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Software is Vital

Secure Software Engineering for the Age of Smart Cities

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AEROSPACE · SPACE · GROUND TRANSPORTATION · DEFENSE · SECURITY

TRUSTED PARTNER FOR A SAFER WORLD

Wherever safety and security are critical, Thales delivers. Together,
we innovate with our customers to build smarter solutions. **Everywhere.**

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Thales e-Security

Our track record. Over 40 years of leadership delivering data protection solutions around the world

Our customers. We secure some of the world's most valuable information and > 80% of payment transactions

Our commitment. Hundreds of R&D staff dedicated to excellence in applied cryptography

Our certifications. All our offerings are independently security certified - more than anyone else!

Our support services. Our Advanced Solutions Group (ASG) provides world-class consulting, training, and deployment assistance

Hardware Security Modules

Key management systems

Network encryption

Signing and time stamping

Banking   **Government**   **Utilities**   **High Tech**   **Mobile**

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About your speaker
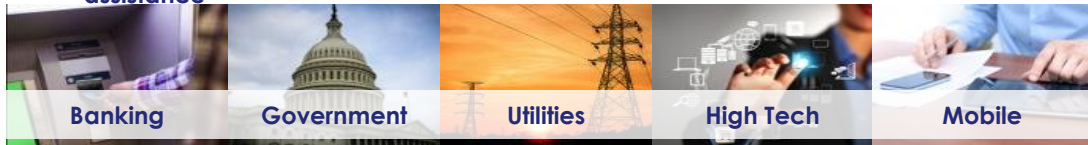
Chief Technology Officer at Thales e-Security

Career in security at many scales

> nCipher (Lead Architect, Director Technical Strategy)
>   - And founder of OASIS KMIP

> ARM (Director of Technology, Secure Services Division)
>   - And Board Director at GlobalPlatform

> Trustonic (Chief Technology Officer)
>   - And Chair of GlobalPlatform Security Task Force

> Thales e-Security (Chief Technology Officer)

Planes, trains and automobiles. And smart phones. And credit cards…

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So…why are we here?

The Fifth International Conference on Communications, Computation, Networks and Technologies

INNOV 2016
August 21 - 25, 2016 - Rome, Italy

Submit a Paper

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Security, Trust, and Privacy

Security and Privacy for Internet of Things and Cyber-Physical Systems; Security control and management in smart cities; Trust and credential negotiations in dynamic environments; Privacy and citizen-profiles; Intrusion prevention and containment; Security in clouds and visualization approaches; Architectural support for security; Security, privacy, and dependability; Security in cooperative networks; Data protection strategies; Collaborative Internet attack containment; Micro-kernels and robustness; Surveillance; Biometrics; Electronic Data Interchange (EDI); Cyber Security; Cryptography; Secure protocols

