

# Future Technologies in the Access Industry

ROB MESSINA

Sr. VP engineering & technology, Oshkosh Corporation

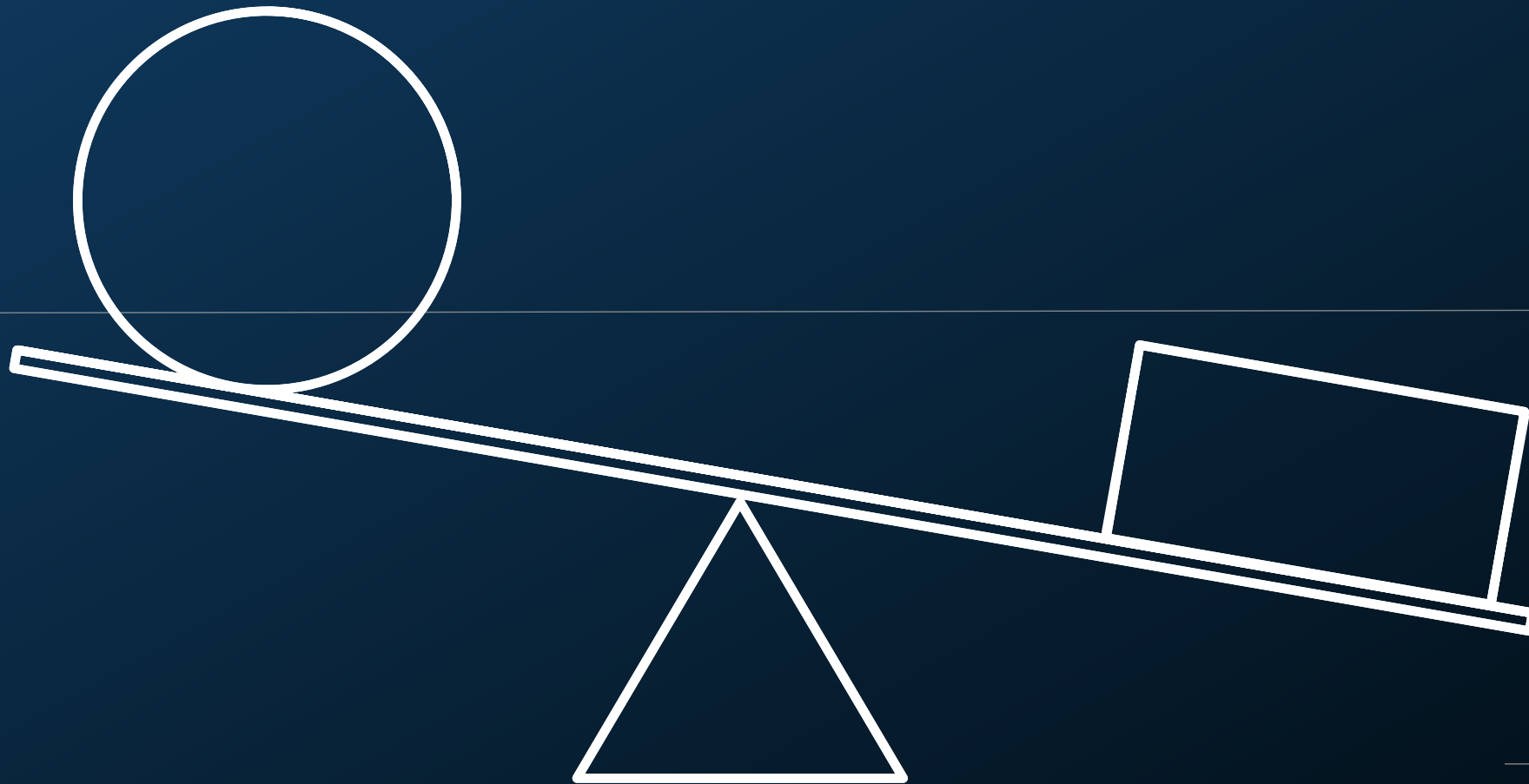


# DIFFERENT INDUSTRIES

adopt **TECHNOLOGY** at different rates



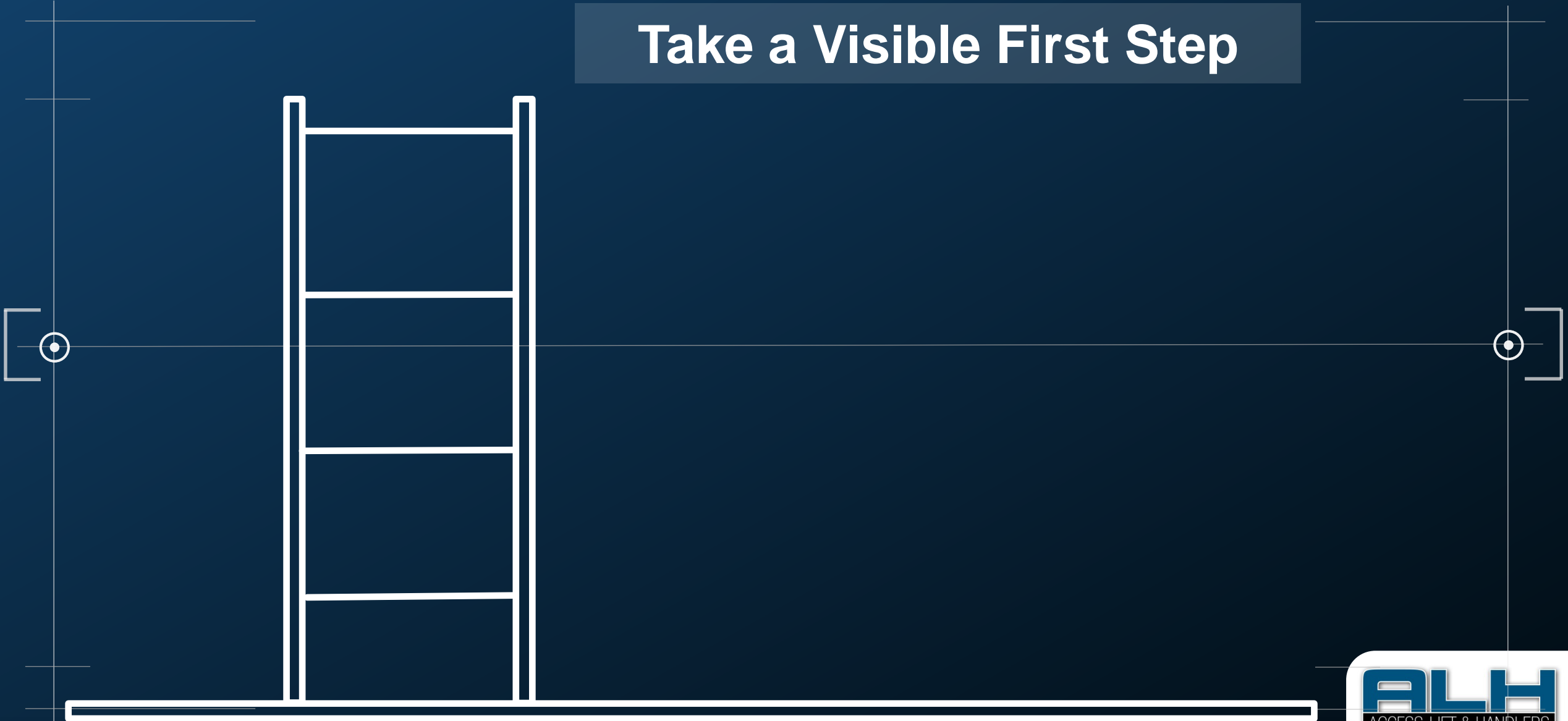
# Simple Machines





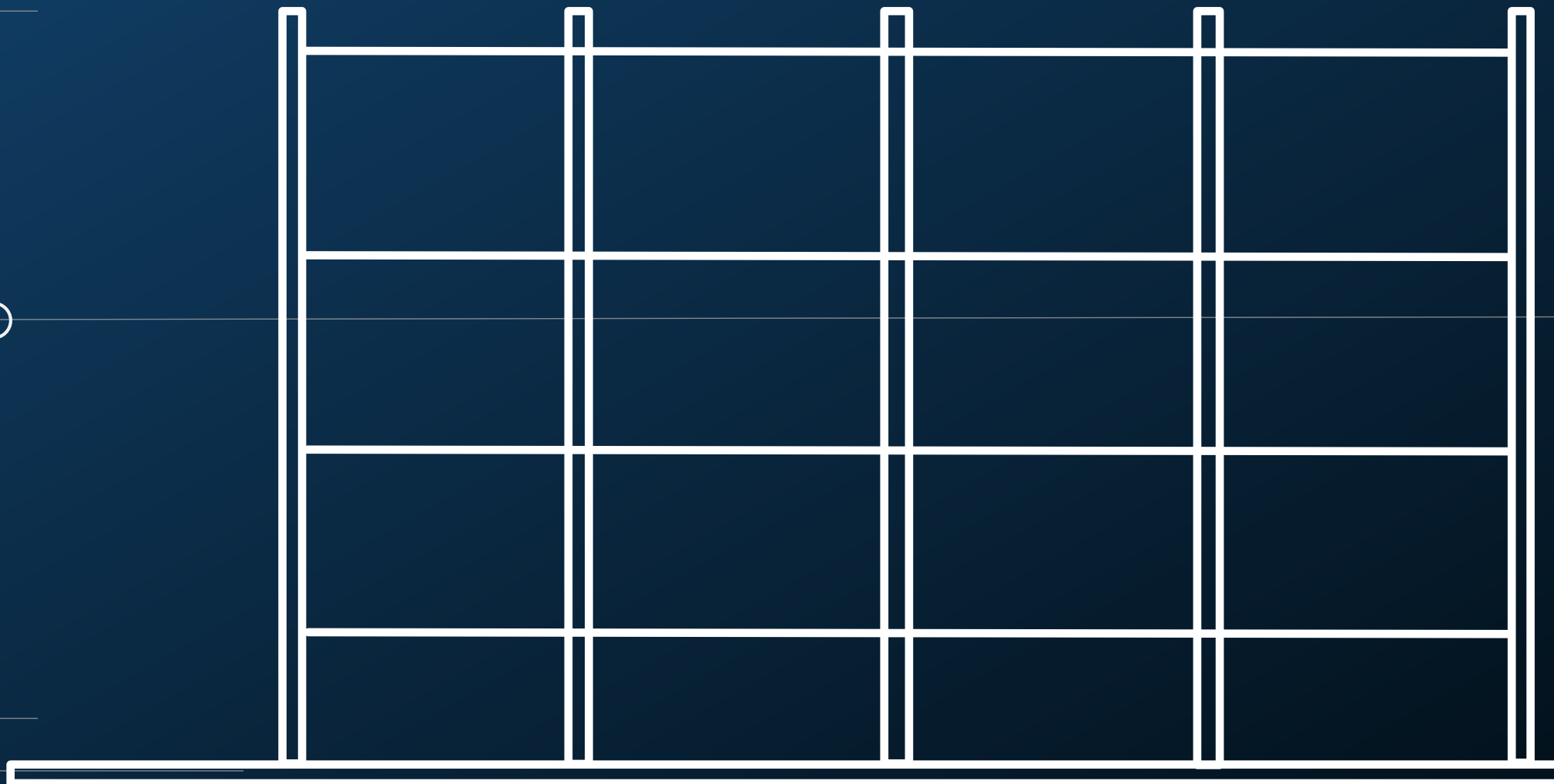
