

Three imperatives for advancing product and systems development

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Increasing rate of change

Reaching for the stars



SPACE



MOON



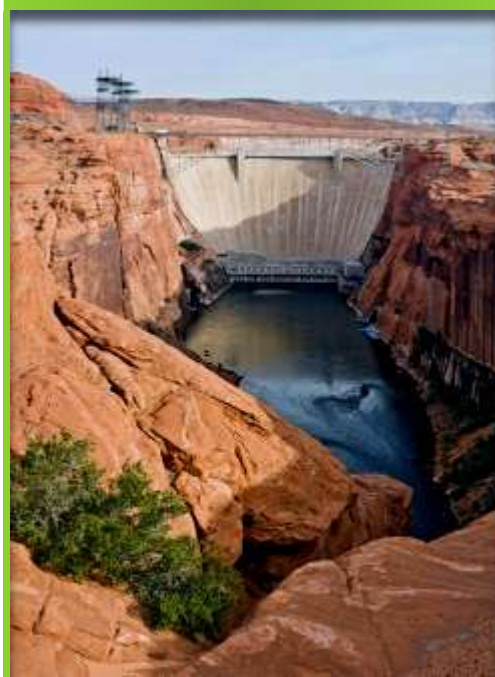
MARS

Increasing rate of change

The power of possibilities



STEAM BOILER



HYDROPOWER



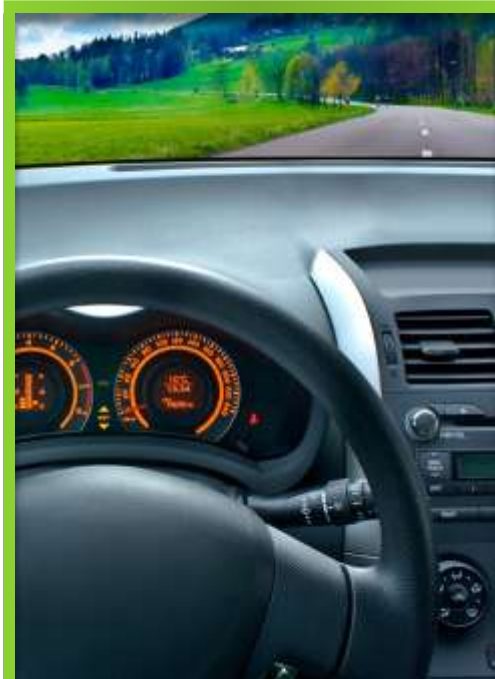
WIND TURBINE

Increasing rate of change

Automotive innovations



MECHANICAL



ELECTRONIC



SOFTWARE

Increasing rate of change

Telecommunication innovations



CELL PHONE



FLIP PHONE



SMART PHONE

The Pace of Innovation is increasing



The bar is rising



MARS



WIND TURBINE