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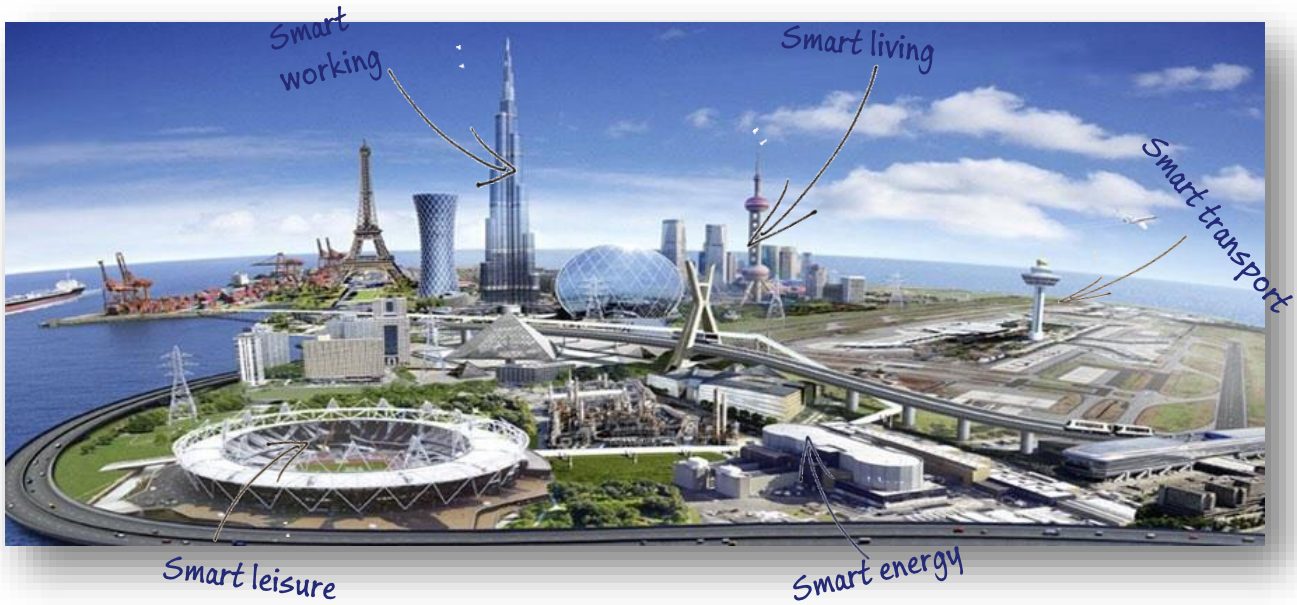
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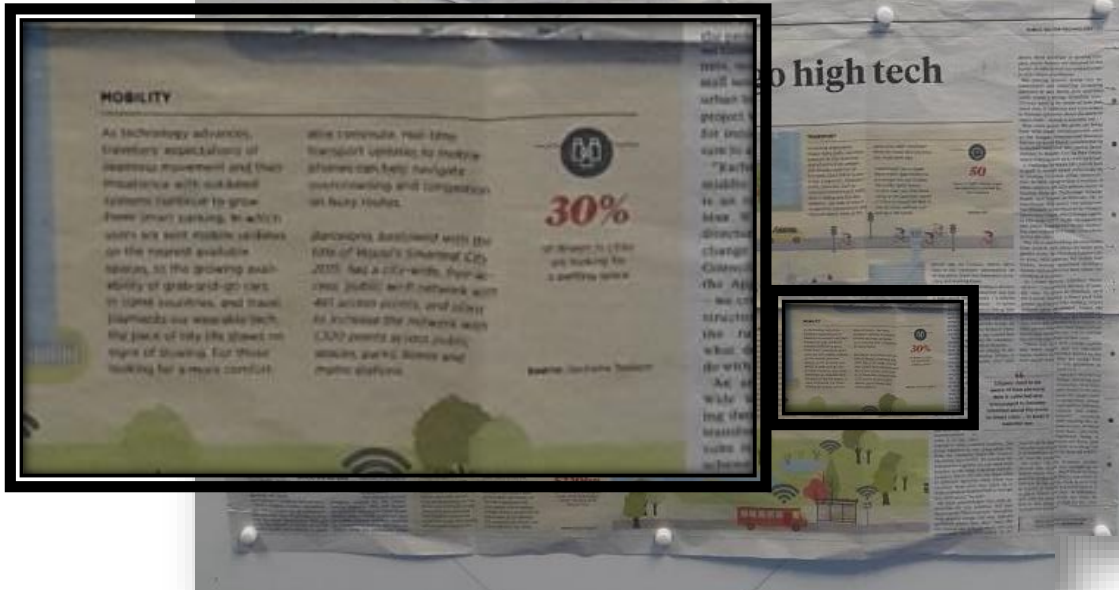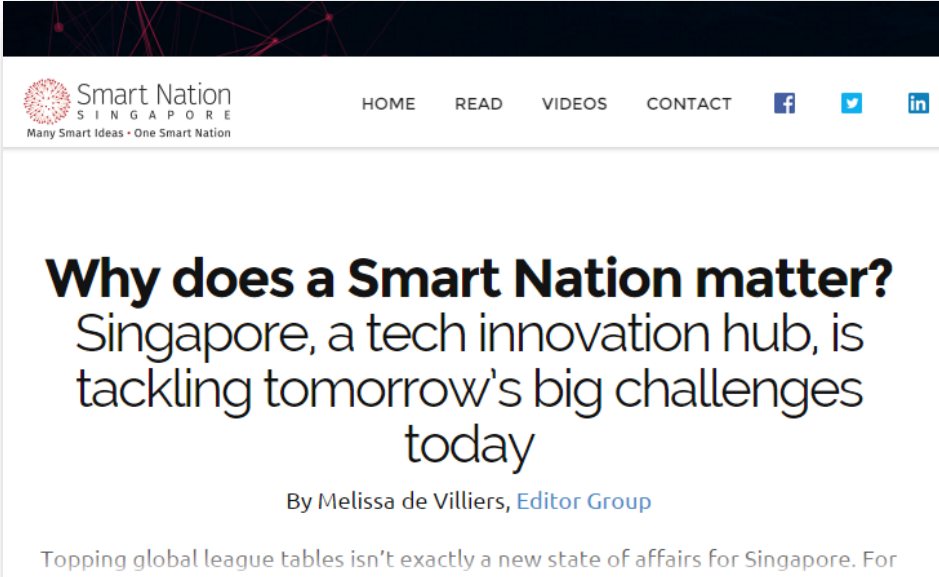
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"Smart Cities"

