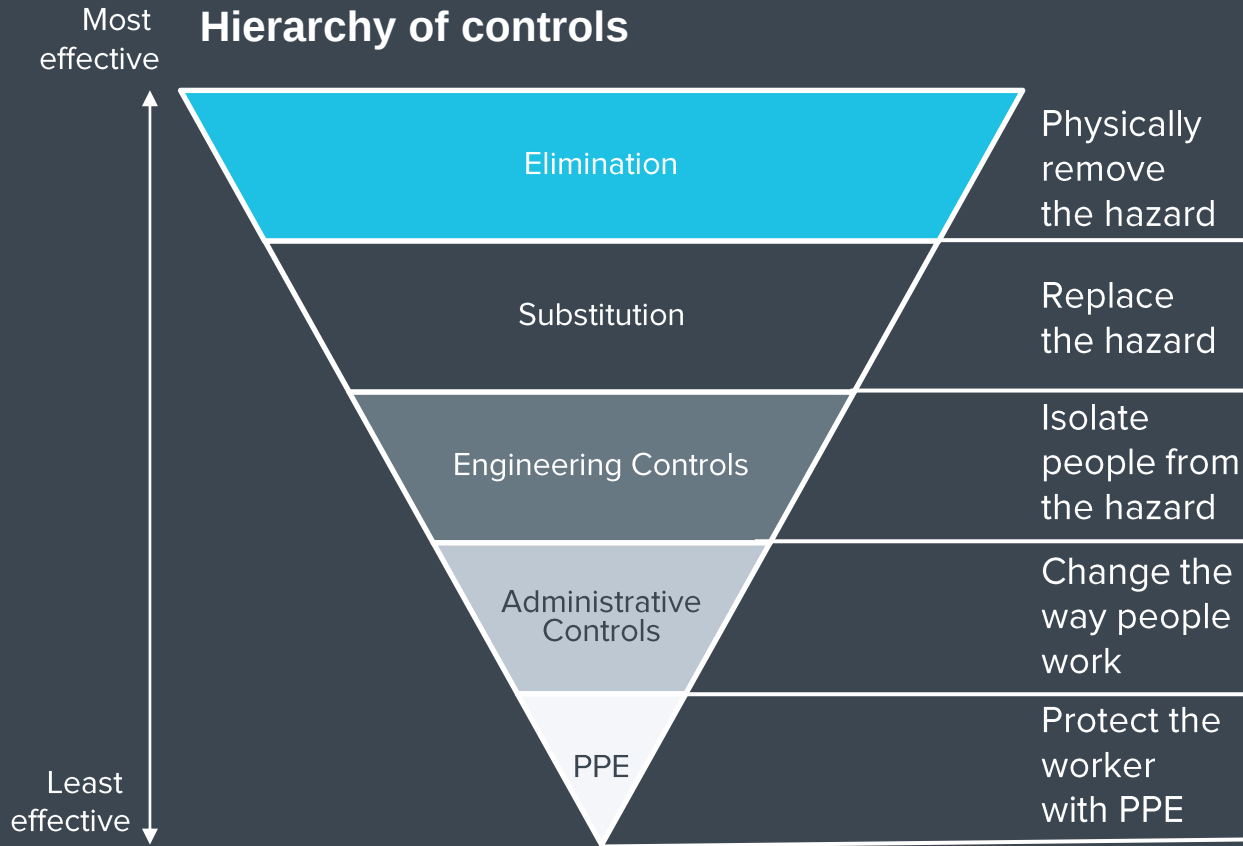




IMPROVE PASSENGER & WORKFORCE SAFETY WITH S&C PREDICTIVE MAINTENANCE

