



Engineering in 2020

TMC Electronics, Roger Hacking

D&E 2016 Den Bosch

V13, 2 November 2016

TMC

**PEOPLE
DRIVE
TECHNOLOGY**

TMC

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DRIVE
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TMC

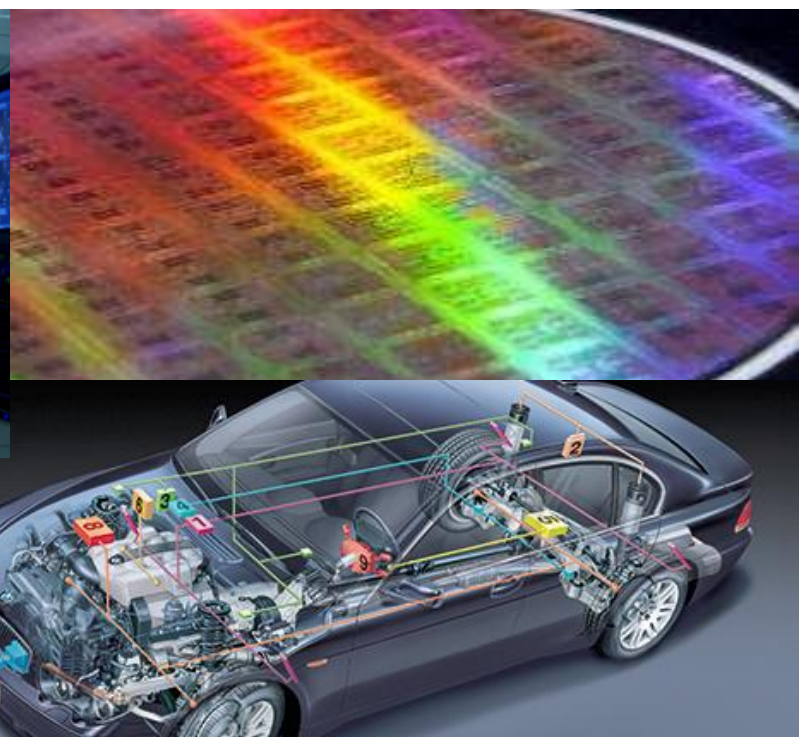
**PEOPLE
DRIVE
TECHNOLOGY**



**TMC Group (~900 People), Entrepreneurial Technology house,
Multi-disciplines, locations in Netherlands and Europe**

Services: In-Sourcing, Consultancy and Projects

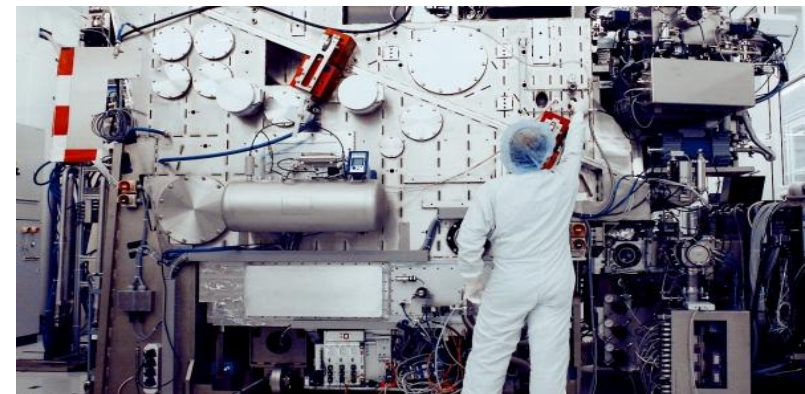
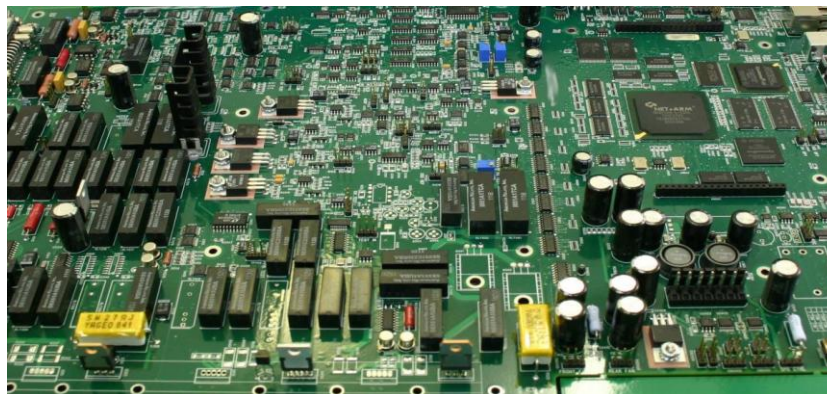
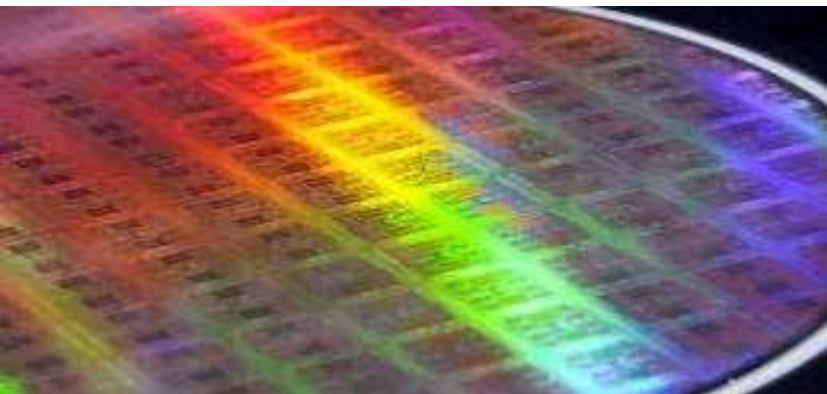
**Business Cells involved in Product Development, from
Research till Mass Production**