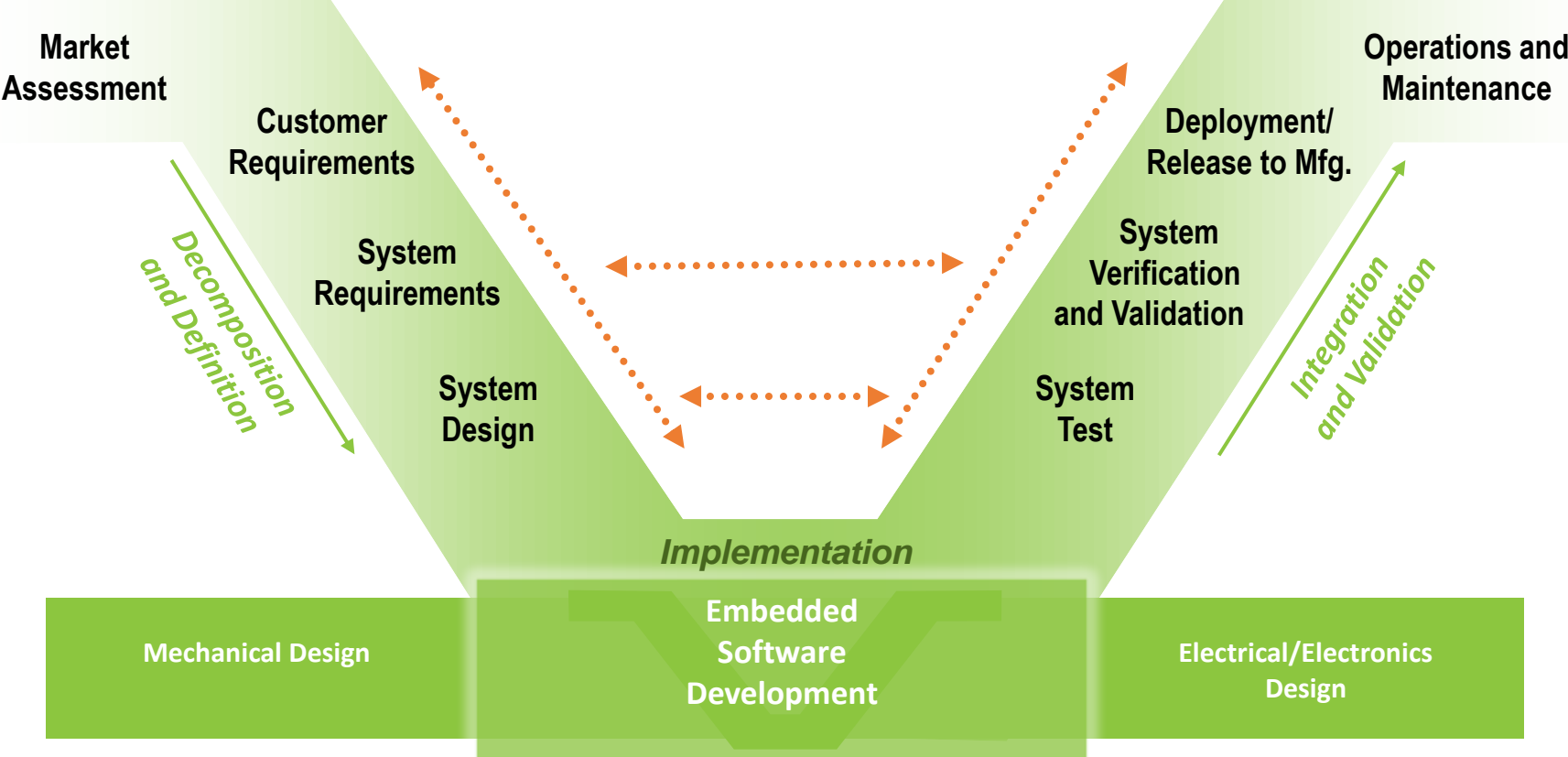


SOFTWARE



SMART PHONE

A systems approach to product development



Product development under siege

Embedded Software: The tipping point for systems engineering?

The key differentiating factor of today's products

- Product features designed using a combination of mechanical and electronic components, animated by controlling software
- Building features in software much less expensive, more flexible than in hardware

Affecting many industries

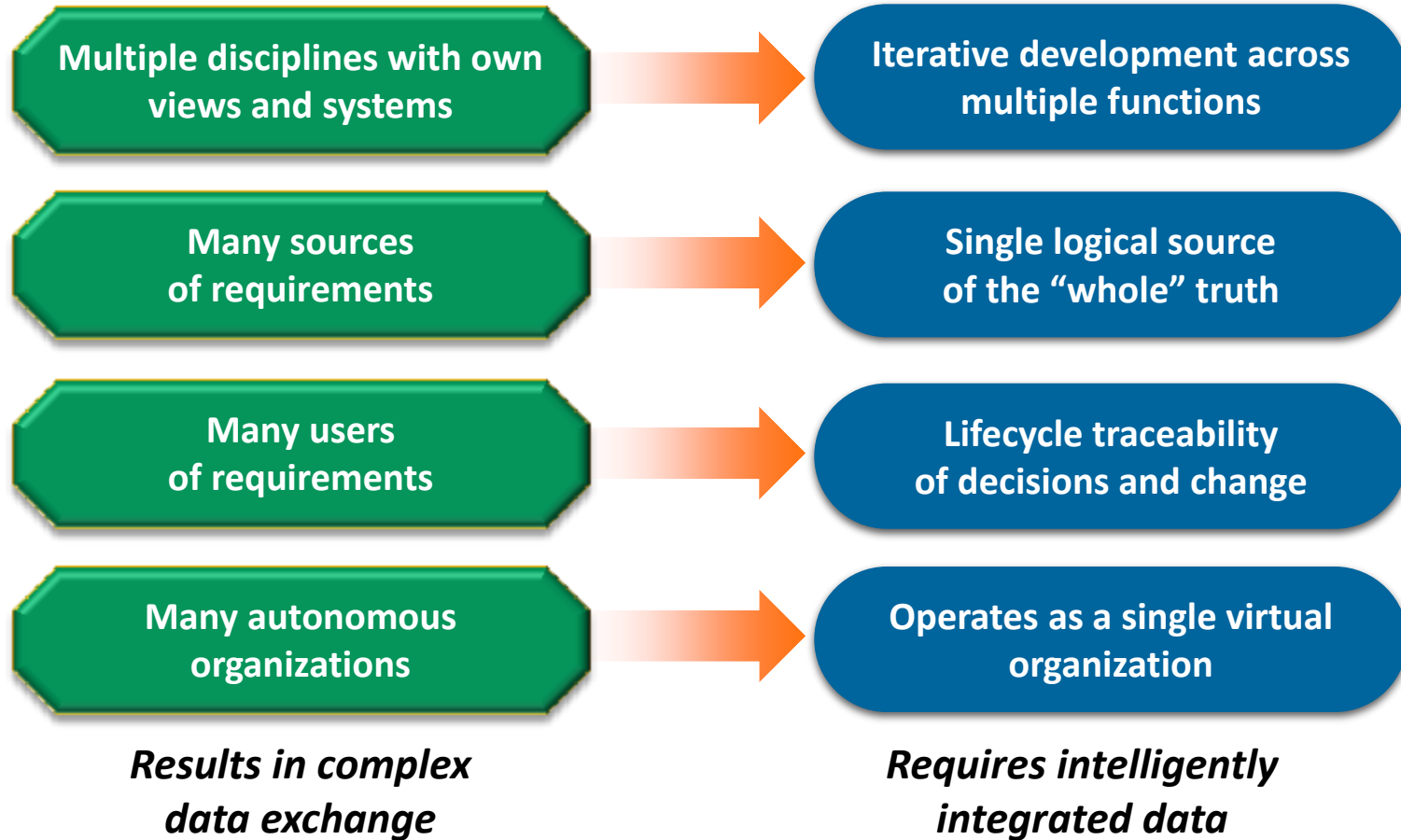
- Multi-use personal electronics
- Programmable functions in appliances, home lighting systems, ...
- User choice in-flight entertainment

