people waiting for elephants to fly

The cost of delusion, the promise of reality

Geoff Hollingworth
Not a normal CMO. Rakuten Whisperer. Rakuten Symphony

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Part One: The cost of delusion

We speak about cost all the time but **we never speak about the cost of delusion**.

The cost of delusion is the largest cost of all. And as we head into 6G we really need to speak about this cost. The current cost for 5G is breaking the bank, to the extent where 6G might not be affordable, is being questioned, and those who 6G is supposed to serve, are asking for a pause. None of this is good for an industry that is supposedly powering the global GDP and defining the future state of all countries. What is going wrong?

Is 5G really a failure?

- "Odd Gs are always bad, even Gs are good",
- "it is another leap forward, I never believed the hype",
- "demand will come, it always does...".

5G is a failure. We build technology to deliver a promise, the promise made was commercial. If that promise is not delivered then it has failed. If that promise is delivered but the cost of delivery is prohibitively expensive versus the return, then that technology is a failure. Currently

the promise has not been delivered and there is no line of sight to delivery.

I do not believe the market is going to deliver on this promise further down the road, the networks do not work this way. 5G will never have ubiquitous coverage, and this is getting worse. We can get closer to ubiquitous coverage as a network of networks but then all the complexity embedded in 5G for advanced management of the network is a cost. There is never only one "G" in a market, there tend to be at least 3 at any moment. Each G takes time to retire, from a customer, device, and ROI point of view. APIs cannot get deployed universally and by the the time networks are universal the next G is starting to be rolled out. We are still waiting for "real 5G" but even when it shows what will it translate to commercially? Will it arrive before something labeled "6G" is starting to roll out?

Private networks have a chance to benefit from the embedded complexity. But then we have to consider for the private use cases how the cost/delay of 5G works when compared to Wi-Fi 7 – both on the network and device side. The mass market winners in private networking will be those that combine cellular with Wi-Fi access seamlessly in the same network. There will be one plan, build, and operate cycle that will appear more like a **Meraki** than a mobile operator. The simple reason being IT is understood and knowledge is democratized; cellular is special and knowledge is less well spread. There will be exceptions such as ports and mines where coverage needs to surivive in unique circumstances but for the vast majority of the (mass) market the primary solution will always need Wi-Fi. Best effort Wi-Fi will decline to be replaced by managed Wi-Fi. Hence the Meraki style experience will win. If done correctly this one managed infrastructure should be available for lease back to any mobile network operator requiring indoor coverage inside those buildings and locations, somewhere where they do not have public access in many instances.

We are already repeating the narrative into 6G with the same concept of ubiquitous coverage mindset. We are not segmenting for actual coverage and actual market reality when comparing to cost, time, and need. Use cases are increasingly nomadic, especially the most high value (enterprise) based services. Spectrum propagation and penetration declines as frequency bands become higher.

Let us say we had not inflated the promise of 5G as an industry and were more realistic. Would we have still included the same functionality in spec? would we have taken cost and complexity out, to make it more financially attractive? Would we have split with 5G, and 5G SA?

We do not know, but we do have the chance to decide how to do things differently going forward.

Part Two: The promise of reality

I would change my mind on all I am saying if there was a stated opportunity that passed the basic muster of simple business case analysis. I have not seen such a case and I believe that is because the motion of the industry is dislocated from the reality of the market.

Standards are not where business innovation happens. This is true so how do we best understand future opportunity. We have to start

behaving like any other healthy business that wants to grow more than protect.

Reality is the fuel cell powering all real business opportunity

The good thing about reality is it never stops changing, it continuously progresses generating new problems to solve and new opportunities to seize. Markets also peak and level, as new markets build.

Peak Universal Macro Market

For any mature market with complete penetration , traffic is no longer exponentially increasing. This is seen as a function of humanity being at peak video and video being the 80% traffic generator of any network. The new Gs do not generate more hours in the day where people can watch more video. No realistic use cases have been identified that would come close to video in terms of capacity requirements.

This is good new for mobile operators, bad news for G cycling vendors.

Existing customers will not pay more to watch additional video or pay for any additional use case connectivity. For the mobile operator the leveling and even reduction of traffic is good. What we see is the opposite, video being optimized to take less bandwidth, as traffic management solutions also mature.

