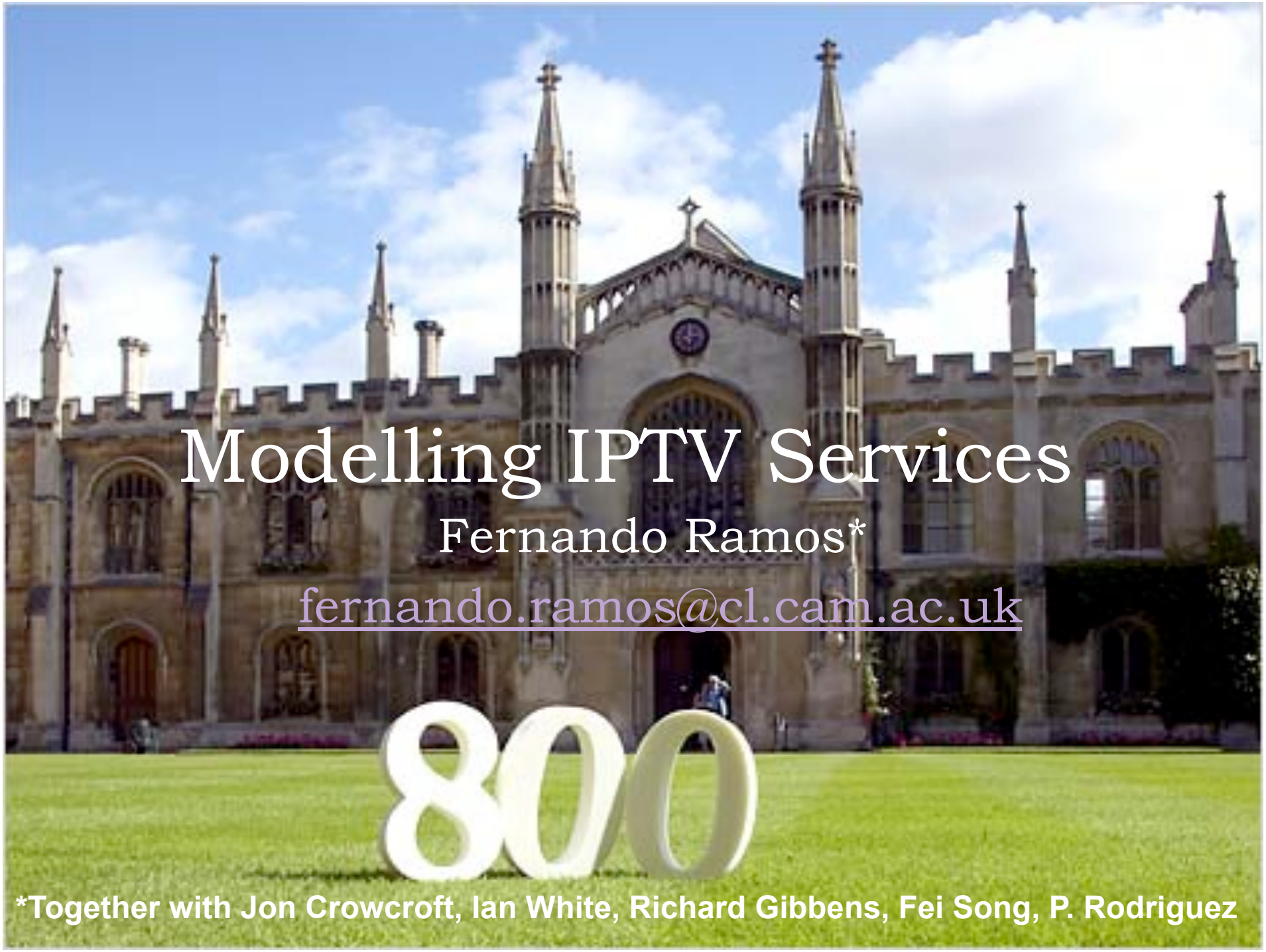


Modelling IPTV Services

Fernando Ramos*

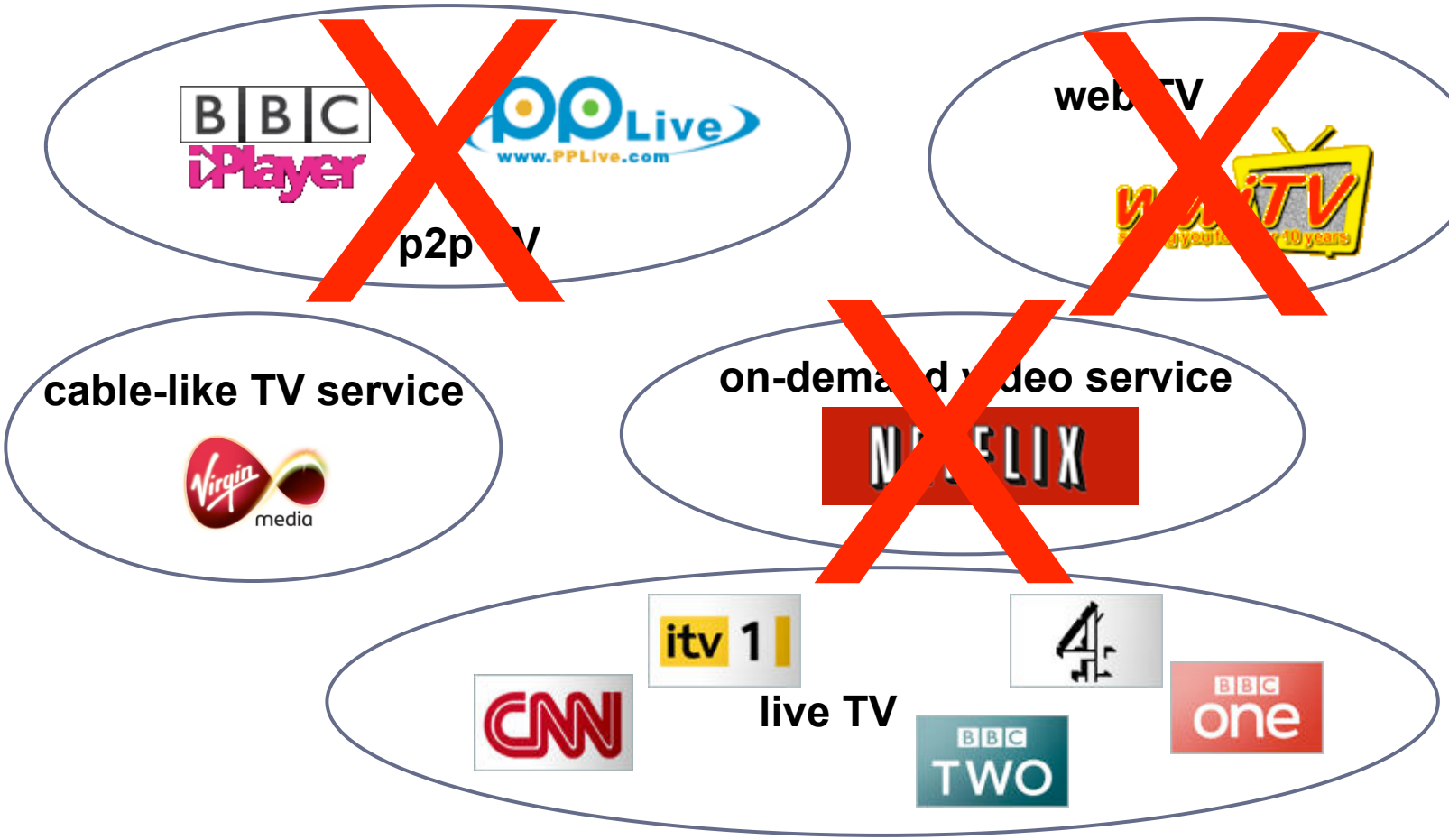
fernando.ramos@cl.cam.ac.uk

*Together with Jon Crowcroft, Ian White, Richard Gibbens, Fei Song, P. Rodriguez

Outline

- Introduction: what IPTV is not, and why do we care
- Motivation to model IPTV services
- The IPTV traffic model, in some detail (W.I.P.)
- Conclusions

