lynxanalytics

WILL AI TRANSFORM THE TELCO C-SUITE?

An eBook for Telecommunication Professionals

Every company these days is basically in the data business – and they need AI to make sense out of it. Big data without AI is a big headache.

Kevin Kelly
Author of The Inevitable.

In this paper, we will explore

The changes machine learning is already bringing to the telco world – and look ahead to future possibilities.

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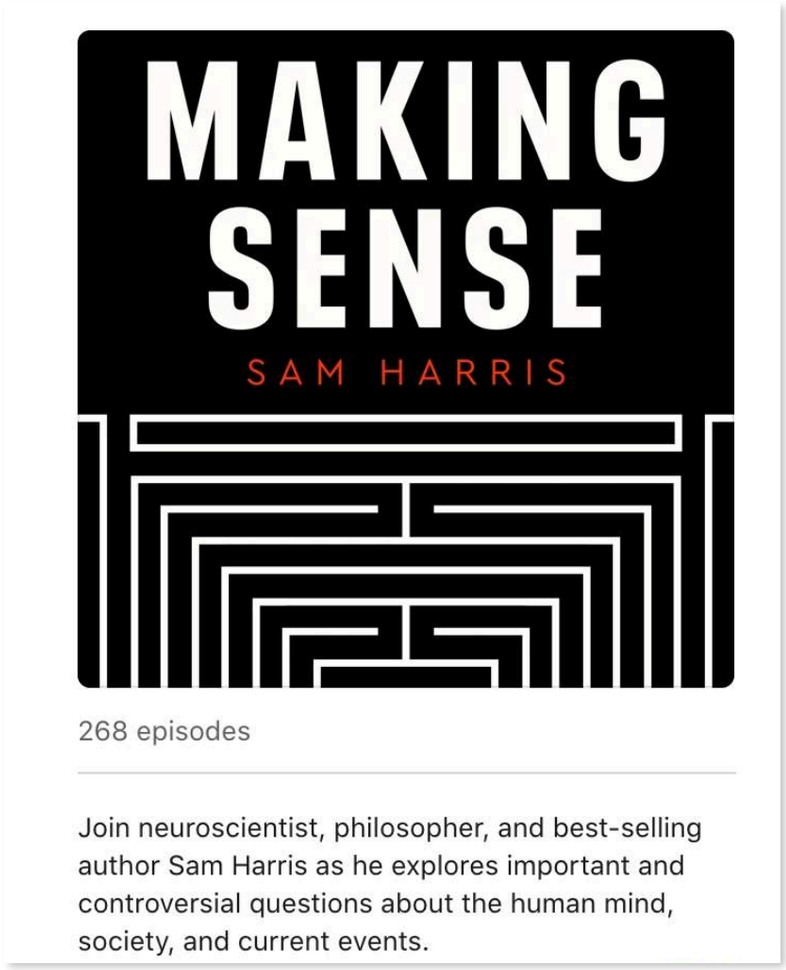
Introduction

On his podcast, the writer and neuroscientist Sam Harris wondered whether artificial intelligence might destroy fiction writing.

His argument was as follows. Imagine if, in the future, everyone carried around their own personal AI bot. Like a superhuman Siri.



Listen to Podcast

You could ask this bot anything – not just facts, but advice too.

Should I marry this man?
Should I take this job?
Could I deceive this person?

The bot would always supply a better answer than yours. Why? Because it would be able to trawl the world's information – facts, opinions, biographies – and examine every possibility in a split second.

If this future came to be, then writers would be stuck. No character in a novel would ever need to make a life or death decision again. They would just ask superhuman Siri. All the drama would be gone.

Obviously, this is a thought experiment. But it does hint at a broader question that many sections of society are now wrestling with, namely: How much decision making should we delegate to intelligent machines?

It's already being debated in the C-Suite.

For the last decade, board level executives have – with varying levels of enthusiasm – applied machine learning (ML) to specific business processes. Intelligent machines can now do everything from writing company reports answering customer service queries.

But this is just the 'micro' stuff. There's a much bigger issue to address: could AI impact the way companies are run?

The C-Suite Gets an AI Upgrade

AI and machine learning aren't going to lead companies, but they will profoundly alter how companies are led.

Read The Article By SAP

An article by SAP spells out the quandary as follows. "It's hard to say how much of a rock star leader's success comes from know-how and how much comes from expectations, status, access to information and tools that aren't readily available to subordinates."

