

State Officials' Attitudes Towards Chinese Vendors Under Network Security Challenges

Prime Minister
of Norway

2018-09-17

**Norway telecom media- Inside Telekom's interview
@ Telia IOT official launch meeting**

What's important is that Huawei knows that it is a commercial enterprise rather than a political tool for China. If anyone is suspicious of this, their market access will be much less.

<https://www.insidetelecom.no/artikler/to-kandidater-til-nytt-kjernenett-bgge-bruker-kinesisk-utstyr/446200>

Belgium Deputy
Prime Minister &
Minister of Telecom
and Postal Services

2018-01-17

**Minister's response to Ericsson CEO
comment about Chinese GSM vendors
@ 5G activities in Hasselt**

We believe in free markets and competition.
The safety regulations we use apply to everyone.

<https://www.hln.be/ihln/multimedia/-gsm-antennes-in-belgie-zijn-niet-veilig-aabf2cba/>

Head of the Canadian
Centre for Cyber
Security

2018-09-23

**Comment @ the House of Commons committee
on public safety and national security**

The government is leery about excluding firms such as Huawei because it believes reducing the number of telecom equipment suppliers would mean Canada would be more vulnerable if one vendor's equipment was infected.

<https://www.theglobeandmail.com/politics/article-no-need-to-ban-huawei-in-light-of-canadas-robust-cybersecurity/>

Deputy Director of
National Cyber
Security Centre
Finland (NCSC-FI)

**Finnish media- Iltasanomat's coverage
about Chinese vendor**

Huawei is a key player in the UK's network infrastructure. It has a research center in the UK and is working very closely with UK regulators, which have regular audits of the research center.

<https://www.is.fi/digitoday/tietoturva/art-2000005675820.html>

Operators' Attitudes Towards Chinese Vendors Under Network Security Challenges

Vodafone CEO

2018-11-20

UK media- The Times's coverage about Huawei

"I think (Huawei) they're doing everything possible to ensure they remain a very serious and credible supplier."

<https://www.thetimes.co.uk/article/vodafone-chief-vouches-for-huawei-in-security-debate-n2vzxrdf>

BT's Chief Architect

2018-11-21

MBBF in London

"There is only one true 5G supplier right now and that is Huawei -the others need to catch up."

<https://www.lightreading.com/mobile/5g/bts-mcrae-huawei-is-the-only-true-5g-supplier-right-now/d/d-id/747734>

Telia Company CEO

2018-11-22

Norwegian media- Dagens Næringsliv's coverage about Huawei

"This is not about a supplier from a country, but how to secure the digital infrastructure."

<https://www.dn.no/telekom/datasikkerhet/huawei/telia/-dette-handler-ikke-om-ett-selskap/2-1-484030>

Telia Norway CEO

2018-11-23

Norwegian media- Dagens Næringsliv's coverage about Huawei

"As operators, we must relate to both to secure our own infrastructure and also to be a part of the digitization participants in the market. This is not a supplier question."

<https://www.dn.no/telekom/datasikkerhet/huawei/telia/-dette-handler-ikke-om-ett-selskap/2-1-484030>

Vice President,
Network Services,
Elisa

2018-05-14

Finnish media- Iltasanomat's coverage about Chinese vendor

"Technology is technology. Although data privacy requires different levels of confidentiality, I don't think there is any difference between these three vendors."

<https://www.is.fi/digitoday/tietoturva/art-2000005675820.html>

Director - DNA

2018-05-14

Finnish media- Iltasanomat's coverage about Chinese vendor

"From the operator's perspective, these three suppliers are at the same level. Like the rest of the world, we believe in these three suppliers."

<https://www.is.fi/digitoday/tietoturva/art-2000005675820.html>

BT's McRae: Huawei Is 'the Only True 5G Supplier Right Now'

LONDON -- Global Mobile Broadband Forum -- Ericsson, Nokia, Samsung and ZTE got a kick in the pants Wednesday morning from BT's Chief Architect Neil McRae when he proclaimed "there is only one true 5G supplier right now and that is Huawei -- the others need to catch up." McRae might have been in a supportive environment, at Huawei's own Global Mobile Broadband Forum event in London, but the outspoken BT executive's message was clear -- Huawei's 5G rivals are stuck in a telco mindset rut and need to up their game.

"I've been to Shenzhen recently [Huawei's headquarters] and there's nowhere else in the world where you can see" the kind of 5G technology developments that Huawei has achieved, he noted during a panel discussion, though without highlighting any specific advances.

"The other suppliers need to learn from Huawei -- the others are held back by old telco issues," he added, before going on to praise Huawei's support for BT's next-generation network development activities.

Of course, this is just one executive's viewpoint, but McRae is a straight talker and knows the impact of sharing his views in public. This is clearly his way of warning the other 5G radio access equipment developers that (in his view) they have lagged behind Huawei, which is aggressively targeting any and all 5G engagements in the markets where it is welcome.

Having one supplier way ahead in terms of R&D and support services is not a good situation for the likes of BT (which owns the UK's largest mobile network operator EE) and other major operators, which will want a number of suppliers to be able to provide cutting-edge, innovative technology solutions for 5G deployments.



And as McRae was talking at a Huawei-hosted event, it wasn't too long before senior executives from the Chinese vendor were highlighting multiple advances that the company has made in integrating multiple technologies into small, power-efficient form factors, as well as in using artificial intelligence tools to improve operations and maintenance (O&M) processes and so lower operating costs for network operators.

It's those kinds of capabilities that, even in the early days of 5G, are enabling Huawei to boast of significant overseas shipments of 5G-enabled radio access products.

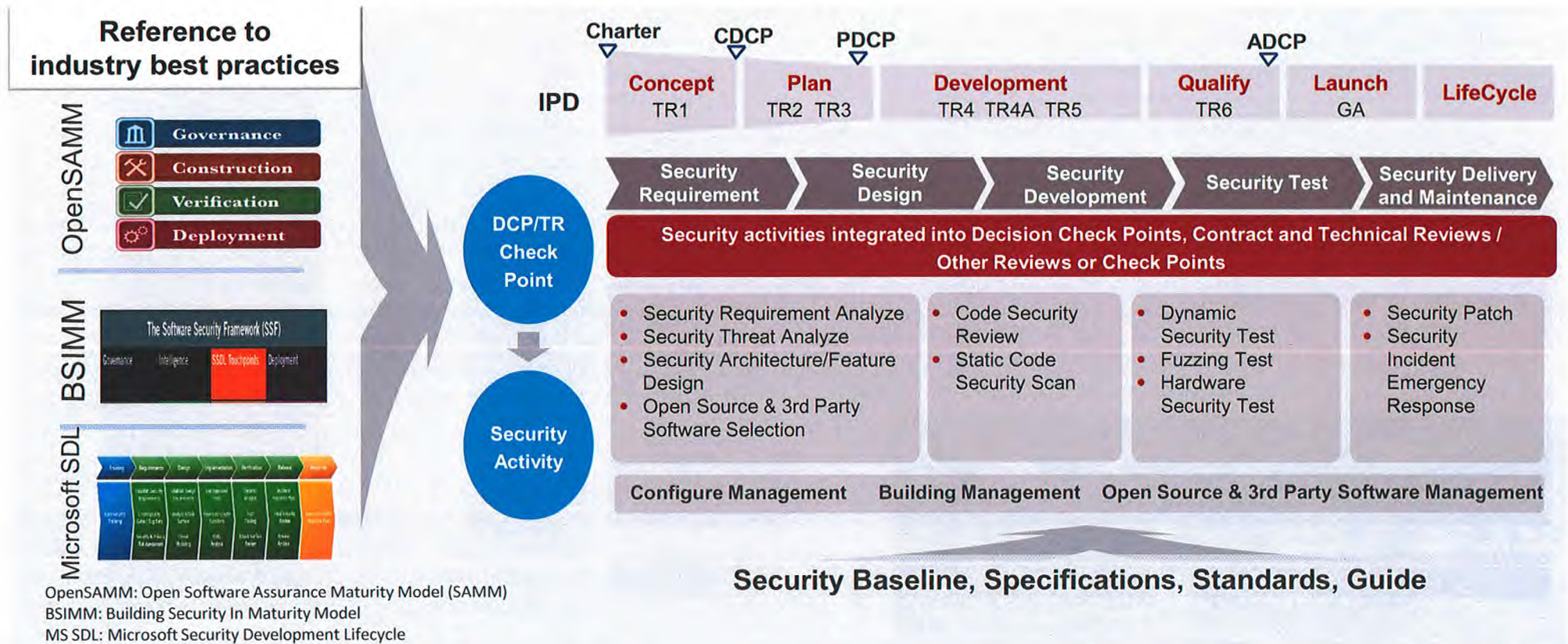
It was also obvious from the event that, despite some ongoing concerns about the security implications of deploying technology from Chinese suppliers, the support for Huawei from major operators across Europe, the Middle East, Africa and Asia is strong.

And for McRae, it's hard to imagine he won't be getting a call from the Nordics in the very near future.

— Ray Le Maistre, Editor-in-Chief, [Light Reading](#)

R&D Network Security - Security Activities Integration Into R&D Lifecycle Process

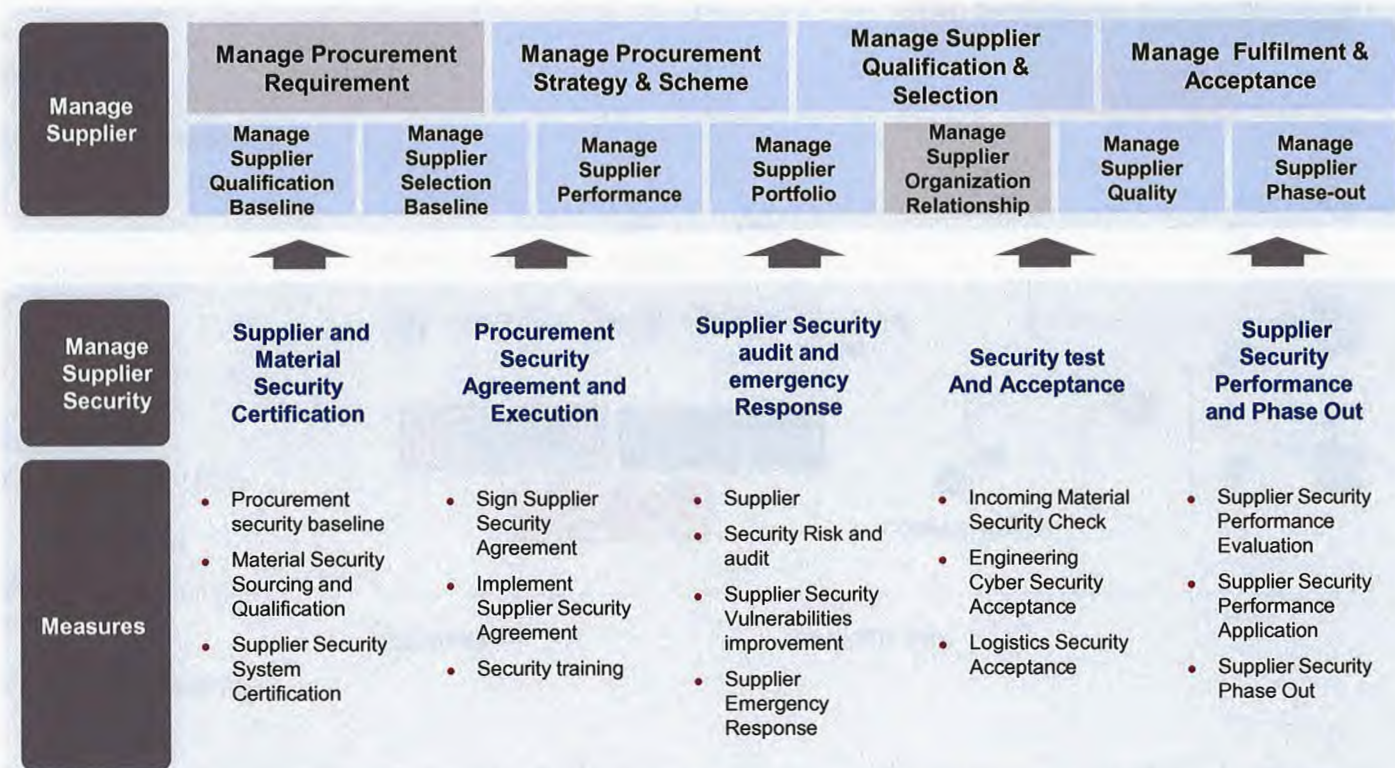
Security By Design / By Default In Lifecycle



Supply Network Security - We Work With Suppliers To Effectively Reduce Potential Risks

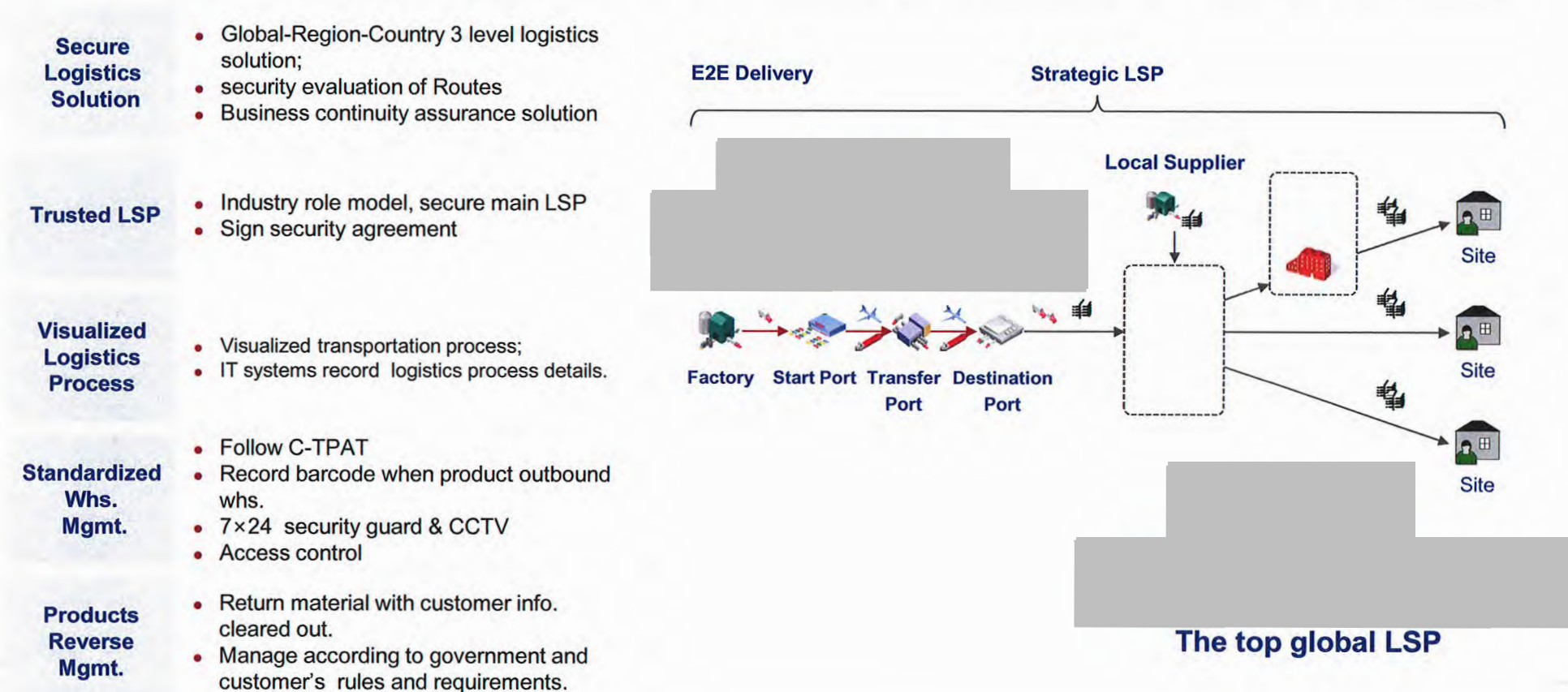
From Supplier Management Criteria, Cyber Security Agreement To Fulfilment & Acceptance Test

- Security is one of the seven elements of supplier management TQRDCES (Technology, Quality, Response, Delivery, Cost, Environment and CSR, security)
- All suppliers that are related to cyber security must sign the cyber security agreement, and pass the cyber security system qualification
- All materials of cyber security must pass the material security test and qualification.

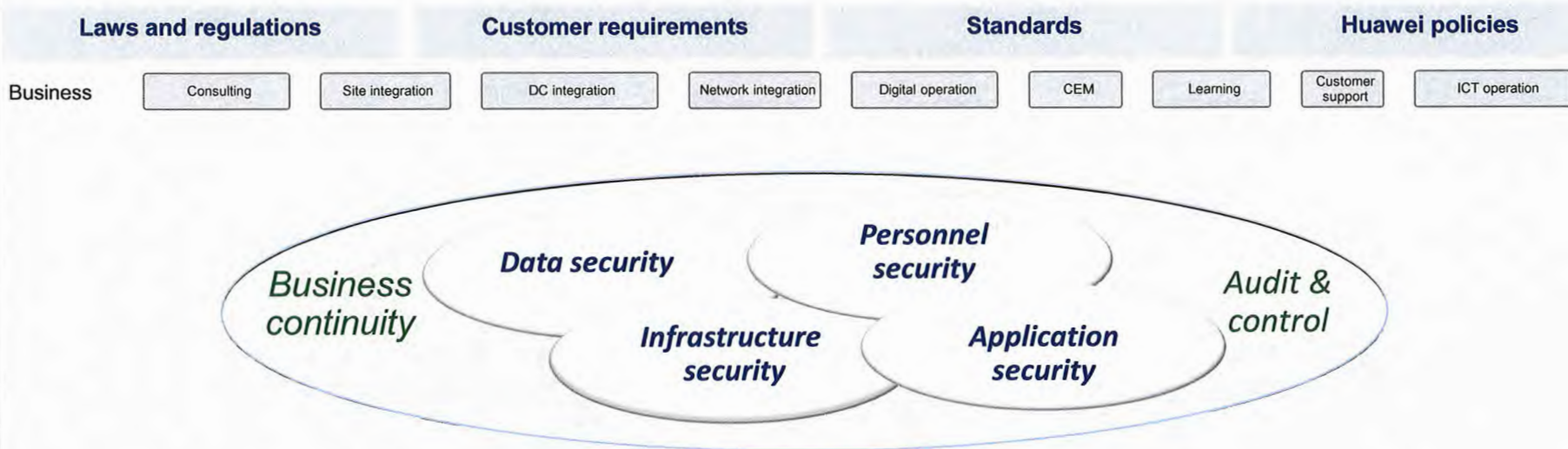


Supply Network Security - Global Logistics Management To Ensure The Integrity & Traceability

From Material Sourcing, Production, To Delivery To Customers In The Supply Chain



Service Cyber Security-from Infra Security , Application Security to Data & Personnel Security



One Security System for Global Security Services — One Security Expert Team

Onsite delivery:

1. Perform operations on the live network under the customer's supervision or authorization. Three Approvals are implemented.
2. Delivery records can be audited for accountability.
3. Comply with cyber security and privacy protection code of conduct

Remote delivery:

1. After obtaining the customer's authorization, access the customer's network through a remote operation platform.
2. Huawei entities sign cross-border data transfer agreements for transferring data out of Europe.
3. Comply with security and privacy policies and processes.

Huawei complies with ISO 27001 and obtains security certification in the service domain.

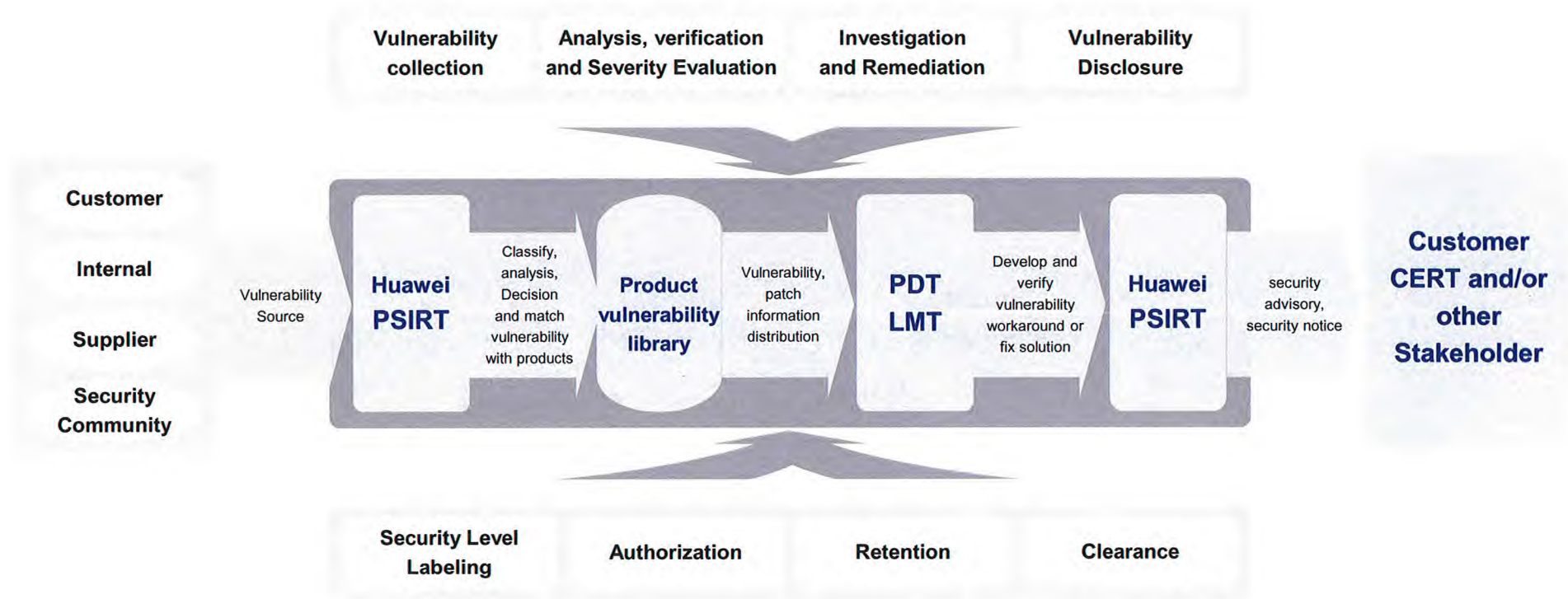
2016



2017

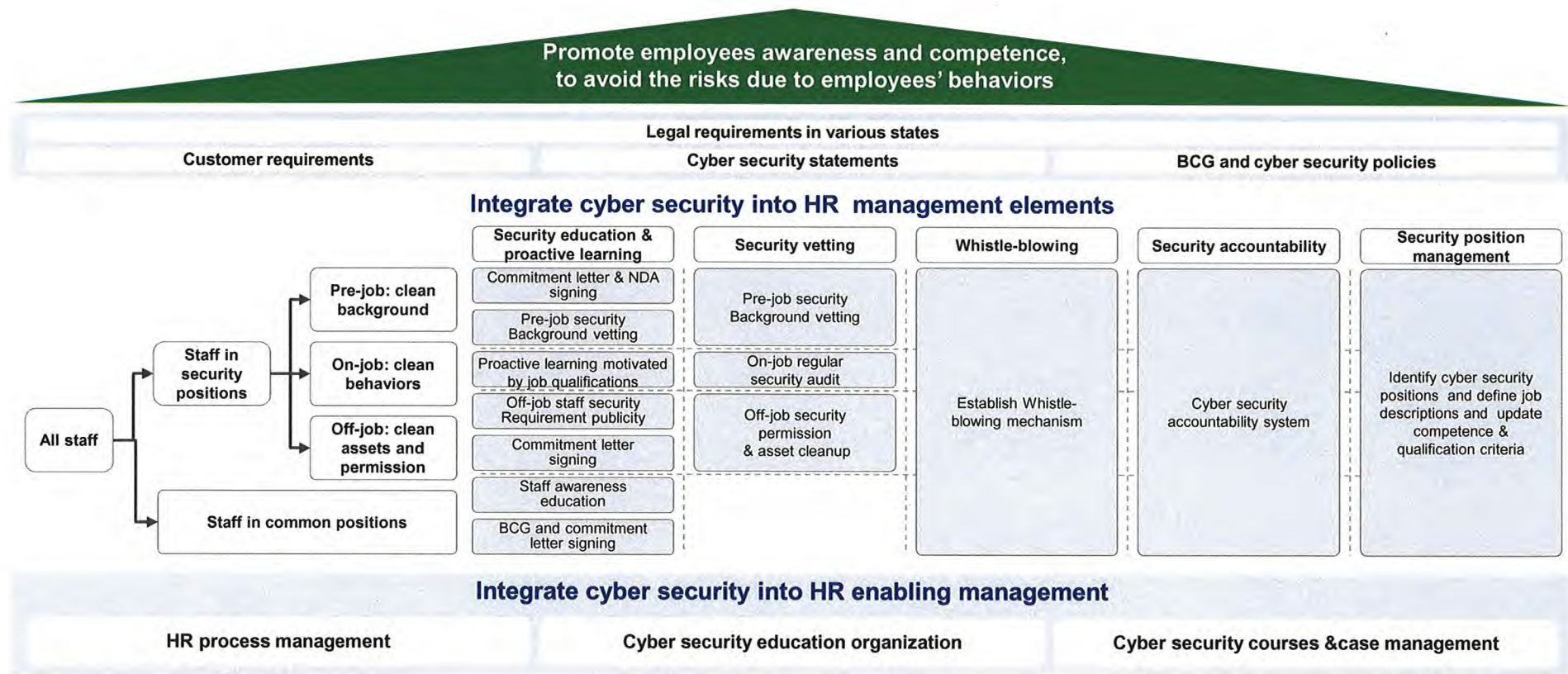


Vulnerability Management & Disclosure - We Adopt Responsible Disclosure Processes With Vendors, CERT Organizations And Security Researchers



HR Cyber Security - Clean Records And Clean Behaviors Are Key Requirements

Imbedding Awareness And Understanding Of Cyber Security As Well As Changing Behavior





Van:
Verzonden: donderdag 3 januari 2019 11:01
Aan:
CC:
Onderwerp: RE: Nieuwe afspraak voor meeting

Hoi

Bel me even als jullie hier zijn (070-), dan pik ik jullie beneden op.

Groet

Verzonden vanuit Mail voor Windows 10

Van:
Verzonden: woensdag 2 januari 2019 14:04
Aan:
CC:
Onderwerp: RE: Nieuwe afspraak voor meeting

Hallo

Super dank je wel dat komt helemaal goed uit. Waar moeten ontmoeten we elkaar (we komen graag naar jou toe)?

Op hoofdlijnen zou ik de volgende agenda willen voorstellen. We staan open voor suggesties van jou kant.

1. Actiepunten laatste gesprek
 - a) Huawei Patent aanvragen verdeling
 - b) Financiering Cyber Security center
 - c) Cyber Security maatregelen Huawei (zie punt 3)
2. Cyber Security maatregelen Huawei Nederland (default is: we werken volgens de processen van de operators)
3. Chinese Law interpretation (naar aanleiding vraag Australie artikel)

Groet,

Solution Director



Huawei Technologies (Netherlands) B.V.
Address: Stationsplein 4 – 6, 2275 AZ, Voorburg
Tel: +31
Email: 1@huawei.com
www.huawei.com

This e-mail and its attachments contain confidential information from HUAWEI, which

is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it.

From: [mailto: @minez.nl]
Sent: Wednesday, January 02, 2019 9:37 AM
To: @huawei.com>
Cc: @huawei.com>
Subject: RE: Nieuwe afspraak voor meeting

Goedemorgen

Morgen half vier zou bijvoorbeeld kunnen. Schikt dat?
En de beste wensen voor komend jaar!