Product development and products leveraging cloud and social generates decision-making fodder for big data, analytics

Requires a systems engineering approach

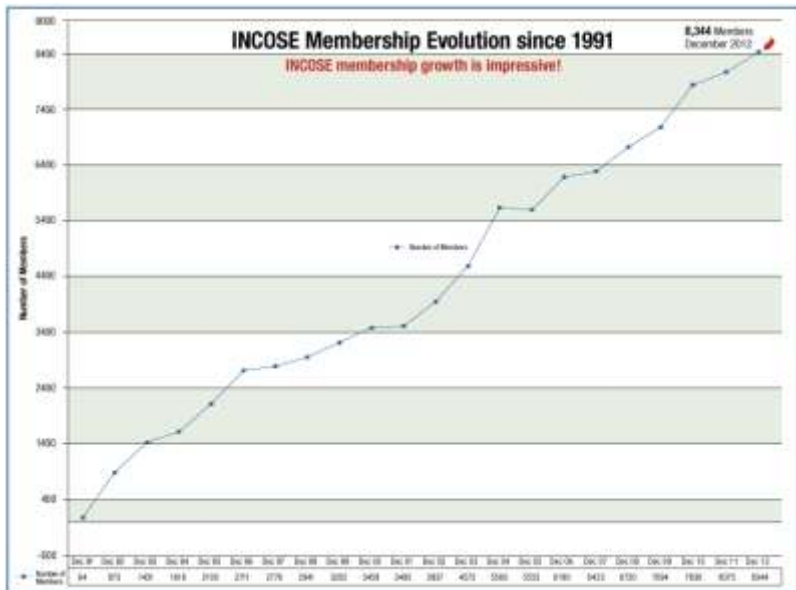
A systems approach requires systemic change