TMC Electronics (~60 people in NL), TMC Group ~80 people

Services: Chip, Board, System

Involved in Product Development, from Research till 0-Series





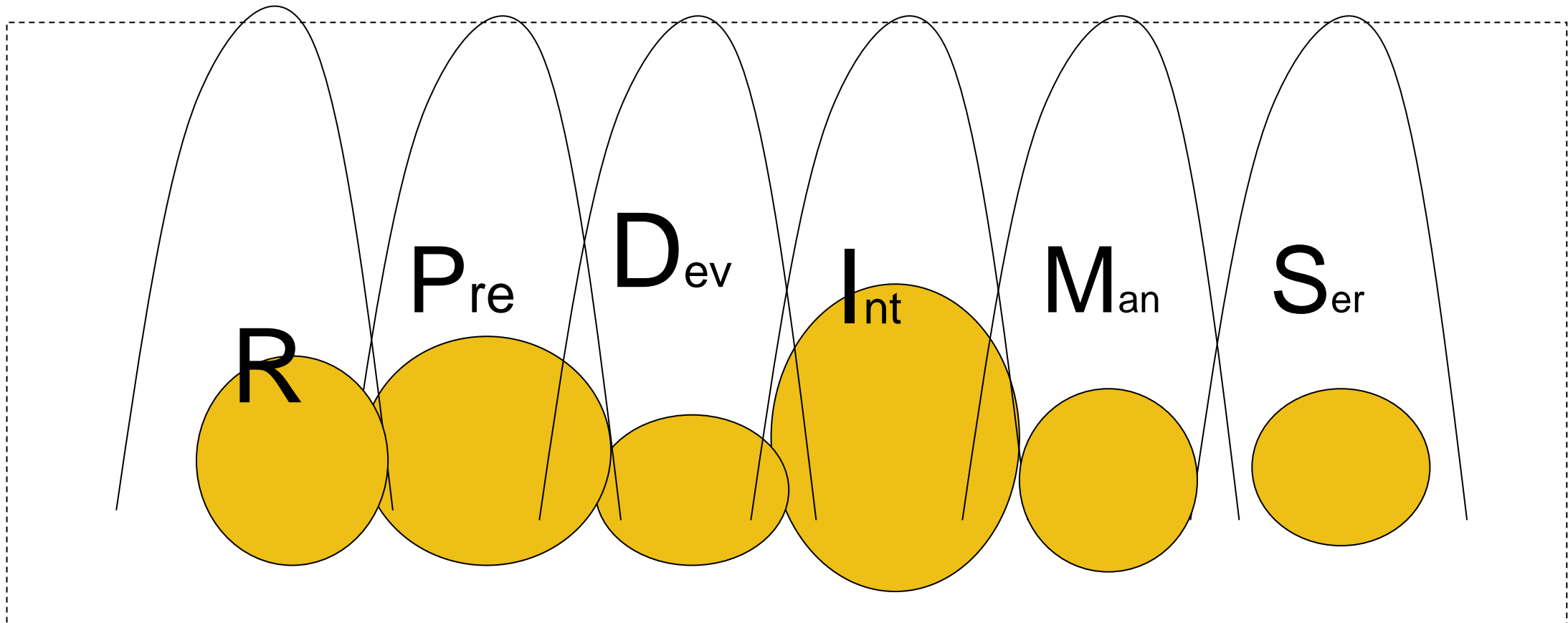
How are products Developed in 2016 ?