# TECHNOLOGY

**Take a Visible First Step**



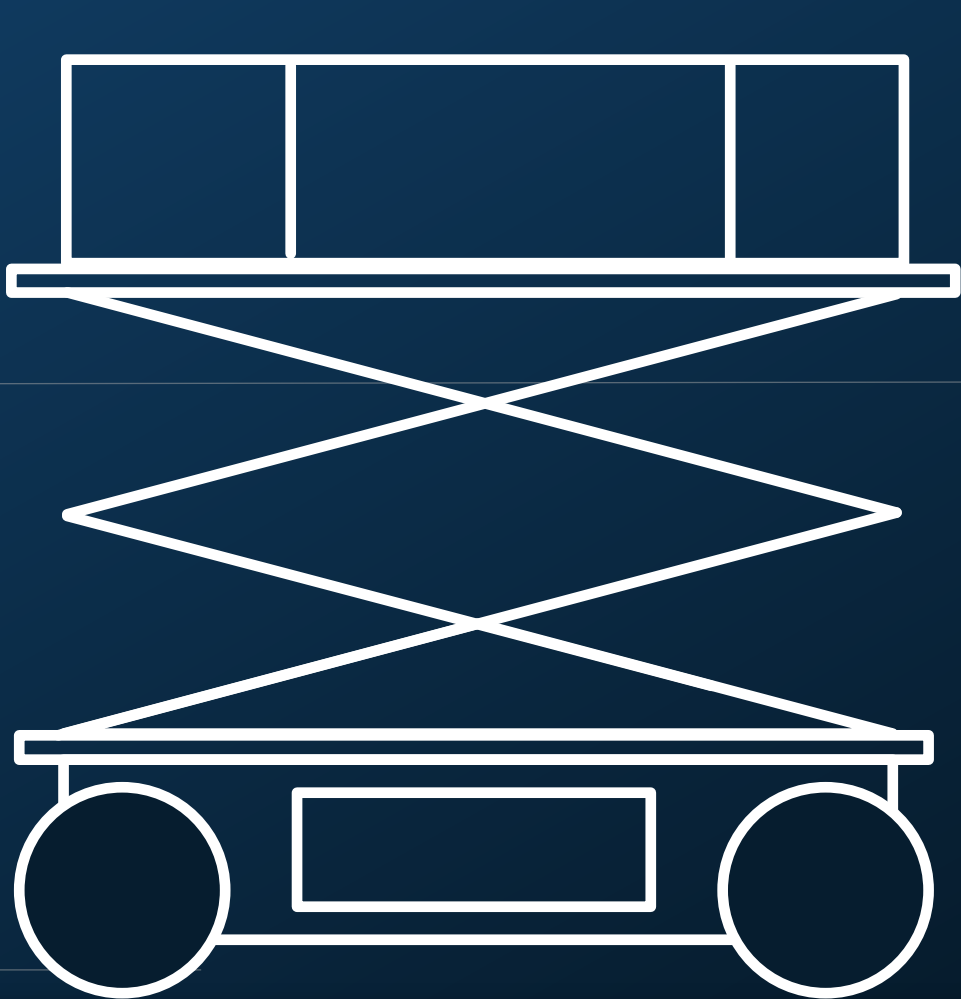
# TECHNOLOGY

Extended



# TECHNOLOGY

## Becoming More Visible



# FUTURE TECHNOLOGIES IN THE ACCESS INDUSTRY





# FUTURE TECHNOLOGIES IN THE ACCESS INDUSTRY

## PRODUCTIVITY



### Mobility



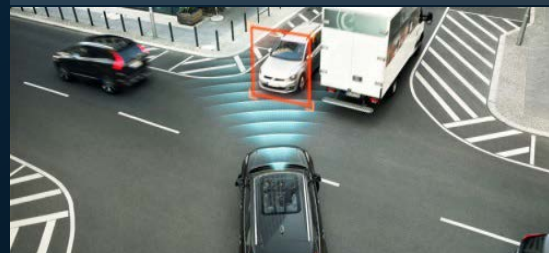
### Connected Products



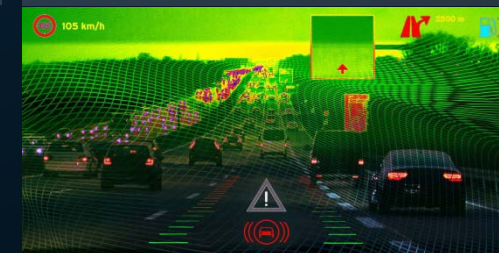
## SAFETY



### Collision Avoidance



### Autonomy





The background features a dark blue and purple color palette with various data visualization elements. On the right side, there is a prominent candlestick chart with several upward-trending bars. A dashed white line represents a trend line following the general upward movement of the bars. In the lower right, there is a line graph with several data points connected by thin lines. The overall aesthetic is technical and data-driven.
$$Productivity = \frac{Value}{Time}$$