New ways of working across the extended enterprise



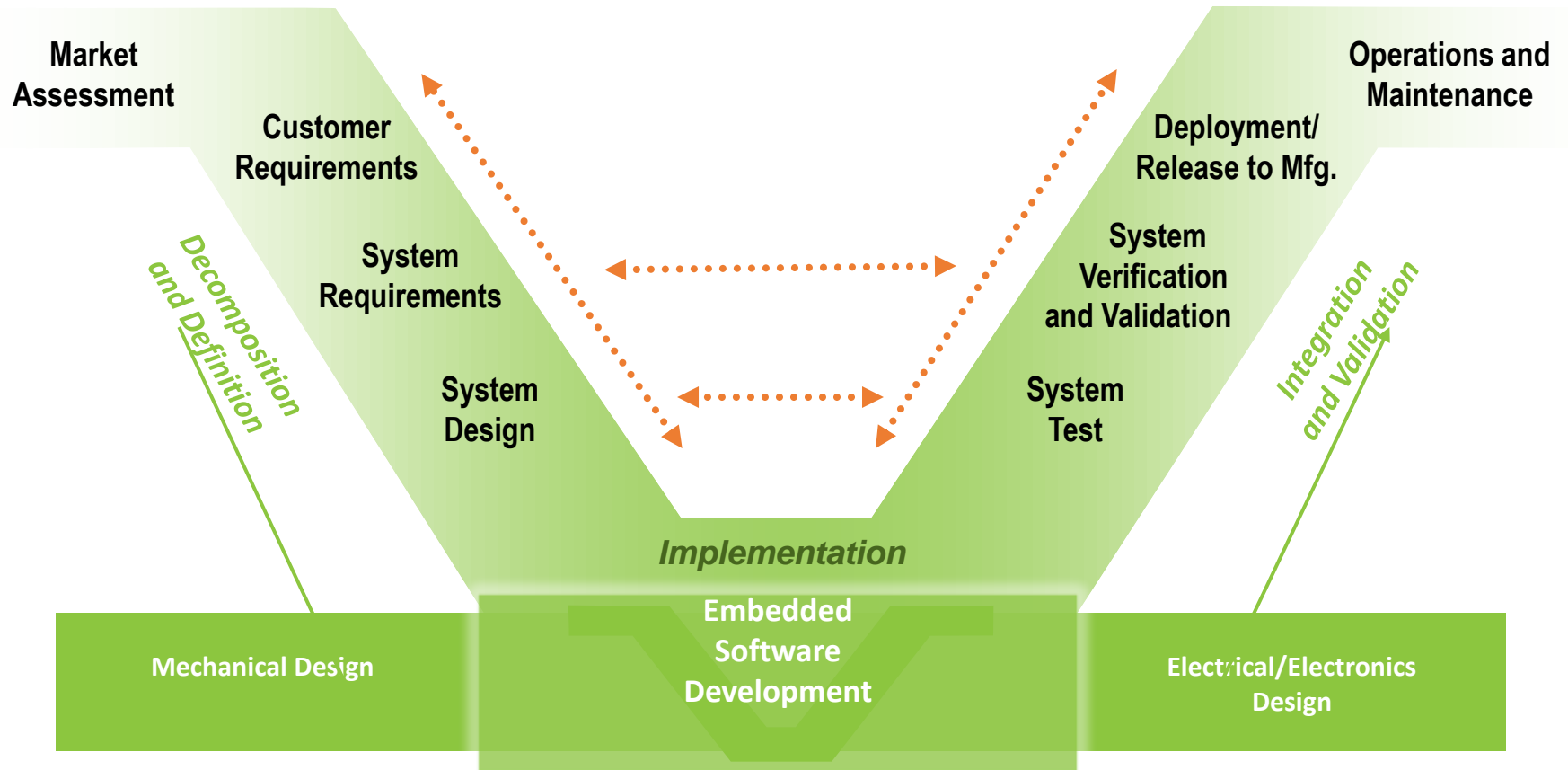
INCOSE fosters a systems approach

- Overview
 - The International Council on Systems Engineering (INCOSE) is a not-for-profit membership organization founded to develop and disseminate the interdisciplinary principles and practices that enable the realization of successful systems.
- Goals
 - To provide a focal point for dissemination of systems engineering knowledge.