It goes on to argue that this will change as ML permeates the organization. There'll be more data, and more people with access to that data. In such a scenario "there will be less reason to admire leaders for having the right hunches and more reason to applaud them for asking the right questions."

The telco industry will be among the first to face up to this brave new world. Obviously Mobile Network Operators (MNOs), Mobile Virtual Network Operators (MVNO) and Communication Service Providers (CSPs) are already in the business of collecting and interpreting data – far more so than companies in many other verticals.

As such they have the ‘raw material’ to embed ML into their operations. Indeed, many are already doing so.

They are using the technology to personalize the customer experience, identify new consumer targets and manage their networks more efficiently. These areas are where the potential for returns is highest.

However, the next step will be to integrate machine learning at the very top – in the C-suite.

Once AI has permeated the entire telco organization, it could change the way decisions are made; not just operational decisions, but strategic ones as well.

In the AI-enabled C-suite, a leader’s instinct will still matter, but it will be the start of a process. Scenarios driven by machine-modelled data and analysis will validate the opinions of bosses and VPs. Or invalidate them.

And it will take minutes rather than weeks to surface key metrics and potential outcomes about the business.

These changes are coming.

Organizations that embrace them first will steal a formidable advantage over competitors.

Chapter 2
How Telcos Are Using AI Today?

Only **17%** of 1800+ IT leaders across the Americas, Europe, Asia and the Middle East described themselves as having “fully mature AI and ML capabilities scaled across their entire organization.”

Rackspace Survey - January 2021

In January 2021, Rackspace conducted a survey of 1800+ IT leaders across the Americas, Europe, Asia and the Middle East.

The report divided respondents into six sectors: government/public sector, digital native, healthcare, financial services, manufacturing and retail.

It revealed that most respondents still believe themselves to be at the beginning of their AI and ML journeys.

Only 17 percent described themselves as having “fully mature AI and ML capabilities scaled across their entire organization.”

More typically, they were applying the technology to particular business functions. Here’s a chart showing the most popular use cases among the study respondents.

Application	% using ML
Component of data analytics	40
Driver of innovation in the company	38
Applied to embedded systems	35
Resource optimization	34
Predictive maintenance/predictive failure	31
Create personalized customer journeys	30
Reduce operational costs	30
Drives new areas of monetization	29
Product lifecycle management	27
Optimization and testing	25
Automate marketing campaigns	14

Current use of AI and machine learning

At present, the industry applies the technology in main areas

- Customer Experience
- Sales and Marketing
- Network Maintenance and Planning

84% of consumers say the experience a company provides is as important as its products and services.

Salesforce's State of the Connected Customer report

96% of telcos regard customer experience (marketing and next best action) as a top AI priority for the next five years.

70% cite customer support (complaint resolution and virtual assistance)

EY's Global telecommunications study 2019-20

We might conclude that consumers have three key CX demands

Make my experience simple and intuitive

Make it unique and personal

Offer me self-service options

Telcos know this. Which is why customer service is where they plan to apply AI first.

And in fact, telcos are already applying machine learning to the challenge. How? Most visibly with virtual assistants

Machine learning enables chat bots to respond to individual customer enquiries with relevant and complete answers instantly.

They can handle most queries by trawling internal and external data sources. This negates the need for new knowledge bases.

It also vastly reduces the pressure on overwhelmed customer care agents.

Bots are smart enough to use 'intelligent routing' to hand over insoluble questions to the right human operators – along with the complete context of the query.

All of this can give customers more power to self-serve.

Rather than trawl FAQs, how-to videos and troubleshooting guides, customers can simply ask a question.

And they can so do on the channel of their choice: text, app, web, voice etc.

65% of telco conversations can be automated

Chatbot specialist LivePerson

For this reason, many MNOs have already committed to the above approach.

For example, Verizon has a dedicated offering called Digital CX that gives its corporate customers a ready-to-go solution.

It comprises a Virtual Agent, a Knowledge Assist feature that provides relevant answers and the best course of action for the agents and a Social Engagement tool that monitors social media trends.

Sales and marketing

Telcos have a unique lens on their subscribers' location, web and app use, network interactions and more. It's taken some time for them to turn these insights into profit.

Frankly, most still don't. But many are, at least, employing the data to make their own sales and marketing activity more effective.

Lynx Analytics is currently helping many telcos to classify subscribers in a more accurate and granular fashion with it's Customer Happiness Index (CHI) Platform.

67% of brands consider telecom operators to be a better original source of data insights than Google, Apple and Samsung.

