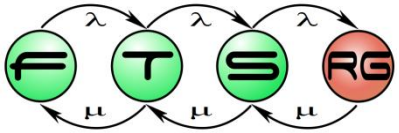
Esettanulmány: cloud rendszerek szolgáltatásbiztonságának vizsgálata

Rendszermodellezés gyakorlat

Kocsis Imre és Salánki Ágnes fóliái

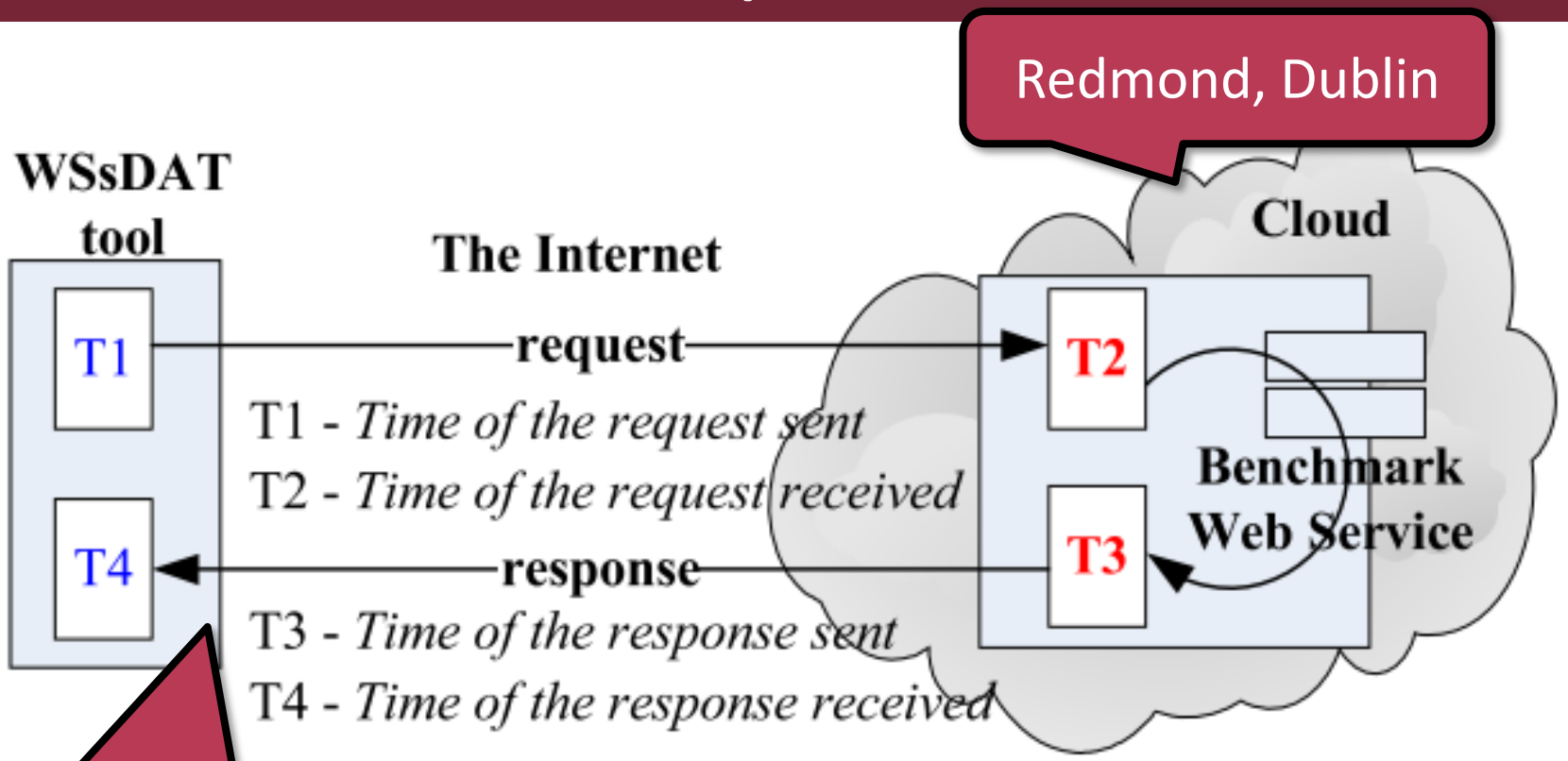
Pataricza, A., Kocsis, I., Salánki, Á., & Gönczy, L. (2013). Empirical Assessment of Resilience. In *Software Engineering for Resilient Systems* (pp. 1-16). Springer Berlin Heidelberg.



