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## 2018

# Communication Technology Update and Fundamentals: *Automotive Telematics*

*Prof. Denise Belafonte-Young MFA  
Lynn University*



# COMMUNICATION TECHNOLOGY UPDATE AND FUNDAMENTALS

16th edition

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A Focal Press Book

ROUTLEDGE

# Where it all began: 14th Edition

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## Automotive Telematics

Denise Belafonte-Young, M.F.A.<sup>\*</sup>

### Why Study Automotive Telematics?

- With fuel buildup and road changes, locations are often hard to find. GPS is an integral part of wayfinding for drivers.
- Tracking devices and quick response times can alleviate societal concerns, reduce safety, and limit stolen property threats.
- Smart phone apps will provide light and horn alerts to help find a lost car, unlock the car, direct the driver to the nearest coffee shop, and much more.
- Hands-free communication and enhanced Fine Booth technology will increase "entertainment" in the car.

### Introduction

Automotive telematics can be defined as "the blending of computers and wireless telecommunications technologies" (Kozco, 2009). Telematics enables drivers to get information about the location, movement, and state of their vehicles. It also enables vehicles to communicate wirelessly, which opens up a wide range of services.

Telematics is essentially a range of different features, options, and devices that are brought together by a single principle—data and communication. (Coe, Dennis, & Jost, 2011b). To provide the above services, telematics products may include GPS (Global Position System), mobile vehicle Wi-Fi connections, digital audio and video solutions, wireless telecommu-

nication modules, and car navigation systems (Coe, Ben, Chu, & Solt, 2006).

### Background

Ford Motor began a manufacturing revolution with mass production assembly lines in the early 20th century, and today it is one of the world's largest automakers (Ford Motor Company, 2014). The history of telematics can go back to Henry Ford's desire in 1908 to create easy transportation for everyday people. As automobiles evolved from strictly a means of transportation to luxury items as time went on, the development of in-vehicle telecommunications, entertainment, and "infotainment" are the landmarks of today's automobile environment.

Table 13.1  
Evolution of Automotive Telematics

In a GSMA study, the evolution of automotive telematics was defined:

Telematics 1.0	Hands-free calling and screen-based navigation
Telematics 2.0	Durable navigation and satellite radio
Telematics 3.0	Introduction of comprehensive connectivity to the vehicle
Telematics 4.0	Seamless integration of mobility and the Web

(Source: GSMA [2011])

### The Birth of the Car Radio

The first technological breakthrough in electronic devices was the car radio. According to Gray (2011), "The first radio appeared in cars in the 1920s, but it wasn't until the 1950s that most cars contained AM radios." William Lear, who created the Learjet, also created the first mass-market car radio. The first FM