Idea

Concept

Proto

Product



CHIP REQUIREMENTS

DESIGN IP & INFRA

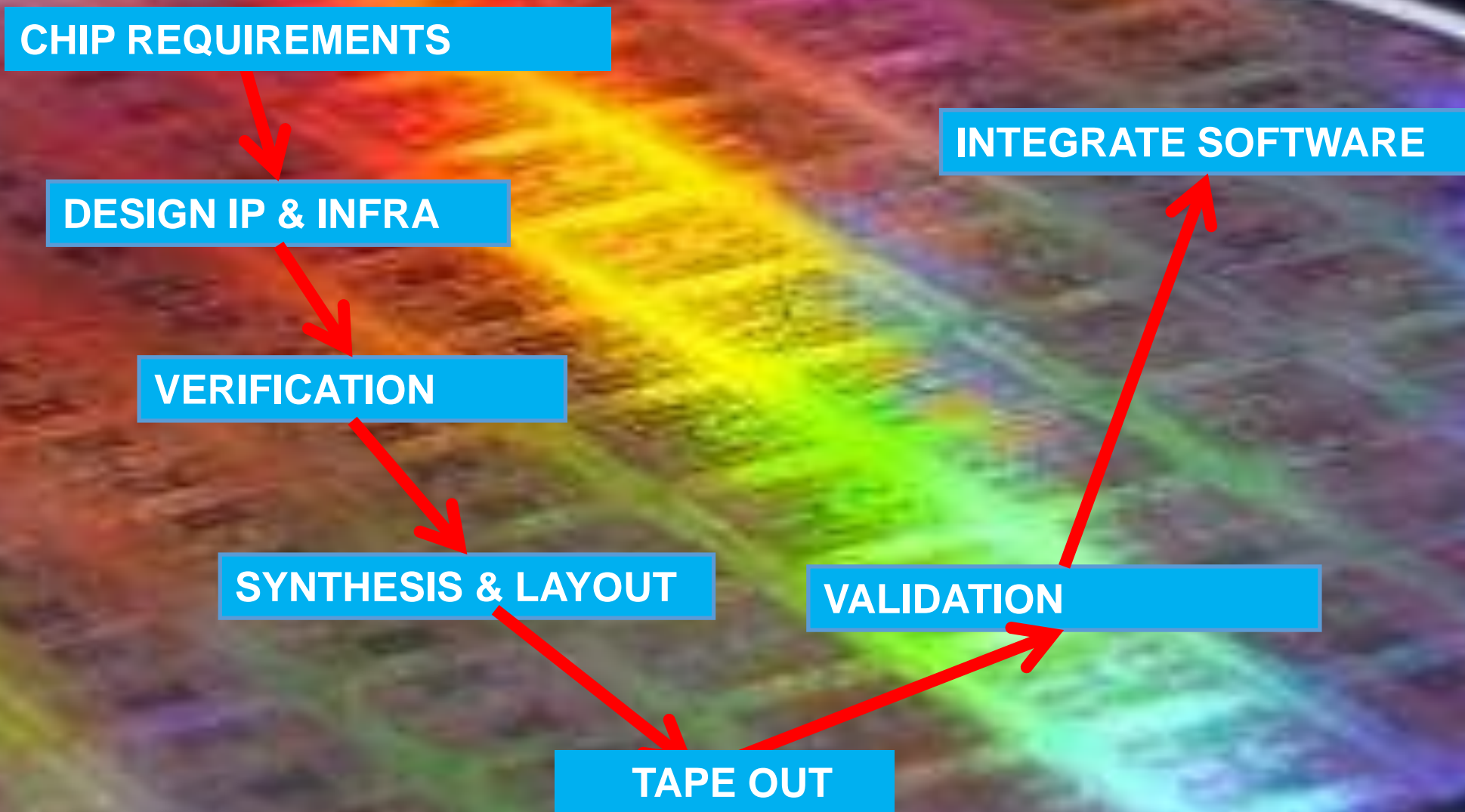
VERIFICATION

