KU LEUVEN

Fast, Furious and Insecure

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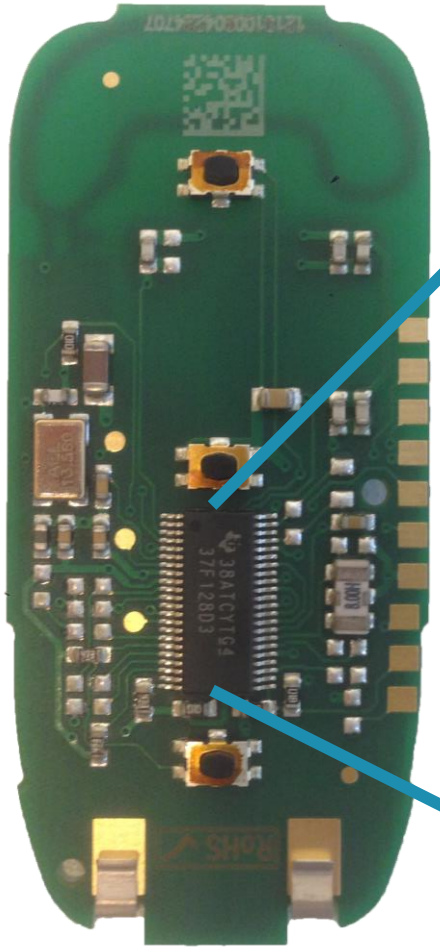
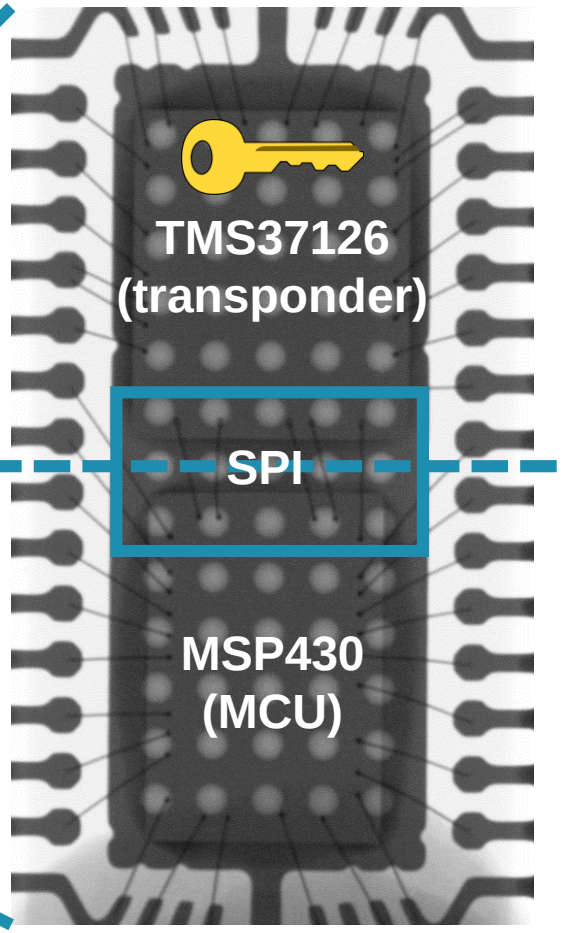
COSIC

an imec research group at KU Leuven

The Tesla Model S key fob



TI TMS37F128



X-ray picture

No firmware readout protection

Findings

- 40-bit key DST40 cipher [1]
  - 40-bit challenge and 24-bit response

[1] Steve Bono, Matthew Green, Adam Stubblefield, Ari Juels, Aviel D. Rubin and Michael Szydlo
In Proceedings of the USENIX Security Symposium (2005), vol. 31, pp. 1–16.

