Disruptive Analysis

Don't Assume

Blockchain & The Telecoms Industry

TMForum, Lisbon

February 2017

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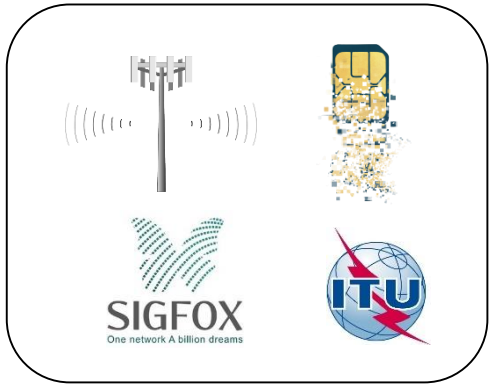
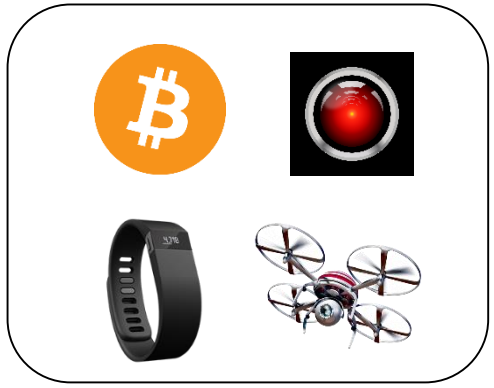
Dean Bubley & Disruptive Analysis

- Tech/telecom analyst & strategic consulting since 1991
- Futurism, Forecasting & anti-forecasting
- Cross-silo, contrarian, independent
- *Often provocative. Sometimes obscure. Occasionally wrong.*



Network Tech, Policy & Business Models

Communications Apps & Services



Telco-Futurism

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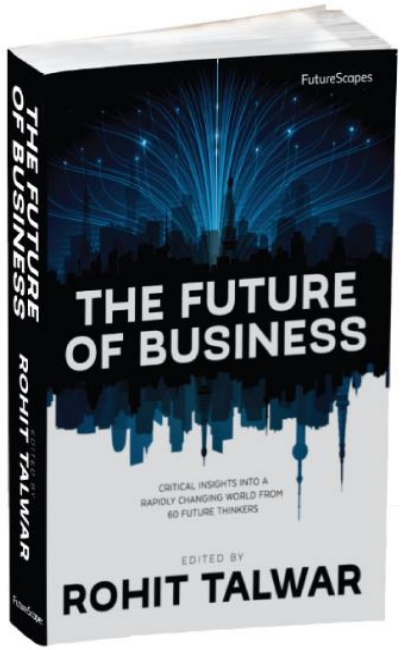
The Future has broad drivers, beyond telecoms



Chapter by Dean Bubley:
"The Future of the Phone Call"

Other Chapters cover:
AI & machine-learning
Analytics & Big Data
Contextual computing
Blockchain & shared ledgers
Crowds & the Sharing Economy
Wearables & quantified-self
3D-printing
IoT, Robots & drones
Autonomous vehicles
Longevity & human enhancement
Green Tech
Financial systems & money
Political & social change