Groet

Verzonden vanuit Mail voor Windows 10

Van:
Verzonden: maandag 31 december 2018 12:11
Aan:
CC:
Onderwerp: Nieuwe afspraak voor meeting

Beste

In onze laatste meeting heb ik het zeer gewaardeerd dat je duidelijk en helder naar ons was en ik zou graag op je uitnodiging willen ingaan om nog een keer om tafel te zitten om door te praten en te kijken waar we je van informatie kunnen voorzien voor de cybersecurity beleidslijnen waar je nu mee bezig bent.

Je gaf, dacht ik, aan dat je in deze week weer verder ging met schrijven aan het stuk waar je mee bezig bent. Graag zou ik willen kijken of we elkaar deze week nog kunnen ontmoeten. De vraag is of dit bijvoorbeeld op donderdagmiddag of vrijdag zou kunnen. Heb je hier beschikbaarheid?

Ik heb tevens naar je vraag gekeken rondom de patenten en heb hier een klein beetje voortgang geboekt en kan je de 5G patent status laten zien voor het mobiele domein.

Groet en alvast een goede jaarwisseling gewenst,

Solution Director



Van:
Aan:
Onderwerp: Fwd: input
Datum: dinsdag 13 augustus 2019 22:42:08
Bijlagen: [Werkdocument Huawei - Economische Zaken Klimaat v1.0 10012019.pdf](#)
[ATT00001.htm](#)

Begin doorgestuurd bericht:

Van: [@huawei.com](mailto:)
Aan: "[@minez.nl](mailto:)",
Kopie: [@minez.nl](mailto:)
Onderwerp: Antw.: [FSI](mailto:) input [PDI](mailto:) [@huawei.com](mailto:)

Beste en ,

In navolging van onze discussie hierbij wat additionele informatie zoals afgesproken.

Mochten er vragen zijn dan horen we dat graag en in ieder geval kunnen we er volgende week als jullie bij ons langskomen nog verdere toelichting op verschaffen.

Met vriendelijke groet,

en

From:
Sent: Tuesday, 8 January 2019 18:07
To: <[@minez.nl](mailto:)>
Cc: [@huawei.com](mailto:)>
Subject: RE: input

Beste ,

Ook namens Huawei nogmaals dank voor het open gesprek afgelopen vrijdag.

We zullen voor uiterlijk donderdag de gevraagde informatie aan leveren inclusief een wat gedetailleerder overzicht van de dienstverlening (wie doe wat bij het netwerk).

M.v.g.

From: [\[mailto: @minez.nl\]](mailto:)
Sent: Tuesday, 8 January 2019 10:02
To: <[@huawei.com](mailto:)>;
[@huawei.com](mailto:)>
Subject: input

Beste en ,

Dank voor het informatieve gesprek afgelopen vrijdag.

Jullie zouden nog wat input sturen. Lukt dit om voor a.s. donderdag te sturen?

@ , jij had het over het . Wordt dat door jullie of

door en gedaan?

Groet

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Werkdocument Cyber Security

Huawei voor het Ministerie Economische Zaken & Klimaat

This document is constructed based on the conversation we had on the 4th of January 2019 with _____ and _____. In this document we, as Huawei, will give you the answers that were raised during our engagement.

The main question that became evident during our conversation is: how do we, as The Netherlands, show that we are in control of our telecom networks in The Netherlands and the risk of cyber security (attacks by other countries) is minimized? Prevention is the key here.

During the meeting it became clear that the government is looking for a well-balanced argumentation and guidelines to be defined in the policy statements. The following aspects could be incorporated in the framework:

1. How can we avoid any influence on the Dutch Telecom Infrastructure from outside?
2. What kind of innovation is the Netherlands going to miss, when Huawei is excluded from telecom networks?
3. What is the scope of Huawei within the mobile network of _____?
4. In what areas is Huawei involved besides the telecom business?
5. What are the facts about the supply chain of Huawei? Where does Huawei source their products and where are they manufactured and what is the competition doing like for instance Ericsson?

1. Legal framework in China and potential influence on individual persons in tech companies.

With regard to the new legislation in China on Cyber and telecoms, there is concern about the influence of China on telecom equipment in The Netherlands. Based on this we handed over the reports by the International recognized law firms that performed their interpretation of the Chinese Law and concluded that the Chinese Government has no legal ground to force Huawei to open Huawei systems outside of China. With regard to the individual action of Chinese persons under pressure of the Chinese government, we stated that all persons of Huawei working abroad are screened and we use the principle of multiple eye: no one single person can get access to vital systems in the operator network without the permission of the customer and multiple supervisor persons at Huawei side. The Huawei Cyber Security policies are also supporting our customers to be in control of their networks and the underlying equipment. This will be addressed in a separate action (see point 7)

2. What kind of Innovation is the Netherlands going to miss, when Huawei is excluded from Telecom networks?

On average it is stated in the market that Huawei is with their network technology in 5G about 1 year ahead of competition. This was confirmed by the operators and government people, as was stated by Ronald. On his question in what areas we are ahead we stated:

- 1) The integrated antenna technology for both low- and high-band and FDD+TDD resulting in a single antenna for a clean site.
- 2) Software Defined Radio to easily introduce new technologies (2G, 3G, 4G, NB-IOT, FDD+TDD and 5G) on different frequency bands and to make better use of spectrum by overlapping 2 technologies in the same spectrum.

- 3) The maturity of radio technology built up during the commercial deployment of more than 10.000 Massive MIMO antennas leading to the option of early deployment of the 5G networks in the Netherlands. Hence deployment of mission critical services could also being delayed. (i.e. autonomous driving, medical health services, etc..)
- 4) Energy efficiency and usage of the total system
- 5) 5G modem technology to create and end-to-end service offering.

Patents: what is the focus of the technology development in Huawei?

From an external source (Relecure) https://relecura.com/wp-content/uploads/2018/04/Huawei_Portfolio_Report_Apr2018.pdf?sm_auiVP4RZjksk42ns1 , it is shown that the Huawei application for patents are mainly in the domain of transmission, wireless technology and chipset development. This question lead to the discussion about the financial support of the Chinese Government and dumping equipment against very low prices. We stated that Telecommunication is a very mature market and our position in the market does not allow us to act in this way.

3. Scope of Huawei within the mobile network of ?

4. In what areas is Huawei involved besides the telecom business?

Huawei has a broad market portfolio and has a long standing relationship in the Netherlands. From Consumer business we are selling smart phones, watches, tablets and modems to the public in The Netherlands. In the business market we are serving enterprises and government organizations with our products like for instance:

. Besides this our central logistics EU hub is located in Eindhoven and we source each year about 300 million euro worth of chipsets from

5. What are the facts about the supply chain of Huawei?

Huawei executes a global procurement policy and sources 70% of materials from non-Chinese companies and only 30% of materials from Chinese companies.

1. 32% of materials are sourced from America, 30% from China, 22% from Taiwan, 10% from Europe, 4% from Japan and 2% from Korea
2. Most of the non-Chinese procurement are high-tech products, such as chips (CPU, Memory, special Chip, DSP), OS/DB/Tool software, Minicomputers, servers, hard drives, etc..
3. 30% of the products are sources from China and are mostly low-tech materials. such as: structural parts, cables, universal components, PCB, power supply, antenna, assembly, PCBA, etc..



4. There seems to be evidence in place that similar global sourcing distribution is in place for other vendors in our industry.

Besides the topics in the framework we have also identified the following subjects in the meeting:

6. Financing of Cyber Security Centers UK and Bonn

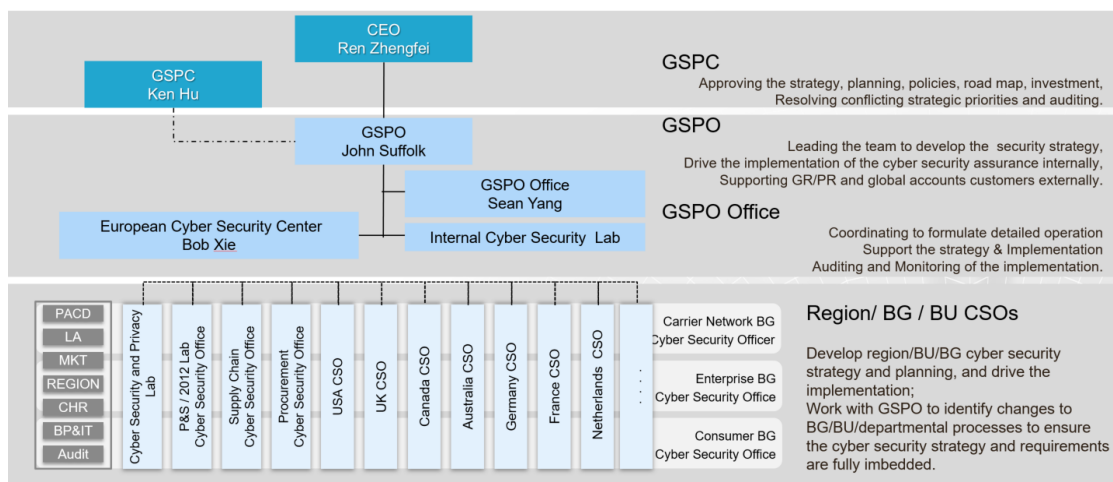
Information on the different financing models has been provided during our face to face discussion. It was mentioned a number of times that the Netherlands government might be considering a national test center to provide higher levels of local assurance. We stated that testing in each country is not very efficient and that sharing information between different countries would probably be more efficient. The cyber security center in Brussels was introduced and we mentioned that The Netherlands could have the first project to go through this testing center.

7. Cyber Security policies of Huawei

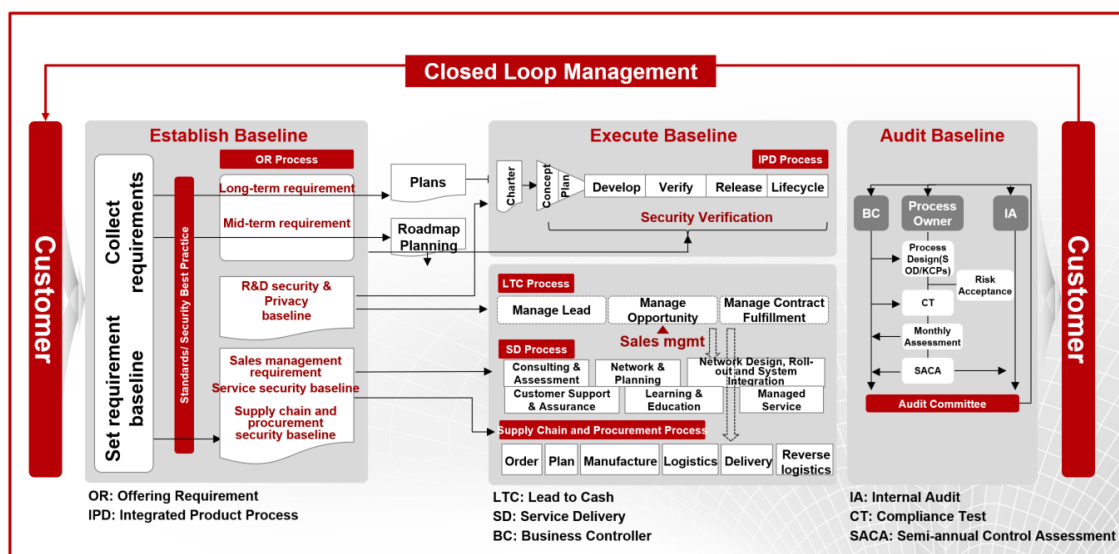
Huawei undertakes Cyber Security as a crucial company strategy, based on compliance with the applicable laws, regulations, standards of relevant countries and regions, and by reference to the industry best practice, it has established and is constantly optimizing an end-to-end cyber security assurance system.

Some practical examples of measures we have taken to ensure this end to end assurance:

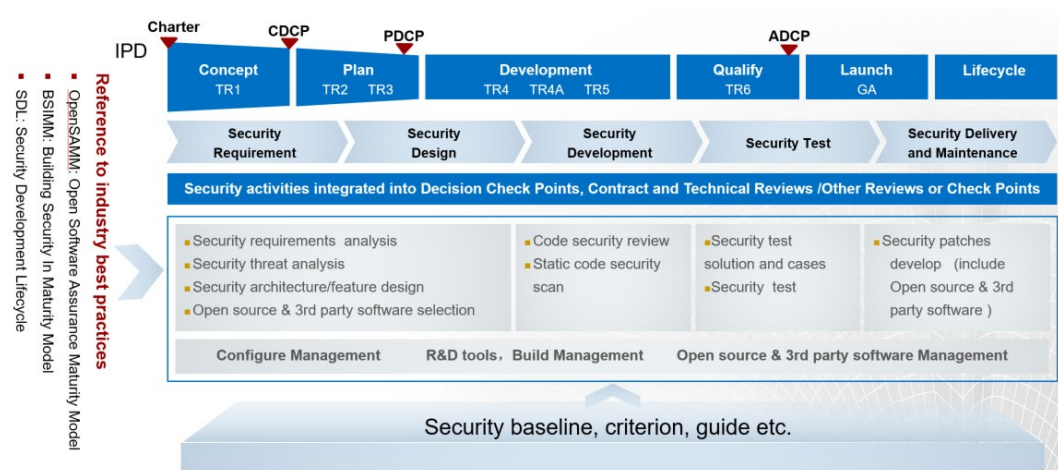
1. A Governance model that is ensuring that security is built in throughout the organization



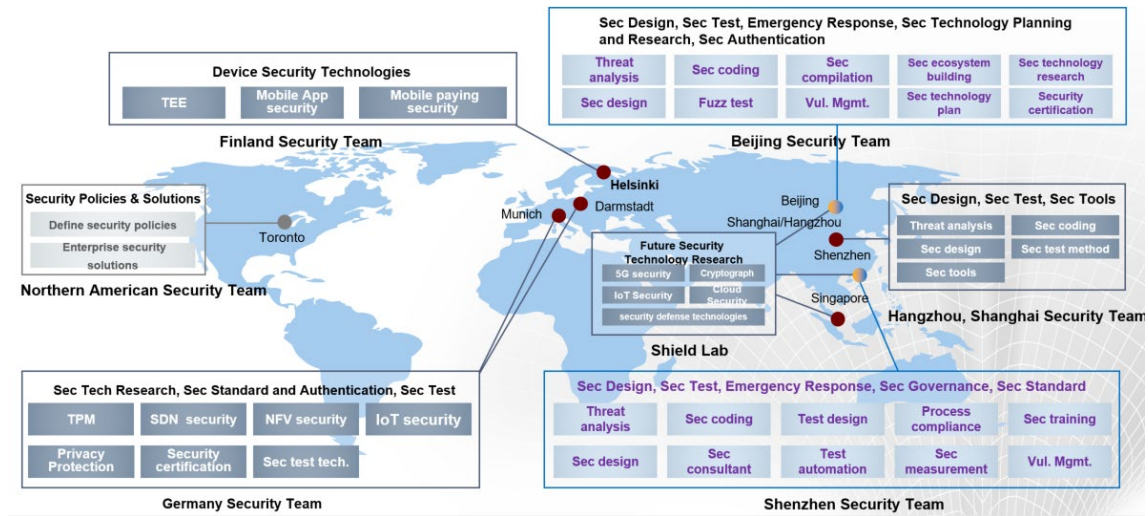
2. A **closed loop management** system whereby Strategy, plans, governance, processes, accountability and supporting technologies are integrated, seamless, repeatable and auditable. Wherever possible we look to be certified or externally validated, wherever there is an appropriate quality or security certification or standard.



3. Huawei has **adopted a build-in approach** through clearly defined and specific security activities and requirements within the product development process, and checks those activities at formal Decision Check Points and Technical Review check points, to ensure the implementation is effective
- In the concept stage of the Integrated Product Development process, security baseline requirements and high level security threat analysis is performed to ensure that all security requirements are adhered to.
 - During the planning stage, product lines implement the product security architecture & feature designs in compliance with security design principles and regulations, to identify security threats and work out mitigations, to ensure product security capabilities
 - In the development stage, all development work complies with Huawei secure programming specifications, and undergoes code security scanning and manual inspection to ensure the code is secure.
 - We perform security testing during Quality Assurance to identify product security problems in the early stages. In addition, we verify and evaluate the product security through the (independent form R&D) Internal Cyber Security Lab to ensure the products security and lawful compliance before launch.



4. To support efficient security planning Huawei is managing its cyber security engineering capability and technology map in a distributed way.

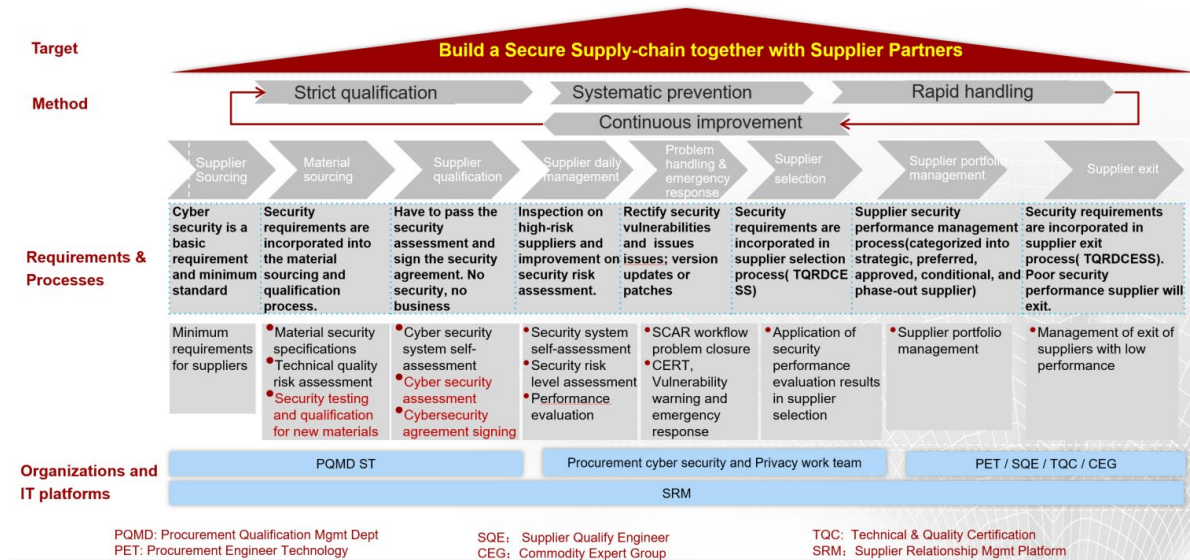


5. Furthermore Huawei actively participates in security standards activities, submitting proposals or leading workgroups

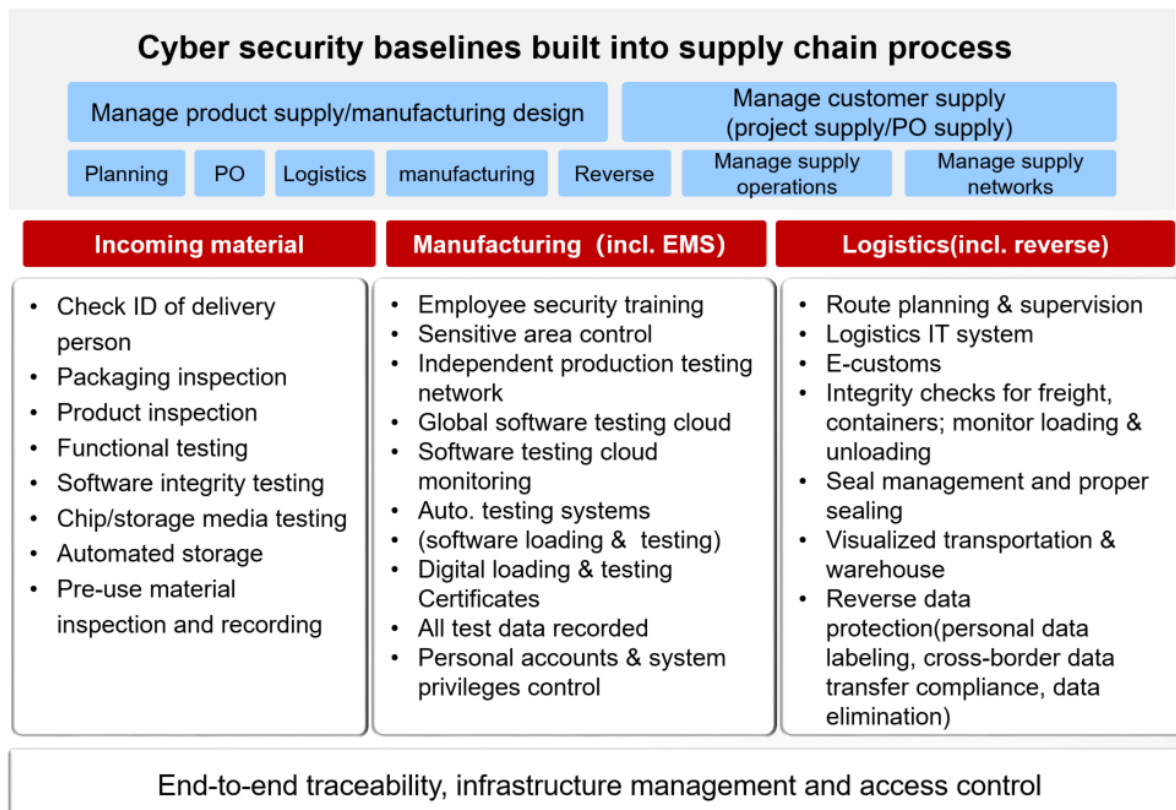


6. Ensuring Integrity in the Supply Chain

Huawei has further built in security into the supplier management



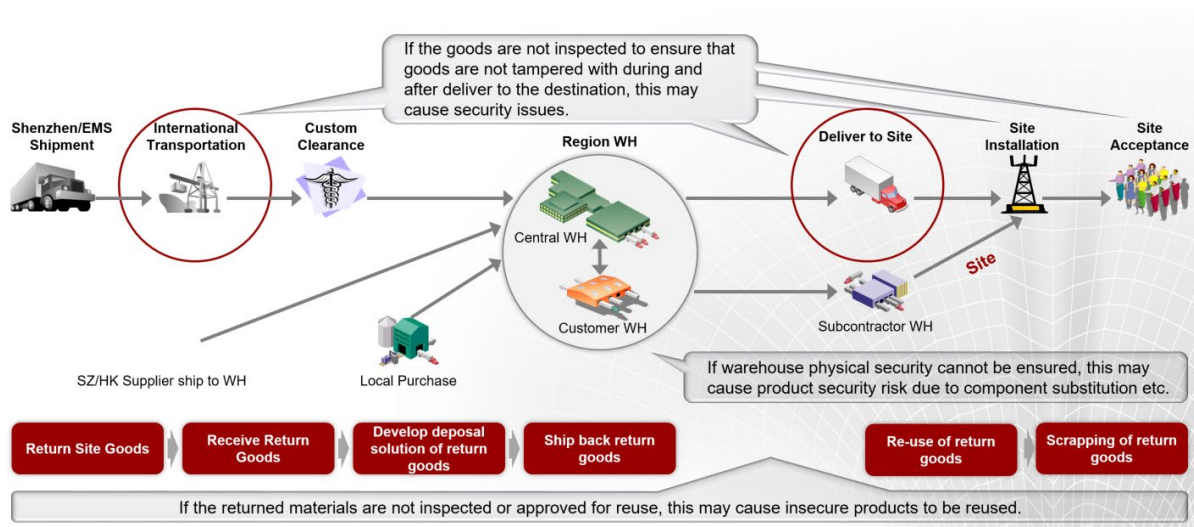
Supply chain security management has been embedded to ensure the integrity and traceability from material form sourcing through production to delivery to customers.



Supply chain security management is also addressing potential security risk in logistics and goods return. With barcode traceability, we can quickly trace and handle security throughout the chain.

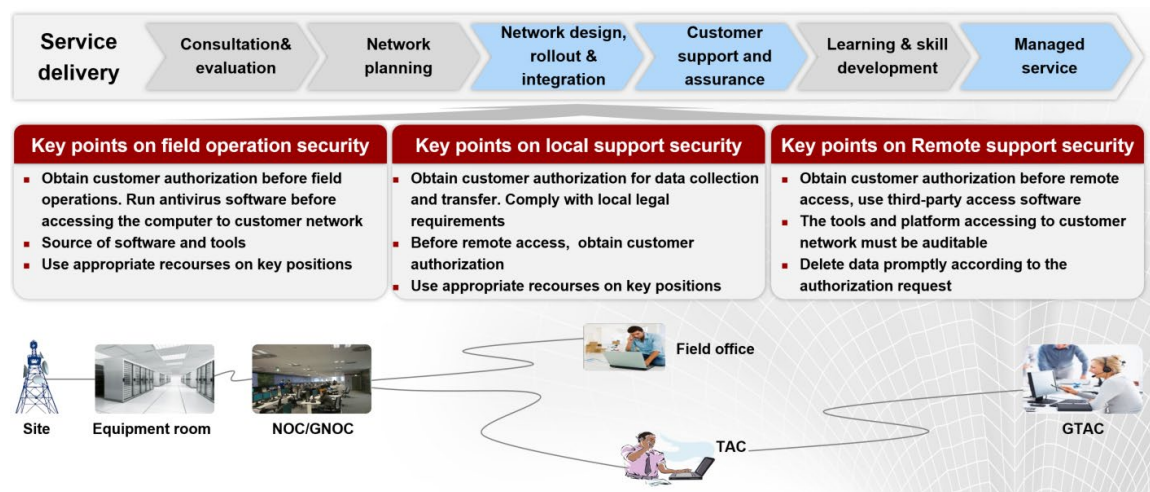
Huawei has the ability to trace 258 categories of materials, including integrated circuits (ICs), storage, resistors, capacitors, PCBs, and even solder pastes, accounting for 98% of all materials used in production (the only categories not fully traceable are fasteners, labels, packaging materials, documentation, protectors, and manuals).

Huawei is able to trace any piece of software within 1 hour and any piece of hardware within 1 day (from raw materials to customer). To support this traceability, Huawei collects over 200 million barcodes every year, including over 30 billion pieces of data.

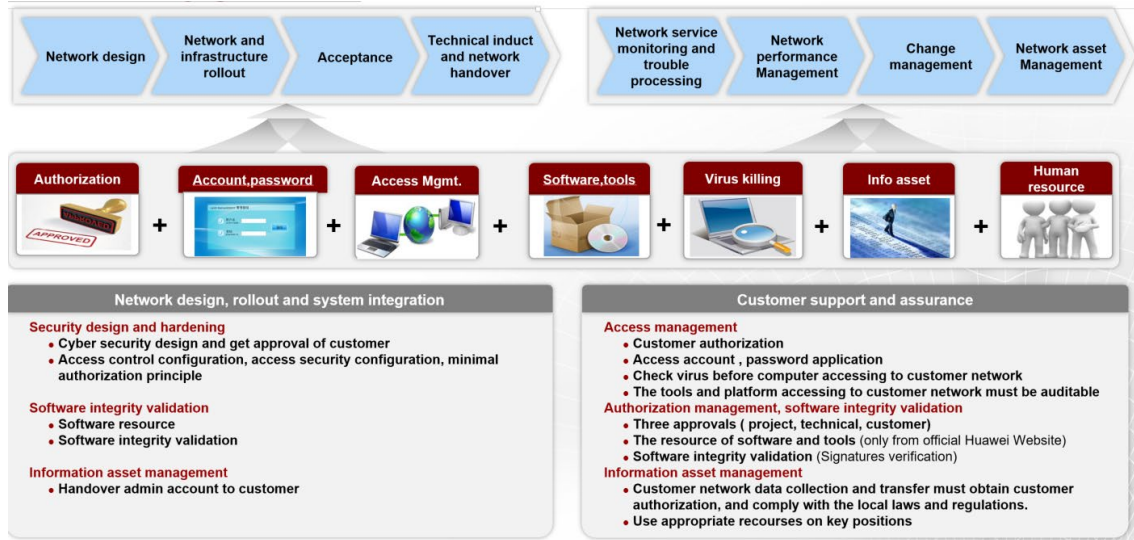


7. Security Assurance Through Service & Delivery

A Service Delivery cyber security assurance system has been established based on the ISO27001 standard and customers' requirements to support the protection the security of customer's network and data.