Delay analysis

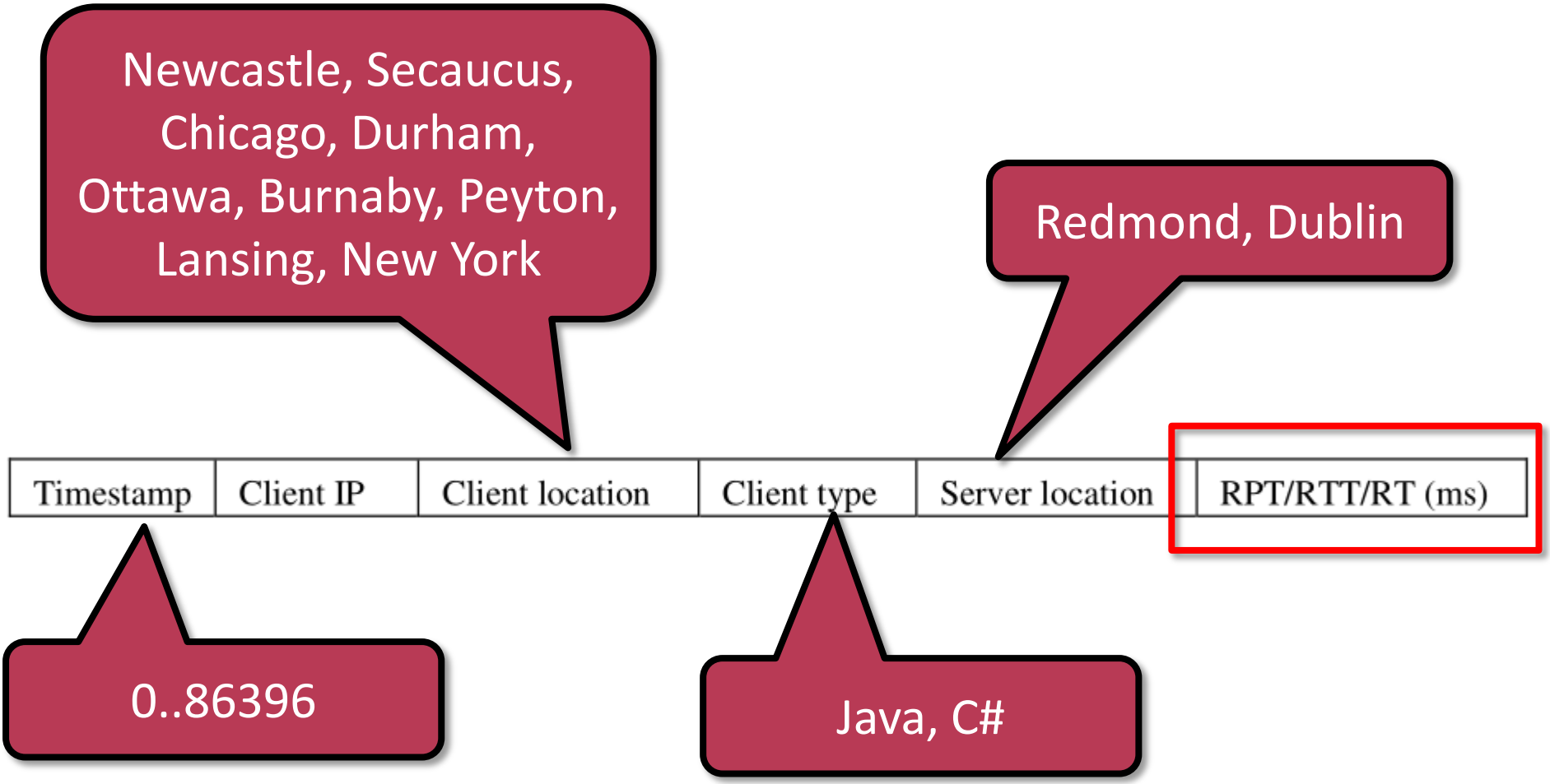
- Gorbenko et al. [8]
- Benchmarking of a cloud-based web-service
- Analysis of delay factors in end-to-end RT
- Comparison of different
  - Client locations
  - Client technology
  - Cloud technology

