



Bu proje Avrupa Birliđi ve Türkiye Cumhuriyeti
tarafından finanse edilmektedir
This project is co-funded by the European Union
and the Republic of Türkiye



Technical Assistance for Turkey in Horizon 2020 Phase-II
EuropeAid/139098/IH/SER/TR

Ufuk Avrupa Dijital ve Robotik, Yapay Zeka ve Grafen alanlarında Odak Grup Eđitimi Yavuz Emre Yađcı-Farplas-Otomotiv 7-18-2022



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4

Uluslararası
Ofis



1968

Kuruluş



250

2019
Satış



2.500

Çalışan



7

AR-GE
Merkezi



12

Üretim
Tesisleri



BETTER.
FUTURE.
TOGETHER.



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INDUSTRY



Kocaeli İstanbul Ankara Bodrum
Paris Mioveni Seoul Rayong Lisbon



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ELEKTRİKLİ ARAÇLAR

FARPLAS MASLAK
ARGE MERKEZİ

ADAS & KAMERA SİSTEMLERİ ve SENSÖR TEKNOLOJİLERİ

BUYUTECH ANKARA
ARGE MERKEZİ ve
SAYKAL GEBZE ARGE
MERKEZİ



ENDÜSTRİ 4.0

FARPLAS GEBZE
ARGE MERKEZİ



HİDROJENLİ YAKIT HÜCRELERİ

FAREL ÇERKEZKÖY
ARGE MERKEZİ



HAFİFLETME TEKNOLOJİLERİ VE DÖNGÜSEL EKONOMİ

FARPLAS GEBZE
ARGE MERKEZİ



FARPLAS LİGHTING

FARPLAS GEBZE
ARGE MERKEZİ



BAĞLANTILI ARAÇLAR VE AKILLI ULAŞIM

FARPLAS MASLAK
ARGE MERKEZİ

Farplas Gebze Arge Merkezi

Farplas Maslak Arge Merkezi

Farel Çerkezköy Arge Merkezi

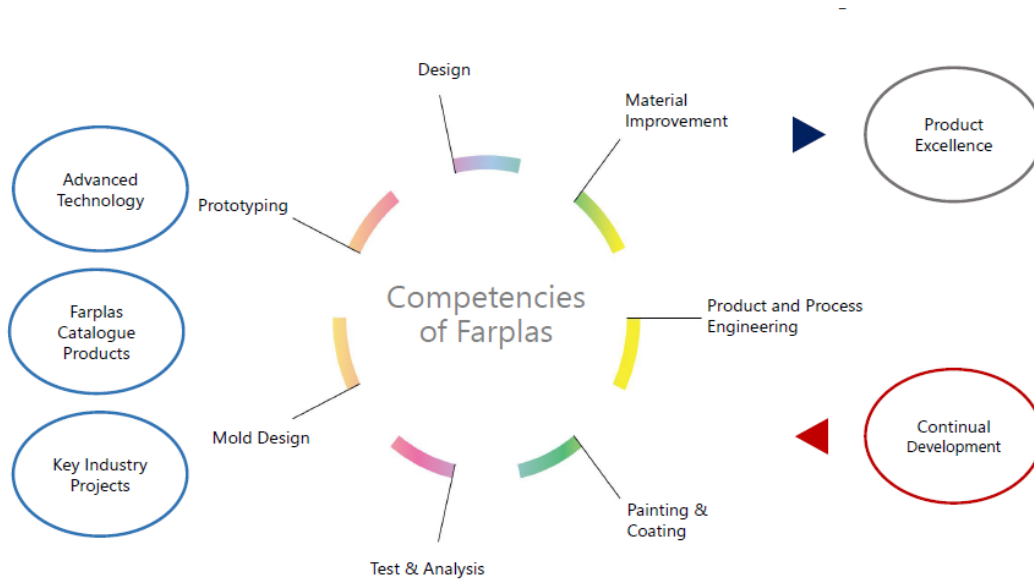
Büyütech Ankara Arge Merkezi

Saykal Gebze Arge Merkezi

- ***Farplas Müşterileri***



- ***Farplas Yetkinlikleri***



- Ulusal, Uluslararası İşbirlikleri ve Yol Haritası Çalışmaları***



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Desteklenen Projelerimiz

Gebze

REVOLUTION

teaming.ai

multicycle

VITAL

4i

BIAS

MITIGATING DIVERSITY BIASES
OF AI IN THE LABOR MARKET

Fark Labs

innomotion

eit Urban Mobility
RIS HUB TURKEY

RAPTOR

Think
BIGG



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EU Projelerimiz

REVOLUTION

Geri dönüştürülmüş plastiklerin ve gelişmiş hafif malzemelerin optimizasyonu yoluyla elektrikli araç menzilini ve ömrünü tamamlamış araçların geri kazanımını en üst düzeye çıkararak elektrikli araç 'DEVİRİMİNİ' destekleme