Hence our engineering and maintenance teams must comply with customer requirements & Huawei security guidelines. In below diagram several of such requirement are shown.



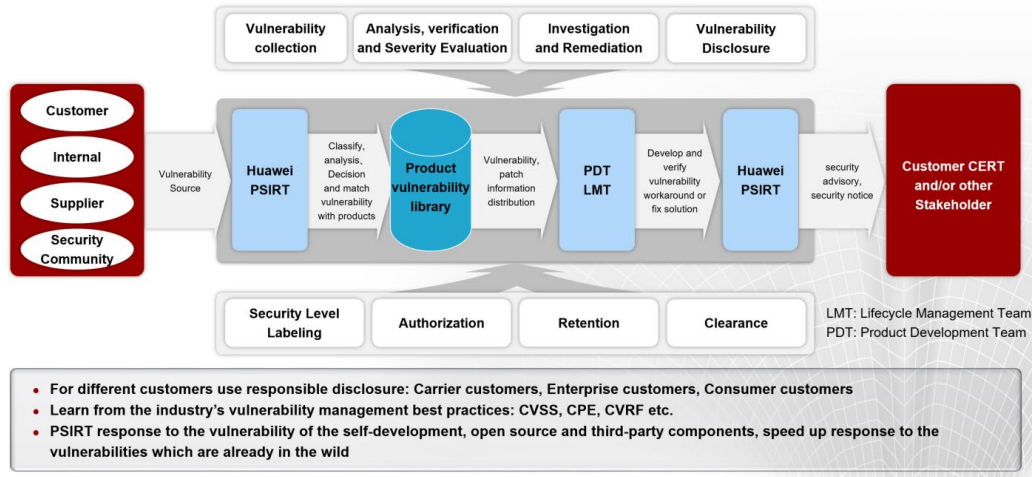
Huawei has taken 10 robust measures to greatly reduce end point security threat to protect customer's networks.



8. Responsible Disclosure and Management of Vulnerabilities

Huawei has adopted responsible disclosure processes with vendors, CERT organizations and security researchers. We coordinate the resolution of the product vulnerability. Huawei Product Security Incident Response Team (PSIRT) manages the receipt, investigation, internal coordination and disclosure of security vulnerability information related to Huawei offerings and it is the only window to disclose the vulnerability of Huawei products. Huawei hopes that security researchers, industry organizations, government agencies and vendors can proactively contact Huawei PSIRT to report potential Huawei product security vulnerabilities.

Promptly handling and disclosing product security vulnerabilities to reduce customer network security risks

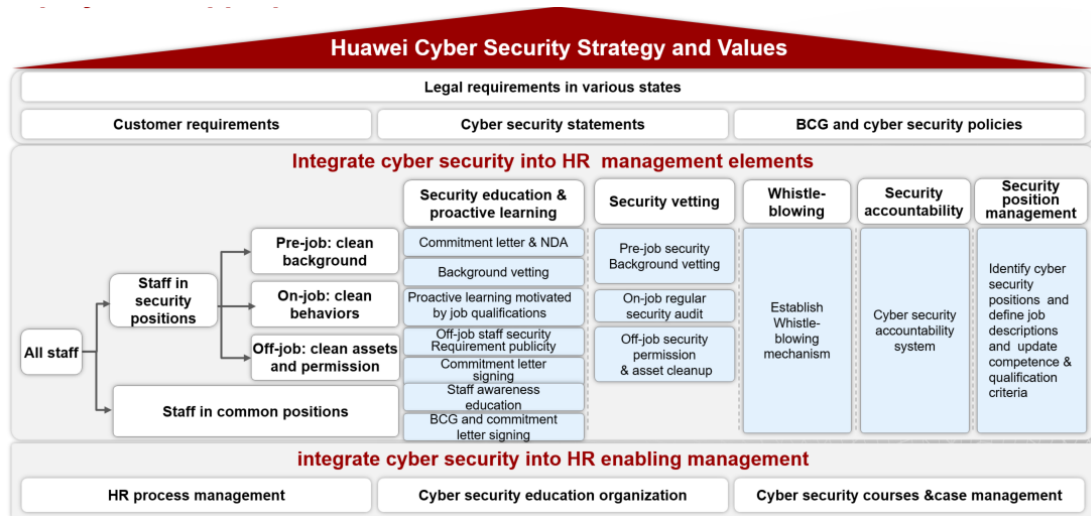


9. HR management

The HR management framework in terms of cyber security has been established to form a legal and critical base. The cyber security requirements on HR are mainly clean background and clean behaviors of employees.

For all Huawei employees (including advisors, partners and outsourced employees): we foster the security culture and awareness through awareness improvement (training of all employees, commitment letter signing), building hand-in-hand atmosphere (whistle-blowing), incentives & punishment (accountability & punishment). Formal cyber security publicity and training has been implemented. The education is a continuous process. Every employee shall pass the exams. Otherwise, their salary increases will be suspended. The cyber security violations of employees, e.g.: using wall climbing software in customers' lab, are just like the behaviors of stealing goods in a store or hitting somebody by car. The responsible employee shall bear legal liabilities as well as corporate punishment.

For cyber security critical positions, before they take the position, we will conduct background vetting to ensure the employees are qualified according to customers' requirements and have no stained record. When they are in service of the positions, we will guide them to improve their awareness and capabilities by promotion qualifications and conduct regular security audit. When they leave the position, we will clean up their assets and privileges related to the company and the customers.



Van: @huawei.com>
Verzonden: woensdag 9 januari 2019 11:21
Aan:
CC:
Onderwerp: RE: Vervolg afspraak

Hallo en

Dinsdag 15 januari is voor ons goed en dan is de suggestie om het van 11:00 tot 12:00 te doen. Jullie zijn welkom bij ons en ik zal een zaal reserveren. Het adres is Stationsplein 4 in Voorburg. Dit is het spiegelgebouw naast station Voorburg.

Succes met jullie gesprekken met de operators. Voor wat betreft de input zullen we jullie deze donderdag in de loop van de dag sturen omdat we ook nog wat afstemming moeten doen met onze klanten.

Groet,

Solution Director



Huawei Technologies (Netherlands) B.V.
Address: Stationsplein 4 – 6, 2275 AZ, Voorburg
Tel: +316
Email @huawei.com
www.huawei.com

This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it.

From: [mailto: @minez.nl]
Sent: Wednesday, January 09, 2019 9:30 AM
To: @huawei.com>; @huawei.com>
Cc: @minez.nl>
Subject: Vervolg afspraak

Bedankt nog voor het gesprek en de informatie vorige week. Graag zou ik een vervolg afspraak maken. Hierbij twee voorstellen voor tijdstippen:

Dinsdag 15 januari ergens tussen 9:00 en 12:00.

Woensdag 16 januari ochtend tussen 11:00 en 13:00.

Wij kunnen dan ook naar jullie kantoor in Voorburg komen.

Mvg.

Met vriendelijke groet,

Ministerie van Economische Zaken en Klimaat
Directoraat-Generaal Bedrijfsleven en Innovatie | Directie Digitale Economie
Bezuidenhoutseweg 73 | Postbus 20401 | 2500 EK | Den Haag

T +31 (0)70 | E [m.](mailto:m.@minez.nl) @minez.nl

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Van:
Aan:
Cc:
Onderwerp: RE: Bevestiging afspraak Mona Keijzer
Datum: maandag 14 januari 2019 14:12:37

Dag

Dank voor de bevestiging. Als er nog iemand extra meekomt, laat ik dit nog weten.

Vriendelijke groeten,

From:) [mailto: @minez.nl]

Sent: Monday, 14 January 2019 10:09

To:

Cc:

Subject: RE: Bevestiging afspraak Mona Keijzer

Goedemorgen

Dank voor de reactie!

Wij noteren de afspraak als definitief in de agenda van de Staatssecretaris op de 25 januari van 11.00-12.00 uur bij ons op het Ministerie.

Graag geef ik door dat wij de heren , en u bij de receptie hebben aangemeld tevens een parkeerplaats gereserveerd.

Mocht er nog verder iemand meekomen dan vernemen wij dit graag van u.

Met vriendelijk groet,

Secretaresse Staatssecretaris mr. drs. M.C.G. Keijzer

.....
Ministerie van Economische Zaken en Klimaat

Bezuidenhoutseweg 73 | 2594 AC | Den Haag

Postbus 20401 | 2500 EK Den Haag

T: + 31 / +31 7

E: @minez.nl

Werkzaam: dinsdag t/m vrijdag

Let op! Bij bezoek aan het ministerie geldt een legitimatieplicht

Van: @huawei.com>

Verzonden: vrijdag 11 januari 2019 21:00

Aan: @minez.nl>

CC: @minez.nl>

Onderwerp: RE: Bevestiging afspraak Mona Keijzer

Beste ,

OK, dan laten we de afspraak graag staan zoals die is. Op 25 January van 11.00 tot 12.00 uur.

Vriendelijke groeten,

 /
 M: [+31](tel:+31)

E: @huawei.com

-
 West European Region-Netherlands Public Relation Dept

From: [<@minez.nl>](mailto:@minez.nl)
To: [<@huawei.com>](mailto:@huawei.com)
Cc: [<@minez.nl>](mailto:@minez.nl)

Date: 2019-01-11 23:09:43

Subject: RE: Bevestiging afspraak Mona Keijzer

Beste

Wij zouden het graag willen, maar dit is helaas niet mogelijk in de agenda van de Staatssecretaris. Zij heeft in de middag een ander afspraak, deze kunnen wij helaas niet verschuiven.

We vernemen graag van u.

Met vriendelijke groet,

Secretaresse Staatssecretaris mr. drs. M.C.G. Keijzer

Ministerie van Economische Zaken en Klimaat

Bezuidenhoutseweg 73 | 2594 AC | Den Haag

Postbus 20401 | 2500 EK Den Haag

T: +31 / +31 9

E: [<@minez.nl>](mailto:@minez.nl)

Werkzaam: dinsdag t/m vrijdag

Let op! Bij bezoek aan het ministerie geldt een legitimatieplicht

Van: [<@huawei.com>](mailto:@huawei.com)

Verzonden: vrijdag 11 januari 2019 14:22

Aan: [<@minez.nl>](mailto:@minez.nl)

CC: StasEZK <StasEZK@minez.nl>; [<@minez.nl>](mailto:@minez.nl)

Onderwerp: RE: Bevestiging afspraak Mona Keijzer

Beste

Dank voor de bevestiging. Is het nog mogelijk om de afspraak te verschuiven naar de middag?

Ik hoop dat dit mogelijk is. Excuses voor de overlast.

Hoor het graag.

Vriendelijke groeten,

M: [+31-](tel:+31-)

E: [<@huawei.com>](mailto:@huawei.com)

West European Region-Netherlands Public Relation Dept

From: [<@minez.nl>](mailto:@minez.nl)

To: [<@huawei.com>](mailto:@huawei.com)

Cc: StasEZK <StasEZK@minez.nl>; [<@minez.nl>](mailto:@minez.nl)

Date: 2019-01-11 19:31:04

Subject: RE: Bevestiging afspraak Mona Keijzer

Beste heer

Graag bevestig ik de afspraak met Staatssecretaris Keijzer en de heren
11.00-12.00 uur bij ons op het Ministerie.
Ik hoop u hiermee voldoende te hebben geïnformeerd.
Met vriendelijke groet,

: op vrijdag 25 januari van

Secretaresse Staatssecretaris mr. drs. M.C.G. Keijzer

.....
Ministerie van Economische Zaken en Klimaat

Bezuidenhoutseweg 73 | 2594 AC | Den Haag

Postbus 20401 | 2500 EK Den Haag

T: + 31 / +31

E: @minez.nl

Werkzaam: dinsdag t/m vrijdag

Let op! Bij bezoek aan het ministerie geldt een legitimatieplicht

Van: @huawei.com>

Verzonden: vrijdag 11 januari 2019 11:33

Aan: StasEZK <StasEZK@minez.nl>

Onderwerp: Bevestiging afspraak Mona Keijzer

Beste heer, mevrouw,

Ik vernam van dat er een afspraak tussen Mona Keijzer en
gepland staat op 25 januari van 11:00 tot 12:00 uur. Ik wil dit graag even bij u checken. Kunt u
bevestigen dat dit bij u in de agenda staat?

Voor ons is het prima.

Ik hoor graag van u.

Best regards,

Head of Communications & Public Affairs



Huawei Technologies (Netherlands) B.V.

Herikerbergweg 36, 1101 CM, Amsterdam Z-O, The Netherlands

Mobile: +31

KVK: 34219858

www.huawei.com



This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Van:
Aan:
Cc:
Onderwerp: RE: MWC
Datum: dinsdag 15 januari 2019 18:52:54
Bijlagen: [image001.jpg](#)
[image002.jpg](#)
[image003.jpg](#)
[image004.jpg](#)
[image005.jpg](#)
[image006.jpg](#)

Dag ,
Dank voor jouw snelle reactie. Begrijpelijk, veel te doen lijkt me. Ik ben in dezelfde versnelling begonnen, het zijn turbulente tijden ;-)
Ik zal nog even apart met schakelen over MWC, dank voor de koppeling.
Groeten,

From: <mailto: @minez.nl>
Sent: Tuesday, 15 January 2019 15:22
To:
Cc:
Subject: RE: MWC

Hoi

Hier alles goed. Ik ben het nieuwe jaar alweer in de 5^e versnelling gestart met alle voorbereidingen voor de aanstaande Multibandveiling. Hopelijk met jou ook alles goed?

Vanuit EZK zullen onze directeur en onze nieuwe DG Focco Vijselaar naar MWC gaan. doet de verdere voorbereiding voor de beide heren. Zij kan ook inschatten of er tijd is om bij jullie booth langs te komen. Vandaar dat ik haar in de cc zet.

Groet,

Van: [@huawei.com](mailto: @huawei.com)>
Verzonden: dinsdag 15 januari 2019 15:07
Aan: [@minez.nl](mailto: @minez.nl)>
Onderwerp: MWC

Ha ,

Hoe is het met je? Ben je het nieuwe jaar goed gestart?

Ik vroeg me af of Mona Keijzer nog naar MWC gaat en zo ja, of een bezoek aan onze booth mogelijk is.

Als zij niet gaat, is er dan wellicht iemand anders van EZ van de partij?

Hoor het graag van je.

Best regards,

Head of Communications & Public Affairs

20180618 Logo Nieuw Huawei - horizontaal



Huawei Technologies (Netherlands) B.V.

Herikerbergweg 36, 1101 CM, Amsterdam Z-O, The Netherlands

Mobile: +31

KVK: 34219858

www.huawei.com



Van:
Aan:
Onderwerp: RE: Voorbereiding afspraak Mona Keijzer -
Datum: maandag 21 januari 2019 16:32:06
Bijlagen: [image001.jpg](#)
[image002.jpg](#)
[image003.jpg](#)
[image004.jpg](#)
[image005.jpg](#)
[image006.jpg](#)

Hoi ,
Nee, helaas. Ik ben het niet en ik heb ook geen uitvraag voorbij zien komen van collega's op basis waarvan ik zou kunnen weten wie het doet.
Groet,

Van:
Verzonden: maandag 21 januari 2019 16:22
Aan:
Onderwerp: FW: Voorbereiding afspraak Mona Keijzer -
Dag ,
Zie hieronder. Weet jij hier misschien iets meer over?
Groeten,

From:
Sent: Friday, 18 January 2019 09:59
To: [<@minez.nl>](mailto:@minez.nl)
Subject: Voorbereiding afspraak Mona Keijzer -

Beste

Ik ben bezig met de voorbereiding voor de afspraak met Mona Keijzer volgende week (25 januari). Kun je mij misschien laten weten wie hier aan jullie kant mee bezig is? Ik zou de onderwerpen een beetje op elkaar af willen stemmen en ik hoor ook graag wie er verder van jullie kant bij aanwezig is.

Vriendelijke groeten,

Best regards,

Head of Communications & Public Affairs
20180618 Logo Nieuw Huawei - horizontaal



Huawei Technologies (Netherlands) B.V.
Herikerbergweg 36, 1101 CM, Amsterdam Z-O, The Netherlands
Mobile: +31
KVK: 34219858
www.huawei.com



This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

Van: @huawei.com>
Verzonden: maandag 21 januari 2019 18:01
Aan:
Onderwerp: RE: Vraag rondom beantwoording vragen Staatssecretaris in WNL uitzending

Hi

Ik dacht het wel. Ik spreek morgen met die het gesprek vanuit onze kant voorbereid en zal je dan even updaten anders blijf ik iedere keer losse vragen en antwoorden aan je stellen/geven ;-)

Groet,

From: | [mailto: t@minez.nl]
Sent: Monday, January 21, 2019 5:26 PM
To: @huawei.com>
Subject: RE: Vraag rondom beantwoording vragen Staatssecretaris in WNL uitzending

Ja, heb jij nog punten?
Alleen de twee CEO's komen toch?

Van: @huawei.com>
Verzonden: maandag 21 januari 2019 17:22
Aan: @minez.nl>
Onderwerp: RE: Vraag rondom beantwoording vragen Staatssecretaris in WNL uitzending

Hi

Dank voor je snelle antwoord. Doe jij ook de voorbereiding van Mona Keijzer voor het bezoek van Huawei van vrijdag aanstaande?

Groet,

From: [mailto: @minez.nl]
Sent: Monday, January 21, 2019 4:38 PM
To: @huawei.com>
Subject: RE: Vraag rondom beantwoording vragen Staatssecretaris in WNL uitzending

Beste

Is inderdaad waar ik mee bezig ben.

Hartelijke groet

Van: @huawei.com>
Verzonden: maandag 21 januari 2019 16:21
Aan: @minez.nl>; @huawei.com>
Onderwerp: Vraag rondom beantwoording vragen Staatssecretaris in WNL uitzending

Beste

We zien veel reactie van media op de nieuwsuitzending van gisteren in WNL met staats secretaris Mona Keijzer. In dit interview beantwoord ze de vragen met de suggestie voor een gedegen onderzoek. Doelt ze hiermee op jou onderzoek en daarmee de beantwoording van de motie Weverling of is dit een additioneel onderzoek?

WNL Op Zondag - STAATSSECRETARIS KEIJZER GAAT CHINESE TELECOMBEDRIJVEN ONDERZOEKEN: 'WE MOETEN NIET NAÏEF ZIJN'

Staatssecretaris Mona Keijzer van Economische Zaken start een onderzoek naar Chinese telecombedrijven. 'We moeten niet naïef zijn,' zegt Keijzer in WNL Op Zondag op NPO 1. De bewindsvrouw wil onderzoeken of Chinese bedrijven moeten worden toegelaten tot het mobiele netwerk. Binnenkort wordt in Nederland 5G-frequenties voor supersnel internet geveild. *(English transcript of the interview below)*

Link: <https://wnl.tv/2019/01/20/staatssecretaris-telecombedrijven/>

FD - STAATSSECRETARIS KEIJZER START ONDERZOEK NAAR CHINESE TELECOMBEDRIJVEN

Staatssecretaris Mona Keijzer van Economische Zaken wil onderzoeken of Chinese telecombedrijven wel moeten worden toegelaten tot het Nederlandse mobiele netwerk. 'We moeten niet naïef zijn', zei Keijzer zondagochtend in WNL Op Zondag. Aanleiding zijn de zorgen over bijvoorbeeld het Chinese techbedrijf Huawei. De Verenigde Staten, het Verenigd Koninkrijk en Nieuw Zeeland sluiten Huawei uit van hun netwerk. Daar bestaat de angst dat de Chinese geheime dienst via de achterdeur kan spioneren in Westerse landen. *(English google translation below)*

Link: <https://fd.nl/economie-politiek/1286413/staatssecretaris-keijzer-start-onderzoek-naar-chinese-telecombedrijven>

MYBROADBAND - NETHERLANDS PONDERES RESTRICTIONS ON HUAWEI AHEAD OF 5G AUCTION

The Dutch government will need to make a decision this year on whether to restrict Chinese state-owned telecom giant Huawei Technologies Co. from playing a role in building a fifth-generation wireless network in the Netherlands, local daily Trouw reported.

Link: <https://mybroadband.co.za/news/government/292838-netherlands-ponders-restrictions-on-huawei-ahead-of-5g-auction.html>

Groet en ik hoop dat je deze vraag kan beantwoorden aangezien wij er ook veel vragen over krijgen vanuit de media,

Solution Director



Huawei Technologies (Netherlands) B.V.
Address: Stationsplein 4 – 6, 2275 AZ, Voorburg
Tel: +316
Email: [@huawei.com](mailto:info@huawei.com)
www.huawei.com

This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it.

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

Van:)
Verzonden: dinsdag 12 maart 2019 09:45
Aan:
CC:
Onderwerp: RE: input

Dank

Ik zal het onder die voorwaarde delen.

Mochten zij elementen eruit willen gebruiken in hun rapportage (en we geen andere bron hebben), dan vragen we expliciet toestemming bij jullie.

Groet

Verzonden vanuit Mail voor Windows 10

Van:
Verzonden: dinsdag 12 maart 2019 09:38
Aan:
CC:
Onderwerp: RE: input

Beste Ronald,

Als jullie het door ons gedeelde rapport in vertrouwen met Dialogic delen hebben wij daar geen probleem mee.

Met vriendelijke groet,

From: [mailto: @minez.nl]
Sent: Monday, 11 March 2019 16:48
To: @huawei.com>
Cc: @huawei.com>
Subject: RE: input

Beste ,

Wij hebben Dialogic ingehuurd om ons te ondersteunen bij het goed in kaart brengen van de impact van mogelijke maatregelen.

Mag ik hun het rapport sturen dat jullie voor ons hebben gemaakt?

Groet

Van: @huawei.com>
Verzonden: donderdag 10 januari 2019 18:47
Aan: @minez.nl>;
@minez.nl>
CC: @huawei.com>
Onderwerp: RE: input

Beste en ,

Van: <@huawei.com>
Verzonden: woensdag 20 maart 2019 22:44
Aan:
CC:
Onderwerp: RE: rapport
Bijlagen: The Value of competition final report STC.PDF

Beste

Hierbij het rapport waar je om vroeg.

Groet,

From: [mailto:@minez.nl]
Sent: Tuesday, March 19, 2019 9:28 AM
To: @huawei.com>
Subject: rapport

Hoi ,

Heb jij de studie **The Value of Competition on 5G Network Deployment** van *Frontier Economics*?

In het eerder van jullie verkregen document wordt daar naar verwezen.

Hartelijke groet,

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.



The value of competition to 5G network deployment

A REPORT PREPARED FOR HUAWEI

August 2018

The value of competition to 5G network deployment

Summary	iii
1 Context: Why 5G matters	9
1.1 The evolution of mobile technology	9
1.2 The current status of 5G networks	10
1.3 The significance of 5G to the Australian economy	11
2 Competition in the market for 5G network equipment	15
2.1 Understanding competition is necessary to examine policy impact	15
2.2 A framework for analysing competition	15
2.3 A global market for 5G network equipment	16
2.4 Competition analysis	17
3 Why competition will be significantly lessened	25
3.1 The 'with and without' test	25
3.2 Market structure in the acquisition market without Huawei	26
3.3 Effects of higher concentration	27
4 The costs of less competition will be high	29
4.1 Simulation of price increases from models of competition	29
4.2 Empirical studies of competition benefits	32
4.3 Both simulation and empirical estimates support a significant price increase	39
4.4 Higher costs to networks pass through in higher prices for consumers	40
5 Exclusion would impose other costs	44
5.1 Huawei is a global leader in 4G and 5G technology	44
5.2 Exclusion will add costs and reduce downstream competition	46
5.3 Exclusion will increase the consequences of network failures	47

The value of competition to 5G network deployment

Boxes

Box 1: Explanation of unilateral effects predictions	32
--	----

Figures

Figure 1: Overview of findings on detriment	v
Figure 2: Estimation of higher prices (%) resulting from Huawei's exclusion	vi
Figure 3: Evolution of mobile standards	9
Figure 4: Impacts of rollout speed and length on 5G's productivity benefit	13
Figure 5 The Structure Conduct Performance paradigm for assessing competition	16
Figure 6: RAN Vendor market shares	18
Figure 7: Industry Consolidation: the major mergers and acquisitions, 1990-2016	19
Figure 8: Comparison of R&D expenditures by sector and firm, EUR M	22
Figure 9: Estimation of higher prices (%) resulting from Huawei's exclusion	40
Figure 10: Source of contributions to 3GPP 5G access standards	45
Figure 11: Comparison on major vendors of 4G/LTE equipment	45

Tables

Table 1: Detriments from loss of competition	vi
Table 2 Overview of market functioning with and without Huawei	25
Table 3 Changes in market concentration from excluding Chinese vendors	27
Table 4 Estimate of price increases as a result of Huawei exclusion	31
Table 5 Average price effects from mergers in the European Union	35
Table 6: Summary of empirical results on the loss of competition	39
Table 7 Estimates of 5G access network deployment costs	41
Table 8: Detriments from higher RAN costs	42

Summary

The Australian Government will soon decide on Huawei's participation in procurements to supply 5G network equipment to Australia's mobile network operators. This report examines the economic impact of excluding Huawei from these procurements.

We find that the cost to industry and consumers of reduced competition from excluding Huawei will be high. We estimate that the exclusion of Huawei will increase the cost of 5G radio access network (RAN) deployment in Australia by up to (AUD) \$2.1 billion, which will be recovered from consumers through higher retail prices. Further, for networks already using Huawei for 3G and 4G equipment, additional switching costs could add several billion dollars and materially delay 5G deployments.

Maximising the economic benefits of 5G

Australia's four mobile networks will soon make important decisions on the initial deployments of their 5G networks. The deployment of 5G mobile networks will be a critical milestone for Australian mobile users. There are many new (and extraordinary) end use applications of 5G already, and the extent of these, and other as-yet undeveloped applications will not be fully known for many years.

The economic benefits of 5G are potentially profound. This includes both direct financial benefit – for example, in more productive enterprises that can take advantage of the new technology – and social benefits, from increasing connectedness and better access to government services such as health and education.

5G is likely to have a positive effect on productivity growth across the Australian economy. Early estimates suggest that 5G could add up to \$2,000 in gross domestic product per capita at the end of the first decade after the rollout.

Source: Bureau of Communications and Arts Research, 2018

Competition drives consumer benefits

Competition between Australia's mobile network operators has produced a vibrant and dynamic market for mobile services. Prices for mobile phone services have fallen by an average of 4.2 per cent annually since 1997–98, while Australia ranks in the top 5 in the OECD for mobile penetration.¹ The exceptional outcomes for Australian mobile users have been underpinned by competition between global

¹ <http://www.oecd.org/sti/broadband/broadband-statistics-update.htm>

equipment vendors to supply network equipment – through the various generations of mobile services.