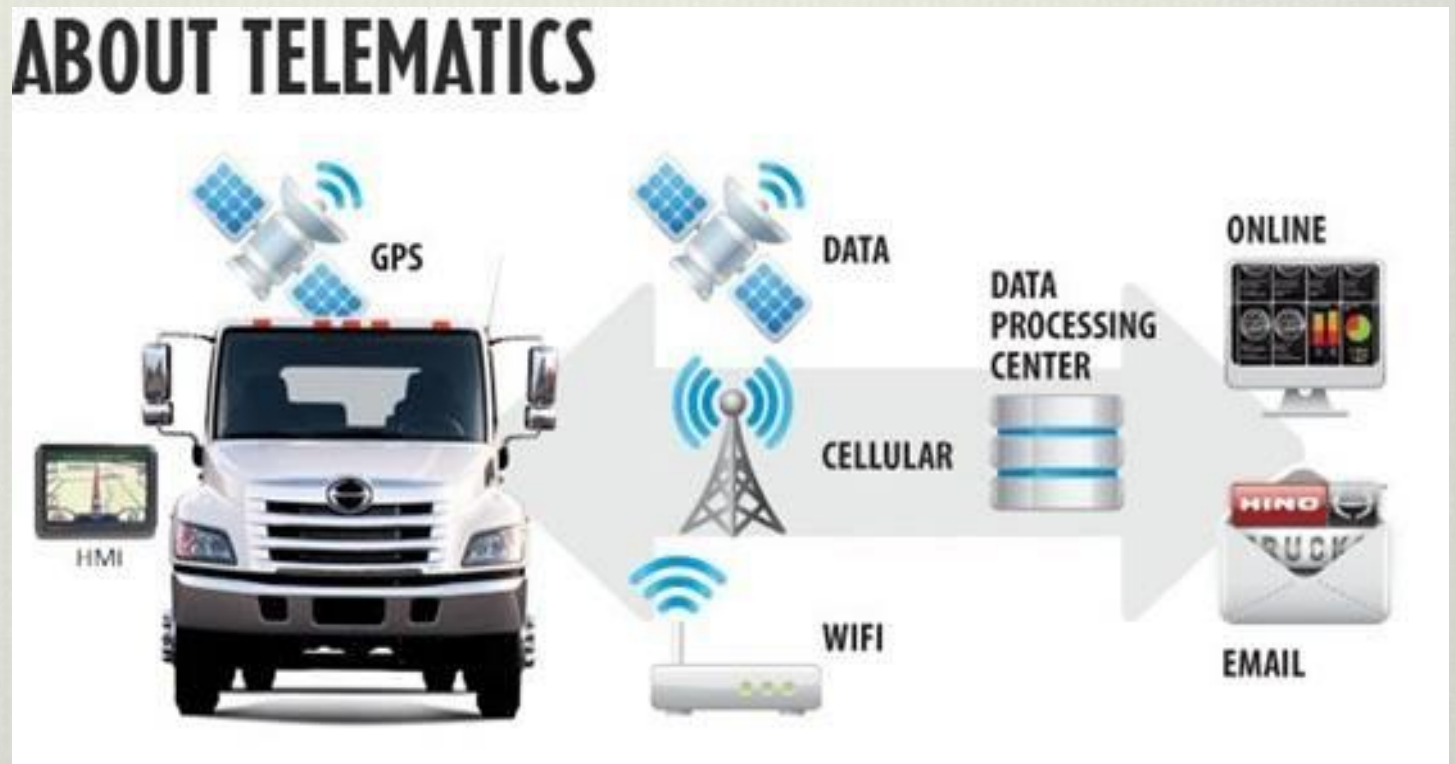
<sup>\*</sup> Assistant Professor, Kennesaw State University (Kennesaw, Florida)



# What is Automotive Telematics?

Automotive Telematics can be defined as “the blending of computers and wireless telecommunications technologies”

(Rouse, 2007)



- Telematics is essentially a range of different features, options and devices that are brought together by a single principle – data and communication.
- Telematics enables you to get information about the location, movement, and state of your vehicle. It also enables your vehicle to communicate wirelessly, which opens up a wide range of services. (Coe, Prime, & Jest, 2014b).



