## CYBER SECURITY – IT IS A CONCERN FOR WATER UTILITIES?


Jon Røstum, chief strategist Powel

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Jon Røstum

**Former**
- PhD NTNU
- Senior researcher at SINTEF
- RISK analysis for water companies including ICT
- Contributor to NOU 2015-13 «Digital vulnerabilities» for water

**Current**
- Chief Strategist Powel Water
- Digital advisory water
- Project leader for Norwegian Water Association project related to Cybersecurity (2018)

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*Q: Anyone of you working with cybersecurity on a daily basis?*

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HAVE YOU HEARD THE STORY ABOUT THE PERSON FROM OSLO-AREA CALLING THE PERSON FROM BERGEN-AREA?

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*We don't understand that we don't understand!* 2015

*The Norwegian National Security Authority (NSM)*

*We still don't understand that we don't understand!* 2017

Norwegian Food Safety Authority (Mattilsynet)

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CYBERSECURITY TOOLKIT FROM NORSK VANN

- Safety and security in SCADA systems (2013)
- Risk & preparedness (2015)
- Safety management (2015)
- Cybersecurity and cloud services (A238/2018)
- Are the reports being read?

www.norskvann.no/index.php/kompetanse/va-bokhandelen



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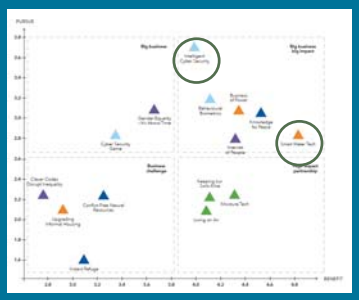
## TOP 10 TECHNOLOGY TRENDS AND OPPORTUNITIES


Gartner 2018

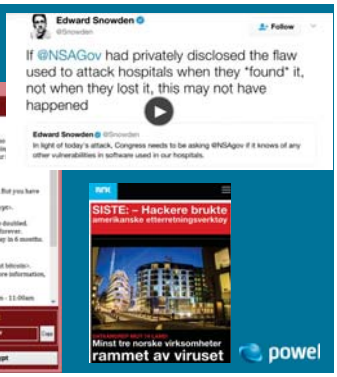


Global Opportunity Report 2017 (UN, DNV-GL)

## EXAMPLE OF DIGITAL TREATHS IN THE WATER SECTOR

- Virus
- Malvare
- Former employees
- CEO fraud
- The value-chain as a vulnerability
- Use of not updated software
- CaaS – Crime as a Service
- Nastional states as a treath
- IoT & cybersecurity

## Wannacry


## EMPLOYEES


- Former employee – not re-engaged New password: "*fu*kyou*"
- Vitek Boden vers 2.0
- Relevant in Norway?


## NATIONAL STATES AS A THREAT


"It seems clear that elements within Iran are working to build a database of vulnerable systems in the U.S., damage to which could cause severe harm to the U.S. economy and citizens, *American Enterprise Institute (2015)*

## CEO FRAUD
Relevant also for water industry


PLATINUM MARKETING MIDLANDS LTD

E.g. Powel

- Bård Benum – CEO
- Øystein Sæther – CFO
- NN – Controller


Subject: Fwd: Faktura

Hei Christin,

Bård trenger vedlagt fakturaen betalt asap. Setter pris på om du kan gjøre betalingen asap og email meg detaljer om betaling når du er ferdig.

Bård via email nedenfor ønsker en godkjent faktura og enda betaling. I pass på mer informasjon og dokumentasjon for transaksjonen til deg når jeg får de

Det viktigste at fakturaen er betalt asap og pls gjøre betalingen som "express". Takk.

Vennlig hilsen

Øystein

Fra: Bård Benum

Dato: 8. juni 2016 kl. 11.07.58 CEST

Hej Øystein, jeg sit lidt og er ved at lave en betaling til en kreditor i dag. Hvad er de oplysninger, du skal foretage betalingen til London?

Skrive meg tilbake når du får dette.

Sendt fra min Mobil

## CAAS - CRIME AS A SERVICE?
*For a small amount of money you can order a cyber attack*


For en billig penge kan du betale andre for å utføre dataangrep

Man trenger ikke lenger være ekspert for å utføre et data-angrep. For bare noen tiere kan hvem som helst kjøpe skadevare.


