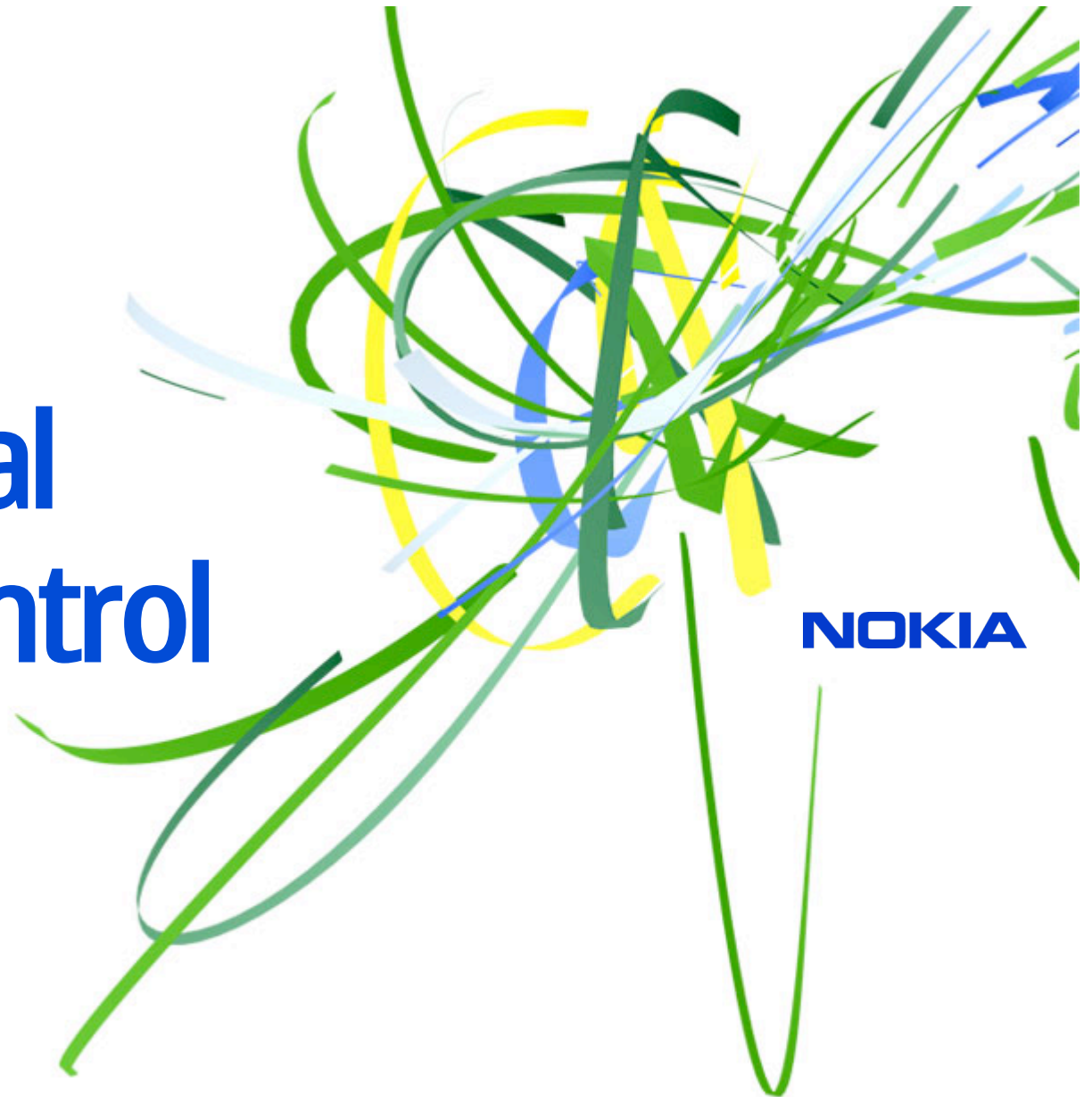# Towards Deployment of Experimental Congestion Control

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NOKIA

Where are we?

- lots and lots of promising congestion control research
  - for fat paths, but also other scenarios
  - some schemes useful on an Internet-wide scale
- potential for benefit is usually demonstrated
  - papers, etc.
- potential for bad interactions is less well investigated
  - because it's hard & boring :-)
- metrics & scenarios for comparing schemes are unclear
  - which TCP variant is "the best" and what does that mean?

Where do we want to go?

- we'd all like to evolve TCP forward
  - TCP = Internet-wide congestion control standard
  - safe in all environments, performs OK in many
- standard ≈ agreed-upon social contract for CC
  - "how we all use the shared resource we communicate over"
- safe ≈ prevents congestion collapse, some fairness
- a "new TCP" needs to be a safe standard
  - not safe ➜ Internet melts down
  - not standard ➜ interactions between different CC (safe?)
    potential for arms race
    hard enough to get one variant right

Why is there an issue?

- interest to enable new CC features in major stacks exists
- some new CC has already leaked out onto the Internet
  - some stacks move beyond RFC mechanisms
- we don't know what is safe
  - optimistic view: "well, the Internet hasn't melted yet"
  - pessimistic view: "but we don't know if it will stay this way"
- we might want to proceed with caution here
  - CC being one one of the cornerstones of the Internet

Questions

- what is "safe" for global deployment?
  - metrics, scenarios, behavior?
  - global ≠ fat wired paths - there are crazy links out there
- a single standard vs. many different mechanisms?
  - evolve a single standard forward?
  - or: everything that backs off under congestion is OK?
- how & what to move from research to standardization?
  - there is IETF interest in an initial effort for Informational/Experimental purposes
- (your question here)

The panelists

- Ted Faber, USC/ISI
  - IETF TCPM WG co-chair

- Murari Sridharan, Microsoft
  - C-TCP and Windows TCP/IP Networking

- Injong Rhee, NCSU
  - BIC/CUBIC TCP

- Stephen Hemminger, Linux Foundation
  - Linux TCP