

# **Tendências Globais na Indústria Automotiva**

**“Pensando fora da Caixa”**

# Palestrante: Hayram Nicacio

- Graduado em Engenharia Elétrica pela UNICAMP.
- Mestrado em Engenharia Elétrica pela UNICAMP.
- Pós-graduado em Planejamento Estratégico pela ADESG/SP.
- 20+ anos de experiência em projetos de Sistemas Embarcados de Aplicação Crítica.
- 15+ anos de experiência como professor universitário para os cursos de Ciências da Computação e Sistemas de Informação nas disciplinas de Redes de Computadores, Segurança da Informação, Programação, Estrutura de Dados, Engenharia de Software, Arquitetura de Computadores.
- 10+ anos de experiência como consultor em projetos de TI e Transformação Digital para grandes empresas brasileiras.
- Atualmente: CTO da MULTICORPOS LLC nos EUA e Consultor para EDAG do Brasil
- SAE BRASIL:
  - Coordenador da pós-graduação em Projeto de Sistemas Digitais Embarcados.
  - Membro fundador do Comitê Telemática e Infotainment, 2010-2017, presidente do comitê em 2015,2016,2017.
  - Membro fundador do Comitê Transformação Digital, 2018 - atual.
  - Membro do Comitê Educação e Engenharia, 2017 - atual.

# Um breve comentário sobre a Engenharia Brasileira

## The “Boeing & Embraer” case



“Boeing may find itself with a critical engineering shortage at just the wrong time if the new mid-sized airplane program proceeds. ... **One can easily envision Embraer, with its lower-cost wages, taking a major engineering role — something that might be crucial at a time when a very large number of Boeing’s engineers are reaching retirement age.**”

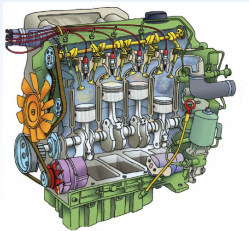
Source: <https://www.bizjournals.com/seattle/news/2017/12/27/boeing-embraer-deal-aerospace-analysts-e2-jet.html>

“Boeing aims for young Brazilian engineers.”

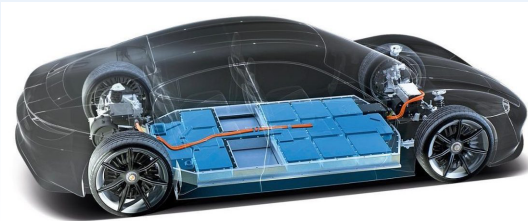
Source (in portuguese): <http://www1.folha.uol.com.br/mercado/2018/01/1947359-boeing-mira-jovens-engenheiros-brasileiros-da-embraer.shtml>

