Disruptive Technology

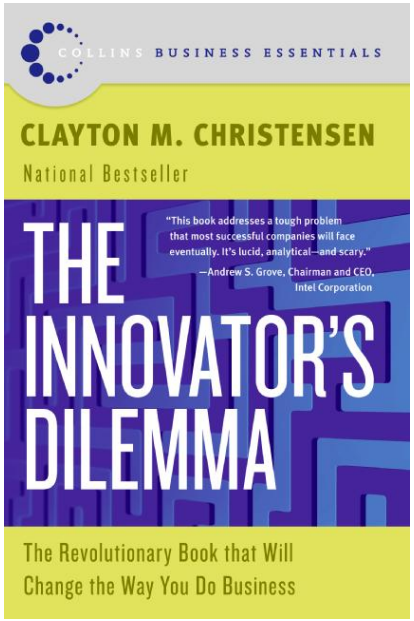
- Challenging the Status Quo

Innovation Day 2006 : Presentation

Dr Hugh Burchett
Manager
Defence and Security Business

Outline

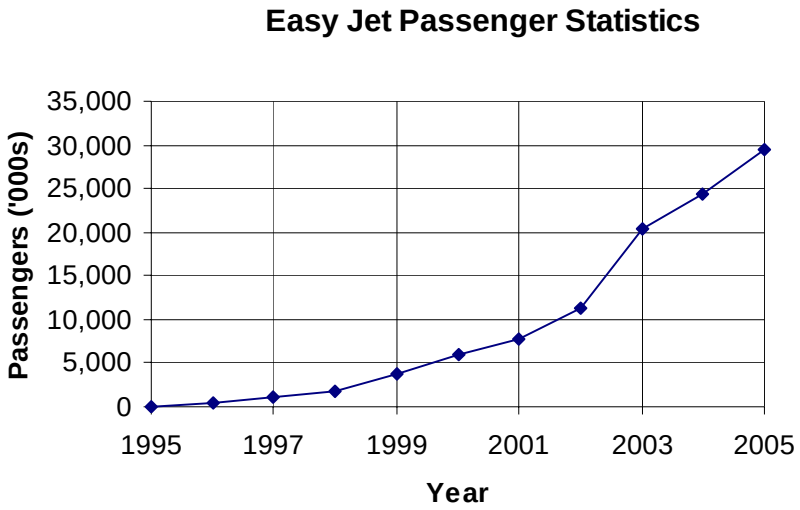
The term “Disruptive Technology” was first coined in 1997 by Clayton Christensen from the Harvard Business School in his book, “The Innovator’s Dilemma”



