

# ***About Network Coding Related Patents***

**Vincent Roca (Inria, France)**

IETF92, NWCRG meeting

March 27<sup>th</sup> 2015, Dallas

# *Why this presentation?*

- WGs are authorized to discuss IPR considerations
  - see [RFC 3979](#) and [RFC 4879](#)
  - if you feel uncomfortable, please leave the room during 15'
- our goal is not to answer questions like:
  - Does techno X infringe patent Y?
  - Is patent Z valid in front of prior art?
- but rather:
  - What is the situation today?

# Warnings...

- this work is limited in scope, breadth, and accuracy
  - it does **NOT** claim to be exhaustive
  - the methodology is somewhat **BIASED**, but not totally (see next slides)
- some contributors prefer to remain anonymous...
  - I'm just a **"messenger"**
  - I didn't read thoroughly nor analyzed the listed patents

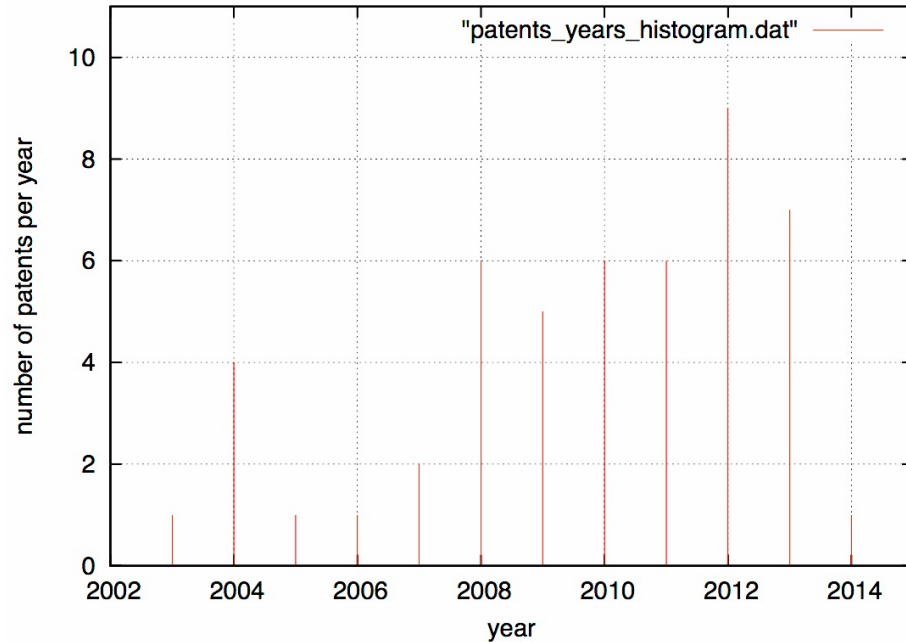
# Raw statistics

- many patents are targeting NC

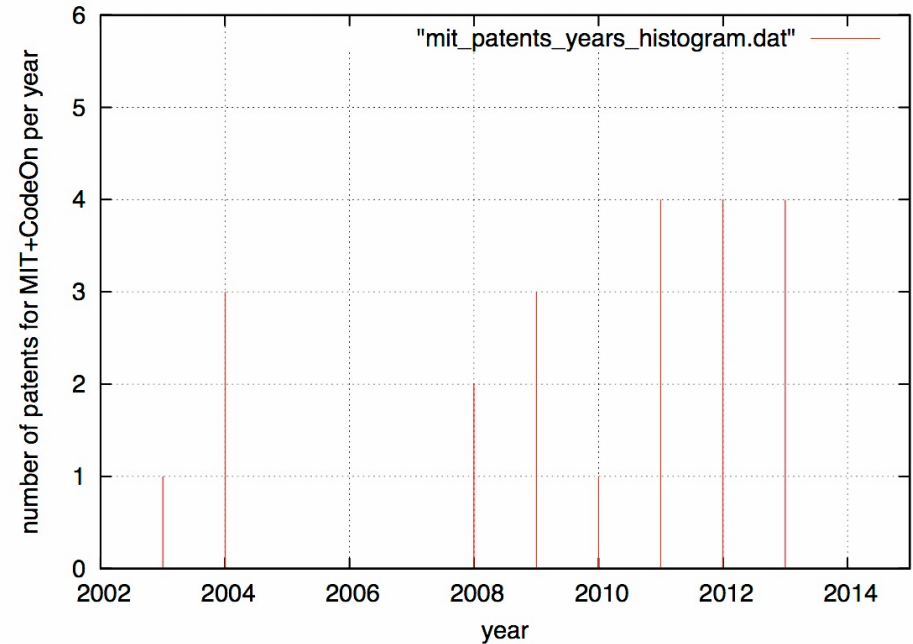
categories	# patents	
declared in IETF IPR disclosures	<b>15</b> <b>(30.6% of total)</b>	
NC related, but not disclosed at IETF	<b>34</b>	<b>warning:</b> does not imply they apply to NWCRG activities
<b>total</b>	<b>49</b>	

- main contributor is clearly identified
  - MIT + CodeOn totalize 22 patents (44.9% of total #)
- is this result biased?
  - yes, since only NWCRG contributors filled in an IPR disclosures
  - but not totally as we also searched “network coding” keywords in Google Patent

# Number of patents per year distribution



all actors



MIT + CodeOn only

- total of 9 patents in 2012: it's the maximum so far!
- actual number for 2014 not known because of “unpublished pending patents”
  - we cannot find them yet...

# Regions applied for

- US only: 28

- Q: is it because USPTO is the less demanding office ;-)

- CN only: 3

- WO extension: 18

- NB: a WO extension does not mean it is granted worldwide. It just means it will be at a minimum considered worldwide as **prior art**

⇒ IPR issues will be essentially localized in the US

- fortunately there's life and use-cases outside of US 😊

# What is patented? An extreme example

- say you're implementing a NC stack, in user space. You need to capture datagrams being sent to process them in you're software. Are you using TUN for that?

---

from the WO 2014074757 A2 patent **application**

33. The system of claim 4, wherein the system includes a software system comprising a user space, a kernel space, and a network stack.

→ 34. The system of claim 33, further comprising a constructor such as TUN, TAP, or a Proxy to connect information data flow from the kernel space of the operating systems network stack in the kernel space to the user space.

35. The system of claim 33, further comprising a TUN virtual device provides a connection from the Internet Protocol (IP) layer of the network stack to the user space.

- The full list is here:

[https://www.dropbox.com/s/gvqzapy0q6516t5/  
a\\_few\\_nc\\_related\\_patents\\_2015-03-26.pdf?  
dl=0](https://www.dropbox.com/s/gvqzapy0q6516t5/a_few_nc_related_patents_2015-03-26.pdf?dl=0)