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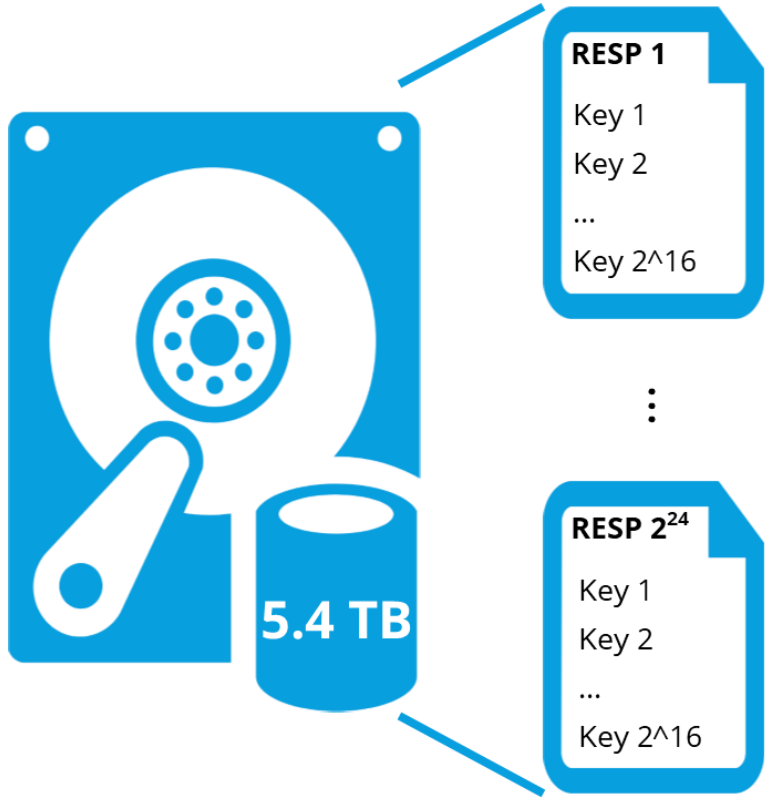
  - 40-bit challenge and 24-bit response
- No mutual authentication

- Time-Memory Trade-Off Table
  - Key recovery in ~2s on a Raspberry Pi



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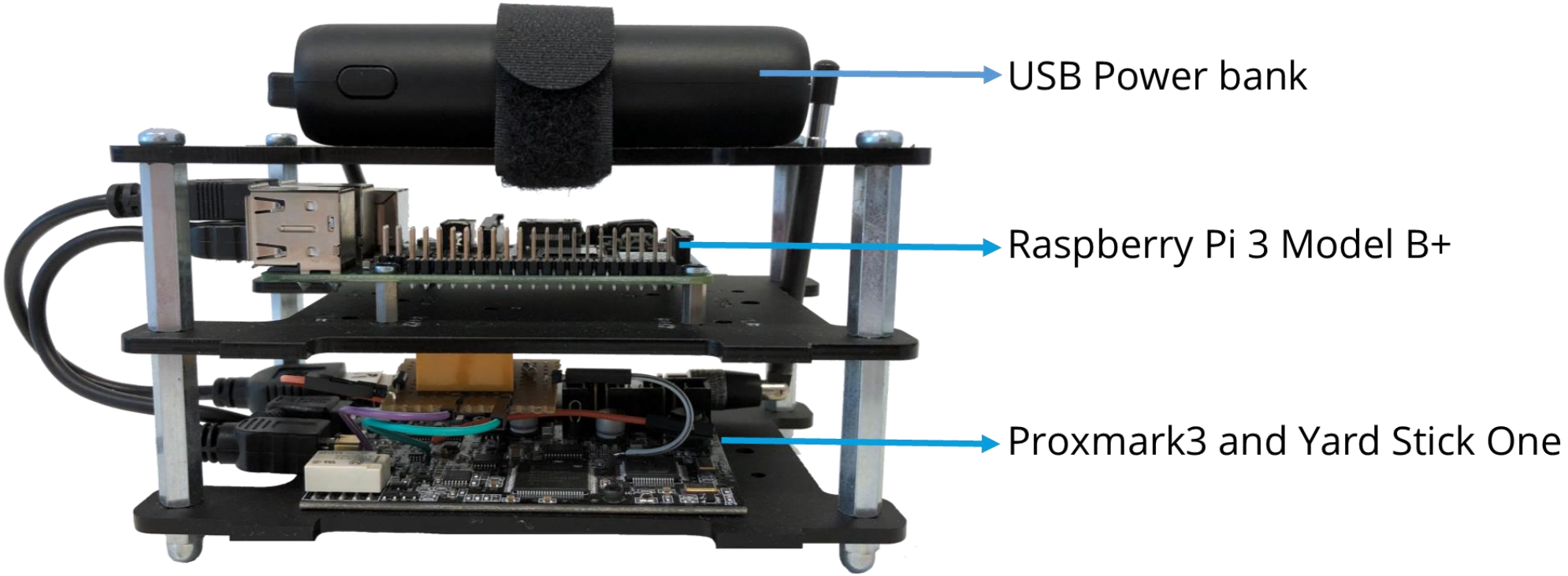
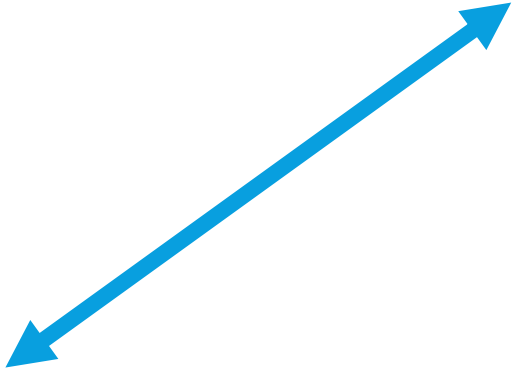
Proof of Concept attack