While competition in the global market for supplying radio access network (RAN) equipment is intense, the market is highly concentrated, comprising three large equipment makers (Huawei, Nokia and Ericsson), and a smaller competitive fringe. This is because the scale of R&D spending required to continually improve performance is very large – globally, Huawei spent almost USD\$12 billion on R&D in 2016/17 (substantially more than both Nokia, approximately USD\$5.6 billion, and Ericsson, approximately USD\$3.8 billion (USD)).²

Excluding Huawei or other vendors will lessen competition and create other detriments

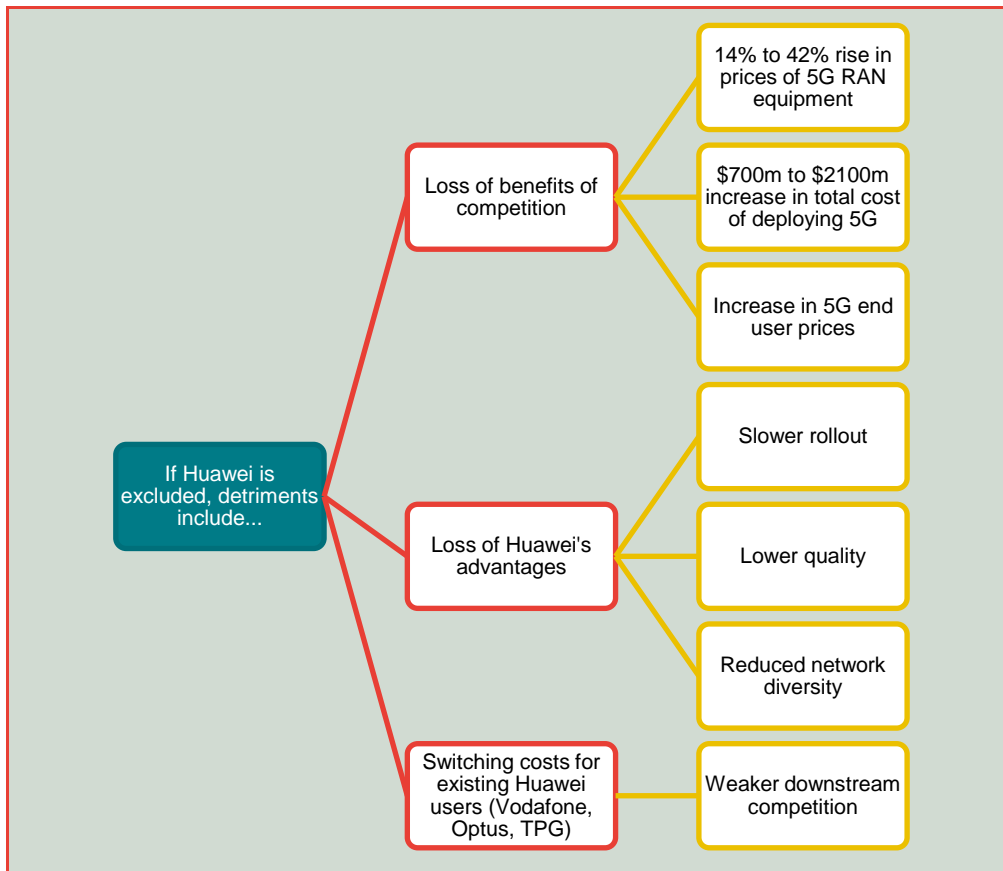
Competition between network equipment vendors produces lower equipment prices, better quality and, ultimately, better services for end users.

Excluding Huawei - or other vendors - from the supply chain would create very material risks of uncompetitive procurements for Australian networks. The concentrated market means there are few alternative vendors with the necessary expertise and scale to provide 5G network equipment. This reduction in competition would substantially increase network procurement costs and retail prices, to the disadvantage of Australian consumers.

There would also be other costs from excluding Huawei. This includes the loss of its particular quality attributes, and additional switching costs for mobile networks that have to change vendors where Huawei has been a key supplier. The detriments are summarised in Figure 1 and further discussed in the report.

² See Figure 8.

Figure 1: Overview of findings on detriment



Source: Frontier Economics

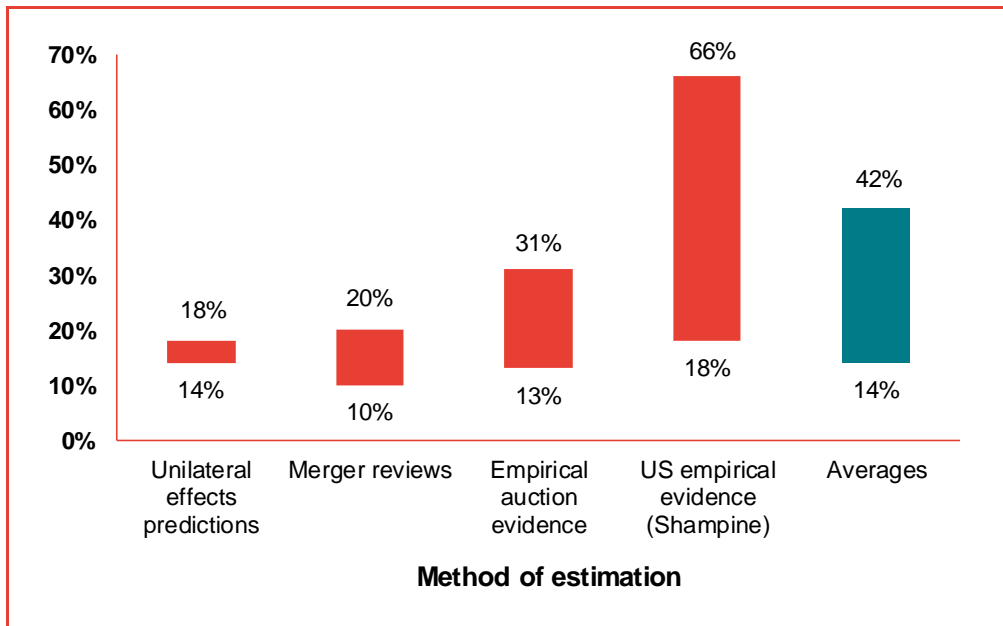
Loss of competition leads to higher prices

We estimate the price increase from excluding Huawei using a number of different methods, based on economic theory and empirical observations (Section 4).

There is a broad spread of estimates, and we adopt an estimate of cost increases from excluding Huawei of between 14% and 42% (Figure 2).³

³ This would be even higher should other Chinese firms such as ZTE also be excluded.

Figure 2: Estimation of higher prices (%) resulting from Huawei's exclusion



Source: Frontier Economics analysis

This translates into detriments for mobile networks over an indicative 7-year deployment period of between (AUD) \$700 million and \$2.1 billion.

The detriment to end users (both business and residential users) will depend on the degree of pass through of these higher costs. We conclude that with all networks affected by the strategic pricing behaviour, these costs will invariably be passed through as higher retail prices.

Table 1: Detriments from loss of competition

	Estimate
Expected cost increase for each network (%)	14%-42%
Expected cost increase across all four networks (\$)	\$700-\$2100 m

Source: Frontier Economics

Loss of Huawei's quality and speed advantages

Currently Vodafone, Optus and TPG all choose to use Huawei equipment in their 4G mobile networks – and Australia's networks offer some of the highest speeds and quality of any networks in the world.⁴ To exclude Huawei from supplying 5G

⁴ See, for example, reports in: <https://www.afr.com/opinion/columnists/huaweis-quiet-determination-pays-off-20180225-h0wmkn>. Penetrations information comes from the OECD broadband portal: <http://www.oecd.org/internet/broadband/broadband-statistics-update.htm>

network equipment would mean significant foregone benefits from the particular advantages that Huawei has over other vendors. Two benefits seem particularly relevant, both related to Huawei's leading position as a 5G vendor.⁵ Huawei will likely be able to:

- **deploy equipment faster and earlier** than competitors, and
- deliver **higher speeds** at **lower latency** and with **superior coverage** than competitors.

Exclusion will create other detriments or forgone benefits

There are three other detriments or forgone benefits from excluding Huawei:

- There will be **switching costs** for mobile networks that have to change vendors where Huawei has been a key supplier. Optus, Vodafone and TPG are to some degree using Huawei's 3G and 4G network equipment. As 5G networks will re-use some 4G network elements, changing vendors means replacement of existing equipment that could be used in their 5G networks.

Huawei estimates that this transition will cost the carriers several billion dollars in services and new equipment, in addition to the write-off of existing equipment. More importantly, the transition could take up to 5 years to complete and could cause significant disruption to the services provided to existing subscribers. This will also delay the 5G networks rollout due to the change-out involved.

- Exclusion will **hinder competition in the 5G retail market**. The switching costs incurred by Optus, Vodafone and TPG will reduce the capacity of these firms to compete effectively with Telstra (which does not use Huawei infrastructure) in the 5G retail market. This softening in retail competition will allow Telstra to raise its prices in response.⁶
- Exclusion will **reduce network diversity** which increases the consequences of equipment failure.

⁵ See material summarised in Section 0.

⁶ This is a standard result of economic models of product differentiation.

1 Context: Why 5G matters

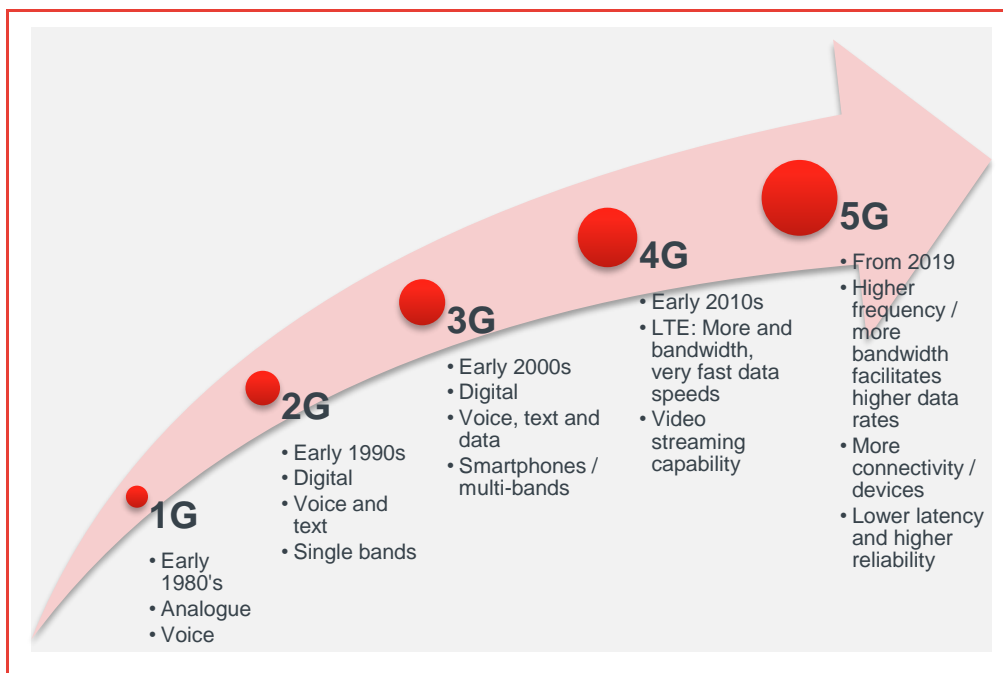
In this section, we set out the context for why excluding Huawei from participating in 5G procurements for Australian mobile networks will expose Australia to higher costs.

We first examine the coming 5G network evolution and the likely investments that will need to be made by mobile networks. Then we consider the likely costs of building these networks in the short- to medium-term.

1.1 The evolution of mobile technology

5G represents the next step in the evolution of mobile network technology. As shown in Figure 3, each change in standards has led to significant changes in the way in which mobile devices are used; from a single application (voice calling) to literally hundreds of potential uses and applications.

Figure 3: Evolution of mobile standards



Source: Frontier Economics

While each “step” has taken around 10 years, this understates the extent of incremental developments within each technology. In recent times, we have seen the development of “4.5G”⁷, and even “4.9G” services, which reflect incremental

⁷ Also known as LTE-Advanced Pro.

improvements over the base 4G standards, and, in the case of 4.9G, reflect a transitional path towards 5G technologies on existing spectrum.⁸

1.1.1 5G Use cases

The “use case” for 5G network deployment is, to some extent, unknown. Undoubtedly, consumers in Australia will want faster services with more data. However, there are a raft of non-consumer facing services which need faster and better mobile connectivity to function effectively.

There are two defining features of 5G that separate it from previous developments – near-zero latency and data rates up to 10 Gbps. These features are expected to support the deployment of enhanced services across a range of different industries. Analysts, vendors and interested stakeholders have developed detailed examples of how 5G technology could be used. These include:

- **enhanced proliferation of the internet of things**, through supporting a greater number and diversity of things to be connected, and increasing the speed and capacity of data transfer between devices
- **virtual and augmented reality**, which is expected to support a range of different industries, such as healthcare (e.g. the ability to perform surgery remotely), the automotive sector (e.g. driverless cars, and improved monitoring of traffic and accidents in real time), and entertainment (e.g. more immersive gaming)
- **low-latency and ultra-reliable communications**, which will support the delivery of critical communications in areas ranging from disaster management and public safety, to robotics and artificial intelligence
- **enhanced mobile broadband**, through faster network speeds to allow viewing of high-resolution content, increased network capacity to support more users in crowded areas and peak times, and improved coverage

5G is not simply about faster internet connections...

As can be seen, 5G has the potential to enable innovation and productivity across industry sectors, and to significantly contribute to Australia’s economic growth and future prosperity.

1.2 The current status of 5G networks

Globally, network operators have indicated a widespread interest in deploying new 5G technology. However, while many 5G trials are already underway, widespread

⁸ https://www.nokia.com/en_int/blog/bridge-gap-5g-unused-tdd-spectrum

network deployments will not occur until the network standards are finalised, spectrum standards are agreed, and devices are (almost) ready to use.

The formal, international process to define 5G is led by the International Telecommunications Union (ITU). The ITU's Working Party 5D is responsible for shaping the standard for “futuristic mobile technologies” to support International Mobile Telecommunications (IMT) for 2020 and beyond. This process is known as IMT-2020. A key body is the industry-driven 3GPP, which undertakes technology standardisation. Collectively, the ITU and 3GPP will drive spectrum harmonisation activities: the ITU, led by administrations, will focus on the spectrum requirements; and the 3GPP, led by industry, will concentrate on equipment and device standards.⁹

The role for government in these processes is also important. This is particularly the case in the harmonisation of international spectrum arrangements which will have significant impact on the availability and cost of 5G devices in Australia. Harmonisation and freeing up spectrum will ensure operators in Australia have the opportunity to roll-out 5G quickly and cost-effectively.

Initial services on 5G could be available from 2020

While the standards should progress over the next 12 months, we understand that – aside from some limited fixed wireless applications – the latest predictions are the first mobile devices could be available for 5G towards the end of 2019 or 2020.¹⁰

1.3 The significance of 5G to the Australian economy

1.3.1 Economic benefits

The economic benefits of 5G are potentially profound. This includes both direct financial benefit – for example, in more productive enterprises that can take advantage of the new technology – and social benefits, from increasing connectedness and better access to government services such as health and education.

These potential benefits were the subject of a study by Deloitte Access Economics in 2016. The study found investment in 5G will be of national economic significance:

It is estimated that annual network spend by mobile network providers could be worth \$5.7 billion in FY 2017-18, with much of this going towards investment in spectrum,

⁹ More information is available at www.3gpp.org and news.itu.int/itu-helps-create-new-mobile-era-via-5g/.

¹⁰ <https://www.itproportal.com/news/huawei-plans-5g-smartphone-launch-in-2019/>

infrastructure deployment and site design. This number is likely to grow further as operators invest in building 5G networks over the next few years...¹¹

However, more important than the direct investment benefits are the associated productivity benefits:

5G will add to the already significant (and growing) \$34 billion long-term productivity benefits from mobile technology estimated under 4G networks in 2015.¹²

This is supported by recent work by the Australian Government.¹³ This work notes that productivity growth—how more output is achieved per unit of inputs—is the key driver of income growth over the long term, and is intrinsically linked to developments in communications technology:

Digital transformation has long held the promise of improving productivity outcomes, and the planned rollout of 5G internationally has been viewed as the next development continuing the critical enabling capacity of communications services across the economy.

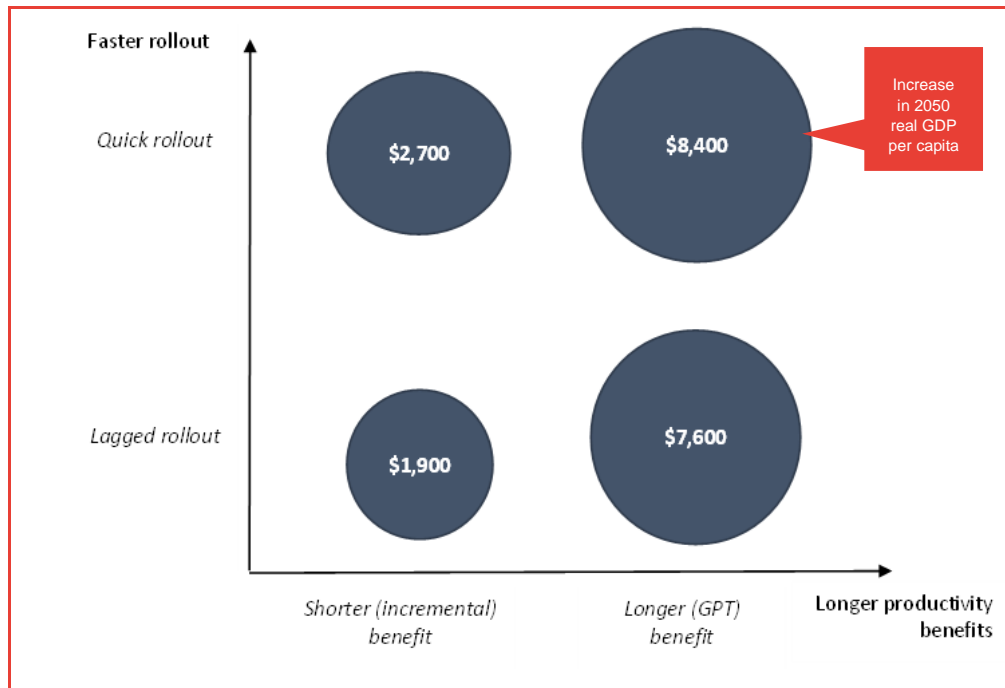
Modelling by the Bureau of Communications and Arts Research (BCAR) indicates that while there is much uncertainty, the benefits from greater productivity on real GDP per capita are potentially very large – as per Figure 4 this will depend on both the speed of rollout and the extent to which 5G is a truly transformative technology (“GPT”).

¹¹ See <https://www2.deloitte.com/au/en/pages/economics/articles/5g-mobile.html>

¹² *ibid.*

¹³ BCAR, *Impacts of 5G on productivity and economic growth April 2018 Working paper*, 2018.

Figure 4: Impacts of rollout speed and length on 5G's productivity benefit



Source: BCAR, *Impacts of 5G on productivity and growth*, April 2018, p. 21.

Other studies relating to 5G in overseas jurisdictions are reaching similar conclusions. A 2016 study carried out for the European Commission forecasted the qualitative and quantitative socio-economic benefits of 5G, with 150 experts contributing. This study separated modelled benefits into four key 'verticals': automotive, healthcare, transport and utilities; and four key 'environments': smart city, non-urban (rural divide), smart home and workplace. The study found that:

Forecasts suggest that 5G deployment costs will be approximately €56.6 billion. The study investigated spectrum challenges and spectrum needs of 5G. Analysis showed there will be a requirement to share spectrum in all the spectrum ranges.

5G is expected to generate benefits of €62.5 billion per annum in the four verticals in 2025. Benefits of €50.6 billion are expected in the four environments. 63 per cent of these benefits will arise for business and 37 per cent will be provided for consumers and society.¹⁴

1.3.2 Achieving the Government's 5G objectives

Reflecting the importance of 5G deployment, the Australian Government has noted its desire to support its early deployment:

¹⁴ Tech4i2, Real Wireless, CONNECT Trinity College Dublin & InterDigital, *Identification and quantification of key socio-economic data to support strategic planning for the introduction of 5G in Europe*: Report prepared for the European Commission, 2016

The Government recognises that 5G will enable innovation and productivity across industry sectors and can significantly contribute to Australian's growth and future prosperity. Therefore, the Government will focus on enabling the early deployment of this new generation of mobile networks in Australia and encourage its use in delivering new services and applications.

The Government will support the timely rollout of 5G in Australia to enable the next wave of broad-based industry productivity, and support the growth of Australia's digital economy.¹⁵

In the first instance, the Government will support the early deployment of 5G in Australia by:

- making spectrum available in a timely manner
- actively engaging in international spectrum harmonisation activities
- streamlining arrangements to allow mobile carriers to deploy infrastructure more quickly, and
- reviewing existing telecommunications regulatory arrangements to ensure they are fit-for-purpose.¹⁶

"Australia is well positioned to harness the opportunities of 5G. Australia has an effective and competitive mobile communications market, with voice and data coverage available to more than 99 per cent of the population. It is the top performer internationally in terms of having in place effective enablers—infrastructure, affordability, consumer readiness and content availability—to support mobile internet adoption."

Australian Government, Department of Communications and the Arts, 2017

We recognise that there has been a significant debate about network security and note that this is an entirely appropriate consideration for Government. However, if the Australian Government is keen to maximise the benefits of 5G, we consider that it should explore all avenues to keep the cost of deploying networks down and allow Australian businesses and consumers to have access to the

best available technology.

As we set out in this report, there are a number of potential costs associated with preventing Huawei from competing – higher prices for users, delays in 5G rollout, loss of international competitiveness for Australian business, and switching costs for mobile networks who already use Huawei equipment. In this paper, we largely focus on the first issue, as this is the most amenable to quantitative assessment, while noting the other costs more qualitatively.

¹⁵ DOCA, *5G—Enabling the future economy*, October 2017, p. 10.

¹⁶ *ibid.*

2 Competition in the market for 5G network equipment

In this section, we set out key features of the markets for 5G network equipment. The extent of competition in this market will determine the likely impact of excluding Huawei's equipment from network deployments.

2.1 Understanding competition is necessary to examine policy impact

The purpose of our analysis is to consider the economic impact of a policy to exclude Huawei and/or other Chinese vendors (such as ZTE) from providing 5G access network equipment to Australian mobile network operators.

The economic impact of such a policy is fundamentally a question about competition: Would excluding Huawei and ZTE reduce competition sufficiently such that the remaining competitors in the market (such as Nokia and Ericsson) could materially raise price or reduce quality to enhance their profits? If so, these economic costs will be borne by Australian networks and ultimately by consumers.

To answer this question, we need to have a good understanding about how competition in the market for mobile access network equipment works. The change in the performance of that market will depend on the degree of existing competition, and the extent to which eliminating competitors will lessen competition.

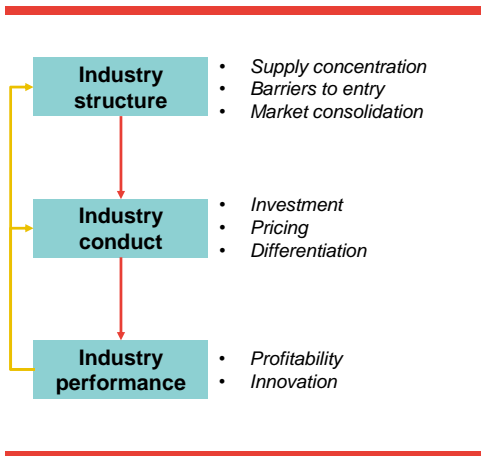
2.2 A framework for analysing competition

In economics, analysis of market competition usually categorises the features of a market under the headings of:

- (i) the structure of a market;
- (ii) the conduct of firms within the market; and
- (iii) the performance of the market.

We can use the presence of indicators of competition organised by these headings – for example, indicators of market structure include market concentration and

Figure 5 The Structure Conduct Performance paradigm for assessing competition



barriers to entry. As noted in the Australian Competition Tribunal's review of the relevant literature on assessments of market competition:

"In the Tribunal's view a market is sufficiently competitive if the market experiences at least a reasonable degree of rivalry between firms each of which suffers some constraint in their use of market power from competitors (actual and potential) and from customers. The criteria for such competition are structural (a sufficient number of sellers, few inhibitions on entry and expansion), conduct-based (eg no collusion between firms, no exclusionary or predatory tactics) and performance-based (eg firms should be efficient, prices should reflect costs and be responsive to changing market forces)."¹⁷

As the Tribunal has previously noted, it is market structure that tends to be the most significant of these factors:

Competition is a process rather than a situation. Nevertheless, whether firms compete is very much a matter of the structure of the markets in which they operate.¹⁸

We adopt this approach in assessing the current state of competition.

2.3 A global market for 5G network equipment

Competition is analysed within the confines of a market, which is, simply put, the field of rivalry within which entities compete.¹⁹ Market boundaries are defined by substitution. Here, our primary concern is to analyse the market within which 5G network equipment is supplied. Although we do not provide an in-depth study of the market boundaries, two critical features of the market stand out:

- The first is that the market is for network infrastructure, and, in particular, access infrastructure for the supply of 5G mobile network services. These goods are not readily substitutable for, for example, fixed network equipment or core network infrastructure.

¹⁷ <http://www6.austlii.edu.au/cgi-bin/viewdoc/au/cases/cth/ACompT/2009/2.html>

¹⁸ *Re Queensland Co-Op Milling Association Limited and De fiance Holdings Limited (QOMA)* (1976) 8 ALR 481, at [40]

¹⁹ In the European Commission's investigation of the merger between Nokia and Alcatel-Lucent, Nokia submitted that the relevant geographic market for mobile network equipment, including RAN, is global in scope due to several factors:

- The second feature is that the geographic reach of this market is global. There may be some differences between suppliers shares in different regions, but, by and large, mobile network equipment buyers can substitute between Chinese, European and American vendors. This approach was supported by the European Commission in its analysis of the 2016 Nokia-Alcatel merger.²⁰

2.4 Competition analysis

2.4.1 Structural indicators of competition

Structural indicators suggest that, while the global market for mobile network equipment is highly competitive, it has only a few larger players. This is because size matters to success: the market is evolving rapidly with market performance critically dependent on extraordinary levels of R&D spending. Large R&D demands and economies of scale pose significant barriers to entry. This has led to a wave of consolidation in the industry since 1995, to help equipment makers reduce costs and maintain favourable market positions. We provide an overview of these structural indicators in the remainder of this section.

The market exhibits moderate-high concentration

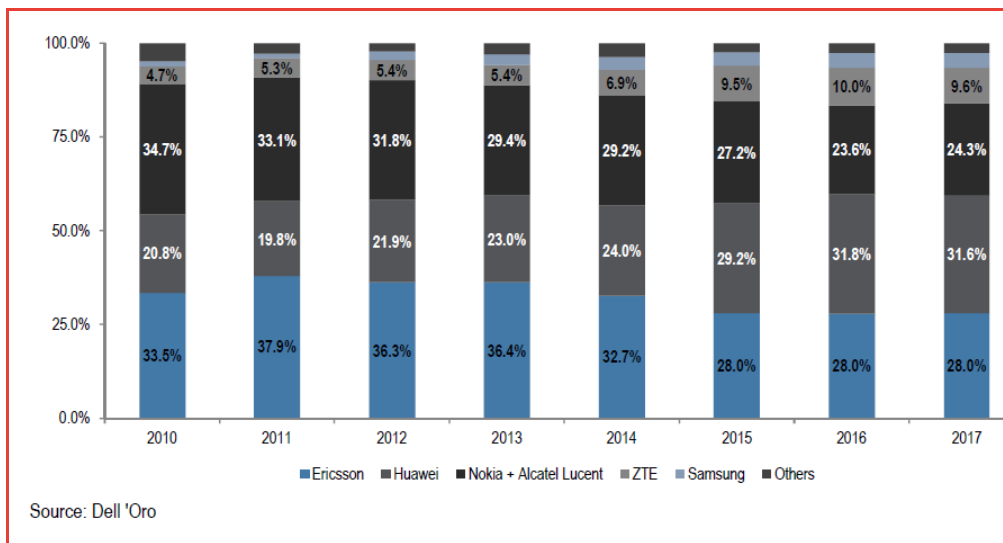
Across the global wireless RAN market, three large vendors, Huawei, Ericsson and Nokia, account for over 80% of the market share. These three large vendors are complemented by two smaller vendors, ZTE and Samsung, who account for roughly 15% of market share. These five players have remained the largest players in the market since 2010, as can be seen from Figure 6 below.