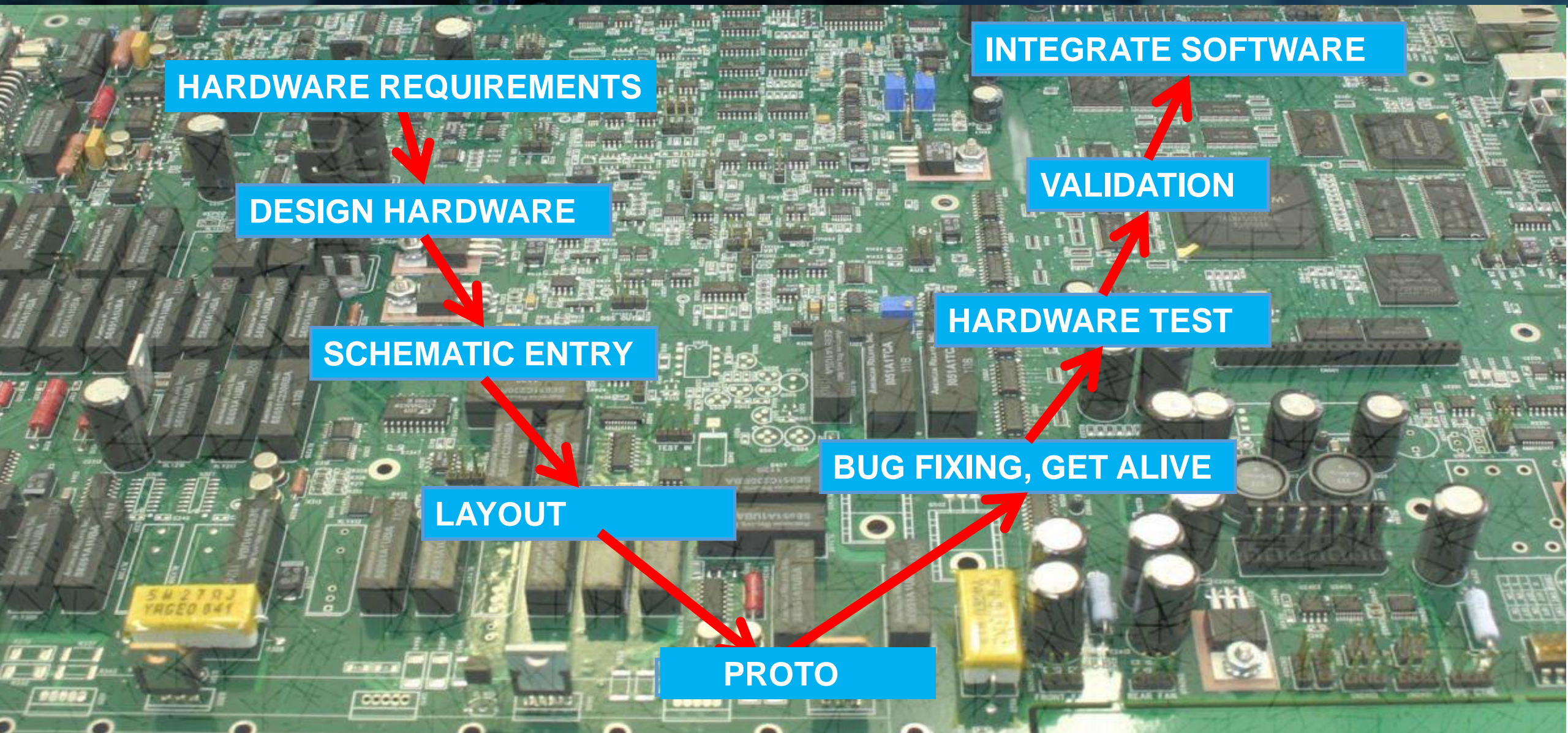
SYNTHESIS & LAYOUT

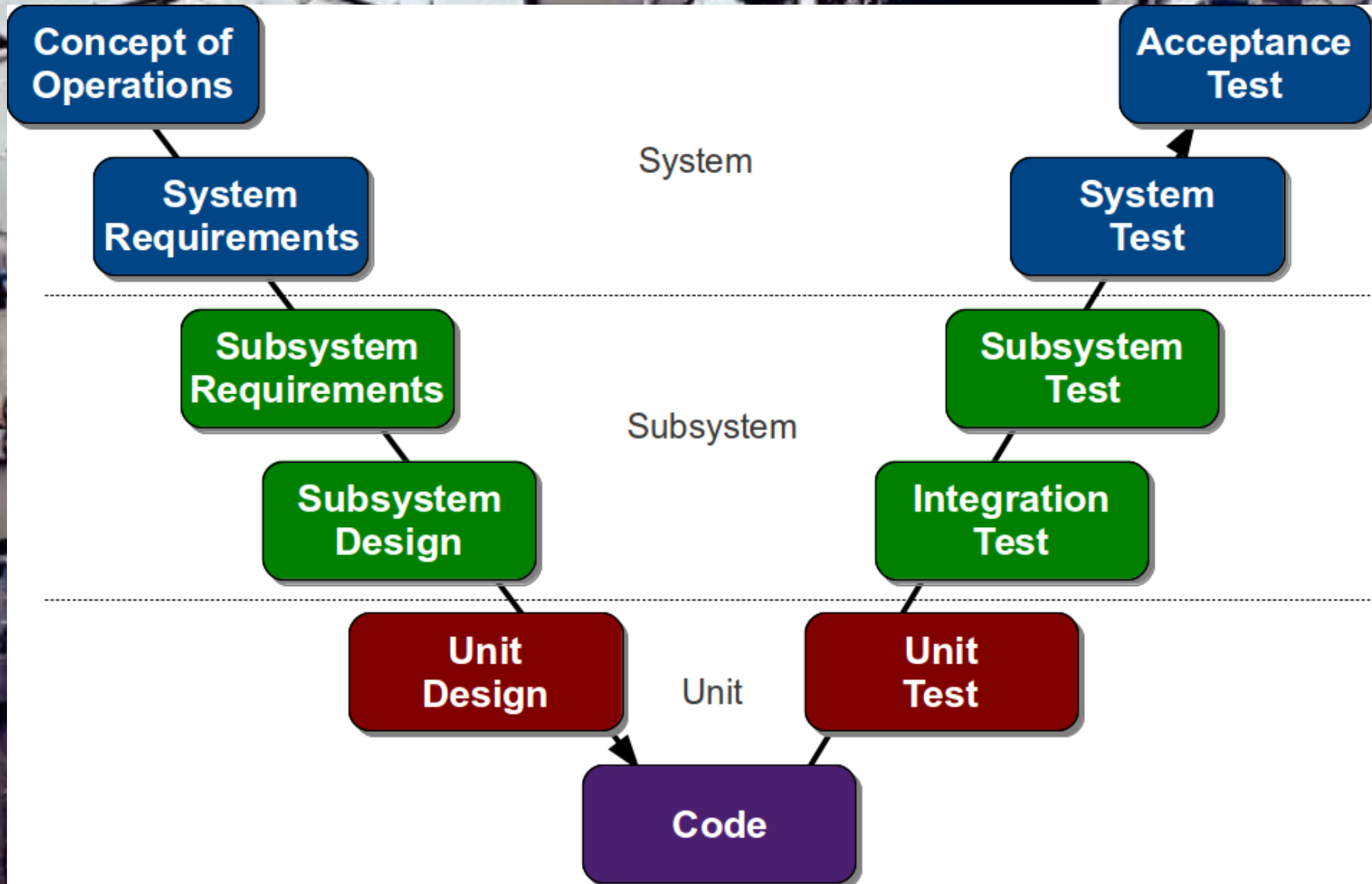
TAPE OUT

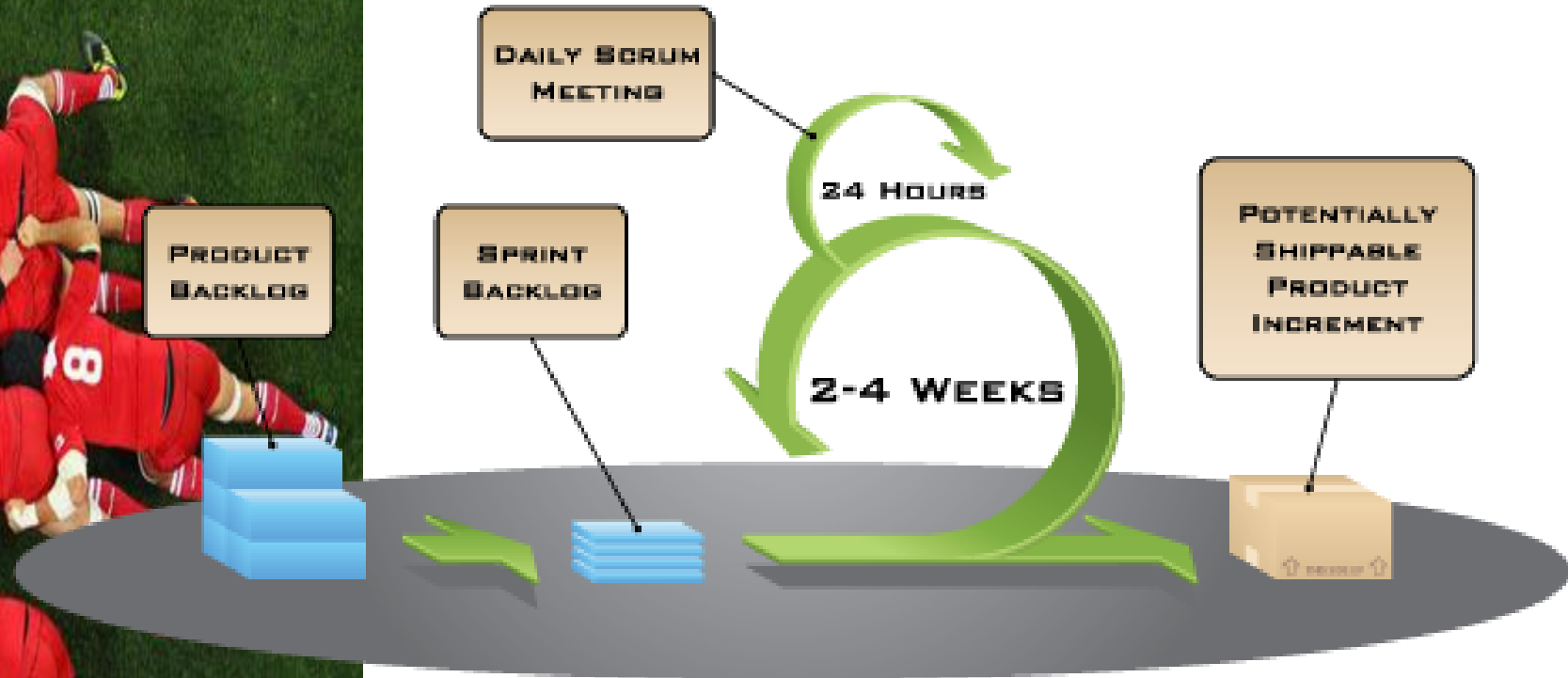