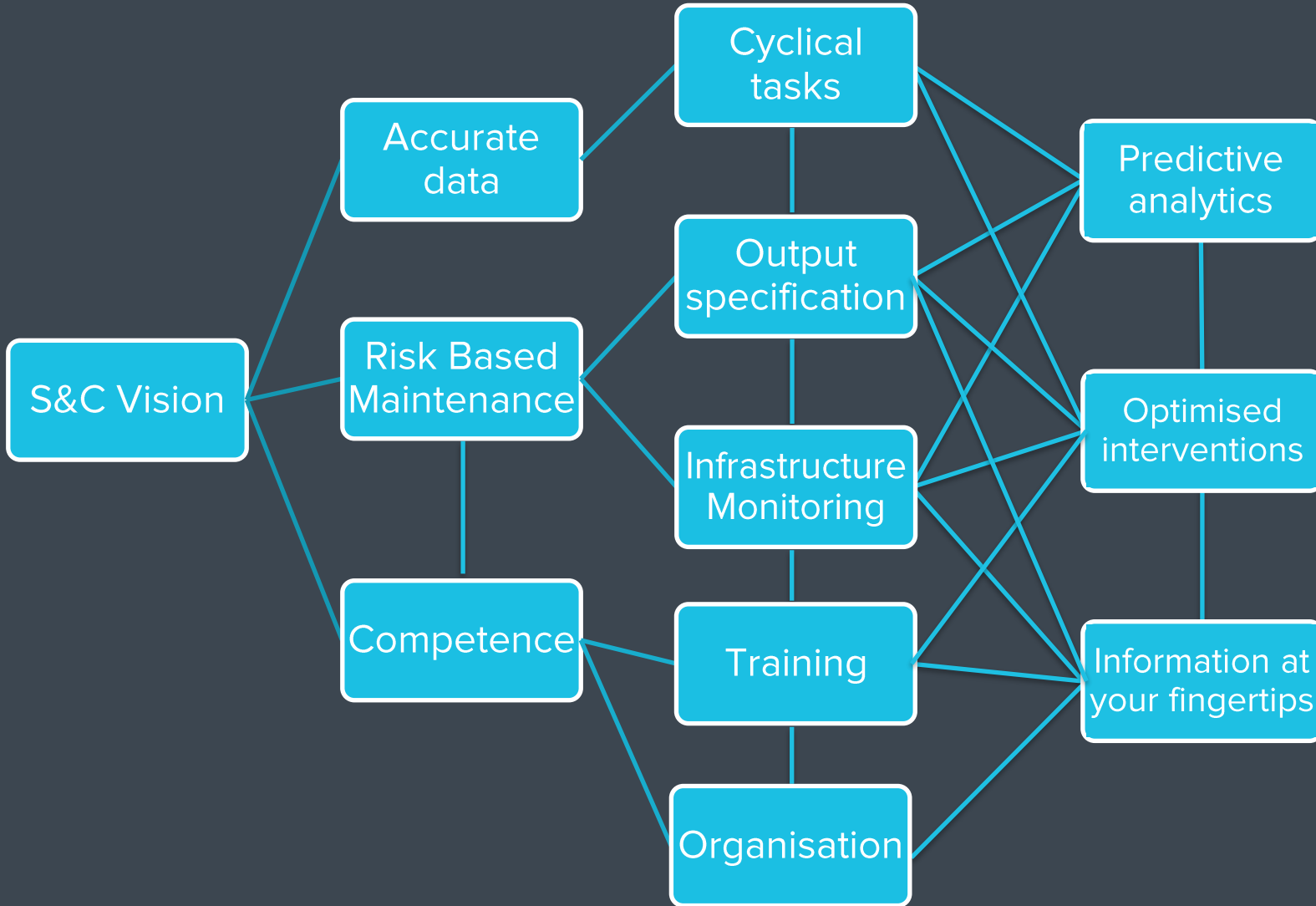
Permanent Way Institution

Making the railway safer using predictive maintenance



Nick Millington's challenge:

