On the road towards personalised medicine, secure data-sharing is an essential prerequisite to enable healthcare use-cases (e.g. training and sharing machine learning models, wearables data-streaming, etc.). On the other hand, working in silos is still dominating today’s health data usage. A significant challenge to address, here, is to set up a collaborative data-sharing environment that will support the requested application while also ensuring uncompromised security across communicating nodes.

EPI Framework is a novel data-sharing framework to support healthcare applications via virtualising network Services and automating security function setup.

**Abstract**

On the road towards personalised medicine, secure data-sharing is an essential prerequisite to enable healthcare use-cases (e.g. training and sharing machine learning models, wearables data-streaming, etc.). On the other hand, working in silos is still dominating today’s health data usage. A significant challenge to address, here, is to set up a collaborative data-sharing environment that will support the requested application while also ensuring uncompromised security across communicating nodes.

**Results**

<table>
<thead>
<tr>
<th>Topology</th>
<th>Name</th>
<th>CP (ms)</th>
<th>DP (ms)</th>
<th>DQ (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proxy-in-between</td>
<td>DOCKER 1</td>
<td>1</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Proxy-in-between</td>
<td>DOCKER 2</td>
<td>10</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Proxy-in-between</td>
<td>DOCKER 3</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Proxy-in-between</td>
<td>DOCKER 4</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Proxy-in-between</td>
<td>DOCKER 5</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

**Conclusion**

Manipulating traffic is a core feature within the EPI framework to enforce network services route:

- We evaluated and benchmarked two different approaches
- \( \Delta t \) depends on positioning of the proxy
- What proxy to deploy? The choice depends on:
  - The application requirements
  - Specific relevance of performance parameters
  - Time-critical application, NGINX
  - Data streaming application, SOCKS6

**Ongoing work:**

- Implementing more EPIF functionalities
- Bridging Function Chaining
- Uniform interfaces of bridging functions
- Extra plug-ins needed in the redirection tools