€5M Toplam Bütçe
€568K Farplas Bütçe



Akıllı üretimde kalite kontrolü için endüstriyel veri hizmetleri

€10M Toplam Bütçe
€100.2K Farplas Bütçe



İmalatta yapay zeka sistemlerini korumak ve geliştirmek için insan-yapay zeka ekip oluşturma platformu

€5.7M Toplam Bütçe
€311K Farplas Bütçe



Plastik bazlı çoklu malzemeler için gelişmiş ve sürdürülebilir geri dönüşüm süreçleri ve değer zinciri

€7.6M Toplam Bütçe
€173K Farplas Bütçe



Biyo-bazlı köpüklü termoplastikler için yenilikçi işleme teknolojileri

€6M Toplam Bütçe
€288K Farplas Bütçe

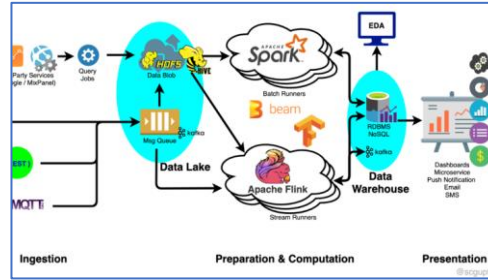
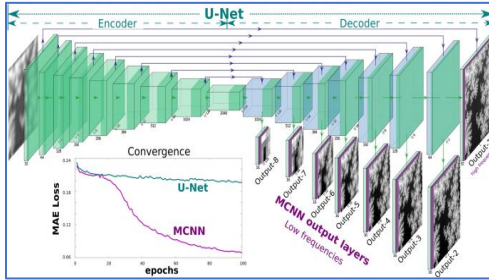


