

Electronic Toll Collection

Night Vision

Active Cabin Noise Suppression

Cabin Environment Controls

Security System

Digital Turn Signals

Remote Keyless Entry

Instrument Cluster

Driver Alertness Monitor

Voice/Data Communications

Entertainment System

Head-Up Display

Accident Recorder

Navigation System

Self-Parking System

Wiper Control

Event Data Recorder

Airbag Deployment

Auto Dimming Mirror

Electric Motor Management

Parental Controls

Battery Management

Adaptive Front Lighting

Project Lion Cage:

Sikkerhetsdilemmaer ved programvare-styrte kjøretøy

Tor Indstøy – VP of Risk Management and Threat Intelligence, Telenor Group

Arild Tjomslund – Special Advisor TTO, University of Southeast Norway

Active Suspension
Electric Power Steering

Tire Pressure Monitoring
Lane Departure Warning
Active Vibration Control

Active Yaw

Adaptive Cruise Control

Automatic Braking (Brake-by-Wire)

Anti Lock Braking

Blind Spot Detection

Hill-Hold Control

Electronic Stability Control

Seat Position Control

Regenerative Braking



Førerassistentsystemer

- Drive-by-wire, steer-by-wire
- Kameraer, radarer, sensorer

Utstrakt bruk av skytjenester (delt mellom produsenter) for:

- Navigasjon
- Prosessering av talestyring
- OTA-plattformer for programvareoppdateringer

- Med OTA blir typegodkjenning tillitsbasert
- Cybersikkerhet for SDV-er er en prosess-sertifisering, uten testing av selve resultatet
- SDV-er er avhengige av produsenten for oppdateringer gjennom hele levetiden



Grensesnitt:

- Wi-Fi, mobilnett
- Bluetooth
- Ladeport
- Radio 315/433MHz
- Smartnøkkel/NFC,
- SOS-system
- GPS/GNSS
- CAN/OBD2
- Mobilapp
- Fysisk tilgang





April 2025:

30 % av nye EV er kinesiske.



NIO ES8 for Oslo Taxi – 'et kjempekupp!'



NIO ES8 i bruk i selvkjørende pilot i Groruddalen, Oslo

Utfordringer:

- Sårbarhet for hacking
- Personvern
- Datainnsamling for samfunnsmodellering og AI
- Trafikksikkerhet og personlig sikkerhet
- Ansvarsproblemer – høy kompleksitet

Nasjonal sikkerhet



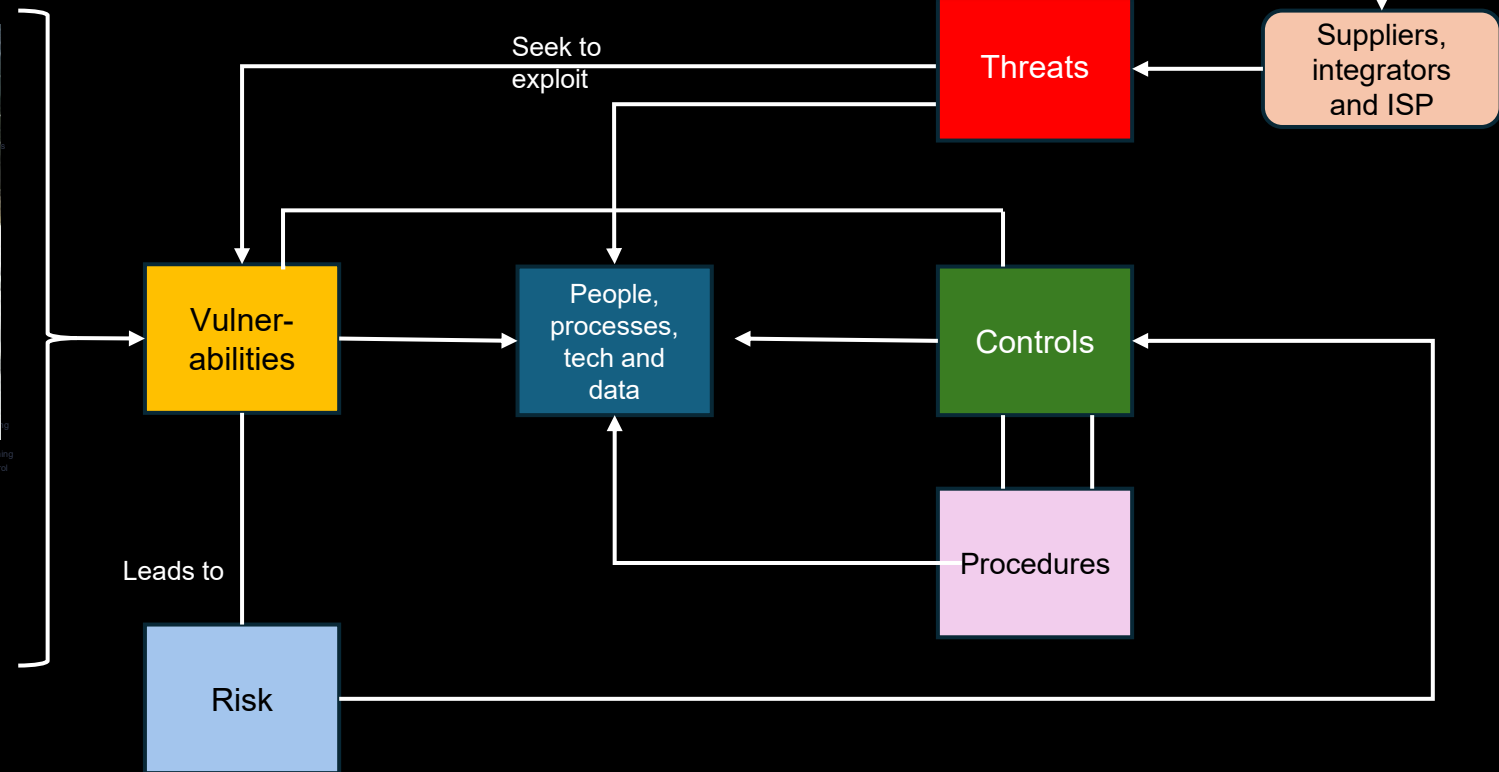
Del 1

Risikoøkosystemet – Tors NIO ES8



Lane Departure Warning
Active Vibration Control

- Spektrumanalyse
- Bluetooth-sniffing
- Avlytting/oppsnapning av sender i bilen
- GPS-analyse
- Pentesting
- OSINT, inkludert: Patentanalyse / gjennomgang av patenter
- Kinesiske forum og meldingsplattformer



Scenariobasert tilnærming

Scenario 1 – Trafikal sabotasje



Kan bilen til Tor brukes til trafikal sabotasje?



China's Nobel anger as Liu Xiaobo awarded peace prize

8 October 2010

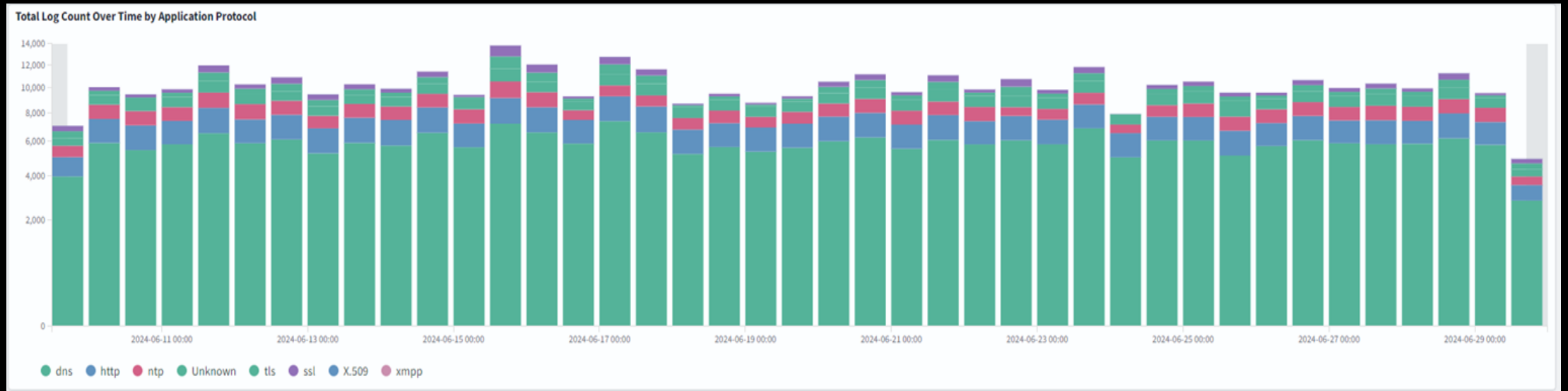


Del 1 – Tors NIO ES8



TLP: CLEAR

Funn: Bilen «skravler» kontinuerlig



Datapakker går kontinuerlig inn og ut av bilen. Selv når bilen tilsynelatende er 'skrudd av'. Det er liten til ingen variasjon gjennom døgnet eller mellom geografiske områder.