VALIDATION

INTEGRATE SOFTWARE

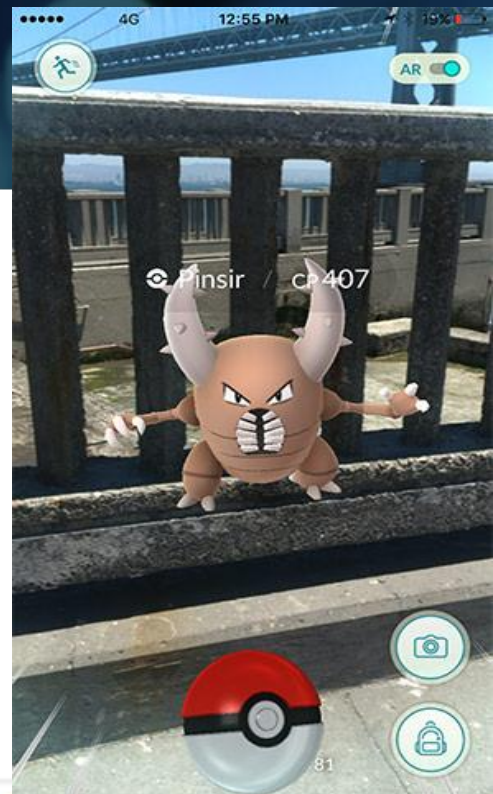
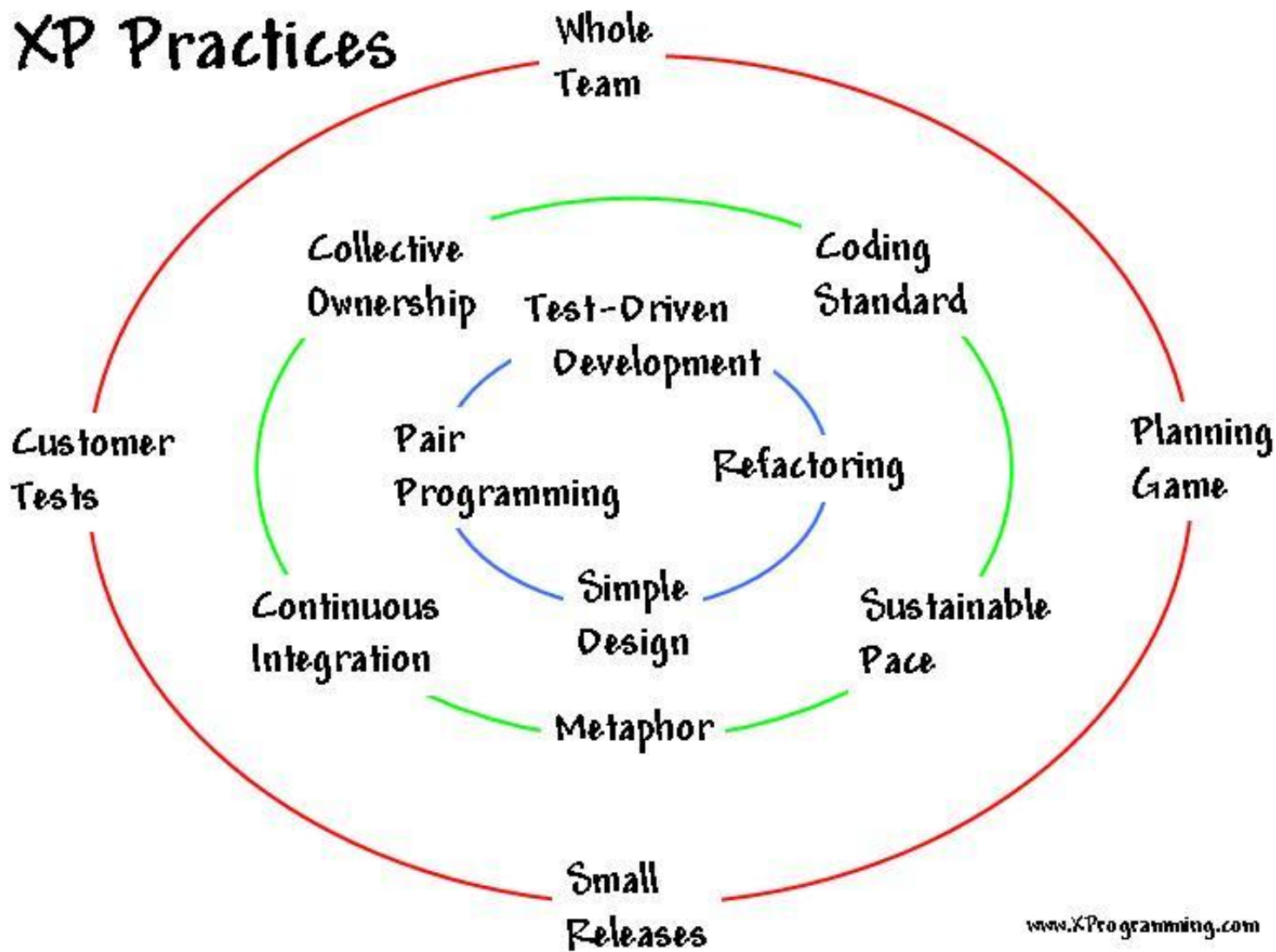