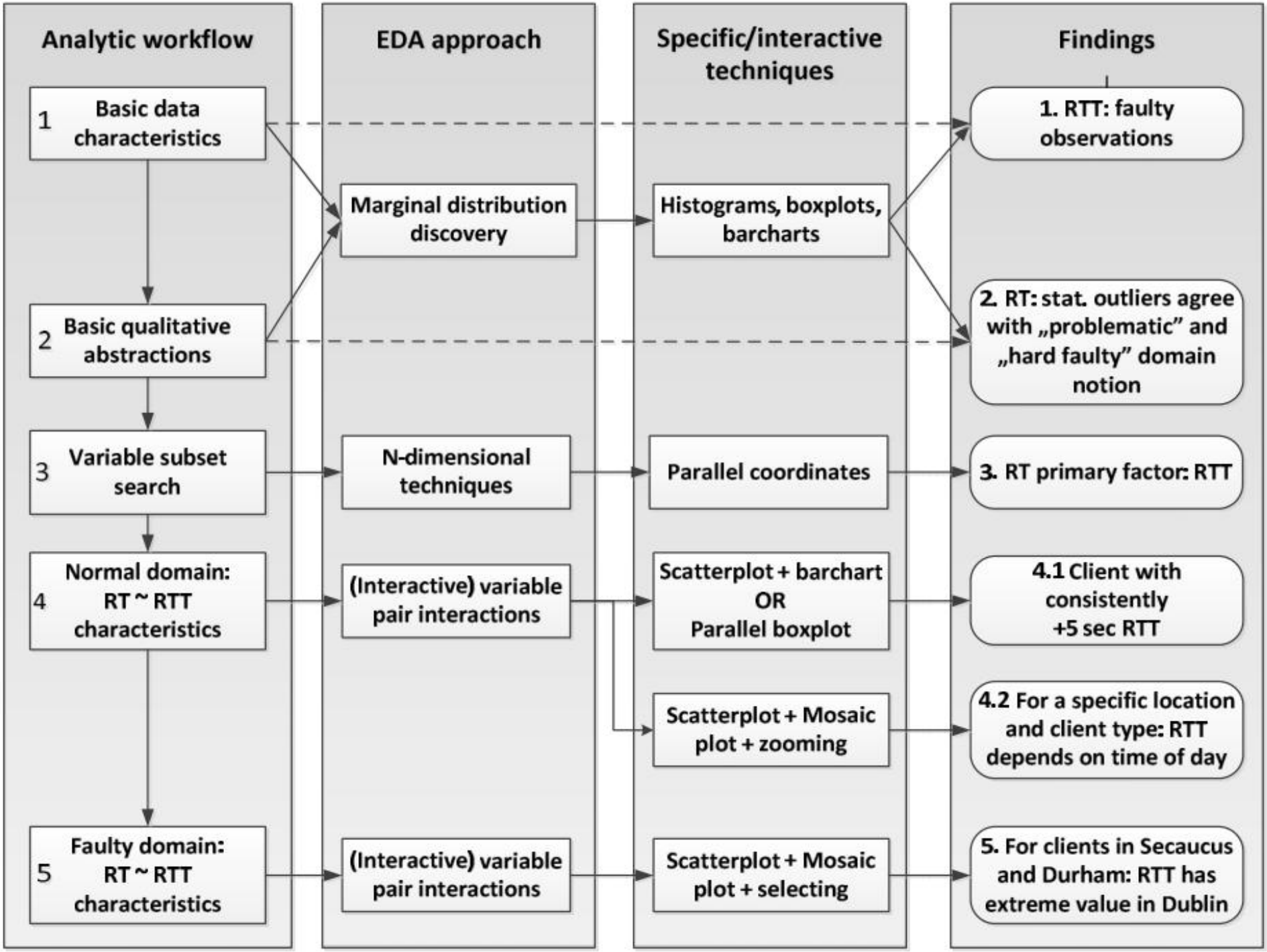
The experiment



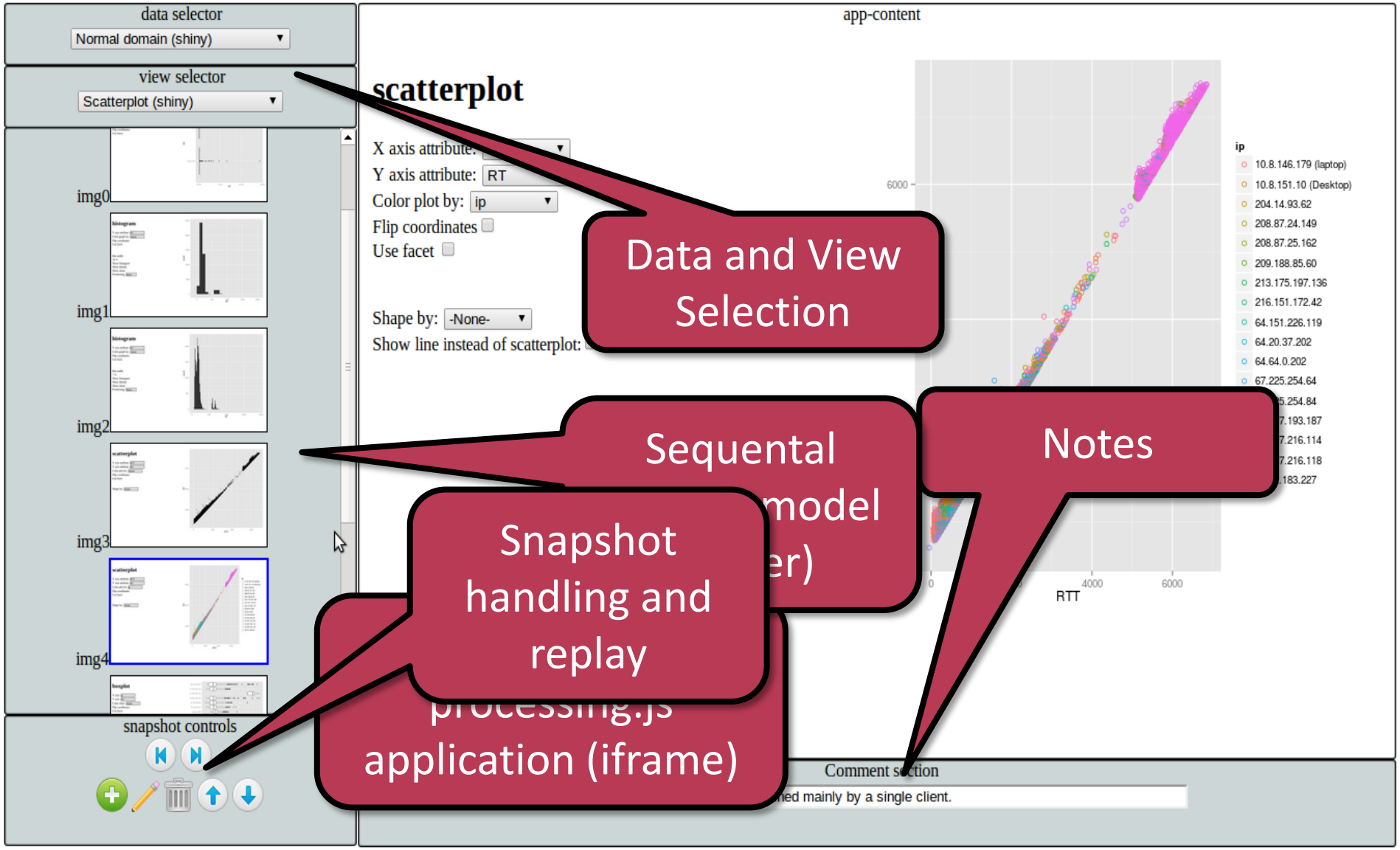
Client locations:
Newcastle, Secaucus, Chicago, Durham, Ottawa, Burnaby, Peyton, Lansing, New York

Dataset


Newcastle, Secaucus, Chicago, Durham, Ottawa, Burnaby, Peyton, Lansing, New York
Redmond, Dublin
Timestamp
Client IP
Client location
Client type
Server location
RPT/RTT/RT (ms)
0..86396
Java, C#


Analytic workflow
EDA approach
Specific/interactive techniques
Findings
1 Basic data characteristics
2 Basic qualitative abstractions
3 Variable subset search
4 Normal domain: RT ~ RTT characteristics
5 Faulty domain: RT ~ RTT characteristics
Marginal distribution discovery
N-dimensional techniques
(Interactive) variable pair interactions
(Interactive) variable pair interactions
Histograms, boxplots, barcharts
Parallel coordinates
Scatterplot + barchart OR Parallel boxplot
Scatterplot + Mosaic plot + zooming
Scatterplot + Mosaic plot + selecting
1. RTT: faulty observations
2. RT: stat. outliers agree with „problematic" and „hard faulty" domain notion
3. RT primary factor: RTT
4.1 Client with consistently +5 sec RTT
4.2 For a specific location and client type: RTT depends on time of day
5. For clients in Secaucus and Durham: RTT has extreme value in Dublin

Quanopt PoC


data selector
Normal domain (shiny)
view selector
Scatterplot (shiny)
img0
img1
img2
img3
img4
snapshot controls
app-content
scatterplot
X axis attribute:
Y axis attribute: RT
Color plot by: ip
Flip coordinates
Use facet
Shape by: -None-
Show line instead of scatterplot:
6000
4000
6000
RTT
ip
10.8.146.179 (laptop)
10.8.151.10 (Desktop)
204.14.93.62
208.87.24.149
208.87.25.162
209.188.85.60
213.175.197.136
216.151.172.42
64.151.226.119
64.20.37.202
64.64.0.202
67.225.254.64
Comment section
ned mainly by a single client.
Data and View Selection
Sequental
model
er)
Notes
Snapshot handling and replay
processing.js application (iframe)