# Agenda desta apresentação

## Indústria Automotiva Tradicional



## Transformação Digital e Novas Paradigmas



## *Insights* e como “Prever o Futuro”

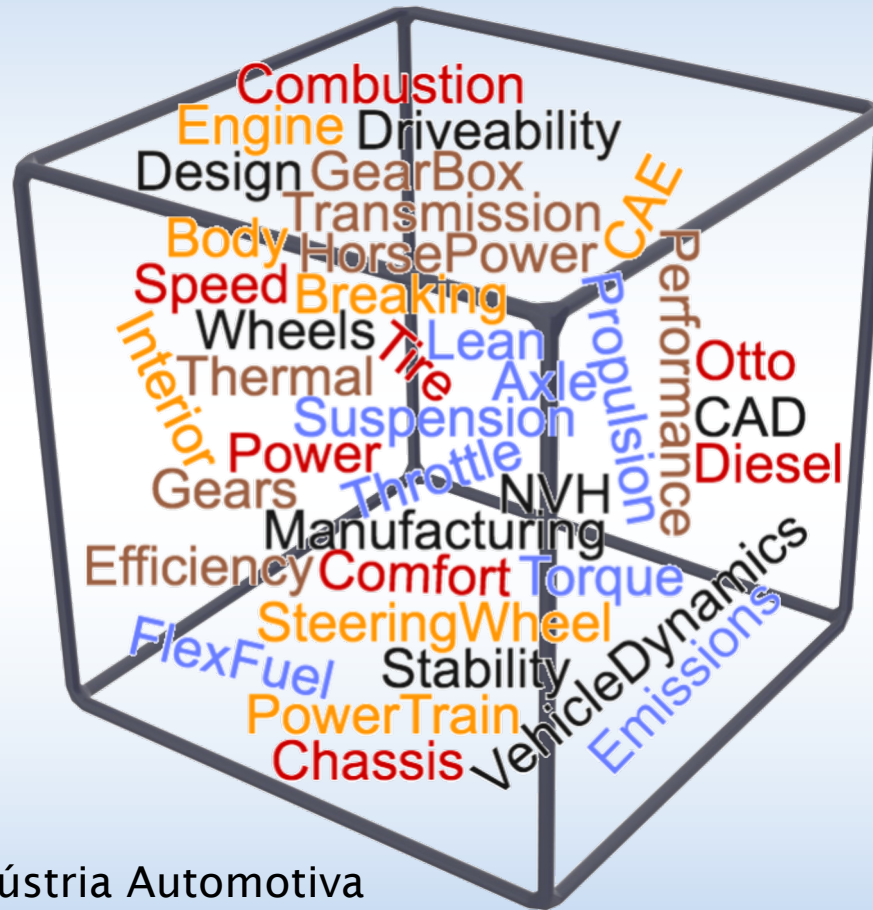




**Como pensar “fora da caixa”?**

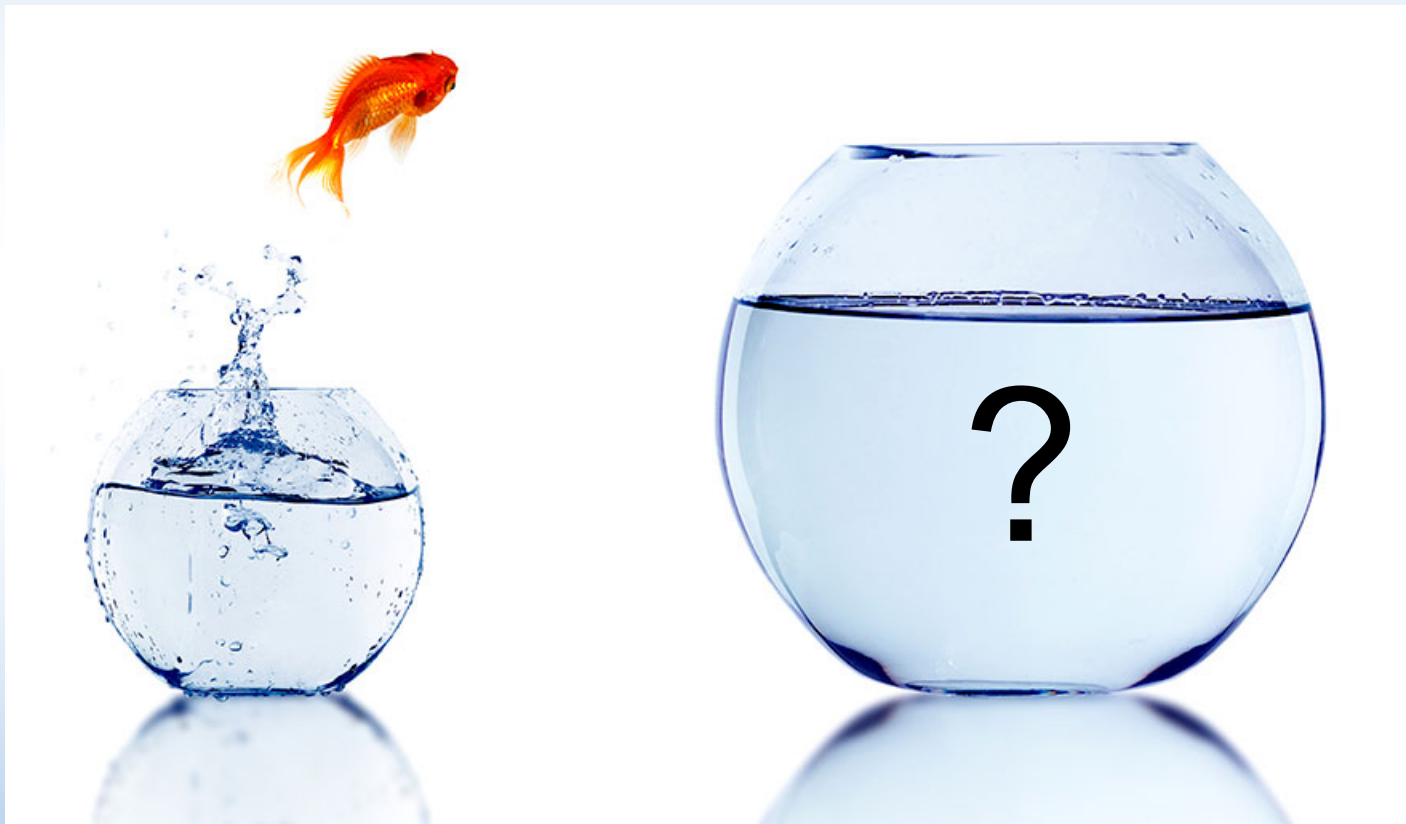
**Como inovar de forma  
sistematizada?**