What IPTV is not



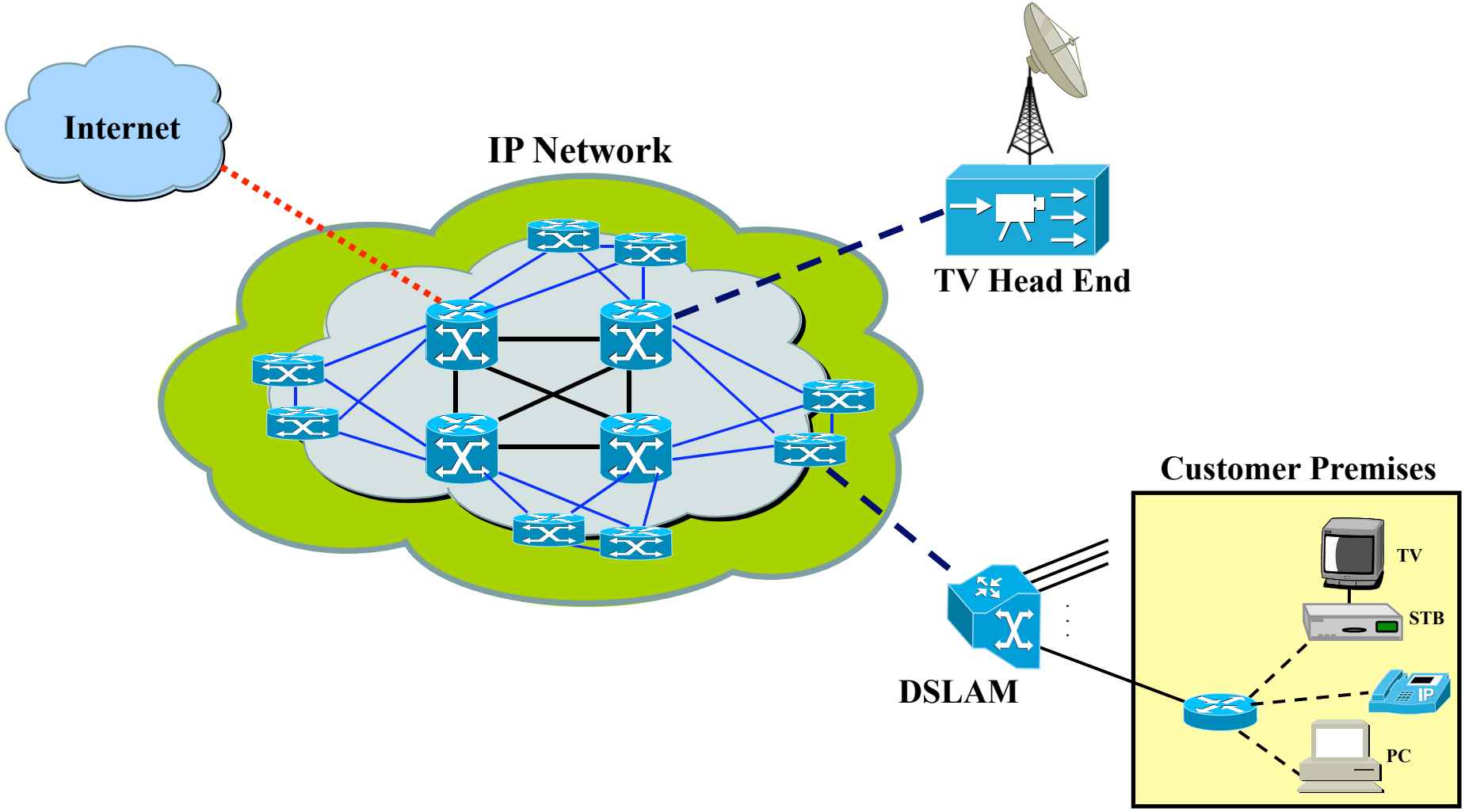
IPTV is a cable-like TV service offered on top of an IP network

Why do we care with IPTV?

- One of the fastest growing television services in the world [1]
  - 2005: 2 million users
  - 2007: 14 million users
  - ...and growing
- High bandwidth and strict QoS requirements
  - Big impact in the IP network