70% av pakkene er kryptert, utstrakt bruk av ukjente protokoller

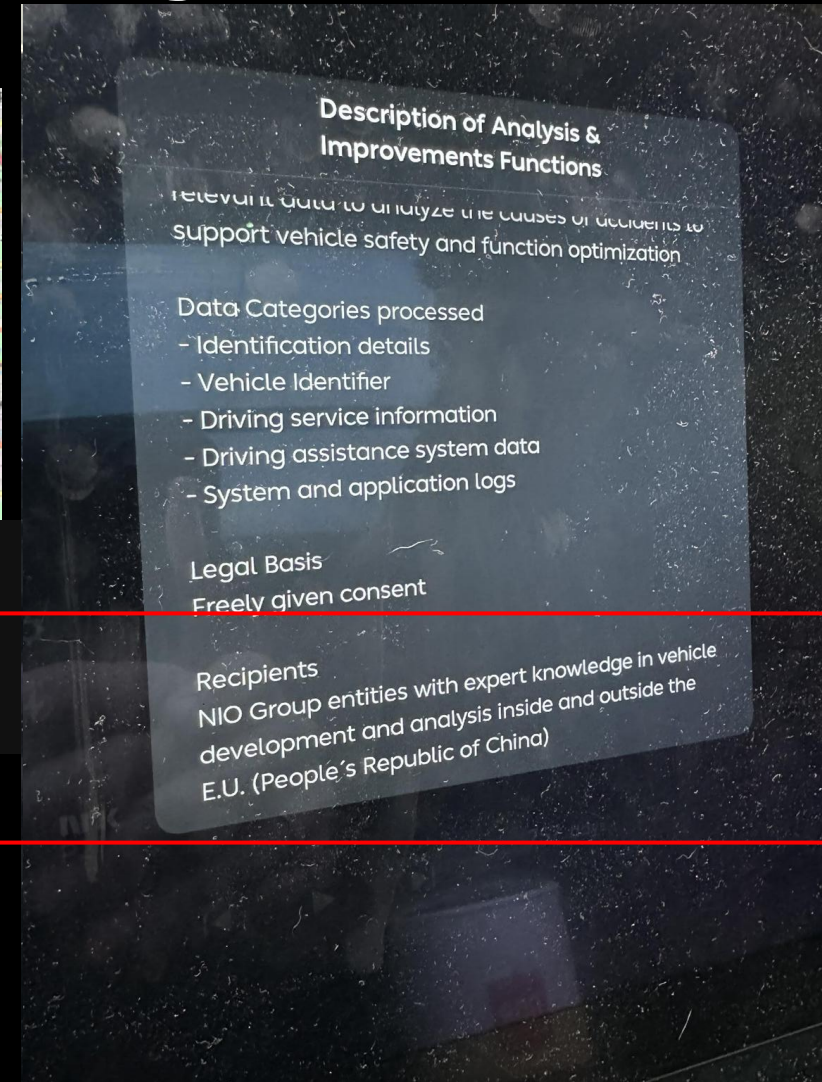
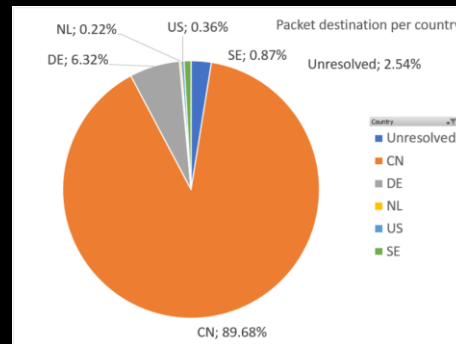


Funn: 90% av datapakkene går til og fra Kina

Eksempler på URL'er: 163.com
China Network Communication Group (CNNIC),
baidu.com,
sina.com



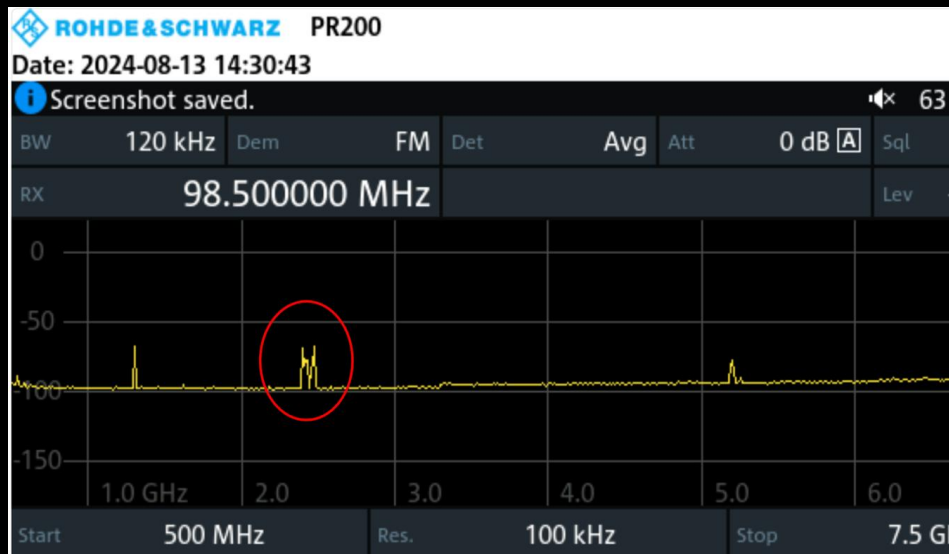
Tor's datapakker sendes hit til Beijing...



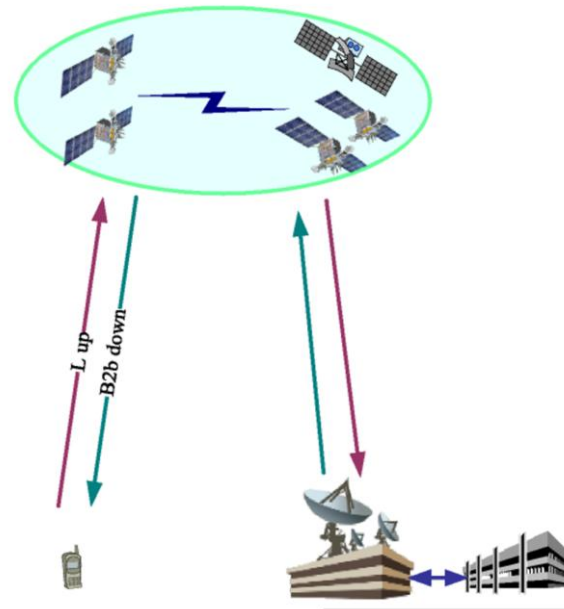
Funn: Spor etter to-veis kommunikasjon til den kinesiske GPS ekvivalenten

BeiDou (kinesiske GPS systemet) er to-veis.

1575.42MHz, 1191.79MHz, 1268.52MHz og 2492.028MHz



A Radio Determination Satellite Service (RDSS) that not only allows the user to navigate but also communicate as the very service itself is two-way between the user and the satellite(s) it is navigating via. This uplink provision can be used to allow a user to send messages to orbiting satellites as well for purely communications purposes. Interestingly, the Chinese BeiDou system is capable of RDSS which means it's a full blown two way communications system with a global reach.