# PRODUCTIVITY - DIGITIZATION



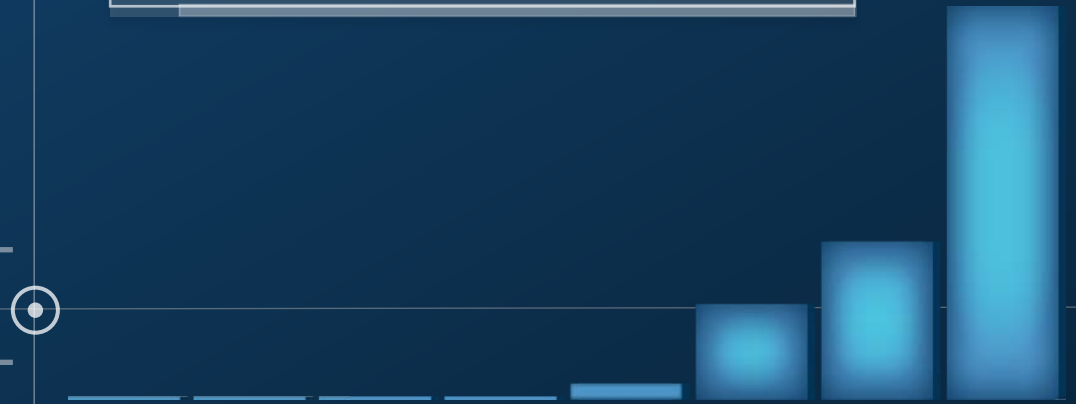
## Electrification Levels

- Traction Systems
- Accessory Systems
- Controls and sensing



# PRODUCTIVITY – THE BIG DATA PARADOX

Exponential Increase in Computing Demand



Today's Demand → Full Autonomy Demand

- Connected and digitized products will produce enough data to outpace Moore's law



Data Rights



Business Model



Privacy



Data Analysis



Capturing Data



Technology



Input Sources



Transfer



Sharing



Visualization



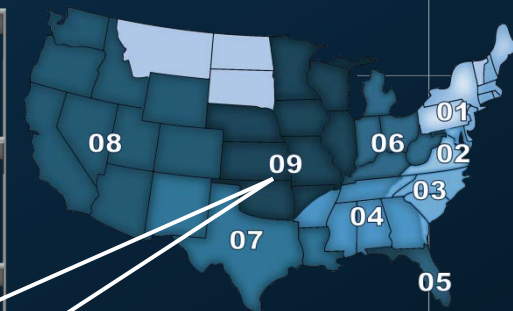
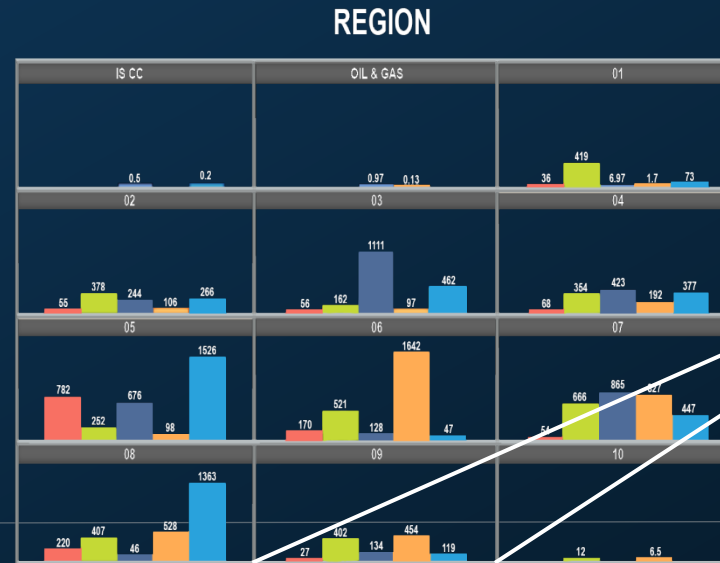
Security

Significant Opportunities

# PRODUCTIVITY - DATA ANALYTICS

## Regional data mining

Impacts of climate, terrain, soil conditions, and duty cycle are discoverable when splitting data regionally.