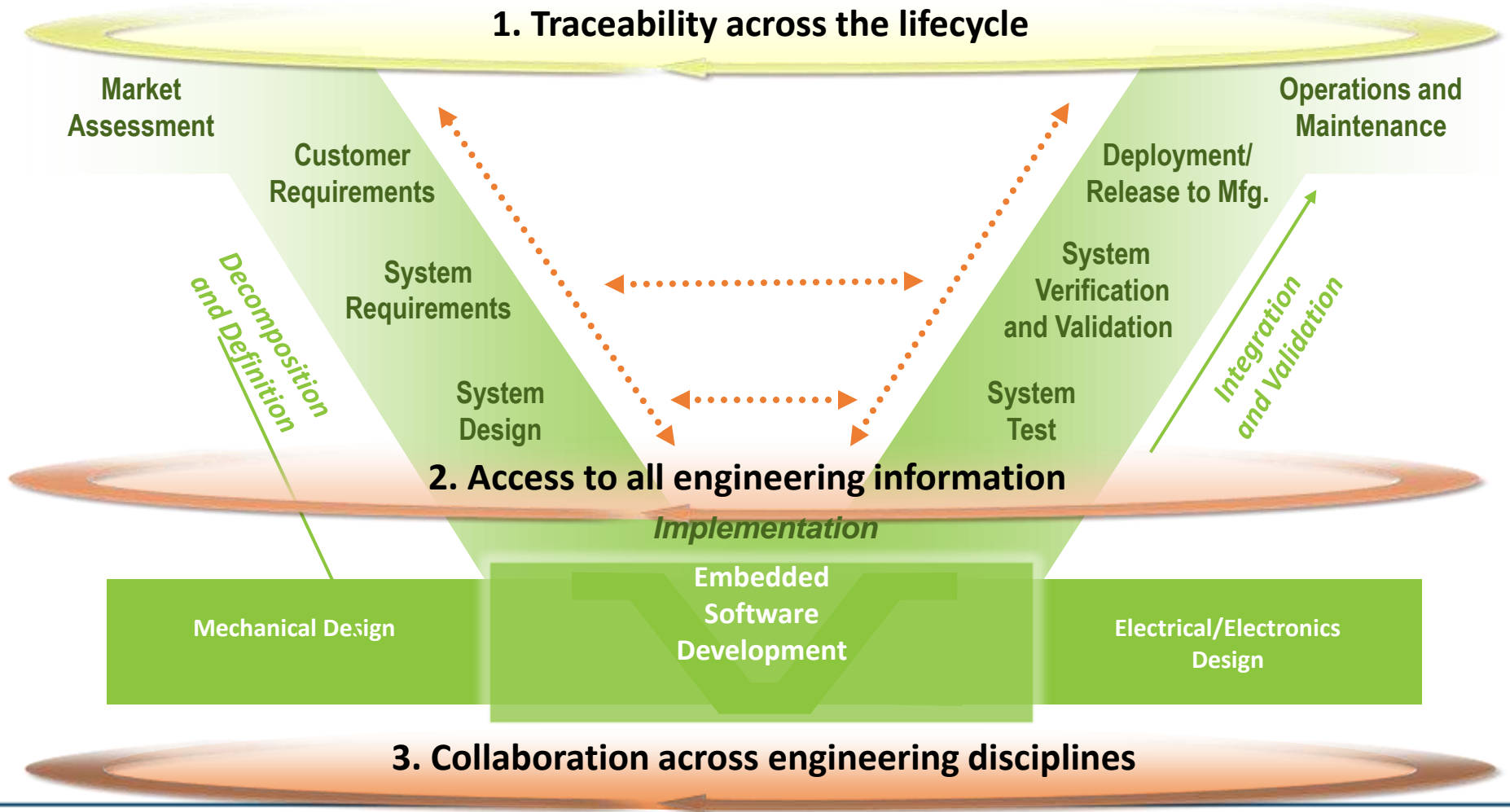


INCOSE membership has grown to over 8400 since 1991!

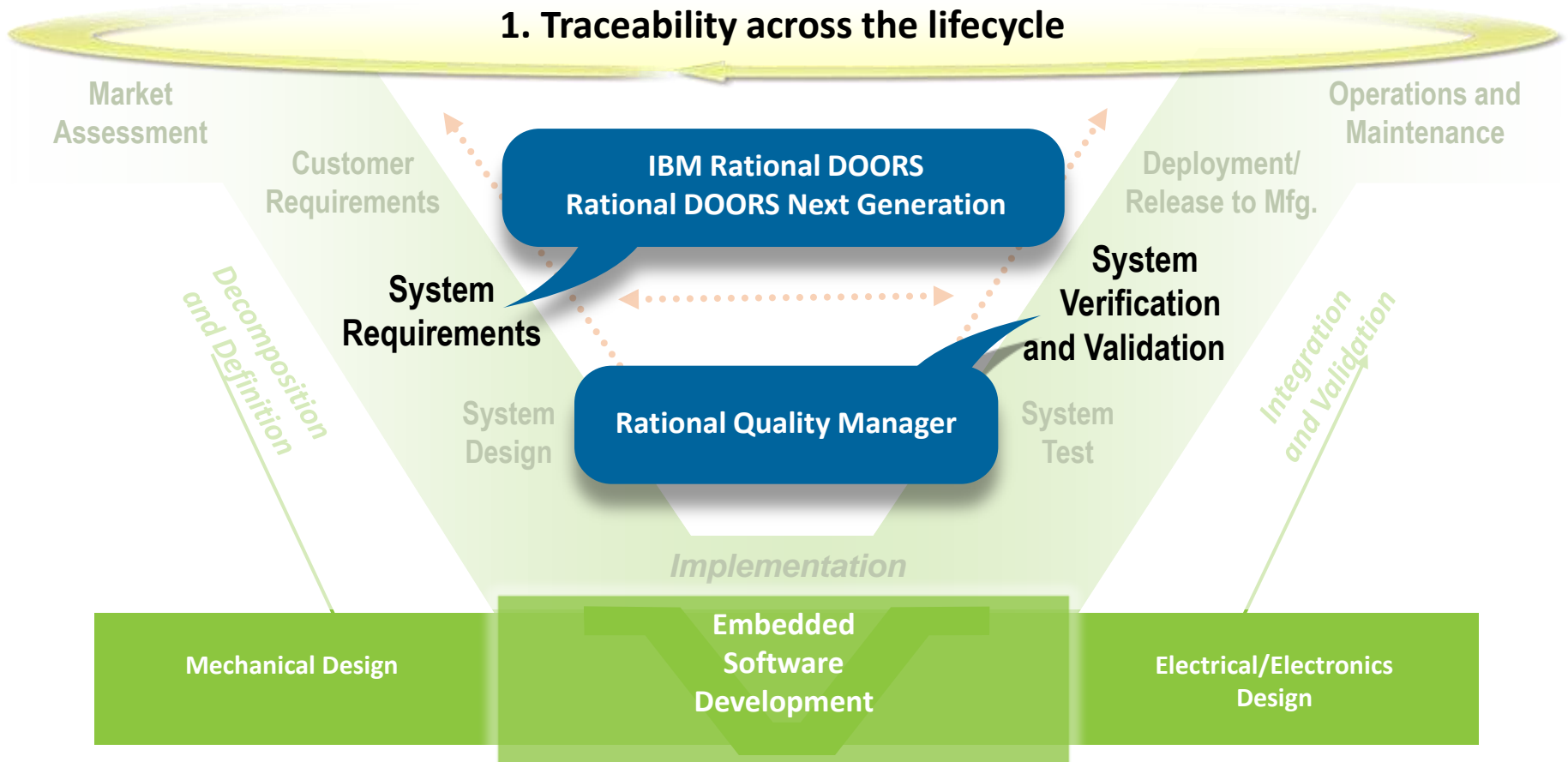
A systems approach to product development