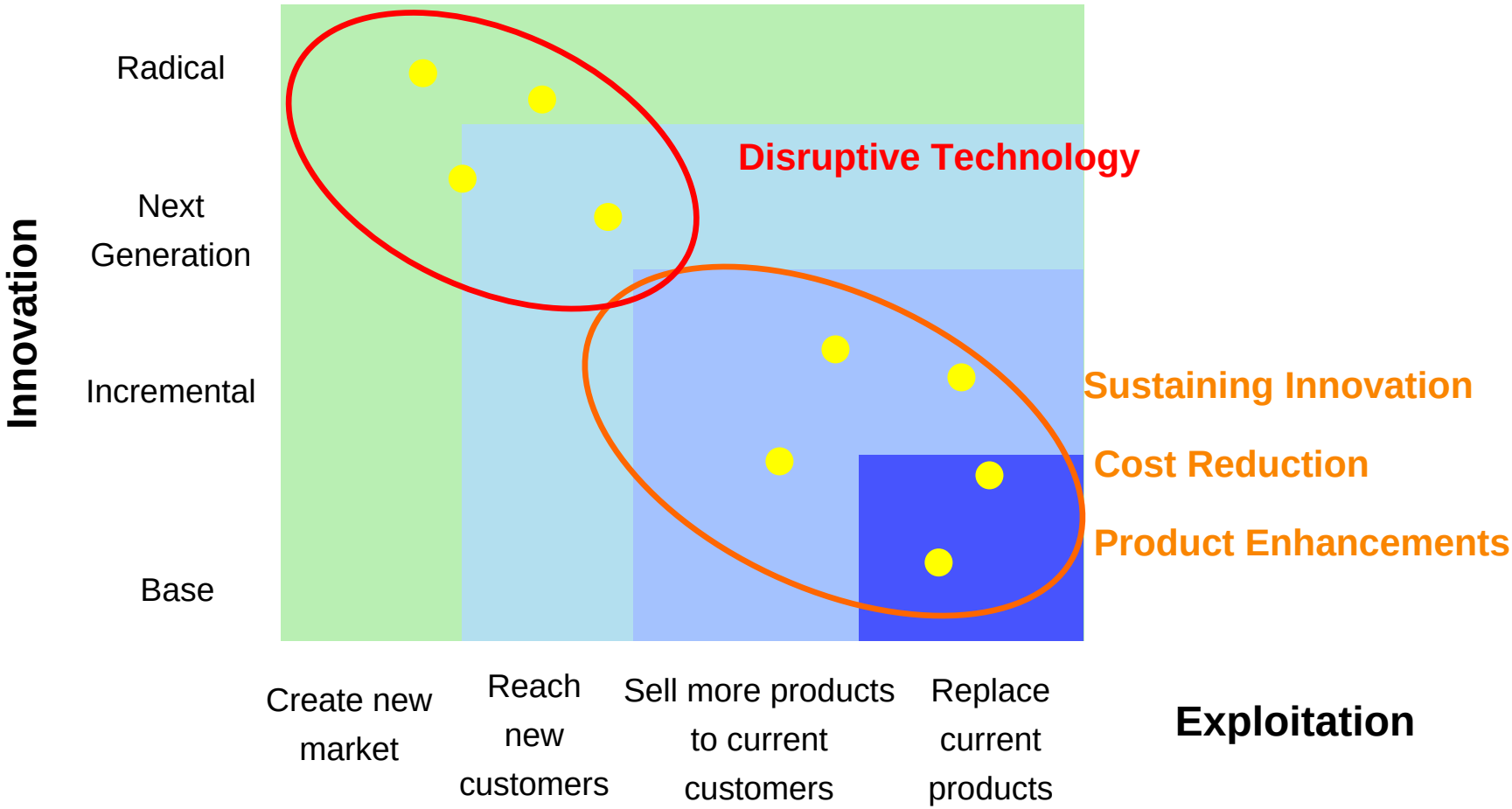
A “Disruptive Technology is a new technological innovation, product or service that eventually overturns the existing dominant technology or product in the market”

Most people have already benefited from Ryanair's and easyJet's disruptive approach to air travel

- EasyJet has seen significant growth over the last 10 years
- Approach is radically different from conventional carriers
- We now expect to be able to fly throughout Europe for less than £100



Disruptive technology targets new markets and new customers with the ability to displace market incumbents



Outline

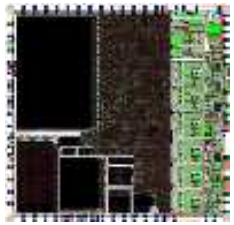
1. What is disruptive technology ?
2. How can you identify it?
3. How do you benefit from it?
4. What is required to make it succeed?
5. Disruptive technology – a case study
6. Summary

A number of pointers indicate whether a technology could have the potential to be disruptive

- It enables people to do things that they previously couldn't do due to cost or skill
- It exploits the technology's benefits in new applications
- It disrupts existing markets
- It builds on existing patterns of consumer behaviour

Cambridge Silicon Radio (CSR) was spun out from Cambridge Consultants in 1998 to develop single chip Bluetooth solutions using RF on CMOS technology

Disruptive technology	**RF Integration using CMOS Technology**
What did it enable?	High volume production of Bluetooth RFIC's at low cost
Where did it first appear?	Development for Viterra for a low cost heat allocator
What was the market?	Bluetooth personal connectivity between mobile devices
Who were the players?	Ericsson, Nokia, Toshiba, Motorola
What was the customer benefit?	Ease of connection between consumer devices

