



# 3SK - World class knowledge and experience

## Excellence in Systems, Safety and Software Engineering



3SK are ISO 9001 certified by BSI under certificate number FS 749486 for:

'The provision of system design and development, consultancy, training and auditing for safety critical embedded systems and functional safety software'





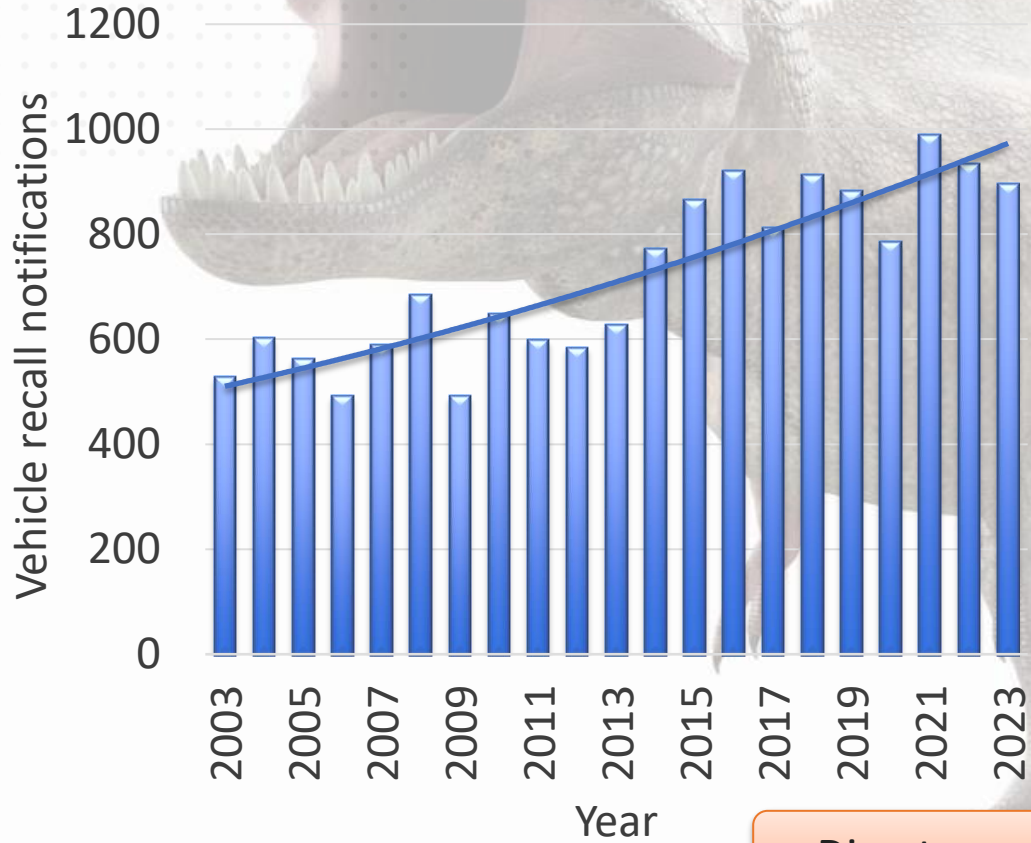
## SDV...?

- Being visionary about creating brilliant User Experiences (UX)
- Making every journey enjoyable, enriching, fun
- Creating valuable revenue streams
- Enabled by software intensive systems