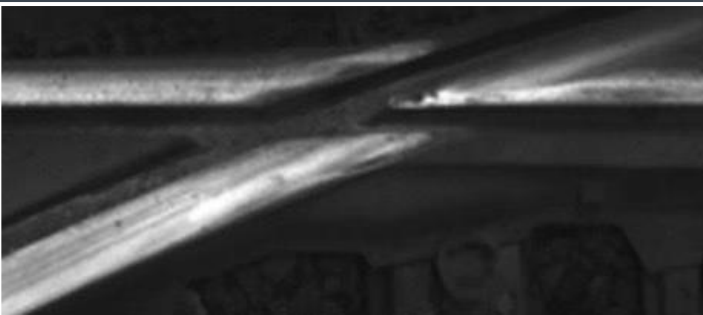
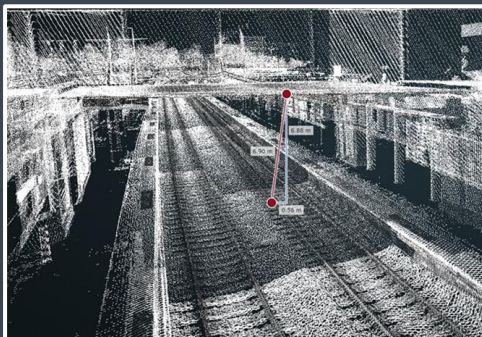
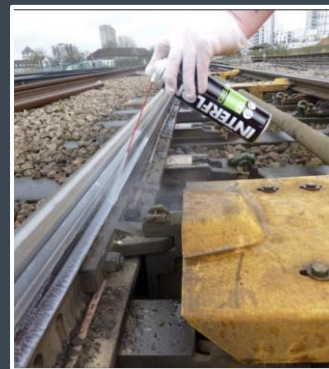
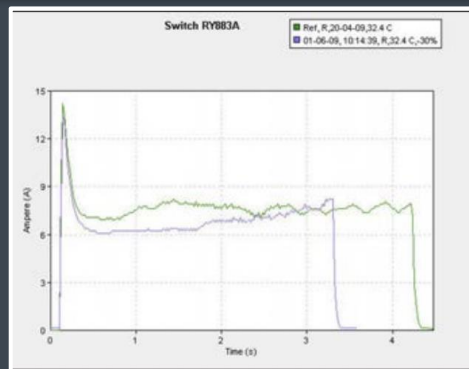
“How can we 100% inspect and maintain S&C without putting a human within the gauge envelope of a passing train?”



S&C Management and Maintenance

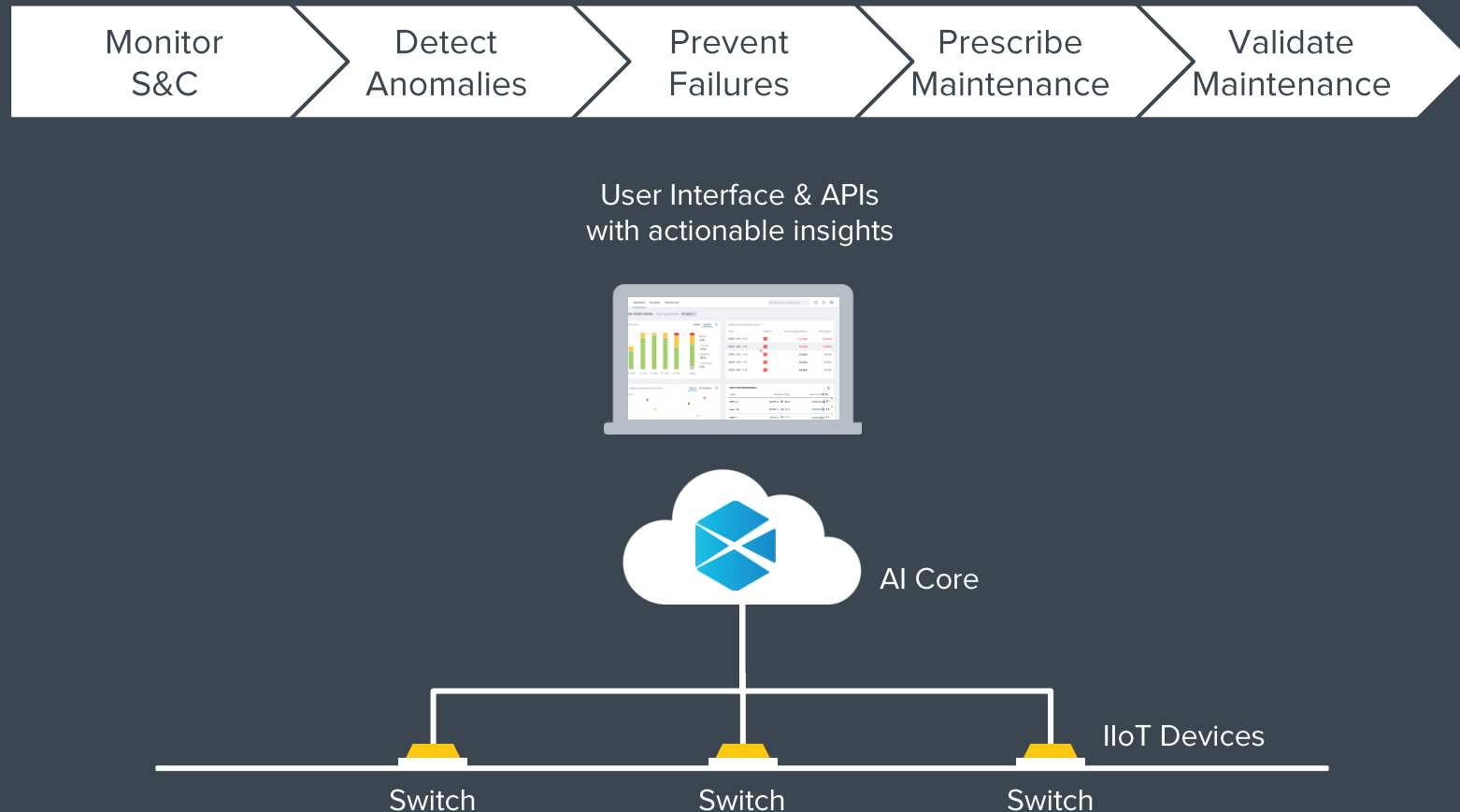
Getting it right is complicated and difficult....