Operators have customers with monthly subscriptions and value the service they receive. There is not one customer that will stop paying for telecom. There is guaranteed revenue stream. Without the need for trillion dollar investments every 10 years, our industry can start to do what we always should have always focused, treating those customers the respect and service they deserve. They will never stop paying for telecom but they will change provider. We can move from a market of peak macro investment to peak customer investment. If we only optimize on providing a better service to our customer genuinely, and operating our networks more efficiently, we as businesses will control our own future.

The only people who have a problem are equipment vendors that have been trained to need a G style network refresh to keep their business models in tact. The industry traditionally has been very closed and

specialist in supply. The latest industry decisions are changing this as the industry finally adopts the technology advances that have happened outside its own ecosystem. This is good news from a supplier resiliency perspective and for the first time there is a direction where supply resiliency is less dependent on legacy vendor sustainability and rather encourages all vendors to modernize as quickly as possible and enable similar revenue per employee metrics as those seen in the other technology sectors and companies.

Part Three: New trends, new growth opportunities

Business has always been reinvented leveraging existing standards as a platform and building above. Successful industries then can standardize subsequent success, where it makes sense, to create as efficient and fast growth as possible for all.

Innovation cycles for technology no longer happen in the vacuum of research but have moved to spawn in the puddles of life around them. The innovation the telecom industry has spawned is the largest ever seen, the internet was born on telecom and web 2.0 was born on mobile. However telecom has not captured any of the value it has created above connectivity and is now so out of touch with the cadence of creation that we have to self reflect on what we need to do differently, not what we think other people owe us.

> We have to self reflect on what we need to do differently, not what we think other people owe us.

While telecom tries to tax the past, future leaders are creating the future. We have to embrace the changing landscape meaning we need to understand the new trends, the new opportunities and always, the new problems that need solving. We need to solve for where customers are and what they need.

Nomadic, collaborative, iterative

To see future network needs, there is a need to understand future AI software design patterns. We now see these appearing and they are different from what we have seen before.

- They depend on large data streams where the data and interpretation has time sensitivity.
- Compute is distributing to where the data is rather than bringing the data to where the compute is.
- This forces distribution of models and software to where the data and compute is, and overhead must be kept to a minimum and automation must be maximized to be cost effective.
- There is need for rapid iteration and continuous fine tuning of the models and algorithms as more data is analyzed and performance improves.

The first applications with these design requirements are the 5G++ network architected functions. The test of the industry is whether the software can be adopted with true AI native, cloud native operations or whether they will be deployed traditionally. If we succeed in deploying a true hyperscale operation for our own software we can take our tooling and knowledge, and expand it to support any application and service.

> Operational transformation is the key to success.

> Business transformation is the key to success.

> Technical transformation supports not leads

Appendix: Business at the speed of machines

A secondary stream of consciousness...

To deliver on any market promise a business leader must first to be an operational leader.

> A TechCo is a company that runs on machines not people and runs at machine speed not people speed. This does not create a company that is a better competitor, it changes what is possible to compete on.

Businesses are nothing more than a collection of people that agree to work together to deliver a business promise. Businesses are needed because the promise is too big for one person to deliver alone so an orchestration of complementary people are required. Machines have automated parts of what humans used to do, but machines have never been able to replace human decision making before. When machines start running the business, companies start to operate at machine speed rather than human speed and everything changes.

> Human speed business cannot compete with machine speed business.

It is not the replacement of humans it is the engineering of the customer promise into software rather than people. Real world complexity is managed at a scale and responsiveness that was previously impossible for humans to achieve. Amazon has disrupted retail. Amazon's biggest competitive advantage is its digital operations. It maximizes profits through personalized recommendations, real time pricing (Amazon changes prices 2.5 million times a day, on average a product price changes every 10 minutes), and maximizes fulfillment efficiency 24/7. Maximum customer value capture, minimum cost serving each customer.

Any operation with multiple steps benefits from machines being in charge. The rapid advances in AI software and tooling, especially open source, is pouring fuel on the already rapidly burning fire. The task of humans moves from trying to stay on top of operations to staying on top of the software running the operations and making sure it is making the best decisions in the most effective manner possible.

This is the secret sauce of Rakuten, that always delivers a single source of real time truth. This is the biggest competitive advantage any company can ever have.

> A single source of real-time truth is the biggest competitive advantage any company can ever have.