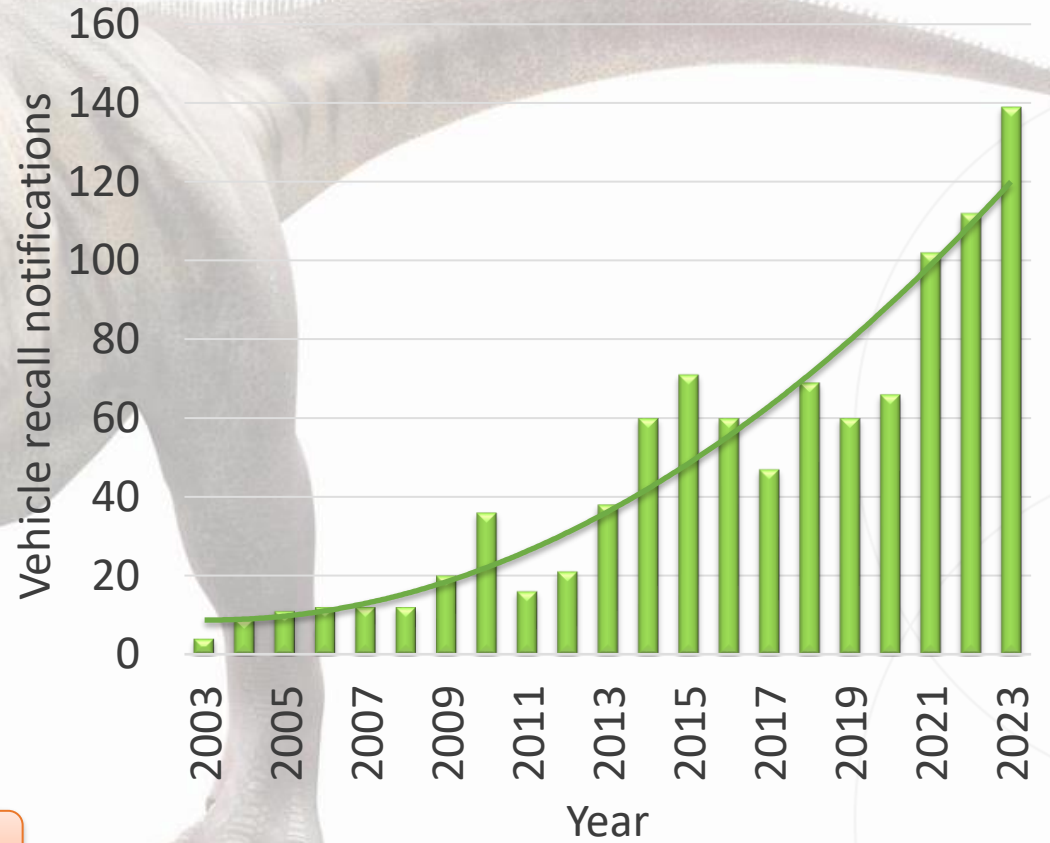


# Recall trends

## Total # of Recalls (USA)



## Software Related Recalls (USA)



Disastrous UX...

...Extinction?



**Volvo EX30 owners refunded over software issues**



**Ford recalls more than 30,000 Mustangs over steering control**

"It appears that the software update performed in response to the first recall [referring to the steering control issue] due to a malfunction to the electronic brake control module, or brake failure."

- ABS and dynamic stability control (DSC) are disabled due to a diagnostic check at start up, disabling both systems.

**Porsche recalls Taycans over sudden power loss problem**



- Electronic stability program (ESP) makes vehicle pull to one side when performing an evasive maneuver. (NTSA Recall 21V-071)

- Electronic stability program issue that caused incorrect intervention due to defects in the yaw sensor software, particularly with the diagnostic procedures. Sensor drift in this case can increase the risk of a crash.

**GM Software 'Fix' Creates Brake Malfunction Issues, Prompts Updated Recall**



- Automatic emergency braking may not engage due to missing software and incompatibilities with new hardware introduced.
- Integrated electronic brake system may detect an abnormal sensor signal decreasing braking performance. This defect was identified as a lack of proper fail-safe logic in the control software. (NHTSA Recall 20V-748)



## SDV ... SW enabled exceptional UX

- 🌐 Being visionary about creating brilliant, revenue generating, UX
- 🌐 Enabled by safe, secure, high quality software intensive systems
  - 🌐 Lean and suitably agile development practices
  - 🌐 Great software architectural design
    - 🌐 Vertical (hardware abstraction, middleware, application layer, .....)
    - 🌐 Horizontal (maintainable, understandable, resilient, .....)
  - 🌐 Appropriate functional safety and cybersecurity analyses and concepts
  - 🌐 Competent and skilled teams using qualified tools