Smart working

Smart living

Smart transport

Smart leisure

Smart energy

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Smart cities…a mainstream idea

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Smart cities…a mainstream idea

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Smart cities…a mainstream idea

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Smart cities...a mainstream idea

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Smart cities…not ambitious enough?

Why does a Smart Nation matter?
Singapore, a tech innovation hub, is tackling tomorrow's big challenges today

By Melissa de Villiers, Editor Group

Topping global league tables isn't exactly a new state of affairs for Singapore. For

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Smart cities…not ambitious enough?

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Smart Cities…Connected Living…but how will we get there?

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Smart Cities…Connected Living…but how will we get there?

Revolution on the streets as cities go high tech

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What about 'Cloud'?

Image Author=Brian Solis, License=Creative Commons Attribution 2.0 Generic

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What about 'Cloud'?

> Six decades into the computer revolution, four decades since the invention of the microprocessor, and two decades into the rise of the modern Internet, all of the technology required to transform industries through software finally works and can be widely delivered at global scale.
>
> In short, software is eating the world.

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What could *possibly* go wrong?

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The Internet of Things

A new model economy

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Connected Home

OPEN

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On the Internet of things, nobody knows you're a dishwasher.

Image Wikimedia Commons, verified copyright free

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The Internet of Bad Things

Internet of Bad Things

🕐 2015-11-13   📁 Cybercrime, Legal issues, News coverage, Politics, Security economics, Security engineering, Security psychology, Web security   👤 Ross Anderson

Wikimedia commons / Markus Kuhn

" As the devices around us become smarter they will become less loyal, and it's not just about malware (whether written by cops or crooks). We can expect all kinds of novel business models, many of them exploitative, as well as some downright dishonesty "

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That's all very well in the home, but…

Image Author=Bell Telecom, License=Creative Commons Attribution-Share Alike 3.0 Unported

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Worlds collide

Software is … everything

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Worlds merge

A conceptual futuristic female robot. Toyota is investing $1bn in artificial intelligence and robotics in Silicon Valley. Photograph: I. Glory / Alamy/Alamy

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A critical problem for Smart Cities

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A critical problem for Smart Cities

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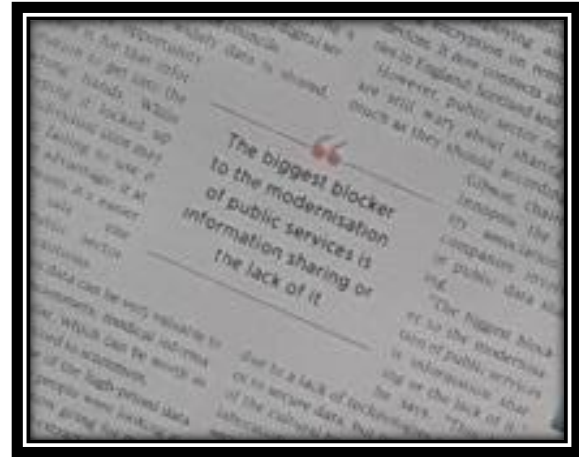
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Data

is

EVERYTHING

is

Data

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Accidental Problems

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Over-reuse

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Remember this?