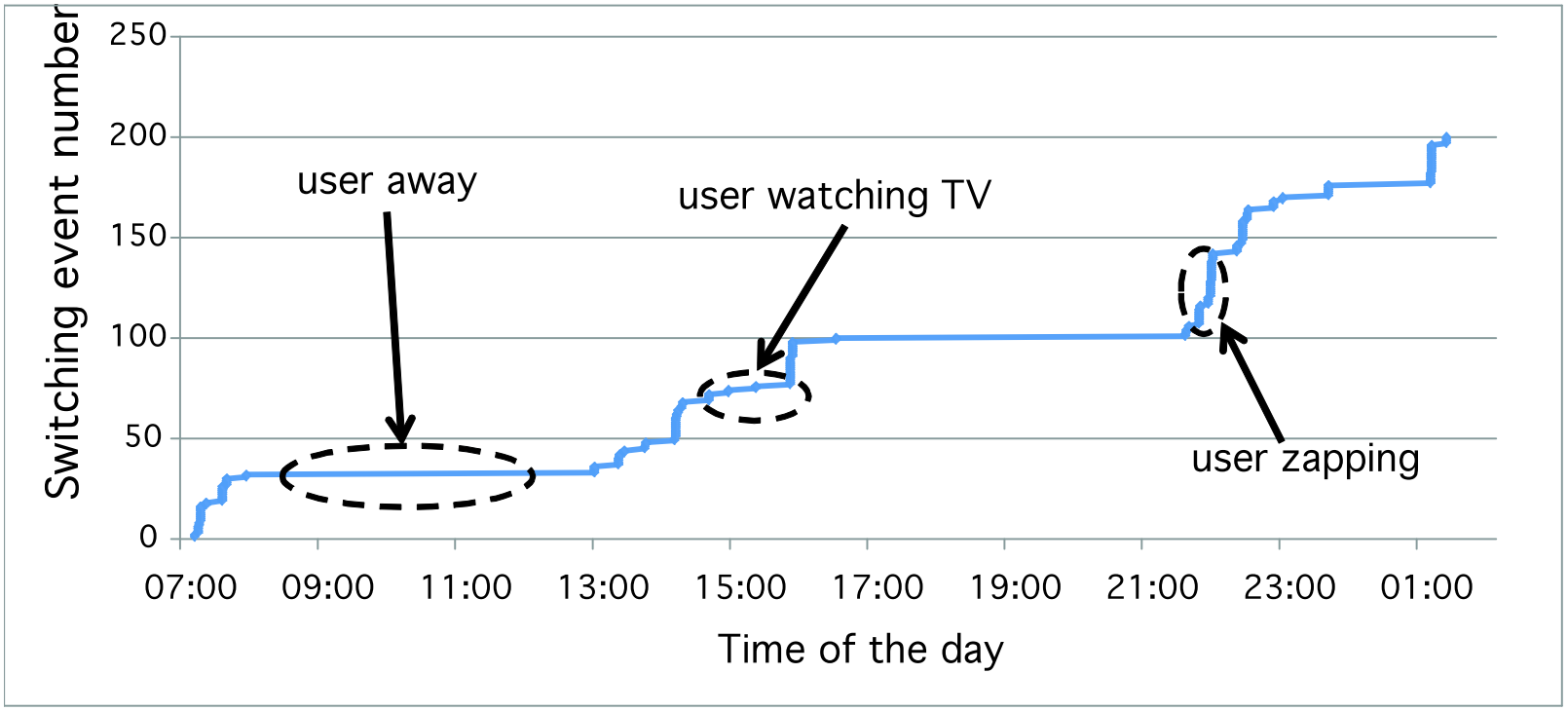
[1] Parks Associates. Tv services in Europe: Update and Outlook, 2008

Overview of an IPTV network



Motivation – Why do we need a realistic IPTV Traffic Model?

- Brand new service on top of an IP network
- User behaviour very different from other IP-based applications



Motivation – Why do we need a realistic IPTV Traffic Model?

- To evaluate different delivery systems for IPTV
- To evaluate different network architectures for IPTV