Competition from Chinese companies, Huawei and ZTE, and to a lesser extent South Korea's Samsung, has eroded the market share of European vendors, Nokia and Ericsson.

-
- (i) international standardization of mobile telecommunications network equipment;
 - (ii) vendor and industry interoperability initiatives through Interoperability Testing Centers (“IOTs”);
 - (iii) contracts that are competed on a global basis – there is no longer a concept of ‘home’ market or region;
 - (iv) worldwide shipping and limited transport costs;
 - (v) limited regional variations in cost and price; and
 - (vi) liberalised downstream service markets leading to open upstream equipment markets.

See European Commission, Case M.7632 NOKIA/ ALCATEL-LUCENT, 24/07/2015, Paragraph 26.

Figure 6: RAN Vendor market shares



Source: J.P Morgan CAZENOVE²¹

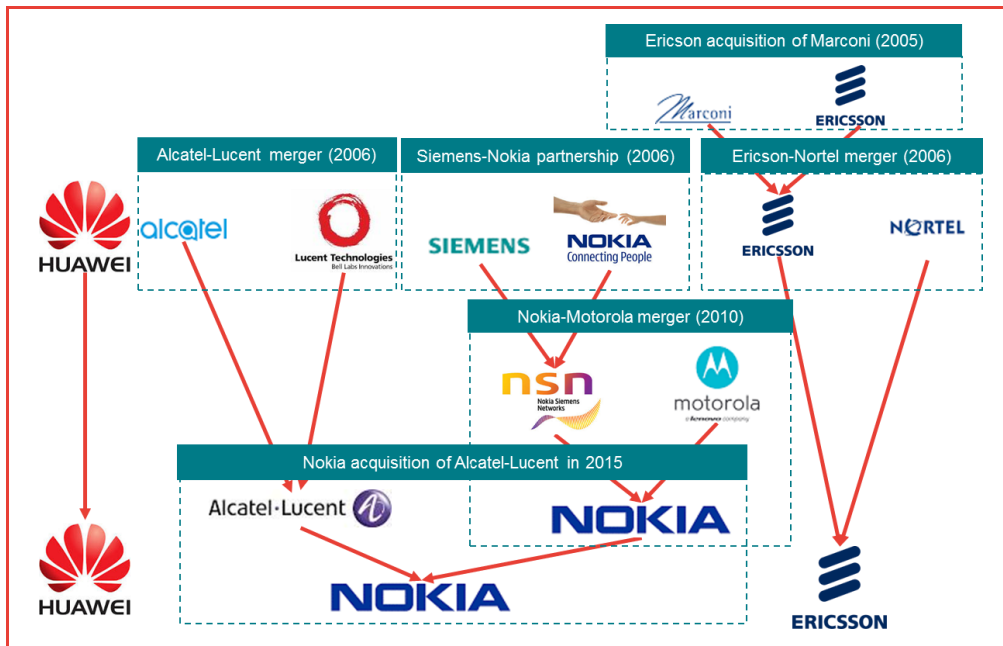
The market has been consolidating

The market share information highlighted in Figure 6 to some extent obscures the degree of consolidation that has occurred in the global vendor market. Large R&D demands, combined with economies of scale and scope, have led to mergers and acquisitions to help equipment makers reduce costs.

In 2005, there were around ten major telecoms equipment vendors in the market (including Ericsson, Nokia, Huawei, Siemens, Motorola, Alcatel, Lucent, Nortel, and Marconi). In the past decade, there has been consolidation in the industry through various mergers, acquisitions, and collaborations across telecom network equipment manufacturers (e.g. Alcatel and Lucent, Nokia and Siemens), which can be seen in Figure 7 below. The drivers of market consolidation include economies of scale and the need for significant R&D expenditures to remain competitive.

²¹ J.P. Morgan, *European Telco equipment*, 13 April 2018

Figure 7: Industry Consolidation: the major mergers and acquisitions, 1990-2016



Source: Frontier Economics

Following several rounds of consolidation, and the emergence of Huawei as a large competitor in the industry, the market is characterised by three large equipment makers (Huawei, Nokia and Ericsson) and a competitive fringe.

Barriers to entry are significant

While concentration can be indicative of a lack of competition, it is also possible that economies of scale may drive firms to be larger. This can result in greater economic efficiency. We observe that this appears to be the case in this market. Nonetheless, a combination of economies of scale and sunk costs (investments that, once incurred, have little alternative use), can create barriers to market entry. The evidence suggests that there are material barriers to entry in the global market for mobile network equipment owing to the following factors.

- Incumbent vendors have an inherent advantage over other players, since every next technology generation product will also need to support the previous generations already deployed.
- As the vendor market is innovation-driven, a large amount of investment in R&D is necessary to keep up with competitors. These costs are at least partly sunk.²²

²² Some investments in e.g. patents may continue to have value and so be partly recoverable despite exit from the market.

Indeed, a lack of new entry over the last 10 years indicates that establishing a new business at efficient scale is likely to be difficult.

2.4.2 Indicators of market conduct

Indicators of market conduct suggest Australian mobile network operators have benefited from strong competition between network vendors. Owing to the international standardization of mobile telecommunications network equipment, vendors develop their products supporting telecommunication standards, and mobile network operators are able to switch between equipment providers. However, ensuring a sufficient number of vendors is critical to creating that competitive dynamic. In contrast, excluding vendors from the supply chain is likely to create a material risks of uncompetitive procurements for Australian networks.

Aggressive competition through tender processes

RAN equipment is typically purchased through tender procedures. In some cases the bidding process is designed for a “single winner” and in other cases the offer is split between two and sometimes even three vendors.²³ Competition between RAN vendors is fierce, with large wireless telecommunications operators with substantial buyer power playing RAN vendors off against one another, through bidding processes typically characterized by the lack of transparency in price levels, as well as lack of transparency in the identity of competing bidders.²⁴

Customers, who are big mobile network operators, are sophisticated buyers that acquire network equipment through tender procedures launched every 3 to 5 years both for newly installed equipment (a greenfield operation) and for subsequent upgrades and updates (brownfield operations). These tender procedures involve multiple vendors and selection criteria are price and technology offered. Moreover, most of the customers have different suppliers for the same generation of network equipment.²⁵

Contracts usually have a duration of 3 to 5 years, as that is the time required to develop and roll-out a network. However, the price for the overall network equipment and its installation is usually agreed upon in advance for the whole contract duration. Moreover, at the termination of the contract, an operator would usually launch a new tender and would therefore be free to choose a new network equipment supplier.²⁶

²³ European Commission, Case M.7632 NOKIA/ ALCATEL-LUCENT, 24/07/2015, Paragraph 18.

²⁴ European Commission, Case M.7632 NOKIA/ ALCATEL-LUCENT, 24/07/2015, Paragraph 79.

²⁵ European Commission, Case M.6007 NOKIA/ MOTOROLA, 15/12/2010, Paragraph 35.

²⁶ European Commission, Case M.6007 NOKIA/ MOTOROLA, 15/12/2010, Paragraph 36.

Products are differentiated within global equipment standards

Owing to the international standardization of mobile telecommunications network equipment, vendors develop their products supporting telecommunication standards. These standards allow mobile network operators to switch between equipment providers. RAN equipment can be grouped into standard generations (2-2.5G, 3G, 4G and the future 5G). 5G systems constitute the next phase of mobile telecommunication standards beyond the current 4G standards. Each system builds upon a long series of technology standards. Firms can only develop standards-compliant products once a standard is complete or near completion.

There is some product differentiation between vendors. For example, while in the past, network equipment was technology specific, more recently, there is also another type of equipment technology, the so-called Single RAN ("SRAN") technology, which allows mobile operators to run and operate multiple mobile telecommunication standards on a single network. SRAN is commonly defined as a radio portfolio, which supports simultaneous usage of 2G (GSM), 3G (UMTS) and 4G (LTE) radio technologies. Single RAN is not standardised and equipment vendors offer different features under the Single RAN banner.²⁷

Nevertheless, as technology and standards are largely global, infrastructure equipment has become a standardised commodity where mobile network operators can switch between equipment vendors. This increases the intensity of competition.

Extensive R&D investment

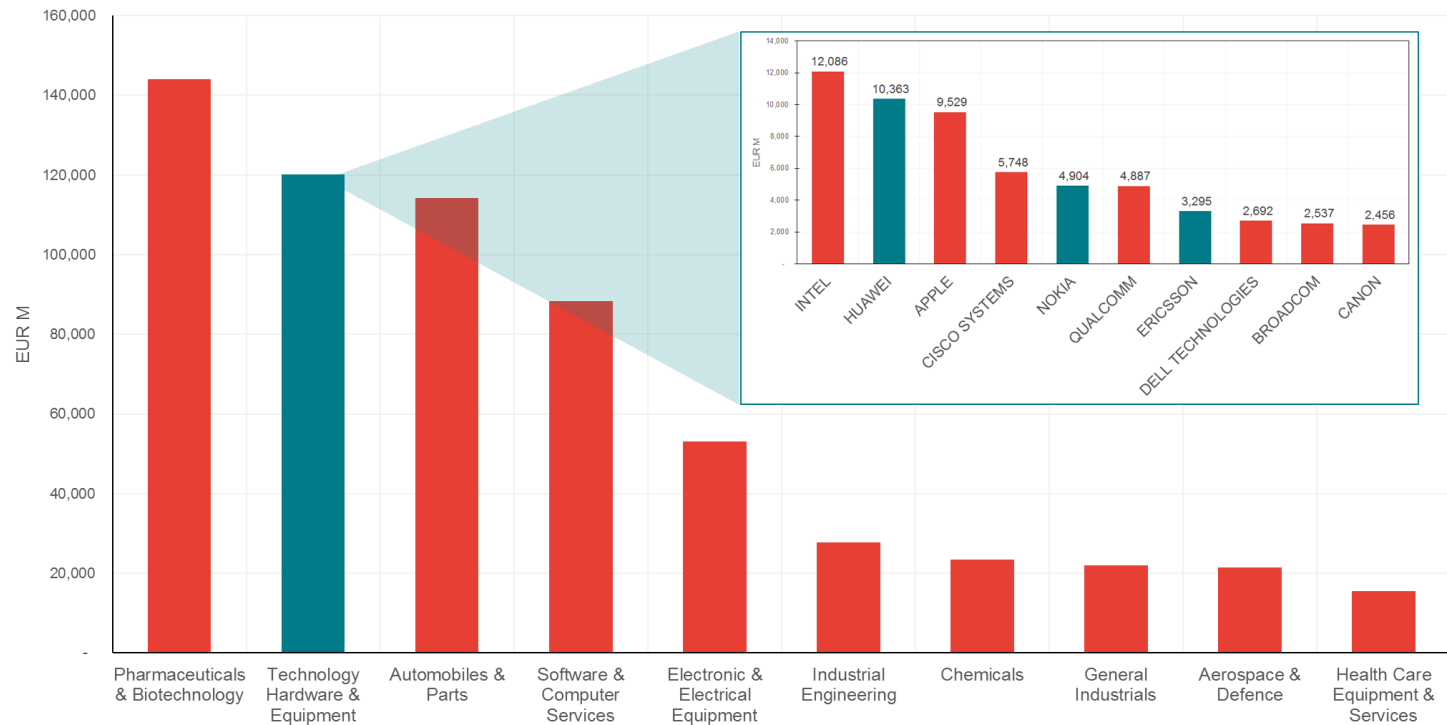
As the vendor market is innovation-driven, a large amount of investment in R&D is necessary to keep up with competitors. Figure 8 shows information from the European Commission on industrial R&D expenses for 2016-17.²⁸ The three successive charts show that:

- the Technology, Hardware and Equipment industry (of which Huawei forms part) is the second-largest spender on R&D
- the same industry has the 4th highest R&D intensity (R&D divided by revenue)
- Huawei spends the second-most on R&D within the Technology, Hardware and Equipment industry – more than EUR\$10 billion. This puts it ahead of Apple and Cisco, and well in front of major competitors Ericsson and Nokia.

²⁷ European Commission, Case M.7632 NOKIA/ ALCATEL-LUCENT, 24/07/2015, Paragraph 16.

²⁸ The 2017 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD.

Figure 8: Comparison of R&D expenditures by sector and firm, EUR M



Source: The 2017 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD. Note: The figure above shows the total research and development expenditure as a percentage of total net revenue of each vendor. The vendors do not report the component of R&D expenditure that can be attributed to RAN infrastructure alone.

These large R&D expenses are a significant barrier to entry in the vendor market. The economies of scale associated with R&D expenditures have driven a significant amount of consolidation in the market over time, while the patents that such expenditures lead to increase the entry costs of later entrants (as using patented technology requires payments to patent holders).²⁹

²⁹ Such patents must be made available to other firms on fair, reasonable and non-discriminator terms (known as FRAND).

Competition in the market for 5G network equipment

2.4.3 Indicators of market performance

Indicators of market performance suggest that the market for mobile network equipment is highly innovative with rapidly changing technology. It generally appears to be functioning well with little evidence of excessive profits. However, this is conditional on all vendors competing for network business.

Profitability

As noted in the European Commission's decision in relation to the merger between Alcatel and Lucent, competition between vendors has put downward pressure on prices.

"At the outset, it must be observed that for some years the industry has witnessed a downward pressure on prices. Customers (mostly, but not exclusively, network operators) tend to carry out their purchases of relevant products through multi-step competitive bids and other sophisticated procurement procedures (e-auctions in some cases) in which they can maximise their bargaining power vis-à-vis suppliers. Where possible, customers tend to use a dual/multiple sourcing strategy ("mix and match" of products from different vendors for different parts of their network) and award "framework contracts" in which the most important parameters (prices, cost, performance benchmarks, etc.) can be renegotiated at periodic intervals, thus allowing customers to have a significant degree of flexibility. This is to be borne in mind when considering the market share figures below, since in this scenario the possible high combined market shares are not necessarily (in themselves) to be considered indicative of future market power of the merged entity."³⁰

Competition has therefore kept profits down; as we have noted, this may have been a factor in the increase in market consolidation as firms have sought greater scale. However, the effectiveness of competition in particular procurements is likely to be conditional on all vendors competing for network business. Notable, the European Commission approved the Nokia-Alcatel merger on the basis that:

...post-transaction, there will continue to be strong suppliers active in the market, namely Ericsson...**Huawei, ZTE** and Samsung.³¹ [emphasis added]

Innovation

Innovation is key in the wireless network infrastructure industry, which is rapidly evolving from a hardware-based to a software-and cloud-based technology. To meet mobile network operators' demand for increased capacity at low costs, equipment vendors have engaged in continuous innovation in new generations of radio access technology and core system products.

³⁰ European Commission, Case M.4214 ALCATEL/LUCENT 24/07/2006, Paragraph 39.

³¹ European Commission, Case M.7632 NOKIA/ ALCATEL-LUCENT, 24/07/2015, Paragraph 85.

2.4.4 Conclusion on competition in the vendor market

The global market for mobile network equipment is highly competitive, and this has been supported by assessments of various competition authorities such as the European Commission and the Federal Trade Commission.³² While the market is relatively concentrated by most standards, and there are large economies of scale, the market is evolving rapidly with market performance critically dependent on extraordinary levels of R&D spending.

Australian mobile networks have the opportunity to capitalise on the competition between network vendors. A sufficient number of vendors creates a dynamic whereby networks benefit from the competitive tension.

³² Noting that neither objected to Nokia's acquisition of Alcatel-Lucent on the basis of competition concerns.

3 Why competition will be significantly lessened

In this section, we set out the appropriate framework for considering the impact of excluding Huawei. We set out why there is a major concern that the increase in market concentration is highly likely to lead to higher prices – and why if this was a merger rather than an exclusion, there is no question that the ACCC would be concerned about the effects of the substantial lessening of competition on consumers.

3.1 The ‘with and without’ test

Understanding the economic consequences of policies to restrict Huawei or other competitors supplying Australian mobile networks can be assisted using standard competition analysis. Such analysis involves a comparison between the likely competition in the market “with” Huawei as an active supplier and competition “without” Huawei.

In some circumstances, policies pursued by governments can lessen competitive constraints and increases firms’ market power, which allows firms to “give less and charge more” to their customers. Reducing the number of vendors available for Australian mobile networks to purchase from will almost certainly lessen the competitive constraints facing remaining vendors, and increase the market power of other global vendors with respect to these mobile networks.

Clearly, in a global market, limitations on supply in Australia will not change competitiveness in other countries. Nor is Australia a large (or even material) share of the global market. This suggests that while excluding Huawei, and other Chinese vendors such as ZTE, will result in uncompetitive procurements for Australian mobile network operators, networks in other regions are likely to fully benefit from vendor competition. This is summarised in Table 2.

Table 2 Overview of market functioning with and without Huawei

Metric	With Huawei / ZTE	Without Huawei / ZTE
Market structure	<ul style="list-style-type: none"> Concentrated, but with a number of larger competitors and a competitive fringe Barriers to entry are high Buyer power of mobile networks 	<ul style="list-style-type: none"> No global impact, but a material increase in market concentration in Australian procurements Weakened buyer power for Australian networks
Market conduct	<ul style="list-style-type: none"> Extensive investment in R&D drives technological improvements 	<ul style="list-style-type: none"> No change in global conduct, but tenders less likely to be fully competitive in Australia

	<ul style="list-style-type: none"> • RAN equipment is typically purchased through competitive tender procedures. 	
Market performance	<ul style="list-style-type: none"> • Market is highly innovative with rapidly changing technology • Competition has kept profits down, which in turn has increased market consolidation 	<ul style="list-style-type: none"> • Higher prices and profits for remaining vendors

Source: Frontier Economics

The key difference relates to the market structure in Australia. We may think of this as an ‘acquisition market’ in which Australian mobile networks seek to purchase from global vendors.

3.2 Market structure in the acquisition market without Huawei

The key impact of the exclusion of Huawei is the resulting increase in market concentration. Given other characteristics of the market, we would expect that the change in market concentration would have detrimental impacts on market conduct and market performance.

In our view, there is no question that resulting increase in market concentration would cause a competition regulator such as Australian Competition and Consumer Commission (ACCC) to be concerned about the remaining strength of competition and its ability to deliver good market outcomes.

The most common way of measuring this increase in concentration is through the Herfindahl-Hirschman Index (HHI). The ACCC, which is the authority responsible for challenging mergers under section 50 of the *Competition and Consumer Act 2010 (Cth)* if they are likely to substantially lessen competition, has noted the following about the HHI:

As part of its overall assessment of a merger, the ACCC will take into account the HHI, as a preliminary indicator of the likelihood that the merger will raise competition concerns requiring more extensive analysis. The ACCC will generally be less likely to identify horizontal competition concerns when the post-merger HHI is:

- less than 2000, or

Calculating the HHI

The HHI is calculated by adding the sum of the squares of the post-merger market share of the merged firm and each rival firm in the relevant market, thereby giving greater weight to the market shares of the larger firms. The HHI indicates the level of market concentration while the change in the HHI (or ‘delta’) reflects the change in market concentration as a result of the merger.

Why competition will be significantly lessened

Final

- greater than 2000 with a delta less than 100.³³

The United States horizontal merger guidelines provide further classifications of markets into three types:

- Unconcentrated Markets: HHI below 1500
- Moderately Concentrated Markets: HHI between 1500 and 2500
- Highly Concentrated Markets: HHI above 2500³⁴

In Table 3, we show how market shares would change as a result of exclusion of Chinese vendors from the market. This shows that the market would already be considered moderately concentrated, but that:

- the HHI increases to over **4,000** (to “highly concentrated”)
- the delta HHI is over **1,500**.

Table 3 Changes in market concentration from excluding Chinese vendors

Supplier	Market share, 2017	HHI	Market share, 2017 (Exc. Chinese firms)	HHI (Exc. Chinese firms)
Ericsson	28.0%	784.0	47.6%	2,268
Huawei	31.6%	998.6		
Nokia-Alcatel	24.3%	590.5	41.3%	1,708
ZTE	9.6%	92.2		
Samsung	3.5%	12.3	6.0%	35
Others	3.0%	9.0	5.1%	26 [#]
Total	100%	2,486	100%	4,037

Source: JP Morgan

Notes: The use of an “other” category potentially overstates HHI numbers. However, even if this category was distributed across a large number of other firms, the HHI remains above 4,000.

3.3 Effects of higher concentration

The exclusion of Huawei from the Australian supply chain would result in the exclusion of the largest player in the global market. Only two large players, Nokia and Ericsson, and one small player (Samsung) would remain in the domestic market (assuming that other Chinese vendors such as ZTE would also be excluded). Given the material barriers to new market entry, it is implausible that excluding Huawei could be compensated by the entry of other new local or global competitors. The remaining global entities will acquire a significant degree of market power.

³³ ACCC, *Merger Guidelines*, 2008 (revised 2017), at 7.14.

³⁴ US Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, 2010.

Standard competition economics emphasises two likely effects from such an increase in market power:

- An increased risk of collusion / coordinated behaviour between suppliers
- An increased risk of remaining firms unilaterally increasing prices reflecting that vendors are not interchangeable (so networks more likely to have preferred Huawei are more likely to face higher prices than networks that would not).

The result of this lessening of competition would undoubtedly be higher prices for network equipment.

In the following section, we further estimate the likely cost of the loss of competition, using economic theory and empirical analysis applied to the 5G network vendor market.

4 The costs of less competition will be high

In this section, we consider methods by which we can estimate the likely price increase and other detriments from the exclusion of Huawei from bidding for 5G RAN tenders for Australian mobile networks.

We first consider tools from merger analysis, which rely on economic theory of oligopoly to generate price predictions. We then consider empirical evidence from a range of markets which can be used in conjunction with our predictions to triangulate a “best estimate” price increase.

4.1 Simulation of price increases from models of competition

As we have noted in section 4, following the standard assessments of competition authorities in merger proceedings, the exclusion of key competitors from a concentrated market is likely to have two kinds of effects:

- an increased risk of coordinated effects
- unilateral effects

4.1.1 Unilateral effects appear more relevant

Coordinated effects, or the possibility that remaining firms will act in concert to raise prices, is a particular concern under certain market conditions. For example, where a small number of firms sell products that are very similar (homogeneous) at transparent prices, it becomes very easy to detect and punish breaches of collusive agreements. Given the nature of vendor competition, and particularly the use of tenders with non-transparent prices, we do not think Huawei’s exclusion would cause a significantly increased risk of collusion.

Instead, we focus our analysis on unilateral effects. Unilateral effects are those that result from the change in market structure on the behaviour of remaining competitors. To take Ericsson as an example, a reduction in the competitive constraint applying to Ericsson caused by the exclusion of Huawei comes about because it means that a rise in Ericsson’s prices will no longer be met by a defection of customers towards Huawei – while some may be lost (‘diverted’) to other competitors such as Nokia, Nokia will also face similar incentives to Ericsson to raise prices.

It is important to emphasise that *all* mobile networks in Australia will benefit from Huawei’s presence – even if they do not actually buy from Huawei. This is because of the uncertainty created by competition, which encourages other firms to offer low prices and continue to invest to ensure their equipment is of a quality that can compete.

4.1.2 Models of oligopoly

Economics has two standard models of oligopoly that can be applied to produce predictions of price changes as a result of changes in market structure:

- the Cournot model, which assumes that firms compete by varying the quantity of goods they offer in the market
- the (differentiated) Bertrand model, which assumes that firms compete by varying the prices of the (differentiated) goods they offer in the market.

While these models can predict price changes, their accuracy will depend on how well these models capture the characteristics of the network vendor market.

In our view, the differentiated Bertrand model is likely to better approximate the characteristics of the vendor radio market. This is because vendors compete through price tenders, and seek to differentiate their products through various product attributes.

We can highlight the relevance of the exclusion of Huawei by comparing the incentives that enterprises have to increase prices in the counterfactual – without the exclusion; and in the factual – with the exclusion.

- *Without* the exclusion, each firm will choose the prices that maximise its profits, without considering the profits of the other firms. Once it has chosen the profit-maximising prices, it will not increase its prices further. To do so would increase the profit margin on each unit sold; but there will be such a large loss in the number of units sold that the net effect of the increase in prices would be to decrease profit. However, some of the lost sales caused by the increase in prices would have been lost to Huawei.
- In the factual scenario (*with* the exclusion), some of the “lost” sales will not be counted as lost – because customers that would have switched to Huawei would no longer be able to. This effect is sometimes characterised as internalising the lost sales that would otherwise be lost to an external party.

This internalising effect will always tend to increase prices. As Farrell and Shapiro state in the context of mergers: “...in a differentiated-product framework, any horizontal merger typically encourages at least some price increase if there are no efficiencies.”³⁵

Efficiencies (meaning offsetting falls in costs) cannot possibly offset price increases in this case, because the gains to global competitors such as Ericsson or Nokia from increased sales in Australia would be trivial relative to their total supply.

³⁵ Joseph Farrell and Carl Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, February 2010, p 6, fn 17.

4.1.3 Estimating the price increase from exclusion

Economists have developed tools to quantify the impact of mergers in differentiated-products markets; with some adaptation, we consider these tools can be used to provide a first-pass approximation of the likely price changes that will result from excluding Huawei.

While the detailed calculations are outlined in Box 1, the basic intuition follows from the logic spelled out above. Compared to a situation where Huawei competes, remaining firms are now able to increase their prices because some of the sales that would otherwise have been lost to Huawei now remain with that firm. In merger analysis, the use of “upward price pressure” tests provide some quantitative methods to estimate the size of this effect. These tests use information on product margins and diversion ratios³⁶ to provide an estimate of the value of sales that are now retained or ‘not lost’. By imposing more structure on markets (e.g. that the demand curve is linear), specific price predictions can be produced.³⁷

A summary of the results follows. The calculation using a linear demand, which as discussion in Box 1 is likely to be conservative relative to other forms. Different price increases are predicted for Ericsson and Nokia because their incentive to change price depends on how much diversion there would otherwise be towards Huawei if they raised prices.³⁸ Based on our diversion assumptions, larger market shares increase the benefits of Huawei’s exclusion.

Table 4 Estimate of price increases as a result of Huawei exclusion

Firm	Margin [#]	Diversion ratio to Huawei [^]	Estimated % price increase
Ericsson	53%	41%	18.4%
Nokia	53%	36%	14.6%

Source: Frontier Economics estimates

Notes: [#] Calculated as price less marginal cost, divided by price. Sourced from “Telecom equipment” at:

³⁶ A diversion ratio measures “where product goes” from Firm A when there is a price rise or other event. For example, if 20% of sales would go to Firm B when Firm A raises its price, then the diversion ratio of A to B would be 20%.

³⁷ As noted by Farrell and Shapiro: “...the magnitude of the price change will depend in a more complex and less transparent way on the overall demand system and on oligopoly conduct.” Joseph Farrell and Carl Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, February 2010.

³⁸ Information on margins may be obtained by using industry-wide data as an approximation. Information on diversion ratios is not readily available; ordinarily these are estimated using customer surveys or econometric analysis. In this instance, we simply use market shares as a proxy for diversion ratios between firms. That is, we assume that with Ericsson’s 28% share of the market, it will take 28% of the demand lost by Huawei. See sources in Table 4.

http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/margin.html

^ Diversion ratios calculated using market shares, excluding Huawei's share, i.e. for Huawei to Ericsson, it is Ericsson's market share of 28% divided by the sum of the market share of all other market participants, excluding Huawei.

Box 1: Explanation of unilateral effects predictions

Our analysis assumes that the market operates according to differentiated Bertrand competition – that is, firms compete on prices but offer differentiated products which might be preferred by different users (variety), so that price rises by a firm do not result in all demand switching away from the firm.

To understand how these model generate price predictions, assume that there are five firms with an equal market share (20%). What does the removal of a firm matter to pricing? Firm 1 will already set its prices as high as it can, as it can be assumed to profit maximise.