Study by Ovum - 2017

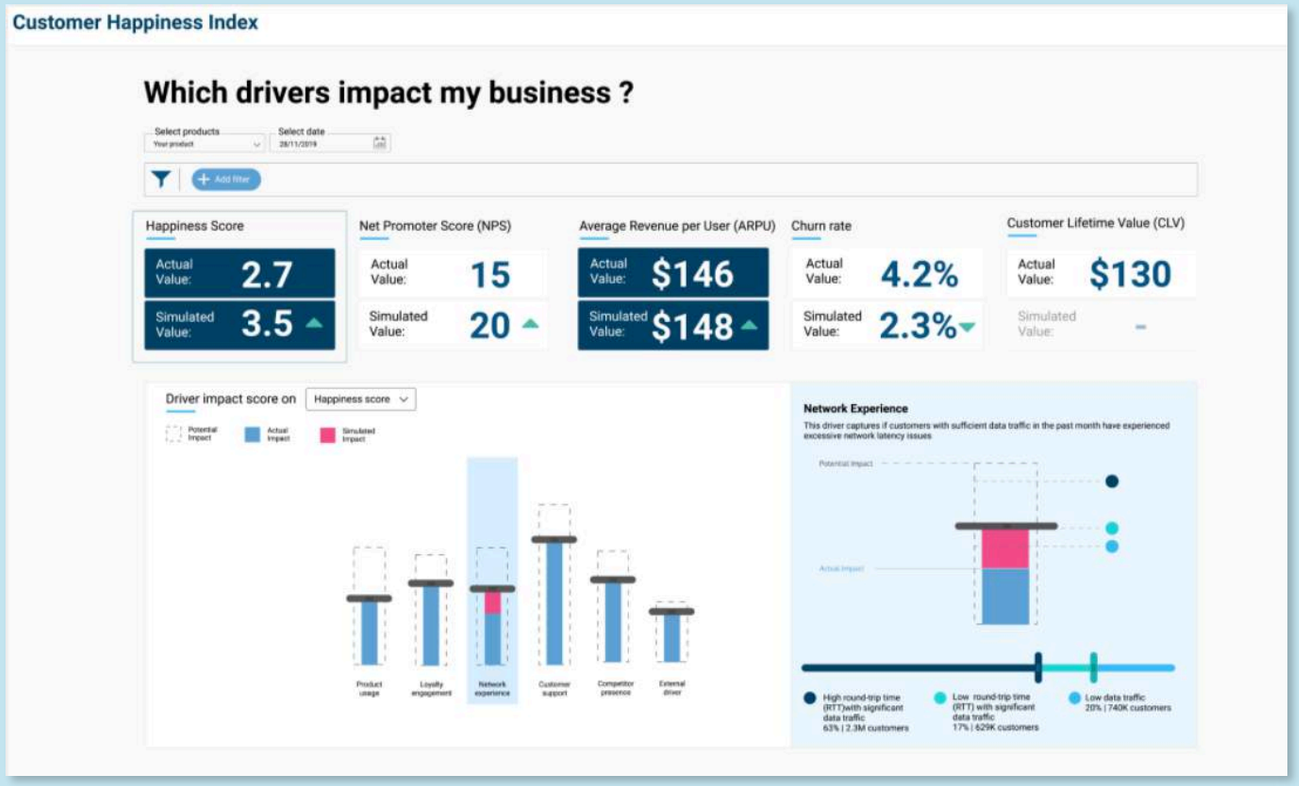
Lynx Analytics Customer Happiness Index (CHI) platform uses ML to analyze metrics such as:

- Quantity of data consumed
- Quality such as latency, throughput, packet loss, on different site technologies, down to customer level
- Dropped calls, reducing in importance, but still important for highest value customers and older customer cohorts
- Number of calls to customer service
- Cross service ownerships such as Fixed/Mobile broadband, IPTV, Mobile, IoT
- Bill disputes
- Value-added service subscriptions

It then lets the telco company see what impact changing a specific operational metric (say, number of customer care calls made) will have on a given business outcome. The most important of these are:

- **Average Revenue per User (ARPU)**
- **Customer Lifetime Value (CLTV)**
- **Propensity to churn**
- **Net Promoter Score (NPS)**

Customer Happiness Index (CHI) platform



The CHI uses machine learning to model these outcomes. And it displays the results in easy-to-read graphs and tables on a web dashboard, enabling automated selections of audiences whose behaviours are explained by the diverse data points.

