

Middle East Technical University

Member Information

<u>Name</u>	<u>Year</u>	<u>Major</u>
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Advisor: Prof. Semra Aşçıgil

Topic: Self Driving Technology/ A Threat or Opportunity

Audience: Waymo Board of Directors

EXECUTIVE SUMMARY

Over the last couple of decades technology has evolved to the point where it became an inseparable part of our lives. Smartphones, smart homes, and smart cars - things are becoming "smart". The technological transformation does not stop there; fully autonomous cars are just around the corner.

The legal framework of this brand-new technology is not clearly determined by the international legal authorities including European Commission of Mobility and Transport or U.S. Department of Transportation. There are several problems arising from the vagueness of legal framework, such as the lack of specific law or regulation determining the responsibility of the company, or the inconsistency in international law about test permissions, regulations and penalties. Therefore, there are some important red-flags that need to be carefully addressed and considered.

The financial dimension raises some concerns around the long-term investment streams that are essential for Waymo's R&D journey. Waymo's annual costs are reported at around \$1 billion while its taxi business, Waymo One, barely generates hundreds of thousand dollars in revenue. A few other potentially viable business models were suggested, one of which was the idea of ride-hailing suggested by the company's CEO John Krafcik. This creates a financial dependency on external funding sources, particularly venture capital, accompanied by continuously rising expectations.

The ethical aspect of autonomous cars is under constant scrutiny, making it an ongoing research in the field of AI ethics. The emergent issues raised by the new technology have a significant impact on the machine's learning and decision-making process when faced with ethical dilemmas. The problem of moral uncertainty, for example, puts the burden of decision-making on the programmers and engineers. But should they really be the ones determining the ethical choices for users or those affected?

Product safety is another AI ethics issue we would like to draw the board's attention. Will artificial intelligence be able to perform humanized reflexes in the interaction with other drivers or pedestrians? Can AI provide a safe drive under extreme circumstances such as unstable road conditions? Is it possible for AI to be hacked? These are just a few of the issues that need to be addressed to ensure the compatibility with safety standards.

As an Ethics Support Team at Waymo, we came up with a solution that is reflected in our FPAT framework. Focus, partnership, awareness and training are the key elements of the constructive solution that Waymo can use to address its legal, financial and ethical concerns.