The image shows a screenshot of a news article from the National Defense University Press. The article is titled "BeiDou: China's GPS Challenger Takes Its Place on the World Stage" and is dated April 14, 2022. The authors are David H. Millner, Stephen Maksim, and Marissa Huhmann. The article is available for download as a PDF. Below the article text, there is a photograph of a rocket launch.

NATIONAL DEFENSE UNIVERSITY PRESS
THE PREMIER PROFESSIONAL MILITARY AND ACADEMIC PUBLISHING HOUSE

NEWS | April 14, 2022

BeiDou: China's GPS Challenger Takes Its Place on the World Stage

By David H. Millner, Stephen Maksim, and Marissa Huhmann
Joint Force Quarterly 105

[Download PDF](#)

Commander David H. Millner, USN, is the Senior U.S. Defense Official/Defense Attaché in Albania. Major Stephen Maksim, USSF, is Chief of the Engineering Liaison Office at the Air Force Nuclear Weapons Center. Lieutenant Commander Marissa Huhmann, USN, is currently serving as an Assistant Public Affairs Officer at U.S. Pacific Fleet.

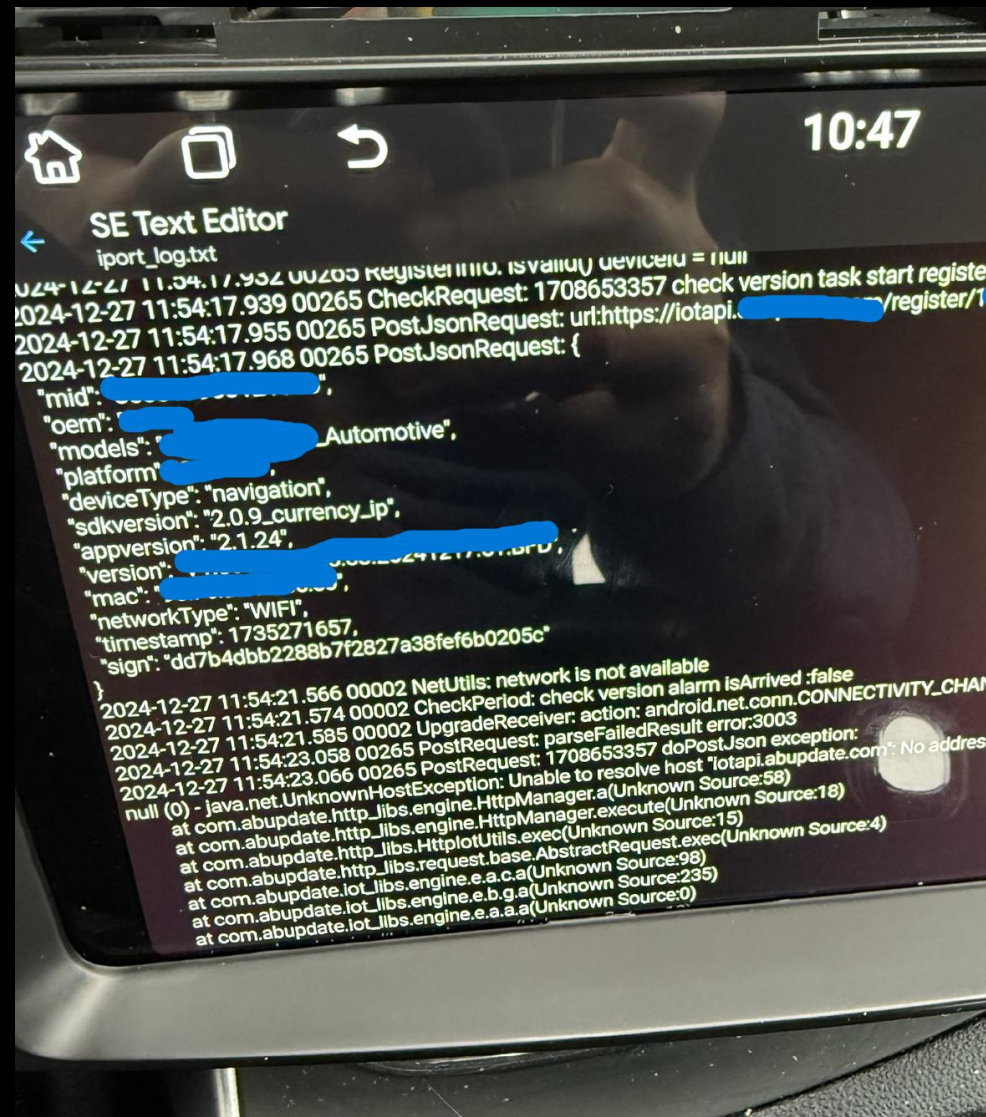
A photograph showing a rocket launch from a mountainous area. The rocket is ascending, leaving a large plume of white smoke and fire. The background features green hills and a blue sky with some clouds.

TLP: CLEAR





Hack #1: FOTA

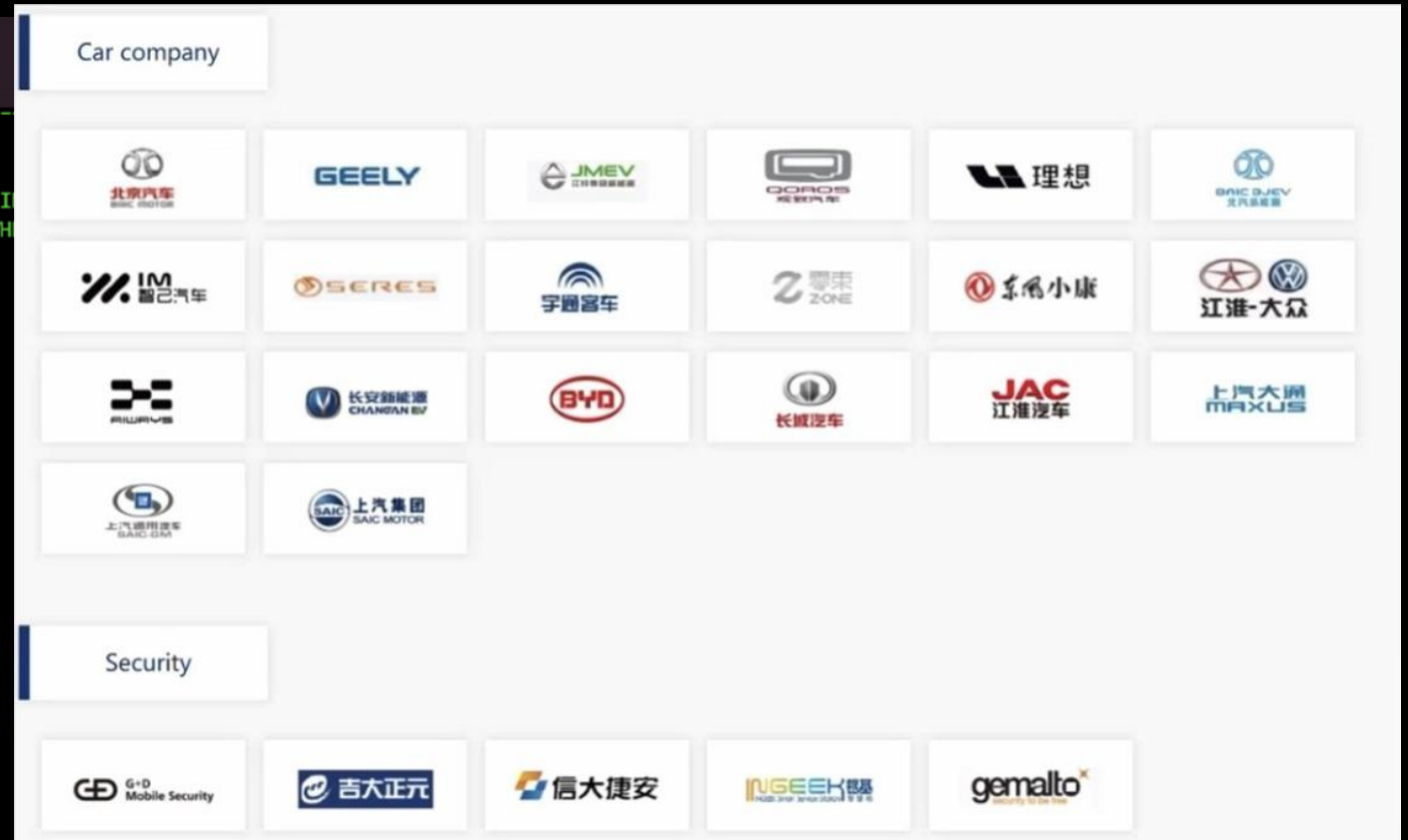


Hack #1: FOTA oppdateringer er sårbare

```
MySQL [iot_register]> SELECT COUNT(DISTINCT country) AS unique_norway FROM device_info WHERE country = 'NO';
+-----+
| unique_norway |
+-----+
|          79443 |
+-----+
1 row in set (1 min 4.00 sec)

MySQL [iot_register]>
```

```
MySQL [iot_register]> bye
-> | unique_device_count
+-----+
| 116801418 |
+-----+
country_en
-> +-----+
```