# Definindo “a caixa”

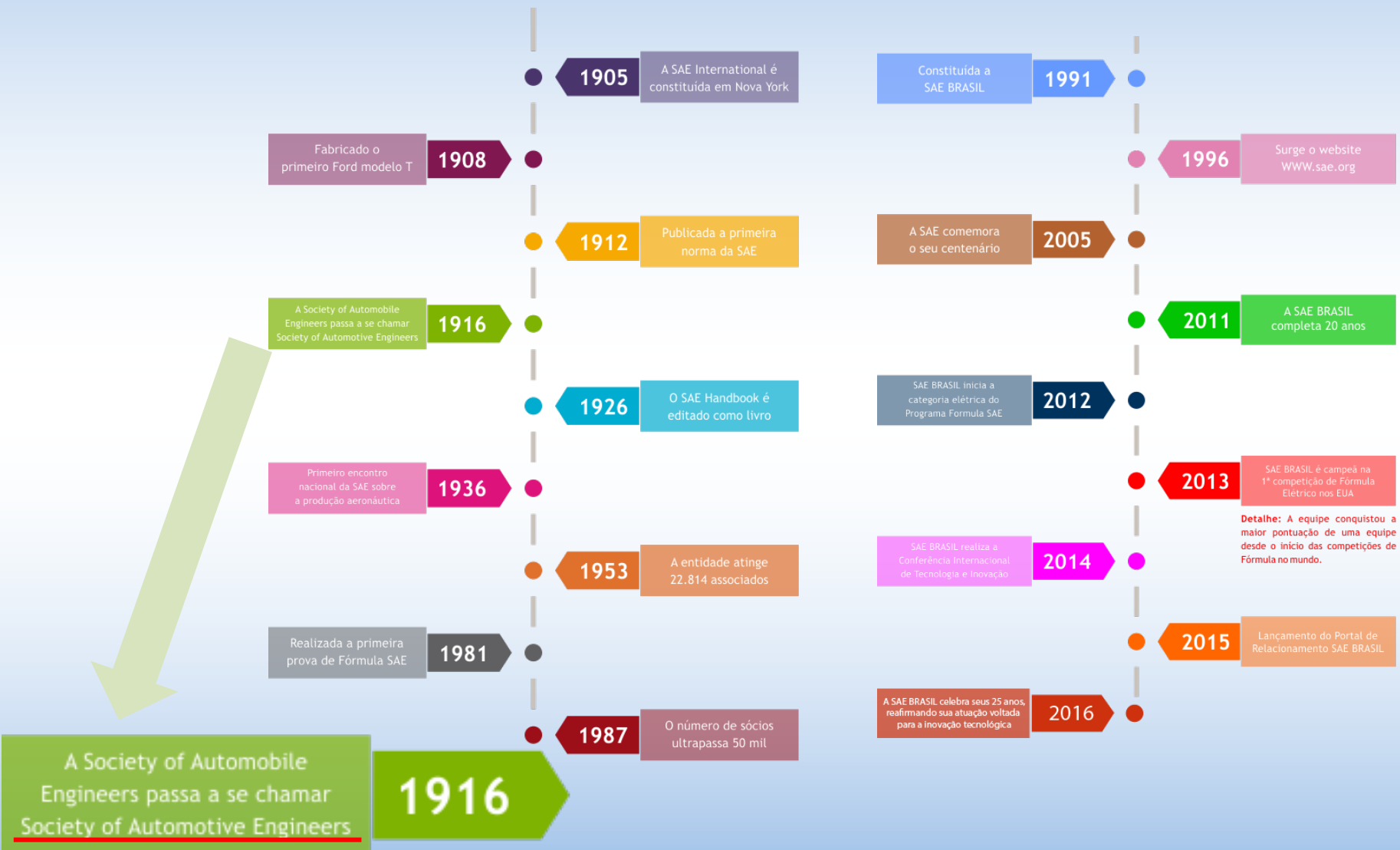


Indústria Automotiva  
Tradicional

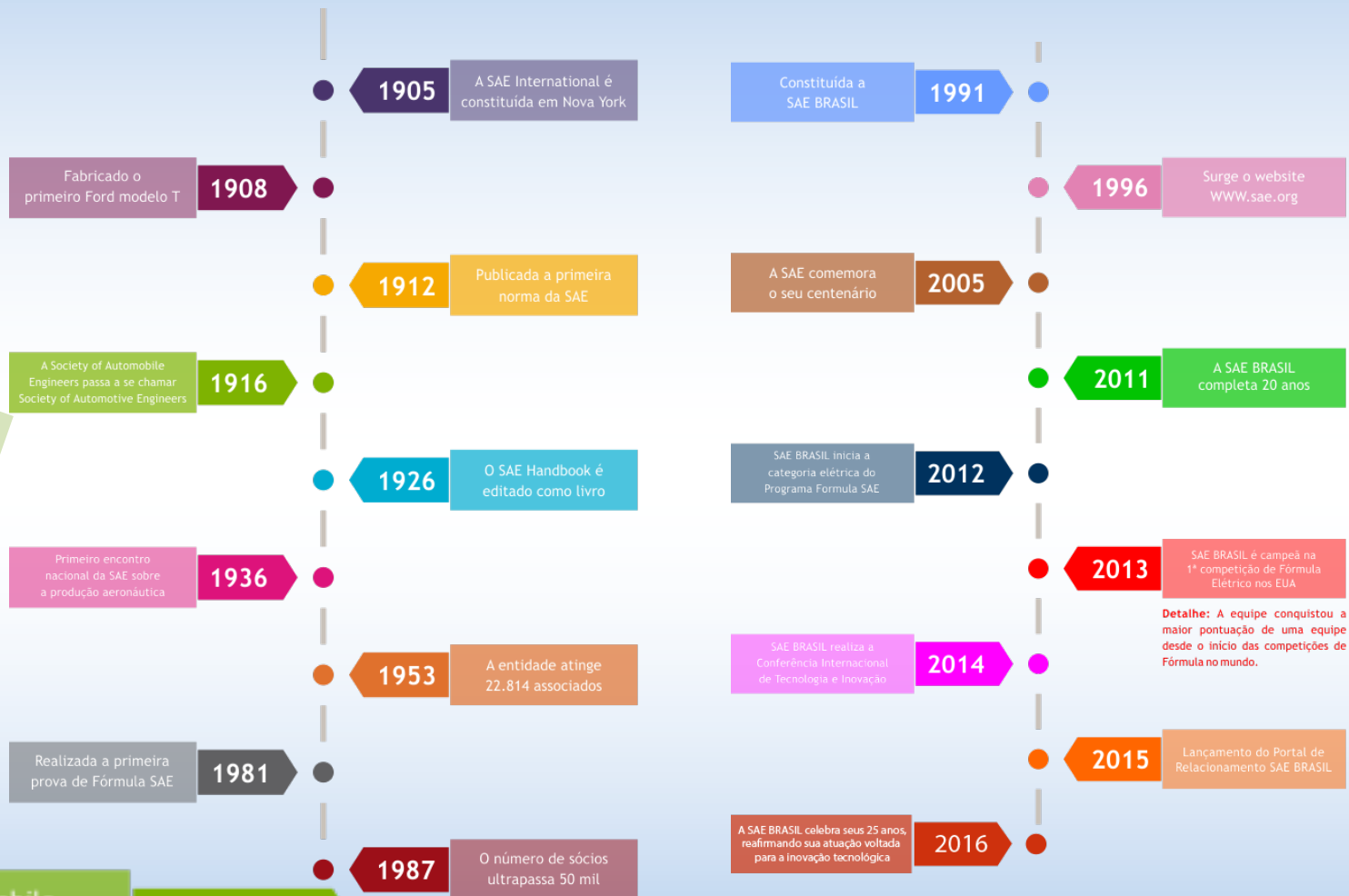
# A Indústria Automotiva está em Transformação



# SAE BRASIL



# SAE BRASIL



A Society of Automobile Engineers passa a se chamar Society of Automotive Engineers

1916

Atualmente:  
**Sociedade de Engenheiros da Mobilidade**

# Novo Conceito de Automóvel

**100M** AVERAGE LUXURY AUTO

**20M** NAVIGATION SYSTEM IN 2009 S-CLASS MERCEDES-BENZ

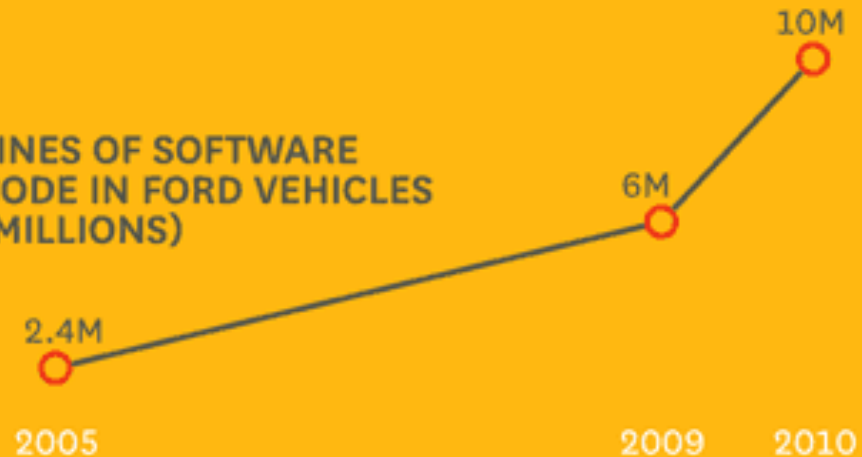
**10M** AVERAGE 2010 FORD AUTO

**6.5M** BOEING 787 DREAMLINER

**5.7M** U.S. AIR FORCE F-35 JOINT STRIKE FIGHTER

**1.7M** U.S. AIR FORCE F-22 RAPTOR JET

LINES OF SOFTWARE CODE IN FORD VEHICLES (MILLIONS)




SOURCES IEEE; AUTOMOTIVE DESIGNLINE





# Eventos “Automotivos” em 2019








☰  **MARKETS BUSINESS INVESTING TECH POLITICS CNBC TV**

**AUTOS**

## CES is now one of the world's biggest auto shows as Ford to Uber debut new technology

PUBLISHED THU, JAN 10 2019 • 8:15 AM EST

Paul A. Eisenstein  
#DETROITBUREAU

SHARE     



Consumers Electronics Show (CES) 2019

# Eventos “Automotivos” em 2019


The screenshot shows the website for the SAE World Congress eXperience (WCX) 2019. The navigation bar includes links for WCX Home, Program, Attend, Exhibit & Sponsor, and Experience. Below this, a secondary menu lists Main, Keynotes, Leadership Summit, Sessions, Connect2Car, Learning Lab, Knowledge Bar, and Professional Dev. The main content area is titled "2019 Keynotes" and features two speaker profiles. The first profile is for Charles V. Payne, the Tuesday Opening Keynote speaker, with a circular portrait and a bio detailing his role as Founder & CEO of Wall Street Strategies and his media presence. The second profile is for Erez Dagan, the Wednesday Plenary Keynote speaker, with a circular portrait and a bio detailing his role as Executive Vice President of Products and Strategy at Mobileye and Vice President at Intel Corporation. Both profiles include a "View Presentation Details" link.