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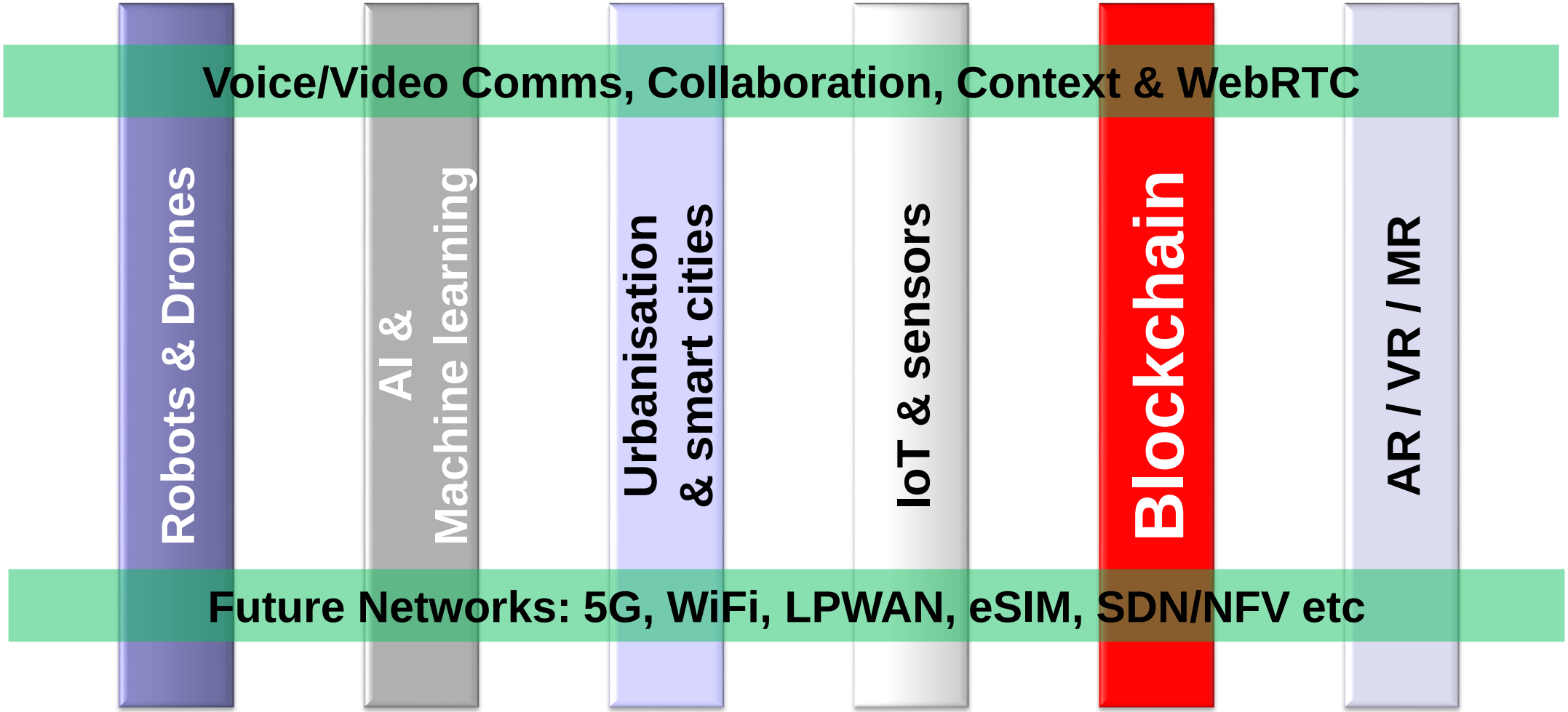
Monetisation, transformation & value arises at intersections



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Trust takes many forms

Examples: Trust in Telecoms

- Call termination CDRs
- Number porting
- Lawful intercept
- VNF utilisation
- Privacy protection
- Credit check
- SIM / Network
- Spectrum rights
- Data integrity

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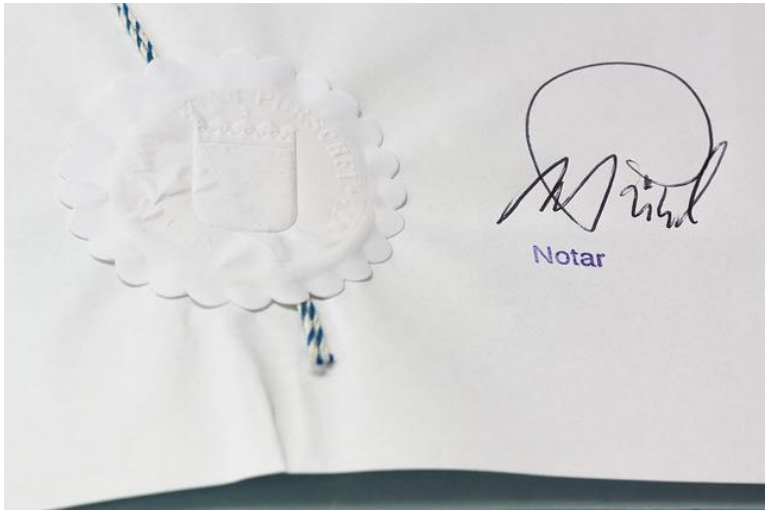
Intermediaries & registries provide (costly, complex) trust



Land Registry

DE BEERS

A DIAMOND IS FOREVER

ECO european communications office

ECO Frequency Information System

EFIS is the tool to fulfill EC Decision 2007/344/EC on the harmonised availability of information regarding spectrum use in Europe and the ECC Decision ECC/DEC/(01)03 on EFIS.

ITU

- But registries don't always scale to new models of ownership & trading
- … and is the registering authority always trustworthy?

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Trust without intermediaries

…. needs a self-proving, immutable database, between multiple untrusting parties

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What is a blockchain?

Transaction 1
Transaction 2
Transaction 3
….
Transaction N

Transaction A
Transaction B
Transaction C
….
Transaction Z

"Consensus" calculation performed & validated with "proof"

Previous block of transactions

Encrypted Hash
000010101010
100101001010
100011010110

Next block of transactions

etc

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More than just "*The* Blockchain"

Original Public BitCoin Blockchain:

"The Blockchain"

Other Public Blockchains e.g. Ethereum

Consortium Blockchain

Private, Enterprise or "Permissioned" Blockchain

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Why is this so interesting?