Konklusjon

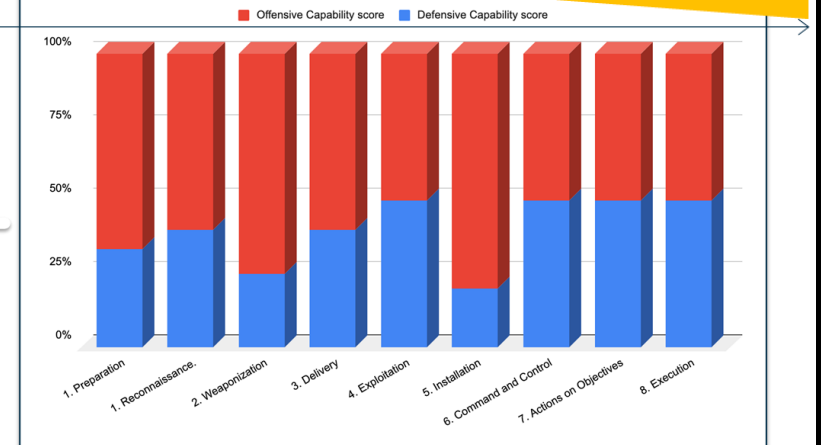
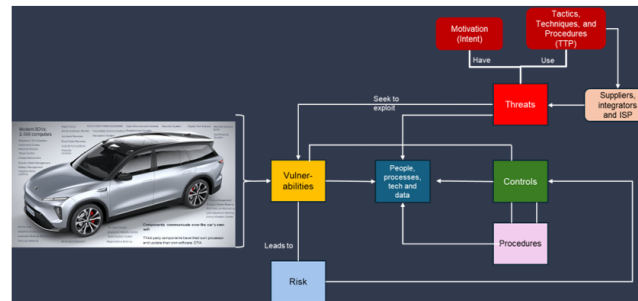
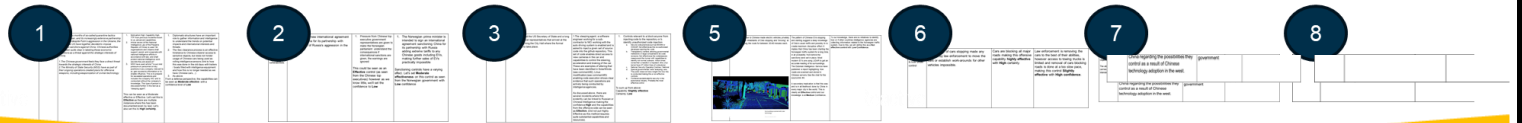
Kan bilen brukes til sabotasje?

Ja.

Og av alle

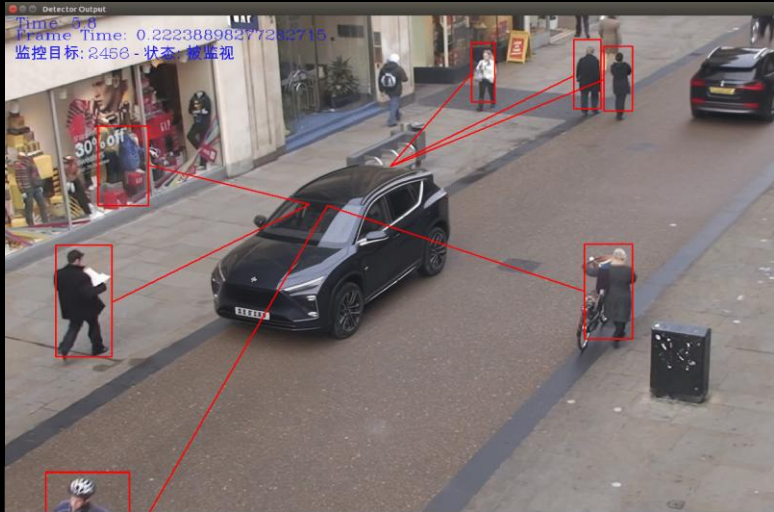
Sikkerhet er under normal standard.

Når angrepssiden vinner, strategisk risikovurdering av scenario om trafikal sabotasje



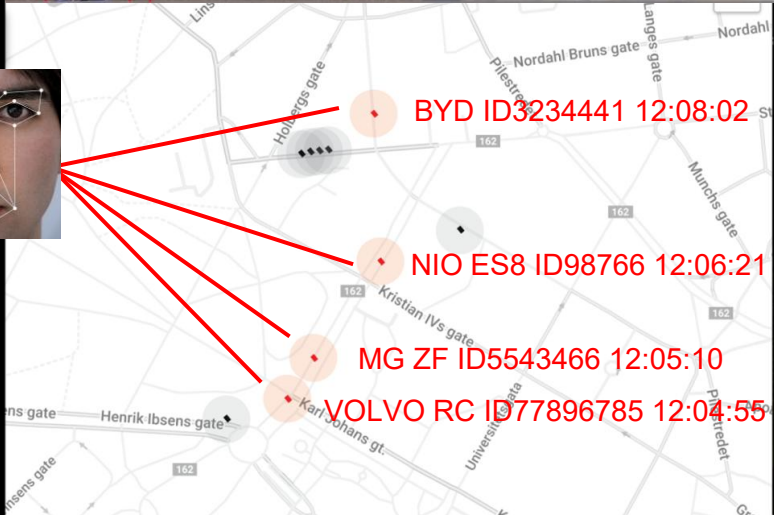
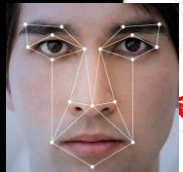
Scenariobasert tilnærming

Scenario 2 – Bil som del av overvåking



Mest sannsynlige mål:

- Kinesiske borgere: dissidenter, studenter, forskere
- Ansatte hos underleverandører i kritiske industrier og kritisk infrastruktur
- Norske POI-er (persons of interest) med innflytelse på forholdet til Kina



Can bilen til Tor fungere som én overvåkingsplattform i et større nettverk?



Kamera – ansikts- og skiltgjenkjenning

ucts Innovation Power & Service



7x8MP kamera –
NIO skriver: Kan
kjenne igjen et
menneske på 223m

● 8MP
● 1.2MP

Legend: Car icon, Traffic cone icon, Person icon

Camera Guidelines for Face Recognition

Match Confidence	Camera Resolution	Minimum Pixels on Face	Pixels per Meter	Pixels per Foot
High	All resolutions	80	457	137
Medium	6 MP or lower	50	286	86
	8 MP	60	343	103



Hack #2: Tredjepart for kameramodul sender data til produsent.