WCX Home Program ▾ Attend ▾ Exhibit & Sponsor ▾ Experience ▾

Main Keynotes Leadership Summit Sessions Connect2Car Learning Lab Knowledge Bar Professional Dev

## 2019 Keynotes

**TUESDAY OPENING KEYNOTE**




**Charles V. Payne**  
Founder & CEO, [Wall Street Strategies](#)

Charles V. Payne is the Founder & CEO of Wall Street Strategies. His stock selections reap sizable profits for his subscribers and viewers. Charles is featured on the Fox Business Network Monday-Friday from 2 - 3 p.m. ET on "Making Money with Charles Payne". He is a member and occasional host of "Varney & Co". In addition, he guest-hosts several shows including "Cavuto on Business" and "Your World".

Charles is not only widely recognized in the media sphere as a thought leader on stock markets and politics but is also the best-selling author of "Be Smart, Act Fast, Get Rich". In his book, he helps the average investor demystify the stock market and profit from it, explained in a manner that only he could deliver.

[View Presentation Details](#)

**WEDNESDAY PLENARY KEYNOTE**



**Erez Dagan**  
Executive Vice President Products and Strategy, [Mobileye](#);  
Vice President, Intel Corporation

In his current role, Mr. Erez Dagan is responsible for Mobileye's Autonomous Driving (AD) and Advanced Driver Assistance Systems (ADAS) products portfolio, strategic planning and initiatives, advanced development projects department, and the Sensors-fusion R&D group.

Erez joined Mobileye in 2003, and in his prior roles in the company has led the object detection R&D group, and managed the suite of associated ADAS products (Autonomous Emergency Braking and Adaptive Cruise Control).

Mr. Dagan holds a [B.Sc in computer science](#) from the Hebrew University and an MBA from IDC, Herzliya.

[View Presentation Details](#)

**SAE World Congress eXperience (WCX) 2019**

# Eventos “Automotivos” em 2019

## Leadership Summit Event-at-a-Glance

	April 9 <b>Tuesday</b>	April 10 <b>Wednesday</b>	April 11 <b>Thursday</b>
	Theme: Autonomous	Theme: Mobility and Digital Ecosystems and its Impact Vehicle Development	Theme: Powertrain/Propulsion and Innovation
8:00 - 8:45 a.m.	<p>Opening Keynote and Executive Interview</p> <p>Keynote: Charles Payne, Chief Executive Officer and Principle Analyst of Wall Street Strategies, Inc.</p> <p>Executive Interview: Paul Mascarenas, SAE 2019 President</p>	<p>Opening Keynote and Executive Interview</p> <p>Keynote: Erez Dagan, Executive Vice President Products and Strategy, Mobileye; Vice President, Intel Corporation</p> <p>Executive Interview: Ken Washington, Ford Motor Co.</p>	<p>Roundtable</p> <p>New Mobility: Women Leading Disruptive Innovation</p>
9:30 - 9:50 a.m.	<p><i>TechTalk</i></p> <p>Intelligent Motorsport - The Most Extreme Proving Ground for Self-driving Cars?</p> <p>Bryn Balcombe, Roborace</p>	<p><i>TechTalk</i></p> <p>The Future of Mobility – Moving People, Data and Freight</p> <p>Shailen Bhatt, ITS America</p>	<p><i>TechTalk</i></p> <p>Mobility 2030 – The Effects of Oil Pricing and Electric Infrastructure on EV Deployment</p> <p>Trisha Curtis, Petronerds</p>
10:00 - 11:10 a.m.	<p><i>Connect2Car Roundtable</i></p> <p>What Do Autonomous Vehicles Mean for Regulation?</p>	<p><i>Connect2Car Roundtable</i></p> <p>What is the Benchmark and Expectation AI in Automotive?</p>	<p>Roundtable</p> <p>Today, Tomorrow, and the Future of Propulsion Systems?</p>
11:20 a.m. - 12:30 p.m.	<p><i>Connect2Car Roundtable</i></p> <p>CyberSecurity, Do We Feel Good Enough to be Just A Little Paranoid?</p>	<p><i>Connect2Car Roundtable</i></p> <p>Privacy and Customer Acceptance of Data Monetization</p>	<p>Roundtable</p> <p>Still Not Dead -Developments in ICE</p>
12:30 a.m. - 1:40 p.m.	Lunch	Lunch	Lunch
1:40 p.m. - 2:00 p.m.	<p><i>TechTalk</i></p> <p>Artificial Intelligence: The Winter of our Discontent or Mild Spring Frost?</p> <p>Sky Matthews, IBM</p>	<p><i>TechTalk</i></p> <p>Trust In Tech</p> <p>Charles Eagan, BlackBerry</p>	<p><i>TechTalk</i></p> <p>Key Trends That are Shaping the Market/the Future</p> <p>Jonathan Smoke, Cox Automotive</p>
2:10 p.m. - 3:20 p.m.	<p><i>Connect2Car Roundtable</i></p> <p>Does Deploying Safe AV's Require Rethinking Validation?</p>	<p><i>Connect2Car Roundtable</i></p> <p>Technology Transition: Cloud and Car Enabled Digital Services</p>	<p>Roundtable</p> <p>As Executives, Where are We Spending our Resources?</p>
3:30 p.m. - 4:40 p.m.	<p><i>Connect2Car Roundtable</i></p> <p>The Business Challenges on System Engineering for Automated Driving Technologies</p>	<p><i>Connect2Car Roundtable</i></p> <p>What is the Future Vision of a Vehicle's Interior and the Technology to Deliver Upon this Digital Environment?</p>	