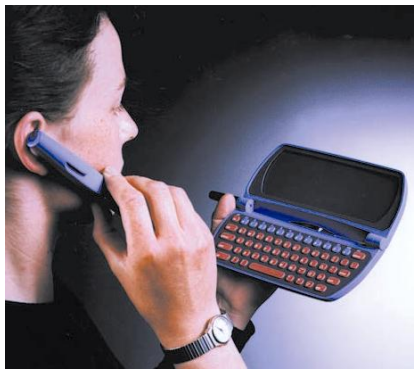


Hindsight is a wonderful thing!

- Product innovation approaches can be used to highlight potential disruptive technologies
- Successful products often combine a disruptive technology and disruptive market approach

Viterra Heat Cost Allocator

(circa 1995)



Two Part Phone Concept

(circa 1997)

Orange Video Phone

(circa 1998)

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Disruptive technologies provide an opportunity for smaller companies to compete with established organisations

- Technologies can be targeted at niche areas of a market,
- Disruptive technologies fit well with smaller companies that are highly innovative
- The successful implementation of a disruptive technology will make a smaller company attractive as an acquisition

L3 communications
SafeView

Press Release

L-3 Communications Acquires Two Leaders in Threat Detection for Military and Homeland Security Applications

Tuesday March 21, 11:44 am ET

State-of-the-art military and homeland security sensors from CyTerra Corporation and non-invasive security systems and portals from SafeView, Inc.

Disruptive technologies provide an opportunity for established companies to leapfrog the competition

- Market incumbents have a strong lead in sustainable technologies
- Disruptive technologies provide a threat to this development route
- The benefits of disruptive technology holds for small and large companies
- Understanding how disruptive technologies can be used is essential

Persona

Clearblue Easy Fertility Monitor

Clearblue Digital Pregnancy Test

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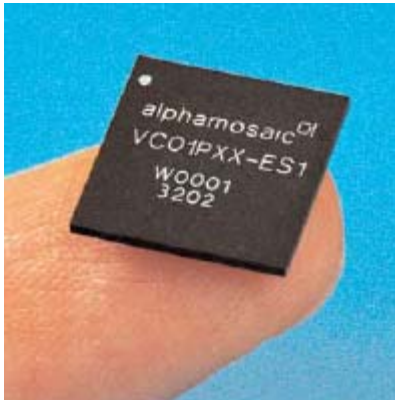
Disruptive technologies will be difficult to identify

- Take a step back to consider the core problem that needs to be solved
- Consider technology transfer between different industries
- Look for sources of innovative thinking



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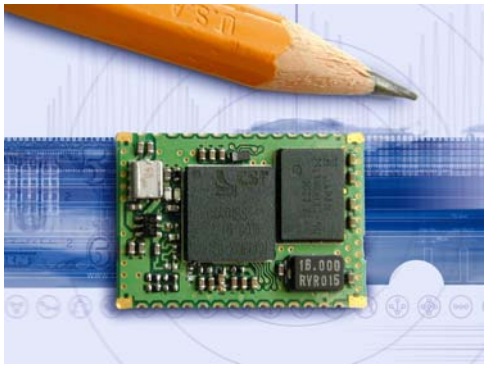
alphamosaic

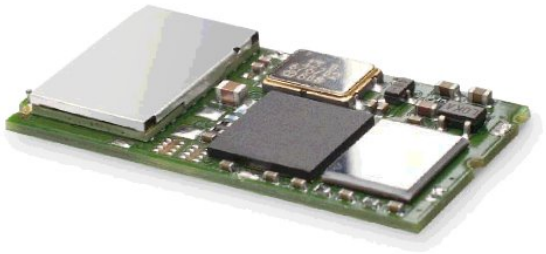
Disruptive technologies will be difficult to justify initially

