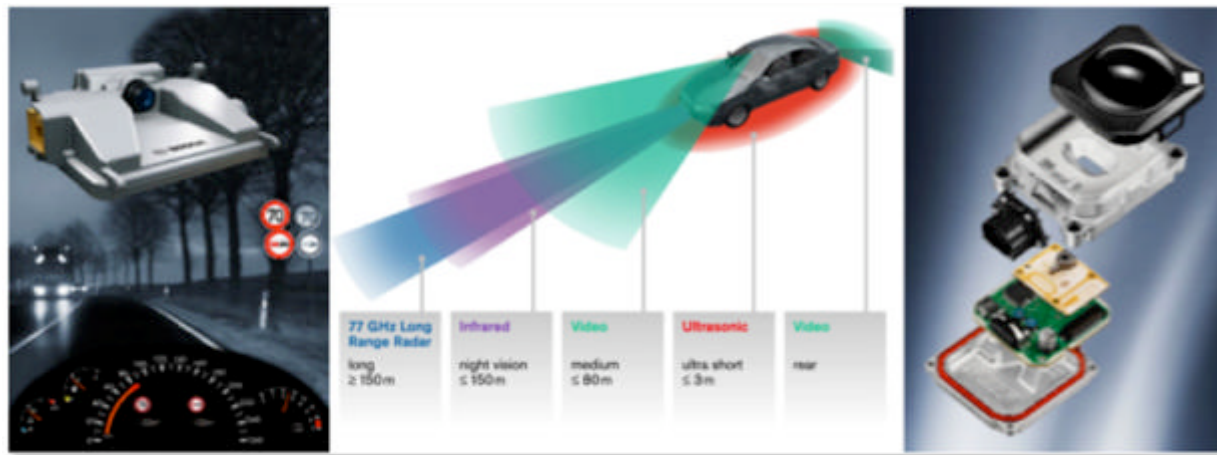


# Intelligent Vehicles – How Smart Can They Get?

How Much For What – Business, Consumer and Strategy Considerations



Stanford University  
April 26, 2011

**Dr. Sven A. Beiker**

Executive Director, Center for Automotive Research at Stanford - CARS  
416 Escondido Mall, Bldg 550 / Room 131, Stanford, CA 94305-4021  
(+1) 650 736-1504, [beiker@stanford.edu](mailto:beiker@stanford.edu), <http://automotive.stanford.edu>

# Great Ideas Being Met With Ignorance?

THANKS TO MARKETING, SALES HAVE INCREASED 100%!

QUESTION: ARE YOU ASKING A ROOM FULL OF ENGINEERS TO BE EXCITED ABOUT A BIG PERCENTAGE INCREASE OVER A TRIVIAL BASE?

YOU LEAVE ME NO CHOICE BUT TO GIVE YOU THE STINK EYE.

OW! OW!  
MAKE IT STOP!

THURSDAY  
APRIL 21

**DILBERT**  
by SCOTT ADAMS  
dilbert.com

www.dilbert.com  
scottadams@aol.com  
© 2008 Scott Adams, Inc./Dist. by UFS, Inc.