....but the benefits of doing so are huge

[illegible]

Right data?
Right place?
Right time?
Right information?
Right treatment?

KONUX combines artificial intelligence and the Internet of Things to deliver a Predictive S&C Maintenance Solution



A yellow, rectangular sensor device is mounted on a concrete base on a railway track. A black cable runs along the rails, passing by the device. The background shows the rails and gravel of the track.

Our device has proven itself in the field for over 4 years

1000 S&C currently monitored across 10+ railways

Network Rail full product acceptance certificate obtained August 2021

25mph to 215mph train speeds supported

Can be fitted to any S&C type - fully autonomous

Unique and mature feature set

Displacement monitoring – safely, continuously and remotely monitor assets under load

NR/L2/TRK/1054 Clause 9 Track Condition:

- Where voiding is identified, record it.
- Where practicable, void meters should be used to measure voiding.
- Lift and pack any voids over 7 mm within the specified timescales.

NR/L2/TRK/001/mod05 Clause 13.4 Voiding in S&C:

- Voiding within three metres of switch toes shall not exceed 7mm.
- Adhere to the enhanced limits (4mm) in NR/L3/TRK/3406 where modular joints are fitted.

Vertical Acceleration Insights - Squat Identification



Trackbed maintenance (9 activities) ?

[How to add maintenance activities?](#)

Region ▼

Time period **Last 12 months** ▼

Evaluation ▼

Maintenance effectiveness

5

Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar

Activities to review

01/13/2022



Possible tamping detected

[Asset 4 · at frog](#)

Review

December 2021

12/10/2021



Possible tamping detected

[Asset 3 · at frog](#)

Review

12/09/2021



Possible tamping detected

[Asset 7 · at frog](#)

Review

February 2022



02/21/2022

Trackbed maintenance

[Asset 2 · at frog](#)

02/01/2022

Trackbed maintenance

[Asset 9 · at frog](#)

January 2022



01/20/2022

Trackbed maintenance

[Asset 5 · at frog](#)

01/17/2022

Trackbed maintenance

[Asset 4 · at frog](#)

01/12/2022

Trackbed maintenance

[Asset 4 · at frog](#)

December 2021



12/09/2021

Trackbed maintenance

[Asset 3 · at frog](#)

12/08/2021

Trackbed maintenance

[Asset 7 · at frog](#)