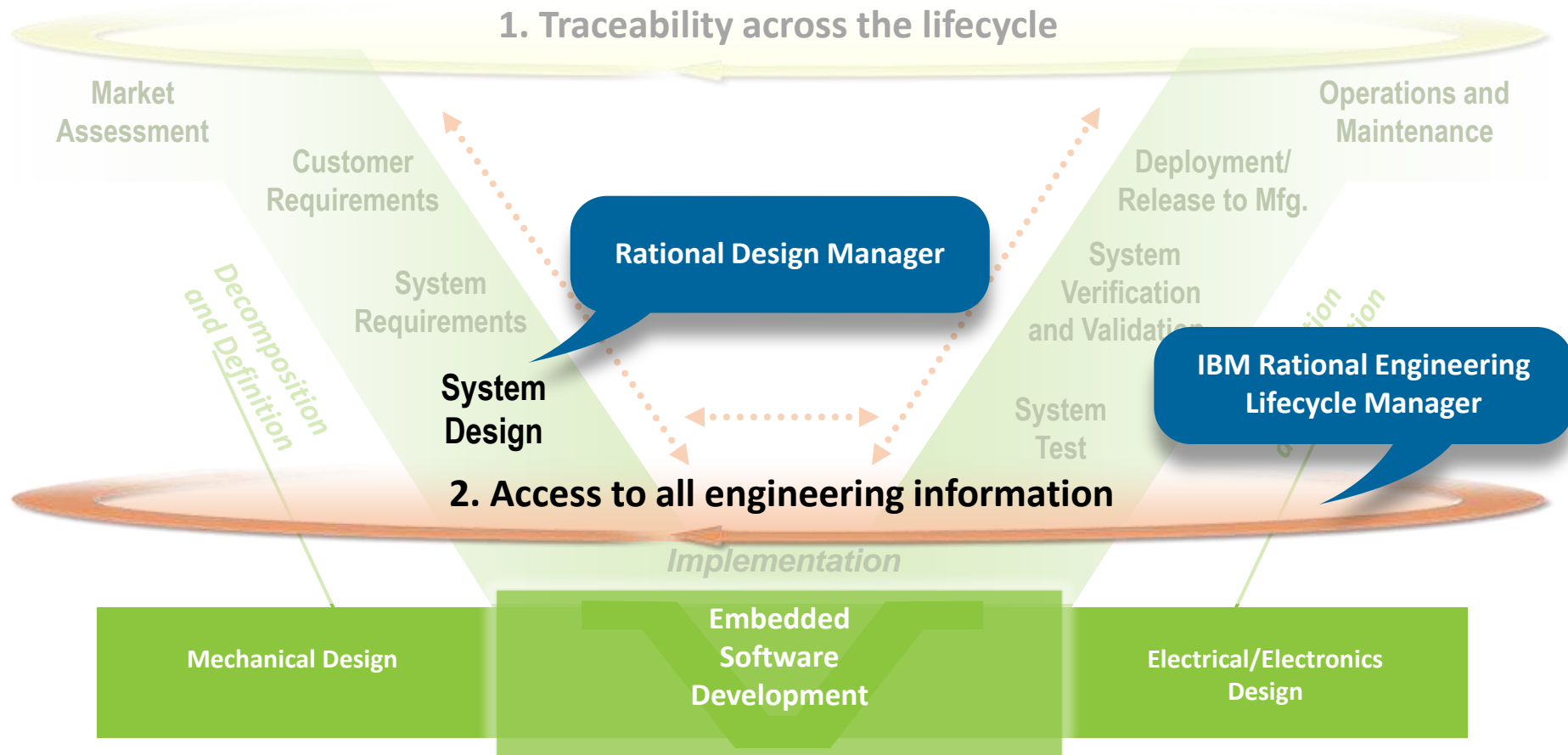
Three imperatives for a systems approach to product development