- Immutable (non-changeable) records
- Shared ownership, read, write
- Potentially much lower back-office costs
- Changes the nature of “trust”
  - Could it make *all* intermediaries obsolete?
  - Easier to manage more agile/distributed marketplaces
  - … although some visions are pure sci-fi
- … but also risks eg power consumption

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Yes, it *is* a bit over-hyped…

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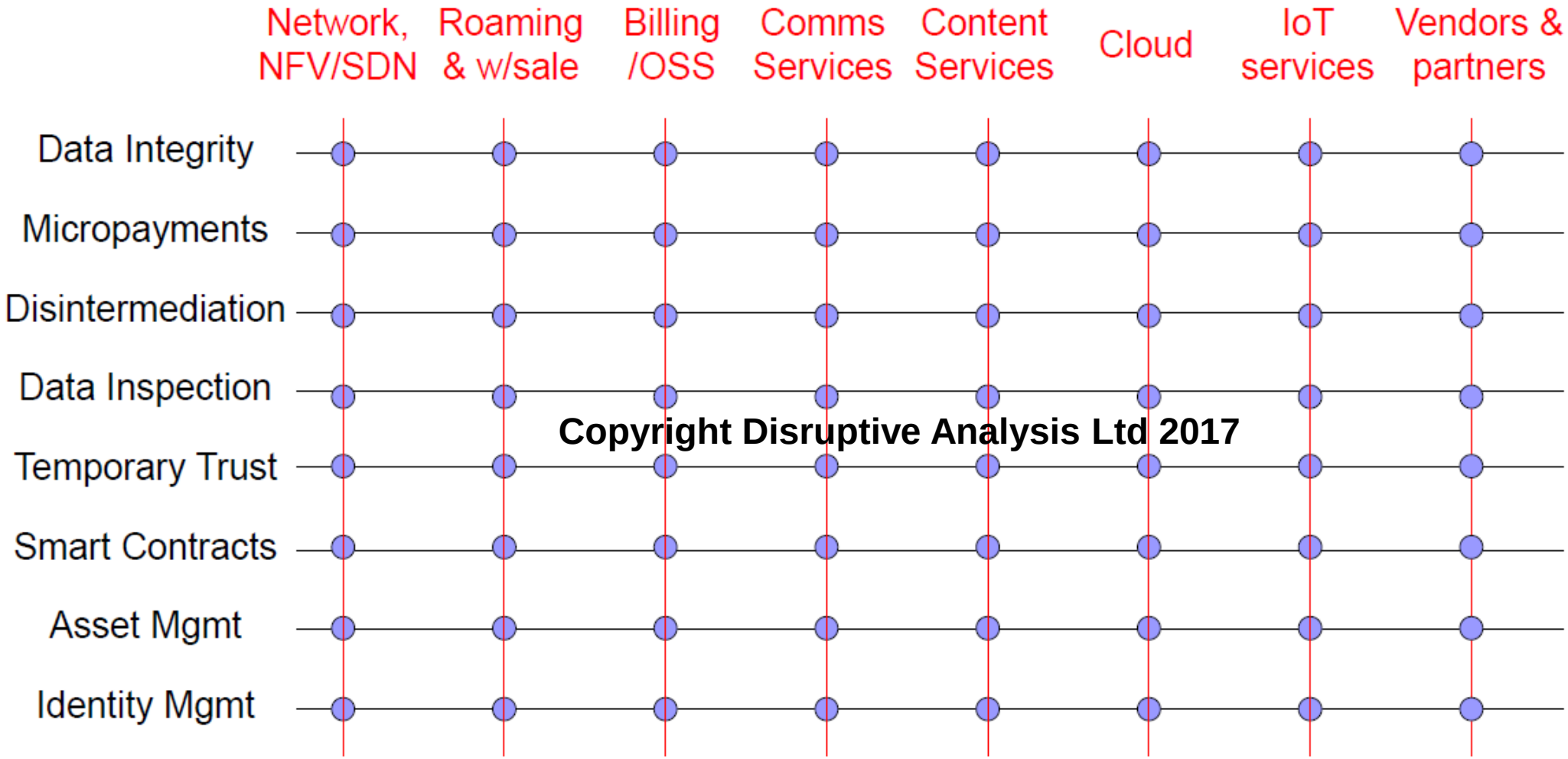
Blockchain options at many telecom-industry intersections