- **Embedded reserved interface**
- **Firmware OTA**
- **Sertifikater, utsagn, terms & conditions etc. er potensiell desinformasjon**

**Hva skjer hvis vi er i krig
med egne leverandører?**

Del 2

Teknisk
sikkerhetsvurdering
(TSA) av Busser fra VDL
og Yutong

– for Ruter



The Lion Cage Project

Ikke i trafikk

EN 54585

TLP: CLEAR

Del 2

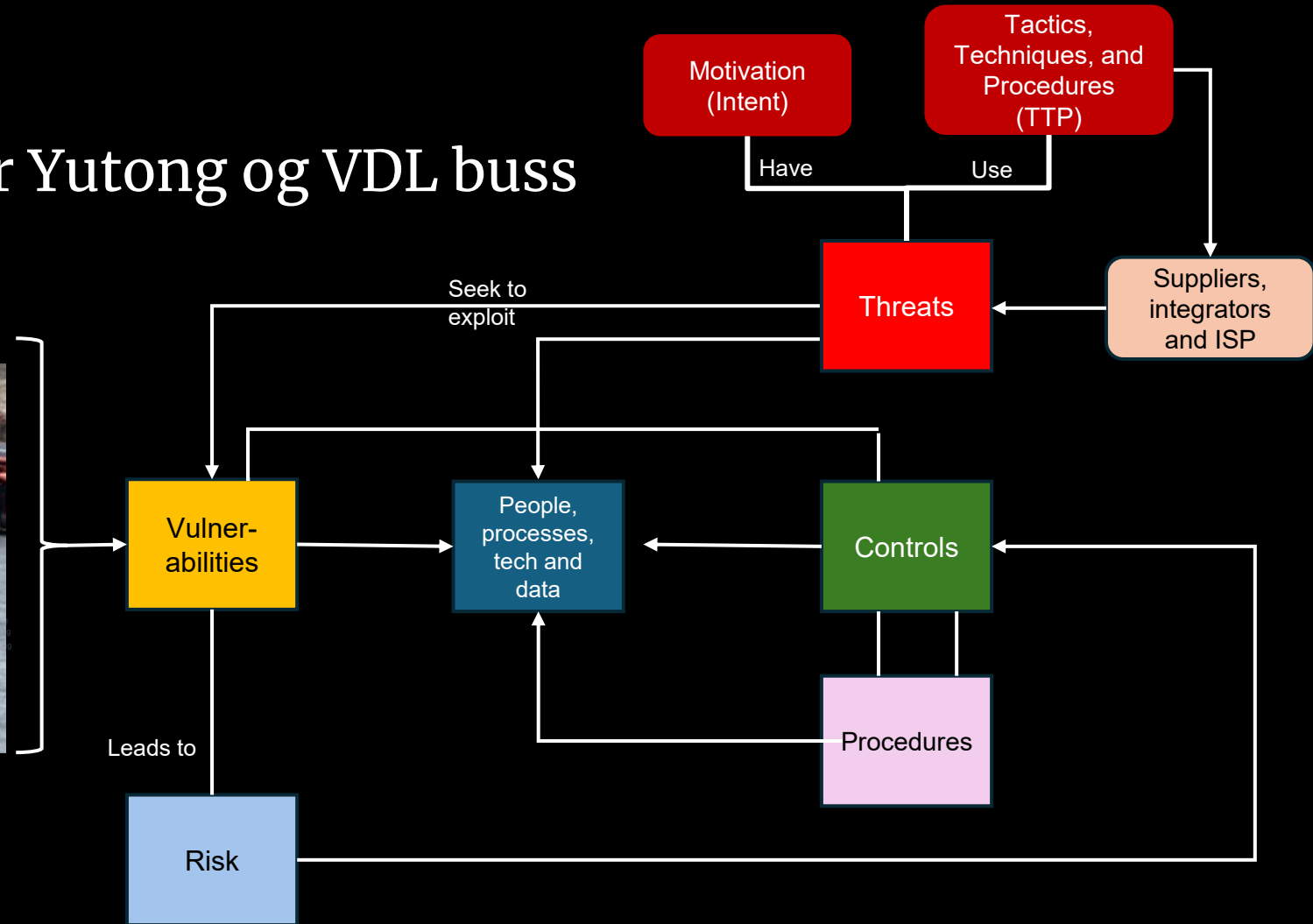
Risikøkosystemet for Yutong og VDL buss

Modern SDVs:
2-300 computers

- Electronic Toll Collection
- Instrument Cluster
- Head-Up Display
- Wiper Control
- Airbag Deployment
- Electric Motor Management
- Battery Management
- Adaptive Front Lighting

Active Yaw

- Adaptive Cruise Control
- Automatic Braking (Brake-by-wire)
- Anti-Lock Braking



Alle busser elektriske innen 2030 – 80 % kinesiske.

- 660 kinesiske busser i Norge (2025)
- 1200 flere på vei



Scenario 1: Kill Switch

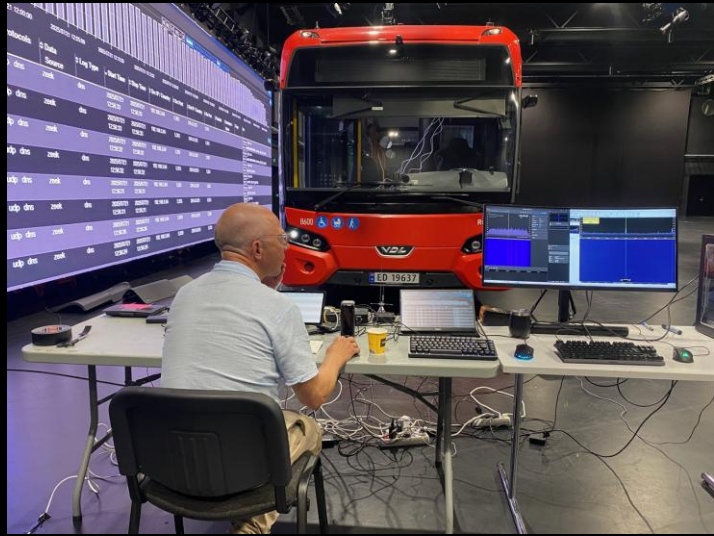
Trafikal sabotasje, eller trussel om sabotasje brukt som pressmiddel