Three imperatives for a systems approach to product development

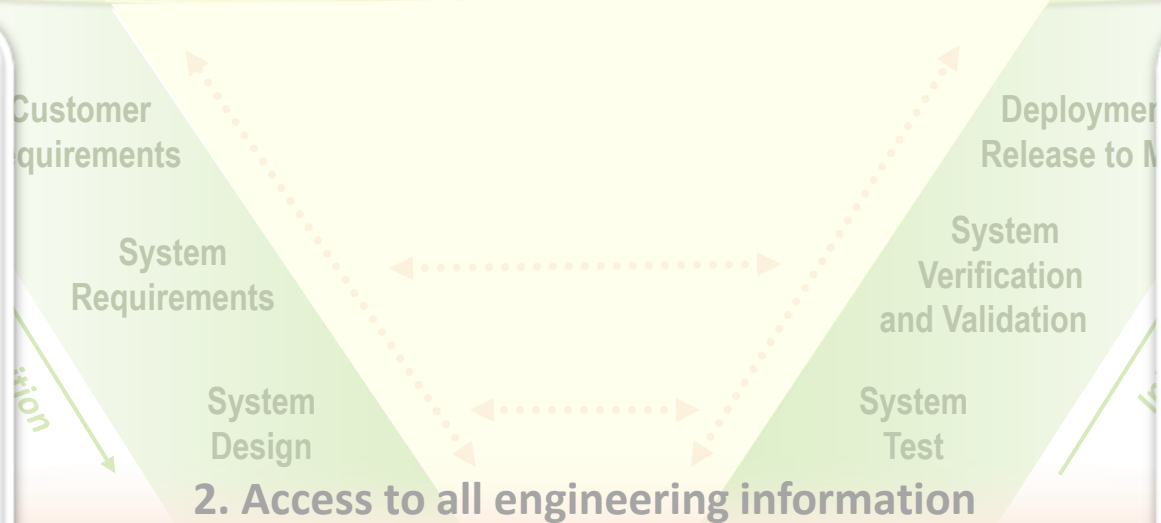


Three imperatives for a systems approach to product development



Three imperatives for a systems approach to product development

1. Traceability across the lifecycle



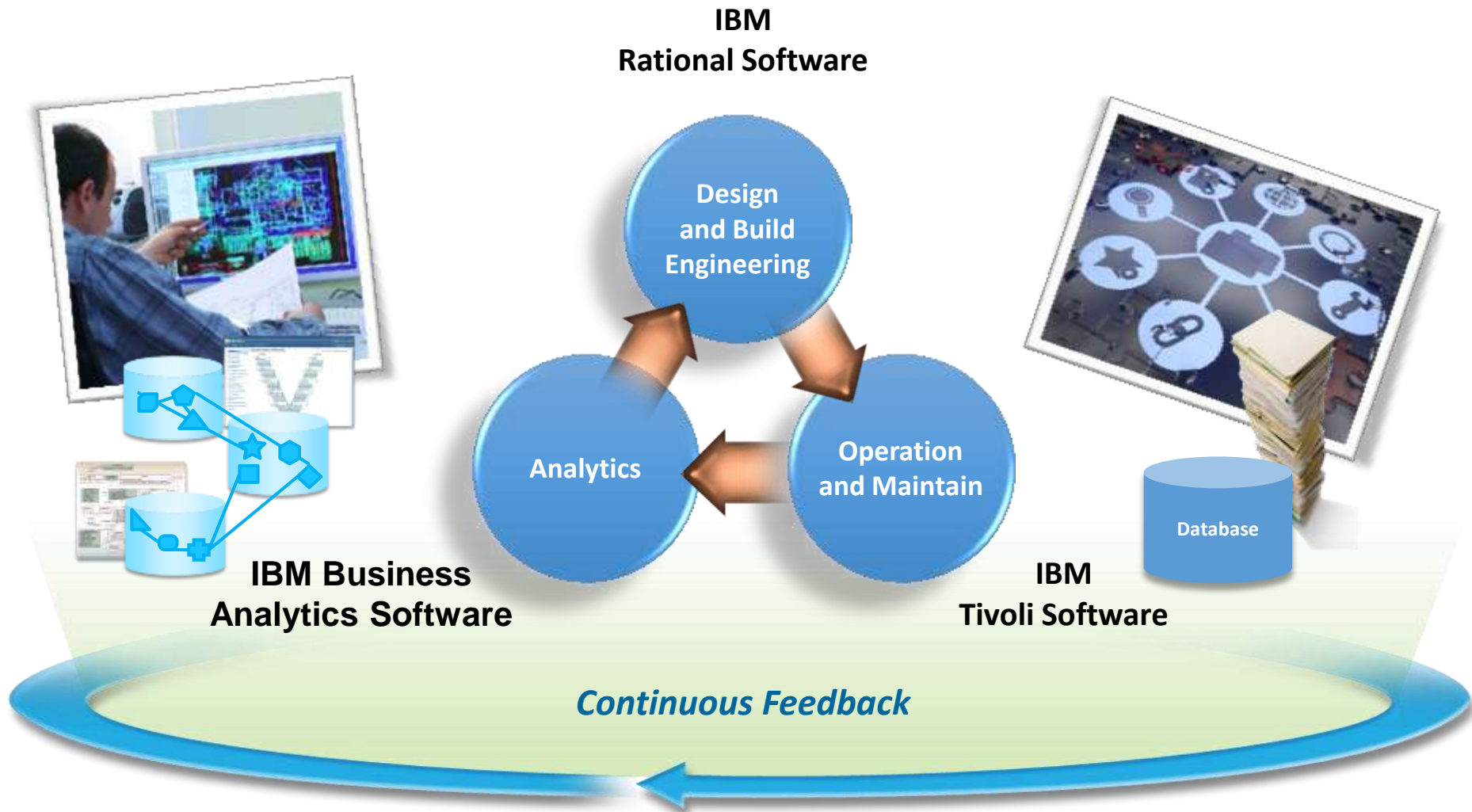
2. Access to all engineering information