Six decades into the computer revolution, four decades since the invention of the microprocessor, and two decades into the rise of the modern Internet, all of the technology required to transform industries through software finally works and can be widely delivered at global scale.

In short, software is eating the world.

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Diversity

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That's all very well in the cloud, but…

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Biting the hand that feeds IT

DATA CENTRE   SOFTWARE   NETWORKS   SECURITY   INFRASTRUCTURE   DEVOPS   BUSINESS   HARDWARE   SCIEN

Business

Uber and Volvo take on Ford in race to launch self-driving vehicles

Automated trucks and – gasp! – SUVs could be here in five years' time

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That's all very well in the cloud, but…

Business

Uber and Volvo take on Ford in race to launch self-driving vehicles

Automated trucks and – gas... years' time
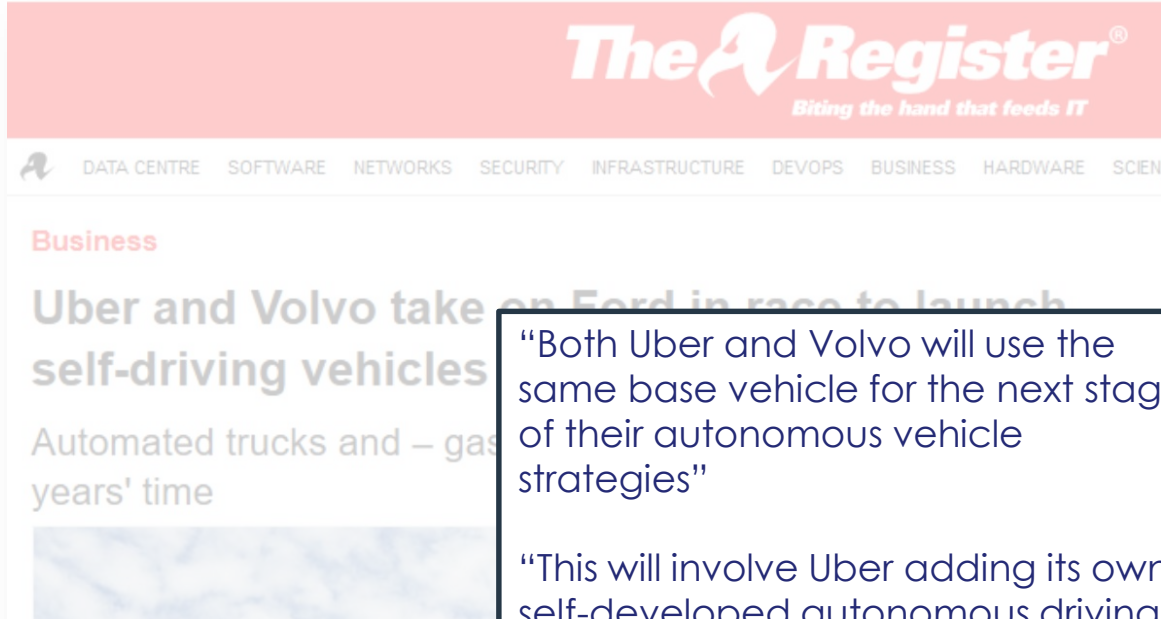
"Both Uber and Volvo will use the same base vehicle for the next stage of their autonomous vehicle strategies"

"This will involve Uber adding its own self-developed autonomous driving systems to the Volvo base vehicle"

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That's all very well in the cloud, but…

SC MAGAZINE
FOR IT SECURITY PROFESSIONALS

NEWS

SC Magazine > News > Connected car vulnerabilities could be reduced with an ounce of prevention

Robert Abel, Content Coordinator/Reporter
Follow @RobertJAAbel

August 09, 2016

Connected car vulnerabilities could be reduced with an ounce of prevention

Share this content:

IOActive researchers found that half of the cyber vulnerabilities in connected vehicles could grant an attacker full or partial control of a vehicle, the majority of which could be fixed with an ounce of prevention.

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"It's somebody else's problem"

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The danger…

everybody's

"It's ~~*somebody else's*~~ *problem"*

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Not Accidental Problems

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Not Accidental Problems

Malign intent

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Unintended consequences

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Remember this?