- Accept that initial ideas may appear to be incomplete or “half-baked”
- Accept that ideas won’t compare well with existing technologies and their accumulated investment
- Consider carefully whether the idea is truly disruptive or sustainable
- Be realistic concerning the development timescales, and what may influence market acceptance

The key is often specialised technical insight or market knowledge

- Success is often down to the skill of individuals rather than brute force engineering effort
- Often requires combining knowledge across different technical areas





Exploitation requires market knowledge and a plan of how to effectively introduce the technology to market

- Knowledge of how the consumer / end user should benefit from the technology
- Clear demonstration of how this is achieved, playing to the strengths of the technology
- Determine what elements are required for successful exploitation
- Considering who controls the route to market for the technology

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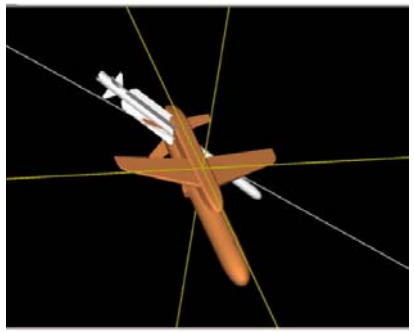
Cambridge Consultants imaging radar as an example of a disruptive technology

- Technology developed from missile test and development systems costing ~ £10K's