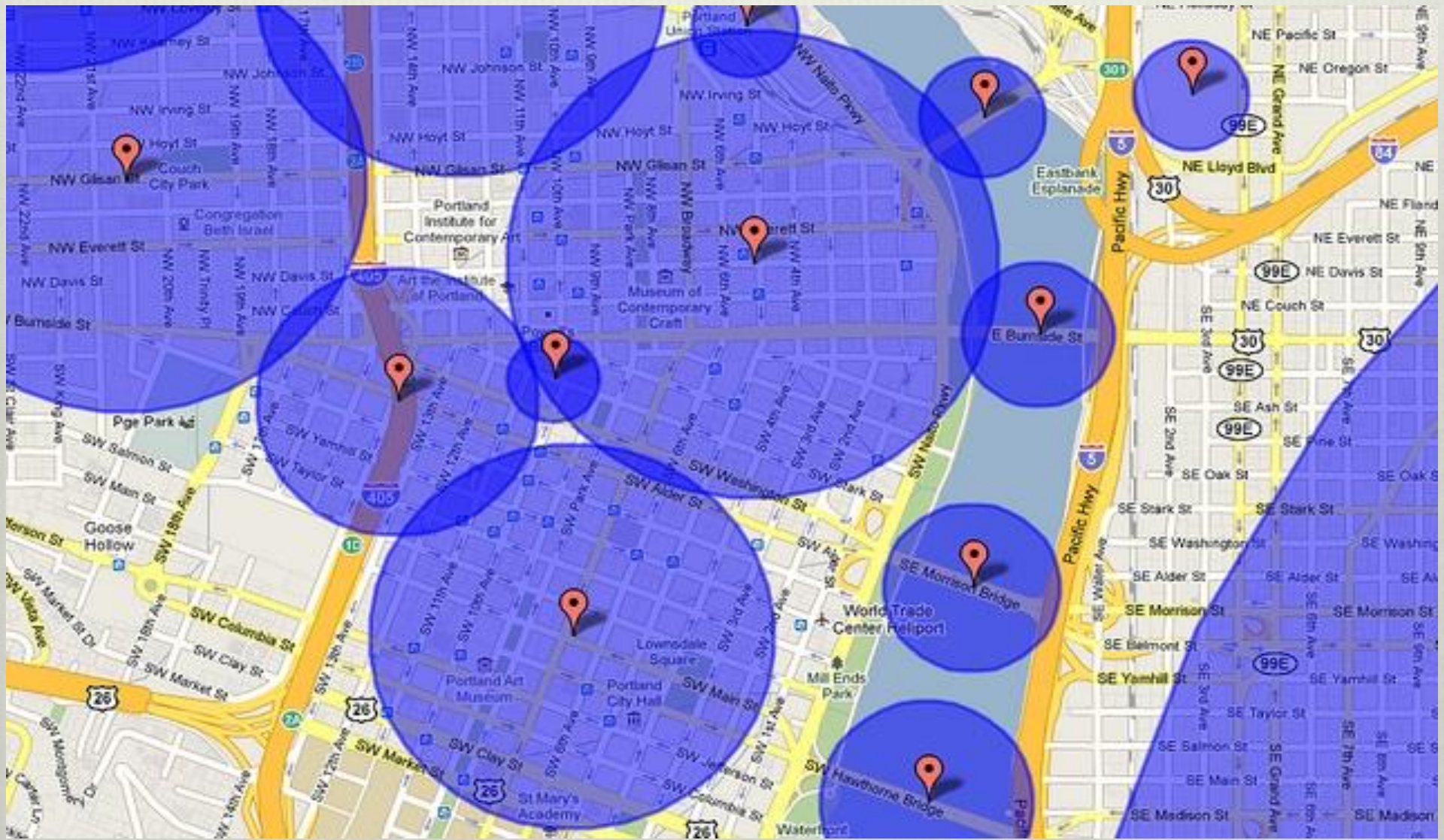
- Telematics makes your car safer, keeps you from getting lost, summons roadside assistance at the press of a button, routes you around accidents, and auto-dials 911 if you're in the accident.
- For most users, telematics means navigation, communications, safety, security, and increasing infotainment.





# ➤ Fleet Management trends

➤ <http://www.automotive-fleet.com/article/photos/253838/2017-fleet-management-trends-telematics/13074.aspx>





# Still on the Rise...

- Self-Driving Cars
- Driverless UBER, car rental, food delivery...etc.
- Smart technology & Connectivity gone mad
- Safety features e.g. Brake sensor technology







Murphy, E. (2017, November 23). Laowa 7.5mm f2, first exposure [Photograph]. *Flickr*. Retrieved from <https://flic.kr/p/ZubjTc>

## Navigation Technology

## Electric Car Charging Stations

Härter, J. (2017, August 13). Bettermann Ladebox B3200 [Photograph].

*Flickr*. Retrieved from <https://flic.kr/p/XvAJYz>



# Connectivity, Navigation, and Diagnostic Analysis

- **GM On-Star system**
- **The Mercedes Benz mbrace,**
- **BMW iDrive Vehicle Control System**
- **Lexus Enform**
- **Toyota Safety Connect**
- **Ford Sync**
- **Hyundai BlueLink**
- **Infiniti Connection**
- **Honda Link**



Intel Free Press. (2013, January 3). Digital natives in car [Photograph]. Flickr. Retrieved from <https://flic.kr/p/dH8unX>