November 2021

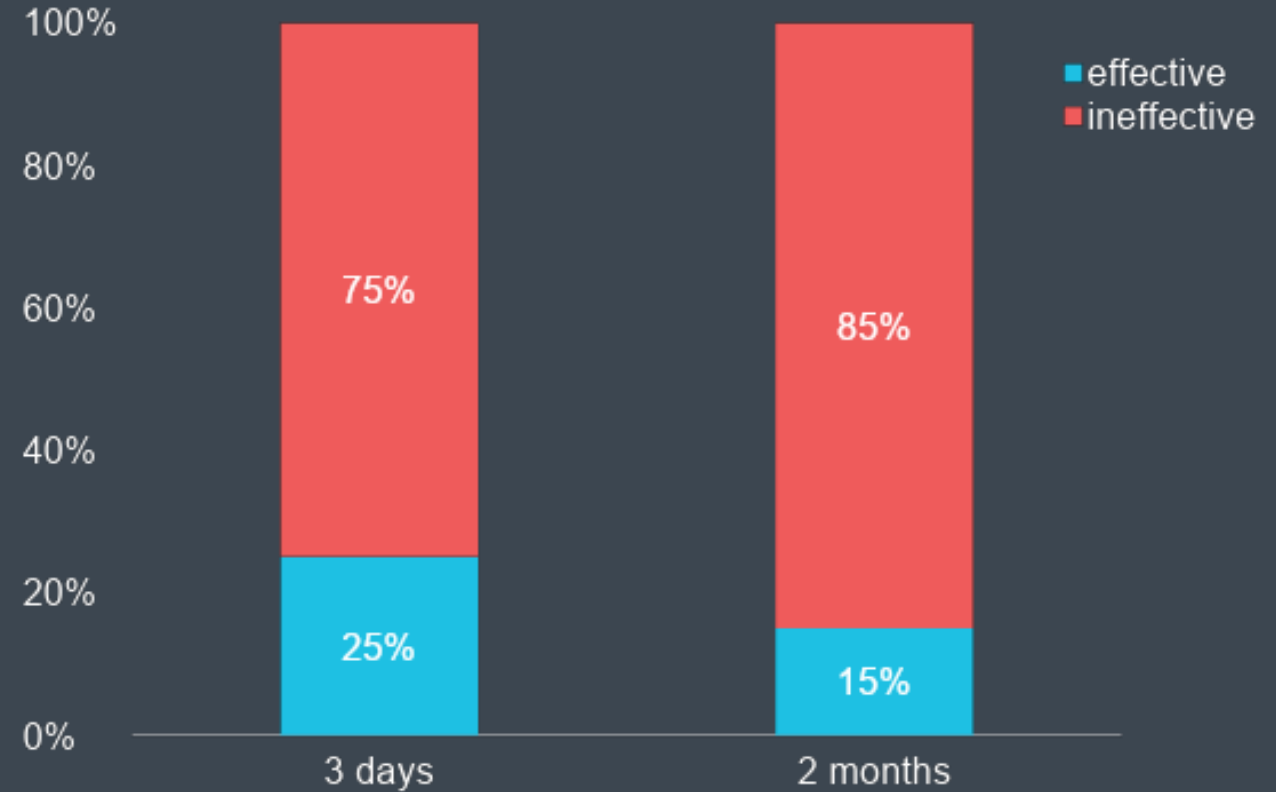
Maintenance Quality Check

- Evaluate the impact of different maintenance interventions
- Resolve the root cause and sustain the fix
- Identify training needs



We analyzed 100+ tamps

Trackbed maintenance effectiveness after 3 days and 2 months



*Effective = at least 15% reduction of vertical displacement; vertical displacement below 3 mm; sustained for 60+ days

Predicting asset condition has huge benefits

SAFER WORKFORCE

- Reduced on-site tasks
- Fewer repeat visits
- Less firefighting



↓ **20% DELAY MINUTES**



PASSENGER EXPERIENCE

- Less unplanned disruption
- Improved availability
- Assurance of asset condition