İşgücü piyasasında yapay zekanın çeşitlilik önyargılarını azaltma

€4.6M Toplam Bütçe
€265.3K Farplas Bütçe

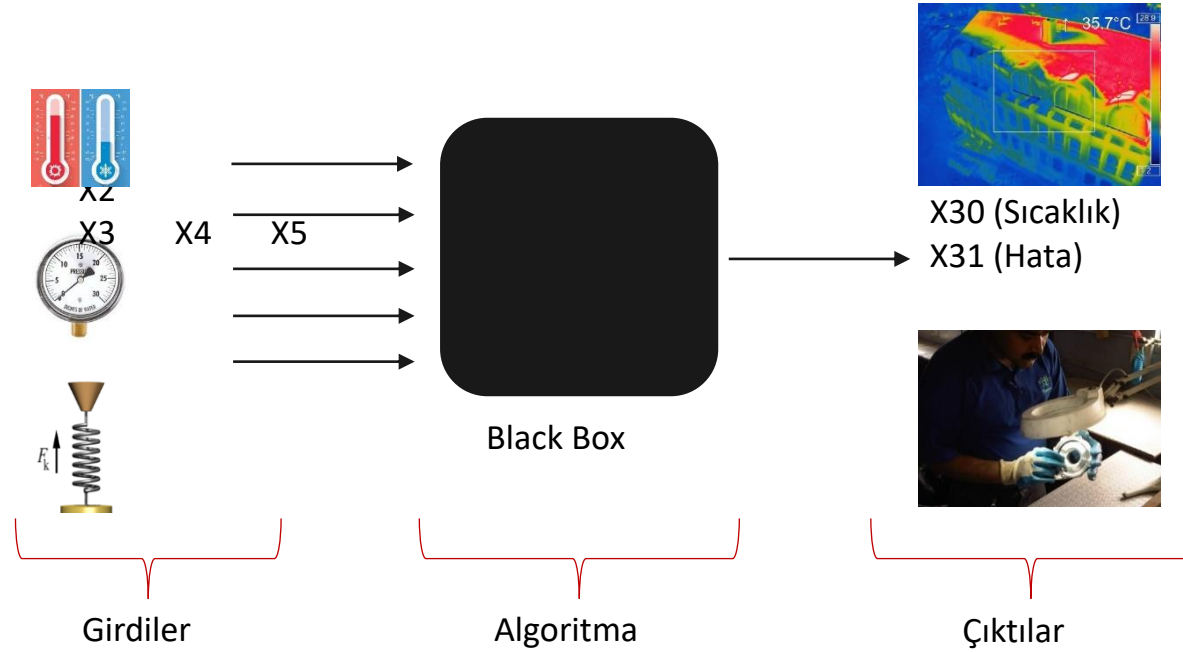
Dijital Dönüşüm Altyapısı

- Büyük Veri Mimarisi
- Enjeksiyon Parametresi Tabanlı Kalite Kontrolü
- Görüntü İşleme Tabanlı Kalite Kontrolü