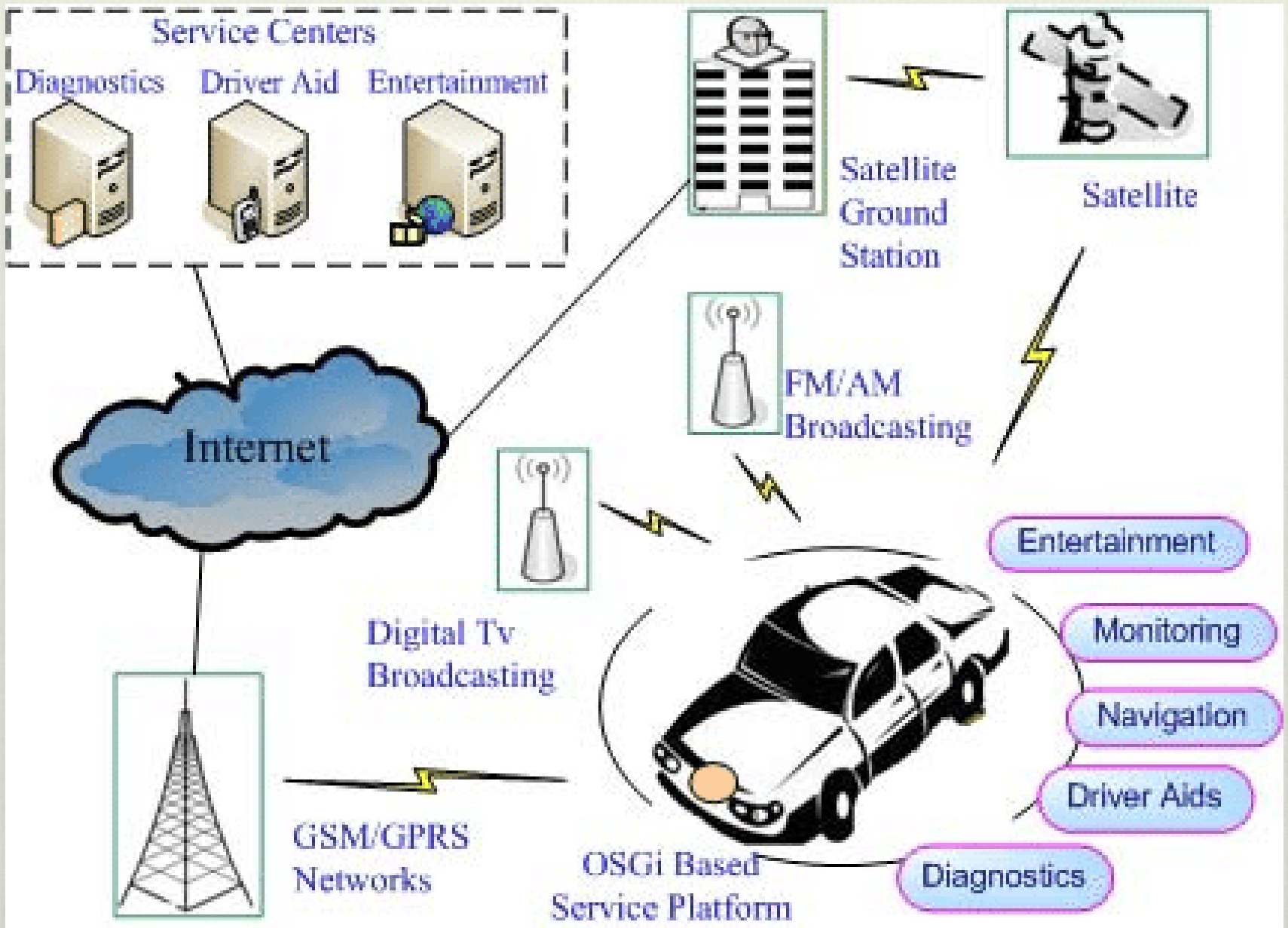


# 5G Technology



Intel Free Press. (2012, December 27). Auto in-dash display [Photograph]