Suppose that Firm 1 has a diversion ratio to Firm 5 of 33%. That is, when Firm 1 raises prices, 33% of the volume it loses goes to Firm 5 if Firm 5 does not change its price. Then if Firm 5 leaves the market (or is acquired by Firm 1), the calculus relating to whether to increase price changes. Now Firm 1 will consider the value of sales made to customers that otherwise would have used Firm 5. The value of sales can be represented by margins – price less the marginal cost of supplying the additional volume, divided by the price. Suppose Firm 1's margin are 50%.

Then we can show that assuming that the prices of Firm 1 and Firm 5 are roughly the same, there will be upwards price pressure because the profit maximising prices of Firm 1 will increase. This can be roughly represented by the margins and diversion ratios – known in the economic literature as the “generalised upward price pressure index”.

In this instance, the standard approaches require some modification, reflecting that we are not estimating the impact of a merger but a market exclusion. In this case, rather than capturing the value of sales from the merging firm which would not be lost as a result of the merger, we instead capture the value of sales from firms which would not be lost as a result of the exclusion.

The estimate of likely price changes can only proceed if we are willing to make further assumptions about the shape of the demand curve. In particular, Shapiro has shown that in the symmetric case where margins M and diversion ratios D are the same between firms 1 and 5, the price increase resulting from a merger of firms is as follows:

$$\% \text{ price increase} = \frac{DM}{2(1-D)}$$

In the case of constant elasticity demand, the price increases will be higher reflecting that elasticity does not change as prices increase. In this case, the prediction is:

$$\% \text{ price increase} = \frac{DM}{1-D-M}$$

Although these formula were developed in the context of mergers, they can also be applied assuming that a firm is simply excluded from the market.

Source: Frontier Economics, Carl Shapiro, (1996), “Mergers with Differentiated Products,” *Antitrust*, 10:23-30, Joseph Farrell and Carl Shapiro, *Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition*, February 2010.

4.2 Empirical studies of competition benefits

Quantifying the impact or cost of the loss of competition using empirical evidence is difficult. It requires an assessment of market outcomes under two different states

The costs of less competition will be high

Final

of competition – one of which is not observable and will not be observable for a number of years.

4.2.1 Natural experiments

A first best approach is not feasible

Natural experiments involve analysing market responses to observable events, and using this information to draw inferences about how a market will likely respond to an event in the future. Relevantly, natural experiments are observational studies, not true experiments where the researcher has control over the test variables. As such, in order to draw clear casual inferences, it is critical to ensure that the natural experiment is well defined and relevant to the facts at hand.

In the present case, the ‘gold standard’ approach would be a natural experiment to measure the higher cost of deploying 5G in Australia that resulted from reduced competition due to Huawei being excluded. To date, 5G technology has only been trialled in Australia – for instance, in March 2018, Telstra conducted a 5G trial in the Gold Coast with technology supplied by Ericsson and Intel.³⁹ Huawei has also participated in 5G trials in Australia, including a November 2016 trial conducted in collaboration with Optus.⁴⁰ Of course, to this point, Huawei has not been excluded from deploying in Australia so no ‘gold standard’ natural experiment is possible.

Evidence from similar natural experiments

In the absence of this, a second-best approach would be to examine the outcomes of similar natural experiments. For example, these might relate to other jurisdictions, earlier versions of technology, or different industry contexts.

In the first case, the natural experiment would measure the higher cost of deploying 5G technology in other countries that resulted from reduced competition due to a vendor being excluded. While a global rollout of 5G has not yet occurred, the technology has been used and trailed in some limited cases – most notably, during the 2018 Winter Olympics held in South Korea.⁴¹ However, as with ‘gold standard’ approach, there is insufficient public information to allow us to undertake a natural experiment around 5G rollout in other countries.

³⁹ <https://www.telstra.com.au/aboutus/media/media-releases/Telstra-offers-Australias-first-taste-of-5G>

⁴⁰ <https://www.zdnet.com/article/optus-and-huawei-clock-35gbps-speeds-in-5g-trial/>

⁴¹ <https://www.olympic.org/news/fans-of-the-olympic-winter-games-2018-to-experience-world-s-first-broad-scale-5g-network>

In the second case, the natural experiment would measure the cost of deploying other technology, such as 3G, 4G or fixed line, in Australia or other countries, that resulted from reduced competition due to a vendor being excluded.

For example, there is some specific evidence relating to deployment of 4G (LTE) networks in the United States. In 2010, Sprint Nextel unveiled its ‘Network Vision’ plan to upgrade its existing network, and rollout LTE technology. It reportedly set a target range of between US\$5 billion and US\$7 billion, and solicited bids from a number of vendors. Huawei and ZTE were excluded from the tender, even though they were said to be the lowest bidders. Notably, it was said that Huawei offered a deal that would have saved Sprint Nextel at least US\$800 million from its existing costs in its first year of operation alone. The bids from the remaining vendors were reportedly as high as US\$8.5 billion.⁴²

The contract was ultimately won by Ericsson, Alcatel-Lucent and Samsung for a combined value of US\$5 billion.⁴³ If Huawei had been awarded the tender, it is likely that the cost of deploying the network upgrade would have been lower, and would have resulted in commensurately lower prices for consumers. However, without further information, we are unable to assess the exact impact of excluding Huawei on the cost of deploying Sprint Nextel’s network upgrade.

Evidence from the United States

A further piece of evidence comes from the United States, where Huawei’s participation in network deployments is currently being considered. Earlier this year, the Federal Communications Commission (FCC) issued a Notice of Proposed Rulemaking to prohibit the use of Universal Service Funds (USF) to purchase equipment from service providers identified as posing a national security risk to communications networks. If passed, the rule may be used to limit Huawei’s operations in the United States.

Huawei’s expert economist discussed the potential economic costs of the proposed rule and its impact on competition.⁴⁴ In his statement to the FCC, Mr Shampine cited evidence that competition from Huawei had resulted in sharply lower network costs, including.⁴⁵

⁴² <https://www.telecomasia.net/content/huawei-zte-excluded-7b-4g-tender>,
<https://www.wsj.com/articles/SB10001424052748704353504575596611547810220>

⁴³ Ibid.

⁴⁴ Reply Declaration of Allan L. Shampine (Compass Lexecon) dated 29 June 2018, In the Matter of *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs*, Federal Communications Commission p.7-8., available at: https://ecfsapi.fcc.gov/file/107021419415731/107110_98178616v1_FINAL%20-%20Huawei%20Reply%20Comments%20-%20National%20Security%20Docket%2018-89.PDF

⁴⁵ Ibid.

- the Chief Technical Officer of Telus, a Canadian carrier, had estimated that Huawei's presence in the market 'dropped prices by 15% at least' as Ericsson and Nokia were forced to respond; and
- James Valley Telecommunications, a rural carrier in the US, had used Huawei to build their entire network, and in doing so had obtained a 40 percent saving relative to the next most cost-effective option.

Mr Shampine's analysis of prices finds that allowing Huawei to freely compete in the US market has resulted in a savings of at least 15 per cent, with savings on some equipment in the vicinity of 40 per cent:⁴⁶

My own analysis of concentration and prices for RAN equipment generally and for LTE base stations specifically (evolved NodeBs, or eNodeBs) is consistent with these conclusions. For example, industry concentration is higher in North America than elsewhere in the world (e.g., Europe), and average selling prices per LTE base station (whether overall, or by pico, micro and macro individually) are higher in North America than in any other region of the world. I calculate that the differences are all at least as large as those described by Telus, and many are as large or larger than those described by James Valley Telecommunications.⁴⁷

4.2.2 Evidence from increasing concentration – general

As an indication of the importance of concentration to prices, an ex post review of merger decisions in the European Union found much larger price effects in more concentrated markets. While the study suggests caution must be used in the results (because not all mergers were studied), it provides a good indication that we should be concerned where the HHI exceeds 2400 and results in fewer than 6 firms, with one or more firms holding more than 35% market share.

Table 5 Average price effects from mergers in the European Union

Concentration measure	Condition	Average price effect across mergers that were unconditionally cleared
Post-merger market share	Greater than 35%	9.7%
Post-merger HHI	Greater than 2400	19.7%

⁴⁶ Ibid.

⁴⁷ Ibid. p.

Concentration measure	Condition	Average price effect across mergers that were unconditionally cleared
Post-merger number of firms	Fewer than 6	12.5%

Source: Ormosi, Mariuzzo, Havell, Fletcher & Lyons, *A review of merger decisions in the EU: What can we learn from ex-post evaluations?*, prepared for DG Competition, European Commission, June 2015, p. 13.

4.2.3 Evidence from increasing concentration in telecommunications markets

In recent years, mobile telecommunications markets have experienced substantial consolidation. For example, the European Commission has recently cleared 4-to-3 mergers in the Netherlands, Austria, Ireland, and Germany.

There is some recent empirical evidence to suggest that greater market concentration in mobile communications markets has led to higher end user prices. We refer, in particular, to a paper by Genakos, Valletti and Verboven (2017)⁴⁸ that studied the relationship between prices, investments and market structure in mobile telecommunications by looking at the experience of 33 countries in the period 2002-2014. The authors undertake two separate regression analyses – one for retail prices, and another for operator investment. In each case, the relevant dependent variable is regressed on market structure (including both the number of operators and HHI), and relevant control variables.

The authors find that:

- Markets with more competitors will result in lower prices – in a market with 2 or 3 operators, one more competitor leads to a reduction in price of about 8.6 per cent. In a market with 4 operators, the reduction is more substantial and is equal to approximately 15.9 per cent.
- An increase in market concentration will raise prices – an increase in the HHI by 10 percentage points would increase prices by 20.37 per cent. To put this in context, a 4-to-3 merger in a symmetric industry would raise the HHI by 8 per cent, from 0.25 to 0.33, and increase prices by approximately **16.3 per cent**.

Some offsetting effects are identified by the authors relating to investment, which is potentially the source of efficiency gains from the mergers. However, as we have discussed, this effect is not relevant to an exclusion case.

⁴⁸ Genakos, Valletti & Verboven (2018), *Evaluating market consolidation in mobile communications*, Economic Policy, Vol 33 Issue 93, pp.45-100

4.2.4 Evidence from competitive bidding in tenders and auctions

Mobile networks use tender processes for network equipment. There is also substantial empirical evidence to demonstrate that restricting participation in tenders or auctions will likely lead to lower auction revenue.

Theoretical support

The theory supporting this proposition is explained by Holtz-Eakin and Bazelon (2013).⁴⁹ They note that in a three-bidder auction, where each bidder has a different valuation of the item being auctioned, the bidder with the highest valuation will win the auction, but pays a price equal to the value of the bidder with the second highest valuation. If one bidder is removed, there are three possible outcomes:

- if the bidder with the highest valuation is removed from the auction, then the bidder with the second highest valuation will win at a price set by the bidder with the third highest valuation
- if the bidder with the second highest valuation is removed from the auction, then the bidder with the highest valuation will win, but now will pay a lower price set by the bidder with the third highest valuation
- if the bidder with the third highest valuation is removed from the auction, then the result is the same as if all bidders were participating, i.e. the bidder with the highest valuation will win and pay a price equal to the value of the bidder with the second highest valuation.

The authors conclude that it is only if low-value, non-marginal bidders are removed would the auction results be unchanged. We do not think this would accurately characterise Huawei's participation, given its size and existing market presence.

Empirical studies

There are a number of studies that quantify the impact of removing a bidder from an auction. Madden and Suenaga (2017)⁵⁰ examine the relationship between prices paid for national 3G wireless licenses when spectrums were sold by auction. Using data from 38 auctions from 2000 to 2011, the authors regress auction prices on a number of variables relating to consumer demand, telecom market conditions, technological attributes, auction design features and competitiveness. The relevant variable for our purposes (COMP) was expressed as a bidder-to-licence ratio. The authors determine a coefficient for this variable of 1.4405, significant at the 1 per

⁴⁹ Shapiro, Holtz-Eakin and Bazelon (2013), *The Economic Implications of Restricting Spectrum Purchases in the Incentive Auctions*.

⁵⁰ Madden & Suenaga (2017), "The determinants of price in 3G spectrum auctions", *Applied Economics*, Vol. 49, Issue 32, pp. 3129-3140.

cent confidence interval. This result suggests that more intense competition among bidders for 3G spectrum places upward pressure on prices – specifically, one extra bidder would be expected to result in a 44 per cent increase in prices. By extension, it may be inferred that removing a bidder would be expected to result in a **31 per cent** decrease in prices.⁵¹

Coey, Larsen and Sweeney (2016)⁵² define and estimate what they call the ‘bidder exclusion effect,’ which is the expected auction revenue when a random bidder is excluded from an auction (see Box 2). The authors apply this analysis to US timber auction data from 1982 to 1989 and find that removing a single bidder at random would decrease auction revenue by approximately **13 per cent** on average.

Box 2: The bidder exclusion effect

For the intuition behind how the bidder exclusion effect can be estimated, the authors consider the example of an auction with more than two bidders ($n > 2$). Suppose the auction format is an ascending auction with private values and no reserve price, where bidders bid their values. If a bidder is excluded at random from the auction, with probability $(n-2)/n$ he will be one of the $n-2$ lowest bidders, and so his exclusion will not affect revenue. With probability $2/n$, he will be one of the two highest bidders, and revenue will drop from the second-highest to the third-highest bid of the n bidders. The bidder exclusion effect is therefore $2/n$ times the expected difference between the second and third-highest bids.

Source: Coey, Larsen and Sweeney (2016)

Using similar data, Athey, Levin and Seira (2011)⁵³ find that the type of bidder also matters to the exclusion result – with an additional mill associated with an increase in auction revenue of **19 per cent** compared to an additional logger of **12 per cent**. If, as we suspect, Huawei is likely to be a strong and credible bidder for most or all networks, a value towards the upper bound would be more likely.

4.2.5 Summary of empirical results

We summarise the results of the empirical studies that help to estimate the impact of Huawei on competition costs in Table 6 below. The average and midpoint impacts are both around 20 per cent. It is notable that these results are similar to the predictions of price increases using models of unilateral effects (i.e. 15-18%).

⁵¹ Madden and Suenaga estimate a 44 per cent increase in auction revenue from greater competition. We have normalized this to produce an estimate of the expected reduction in auction revenue from less competition by applying the following formula: $1/(1+44\%)-1$.

⁵² Coey, Larsen and Sweeney (2016), *The Bidder Exclusion Effect*, September 2014). NBER Working Paper No. w20523, also available at: <https://bfi.uchicago.edu/sites/default/files/research/BidderExclusion.pdf>

⁵³ Athey, Levin and Seira, “Comparing Open and Sealed Bid Auctions”, *The Quarterly Journal of Economics* (2011) 126, 207–257.

Table 6: Summary of empirical results on the loss of competition

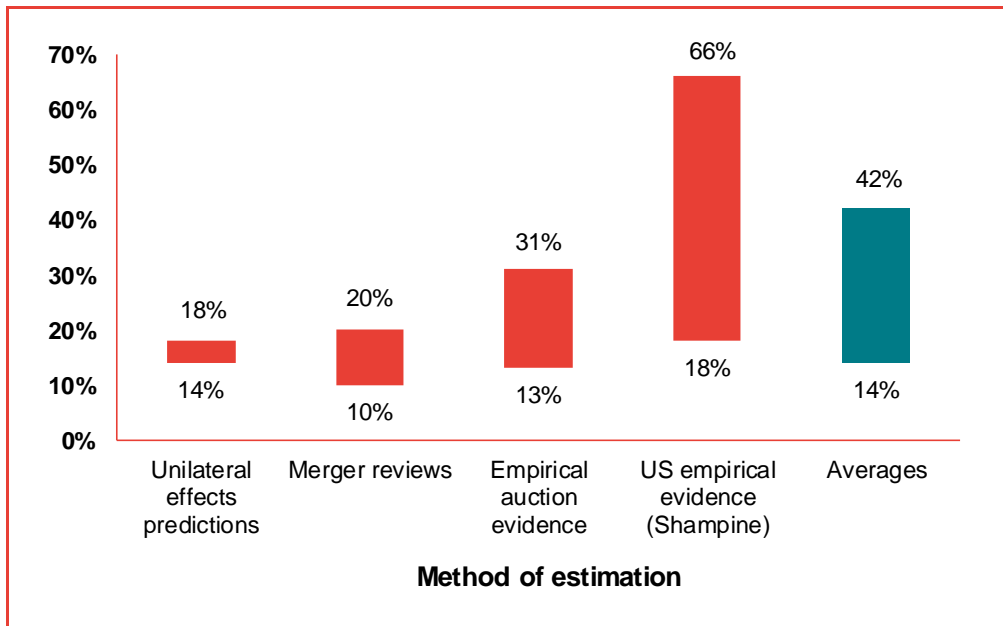
Source	Description	Price impact
Shampine (2018)	<ul style="list-style-type: none"> - Allowing Huawei to freely compete in the US market has contributed to cost savings of 15-40%. - By extension, restricting Huawei's ability to compete in the US would have increased costs by about 18-66%% (on current levels).⁵⁴ 	18% - 66%
Genakos, Valletti and Verboven (2017)	<ul style="list-style-type: none"> - Examined the impact of market concentration on prices in mobile telecommunications. - Estimates that an increase in HHI by 10 percentage points would increase prices by 20.37%. A 4-to-3 merger in a symmetric market would raise the HHI by 8%, and thereby increase prices by about 16.3%. 	16%
Madden and Suenaga (2017)	<ul style="list-style-type: none"> - Examines the relationship between prices paid for 3G spectrum licences sold by auction, and number of bidders. - Estimates that one extra bidder would be expected to increase prices paid by about 44%. By extension, removing a bidder would reduce prices paid by 31% (on current levels). 	31%
Coey, Larsen and Sweeney (2016)	<ul style="list-style-type: none"> - Develops a model to estimate the expected reduction in auction revenue when a random bidder is excluded. Applies the analysis to US timber auction data and finds that removing a random bidder would have decreased auction revenue by 13%, on average. 	13%
Athey, Levin and Seira (2011)	<ul style="list-style-type: none"> - Using timber auction data, finds impact of additional mill of 19%, and additional logger of 12% on auction revenues. 	12%-19%

4.3 Both simulation and empirical estimates support a significant price increase

The material in sections 5.1 and 5.2 indicate a broad spread of estimates from the removal of a competitor. Taking the average of the 'low' estimates and the 'high' estimates gives a range of between 14 and 42 per cent (Figure 2), and we suggest the true figure is likely to be within this range. This increase would be even higher should other Chinese firms such as ZTE also be excluded.

⁵⁴ That is, a 15% saving translates to an 18% increase as $100\% / (100\% - 15\%) = 1.18$.

Figure 9: Estimation of higher prices (%) resulting from Huawei's exclusion



Source: Frontier Economics analysis

4.4 Higher costs to networks pass through in higher prices for consumers

The impact of higher prices paid by network operators for RAN equipment for consumer prices depends on four things:

- the total expenditure on RAN equipment
- the expected increase in that cost due to the loss of competition
- the rate at which cost increases are passed through to consumers
- the share of RAN costs in retail (or end user) prices.

The percentage impact on retail prices can be calculated as:

$$\begin{aligned}
 & \text{Predicted \% increase in retail prices} \\
 &= \% \text{ increase in RAN prices/costs} \\
 &\times \text{share of RAN costs in retail prices} \\
 &\times \text{pass through factor}
 \end{aligned}$$

While we have an estimate of the second factor, in this section we estimate plausible values for the first, third and fourth factors.

Clearly, at this stage we can only develop preliminary estimates of these parameter values, as no firms have yet deployed 5G networks. However, we consider that there is sufficient information to provide an indicative indication that the costs will be, by any measure, large.

The costs of less competition will be high

Final

4.4.1 The costs of deploying 5G networks

We have considered a number of sources of information on the costs of deploying 5G networks. We rely on three studies relating to different countries (the UK, Canada and the United States), and then scale these estimates for Australia's population.

The results of this are presented in Table 7. Note these estimates use a RAN network share of total 5G investment of 25 per cent. This means that, if mobile networks just recover their costs, we can use the 25 per cent figure to estimate an effect on retail prices.

Table 7 Estimates of 5G access network deployment costs

Country / Region	US	Canada	UK	European Union
	<i>\$USD</i>	<i>\$CAD</i>	<i>£GBP</i>	<i>€EUR</i>
Forecast 5G investment over 7 years, bn	275	27	14	56 [#]
Population estimate (m)	325	36	66	370
RAN share of investment costs	25%			66% [#]
Estimate of RAN costs (bn)	\$68.8	\$6.8	£3.5	€5.7
Estimates scaled for Australia's population (25m)				
Forecast 5G investment over 7 years, bn	AUD \$29	AUD \$19	AUD \$10	AUD \$5.7
RAN share of investment costs	25%			66% [#]
Estimate of RAN costs (bn)	\$7.15	\$4.69	\$2.46	\$3.74

Sources: Accenture estimates for US and Canada, See footnote 14 for Europe, Frontier Economics analysis

Notes: [#] estimate refers to RAN plus backhaul costs / transmission links. We use a 66% share of RAN costs as a best estimate of the total based on costs of earlier generations.

There is a wide range in these estimates, which is perhaps not unexpected given the prevailing uncertainty. Our view is that Canada and the United States are better comparators for the cost of rolling out networks, due to geographical similarities with Australia. In contrast, the UK and Europe are not such close comparators due to much denser population, which lowers capital costs associated with network coverage.⁵⁵ As a base level we adopt a value of \$5 billion for estimated RAN costs incurred over 7 years, which is slightly more than Canada but below the United States (adjusted for population).

⁵⁵ The UK's population density of 272 persons per km² is far in excess of Australia or Canada at 3 and 4 respectively per km², and in excess of the United States at 33 per km². See https://en.wikipedia.org/wiki/List_of_countries_and_dependencies_by_population_density

4.4.2 Expected increase in costs

The expected increase is summarised in Table 8.

Table 8: Detriments from higher RAN costs

	Estimate
Expected cost increase (%)	14%-42%
Estimate RAN costs incurred over 7 years	\$5bn
Expected cost increase across all four networks (\$)	\$700m - \$2.1bn

Source: Frontier Economics

4.4.3 Economic considerations around pass through

When costs increase, we usually expect that some or all of these higher costs will be passed through to consumers in the form of higher prices. The rate of pass through is the extent to which a firm's price will change in response to a change in its cost. It depends on a number of factors, including the nature of the demand curve faced by the firm, the intensity of competition in the relevant markets, and whether firms compete on quality as well as price.

Economic theory indicates that pass-through of industry-wide costs will generally increase with the intensity of competition. That is, in a highly competitive market, a profit maximising firm will typically pass through most or all of any industry wide cost changes.⁵⁶ In the preceding sections, we found that restricting Huawei from providing 5G network services will likely lead to an increase in 5G network costs of between 15% and 20%. In addition, the market for the supply of 5G services to end use customers is likely to be highly competitive as rival network operators vie for scale, particularly with TPG's entry in recent times. This level of competition suggests that most (if not all) of the higher 5G network costs will be passed through to consumers in the form of higher prices.

4.4.4 Consumer prices will rise

We conclude that the most likely outcome is:

- Taking a midpoint of cost estimates and share of RAN costs in total network investment costs, a 14%-42% increase in cost will be equivalent to about \$700 million to \$2.1 billion.

⁵⁶ Exceptions to this proposition do exist. For instance, under particular specifications of the demand curve (e.g. very convex inverse demand curves), pass through may decrease as competition increases. In addition, where firms compete on both price and quality, a range of pass through rates are possible, once effects on quality and consumers' willingness to pay are considered.

- All of these costs will be passed through to consumers, on the basis that network competition will be strong.
- Huawei's exclusion will act as a 'lack of competition tax' on consumers.

5 Exclusion would impose other costs

We further consider other detriments from excluding Huawei, relating to a loss of quality, speed of deployment and switching costs for current users of Huawei equipment. These costs are difficult to quantify, but are potentially much larger in magnitude than the price-related costs we identify in section 4.

5.1 Huawei is a global leader in 4G and 5G technology

The benefits from lower prices are not the only benefit of allowing Huawei to supply 5G network equipment. Huawei's network equipment is not identical to that of its competitors. This allows for mobile networks to make trade-offs between price and quality and so provide end users with additional product variety (so, for example, end users could choose between a cheaper, less fully featured network, and a more expensive, highly quality network).

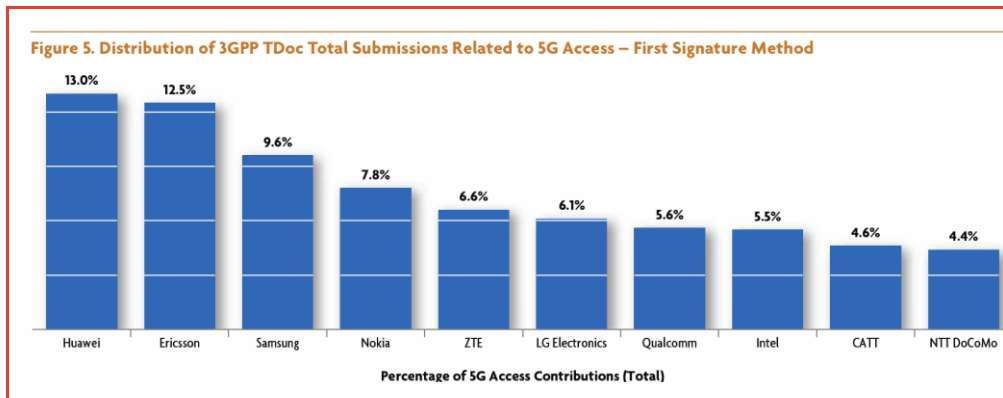
In this case, the exclusion would be particularly costly as Huawei is a leader in 4G and 5G technology. This can be observed in objective information related to the 3GPP process which sets global standards for 5G equipment. Analyst firm Signals Research Group estimate the role of different vendors by measuring the quantity of submissions made to 3GPP – more than 300,000 submissions – which are an effective proxy for “standard essential patents⁵⁷” which are ultimately produced by vendors. Signals Research Group concludes that:

With both approaches Huawei and Ericsson come out on top for 5G Access...⁵⁸

⁵⁷ A standard-essential patent is a patent that claims an invention that must be used to comply with a technical standard.

⁵⁸ Signals Research Group, *Standing On Our 5g Soapbox: Analyzing Cellular Standards Leadership Through A Different Lens*, May 2018, p. 19.

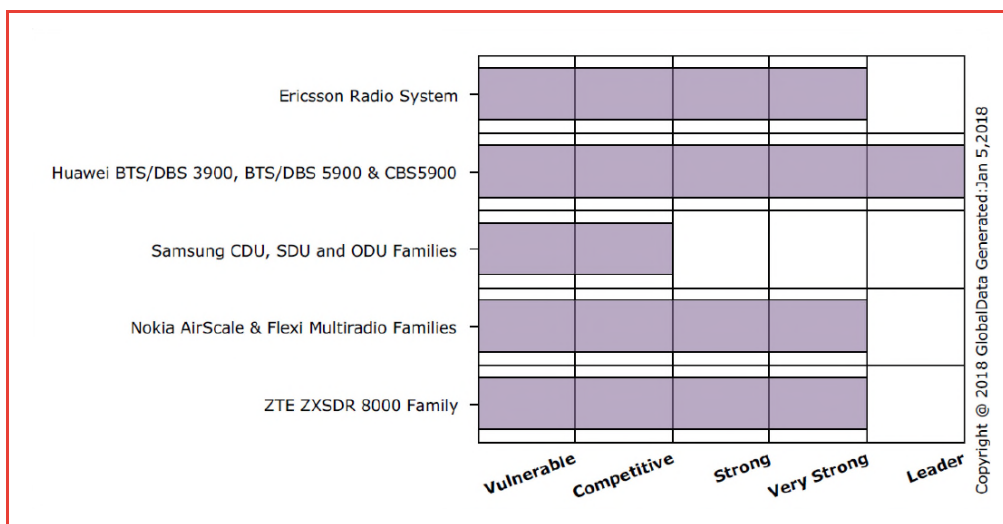
Figure 10: Source of contributions to 3GPP 5G access standards



Source: Signals Research Group

This technology leadership is translating into speed, latency and capacity advantages on 5G network equipment. Already, Huawei has that leadership in 4G / LTE equipment, as shown in Figure 11, with analysts GlobalData anointing Huawei as the “leader” in this field.