Ultimately, armed with these insights, the telco's decision makers can initiate actions with greater certainty about the business outcome; for example marketing teams can then craft promotions tailored for individuals or small clusters of subscribers to reduce churn or improve NPS.

MNOs are already employing CHI this way. In 2020, Hong Kong Telecom used the tool to assist its 5G roll out.

It studied the data to establish which regions would benefit most (in terms of ARPU uplift and reduced churn) from a 5G launch. It then directed its engineering teams to upgrade these locations first. The resultant promotions delivered double digit take-ups from all contacted customers.

Hong Kong Telecom uses CHI to establish which regions would benefit most (in terms of ARPU uplift and reduced churn) from a 5G launch.

Network Planning and Maintenance

The telco business is fundamentally an infrastructure business.

All those revenue-generating consumer-facing services are built on top of hard engineering – on towers and cell sites.

It's no surprise then that, mobile network operators spend nearly a quarter of their revenue on network management and maintenance every year.

They have to. Why? Because consumers hate downtime.

60% of subscribers who had churned cited network performance as their main reason for quitting.

Cable Industry Study

And for corporate customers the cost of network outages can be about far more than dropped calls. It can cause the failure of critical enterprise services.

So the question of how telcos fix network faults is hugely significant.

Historically, their approach has been to set up monitoring systems that trigger alarms when anomalies occur.

Analysts working at Network Operation Centers study these alarms to decide on what action to take.

The flaws with this approach are obvious. The system can only find what it is looking for – it can't detect new kinds of outage.

Over time, the alarms proliferate, but humans can't process them all.

As a result, the operatives mute some alarms thereby (possibly) ignoring faults that could eventually bring the network down.

To remedy this, a number of specialists have developed ML-based probabilistic algorithms to monitor network activity without human intervention.

These systems manage millions of alarms simultaneously.

In time, they learn to identify which to act upon and which to ignore. They can:

- **Prioritize alarms that have a high probability of leading to network incidents.**
- **Learn which alarms don't indicate serious problems and deprioritize them.**
- **Consolidate multiple alarms that might indicate the same fault**
- **Understand the relationships between different alarms to create new alarm families**

Vodafone is one of the pioneers in this space.

It **developed an 'Anomaly Detection System'** based on technology developed by Nokia Bell Labs to diagnose network faults.

It has already deployed the system across 60,000 4G sites in Italy and will roll it out across Europe by early 2022 as part of a wider network transformation.

Vodafone believes the tech will help it to detect 80 percent of all network and capacity issues.

Inseparable Twins: AI and Digital Transformation

Machine learning is helping telcos to replace previously physical processes with delightful digital journeys – as Orange Poland's Flex offering proves…

In 2019, Orange Poland announced a plan to 'Uber-ize' telecoms. It would re-think how customers could sign up, shop and interact with the network. And it would rip up the rule book – and take its cue from digital native innovators such as Uber, Revolut and Netflix. The result was **Orange Flex**.

Flex replaces the entire process of signing up for a subscription and managing an account with an app.

Customers download the app, choose a tariff, upload a picture of their ID and a selfie and enter a payment credential.

The app also lets people transfer data balances with friends and family and add content subscriptions with just a few clicks on the app.

No shop visit. No paper. No call center.

Flex would not have been possible **without machine learning**, which powers the image recognition tech used at the on-boarding stage.

This process requires orchestration of more than 1200 possible screens in the app to cover all scenarios. Verification and launch takes two minutes for an eSIM-enabled device (where the SIM is pre-embedded in the phone).

The public has embraced Orange Flex. **280,000 people downloaded the app** in nine months – with around 30 per cent converting to active users every week.

As a consequence, Orange Poland has achieved cost savings by automating business processes, minimizing dependence on physical retail channels and reducing commission payments to channel partners.

Chapter 3
The Elephant in the Room: AI and 5G

‘Standalone’ 5G is not merely a ‘slightly better than before’ upgrade on 4G. It is, in fact, an entirely new type of network.

Standalone 5G is largely virtual – based on foundational technologies (Network Function Virtualization and Software Defined Networking) that turn many physical network components into software.

The new 5G infrastructure will transform the speed and capacity of the network. 5G will be up to x100 faster than 4G and able to connect one million devices per square kilometre.

The mobile industry trade body GSMA expects MNOs to spend $1.1 trillion between 2020 and 2025 in mobile CAPEX. 80 per cent of this outlay will be on 5G networks.

5G could contribute $2.2 trillion to the global economy by 2034.

GSMA

As such it will be able to support innovations that depend on always-on super-fast mobile broadband.