Scenario 2: Lutvann

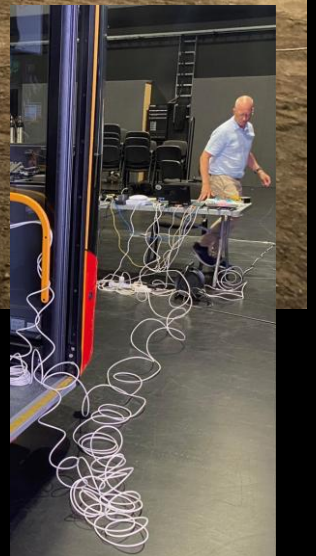
Rullende overvåking



Yutong – 2025 model og VDL – 2022 model

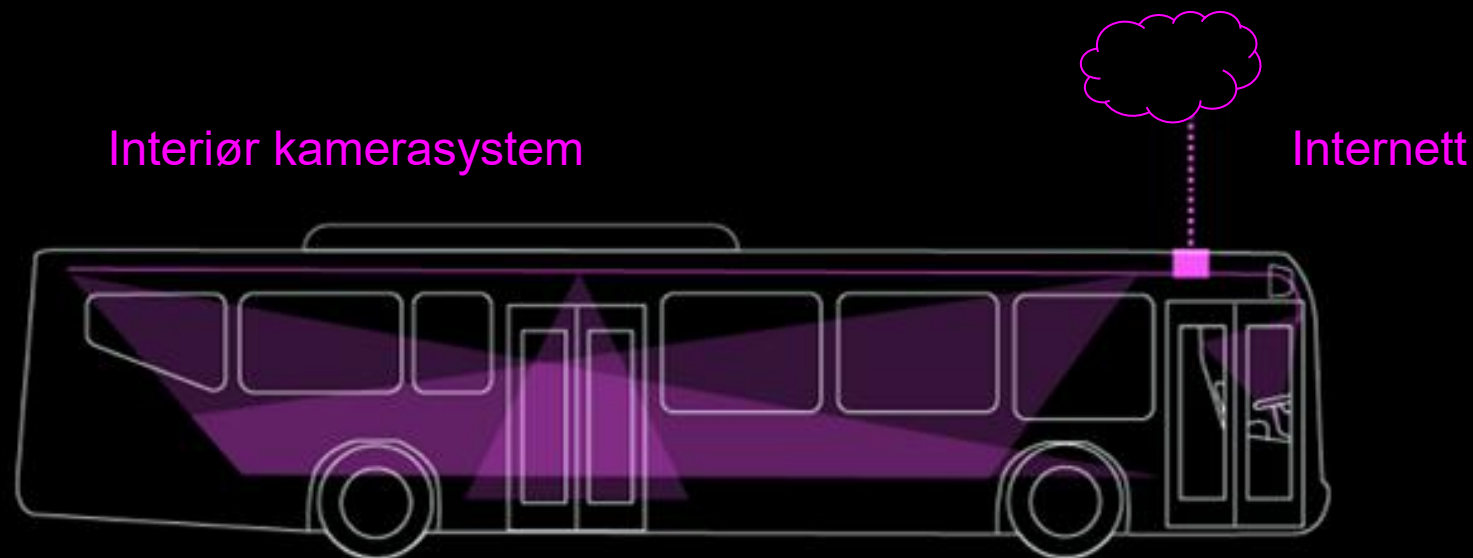


Kan VDL og/eller Yutong bussen bli brukt til Kill Switch scenarioet, eller Lutvann scenarioet?



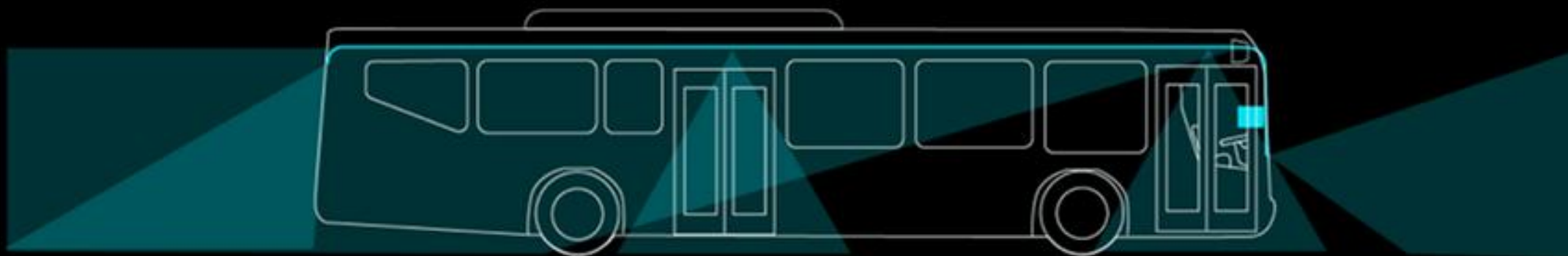
VDL – 2022 model og Yutong – 2025 model

Interiørovervåkings
funksjonaliteten er
online, til ConnectBus-
partner i Sverige.



VDL – 2022 model og Yutong – 2025 model

Eksteriør kamerasystem



Eksteriørovervåkings-funksjonaliteten er isolert. Lutvann-scenariot, når det gjelder bilder eller video, er **ikke mulig med denne bussen.**

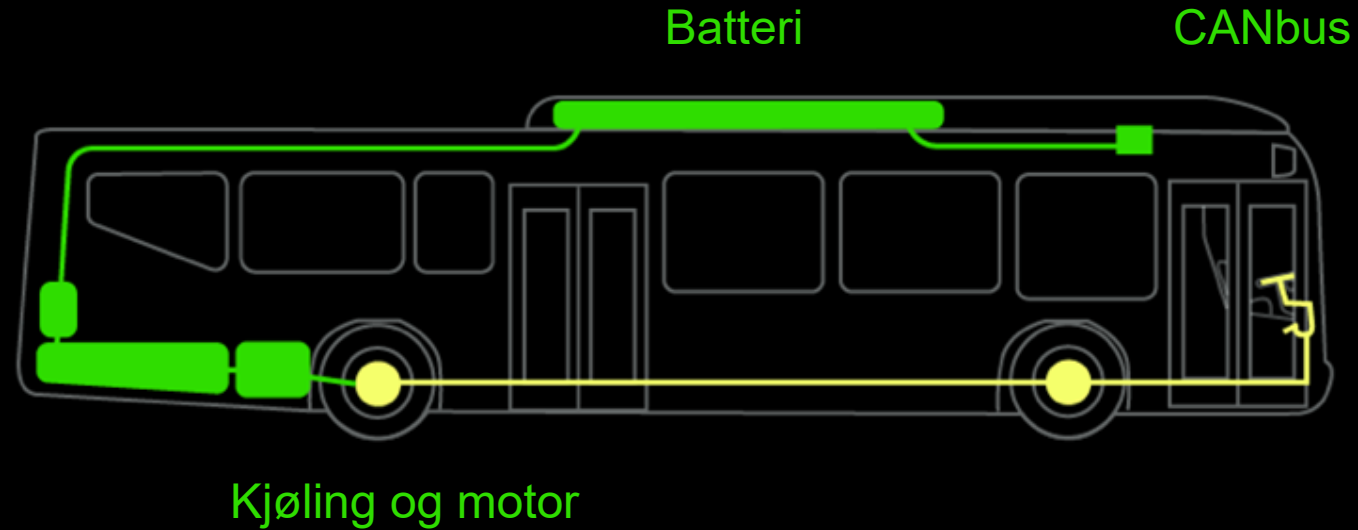


VDL – 2022 model

Kritisk funksjonalitet
isolert

Kill Switch ikke mulig

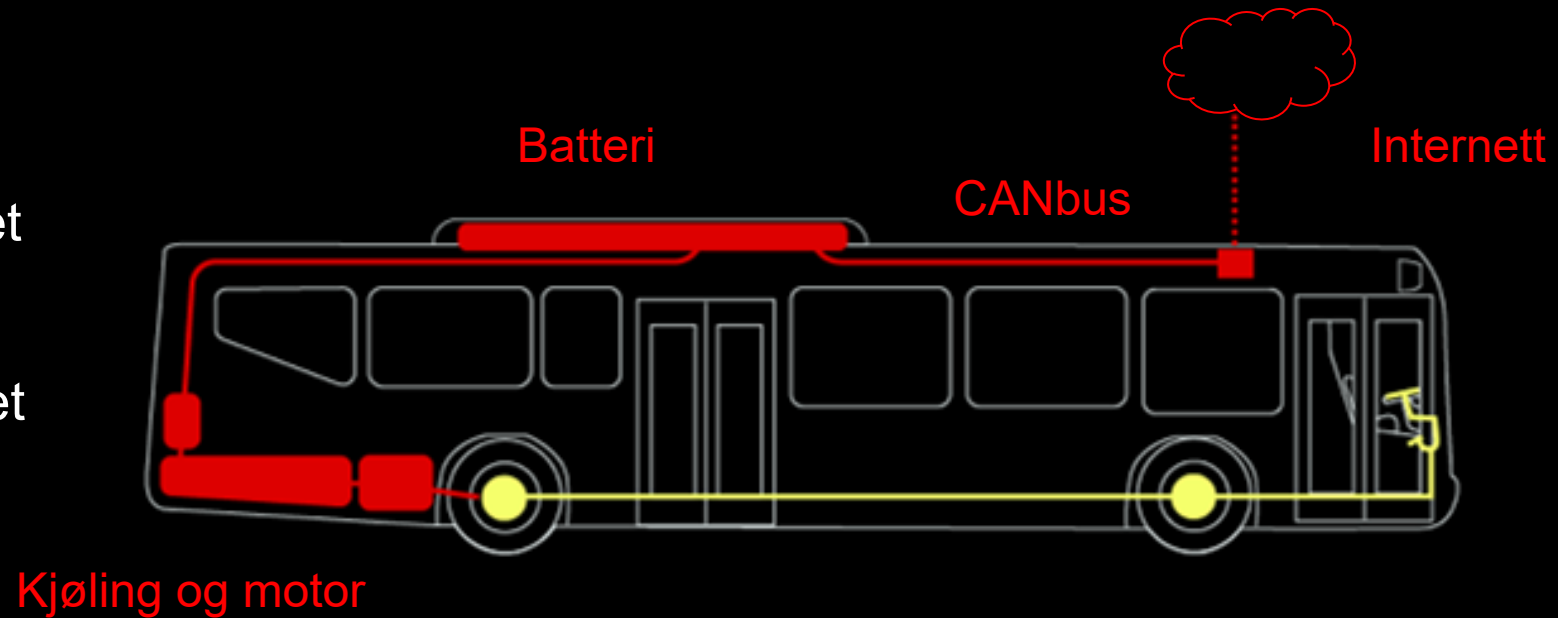
Eksteriørkamera
isolert – ingen Lutvann



Yutong – 2025 model

Kritisk funksjonalitet
er online

Kill Switch scenariet
er mulig



+ design er relativt enkelt, lite systemintegrasjoner



Yutong – 2025 model

Kritisk funksjonalitet er online.