Figure 11: Comparison on major vendors of 4G/LTE equipment



Source: GlobalData, LTE RAN: Competitive Landscape Assessment, November 15, 2017

The nature of some of these benefits is obvious in that Vodafone, Optus and TPG all choose to use Huawei equipment in their 4G mobile networks – and Australia’s networks offer some of the highest speeds and quality of any networks in the world.⁵⁹

⁵⁹ See, for example, reports in: <https://www.afr.com/opinion/columnists/huaweis-quiet-determination-pays-off-20180225-h0wmkn>

With respect to 5G access networks, China is currently hosting the world's largest 5G field trials, with all major vendors involved.⁶⁰ The results from China's Third-Phase non-standalone 5G R&D Tests indicate that Huawei's equipment is performing better across a range of quality dimensions:

- **Speed** – Huawei has substantially higher throughput speed – single user peak, call peak, and cell average.⁶¹
- **Latency** – Huawei has substantially lower latency – both for downlink and uplink, and has >99.999% reliability.⁶²
- **Capacity** – Huawei can manage a far greater number of connections.⁶³

5.2 Exclusion will add costs and reduce downstream competition

A further potential cost from exclusion is that it will impose switching costs on some, but not all, mobile networks.

Optus, Vodafone and TPG have used Huawei equipment to varying degrees in their rollout of 3G and 4G networks. If building a 5G network required entirely new infrastructure, then we would expect that the cost of exclusion would apply to all firms (in the form of higher prices or lower quality). However, the further concern here is a ban will impose further costs on Telstra's competitors because elements of their existing 4G networks will be re-used in their 5G networks. Existing infrastructure may therefore have to be replaced with 'compliant' 5G infrastructure.

Huawei estimates that this transition will cost the carriers several billion dollars in services and new equipment, in addition to the write-off of existing equipment.

Perhaps more significantly, the transition could take up to 5 years to complete, and cause significant disruption to the services provided to existing subscribers. This will also delay the 5G networks rollout due to the change-out involved.

While the harm might appear to be on certain mobile networks, the effect will be felt by all consumers. This is because of the effect of additional costs on downstream competition. These additional costs incurred will weaken competition in downstream mobile markets; an increase in costs for Vodafone, Optus and TPG

⁶⁰ See reports at: <https://www.rcrwireless.com/20180621/5g/huawei-completes-new-phase-china-5g-test-tag23>

⁶¹ Chaobin Yang (President of 5G, Huawei), *China IMT2020 Technology Test Update*, November 2017, Slide 5

⁶² *ibid.*, slide 6

⁶³ *ibid.*, slide 7

will ‘soften’ competition with Telstra. In classic models of differentiated price competition (Bertrand), firms facing cost increases will increase their prices. But it will then be optimal for firms not facing cost increases (i.e. Telstra) to raise its prices in response to the softer competition from rivals.⁶⁴

5.3 Exclusion will increase the consequences of network failures

A final potential cost of exclusion is the loss of resilience to network problems. One of the virtues of competitive network deployments with multiple vendors is that it creates diversity. In contrast, relying on a smaller number of vendors means that that networks will lack diversity – and so failures are more likely to affect more than one, or all, networks.

⁶⁴ This is a standard result of models of firms selling differentiated products. “Best response” functions for a firm typically are increasing in cost and in the prices of other firms. An increase in cost leads to an increase in price. For other firms, which see that price increase, the best response will also be to increase price.

Frontier Economics Pty Ltd in Australia is a member of the Frontier Economics network, and consists of companies based in Australia (Melbourne, Sydney & Brisbane) and Singapore. Our sister company, Frontier Economics Ltd, operates in Europe (Brussels, Cologne, Dublin, London & Madrid). The companies are independently owned, and legal commitments entered into by any one company do not impose any obligations on other companies in the network. All views expressed in this document are the views of Frontier Economics Pty Ltd.

Disclaimer

None of Frontier Economics Pty Ltd (including the directors and employees) make any representation or warranty as to the accuracy or completeness of this report. Nor shall they have any liability (whether arising from negligence or otherwise) for any representations (express or implied) or information contained in, or for any omissions from, the report or any written or oral communications transmitted in the course of the project.

FRONTIER ECONOMICS

BRISBANE | MELBOURNE | SINGAPORE | SYDNEY

Frontier Economics Pty Ltd 395 Collins Street Melbourne Victoria 3000

Tel: +61 (0)3 9620 4488 Fax: +61 (0)3 9620 4499 www.frontier-economics.com.au

ACN: 087 553 124 ABN: 13 087 553 124

Van:
Aan:
Onderwerp: 5G Workshop
Datum: dinsdag 26 maart 2019 18:06:08
Bijlagen: [image001.jpg](#)
[image002.jpg](#)
[image003.jpg](#)
[image004.jpg](#)
[image005.jpg](#)
[image006.jpg](#)

Hallo

Tijd geleden! Hoe is het met je? Vanuit ons was het idee om weer eens een 5G workshop op touw te gaan zetten, zoals we vaker hebben gedaan. Topics waar we aan zaten te denken:

- ☐ ⌚ Glasvezel (stand van zaken en noodzaak)
- ☐ ⌚ 5G security
- ☐ ⌚ Regulering 3.5 GhZ (we zouden hier Duitse collega's voor kunnen uitnodigen om van hen te horen waar men in Duitsland staat)

Qua timing denken we aan eind april.

Zou dit werken voor jullie?

Best regards,

Head of Communications & Public Affairs

20180618 Logo Nieuw Huawei - horizontaal



Huawei Technologies (Netherlands) B.V.

Herikerbergweg 36, 1101 CM, Amsterdam Z-O, The Netherlands

Mobile: +31

KVK: 34219858

www.huawei.com



This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

Van:
Aan:
Onderwerp: RE: 5G Workshop
Datum: maandag 1 april 2019 19:01:13
Bijlagen: [image001.jpg](#)
[image002.jpg](#)
[image003.jpg](#)
[image004.jpg](#)
[image005.jpg](#)
[image006.jpg](#)

Hoi

Hier alles goed. Wel heel erg hectisch de afgelopen weken, maar dat had ik op zich ook wel verwacht. We zitten namelijk nu in de fase waarin een aantal belangrijke besluiten worden gemaakt over de aanstaande veiling van 700, 1400 en 2100 MHz. De grote belangen die daarbij spelen maken dat iedereen er wel wat van vindt en wat wil dus dat zorgt voor aardig wat georganiseerde chaos.

Lijkt me leuk om weer eens een workshop te gaan doen. Qua inhoud:

- Als je met glasvezel bedoelt: backhaul, dan lijkt me dat een mooi onderwerp. In dat geval ben ik trouwens ook wel benieuwd naar de ontwikkelingen rond radio-backhaul en 5G. In het verleden werd er met enige regelmaat gesproken over de mogelijkheden van mmWave voor radio-backhaul van small cells, dus ik ben wel benieuwd of daar ontwikkelingen in zijn. Overigens, als je meer algemeen de ontwikkelingen in glasvezel wilt bespreken dan zie ik dat ook wel zitten want daar is momenteel natuurlijk ontzettend veel in gaande in Nederland. Maken we er dit keer een FMC-workshop van
- 3,5 GHz-band lijkt me ook een goede. We zijn heel benieuwd wat jullie in verschillende landen zien gebeuren in die band. Duitsland is absoluut interessant voor ons. Vooral vanwege de ontwikkeling daar om 100 MHz in die band beschikbaar te maken voor *verticals*. Iets wat wij ook serieus overwegen zoals je misschien in de recente consultatie van het beleidsvoornemen 3,5 GHz hebt gezien.
- Misschien dat we ook kunnen kijken naar de ontwikkelingen in de 3GPP-standaardisatie van 4G en 5G. Wat zijn de kenmerkende features voor de aankomende releases? Welke technologische ontwikkelingen komen er aan, zoals bijv. hogere orde modulatie als QAM 1024 waar ik over hoor. Voor welke frequentiebanden vindt de komende tijden 5G standaardisatie plaats. Maar ook; welke releases zien we op het moment terug, bij welke operators, in welke landen, en welke technologieën of features kunnen we het meest van verwachten. We weten immers dat lang niet alles wat wordt gestandaardiseerd zijn weg naar commerciële netwerken en randapparaten vindt. Dit moet natuurlijk niet té diep de techniek in gaan want helaas is onze technische kennis te beperkt, maar iets van een conceptuele beschrijving van nieuwe technologieën en features is wel behulpzaam. Hopelijk begrijpen we dan wat die in de praktijk (kunnen) gaan betekenen.
- 5G uitrol. Jullie hebben vast een nog veel beter beeld van de uitrol die wereldwijd langzaam van start gaat. Welke operators, in welke landen, met welke frequenties, voor welke doelen/met welke business cases. Zo'n overzicht is misschien mooi om mee te beginnen.

Vanwege de ontwikkelingen rond Huawei is me verzocht om het onderwerp 'security' maar even te mijden. Daarop loopt natuurlijk een traject en er schijnen mensen binnen de overheid nerveus te worden als we het daar over gaan hebben, dus laten we dat maar niet onnodig over onszelf afroepen. Genoeg andere dingen te bespreken.

Qua datum komt eind april mij persoonlijk heel slecht uit. Het project waar ik deze mail mee begon wordt in de periode afgerond. Dat betekent dat ik juist in die periode continue op standby

moet staan. Tweede of derde week mei komen mij beter uit. Past dat? Zo ja, dan ga ik hier en bij AT mensen polsen. Regel jij het dan weer met de ACM zoals volgens mij vorige keer, of wil je dat ik dat probeer?

Groet,

Van:

Verzonden: dinsdag 26 maart 2019 18:06

Aan:

Onderwerp: 5G Workshop

Hallo

Tijd geleden! Hoe is het met je? Vanuit ons was het idee om weer eens een 5G workshop op touw te gaan zetten, zoals we vaker hebben gedaan. Topics waar we aan zaten te denken:

- ✓ Glasvezel (stand van zaken en noodzaak)
- ✓ 5G security
- ✓ Regulering 3.5 GHz (we zouden hier Duitse collega's voor kunnen uitnodigen om van hen te horen waar men in Duitsland staat)

Qua timing denken we aan eind april.

Zou dit werken voor jullie?

Best regards,

Head of Communications & Public Affairs



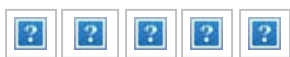
Huawei Technologies (Netherlands) B.V.

Herikerbergweg 36, 1101 CM, Amsterdam Z-O, The Netherlands

Mobile: +31

KVK: 34219858

www.huawei.com



This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

Van:
Aan: "
Onderwerp: RE: 5G Workshop
Datum: donderdag 9 mei 2019 17:08:41
Bijlagen: [image001.jpg](#)
[image002.jpg](#)
[image003.jpg](#)
[image004.jpg](#)
[image005.jpg](#)
[image006.jpg](#)

Hoi

Ik vrees dat ik nooit meer op je eerdere mail was terug gekomen. Mocht het nog relevant zijn; wie je het beste kunt benaderen voor een gesprek tussen is een beetje afhankelijk van de agenda-onderwerpen. Als het dus nog relevant is dan help ik je graag verder zodra ik weet wat jullie willen bespreken.

Groet,

Van:

Verzonden: woensdag 10 april 2019 14:59

Aan:)

Onderwerp: RE: 5G Workshop

Ha

Ik kan me helemaal vinden in jouw voorstel. Ik ga hiermee aan de slag en zal zelf de ACM benaderen.

Ander vraagje nog: wij (onze CEO in NL,) zouden graag eens bijpraten met . Kan dat het beste via jou of kan ik beter rechtstreeks met contact opnemen?

Groeten,

From: [mailto: @minez.nl]
Sent: Monday, 1 April 2019 19:01
To: @huawei.com>
Subject: RE: 5G Workshop

Hoi ,

Hier alles goed. Wel heel erg hectisch de afgelopen weken, maar dat had ik op zich ook wel verwacht. We zitten namelijk nu in de fase waarin een aantal belangrijke besluiten worden gemaakt over de aanstaande veiling van 700, 1400 en 2100 MHz. De grote belangen die daarbij spelen maken dat iedereen er wel wat van vindt en wat wil dus dat zorgt voor aardig wat georganiseerde chaos.

Lijkt me leuk om weer eens een workshop te gaan doen. Qua inhoud:

- Als je met glasvezel bedoelt: backhaul, dan lijkt me dat een mooi onderwerp. In dat geval ben ik trouwens ook wel benieuwd naar de ontwikkelingen rond radio-backhaul en 5G. In het verleden werd er met enige regelmaat gesproken over de mogelijkheden van mmWave voor radio-backhaul van small cells, dus ik ben wel benieuwd of daar ontwikkelingen in zijn. Overigens, als je meer algemeen de ontwikkelingen in glasvezel wilt bespreken dan zie ik dat ook wel zitten want daar is momenteel natuurlijk ontzettend veel in gaande in Nederland. Maken we er dit keer een FMC-workshop van
- 3,5 GHz-band lijkt me ook een goede. We zijn heel benieuwd wat jullie in verschillende landen zien gebeuren in die band. Duitsland is absoluut interessant voor ons. Vooral vanwege de ontwikkeling daar om 100 MHz in die band beschikbaar te maken voor *verticals*. Iets wat wij ook serieus overwegen zoals je misschien in de recente consultatie van het beleidsvoornemen 3,5 GHz hebt gezien.
- Misschien dat we ook kunnen kijken naar de ontwikkelingen in de 3GPP-standaardisatie van 4G en 5G. Wat zijn de kenmerkende features voor de aankomende releases? Welke



Kabinet Minister-President
Ministerie van Algemene Zaken

19091565
⇒ DE

> Retouradres Postbus 20001 2500 EA Den Haag

Aan de Staatssecretaris van
Economische Zaken en Klimaat
Postbus 20101
2500 EC DEN HAAG

Kabinet Minister-President

Binnenhof 19
2513 AA Den Haag
Postbus 20001
2500 EA Den Haag
www.rijksoverheid.nl

Contactpersoon

Raadadviseur

T 070
@minaz.nl

Onze referentie
4060950

Datum 3 april 2019
Betreft Doorzending brief ter verdere behandeling

Hierbij stuur ik u in afschrift een brief van de heer [redacted] Rotating Chairman
Huawei Technologies Co., Ltd waarin hij vraagt om een gesprek betreffende
plannen van Huawei in Nederland.
Gezien het onderwerp verzoek ik u de behandeling van de brief over te nemen.

De briefschrijver wordt via de Nederlandse ambassade in Beijing van deze
doorzending in kennis gesteld.

DE MINISTER-PRESIDENT,
Minister van Algemene Zaken,
namens deze,

mr.





Date
March 25th 2019
Subject

Meeting request to discuss Huawei plans for the Netherlands

Ministry of General Affairs
Prime Minister Mr. Rutte
PO box 20001
2500 EA The Hague
The Netherlands

Dear Prime Minister Rutte,

Our schedules didn't match when we were both in Davos earlier this year. I will however be visiting Europe in the second half of April and I would highly appreciate meeting you at a time of your convenience.

I would like to review with you Huawei's current position and future strategy in the Netherlands. Huawei has become an important economic actor in the Netherlands since establishing itself in 2005 with now two local offices, a Global Corporate Center in Amsterdam as well as the European Supply Center in Eindhoven. Huawei employs over 600 staff in the Netherlands and our company as a whole contracted for more than half a billion euros from Dutch companies last year. Our future strategy would include the setting up of a R&D center in the Netherlands this year.

Your personal support, also exemplified last year in Guangzhou when you presented the NFIA-reward to the Huawei CEO in the Netherlands, is highly appreciated. The Netherlands continues to be a very favorable technological ecosystem for Huawei with the right infrastructure, its top universities and talented labour force. It is an honor for Huawei to be part of the digital transformation process in the Netherlands and to support your country's competitiveness.

Regretfully mischievous attempts are being made to discredit Huawei in the eyes of European governments and undue pressure is being put on them. I am confident that these countries, including your country, will not yield to that pressure and that you will base your position solely on the facts and on your own experience.

The continuous support of the Dutch government has been pivotal and enabling us to invest, innovate and flourish here, and I would like to discuss with you how we can continue to develop our presence in the future.

I look forward to meeting you and I hope that a mutually convenient date can be found. Huawei CEO in the Netherlands, _____ and his office, will follow up with your staff accordingly.

Sincerely yours _____

Rotating Chairman
Huawei Technologies Co., Ltd.

Van:
Verzonden: donderdag 18 juli 2019 14:59
Aan:
Onderwerp: Fwd: Bijpraten met

Van: @huawei.com>
Datum: 15 april 2019 om 16:20:11 CEST
Aan: @minez.nl>
Kopie: @minez.nl>, "secretariaatDE@minez.nl"
 <secretariaatDE@minez.nl>
Onderwerp: Antw.: Bijpraten met

Beste

Dank voor je snelle reactie. Dat is geen probleem. Zal ik de PA van vragen contact op te nemen met
 jouw secretariaat om de mogelijkheden te bekijken?

Groeten,

From: [mailto: @minez.nl]
Sent: Monday, 15 April 2019 16:13
To: @huawei.com>
Cc: () @minez.nl>
Subject: Re: Bijpraten met

Beste
 Altijd bereid, maar ik ben er pas volgende week weer..
 Groet

Op 15 apr. 2019 om 15:35 heeft @huawei.com> het volgende geschreven:

Beste

Gezien alle ontwikkelingen de laatste tijd, zou op korte termijn met je willen
 bijpraten. Valt dat in te regelen?

Vriendelijke groeten,

Best regards,

Head of Communications & Public Affairs

<image001.jpg>

Huawei Technologies (Netherlands) B.V.
Herikerbergweg 36, 1101 CM, Amsterdam Z-O, The Netherlands
Mobile: +31
KVK: 34219858
www.huawei.com

<image002.jpg> <image003.jpg> <image004.jpg> <image005.jpg> <image006.jpg>

This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Van:
Aan:
Onderwerp: FW: Bijpraten met
Datum: vrijdag 2 augustus 2019 10:34:31
Bijlagen: [image001.png](#)

Van: @huawei.com>
Verzonden: donderdag 18 april 2019 13:12
Aan: @minez.nl>
Onderwerp: RE: Bijpraten met

Dear

Thanks very much for your prompt response. 26 April 14:30-15:15 is perfect for Mr. He should come alone to your office.

Thank you and have a nice day!

Best regards,

Personal Assistant to CEO



Huawei Technologies (Netherlands) B.V.
Amsterdam office: Herikerbergweg 36, 1101CM, Amsterdam, The Netherlands
Voorburg office: Stationsplein 4-6, 2275AZ Voorburg, The Netherlands
Mobile: +31
<http://www.huawei.com>

From: [mailto:[@minez.nl](#)]
Sent: Thursday, April 18, 2019 12:43 PM
To: [@huawei.com](#)>
Subject: RE: Bijpraten met

Hello
Friday 26 april 14.30-15.15 will be fine.

Our office is located on Bezuidenhoutseweg 73, Den Haag. (3th floor, A-Zuid)

Does mr come alone?

Best regards,

Directiesecretaresse Digitale Economie
DG Bedrijfsleven en Innovatie
Ministerie van Economische Zaken en Klimaat
Postbus 20401, 2500 EK Den Haag

Bezuidenhoutseweg 73
Tel. 070-

Van: @huawei.com>
Verzonden: donderdag 18 april 2019 11:53
Aan: Secretariaat DE <SecretariaatDE@minez.nl>
Onderwerp: RE: Bijpraten met

Dear sir/madam,

Good afternoon! My colleague Mr. _____ has contacted Mr. _____ earlier about setting up a meeting between Mr. _____ (CEO, Huawei Netherlands) and Mr. _____. Will you please check if there is any possibility doing it next week Friday 26 April between 11:30-15:30 or Thursday 25 April between 09:00-11:00? Mr. _____ could visit the office of Mr. _____ at Den Haag.

Thank you very much!

Best regards,

Personal Assistant to CEO



Huawei Technologies (Netherlands) B.V.
Amsterdam office: Herikerbergweg 36, 1101CM, Amsterdam, The Netherlands
Voorburg office: Stationsplein 4-6, 2275AZ Voorburg, The Netherlands
Mobile: +31
<http://www.huawei.com>

From: @minez.nl
Sent: Monday, 15 April 2019 16:13
To: @huawei.com>
Cc: @minez.nl>
Subject: Re: Bijpraten met

Beste
Altijd bereid, maar ik ben er pas volgende week weer..
Groet

Op 15 apr. 2019 om 15:35 heeft @huawei.com het volgende geschreven:

Van:
Verzonden: donderdag 25 april 2019 18:56
Aan:
Onderwerp: Re: Afspraak

en ik

Verstuurd vanaf mijn iPhone

Op 25 apr. 2019 om 16:53 heeft [@huawei.com](mailto:)> het volgende geschreven:

OK, mooi. Wie zal er bij de meeting aanwezig zijn van jullie kant?

Groeten,

From:) [mailto:]@minez.nl]
Sent: Thursday, 25 April 2019 16:06
To: @huawei.com>
Subject: RE: Afspraak

Prima qua onderwerpen

Gr

Van: ;@huawei.com>
Verzonden: donderdag 25 april 2019 15:42
Aan: @minez.nl>
Onderwerp: Afspraak

Beste

Morgen staat er om 14:30 uur een afspraak gepland tussen t en onze CEO, . Ben jij deze aan het voorbereiden vanuit het ministerie?

Qua onderwerpen:

- ✓ Business update vanuit ons
- ✓ Update vanuit jullie over het rapport – hoe verhoudt dit zich tot het NCTV deel? En wat is de route richting Europa?

Ik hoor het graag van je.

Best regards,

Head of Communications & Public Affairs

<image001.jpg>

Huawei Technologies (Netherlands) B.V.
Herikerbergweg 36, 1101 CM, Amsterdam Z-O, The Netherlands
Mobile: +31
KVK: 34219858
www.huawei.com

<image002.jpg> <image003.jpg> <image004.jpg> <image005.jpg> <image006.jpg>

This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Van: @huawei.com>
Verzonden: vrijdag 10 mei 2019 08:43
Aan:
Onderwerp: GSMA event over 5G Security in Den Haag
Opvolgingsvlag: Opvolgen
Vlagstatus: Met vlag

Beste

Op 28 en 29 mei a.s. organiseert GSMA een conferentie over 5G Security, zie <https://www.mobile360series.com/security-for-5g/>. Wij zijn daar sponsor en leveren o.a. een keynote speech en organiseren een ronde tafel discussie over privacy protection.

Zou jij of een collega van je hierbij aanwezig willen zijn? Zo ja, dan kan ik je aanmelden.

Ik hoor het graag van je.

Vriendelijke groeten,

Best regards,

Head of Communications & Public Affairs



Huawei Technologies (Netherlands) B.V.
Herikerbergweg 36, 1101 CM, Amsterdam Z-O, The Netherlands
Mobile: +31
KVK: 34219858
www.huawei.com



This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

Van:
Aan:
Onderwerp: FW: Graag reactie
Datum: dinsdag 3 september 2019 15:20:00
Bijlagen: [image001.png](#)

Van: @huawei.com>
Verzonden: maandag 20 mei 2019 20:56
Aan: @minez.nl>
Onderwerp: RE: Graag reactie

Dank voor je snelle (re)actie!

Ik wacht bericht secretariat dan even af.

Groeten,

/
Mobile:
Email: [@huawei.com](#)

From: @minez.nl>
To: @huawei.com>
Date: 2019-05-20 18:07:41
Subject: RE: RE: Graag reactie

Beste ,

Dank voor je mail. Graag.
Ik kan op korte termijn iets regelen met en mij.
Zal het secretariaat van Jos vragen iets in te plannen in samenspraak met jou.

Groet

Van: <[@huawei.com](#)>
Verzonden: maandag 20 mei 2019 14:04
Aan:) <[@minez.nl](#)>
Onderwerp: FW: RE: Graag reactie

Beste ,

Verwijzend naar onderstaande brief nog even het volgende: onze CEO in Nederland, , wil onderstaande graag nog komen toelichten op korte termijn in een 1-op-1 gesprek met Focco Vijselaar (en jou) om zodoende wellicht wat zorgen weg te kunnen nemen of op zijn minst te reduceren. Valt dat op korte termijn te regelen?

Groeten,

From: <<@huawei.com>
<<@minez.nl>
Cc: <<@huawei.com>
Date: 2019-05-17 16:43:57
Subject: RE: Graag reactie

Dear ,

Thank you for the time on the phone this morning and the question you posted to us: As discussed, I would like to hear what a blockade of supplies from the US means for the continuity of Dutch telecom networks to which you supply equipment. What about being able to maintain that type of equipment, to what extent is that endangered and why / why not?

With regard to your question we have the following statement that we would like to make:

Introduction:

The Bureau of Industry and Security (BIS) of the US Department of Commerce announced recently its decision to place Huawei on its so-called "Entity List". This decision is the latest move in the campaign against Huawei, waged by the US government for political reasons and to support the negotiations in the trade war. The company has known this could be a possibility for many years. We have invested heavily and made full preparations in a variety of areas, including R&D and business continuity, which will ensure that our business operations will not be greatly affected, even under extreme conditions.

Huawei is against the decision made by the Bureau of Industry and Security (BIS) of the US Department of Commerce. This decision is in no one's interest. It will do significant economic harm to the American companies with which Huawei does business. It affects tens of thousands of American jobs, and disrupts the current collaboration and mutual trust that exist on the global supply chain. Huawei will seek remedies immediately and find a resolution to this matter. We will also proactively endeavor to mitigate the impacts of this incident.

Business Continuity Global:

Huawei and her partners adhere to global and local business ethics. We abide by all international conventions and applicable laws and regulations in the countries and regions where we operate. We comply with and maintain international trade rules. These principles lie at the heart of our global management of operational compliance and are always followed by our management teams. To ensure trade compliance, we obey the laws and regulations of every market in which we operate, and comply with all sanctions and export control laws and regulations of the UN, the US, and EU. In addition, we have established a trade compliance organization, led by our Chief Legal Officer and Chief Compliance Officer. Trade compliance is an integral part of our company's policies, rules, and processes.

With today's highly globalized division of labor, Huawei must rely on third parties (including companies and agencies) for manufacturing, logistics, and services. Therefore, third party business discontinuity could directly or indirectly compromise Huawei's operations and business performance. To ensure business continuity, Huawei has established a Business Continuity Management System (BCMS) for Supply & Manufacturing.

This system covers end-to-end processes from suppliers to Huawei and onwards to our customers. As part of this system, we have developed and established effective measures to ensure business continuity, including management organizations, emergency response and business continuity plans, training, drills, employee awareness efforts, and improvements to emergency response capabilities.

We always consider the "design for supply chain" as a key requirement for products as well as being a part of new product design. We can reduce supply risks through a diversified supply plan that ensures sourcing from multiple suppliers, use of multiple solutions, and selection of suppliers from different regions as well as suppliers with factories in multiple locations. This supply plan ensures supply continuity during emergencies.

We select product components that ensure multi-supplier, pin-to-pin compatibility. Key dedicated components are supported by multiple supply solutions. Our diversified supply plan can prevent the risks caused by using exclusive suppliers.

We continuously manage components that come from exclusive suppliers, and stock up on materials to ensure supply security.