# Market Penetration – From Innovation to Mainstream

## Innovations' penetration

### Regulation-driven

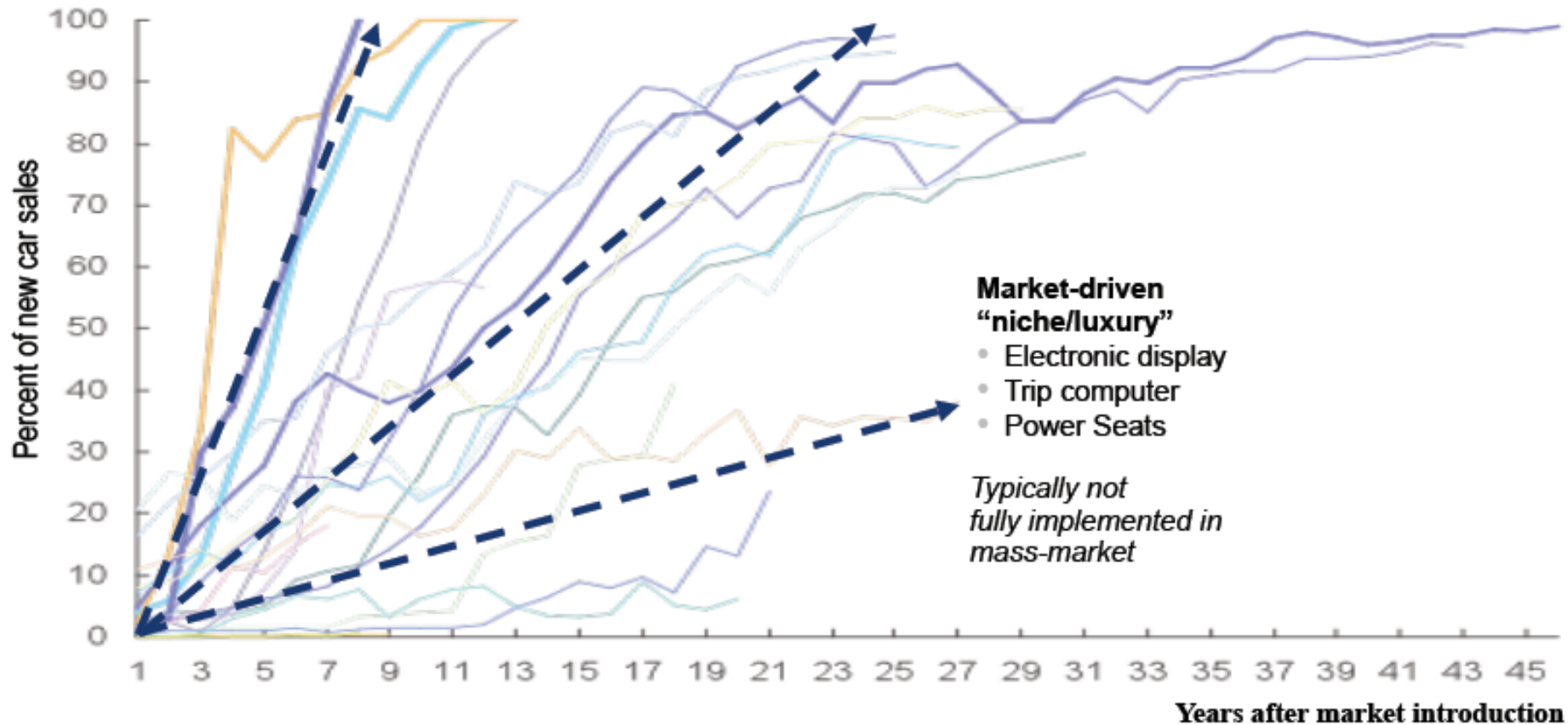
- Front Airbag
- Front Disk Brakes
- Radial Tires