. Flickr. Retrieved from <https://flic.kr/p/dEM7kr>





# How Vehicle-to-Vehicle Communication Could Replace Traffic Lights and Shorten Commutes

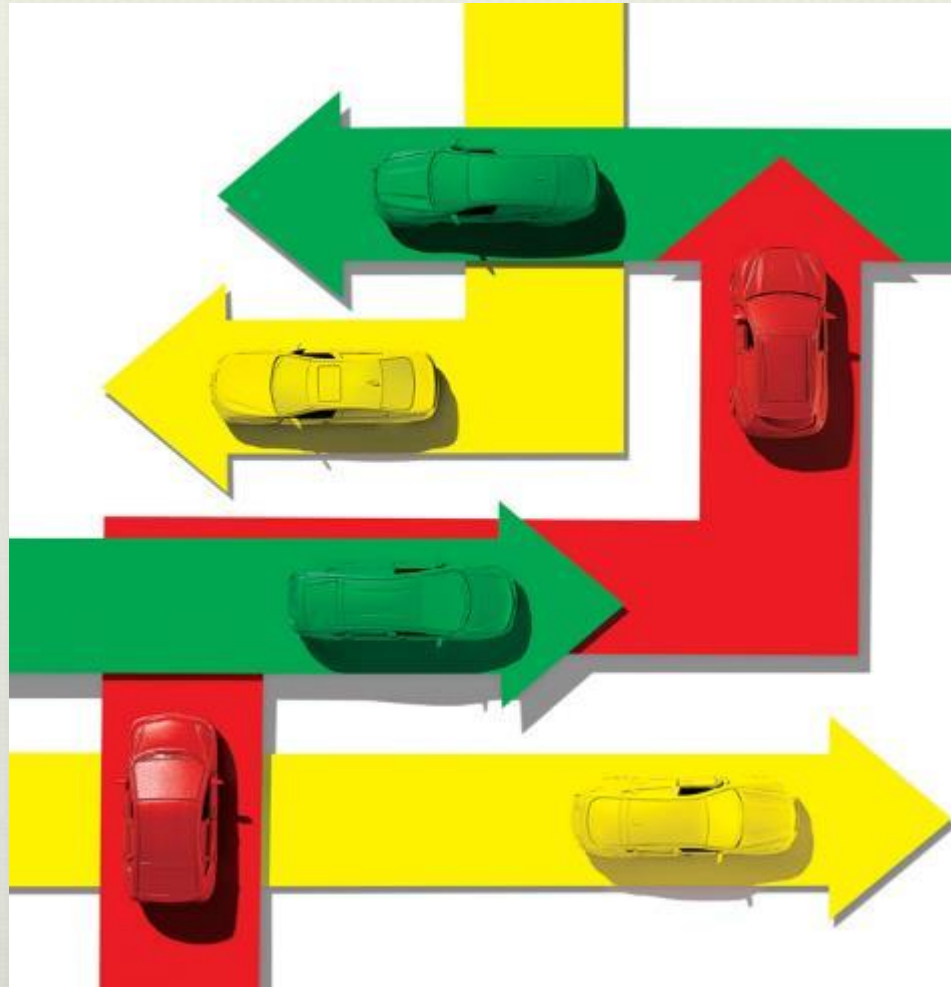
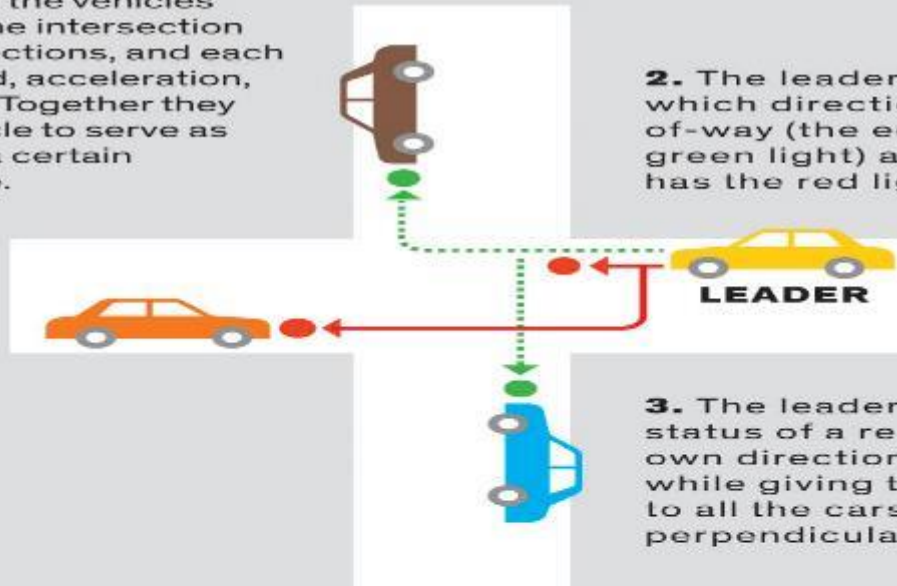