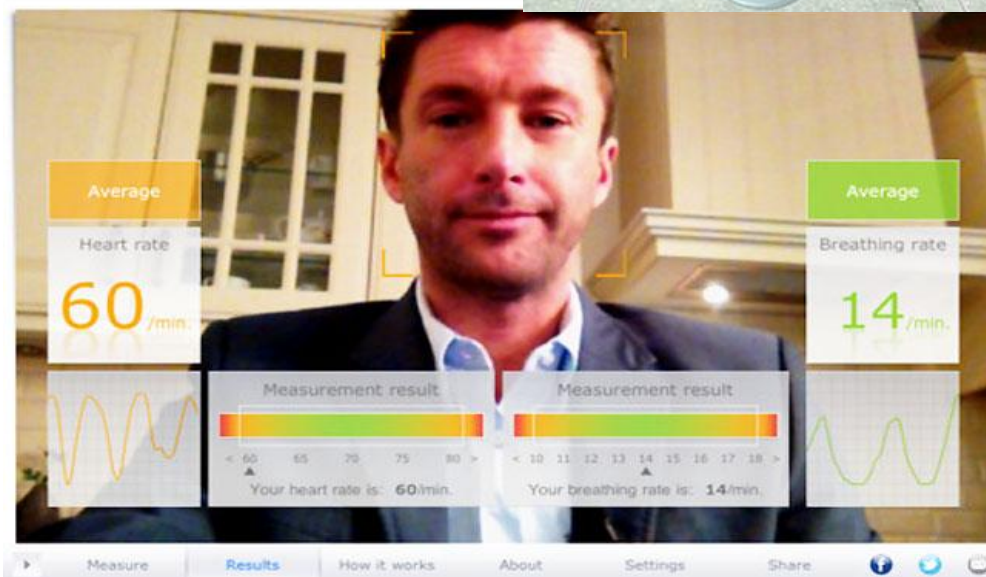




XP Practices



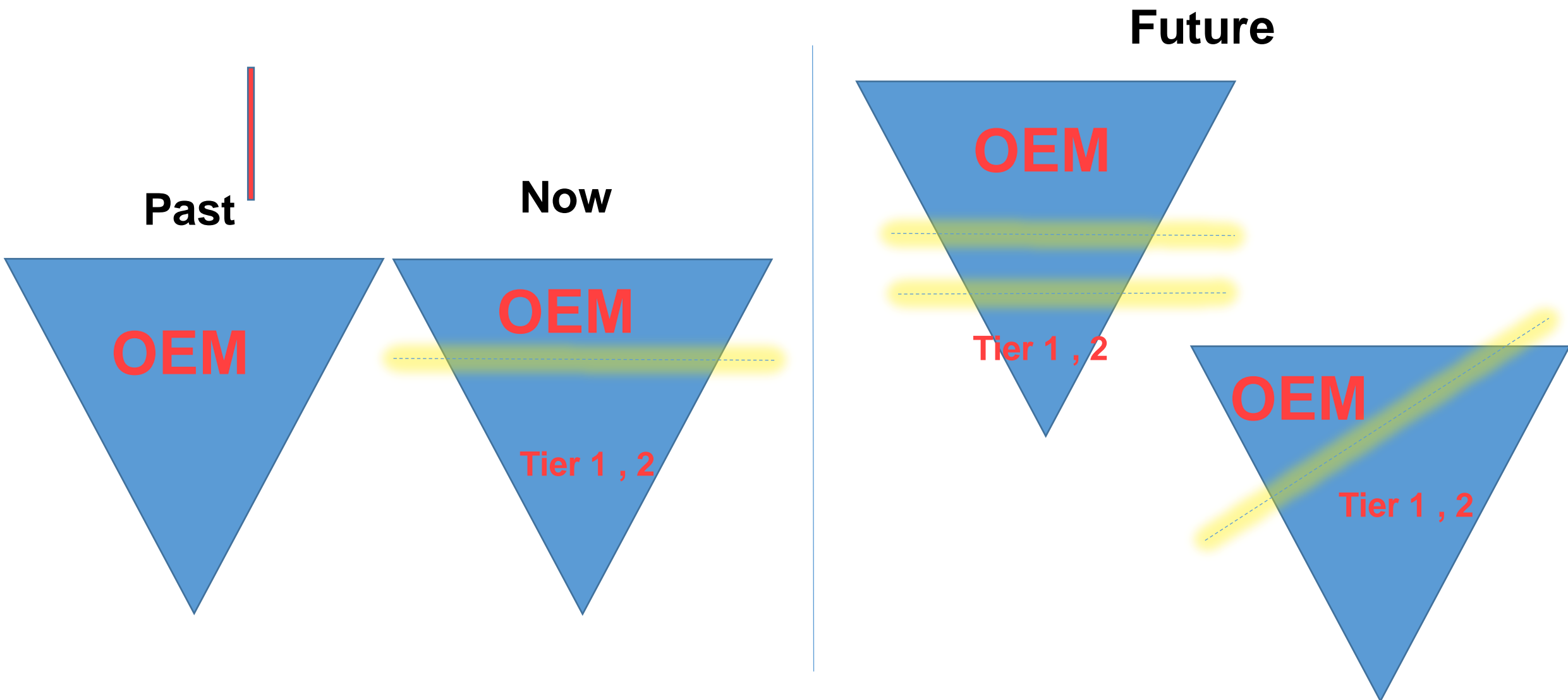
PHILIPS
sense and simplicity

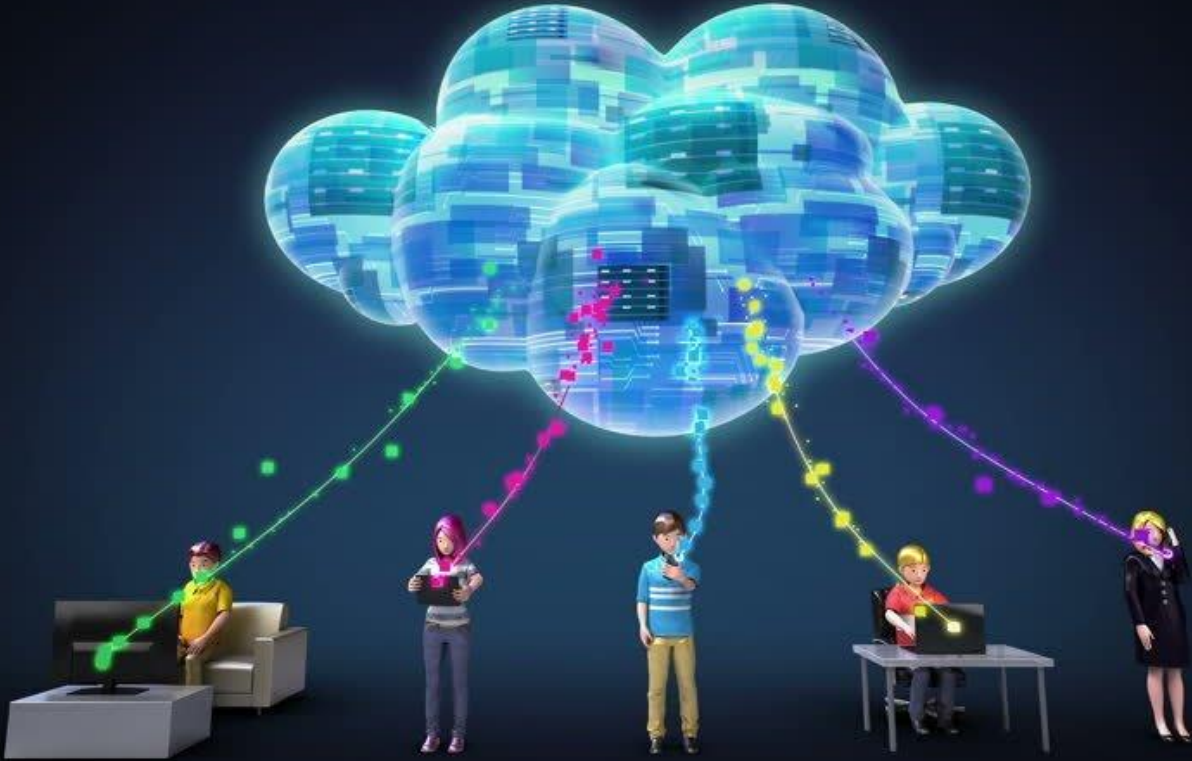






What Trends can be seen ?