Eksteriørkamera er isolert
Produsenten har tilgang til interne systemer. – **Kill Switch-scenarioet er derfor mulig med denne bussen.**

Eksisterende systemdesign er fortsatt enkelt, med lav grad av systemintegrasjon.

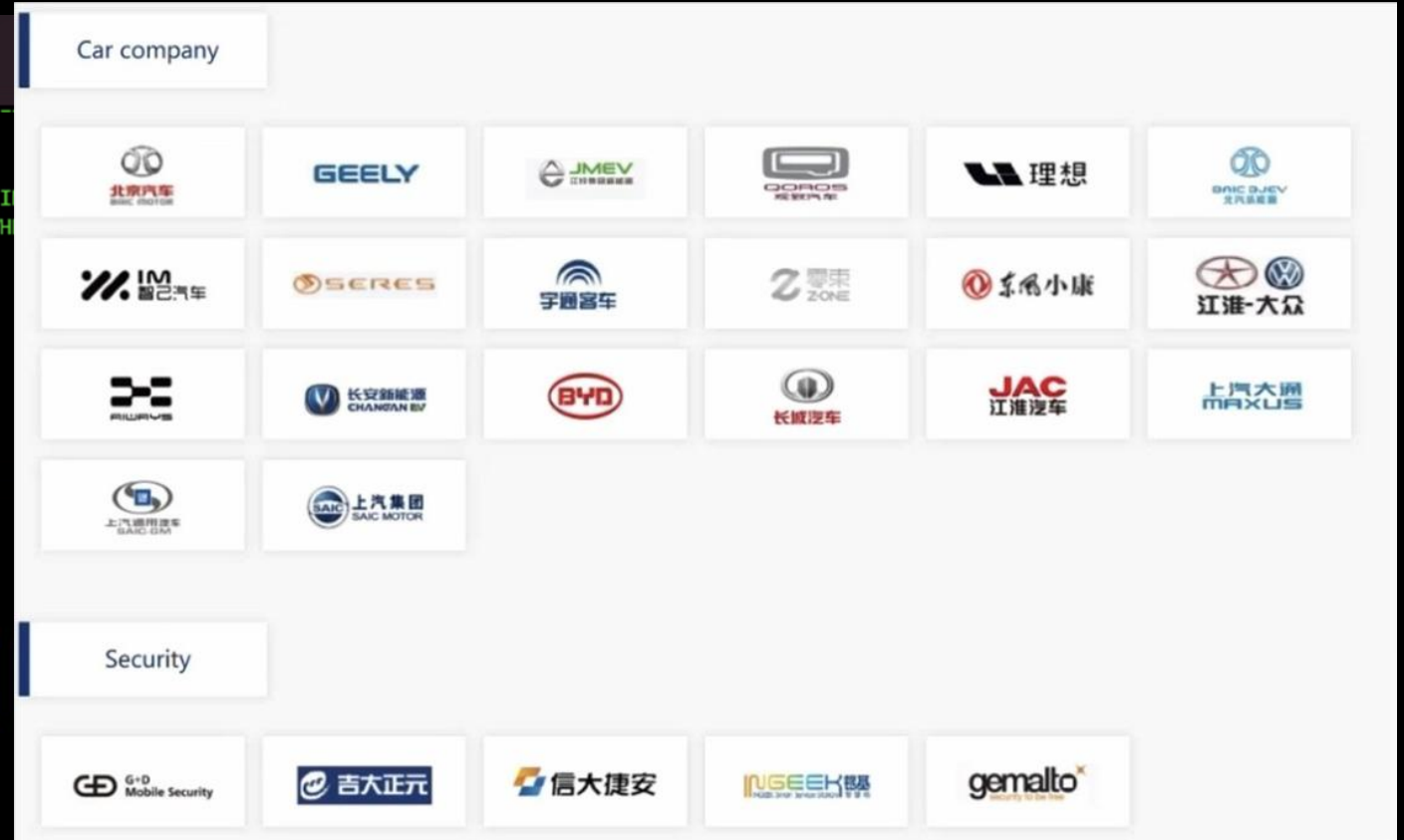


Hack #1: FOTA oppdateringer er sårbare

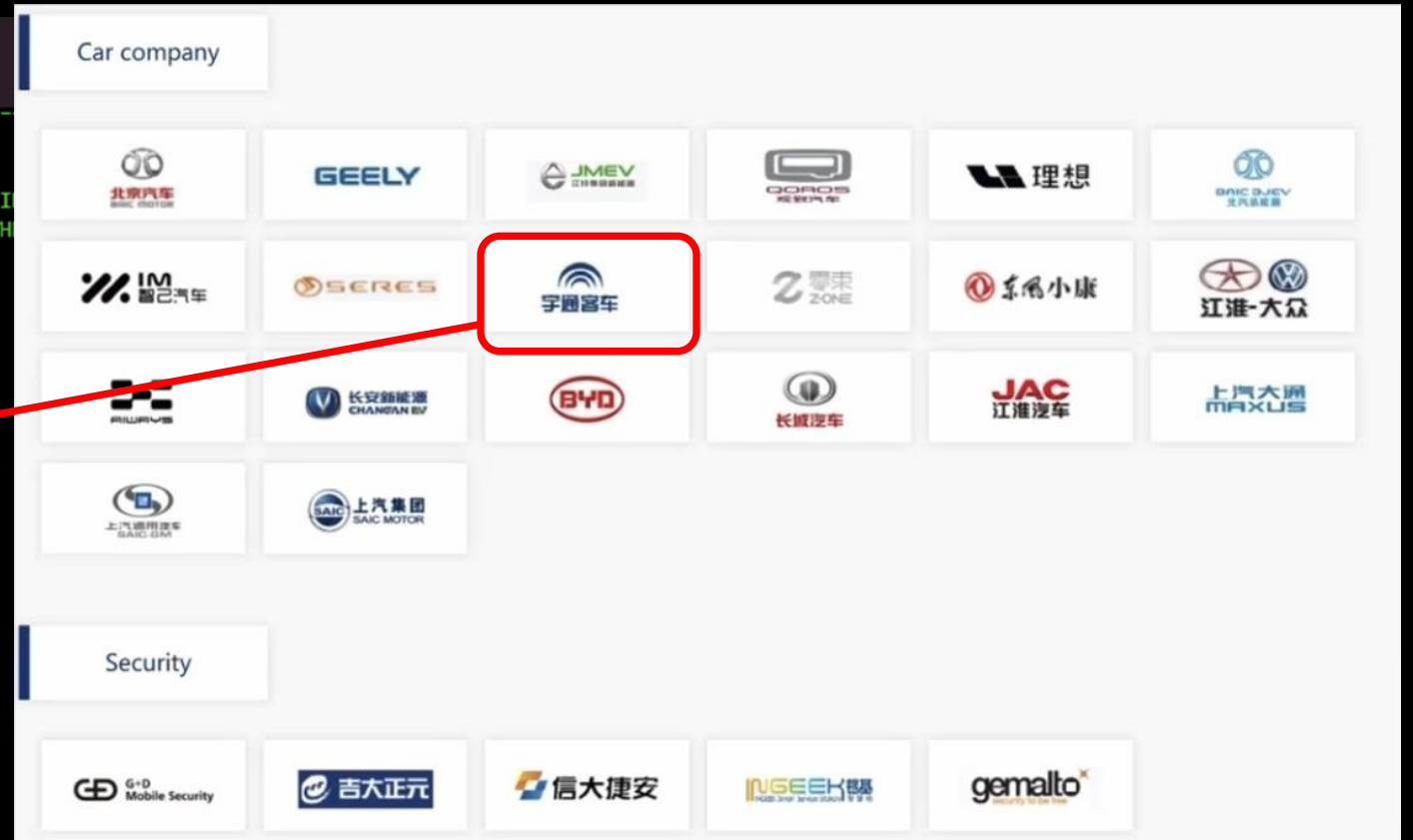
```
MySQL [iot]> SELECT table_name
<chema = "iot" ORDER BY (data_1
+-----+
| Table
+-----+
| stats_interface_check_info_ba
| ota_pre_record
| stats_online_check_down_upgra
| stats_interface_download_info
| stats_device_area
| ota_device_version
+-----+
100 rows in set (0.79 sec)
MySQL [iot_register]> SELECT COUNT(DISTI
<) AS unique_norway FROM device_info WH
+-----+
| unique_norway |
+-----+
|          79443 |
+-----+
1 row in set (1 min 4.00 sec)
MySQL [iot_register]> []
```

```
MySQL [iot_register]> bye
-> | unique_device_count
```

```
+-----+
| 116801418 |
+-----+country_en
-> +-----+
```

