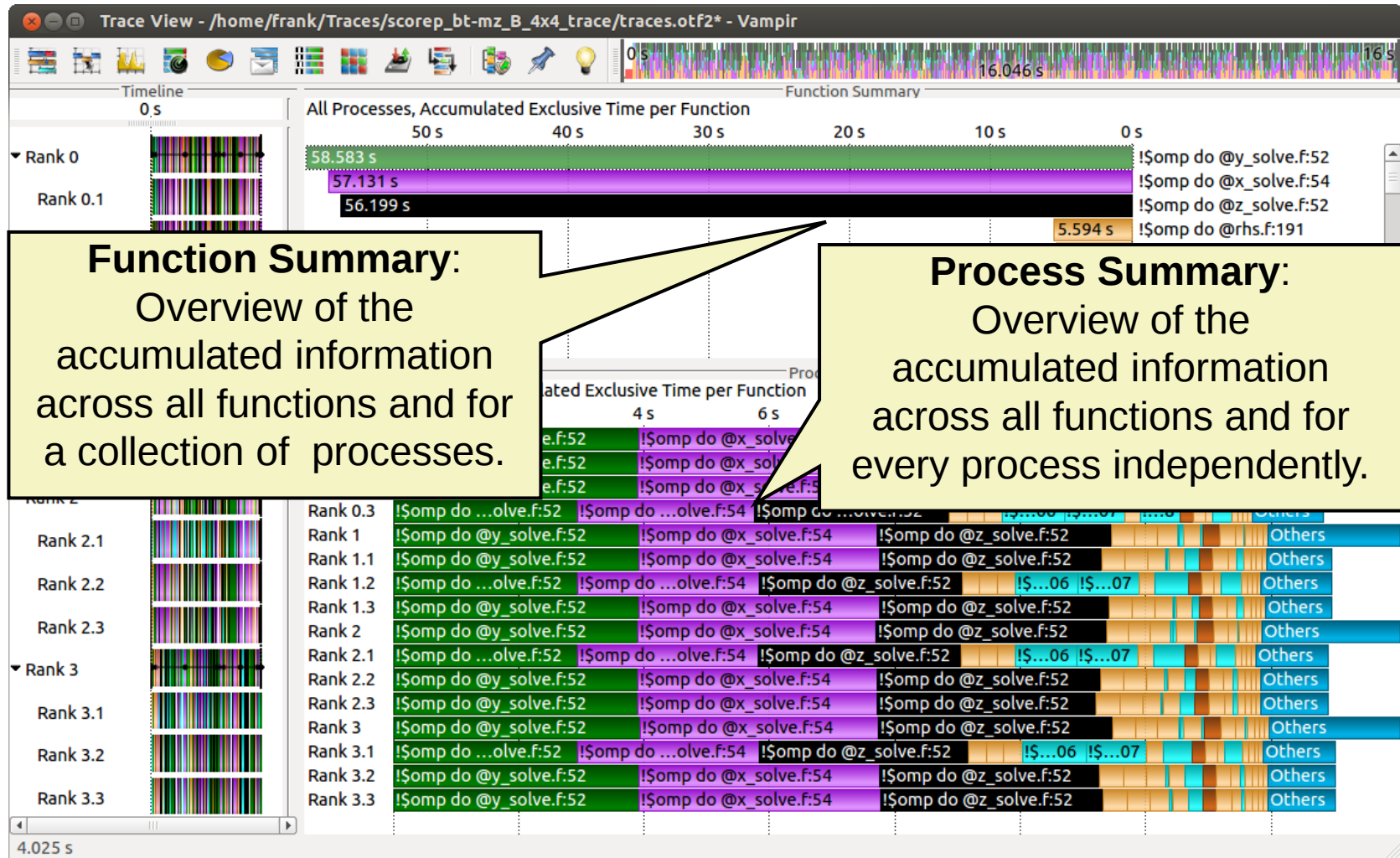


Zoom in: Finalisation Phase



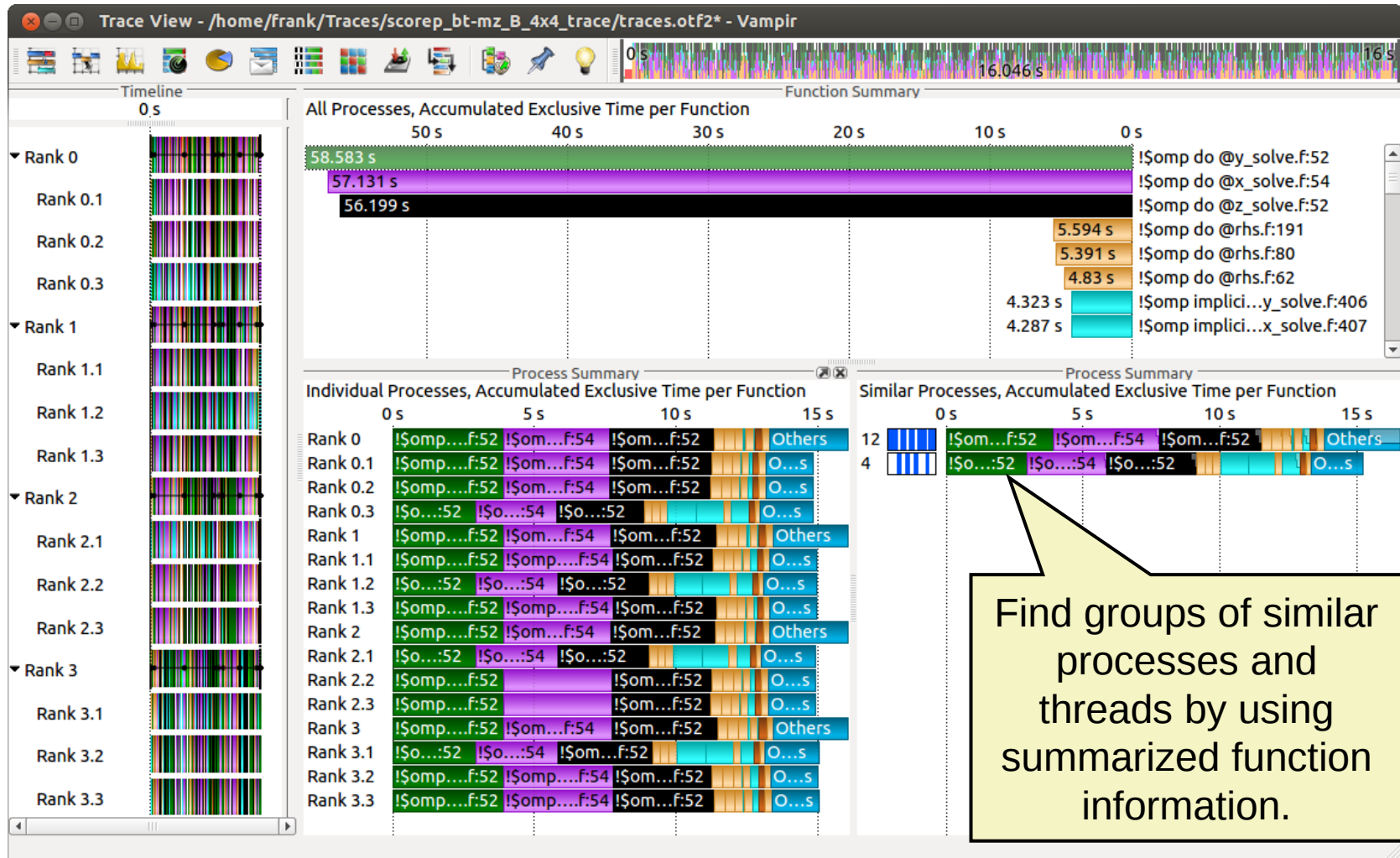


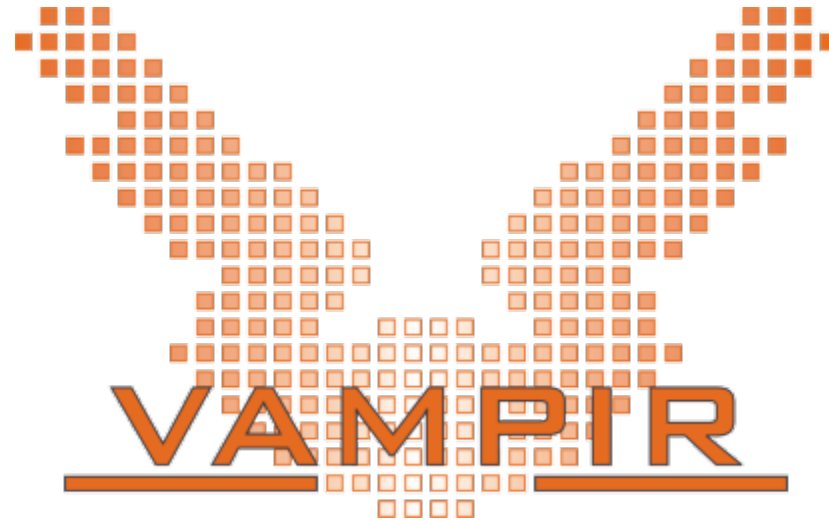
Process Summary





Process Summary





Vampir is available at <http://www.vampir.eu>,
get support via vampirsupport@zih.tu-dresden.de