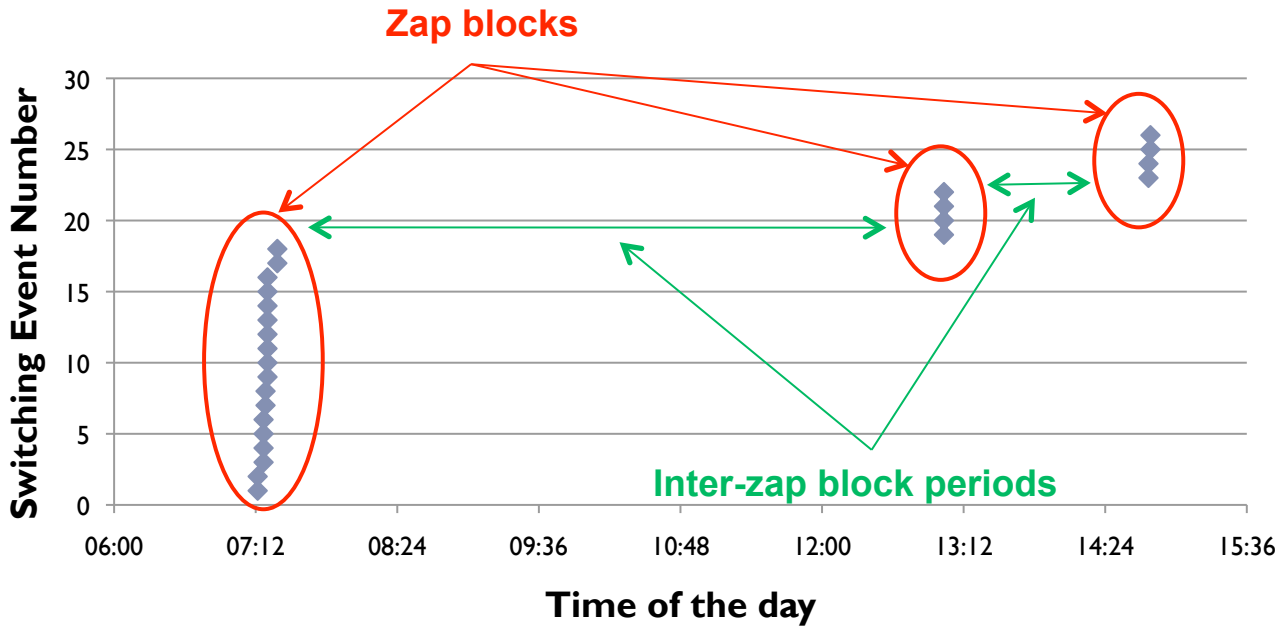
The dataset

- We have analysed real IPTV data from one of the largest IPTV service providers
  - ~ 6 months worth of data
  - ~ 250,000 customers
  - ~ 620 DSLAMs
  - ~ 150 TV channels

- *NB: We consider a user is zapping if he switches between 2 TV channels in less than 1 minute.*

IPTV Traffic Model

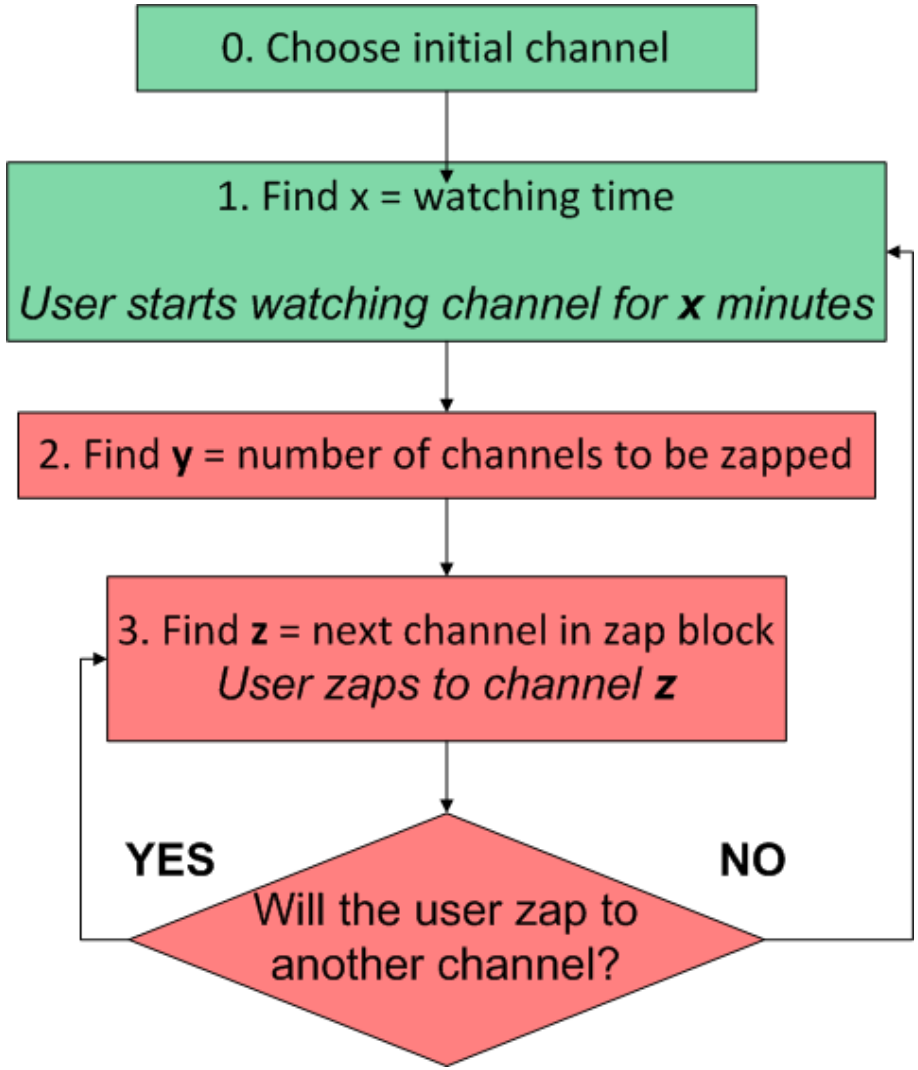
- Workload characteristics
  - Zapping blocks containing a **random number of switching events** (zapping period)
  - Separated by watching/away **periods of random length**