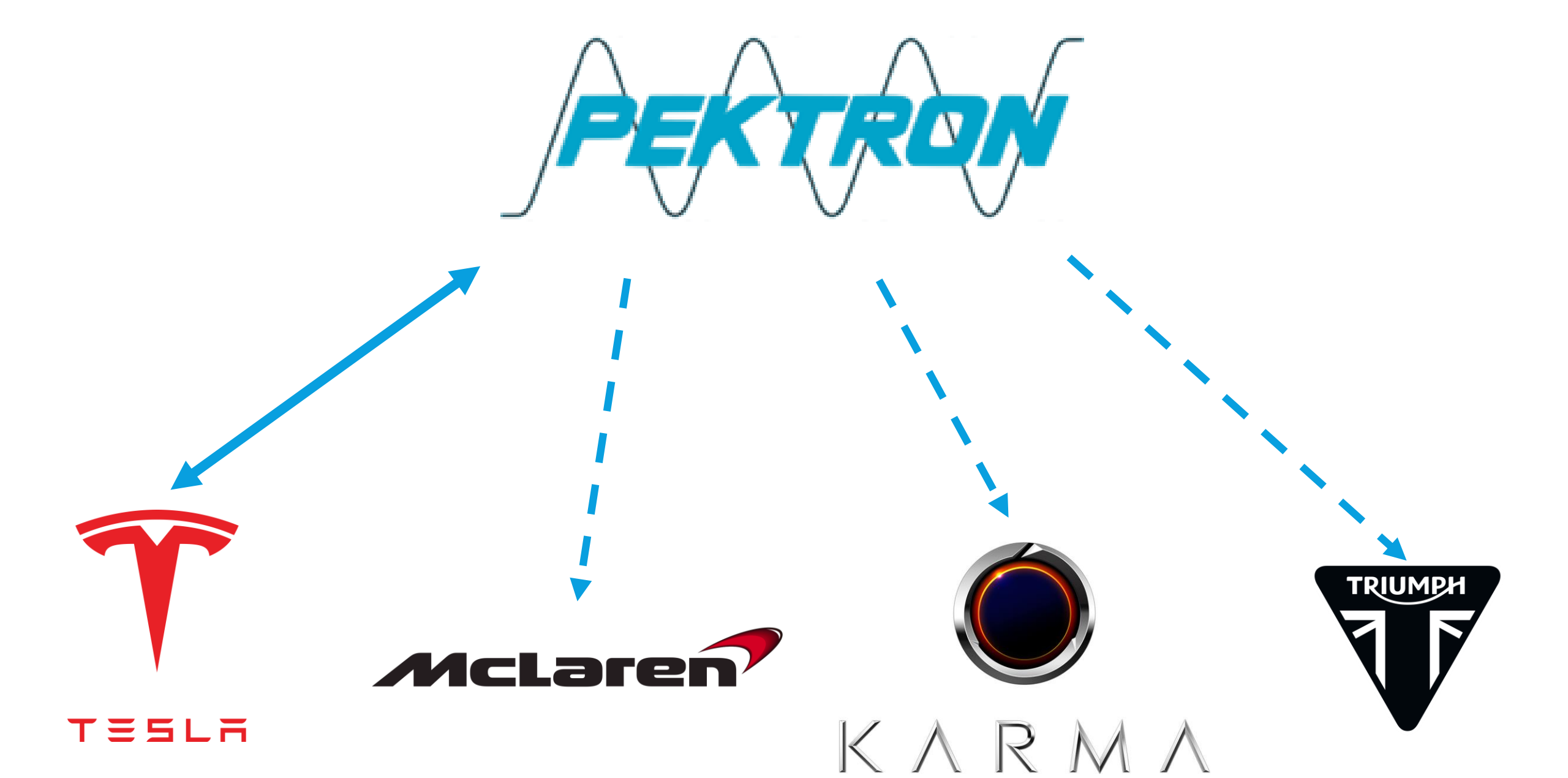



TESLA

PEKTRON



TESLA


PEKTRON
TESLA
McLaren
KARMA
TRIUMPH

Responsible disclosure

- First notified Tesla on 31/08/2017

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More information

- esat.kuleuven.be/cosic/cosic-cryptography-blog/
- Poster sessions
- @CosicBe or @LennertWo
- WIRED article
- Live demo?!