To address demand fluctuations and supply risks, Huawei and our suppliers have established a three-layer stock-up mechanism for raw materials, semi-finished products, and finished products. Our IT systems allow us to easily view orders and inventory, rapidly transmit customer needs, and ensure the prompt supply of products.

Huawei is prepared for any supply risk. Therefore the USA ban will not affect our production and distribution or use of our products.

Business Continuity The Netherlands:

As Huawei The Netherlands we have made explicit agreements with our Dutch customers in The Netherlands. These agreements do not only cover product continuity but also service continuity. The following statements have been made towards our Dutch customers in a bilateral agreement:

We are pleased to elaborate on the subject in person upon your request.

With kind regards,

Solution Director
Tel :
Email

[@huawei.com](mailto: @huawei.com)

Huawei Technologies (Netherlands) B.V.
Amsterdam office: Herikerbergweg 36, 1101CM, Amsterdam, The Netherlands
Voorburg office: Stationsplein 4-6, 2275AZ Voorburg, The Netherlands
<http://www.huawei.com>



构建万物互联的智能世界
Building a Fully Connected,
Intelligent World

This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

From: [@minez.nl]
Sent: Friday, May 17, 2019 3:03 PM
To: <j @huawei.com>
Subject: Graag reactie

Hoi ,

Als besproken verneem ik graag wat een blokkade van toeleveranties uit de VS betekent voor de continuïteit van Nederlandse telecomnetwerken waar jullie apparatuur aan leveren. Hoe staat het met het kunnen onderhouden van dat soort apparatuur, in hoeverre komt dat in gevaar en waarom wel/niet?

Alvast dank,
Groet

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you

are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Van:
Aan:
Onderwerp: FW: ps=FW: Graag reactie
Datum: vrijdag 2 augustus 2019 10:32:30
Bijlagen: [image001.png](#)

Van: @huawei.com>
Verzonden: woensdag 22 mei 2019 11:39
Aan: @minez.nl>
Onderwerp: RE: ps=FW: Graag reactie

Beste

Maandag 3 juni om 9:00 uur is helemaal goed! Kun je dit nog even bevestigen?

Groeten,

From: [<mailto:> [@minez.nl](#)]
Sent: Wednesday, 22 May 2019 10:54
To: [@huawei.com](#)>
Subject: RE: ps=FW: Graag reactie

Goedemorgen
Het zou kunnen op maandag 3 juni om 9.00 of anders 12.00u
Bij beide opties heb ik maar een half uurtje.

Hoor graag.
Groet,

Van: [@huawei.com](#)>
Verzonden: dinsdag 21 mei 2019 20:02
Aan: [@minez.nl](#)>
Onderwerp: RE: ps=FW: Graag reactie

Beste

Dank voor je suggesties. Op 5 juni is onze CEO helaas in China en 17 juni is weer erg ver weg. Zou het wellicht nog op 3 juni voor 15:00 uur of daarvoor nog lukken? Eventueel is een halfuurtje genoeg, of tijdens een lunch.

Ik hoop dat er nog iets geregeld kan worden voor 4 juni.

Ik hoor het graag.

Vriendelijke groeten,



Huawei Technologies (Netherlands) B.V.

Voorburg, May 22nd 2019

To the State Secretary of Economic Affairs & Climate
 Ministry of Economic Affairs
 Mrs. Mr. Drs. M.G.C. Keijzer
 PO Box 20401
 2500 EK, The Hague

Cc. Mr. F. Grapperhaus

Excellency, Dear Mrs. Keijzer,

The Bureau of Industry and Security (BIS) of the US Department of Commerce announced recently its decision to place Huawei on its so-called "Entity List". This decision is the latest move in the campaign against Huawei, waged by the US government for political reasons and to support the negotiations in the trade war. Huawei is against this decision.

The US government has launched the campaign against Huawei since long. Up till today, there is no single evidence provided to support their allegation. Under this circumstance, the action is clearly a violation of both legal and diplomatic practice globally.

To guarantee our products and services delivery to our customer, Huawei has invested heavily in the past 10 years to ensure that our business operations will not be affected, even under extreme conditions, such as natural disasters or disruption of supply as a result of political reasons. Huawei Technologies Netherlands BV have made explicit agreements and measures with our Dutch customers to secure product and service continuity.

Prior to the recent announcement of the US government, the US allegations have been focusing on cyber security. Given the considerable pressure from the US government to the European and Dutch policy makers, and the various unsubstantiated allegations, we experience an increasing difficult market and political situation in the Netherlands. The environment is currently strongly influenced by emotions rather than facts.

The Dutch Taskforce regarding 5G cyber security risks is in progress and is evaluating the vulnerabilities and potential mitigations towards critical infrastructure. As one of the technology suppliers, we are also evaluated in this investigation. Huawei is for many years an innovative, open and contributing company in the Netherlands.

Therefore we hope that the Dutch government will be fair, fact based, and a non-discriminatory towards the Huawei evaluation. The results of the taskforce are expected soon now, and Huawei would appreciate a timely notification of the content of such report as well as the opportunity to appeal if needed.



Huawei Technologies (Netherlands) B.V.

In June our global chairman Mr. [REDACTED] would like to visit the Netherlands and have an engagement with you. We would appreciate the opportunity very much to elaborate on the position of Huawei and the contribution to the Netherlands.

Huawei will continue to focus on the long-term development with the Netherlands and contribute to the digital transformation in order to support the competitiveness of the Dutch society. I am looking forward to meeting you again.

Yours Sincerely,

[REDACTED]
Huawei Technologies Benelux
CEO

Van: @huawei.com>
Verzonden: vrijdag 14 juni 2019 13:33
Aan:
CC:
Onderwerp: RE: Vragen mbt Google/Huawei

Hallo ,

Geen probleem. Laat je niet beperken en stel gewoon je vragen en dan kijk ik of ik ze kan beantwoorden. Als het me niet lukt dan zal ik het zeggen. Sommige antwoorden mag ik ook niet zwart-op-wit zetten, maar kan ik wel mondeling geven.

Groet,

Solution Director

Tel : +31 6

Email : [@huawei.com](mailto: @huawei.com)

Huawei Technologies (Netherlands) B.V.

Amsterdam office: Herikerbergweg 36, 1101CM, Amsterdam, The Netherlands

Voorburg office: Stationsplein 4-6, 2275AZ Voorburg, The Netherlands

<http://www.huawei.com>



构建万物互联的智能世界
Building a Fully Connected,
Intelligent World

This e-mail and its at
Any use of the inform
other than the intend

ontain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above.
ned herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons
s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

From:) [mailto: @minez.nl]
Sent: Friday, June 14 2019 1:30 PM
To: @huawei.com>
Cc: @minez.nl>
Subject: RE: Vragen mbt Google/Huawei

Beste ,

Hartelijk dank voor je reactie. Mogelijk kom ik nog bij je terug voor extra verduidelijking, maar ik begrijp ook je beperkingen in de beantwoording van onze vragen.

Met vriendelijke groet,

Ministerie van Economische Zaken en Klimaat
Directoraat-Generaal Bedrijfsleven en Innovatie | Directie Digitale Economie
Bezuidenhoutseweg 73 | A Zuid | 3^e etage | Postbus 20401 | 2500 EK | Den Haag

T E @minez.nl

Van: @huawei.com>

Verzonden: donderdag 13 juni 2019 16:57

Aan: @minez.nl>;

< @minez.nl>

Onderwerp: RE: Vragen mbt Google/Huawei

Hallo en

Het heeft even geduurd omdat ik op dit moment zeer druk ben met de ban vanuit de VS en de BCM maatregelen om de continuïteit van de diensten van onze klanten in Nederland te garanderen. Om je vragen 1-op-1 te beantwoorden is wat lastig in verband met het review proces, maar ik heb de volgende officiële statements die we hebben gemaakt naar onze klanten en distributeurs. Onder in mijn mail vind je de antwoorden op je vragen naar mijn mening. Als er iets ontbreekt dan hoor ik het graag.

Statement Huawei:

"Huawei heeft een substantiële bijdrage geleverd aan de ontwikkeling en wereldwijde groei van Android. Als een van de belangrijkste partners van Android hebben we altijd nauw samengewerkt met hun open-sourceplatform om een ecosysteem te ontwikkelen waarvan zowel gebruikers als de smartphone industrie hebben geprofiteerd.

Huawei zal beveiligingsupdates en after-sales services blijven leveren aan alle bestaande Huawei en Honor smartphones en tablets. Dit geldt voor de producten die zijn verkocht en die wereldwijd op voorraad zijn.

Om alle wereldwijde gebruikers de beste ervaring te bieden blijven we bouwen aan een veilig en duurzaam software-ecosysteem."

Tweet van Android

hierbij ook de link naar de tweet van Google's

Android; <https://twitter.com/Android/status/1130313848332988421?s=20>

Beantwoording aanvullende vragen

- De producten die zijn verkocht of die in de winkel liggen werken zoals consumenten van Huawei producten gewend zijn. Deze behouden toegang tot de Google services, waaronder Google Play Store en Gmail.
- Over de specificaties van toekomstige smartphones doen wij voor de lancering nooit uitspraken.

Qua vragen kan ik de volgende statements maken:

1. Heeft het nieuws impact op de huidige verkopen van Huawei? Hoeveel impact gaat dit hebben om de CBG's wereldwijde business?

Huawei blijft beveiligingsupdates en after-sales services leveren voor alle bestaande Huawei smartphones en tablets die verkocht zijn, en die wereldwijd nog op voorraad zijn.

2. Kunnen consumenten nog steeds de Google services gebruiken, zoals de Google Play store en Gmail op hun Huawei telefoon?

De producten die zijn verkocht of die in de winkel liggen werken zoals je gewend bent. Deze behouden toegang tot de Google Play Store en Gmail. Klanten blijven dus ook updates krijgen van apps uit de google store

3. Krijgt een Huawei smartphone nog steeds Google beveiligingsupdates?

Ja, je Huawei-smartphone krijgt nog steeds beveiligingsupdates

4. Betekent dit dat Huawei zijn eigen operating system sneller zal ontwikkelen?

Android is open source en Huawei heeft een flinke bijdrage geleverd aan de ontwikkeling en groei van Android. We zullen de ontwikkeling en het gebruik van Android prioriteit geven.

Groet,

Solution Director

Tel : +31 6

Email : [@huawei.com](mailto:)

Huawei Technologies (Netherlands) B.V.

Amsterdam office: Herikerbergweg 36, 1101CM, Amsterdam, The Netherlands

Voorburg office: Stationsplein 4-6, 2275AZ Voorburg, The Netherlands

<http://www.huawei.com>



构建万物互联的智能世界
Building a Fully Connected,
Intelligent World

This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

From:) [mailto: :@minez.nl]
Sent: Wednesday, June 5, 2019 4:59 PM
To: @huawei.com>
Cc: @minez.nl>
Subject: RE: Vragen mbt Google/Huawei

Hoi

Ik besprak net met even de planning. Weet jij wanneer je antwoord kan geven op onderstaande vragen?
Met name de dik gedrukte vraag zijn we benieuwd naar.

Hoor het graag en dank alvast voor je medewerking!
Groet

Van:
Verzonden: dinsdag 4 juni 2019 13:30
Aan: ' @huawei.com' @huawei.com>
CC: @minez.nl>
Onderwerp: Vragen mbt Google/Huawei

Beste

begreep ik dat ik je kon benaderen voor een aantal vragen. Ik hoop dat je ons een antwoord kan geven.

- Hoe veel Nederlanders hebben een Huawei mobiele telefoon?
- Wat voor impact heeft de intrekking van de licentie van Google n.a.v. de VS entity list op deze groep? Kunnen zij hun Huawei telefoon op de huidige wijze (veilig) blijven gebruiken?
- Klopt het dat de komende 3 maanden (transitie periode) de gebruikers van Huawei telefoons toegang houden tot bijvoorbeeld Google Play en beveiligingsupdates?
- **Wat gebeurt er na deze 3 maanden? Kunnen huidige gebruikers de "oude" versie van het besturingssysteem veilig blijven gebruiken? Klopt het dat gebruikers van de huidige Huawei smartphones niet kunnen upgraden naar een nieuwere versie van het Android besturingssysteem en evenmin toegang zullen krijgen tot de Google apps als Play Store, Gmail en YouTube? Klopt het dat gebruikers geen beveiligingsupdates (van Huawei dan wel Googlesoftware) kunnen ontvangen?**
- Klopt het dat Huawei in ieder geval toegang behoudt tot het Android Open Source Project van Google? Klopt het dat Huawei hierover in gesprek is met Google, om te zien hoe dit kan worden ingezet om gebruikers van de Huawei smartphones te kunnen blijven bedienen? Hoe ziet Huawei de toekomst? Zijn er nog alternatieven?

- Klopt het dat Huawei een rechtszaak is gestart in de VS over deze blokkade? Wat kunt u hier over melden? Wat hoopt u te bereiken?

Bij voorbaat dank.

Met vriendelijke groet,

beleidsmedewerker

.....
Ministerie van Economische Zaken en Klimaat
Directoraat-Generaal Bedrijfsleven en Innovatie | Directie Digitale Economie
Bezuidenhoutseweg 73 | A Zuid | 3^e etage | Postbus 20401 | 2500 EK | Den Haag

.....
T 06 | E | n@minez.nl

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Van: @huawei.com>
Verzonden: vrijdag 21 juni 2019 21:20
Aan:
Onderwerp: Officieel statement van Huawei rondom toestel upgrades naar Android Q
Bijlagen: Huawei Geeft Antwoord - 21062019.pdf

Hallo ,

Recent hebben we een officieel statement gemaakt dat we naast de updates van onze huidige telefoon ook de upgrades gaan uitvoeren van de android software naar Q.

Groet,

Solution Director
Tel : +31 6
Email : [@huawei.com](mailto: @huawei.com)
Huawei Technologies (Netherlands) B.V.
Amsterdam office: Herikerbergweg 36, 1101CM, Amsterdam, The Netherlands
Voorburg office: Stationsplein 4-6, 2275AZ Voorburg, The Netherlands
<http://www.huawei.com>



构建万物互联的智能世界
**Building a Fully Connected,
Intelligent World**

This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

Van:
Aan:
Onderwerp: FW: ps=afspraak CEO Huawei
Datum: vrijdag 2 augustus 2019 10:31:39
Bijlagen: [image001.png](#)

Van: @huawei.com>
Verzonden: maandag 24 juni 2019 11:20
Aan: @minezk.nl>; @huawei.com> @huawei.com>
Onderwerp: RE: ps=afspraak /CEO Huawei

Dag

Yes, and will come at 9.30.

Best,

 /
 Mobile: [+31-](#)

Email: [@huawei.com](#)

From: @minezk.nl>
To: @huawei.com>; @huawei.co
[m](#)>
Cc: @huawei.com>
Date: 2019-06-24 11:03:47
Subject: RE: ps=afspraak /CEO Huawei

Dear ,

Are you coming tomorrow at 9.30?
 In need to know. The agenda is very full.

Sincerely,

Van: @huawei.com>
Verzonden: vrijdag 21 juni 2019 13:36
Aan: @minezk.nl>;
 < @huawei.com>
CC: @huawei.com>
Onderwerp: RE: ps=afspraak /CEO Huawei

Dear

I checked with the PA of our CEO
 9:30.

and our preference is to meet on Tuesday 25th at

With kind regards,

Solution Director

Tel : +31 6

Email : [@huawei.com](mailto:minez.nl)

Huawei Technologies (Netherlands) B.V.

Amsterdam office: Herikerbergweg 36, 1101CM, Amsterdam, The Netherlands

Voorburg office: Stationsplein 4-6, 2275AZ Voorburg, The Netherlands

<http://www.huawei.com>



构建万物互联的智能世界
Building a Fully Connected,
Intelligent World

This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

From: [\[mailto:minez.nl\]](mailto:minez.nl)
Sent: Friday, June 21, 2019 12:17 PM
To: [@huawei.com](mailto:minez.nl)>
Subject: FW: ps=afspraak /CEO Huawei

Goedemiddag ,
Op verzoek van wil ik graag volgende week een half uurtje inplannen.

Zou het lukken op donderdag 27 juni tussen 14.00-15.00 of anders om 16.30u.
Of anders dinsdag 25 juni om 9.30u.

Ik hoor graag van u.

Vriendelijke groet,

Van:
Verzonden: vrijdag 21 juni 2019 11:04
Aan: Secretariaat DE <SecretariaatDE@minezk.nl>
Onderwerp: ps=afspraak /CEO Huawei

Beste secretariaat,

Wil je kijken of er voor volgende week een half uur kan worden geprikt voor overleg tussen en CEO Huawei?

Als contactpersoon bij Huawei kan je aanhouden. Onderwerp is update BCM 5G.

[@huawei.com](mailto:minez.nl)

Mocht dat niet lukken, laat me graag even weten.

Groet

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Dit bericht kan informatie bevatten die niet voor u is bestemd. Indien u niet de geadresseerde bent of dit bericht abusievelijk aan u is gezonden, wordt u verzocht dat aan de afzender te melden en het bericht te verwijderen.

De Staat aanvaardt geen aansprakelijkheid voor schade, van welke aard ook, die verband houdt met risico's verbonden aan het elektronisch verzenden van berichten.

This message may contain information that is not intended for you. If you are not the addressee or if this message was sent to you by mistake, you are requested to inform the sender and delete the message.

The State accepts no liability for damage of any kind resulting from the risks inherent in the electronic transmission of messages.

Van: <@huawei.com>
Verzonden: dinsdag 2 juli 2019 16:21
Aan:
CC:
Onderwerp: Reactie op Kamerbrief

Beste

Hierbij voor de volledigheid nog onze reactie op de Kamerbrief:

"Huawei heeft kennisgenomen van de Kamerbrief inzake het 5G Taskforcerapport dat vandaag is gepubliceerd. We verwelkomen de op feiten gebaseerde, genuanceerde aanpak van de Nederlandse overheid. Een open en transparant veiligheidsgarantieraamwerk draagt bij aan de duurzame ontwikkeling van de gehele industrie en de digitale transformatie van Nederland. Ook faciliteert het de verdere ontwikkeling van betrouwbare, hoogwaardige netwerken die veilige en snelle communicatie tussen mensen mogelijk maken.

We zijn ons bewust van de zorgen die op dit moment in de samenleving leven op het gebied van cyberveiligheid. Veiligheidsdreigingen komen niet van leveranciers van telecomapparatuur, maar van partijen die een ander oogmerk hebben en kwetsbaarheden uitnuttten. Cyberveiligheid is een gezamenlijke verantwoordelijkheid van alle partijen in het domein van telecommunicatie. Samenwerking tussen alle relevant partijen in de ICT-sector is daarom van cruciaal belang om uitdagingen op het gebied van cyberveiligheid aan te pakken. Met dit rapport kiest het kabinet voor een geharmoniseerde, Europese lijn op het gebied van 5G en neemt om die reden nog enige tijd alvorens de concrete maatregelen in te vullen. Huawei is voorstander van deze Europese aanpak.

Daarnaast zal Huawei er alles aan blijven doen om te voldoen aan de standaarden die worden gesteld door de Nederlandse overheid. Door de meest geavanceerde en veilige technologie te leveren, ondersteunt Huawei de ambitie van Nederland om digitaal koploper binnen de Europese Unie te blijven."

Mocht je nog vragen en/of opmerkingen hebben, dan hoor ik het graag.

Vriendelijke groeten,

Best regards,

Head of Communications & Public Affairs



Huawei Technologies (Netherlands) B.V.
Herikerbergweg 36, 1101 CM, Amsterdam Z-O, The Netherlands
Mobile:
KVK: 34219858
www.huawei.com



This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

Van:
Verzonden: vrijdag 5 juli 2019 14:04
Aan:
Onderwerp: RE: ontmoeting | en staatssecretaris Mona Keijzer

Beste

Ter beantwoording van je vraag: onze staatssecretaris is helaas niet beschikbaar. Mijn advies is om nogmaals bij het ministerie van Algemene Zaken aan de poort te kloppen. Helaas kan ik je verder niet helpen.

Met vriendelijke groet,

beleidsmedewerker

Ministerie van Economische Zaken en Klimaat
Directoraat-Generaal Bedrijfsleven en Innovatie | Directie Digitale Economie
Bezuidenhoutseweg 73 | A Zuid | 3^e etage | Postbus 20401 | 2500 EK | Den Haag

T 06 | E @minez.nl

Van: ;@huawei.com>
Verzonden: vrijdag 5 juli 2019 10:19
Aan: @minez.nl>
Onderwerp: RE: ontmoeting | en staatssecretaris Mona Keijzer

Beste

Weet jij al iets meer inmiddels?

Groeten,

From: [mailto: @minez.nl]
Sent: Tuesday, 2 July 2019 10:19
To: @huawei.com>
Subject: RE: ontmoeting | en staatssecretaris Mona Keijzer

Beste

Dank voor je mail. Ik ga informeren wat de stand van zaken is en ga mijn best doen. Je hoort zo snel mogelijk van me.

Met vriendelijke groet,

beleidsmedewerker

Ministerie van Economische Zaken en Klimaat
Directoraat-Generaal Bedrijfsleven en Innovatie | Directie Digitale Economie
Bezuidenhoutseweg 73 | A Zuid | 3^e etage | Postbus 20401 | 2500 EK | Den Haag

T 06 | E

Van: @huawei.com>
Verzonden: vrijdag 28 juni 2019 09:48
Aan: @minez.nl>
Onderwerp: RE: ontmoeting | en staatssecretaris Mona Keijzer

Hoi

Ik kom via deze weg toch weer even bij jou in de lucht. Het staat nu namelijk vast dat onze CEO, , op 10 en 11 juli in Nederland is. Onze CEO in NL heeft hier in zijn laatste ontmoeting met : aan gerefereerd en gevraagd of een ontmoeting tussen ; en Mona Keijzer toch nog mogelijk is. Aangezien het rapport van de Taskforce als het goed is volgende week nog wordt gepubliceerd, zou dat een goede aanleiding kunnen zijn voor een gesprek op 10 of 11 juli. Ik begreep dat hier nu wel over gesproken wordt binnen het ministerie, maar ik weet niet precies wat de status nu is.

Kun jij mij hier wellicht bij helpen?

Ik hoor graag van je.

Vriendelijke groeten,

From:) [mailto: n@minez.nl]
Sent: Monday, 20 May 2019 17:59
To: @huawei.com>
Subject: RE: ontmoeting en staatssecretaris Mona Keijzer

Beste

Ik begrijp je verzoek. Helaas moet ik je vertellen dat mede gegeven de volle agenda van de staatssecretaris en het feit dat ze al een keer Huawei heeft ontvangen, in dit geval Focco Vijselaar de gesprekspartner van de heer zou zijn. Indien jullie dat niet willen, zou je inderdaad kunnen proberen of Grapperhaus zou kunnen.

Met vriendelijke groet,

beleidsmedewerker

Ministerie van Economische Zaken en Klimaat
Directoraat-Generaal Bedrijfsleven en Innovatie | Directie Digitale Economie
Bezuidenhoutseweg 73 | A Zuid | 3^e etage | Postbus 20401 | 2500 EK | Den Haag

T 06 | E @minez.nl

Van: ;@huawei.com>
Verzonden: zondag 19 mei 2019 14:44
Aan: @minez.nl>
Onderwerp: RE: ontmoeting en staatssecretaris Mona Keijzer

Beste

Ik heb je voicemail afgelopen vrijdag al ingesproken, maar via deze weg ook even per email. Wij spreken graag weer een keer met Focco Vijselaar, alleen is onze wereldwijde CEO daarvoor niet het meest geschikte aanspreekpunt. Het is voor belangrijk de Chinezen heel belangrijk om een beetje op hetzelfde niveau een gesprekspartner te hebben en voor onze global CEO is dat een Minister of staatssecretaris.

Is het wellicht mogelijk om dit nog een keer te toetsen bij Mona Keijzer? Of is een afspraak met Minister Grapperhaus van Justitie & Veiligheid wellicht een optie?

Ik hoor het graag van je.

Vriendelijke groeten,

From:) [mailto:@minez.nl]
Sent: Thursday, 16 May 2019 15:47
To: [<@huawei.com>](mailto:@huawei.com)
Cc: secretariaatDGBI <secretariaatDGBI@minezk.nl>; @minez.nl>
Subject: RE: ontmoeting en staatssecretaris Mona Keijzer

Beste

Onze directeur-generaal Bedrijfsleven en Innovatie Focco Vijselaar, direct betrokken bij de taskforce, wil de heer graag ontvangen.

Zie de cc voor het emailadres van zijn secretariaat. Kan ik nog iets anders doen om het inplannen van de afspraak te vergemakkelijken?

Met vriendelijke groet,

beleidsmedewerker

Ministerie van Economische Zaken en Klimaat
Directoraat-Generaal Bedrijfsleven en Innovatie | Directie Digitale Economie
Bezuidenhoutseweg 73 | A Zuid | 3^e etage | Postbus 20401 | 2500 EK | Den Haag

T 06 | E @minez.nl

Van: [<@huawei.com>](mailto:@huawei.com)
Verzonden: donderdag 16 mei 2019 13:00
Aan: @minez.nl>
Onderwerp: RE: ontmoeting ; en staatssecretaris Mona Keijzer

Beste

Dank! Dan wacht ik de datavoorstellen van jullie kant even af. Qua timing is het wel goed als we er niet te lang mee wachten, denk ik.

Overigens, ik begreep dat er wat verwarring was aan jullie kant over de vraag om wie het nu precies ging. Mona Keijzer heeft eerder gesproken met onze President voor West-Europa. Dit keer gaat het om onze CEO op het hoofdkantoor in China.

Ik hoor graag van je.

Groeten,

From: @minez.nl
Sent: Wednesday, 15 May 2019 10:08
To: [<@huawei.com>](mailto:@huawei.com)
Subject: RE: ontmoeting en staatssecretaris Mona Keijzer

Beste

Dank voor je mail. Het verzoek is hier de lijn in. Ik wacht nu op reactie, en laat het je zo snel mogelijk horen.

Met vriendelijke groet,

beleidsmedewerker

Ministerie van Economische Zaken en Klimaat
Directoraat-Generaal Bedrijfsleven en Innovatie | Directie Digitale Economie
Bezuidenhoutseweg 73 | A Zuid | 3^e etage | Postbus 20401 | 2500 EK | Den Haag

Van: @huawei.com>

Verzonden: vrijdag 10 mei 2019 14:56

Aan: @minez.nl>

Onderwerp: RE: ontmoeting ; en staatssecretaris Mona Keijzer

Beste

Heb jij al zicht op een eventuele datum voor een afspraak tussen en de staatssecretaris?

Vriendelijke groeten,

Best regards,

Head of Communications & Public Affairs



Huawei Technologies (Netherlands) B.V.
Herikerbergweg 36, 1101 CM, Amsterdam Z-O, The Netherlands
Mobile: +31
KVK: 34219858
www.huawei.com



This e-mail and its attachments contain confidential information from HUAWEI, which is intended only for the person or entity whose address is listed above. Any use of the information contained herein in any way (including, but not limited to, total or partial disclosure, reproduction, or dissemination) by persons other than the intended recipient(s) is prohibited. If you receive this e-mail in error, please notify the sender by phone or email immediately and delete it!

From: [mailto: @minez.nl]

Sent: Friday, 3 May 2019 11:28

To: @huawei.com>

Subject: ontmoeting en staatssecretaris Mona Keijzer

Beste

Kunt u mij even bellen over de ontmoeting tussen en staatssecretaris Mona Keijzer. Ik heb een brief ontvangen, maar geen contactgegevens, en wil graag even bespreken wat handig is qua logistiek.

Met vriendelijke groet,

beleidsmedewerker

Ministerie van Economische Zaken en Klimaat
Directoraat-Generaal Bedrijfsleven en Innovatie | Directie Digitale Economie
Be Zuidenhoutseweg 73 | A Zuid | 3^e etage | Postbus 20401 | 2500 EK | Den Haag