3. Collaboration across engineering disciplines



Expanding lifecycle capabilities





New features driven from increasing consumer expectations

- Multimodal HMI
- HD Displays
- Improved Voice Control
- Connected World
- Telematics
- Connected Navigation *augmented offboard*
- Media Management *online and local*
- HD Audio / Video
- Full Feature Rear Seat Entertainment

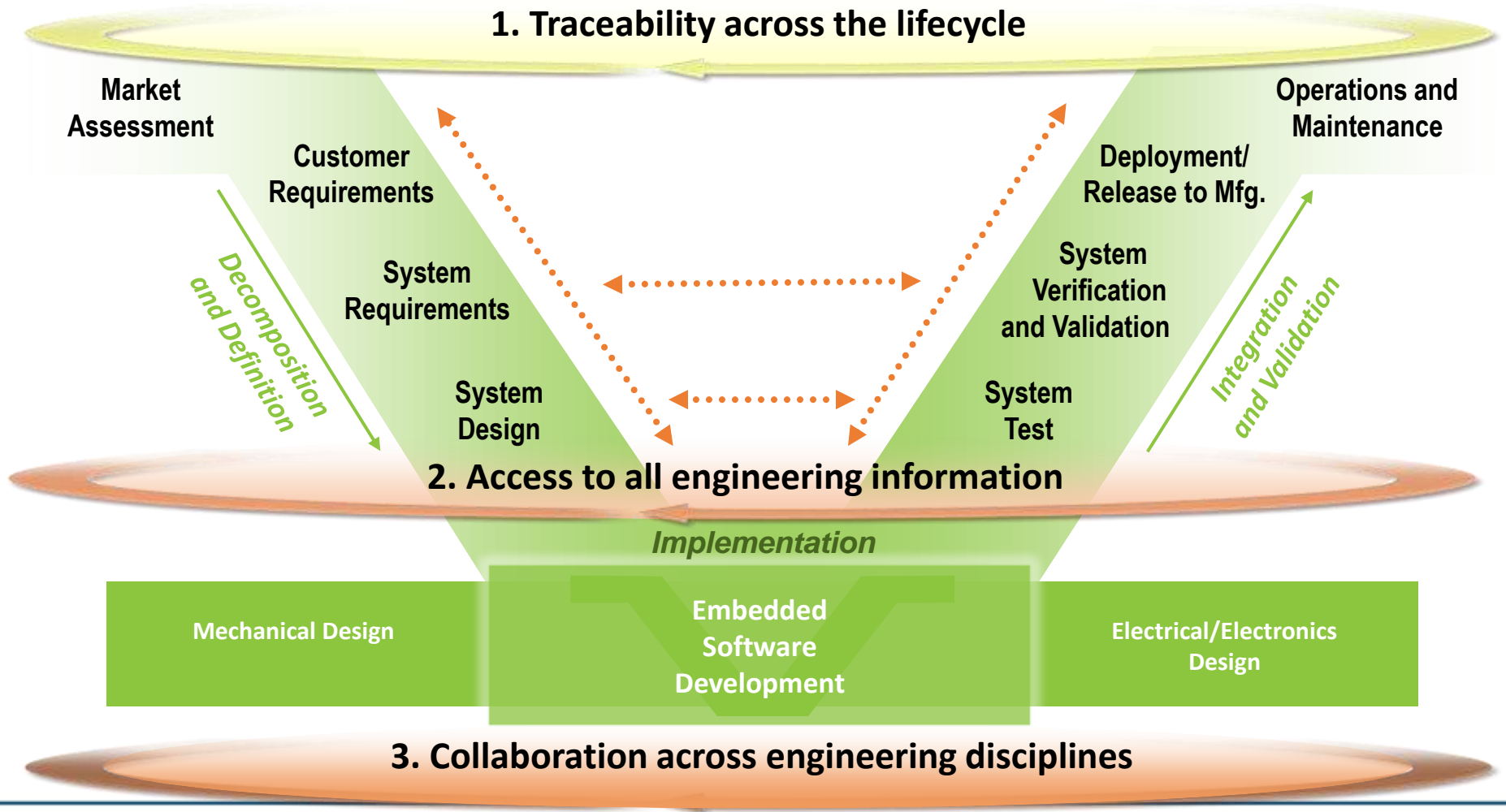
What will the consumer expectations of tomorrow be?

Automotive **crowdsourcing** has delivered innovation in just 3 weeks!

- Brand new HTML5 Media Player and HVAC interface
- Remote HVAC control through smartphone



Three imperatives for a systems approach to product development



In this new era of engineering...



...think of what's possible

Thank You

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