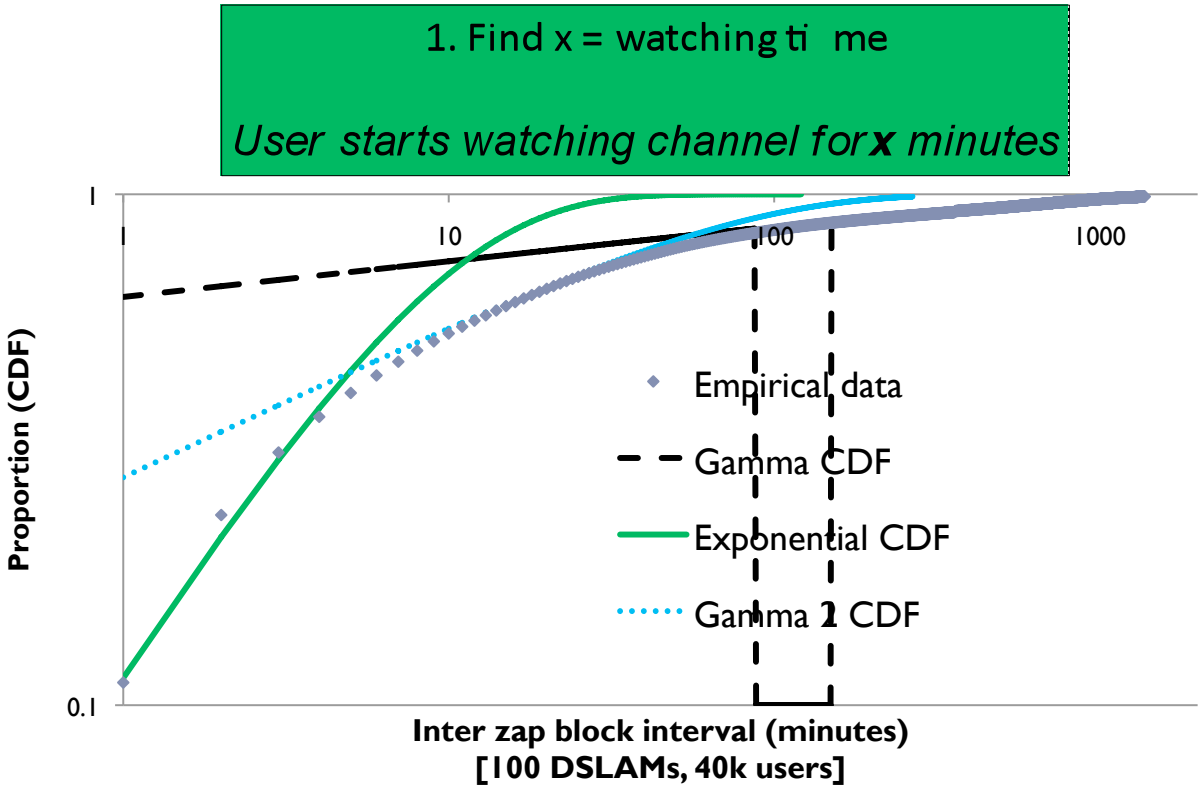
IPTV Traffic Model

WATCHING MODE

ZAPPING MODE



IPTV Traffic Model - Detailed



Findings:

Empirical data fits with 2 gamma and 1 exponential (consistent across regions)

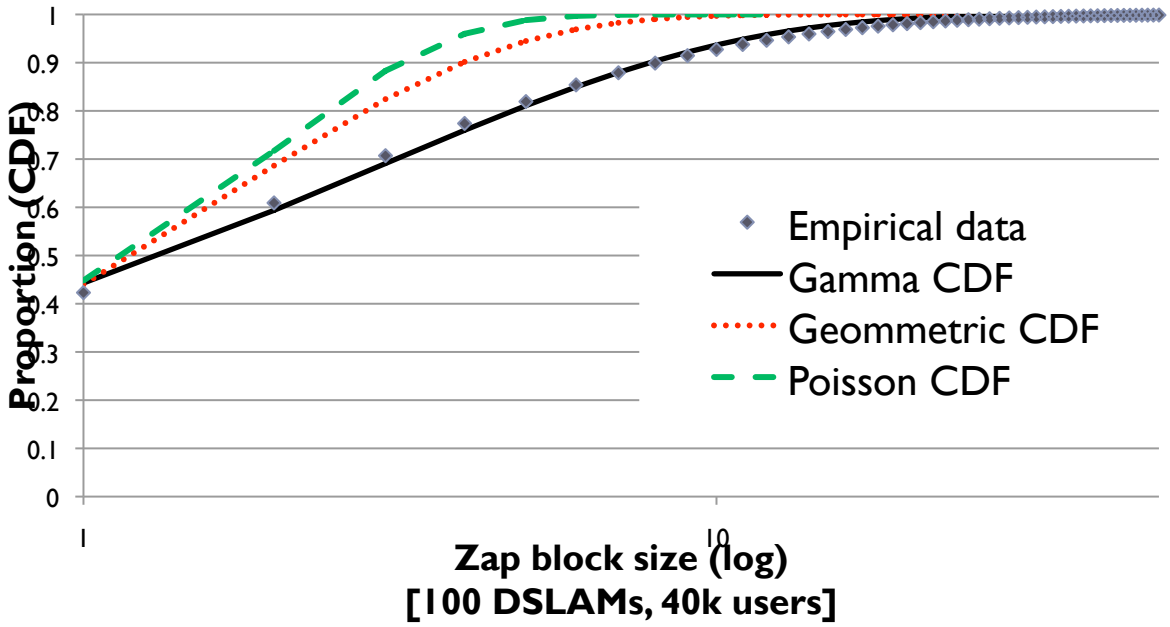
To do:

Check consistency for different channels

Check consistency for period of the day

IPTV Traffic Model - Detailed

2. Find **y** = number of channels to be zapped



Findings:

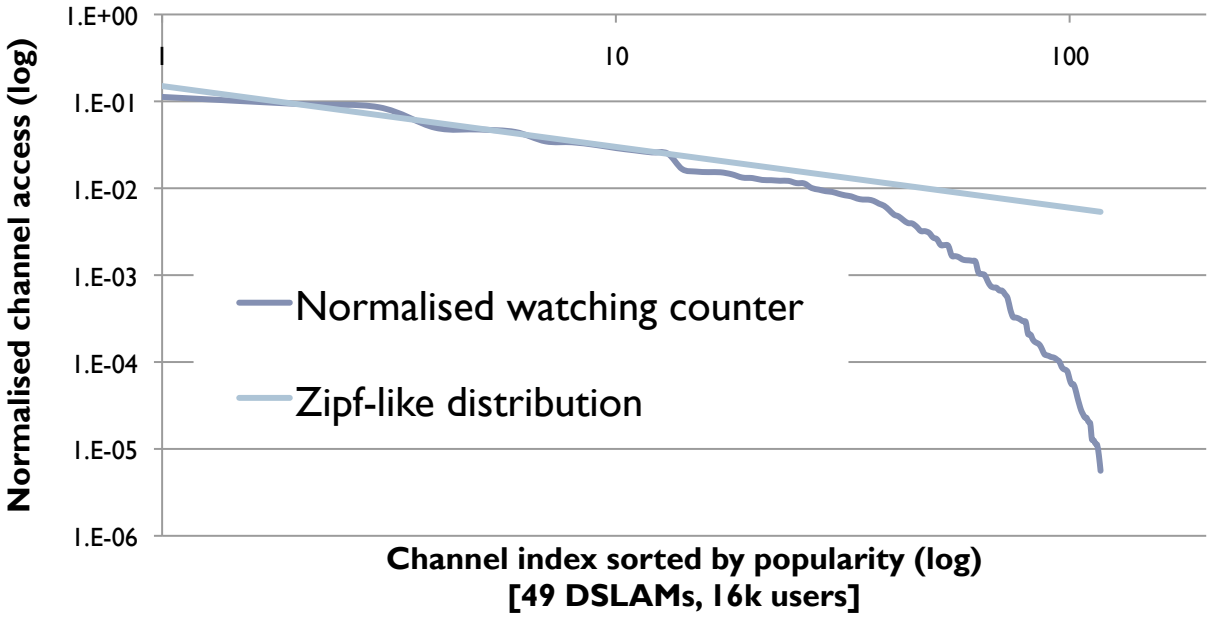
Empirical data fits with gamma distribution (consistent across regions)