Photo: Dan Saelinger

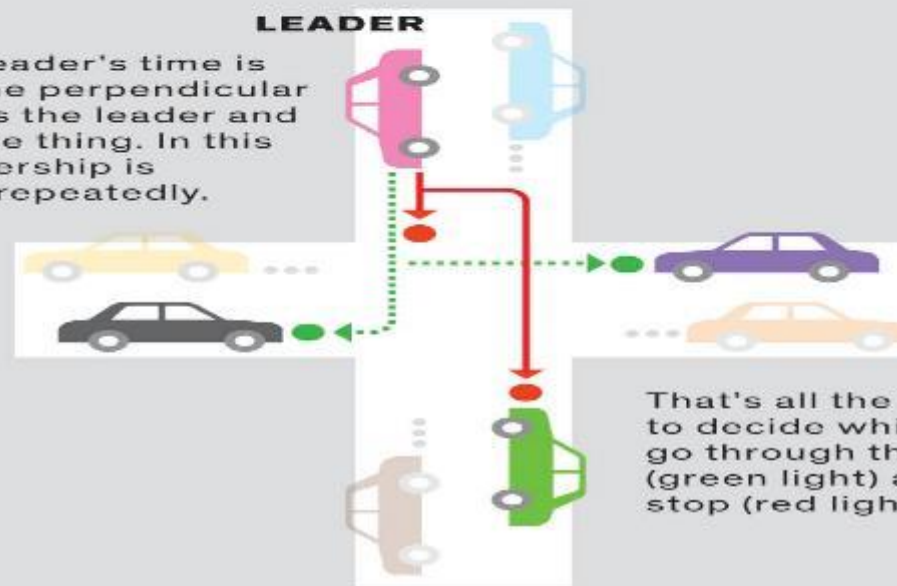
**1.** Each vehicle computes its own distance to the intersection, the distance of the vehicles approaching the intersection from other directions, and each vehicle's speed, acceleration, and trajectory. Together they elect one vehicle to serve as the leader for a certain amount of time.



**2.** The leader vehicle decides which direction has the right-of-way (the equivalent of a green light) and which direction has the red light.

**3.** The leader assigns the status of a red light to its own direction of movement, while giving the green light to all the cars in the perpendicular flow.

**4.** After the leader's time is up, a car in the perpendicular flow becomes the leader and does the same thing. In this fashion, leadership is handed over repeatedly.



That's all the algorithm needs to decide which vehicle gets to go through the intersection (green light) and which has to stop (red light).



????????????? Don't we have this?



*“Communication Technology  
Update and Fundamentals”*

Is a great text and/or tool for any  
emerging media or technology  
course

The Book is used as a  
supplemental text in our  
Communication and Emerging  
Media Major course:

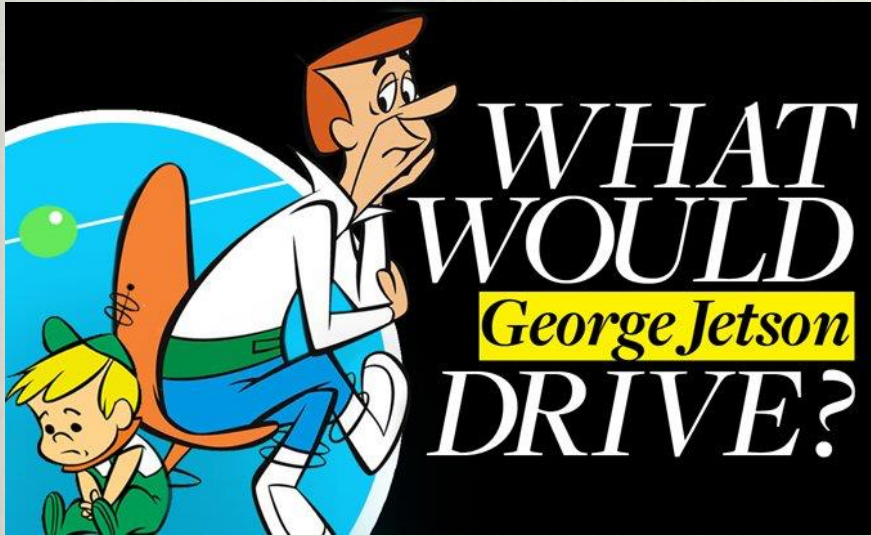
COM 244- *Development of  
Technology in Communication*



In Conclusion...

Keep updated with us...

What's next?



Thank you!