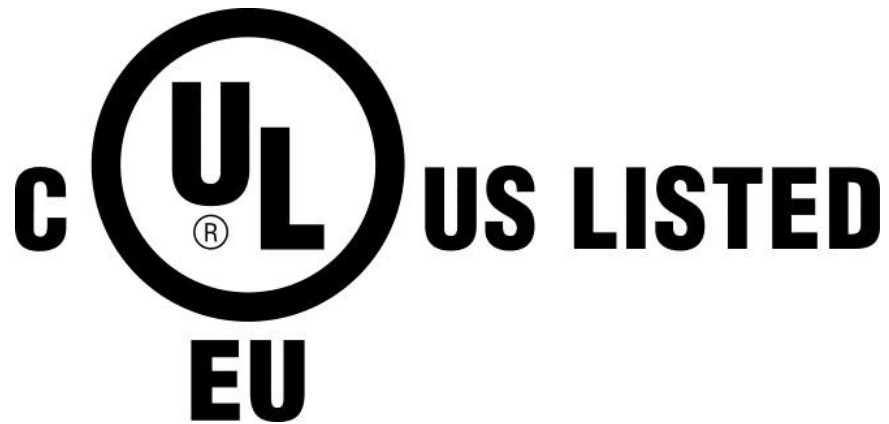




Everything Connected, Devices & People, Multi Discipline



APPROVED



- Product Quality
- Process Quality
- Company Image



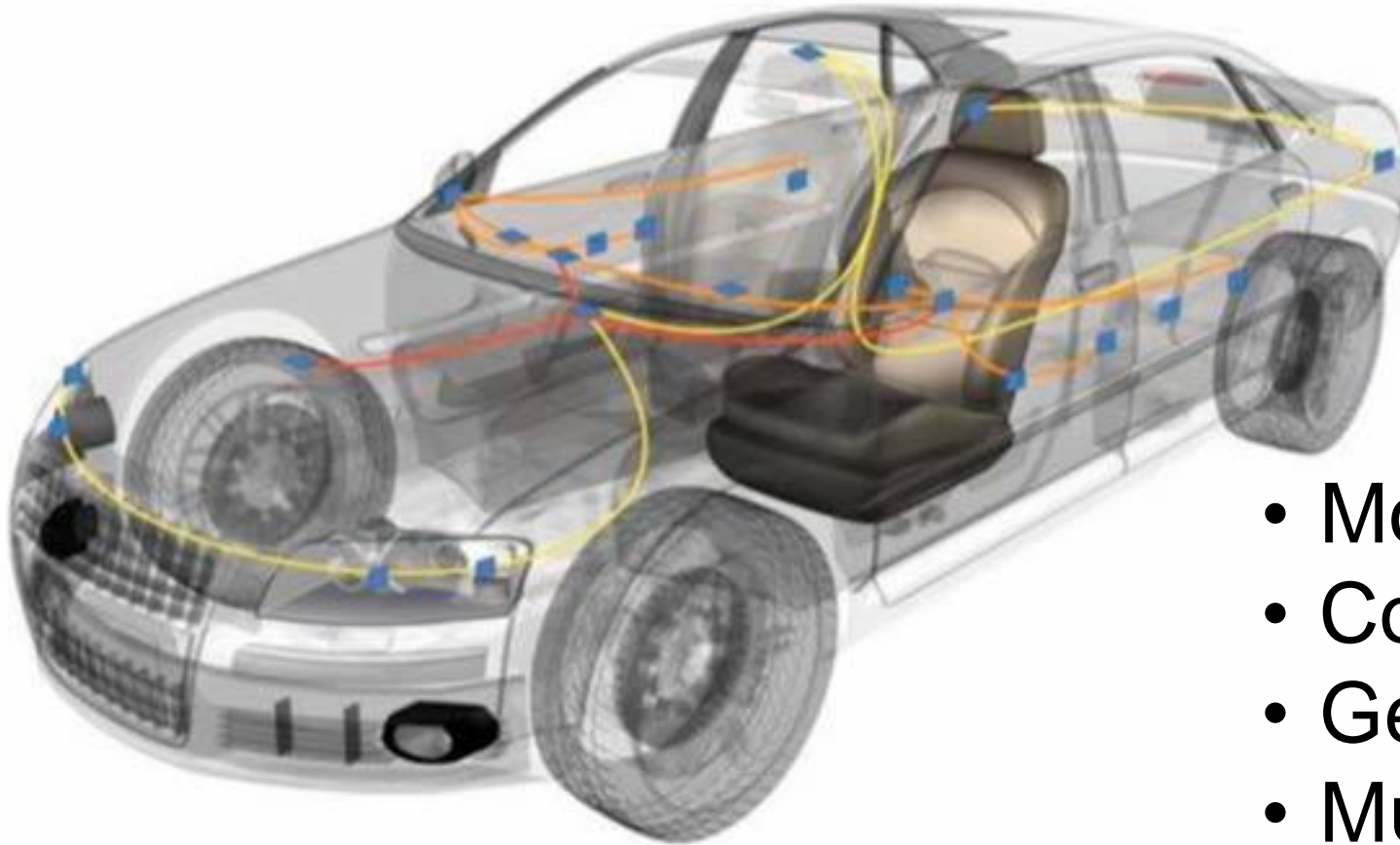
SAMSUNG GALAXY
NOTE 7



Functional Safety 26262

Automotive SPICE®

CMMI®



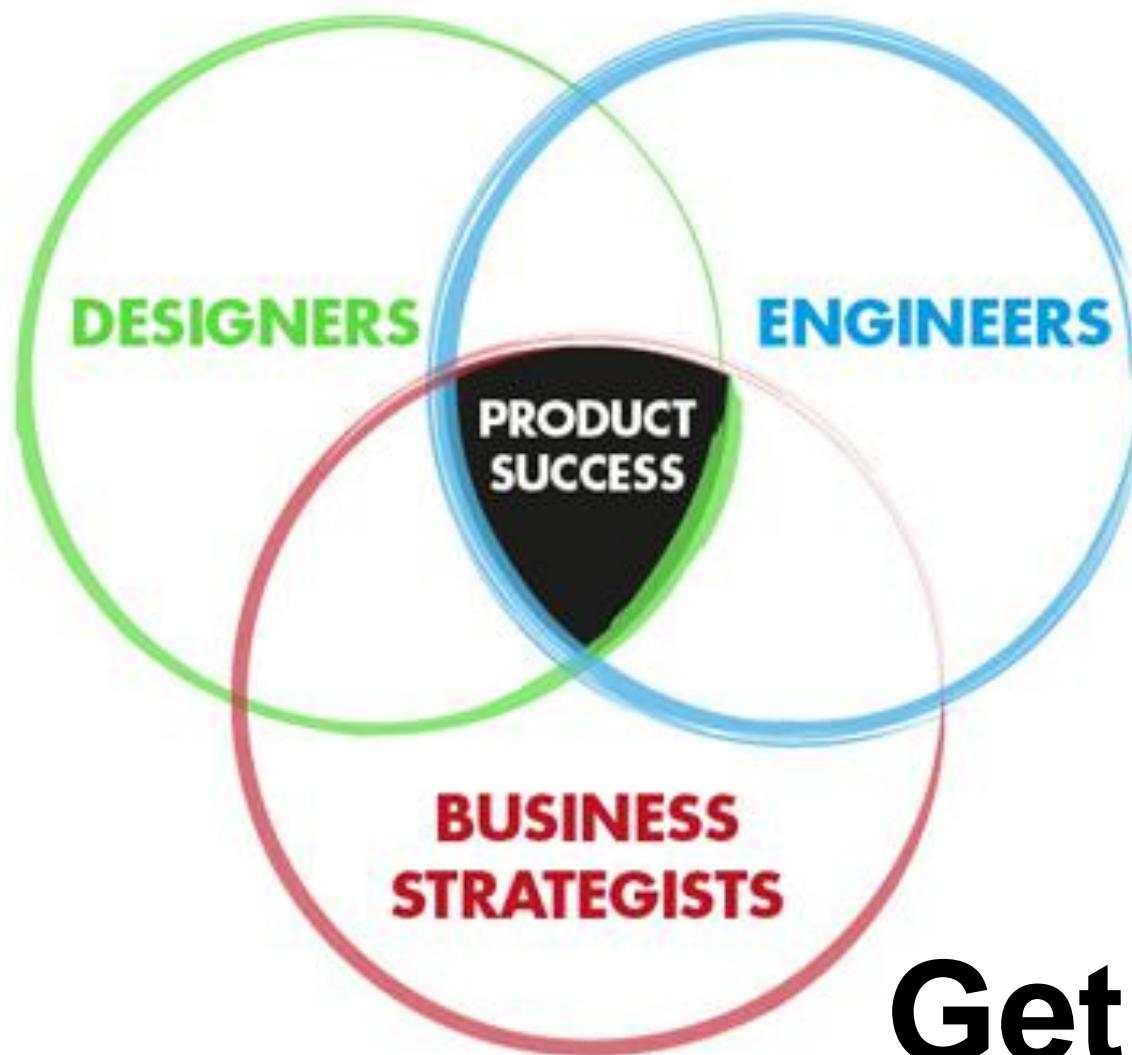
- Modelling
- Continuous Integration
- Generate Automatically
- Multi Discipline Domains



- 
- *Shift in Development Process of Products OEM-T1,2*
 - *Everything Connected, Multi Disp*
 - *Quality Products/Processes*
 - *First Time Right, Auto Generate*
 - *Shortage “”Skilled”” Tech People*

Impact on Engineering in 2020?

People are KEY



Get T-Engineers

- Multi discipline
- Has global knowledge of several disciplines
- Strong and in depth knowledge of 1 technical discipline
- Communicate with other disciplines and Stakeholders and Subcontractors
- Entrepreneurial Attitude
- Is focused on Quality and RAMS
- Is Customer Oriented and has Excellent soft skills



MEC ----- MECH ----- SW

**E
L
E
C**

M C

Focused on the **Why** of the customer (Internal/external) and is able to translate this into solutions (**What and How**), It will make the difference

QUESTIONS



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Booth 29*

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