Roundtable  
Still Not Dead -Developments in ICE

Roundtable

Connect2Car  
Roundtable

TechTalk  
Series

SAE World Congress eXperience (WCX) 2019

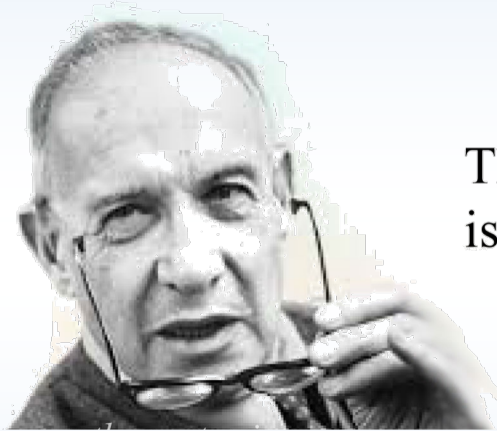
# Novo Conceito de “Indústria Automotiva”



Principais empresas da “indústria automotiva” Israelense



# E o futuro?



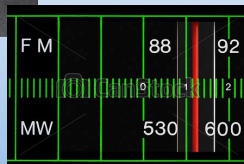
The best way to predict the future  
is to create it.

*Peter Drucker*

# Inovação Sistemática

Soluções inventivas para problemas (TRIZ)

... 1970 ... 1980 ... 1990 ... 2000 ... 2010 ... 2020 ... 2030 ...

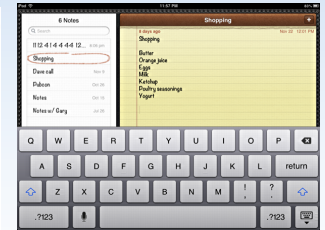
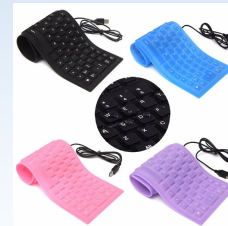




# Inovação Sistemática

Soluções inventivas para problemas (TRIZ)

## Tendências de Evolução: Vaporização



Monolítico



Articulado



Flexível

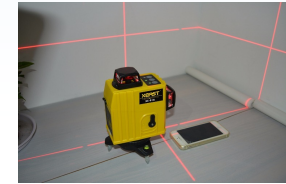


Campo

# Inovação Sistemática

## Soluções inventivas para problemas (TRIZ)

### Tendências de Evolução: Vaporização



Monolítico

Articulado

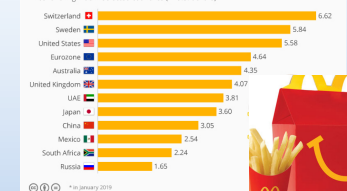
Flexível

Campo

### Tendências de Evolução: Experiência do Consumidor



Burgeromics: The Price of a Big Mac in Global Comparison



Commodity

Produto

Serviço

Experiência

Transformação

# Pensando “fora da caixa” ?



**AIRBNB**  
The largest accommodation provider owns no real estate.

@BUSINESSMINDSET101



**ALIBABA**  
The most valuable retailer has no inventory



**FACEBOOK**  
The most popular media provides no content.



**INSTAGRAM**  
The most valuable photo company sells no cameras



**NETFLIX**  
The largest growing television network lays no cables.



**UBER**  
The largest taxi company owns no vehicles.

# Pensando “fora da caixa” ?

AUTOS

## Tesla is ‘headed for the graveyard,’ predicts former GM exec Bob Lutz

PUBLISHED TUE, SEP 18 2018 · 5:56 PM EDT | UPDATED TUE, SEP 18 2018 · 6:02 PM EDT

Michelle Fox  
@MFOXCNBC

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## GM CEO Mary Barra: Tesla CEO Elon Musk doesn't want unionized workers

Nathan Bomey and Jamie L. LaReau, USA TODAY | Published 1:11 p.m. ET Jan. 11, 2019 | Updated 10:13 a.m. ET Jan. 14, 2019

## Tesla = 15% Of Luxury Car Sales In USA

[Twitter](#) [LinkedIn](#) [Facebook](#)