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Internet of Bad Things

🕐 2015-11-13   📁 Cybercrime, Legal issues, News coverage, Politics, Security economics, Security engineering, Security psychology, Web security   👤 Ross Anderson

" As the devices around us become smarter they will become less loyal, and it's not just about malware (whether written by cops or crooks). We can expect all kinds of novel business models, many of them exploitative, as well as some downright dishonesty "

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DATA CENTRE   SOFTWARE   NETWORKS   SECURITY   INFRASTRUCTURE   DEVOPS   BUSINESS   HARDWARE   SCIENCE   BOOTNOTES   FORUMS

Security

Big Red alert: Oracle's MICROS payment terminal biz hacked

Shops, hotels worldwide warned after support portal pwned

8 Aug 2016 at 22:57, Shaun Nichols

Hackers infected hundreds of computers within Oracle, infiltrated the support portal for its MICROS payment terminals division, and potentially accessed sales registers all over the world.

The miscreants installed malware on the troubleshooting portal to capture customers' usernames and passwords as they logged in. These credentials can be used to access their accounts and remotely administer their MICROS point-of-sales (POS) terminals.

The ranks of MICROS customers are said to include a number of major retail chains as well as hotels, with systems installed in more than 330,000 sites in 180 countries. Whoever broke into the database

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Not Accidental Problems

Un-aligned intent

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Remember this?

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Remember this?

Internet of Bad Things

2015-... nomics, Security engineer...

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Seeing this does not always mean you are at risk.

You are at Risk!

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Cryptography

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Cryptography is Hard

Alice
&
Bob

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Alice & Bob
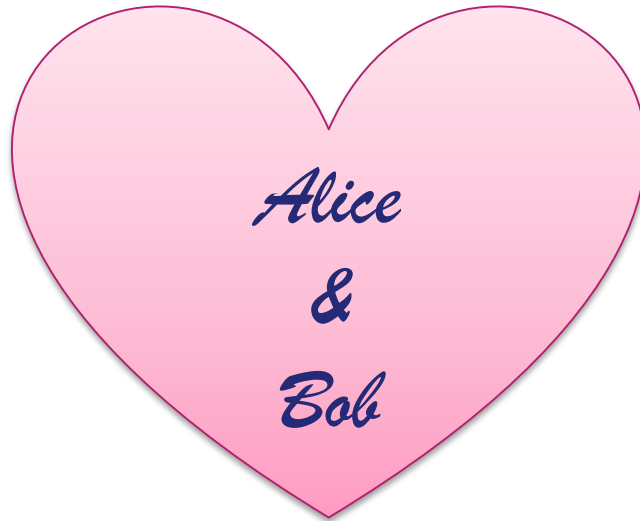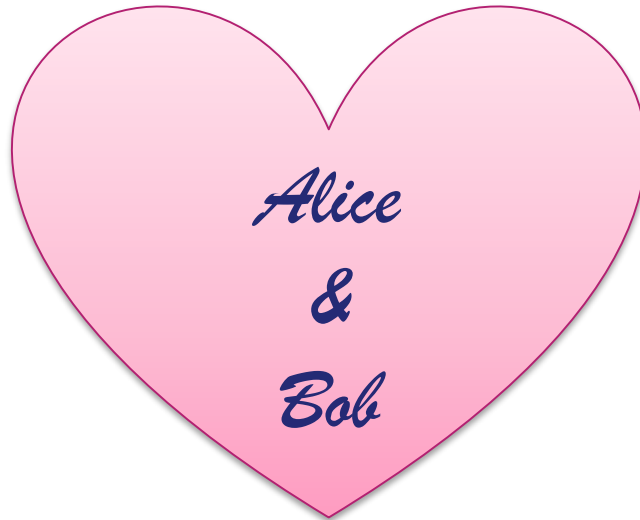
…if only it were this simple…

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Hard Problems

Available expertise

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Life at the cutting edge

10:000

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Reliability and Durability

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How long is a lifetime?

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Why don't we just write better code?