International Business Times

Hackers hijacking water treatment plant controls shows how easily civilians could be poisoned

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## DIFFERENT SEARCH ENGINES


Google


The search engine for the Web

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## The «S» in IoT stands for the security?


Bogdan Costea

so they hacked a casino through its fish tank. wait, what? theconversation.com/the-internet-o... #iot #security

Internet-enabled devices are so common, and so vulnerable, that hackers recently broke into a casino through its fish tank. The tank had internet-connected sensors measuring its temperature and cleanliness. The hackers got into the fish tank's sensors and then to the computer used to control them, and from there to other parts of the casino's network. The intruders were able to copy 10 gigabytes of data to somewhere in Finland.

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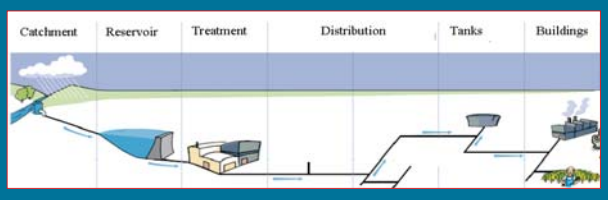
## WHERE WITHIN WATER CAN **IOT-SENSORS** LIGHTEN UP?




*Where and how can IoT sensors be applied to lighten up the water sector?*

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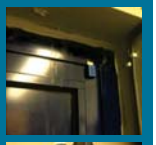
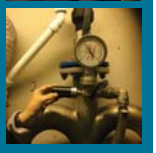
## HOW TO MAKE A PUMPING STATION SMART IN 30 MINUTES?





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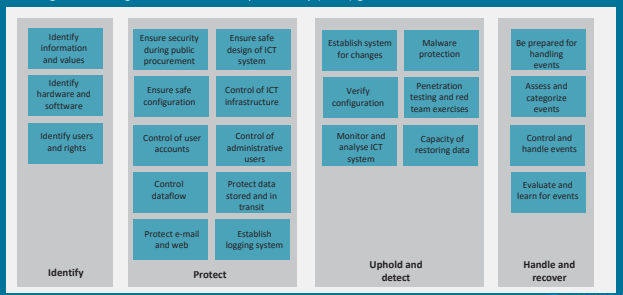
## WHAT DOES THIS MEAN FOR WATER ?

- End- to end encryption?
- No SCADA connection?
- If using SCADA data, PUSH not PULL data?
- A flexible, scalable and secure platform for handling IoT is required!

## MAIN PRINCIPLES FOR CYBERSECURITY IN WATER

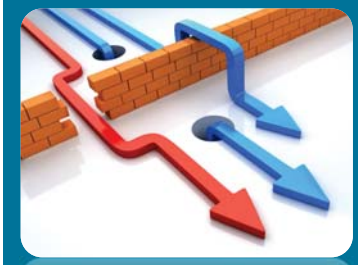
Following The Norwegian National Security Authority (NSM) guidelines




https://www.nsm.stat.no/publikasjoner/rad-og-anbefalinger/grunnprinsipper-for-ikt-sikkerhet/introduksjon/

## PENETRATION TESTING

Identification of vulnerabilities in infrastructure and solutions



- «White hat hacker» approach
  - Are the barriers good enough?
  - Are there any backdoors?
  - Known vulnerabilities?
- Tests:
  - *Inside test* (what can you do when you are already inside the system?)
  - *Outside test* (is it possible to enter from cloud/web?)

## A PRACTICAL CYBERSECURITY RECOMMONDATION....

Meny VVS aktuelt

**Digital vannbransje - muligheter og sikkerhetsrisiko**

**Digitalisering i vannbransjen er en kjempemulighet for videre utvikling, men alle som arbeider i bransjen må tenke nøye gjennom hva de gjør. Sjefstrateg i Powel, Jon Rostum, stilte en rekke inngående spørsmål om sikkerhet til 300 bransjefolk under Nordisk Drikkevannkonferanse i Oslo.**

Av Odd Borgestrand

https://www.vvsaktuelt.no/digital-vannbransje-muligheter-og-sikkerhetsrisiko-124283/nyhet.html

*«Think safety and be careful with your stick. Think twice before you stick it in. It might become a source of infection. Only use it once! «*