Needless to say, the volume of data and telemetry generated by these future virtual networks will be orders of magnitude greater than what has come before.

This data explosion will compel carriers to consider a more automated approach to their network management. This is especially the case when it comes to network slicing.

In a 5G world, MNOs can allocate bandwidth to enterprises.

This network slicing will give private organizations the ability to run their own mini-networks on top of a common physical infrastructure.

It could transform the fortunes of telcos – turning them from connectivity providers to strategic partners in the digitization of all manner of industry verticals.

To make a success of network slicing, MNOs will need to apply AI and machine learning to it.

Such systems will be needed to make better real-time decisions about the allocation of network resource to private enterprise customers.

To make a success of network slicing, MNOs will need to apply AI and machine learning to it.

Chapter 4
From AI Pockets to AI at scale – all the way to the C-Suite

When the PC first hit the business world, it functioned as a faster and more flexible typewriter. Employees used it for specific tasks: letter writing, basic bookkeeping, desktop publishing. It took some time for the PC to become networked and to infiltrate/transform every corner of the organization.

Machine learning is going on the same journey.

Today, as this paper has shown, AI/ML is making a difference to telcos in pockets – customer on-boarding, network maintenance etc.

The challenge facing MNOs and CSPs is to implement AI at scale across the whole company. With machine learning embedded in every operational process, telecom companies will be better able to plan their network upgrades, cope with fluctuating demand levels, adjust to supply chain disruptions, offer improved consumer experiences and – crucially – to make better decisions for the business as a whole.

What will it take to get there?

Transforming Telcos with Artificial Intelligence

Boston Consulting Group

The thinktank Boston Consulting Group has a number of suggestions. They include:

- Use the technology to reimagine existing operating procedures in every function.
- Identify where AI will create the highest value.
- Create dozens of teams, each with the attitude of a start-up, to tackle key processes that cut across silos.
- Limit rigid procedures, rules, approvals, and other time-consuming requirements, particularly on network staff.
- Explore how AI can drive growth in adjacent areas such as health, media, entertainment, third-party analytics, and other digital services.
- Make the C-suite own AI. This might be the most important of all. BCG says: "Using AI at scale requires a new employee mindset and culture, so it's important to prepare your people for change. To do that, getting the C-suite to own the AI deployment process is critical."

And so we arrive at the central premise of this paper – the ability of AI to give business leaders access to information and insights that will ultimately change the way they make decisions.

In the first instance, it should help leaders arrive at the best answers more quickly.

Consider the real example of a newly arrived CEO at a Canadian telco who decided to review the overall profitability of the business. She was shocked to discover that no one could say for sure how profitable any single large enterprise account in the MNO's corporate customer base was.

This made renegotiating and expanding contracts a very challenging task. AI could have helped. An AI-powered system is good at pinning values on specific items in a specific context. In this scenario, it could have answered: "how much room do we have to renegotiate this account and still remain profitable?"

Extend this capability across all facets of the business, and you change the very nature of decision making at the C-suite.

Even for really big questions such as: should we acquire this company? And at what price?

Here's how SAP describes this possible future.

"AI will not be the end of leadership, but it will change what's needed to be a successful leader. CEOs will leverage the ability of AI to turn massive amounts of data into answers to complex strategic questions at a massively accelerated rate.

"In the AI-enabled C-suite, hunches and gut instincts will still be important, but they will be tools for inquiry rather than action. AI will enable CXOs to prove or dispel their hunches with extensive data and analysis rather than relying solely on personal experience or counsel from trusted advisers."

Some verticals are already moving towards such a future. The venture capital space, for example.

More than 75% of VC and early-stage investor executive reviews will be informed by AI by 2025.

Gartner

It says that investing strategy will move away from gut feel and precedent. Instead, VCs will deploy AI systems to ingest data from a range of sources (social media, business sites, past and current investments, company financials), and use the resultant insights as the basis for their decisions.

In the telco world, some forward-looking MNOs are already on a similar journey.

Let's return to the example of Hong Kong Telecom. Its CEO wanted to know whether he could use AI to provide a holistic view of the company's key metrics – ARPU, churn, customer sentiment etc – rather than rely on a patchwork of reports from the various functional groups.

He asked Lynx Analytics to lead this effort, and the result was the Customer Happiness Index tool.

Every other telco should be considering the same issues. It won't be easy. Data is often siloed and incompatible. A huge challenge will be getting it into the correct format so that it is easily accessible by ML systems.

But these hurdles can be overcome.

Now's the time for action.