April 6th, 2019 by Zachary Shahan

### Luxury Car Sales — Top Brands in USA (Q1 2019)

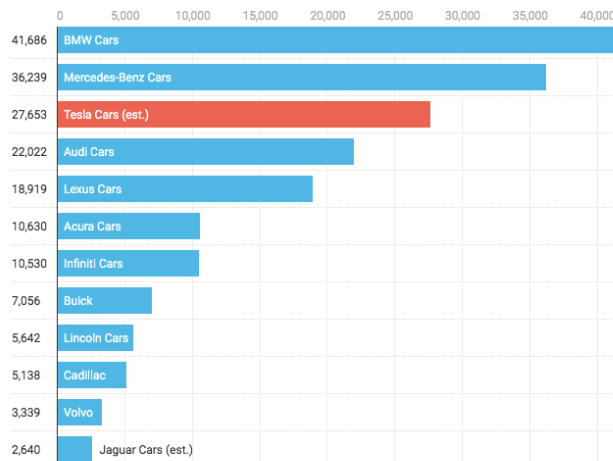


Chart: CleanTechnica • Source: Automakers, CleanTechnica • Get the data • Created with Datawrapper

**Gali** @Gfilche · Apr 13, 2019  
Replying to @Gfilche  
avg Uber ride costs \$2/mile today. cars live for ~150k miles. robotaxis could charge \$1/mile and generate \$150k in revenue over their lifetime.

transportation as a service flips gross margin structure of vehicles from ~20% to 50%+

**Elon Musk** [✓](#)  
@elonmusk

Model 3 drive unit & body is designed like a commercial truck for a million mile life. Current battery modules should last 300k to 500k miles (1500 cycles). Replacing modules (not pack) will only cost \$5k to \$7k.

♥ 2,318 1:18 PM - Apr 13, 2019

**John Robb** [✓](#) @johnrobb · Apr 12, 2019  
Replying to @johnrobb @elonmusk  
This specific instance aside, this is an interesting concept.

The idea of a product that gains in value the longer you own it, because the longer you own it, the more it learns...

**Elon Musk** [✓](#)  
@elonmusk

Exactly

♥ 625 5:42 PM - Apr 14, 2019

**Fred Lambert** [✓](#) @FredericLambert · Apr 13, 2019  
Replying to @elonmusk  
Is that what you mean when you say that Tesla vehicles are now "appreciating assets"?