## Component data mining

Consumption trends become readily visible.





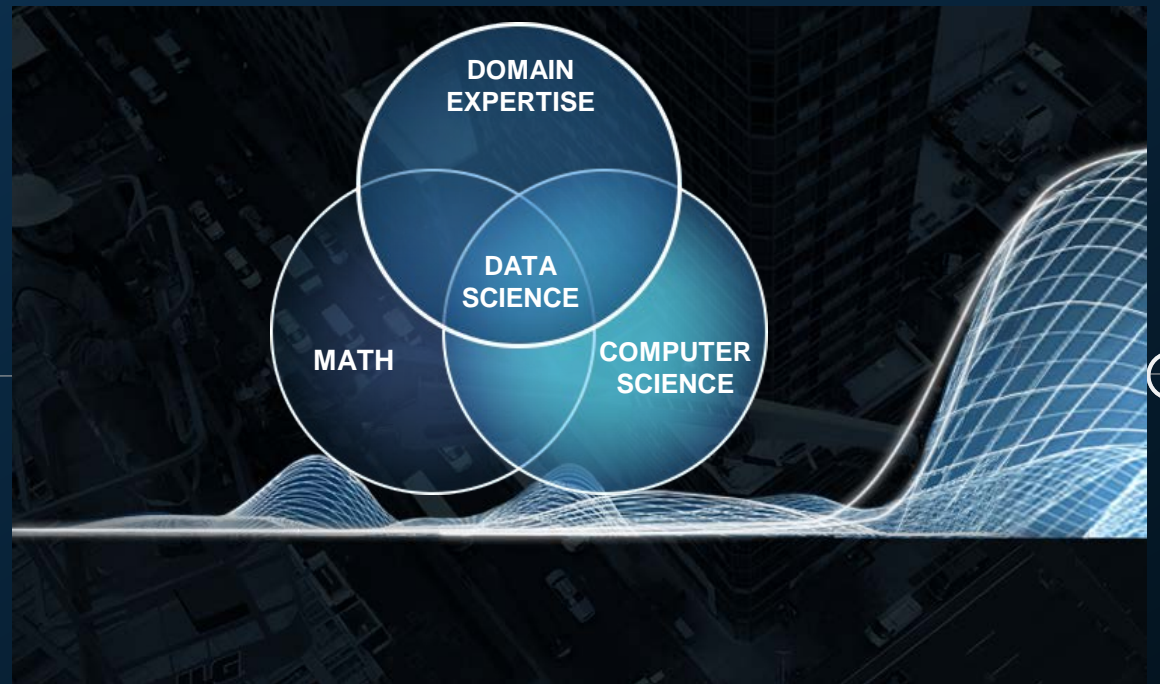
# PRODUCTIVITY – APPLIED DATA

## What is the design space?



Design constraints are normally well understood by the development team.

## What problem are we solving?



Real duty cycle data significantly improves developing the optimum product.

SAFETY IS OUR  
BUSINESS

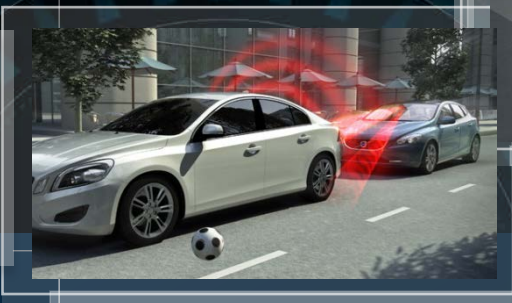


**ALH**  
ACCESS, LIFT & HANDLERS  
CONFERENCE  
& AWARDS 2017



# SAFETY - FIVE LEVELS OF AUTONOMY

Modern Vehicle



Modern Vehicle Plus



Partial  
Autonomy



Full Autonomy  
(+Human)



Full Autonomy  
(no Human)





# SAFETY - AUTONOMY

## DULL



## DIRTY



## DANGEROUS



**47%** Jobs automated within 20 years



# SAFETY - AUTONOMY

## DULL



saf et y

**80%** reduction in construction site falls since 1974