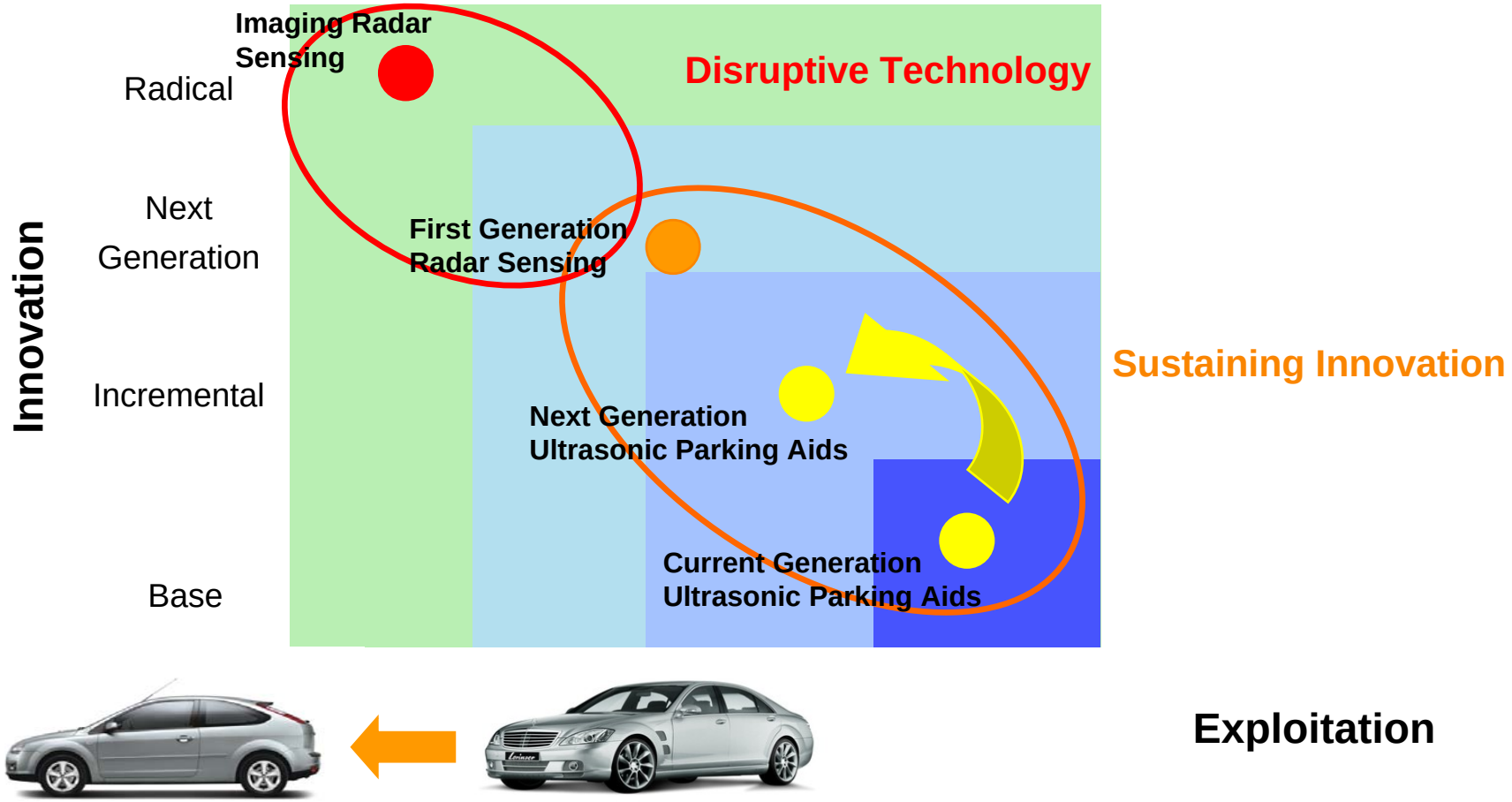


Question: How could this technology be exploited in a high volume application?

Ultrasonic Park Assistance systems are now commonplace

- 4 sensors required per bumper with a central controller
- Additional sensors required for side looking applications

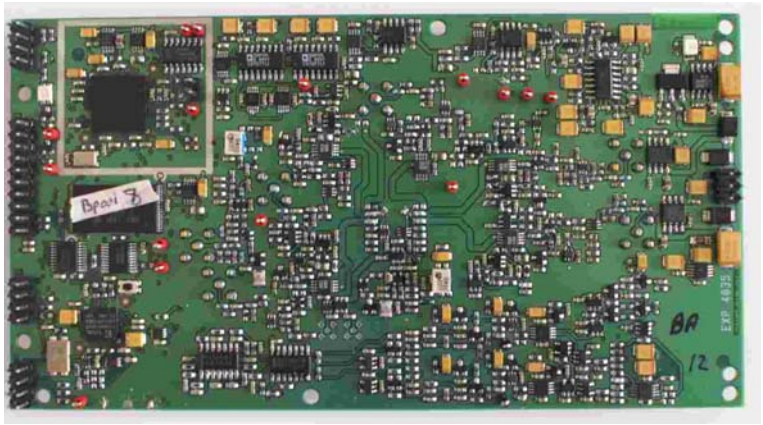
First generation radar sensors have evolved using existing architectures



Our solution replaces existing systems with 4 sensors and a central controller with a single unit

- Provides position and velocity information for objects
- Warning zone can be defined in software
- System can be reconfigured for different ranges