To do:

Check consistency for period of the day

IPTV Traffic Model - Detailed

3. Find z = next channel in zap block
User zaps to channel ***z***



Findings:

Popularity is a) Zipf-like for top channels, b) decays abruptly for non-popular ones.

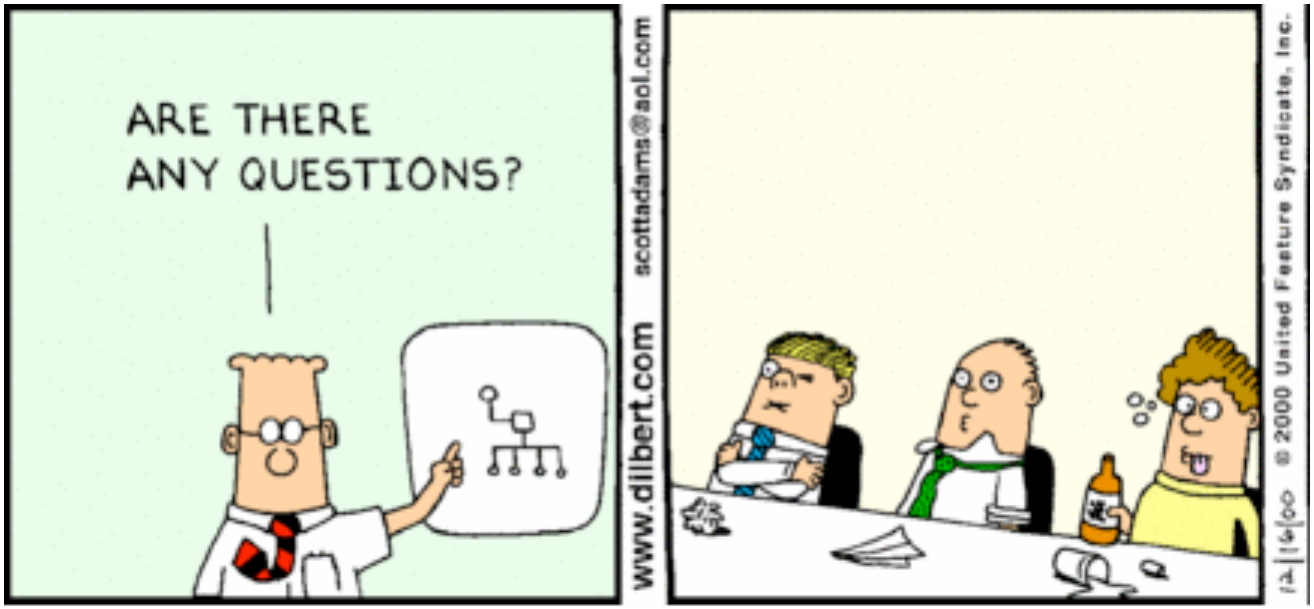
To do:

Add dependency of previous channel.

Conclusions

- Preliminary results of an IPTV Workload model were presented
- Some of the main findings:
  - Workload characteristics: Burst (zapping) periods separated by watch/way periods
  - Popularity: a) Zipf-like for top channels, b) decays fast for non-popular ones
  - Watching period empirical data fits with 2 gamma and 1 exponential distributions
  - Number of channels in a zap period fits with gamma distribution
- See you at the SIGCOMM Poster Session! ☺

THANK YOU!



fernando.ramos@cl.cam.ac.uk