

# SDN

## Solution- or Problem-Based Research?

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# IRTF is generally problem-focused

- Routing
- Congestion Control
- Network Complexity
- Delay-Tolerant Networking
- Network Management
- ...

## one recent exception

- HIP (host identity protocol)
- SDN another exception?
  - aimed at sufficiently many different problems
  - solution-based r-g could make sense, but...

# solution-focused or problem-focused?

## solution-focused?

- assume SDN, then solve outstanding potential problems with it? e.g.
  - policy complexity
  - modelling scalability
  - inter-domain
  - validation of evolvability claims
  - ... see mailing list & other presentations (esp. Dave Ward's IAB plenary) for dozens more suggestions

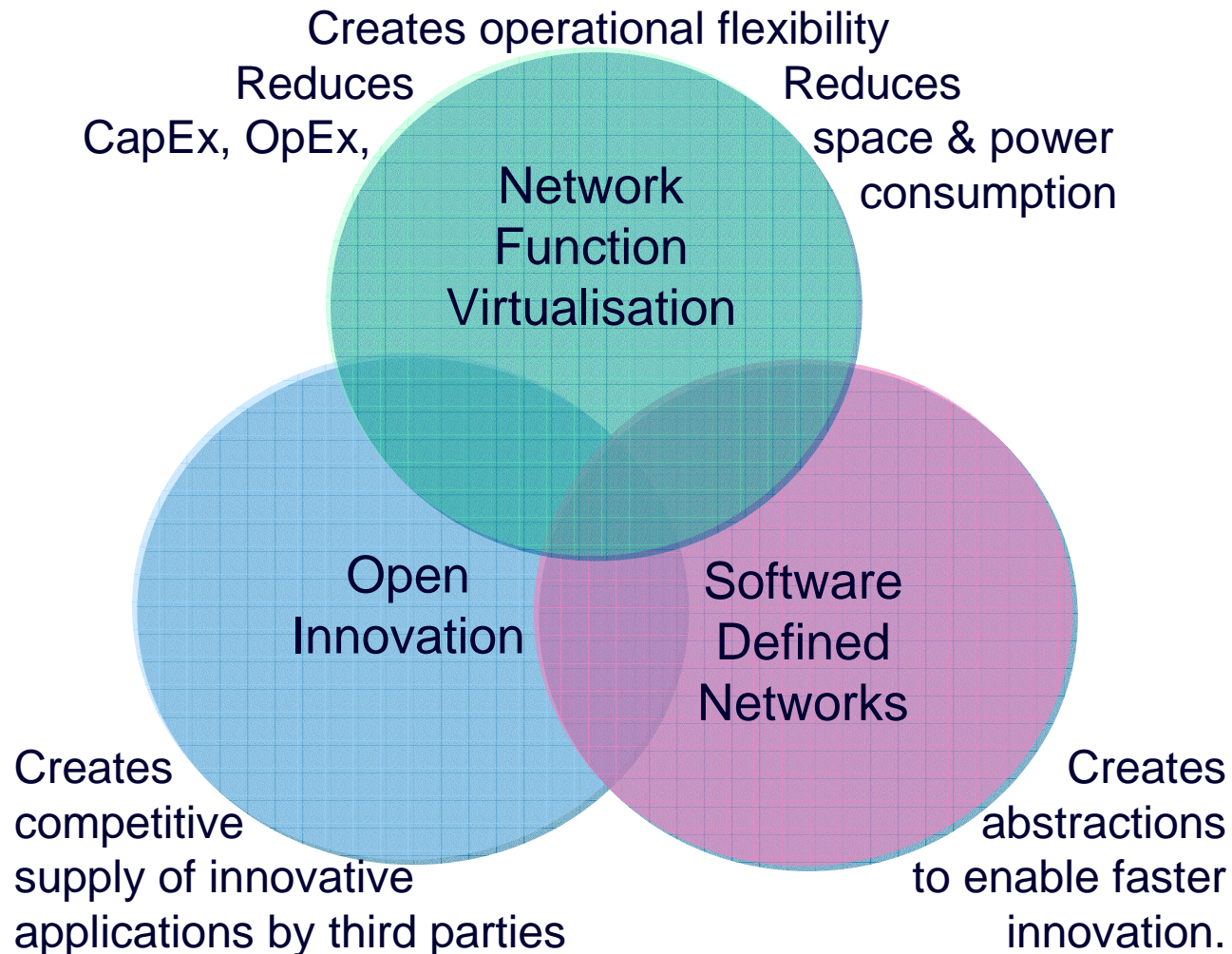
## problem-focused?

- pre-standards convergence on best approach to solve a problem?
  - how does centralised FIB distribution compare vs decentralised vs hybrid?
  - is it best for forwarding isolation to be independent of performance isolation for virtual networks?
  - is it best to use the same architecture for FIB distribution and for config?
  - how best to do multipath & traffic engineering

# boiling a small lake

- solution-focused
  - makes the work concrete
  - but answers will either be SDN OK or SDN not OK
  - not a good model of the real choices facing us
- problem-focused
  - preferred
  - but leads to ocean-boiling
- some thoughts on narrowing scope
  - for discussion...

# 3 Strategic Networking Paradigms for Network Operators



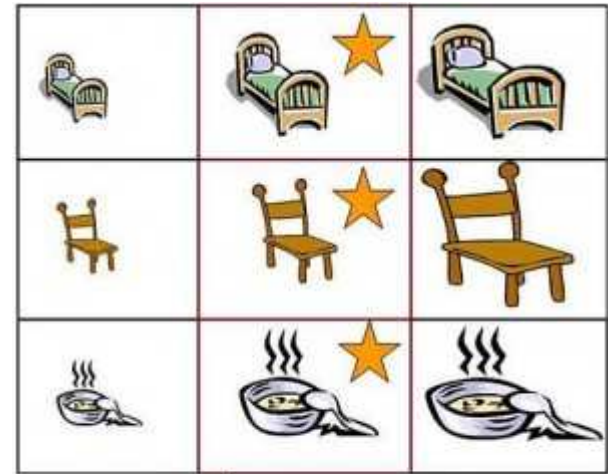
# mapping of technologies to problems

	forwarding isolation	performance isolation	orchestration / config	obj models / schemas	network control APIs
SDN ocean	OpenFlow ForCES MPLS MPLS-TE IPsec TRILL SPB	Diffserv ConEx	OFconfig NETCONF SNMP RESTful Web UI CLI	Yang SID	ALTO CDNI XMPP

- we could focus on solving a particular problem (column)
- we could also ask
  - is an integrated solution (multi-column) good?
  - or “do one thing and do it well” so operators can pick & choose rather than lock-in to an über-solution?

## position

- solution-focused – too narrow
- problem-focused – too broad
- solution-prompted – just right
  - prefer to use SDN as a prompt to re-evaluate
  - provokes questioning of traditional approaches
  - doesn't require us to assume SDN is the answer



SDN

Solution- or Problem-Based  
Research?

**Q&A**