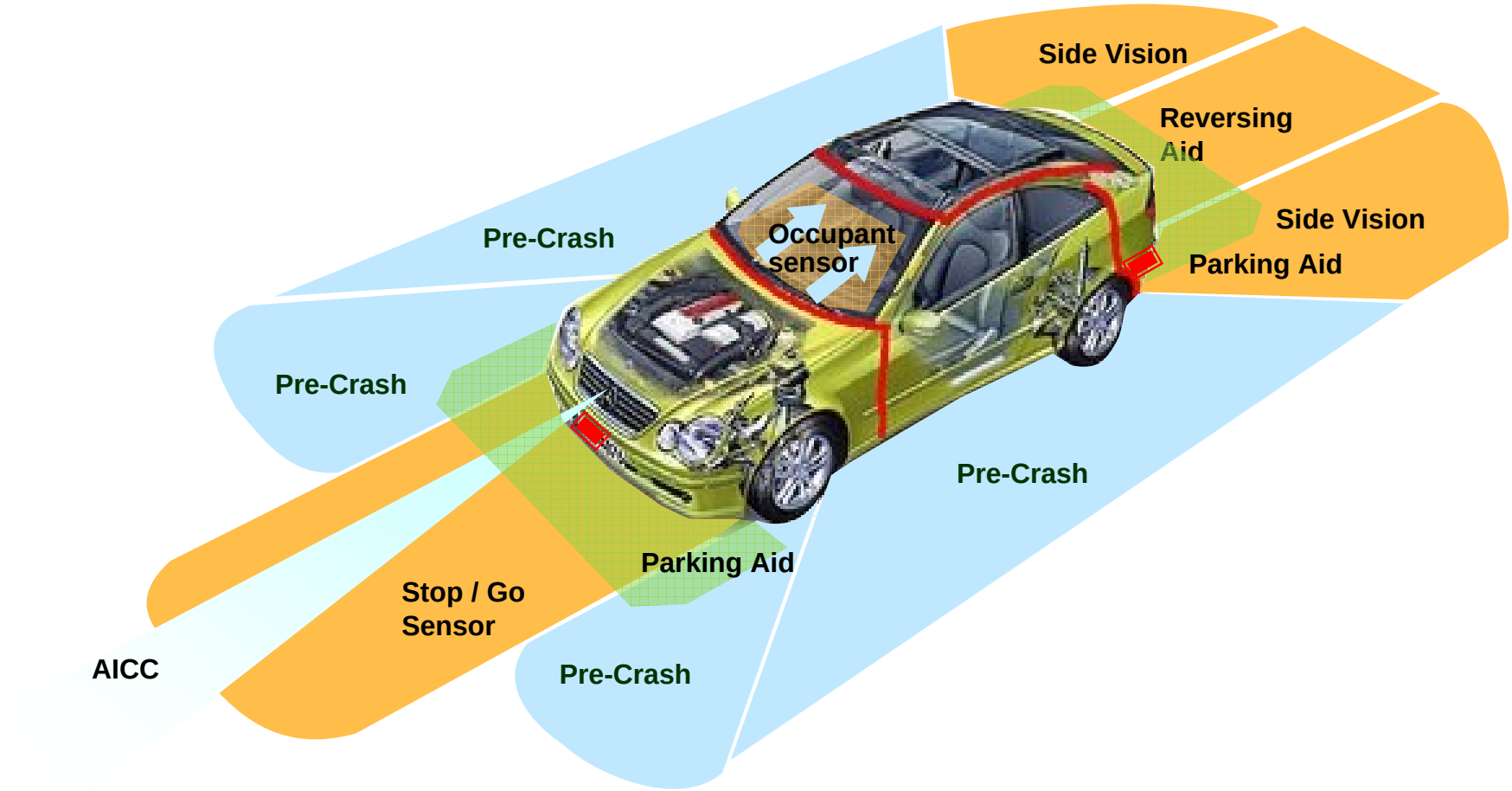
Size: 170mm x 80mm



This is an inherently low cost solution provided by considering the overall system cost not just the sensor cost

- Adapted from missile test system architecture
- Minimised component cost and manufacturing cost
  - whilst maintaining required level of performance
  - using low cost RF and processor technology from the wireless area
- Working with both vehicle OEMs and suppliers to commercialise the technology

Four sensors enable thirteen programmable alarm zones to be formed to support safety and convenience functions



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Disruptive technology is often seen as a holy grail, but there are issues that need to be addressed in order for it to be a success

- Look for examples of challenging developments that have succeeded
- Innovative developments have been key pointers towards disruptive technologies
- Focus on what users want from their products at the top level
  - and ask how that can be achieved from a clean sheet of paper
- Address the route to market and how the technology will be exploited and when

Contact details:

Cambridge Consultants Ltd
Science Park
Milton Road
Cambridge
England CB4 0DW

Tel: +44(0)1223 420024
Fax: +44(0)1223 423373

Cambridge Consultants Inc
101 Main Street
Cambridge
MA 02142
USA

Tel: +1 617 532 4700
Fax: +1 617 737 9889

info@CambridgeConsultants.com
www.CambridgeConsultants.com