**Elon Musk** [✓](#)  
@elonmusk

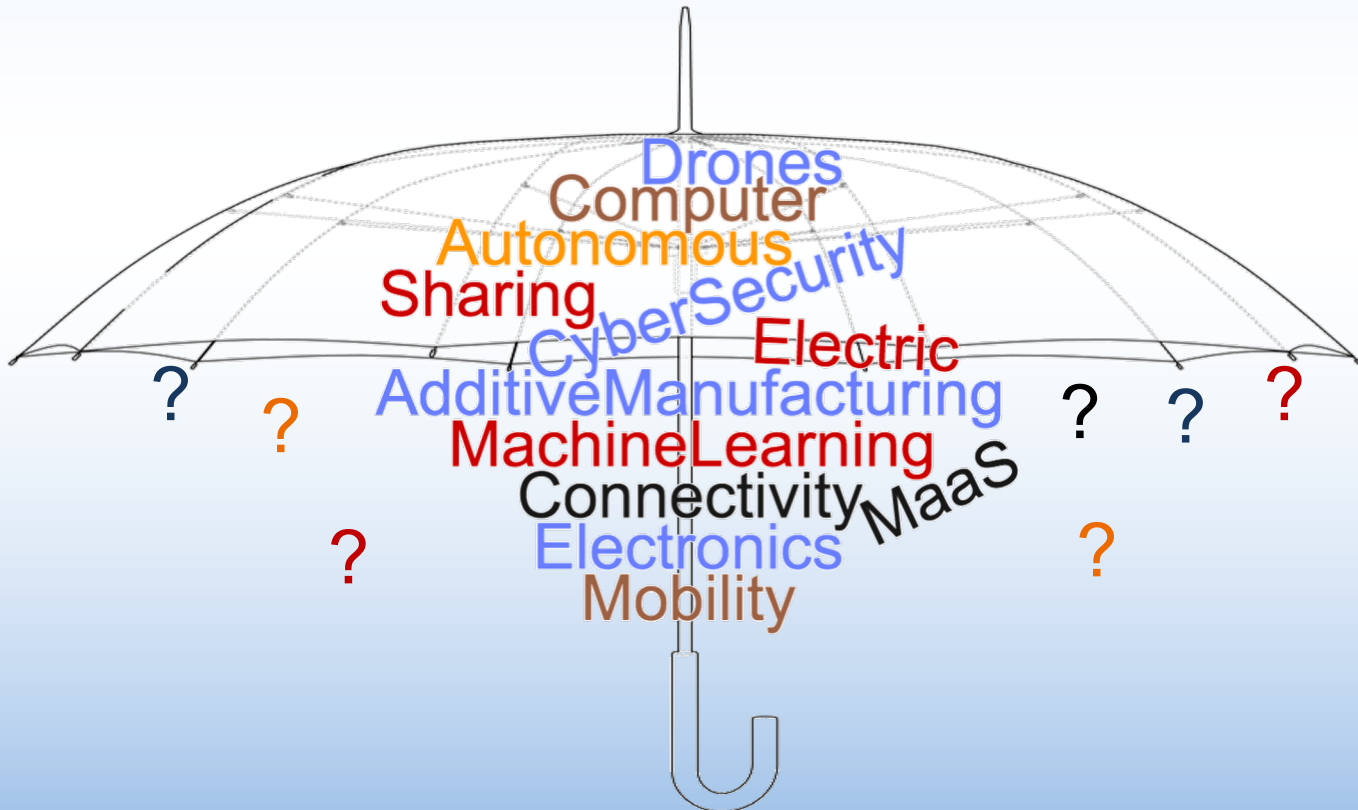
Yes

♥ 1,789 4:43 PM - Apr 13, 2019

# Pensando “fora da caixa” ?

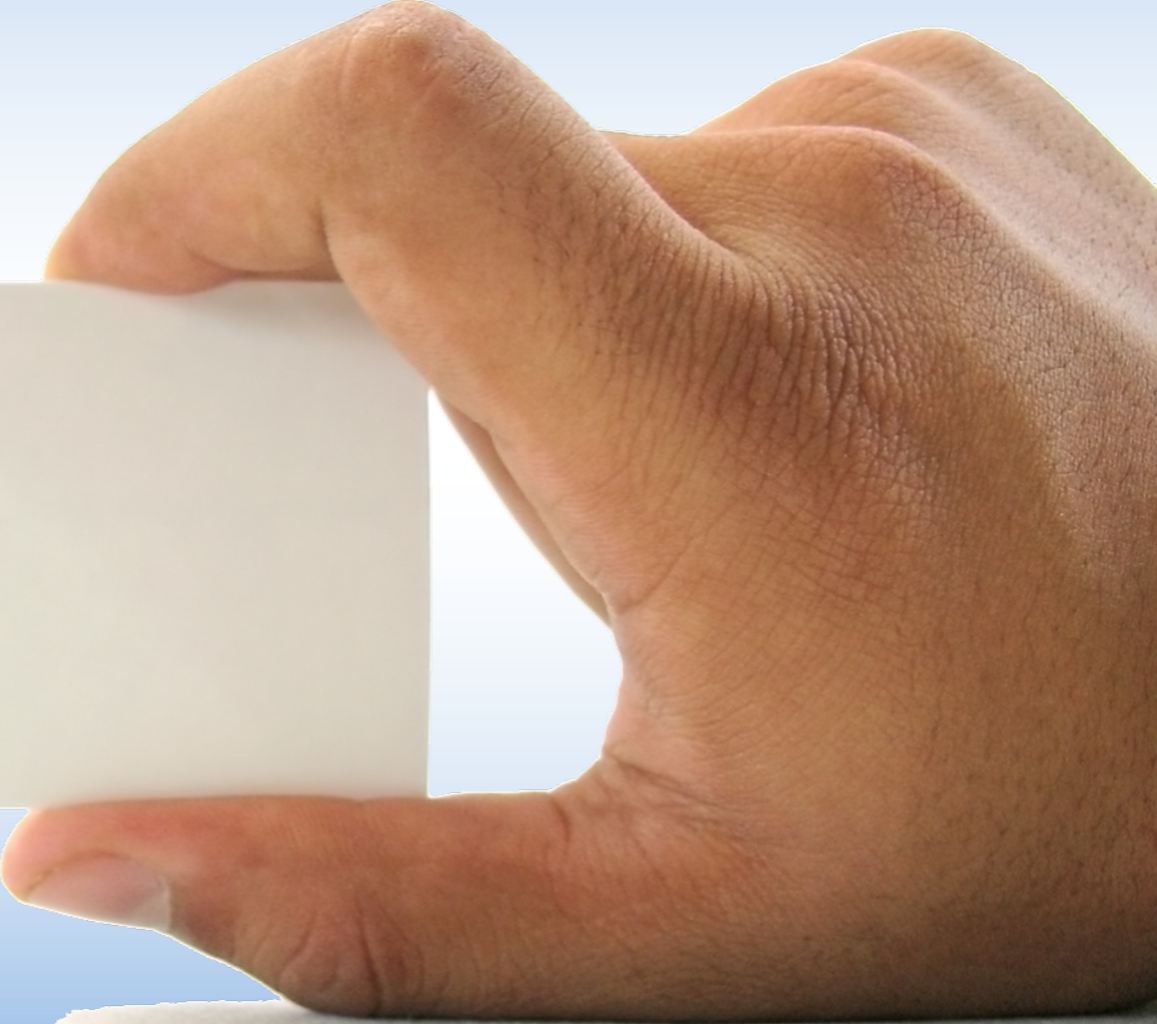
Engenharia e Indústria Automotiva

## Negócios da Mobilidade e seu Ecosystema





# Contatos



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