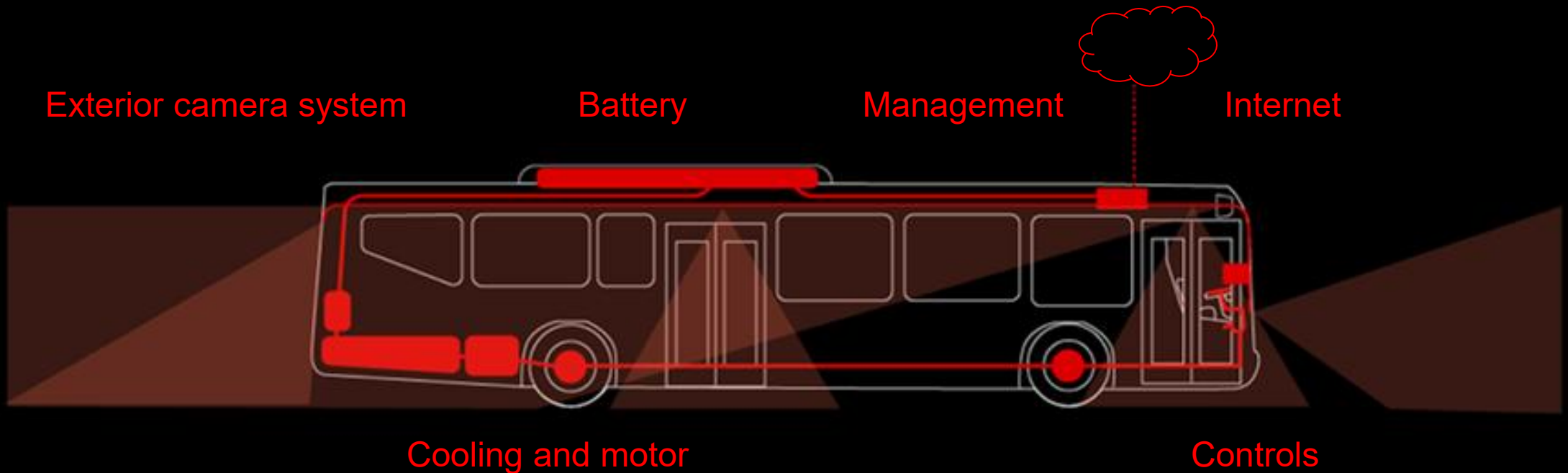


Hack #1: FOTA oppdateringer er sårbare



- **Busser er ikke like komplekse som biler, fortsatt mulig å redusere risiko.**
- **Det er vår higen etter mest mulig data og forretningsmodeller som baserer seg på avhengighet til produsenten i hele produktets levetid som åpner for sårbarheter. Ikke nullutslipp (duh).**

Fremtiden: Autonome busser = droner



Med økte nivåer av førerassistentsystemer og autonomisystemer, inkludert kameraer, vil systemene bli mer integrerte og økt fokus bør legges i smarte løsninger for isolering.



More about the BYD's "God's Eye" driving assistance system

BYD officials revealed that the "God's Eye" ADAS system has three intelligent driving classifications. The entry-level system is called "God's Eye C". It relies on a three-camera cluster sitting behind the windshield. As the entry-level tier ADAS system, the "God's Eye C" will be adopted by cars under the BYD brand. This perception system will be powered by the DiPilot 100 system with a peak computing power of 100 TOPS.

BYD next gen:

- 12 cameras
- 3 front-view
- 5 panorama
- 4 surround view
- 5 mm wave radar
- 12 ultrasonic radar



Other hardware elements of the "God's Eye C" include 12 cameras, 5 mm-wave radars, and 12 ultrasonic radars. Those 12 cameras consist of 3 front-view cameras, 5 panoramic cameras, and 4 surround-view cameras. Five mm-wave radars provide 360-degree non-dead angle perception, the front radar has a detection distance of 300 meters. The accuracy of the 12 ultrasonic radar sensors is 1 cm, and the parking accuracy is 2 cm

US lawmakers raise concerns over Chinese self-driving testing data collection

By David Shepardson

November 16, 2023 10:23 PM GMT+1 · Updated November 16, 2023



Automotive News Canada Sign In

Subscribe

EV

Chinese EV spy risk is real in Canada, experts warn

Share

"Anyone who buys a Chinese-made EV for use in Canada must be aware of these risks," said George Takach, an author and expert on China. By volume, BYD of China is the world's largest EV automaker. (BLOOMBERG)

By Greg Layson

Last Updated February 06, 2026 06:00 AM EST

NATIONELLT KUNSKAPSCENTRUM OM KINA

11 december, 2024

Security concerns regarding Chinese connected cars: A short overview

Handel och ekonomi

Säkerhet och påverkan

Alexis von Sydow

Ladda ner PDF

Del

INNEHÅLL

Security vulnerabilities of connected cars

Risks with Chinese manufacturers and components

Regulatory responses in the United States and the European Union

Fredrik Sandberg/TT

DeepSeek Is Already Making Its Way Into Chinese EVs

Two Chinese automakers—including Geely—have announced support for China's AI disruptor.



Photo by: Voyah

Dette er politiets nye patruljebil

Politiet bytter patruljebil fra Volvo V90 CC til Volvo XC60 T8.



Volvo XC60 T8 blir politiets nye patruljebil. Foto: Politiets Fellestjenester



Truck Manufacturers

1st Jan Change

Valuation ▾

ses Official Publications

Work More

Share

aborate with the

king a significant

al markets day when it

Porsches across Russia suddenly stop working

'It's possible this was done deliberately,' says car dealership

Anthony Cuthbertson • Monday 08 December 2025 14:38 GMT • 22 Comments



The Moscow Times 30 YEARS INDEPENDENT NEWS FROM RUSSIA RU Q

Support The Moscow Times! CONTRIBUTE TODAY

Hundreds of Porsche Owners in Russia Unable to Start Cars After System Failure

Dec. 2, 2025

f X Telegram WhatsApp Email RSS PDF

Dere er i godt selskap!

PST DSB NSM FFI Nkom

Etterretningstjenesten

Stortinget

Norges Bank

Utenriksdepartementet

Samferdselsdepartementet

Statens vegvesen

Kongsberg Defence
& Aerospace

Telenor Group

GKN Aerospace

DNB MGF COOP



Tor Indstøy – VP of Risk Management and Threat Intelligence at Telenor Group
tor.indstoy@telenor.com

Arild Tjomsland – Special Advisor TTO at the University of Southeast Norway
arild.tjomsland@usn.no

All technical details at [Lion Cage on LinkedIn](#)

