Focus Group 1:

Present: Chantal, Rob, Rosy, Craig, Sam, Richard, Thomas, David (Skype)

Rob

Chantal

* Rob explained background
  + Initial questions that came up:
    - What is NetFlow?
    - What is an AS?
* General comments/questions/what ppl would like to get out of a visualisation
  + David’s point of view from managing small rural network: If there are failures, where are they happening; breakdown of kind of traffic causing congestion
  + Sam’s view: NRENs need to be connected to each other first before connecting to commercial ISPs
  + Craig: Show which links are available
    - tool should be network aware
    - need to see which links might be faster
    - tool should show why it’s routing through Europe and not straight
    - need to tweak how it’s routing through NRENs
    - using Looking Glass Servers to check routes
    - construct a database of all possible links
    - Idea of what’s possible because fibre is there instead of what’s happening
    - ^ Might not be in our scope
* Rob’s visualisation (Paper prototype with chord diagram)
  + chord diagram is end to end (actual link does not hold any information)
  + How to show traceroute info on dashboard
  + transaction between ASes
    - Richard: Knowing whether my institution is consuming/supplying
    - interested in information sharing
  + Summarising of data (it’s a lot of data)
  + Collaboration across continents - fantastic diagram
    - generate per type of traffic - interesting but might not help?
    - more what shall we do to improve things vs what can I tweak now?
  + filter to top ASes (lots of Ases)
  + Chord
    - incoming vs outgoing not obvious
    - quantity of data vs # of connections
      * quantity - expect same to go out as come in
      * # - more interest here
    - tendency to relate each end of chord
    - 10% of red looks different to 10% of brown
  + need learnable and understandable vis rather than natural and intuitive
  + Network diagram as an alternative but it could get cluttered
* Chantal’s visualisation (Interactive map with fibre overlay)
  + Uses:
    - Is it a problem of quality of the line?
    - A problem of capacity of the line?
    - Want a hop by hop analysis to identify where problems might be at each link
    - Is it case that protocol needs to be tweaked vs lack of fibre
  + Animation movement is at constant speed
    - vary speed depending on link quality between hops (relative: high/low)
  + Might not be useful to know if link is going through Saharan Desert (for example); might be more useful at country level
  + “Shaping of networks”/”bandwidth shaping”
    - fast traffic might be bottlenecked with videos for example
    - Therefore: Traceroute doesn’t necessarily show routes that actual traffic traverses
  + Craig: Not sure how useful it is mapping each hop:
    - David: Interest in how many hops within a country
    - more NB which country with number of hops and then jump out to another country (How many hops within a country)
  + info on where fibre is laid down
    - “physical link”: fibre vs satellite link
  + Fibre overlay
    - Craig: take out if you can’t manage to map traceroute data
    - Thomas: like cables there - can sort of reason which cables are being used as a reference
    - Afterfibre.org - overlay fibre with positions
  + Geolocation might not be true
    - satellite links: might show IP address in Europe but it might be in Africa
    - to go in future works :P
  + Latency/RTT:
    - per hop is better to see link quality - was problem at UCT/TENET level etc
* Comments for Rosy:
  + Variable packet size - might not go circuitously (to add to different traceroute experiments)
  + code automatically ping if traceroute doesn’t reach destination