CODE QUALITY 2

XKCD.com

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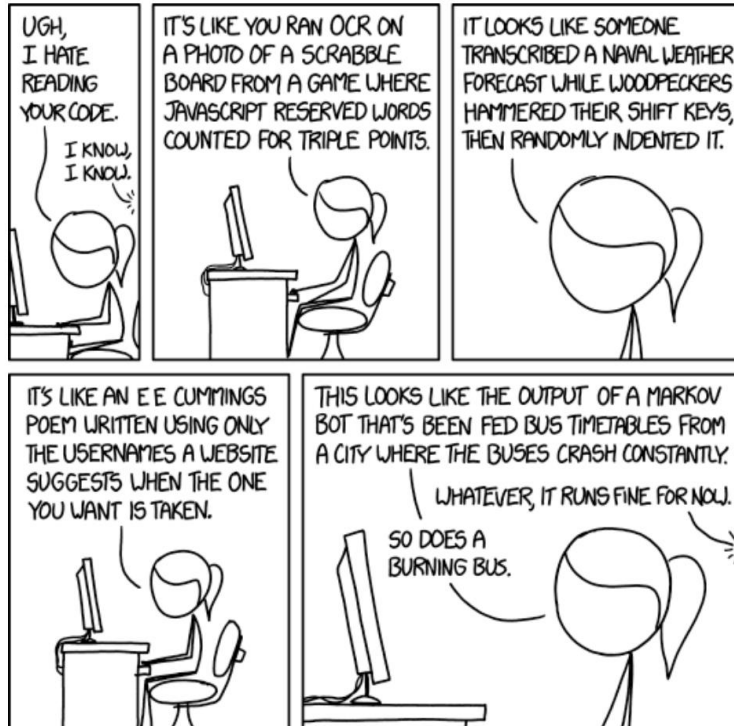
Developing areas that will help

Think like an attacker!

> Software has to work in adverse conditions, not just ideal ones

The cloud can help

> Concentrating expertise where it's needed
> Population level analytics
> Being online can move the hard parts of protocols around

Isolation technologies

> Software *and* hardware

Software quality tools

> If they are used properly!
> Simulation needs to catch up

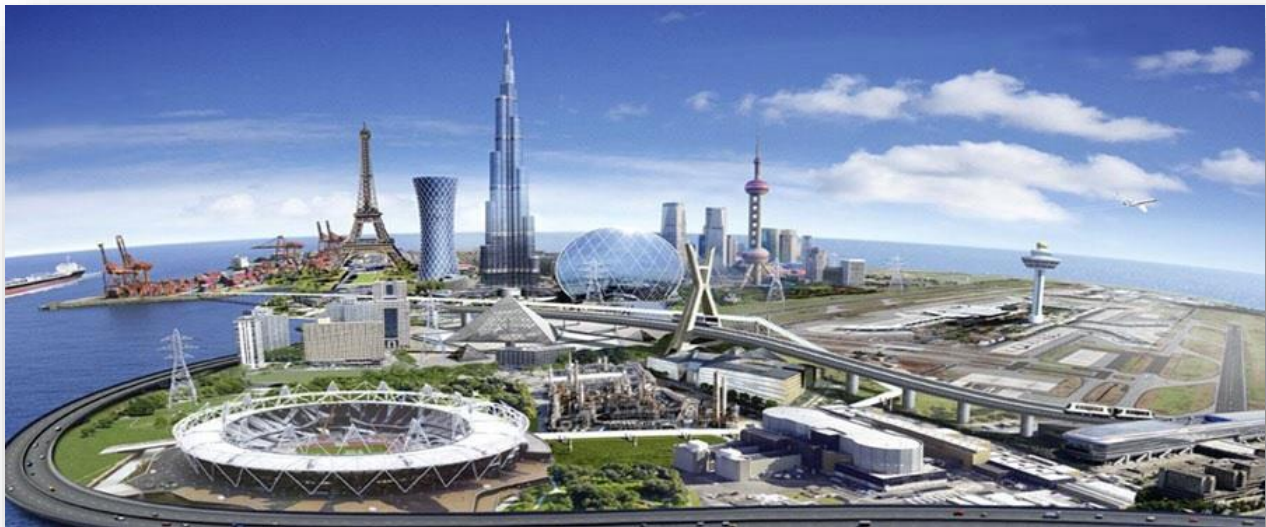**More sophisticated security standards**

> Common Criteria iTC?

Regulation

> Money talks…

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Because this is the world we want…

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…not this one!

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Questions?

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