Appendix: Machine Speed, Manual Operations

Telecom already runs at machine speed. Once switchboard operators were replaced with automated switches, fixed line telecom ran at machine speed. Waiting for a human to be available to connect a call was no longer necessary. The customer promise is already delivered by machines and by 1980, there were over 175 million locations in the USA alone that were connected via the telephone network. [**ref**]

Mobile's original promise was to connect people not places. This replaced the fixed line behaviour of calling a building asking if somebody was there and either calling another building or having somebody look for them if they recently saw them. This is how paging works in a mobile network, machines do it rather than humans. Billions of people now have phones. The removal of humans from operations allows scale to be machine scale, not only machine speed.

The difference is the lack of efficiency in operating the machine speed model. The service is delivered by machines but the operations of running the machines has always been bespoke, manual, and expensive.

Telecom companies have an opportunity to enable their core business to lead in digital operations and also enable others to do the same. Any highly distributed company with a complex operation and need for large scale efficiency requires the same solution as telecom does.

We see if this opportunity can be realized as all companies start become service providers in their own spaces...

Appendix: Multi-network reality

We are solving for a different world. When the cellular industry started it enabled to speak wherever they were. The universal service was voice that was defined and there was only one network.

Now there are many networks that devices can connect to, and 80% of the time traffic does not travel through cellular networks at all. In markets with high fiber penetration Wi-Fi connectivity and latency has higher performance than cellular, especially indoors, where higher frequency spectrum no longer travels inside buildings, especially those with reflective sustainability materials.

We previously solved as if cellular was the only way to solve all the problems. We must embrace that there are other better ways to solve for coverage, depending the use case and the coverage type required. We have less of a coverage problem and more of a seamless access problem, as one moves from indoor to outdoor city to outdoor suburb to rural.

(May God have mercy on your soul if you read this far...)

T.H.E. E.N.D. O.F. T.H.O.U.G.H.T.S.

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Andy Jones · 1st
Consultant & Advisor/Telecom Industry Thought Leader/Former T...
10mo

As someone building private network ecosystems, I completely concur with the following:
“Private networks have a chance to benefit from the embedded complexity. But then we have to consider for the private use cases how the cost/delay of 5G works when compared to Wi-Fi 7 – both on ...more

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Andy Jones · 1st
Consultant & Advisor/Telecom Industry Thought Leader/For...
10mo

Please bear with... 🐻
(Currently preoccupied with biz dev at the coalface of industrial enterprise 5G, focusing on the vibrant German market in particular...but that third WP will be all the richer as a result of ongoing ecosystem-formation and end-customer engagem ...more

Like | Reply

Sebastian Thalanany · 1st
Technology Standards[Technical Director] | 3GPP Expert - 5G/6G...
10mo

Reflective of an evolutionary pattern, where every odd ‘G’ introduces an inflection phase (e.g., circuit to packet, in the transition from 2G to 3G), followed by the next even ‘G’ introducing a maturation and augmentation phase (e.g., packetization in 4G), followed by the next odd ‘G’ introducing an inflection phase (e.g., packet to virtualiza ...more

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Sebastian Thalanany · 1st
Technology Standards[Technical Director] | 3GPP Expert - ...
10mo

Yes, IMS and the call control model, mimicking the legacy circuit switched model, in a packetized fabric, is a trip down memory lane.

As the virtualized fabric of a service based architecture, ...more

Like | Reply

Behdad Banian · 1st
CMO | Go-To-Market Specialist | Growth through Innovation & Inc...
10mo

There are several salient points you make Geoff Hollingworth. If we were to learn from our experience to date we know that previous generations of mobile networks have much more to give. Look at when 2G was expected end of life early 2000, and where it went from there. Similarly with 4G considering 3G was a failure. This makes sens ...more

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Reza Karimi · 2nd 10mo
Vice President, Corporate Strategy at Huawei Technologies

Geoff Hollingworth hi,
A clarification if I may: No-one in the mobile industry is pushing for THz for 6G, and it is well understood and established that the primary bands for 5G-Advanced and 6G will be at mid-bands (and not mmWaves). ...more

Like | Reply

Jonas Wallenius · 1st 10mo
Lost in strategy? Map it. DM to book a Wardley mapping session.

Nailed it. This is quite a good read Simon Wardley and telecom friends. You can see several patterns here, where an industry that's already a commodity (people just need solid connectivity then don't think much about it, just like water or electricity) keeps behaving like it's not - and paradoxically at the same time, keeps behaving like it's also a ...more

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Jonas Wallenius · 1st 10mo
Lost in strategy? Map it. DM to book a Wardley mapping se...