↑ **25 % MAJOR COMPONENT LIFE**



OPTIMIZED MAINTENANCE

- Regimes aligned to current & predicted asset condition & load



↑ **25% S&C UNIT LIFETIME**





**S&C
Alliance**

**150+ YEARS S&C
EXPERTISE**





OneBigCircle


Staytite



KONUX

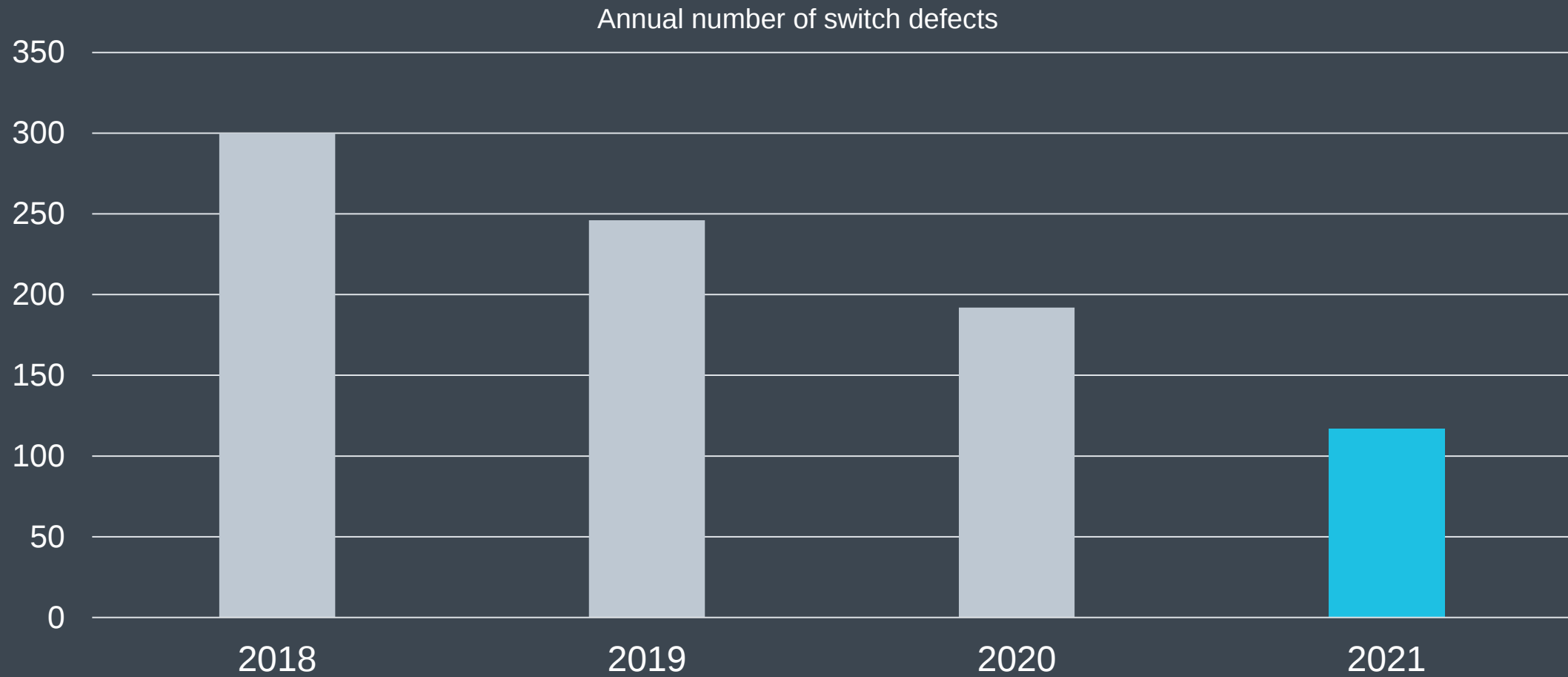
FAST PATCH
SP!KE FAST


INTERFLON

flexilube
smart lubrication

 **S&C**
Alliance

Great results are achievable!



LET'S COLLOBORATE TO IMPROVE SAFETY!

Tim Flower, UK Account Director
timothy.flower@konux.com