### Market-driven "must have"

- Power Steering
- Air Conditioning
- Power Windows

Typically ~ 8-11 yrs

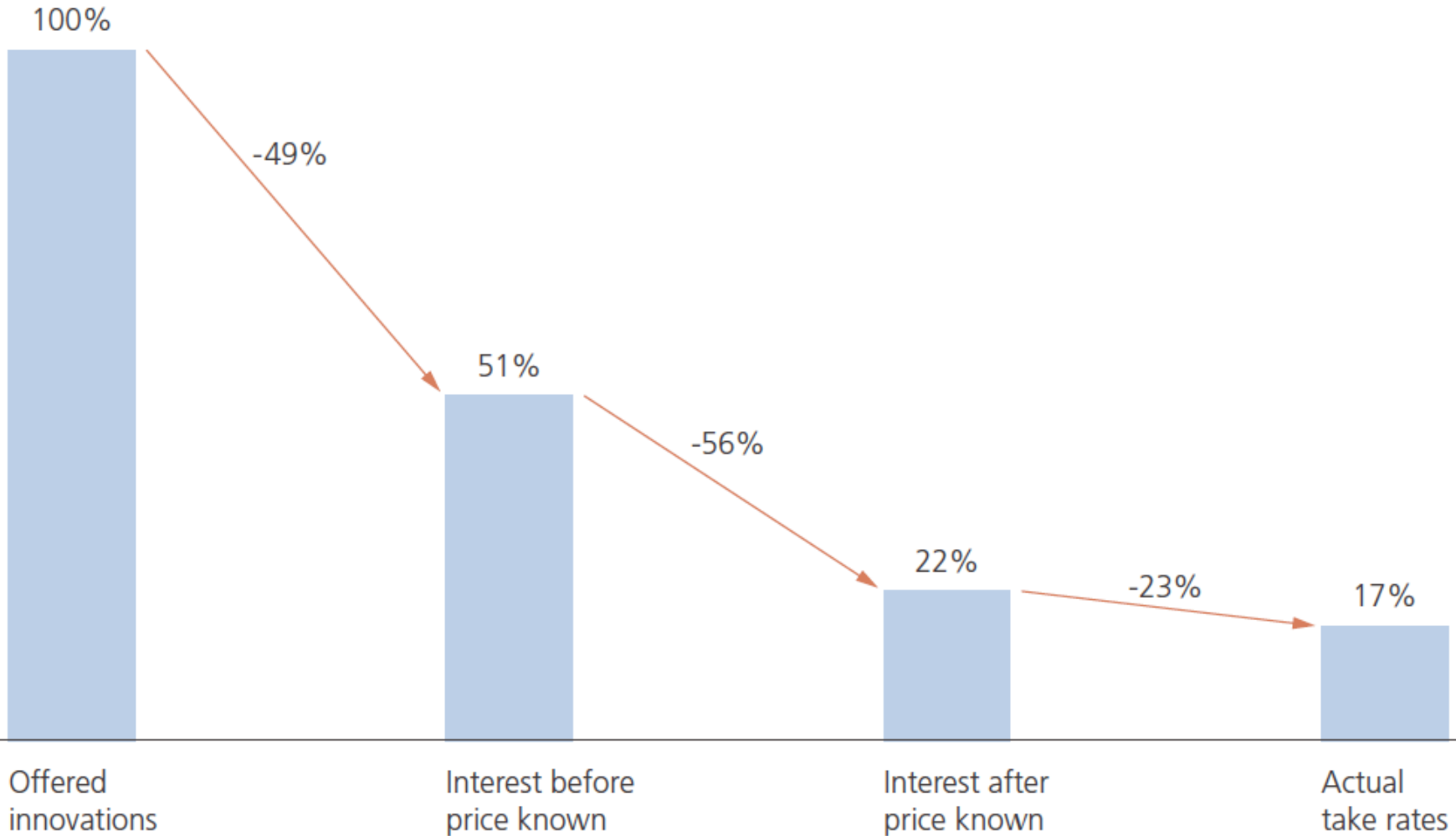
Typically ~ 20-30 yrs



# Innovation Acceptance – How To Sell Technology?

Only 17 percent of innovations are bought by the customer

Sales success of innovations<sup>1</sup>



<sup>1</sup> Germany / U.S., based on 14 innovations in buying simulation

# Popular Consumer's Choices When Buying a New Car - #1\*

## Feature: Leather Seats

**Why People Want It:** Since the dawn of the automobile, leather upholstery has been a luxury feature. That's not to say it's the correct metric for luxury. After all, you can get leather seats in a Kia Rondo. Still, it's one of those features which makes every car seem a little nicer, despite the at-times atrocious plasticky vinyl feel to the material.



# Popular Consumer's Choices When Buying a New Car - #2\*

## Feature: Navigation System

**Why People Want It:** Driving is hard. Knowing where you're going and using a map is even harder. Being aware of your cardinal directions and prior preparation for a trip are old ways of thinking. Pre-internet ways. Nowadays you simply take twenty minutes to awkwardly key in your destination address, then dive across four lanes of freeway traffic. The prompt tells you to awkwardly turn as you're passing it. It's

### How Much Is That GPS in the Dashboard?

In a new J.D. Power study, consumers expressing "definite interest" in various automotive technologies tended to lose interest if the price was too high.

Automotive feature	"Definite" consumer interest	Rank after told price	Price quote
Portable navigation device	22%	10	<\$400
Navigation system	22	14	\$1,600
Satellite radio	20	5	\$12.95/mo
Premium surround sound	18	6	\$500
Hybrid-electric capability	15	8	\$5,000
Blind-spot detection	14	2	\$500
Rear-vision camera system	14	3	\$450
In-vehicle Internet connection	13	18	\$30/mo
Wireless-connectivity system	12	4	\$250
Personal-assistance safety services	12	8	\$17/mo
Rear-seat entertainment system	12	18	\$1,500
Active-cornering headlight system	11	1	\$300
HD radio	10	7	\$200
Enhanced adaptive cruise control	9	16	\$1,500
Head-up display	9	17	\$1,200
Collision mitigation system	8	11	\$1,500
Advanced telematics services	7	13	\$300/yr
Automatic parallel-parking system	5	18	\$950
Lane-departure warning system	4	11	\$500

