42611 - Theory of science in engineering

DTU - Technical University of Denmark

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Assignment 10
Diffusion and Co-Creation Methodologies

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Assignment 10a: Diffusion

For this assignment, autonomous vehicle technology as described in assignment 9a will be used. The primary adapters of the technology for this discussion will be consumers or regular drivers who need to get from point a to b, like to and from work.

It is the individual decision that will be focused on, with only 42% willingness among customers to use autonomous vehicles [1, statista link].

Social System

The social system is people worldwide 18 years or older.

It is expected that humans are in control of technology, in the most direct meaning possible. This social norm is hindering the diffusion of the concerns for this technology.

The following consequences could occur as a result of diffusion.

- An accelerated adaptation of technology. This could be considered a desirable anticipated direct consequence.
- Reduced death and injury from traffic accidents by increased adaptation. This could be considered a desirable anticipated indirect consequence.
- Over trusting of autonomous technologies, as to neglect the remaining potential safety issues of this and other autonomous technologies. This could be considered an undesirable unanticipated direct consequence.

Diffusion ammunition

The following characteristics could be leveraged for diffusion.

- Relative advantage.
  Statistics of death and injury-related accidents of non-autonomous vehicles could be leveraged to showcase how much safer autonomous transportation would be.
- Compatibility.
  Demonstration of the capabilities of autonomous vehicles to operate in current transit systems.
- Complexity.
  Operating an autonomous vehicle would not require a traditional driver's license to operate. Education in operating a self-driving car would be so much easier, a formal "educational" licensing procedure would likely not be needed.
- Trialability.
  A very likely autonomous taxi service would make trying out an autonomous vehicle very possible.
- Observability.
  Autonomous vehicles would be driving on public roads and be very visible. If autonomous vehicles were made very distinguishable from self-driving cars, it would leverage the effects of observability.

Channels

The advantage of mass communication is a broader reach, but it comes at the cost of decreased trust. The advantage of more exclusive personal communication is higher trust but at the cost of very little reach.

The adaptors could be considered to be almost every person on earth, as almost everyone require some kind of movement over longer distances. Channels that would be effective at targeting a broad audience, could be mass communication through official news. Another channel that could also be effective is the emerging social media platforms or search engines online. Results from search engines are trusted by 2% more people than traditional media at 59% percent of people, according to Statista [2, statista link].

Adaptors

The early adaptors would likely be those with money and a great need to travel long distances regularly. A white-collar worker would very likely find it enticing to be able to work productively during travel to and from work.

The late adaptors would likely be those with little need to travel or lack of money. A store cashier that lives 5 walking minutes away from work would likely not hurry to purchase or become a heavy "taxi-user" of autonomous vehicles.

Assignment 10b: Co-creation

Social practices which everyday practices are linked to the use of this technology?		**Expectations** what expectations do designers and users have for the future use of this technology?	
Designers	Users	Designers	Users
Designers will explore the ideas of users and optimize and create parts to accommodate interior designs. Further optimizations and development will also be a practice of the designers.	Drivers will enter autonomous vehicles and merely input the desired destination. The vehicle when then proceed to the desired destination fully automated. The autonomous vehicles can be configured with different interiors to accommodate different situations, like a small office desk space for working, multiple seats to accommodate multiple people or even a mini cinema for entertainment during travels. The users would find, modify and change the interior configuration to needs etc.	Designers expect everyone to one day uses the technology, and this would open a new avenue of transport infrastructure.	Users expect the continued access and operation of the technology. Some might even expect a more efficient system, perhaps even water or airborne.
Infrastructures what infrastructures will be needed when installing and using this technology?		**Possibilities and limitations** what do designers and users see as the technical possibilities and limitations of technology?	
Designers	Users	Designers	Users
Servers for software and updates, perhaps even servers for other types of digital control with autonomous vehicles, manufacturing facilities, power facilities and viable compatible roads for the vehicles.	Storage solutions, like garages and parking spots, perhaps with the addition of charging stations would be necessary to facilitate autonomous vehicles.	The designers could see posibilities to accomdate more daily tasks and conveniencies. It could be things like a fridge for groceries, or a trailer type attachment including a robot arm to lift heavy objects.	Users could think that space is limited, by the nature of being confined to a vehicle with a size that can operate on current road infrastructures.