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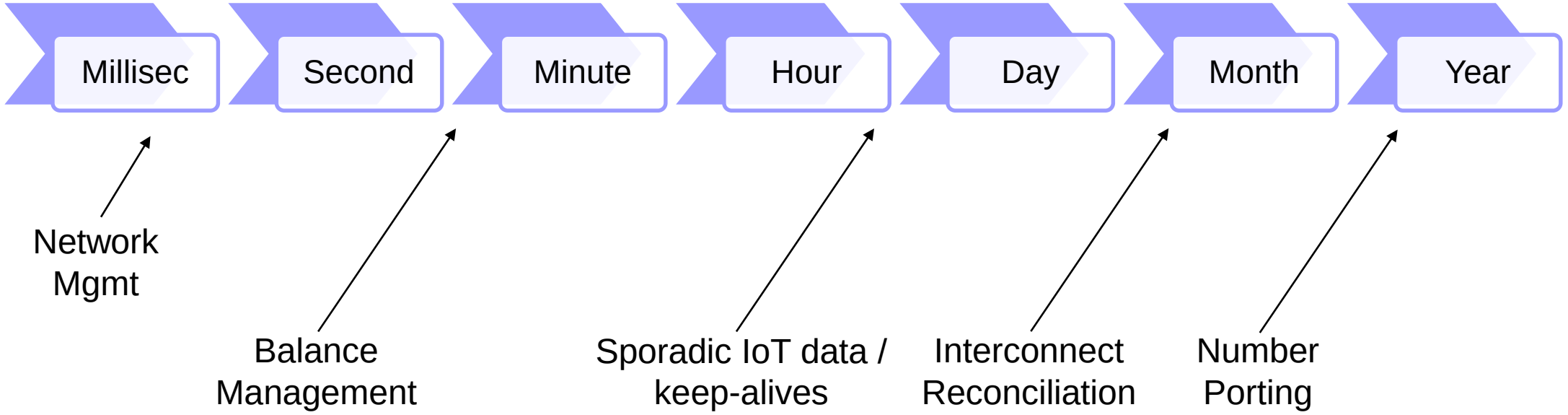
Timescales matter: How fast does data change?

Public & some private blockchains are extremely slow & may have latency of minutes or more



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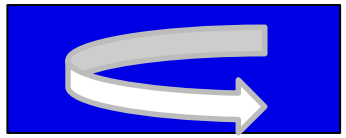
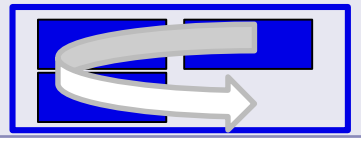
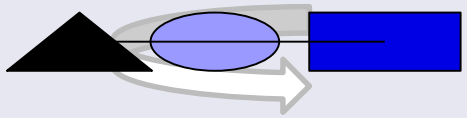
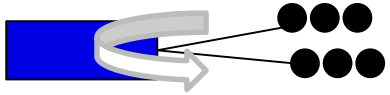
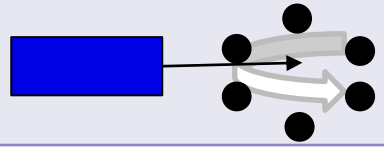
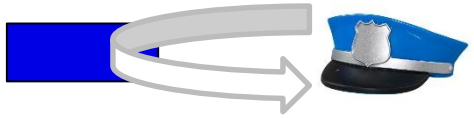
Between which entities does blockchain make sense?

	Within one telco's functional unit / opco	
	Between a telco's functional units / opcos	
	Between "peer" telcos / counter-parties	
	Along a telecom vendor supply-chain	
	Between telco & customers for a service	
	Managed by telco for a community	
	Between telco & regulators/government	

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Is Data Integrity the Sweet Spot?

- Law-enforcement: are call records genuine?
- IoT: has sensor data been tampered with?
- Fraud: has anyone changed what I said?
- Analytics: is the data about me accurate?
- Regulation: are network-coverage claims real?
- Neutrality: has my data (or advert) been changed?
- Voice, image & video verification

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Other promising telecoms blockchain use-cases

- Roaming & interconnect management
- Registers of numbers / spectrum
- SLA management
- Micropayments for services
- Off-grid IoT & LPWAN
- Smart contracts for enterprise
- NFV management / billing
- Blockchain PaaS

- **Still very early days…..**

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… and some less-convincing suggestions

- eSIM-related
- Identity management
- Storage management
- Cellular / WiFi convergence
- Realtime billing
- Capacity as currency

Forecasts & conclusions

- Existing telecom IT & security processes & mechanisms will adopt BC/DLT only slowly
  - Areas with intermediaries (eg roaming, number porting) may be early
  - Possible: Blockchain for *enhancement* (eg LI integrity & compliance)
- New areas should see niches launches / experiments in 2017
  - Data integrity-as-a-service (especially for IoT)
  - Telecoms involvement in verticals (banking, health, e-govt)
  - NFV or spectrum-management, but maybe 2018+
- Diverse use-cases make a single “blockchain strategy” hard
- Watch for (or start!) consortia / standards initiatives
  - Maybe “Hyperledger for Telcos” working group?
  - TMForum / GSMA etc scrutiny

If you only have a Blockchain hammer….

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