Source: J.D. Power & Associates Published in: "These Days, Cheap Is the Rule of the Road for Auto Gadgets", Wall Street Journal, 6/9/09



\*Source: Ten Most Important Features Car Buyers Want and Why, Jalopnik.com, 11/13/2009

# Popular Consumer's Choices When Buying a New Car - #3\*

## **Feature:** Sunroof

**Why People Want It:** Everybody loves letting the sun shine in, and since we as a nation now spend virtually all our time in the office, at the mall, or in front of the TV when not in the car, a hole in the roof is absolutely critical for the body's production of Vitamin D. You can quite easily pick out people without sunroofs, as they'll be suffering the effects of Vitamin D deficiency, namely cardiovascular disease, cognitive impairment in older adults, severe asthma in children and cancer.



# Popular Consumer's Choices When Buying a New Car - #4\*

## **Feature:** Third Row Seat

**Why People Want It:** You know all those *other friends* you have? The ones you don't really want to ride with you when hitting the town because they talk too loud on their cell phone or possess the innate ability to make every conversation about how the '85 Bears were the greatest football team ever? Those friends are the reason 3rd row seats were invented. Put them in the wayback and A) you can't hear them from the drivers seat and B) it's so cramped back there they'll never want to hitch a ride with you again. We're surprised it's only at #4.



# Popular Consumer's Choices When Buying a New Car - #5\*

**Feature:** DVD Video System

**Why People Want It:** Have kids? Hate them? DVD players all around. Who wants the arduous task of actually speaking with your progeny? Nobody, that's who. Having conversations about the trip, the world around, answering questions and providing a general education for your kids is the job of the public schools. Put the latest *Pixar* flick on and enjoy pretending you never even had them.



\*Source: Ten Most Important Features Car Buyers Want and Why, Jalopnik.com, 11/13/2009

# Popular Consumer's Choices When Buying a New Car - #6\*

**Feature:** Automatic transmission

**Why People Want It:** People want automatic transmissions because they're the only way to enable knee driving, which frees up both hands for more important tasks, like putting on eyeliner, checking out the morning newspaper, chatting with a cell-phone in one hand and a coffee in the other. Also, they don't like manual transmissions because they hate sunshine and rainbows and freedom and the American way. Plus hills. They hate hills.



# Popular Consumer's Choices When Buying a New Car - #7\*

**Feature:** Tow Hitch

**Why People want it:** Tow hitches are like bicycles. Some people use them a lot, every day in fact, other just like to have one for recreational stuff, but most just like to have them because. You never know when you'll need a tow hitch. Those are the people with rusty tow hitches that've never seen the inside of a receiver.



# Popular Consumer's Choices When Buying a New Car - #8\*

**Feature:** Seat Heater(s)

**Why People Want It:** If you've ever lived in a state that does winter with gusto, say, Michigan, you realize the utility of seat heaters. They're practically life saving devices in February. Since American's bottoms are ever expanding and a large heat sink, an unheated backside could probably result in flash hypothermia. Seat heaters: Saving American lives during short trips to the Taco Bell drive through at 2 AM in February.



# Popular Consumer's Choices When Buying a New Car - #9\*

**Feature: 4WD**

**Why People Want It: You need four wheel drive to conquer the cliffs of cul-de-sac every morning** while commuting from your remote village of Pulte. It's absolutely essential when considering the refuse-strewn terrain and deep water you'll face during sudden thunderstorms. By God, what if you go tailgating at your alma mater and have to park on the *grass*! There'd be no rescue for you if you had no four wheel drive.



# Popular Consumer's Choices When Buying a New Car - #10\*

**Feature:** Cruise Control

**Why People Want It:** The phrase "Set it and forget it" made Ron Popeil a rich man. We don't particularly like paying attention to things that don't need constant modulation, it's boring. Thus cruise control. It used to require Rube Goldberg-like gadgetry to keep speed constant without having your foot on the pedal, but now it's as simple as a piece of software controlling the electronic throttle. Not standard yet (but getting there) are systems to prevent you from plowing into the back of a Reatta at freeway speeds because some boob decided to slam on his brakes while you were texting on your cell phone.