Geoff Hollingworth I think it's like chess, you get better but never master it fully. But it's delightfully fun and helpful to do it together.

What have you mapped lately? Did you try out MapKeep ...more

Like · 1 | Reply

Dean Bubley · 1st 10mo
Tech Industry Analyst & Futurist | Influential advisor & speaker wi...

Great article & I agree with almost everything, although this sentence maybe needs some more nuance:

"Compute is distributing to where the data is rather than bringing the data to where the compute is. " ...more

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See previous replies

Geoff Hollingworth Author 10mo
Not a normal CMO. Rakuten Whisperer. Rakuten Symphony

Dean Bubley Oh I completely agree it is not new. What is new is that anybody can do it, you don't have to be CERN or a car. So I think the real magic that happens is not the creation of one web 2.0 app but the tooling that enables the creation of millions, for near no cost. Then I think we see the real creativity take of ...more

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Francis Haysom · 1st 10mo
Principal Analyst at Appledore Research

An article that needed writing. We have been in Emperor's new clothes territory almost from the beginning of 5G as William Webb explained in the 5G Myth. CSPs are successful connectivity oligopolies providing a service we all want "a telco". The challenge is that CSPs live in a vendor environment that is still based on the delusion of being somethi ...more

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William Webb · 2nd 10mo
Independent Consultant, Board Member and Author

😂

Like | Reply

John Camilleri · 1st
Digital Infrastructure
10mo

Good article. 5G including PN have failed to deliver at a cost that supports sustainable commercial builds, save for a few niche markets where the technology stack applies. For example, many DSIT project won't achieve sustainable solutions and there's a lot of overreporting of viable commercial networks. ...more

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Geoff Hollingworth Author
Not a normal CMO. Rakuten Whisperer. Rakuten Symphony
10mo

John Camilleri Completely agree. See here for an example of pragmatic competition to network slicing that the bbc used on UK election day. Contained in here
- https://assets.ycodeapp.com/assets/app51092/Documents/KdoLWIxv8ZmA196gxoRiKocXvNaOf7x8g2GGzwye- ...more

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Gareth Price-Jones (PGCert BA) · 1st
Strategic Consultant | Experienced ICT Professional | bring techn...
10mo

Geoff insightful article, Id agree with Dean on the distribution of compute to be closer to the data, storage or more to the point memory for real time analysis drives cost unless you can drive economies of scale (which tends to drive a centralized model). Also having pools of the right compute has a similar issue. ...more

Like · 1 | Reply · 1 reply

Geoff Hollingworth Author
Not a normal CMO. Rakuten Whisperer. Rakuten Symphony
10mo

Gareth Price-Jones (PGCert BA) I had the first mobitex blackberry. It was the only device i ever had that broke rather than me replacing it with the latest model. For those that don't know Mobitex was the original data network in the USA, built by Ericsson, with a data rate of 8.6 kb per sec. It worked brilli... ...more

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Andrew Conway · 1st
CTO | Telecommunications
10mo

Very insightful article Geoff. I made it to the end too! Lots to process here. /Andy

Like · 1 | Reply · 1 reply

Geoff Hollingworth Author
Not a normal CMO. Rakuten Whisperer. Rakuten Symphony
10mo

Andrew Conway, You win the prize!!! 😊

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Carlos A. Ramos · 1st
Principal Data Scientist Consultant | MBA | US Air Force ...
(edited) 10mo

Awesome article! You nailed many of the large trends with implications. Anyone in the industry looking long term would realize Wi-fi + Fiber makes a lot of sense. And while fiber takes longer to deploy after it's in place it's much easier and lot less costly to upgrade vs. wireless networks. ...more

Like · 1 | Reply · 1 reply

Geoff Hollingworth Author
Not a normal CMO. Rakuten Whisperer. Rakuten Symphony
10mo

Carlos A. Ramos thank you for sharing the fiber facts, I had no idea. All networks play a role, using one network for all roles feels naive. I do think for cellular we specialized in macro since initially it

was the hardest to solve. I do now think we are at peak macro and growth will happen but not there. ...more

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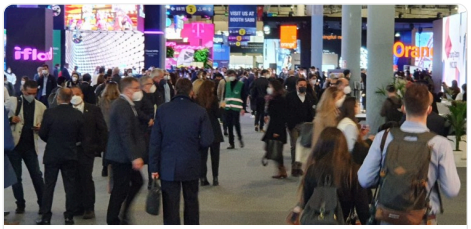

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Paul Rhodes

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