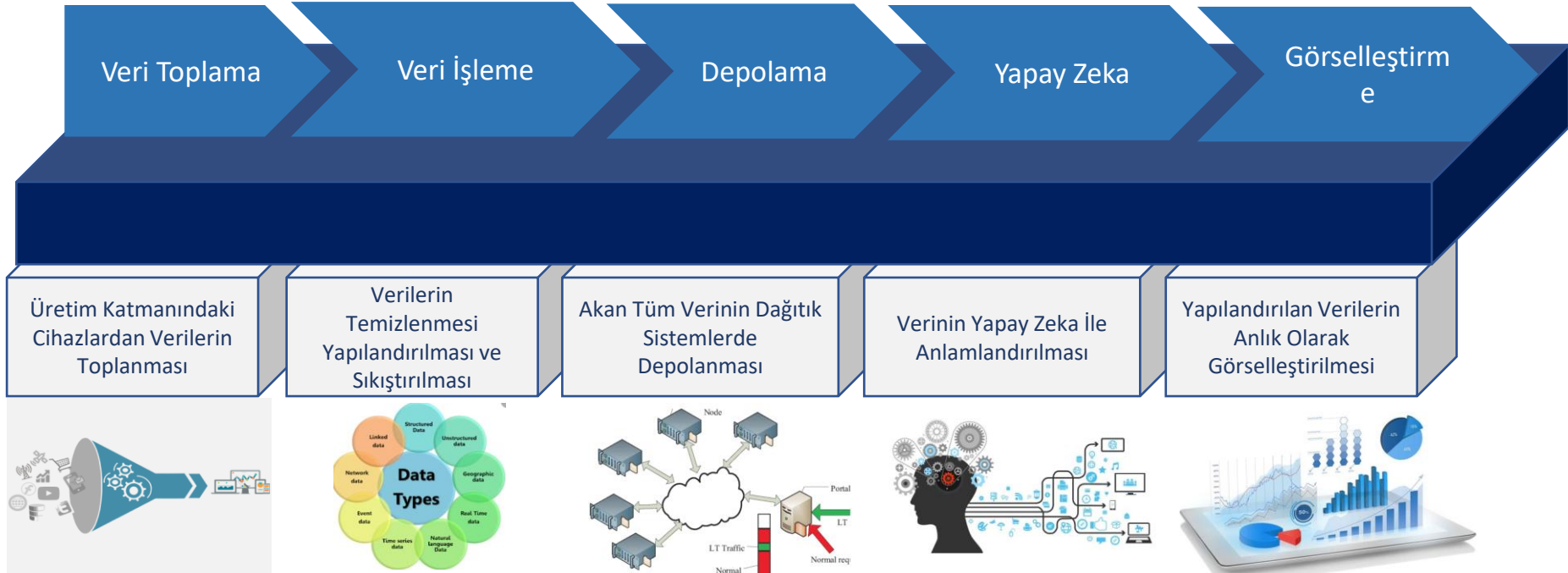
Euromap 63

Makine Öğrenmesi Modeli

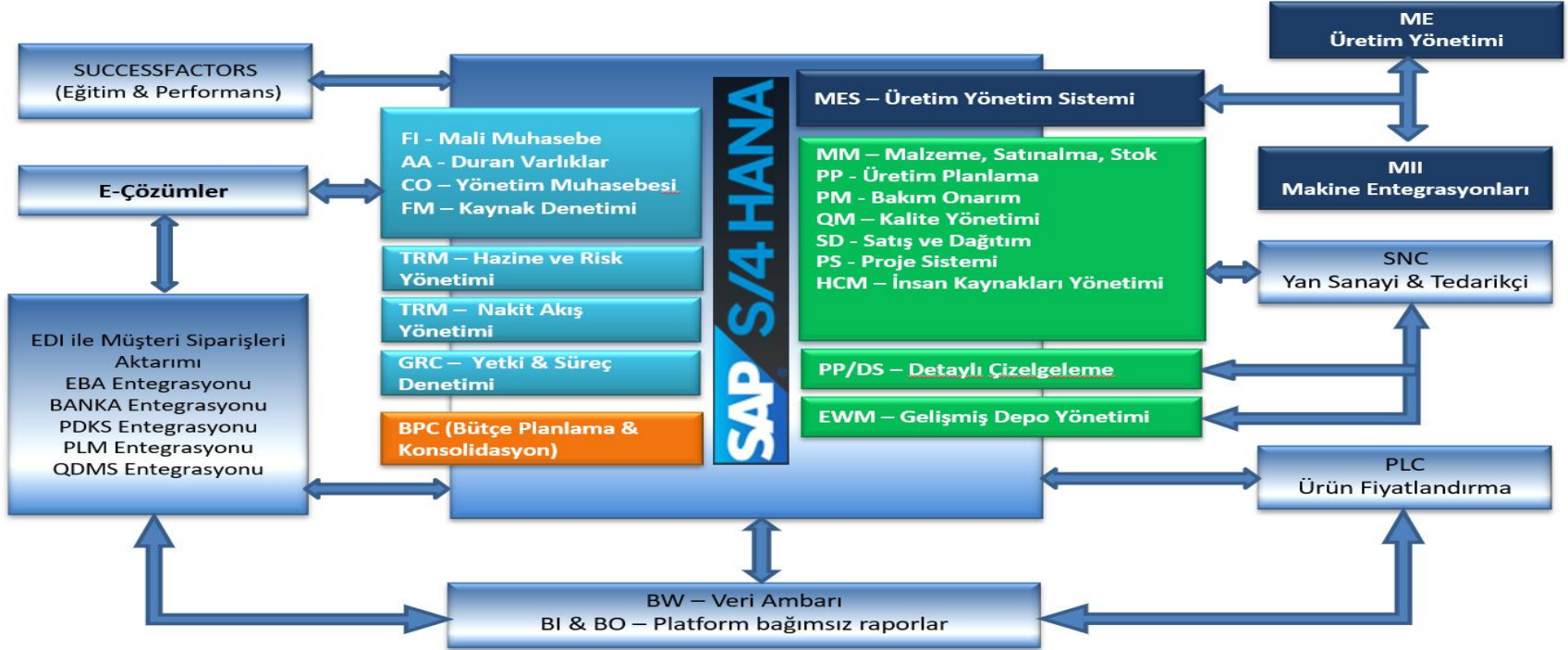


Platform

Farplas için büyük veri tabanlı veri toplama, ileri analitik ve yapay zeka platformu oluşturmak ve makineler ile entegrasyonunu sağlama amaçlı kurulmuştur.



Farplas SAP Altyapısı

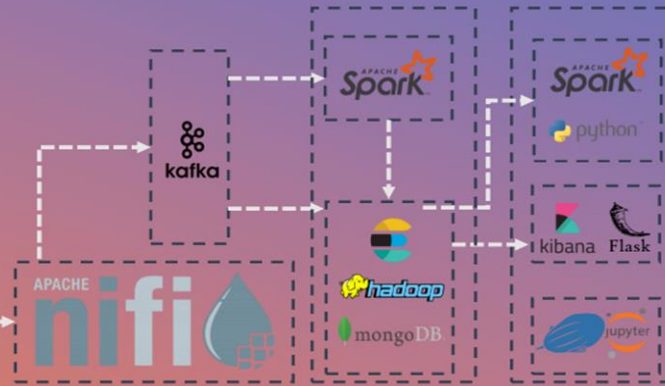


Büyük Veri Mimarisi

Connect & Collect

Device	Protocol	Freq
 Machine	Euromap	1 sec 1 cyc
 Robot	RestAPI	1 sec
 Sensor	Modbus	5 min
 Analyzer	MQTT	2 sec

Process & Store



Active



@010ServoPmpLinSaveP1\Value17.Data,@010ServoPmpLinSaveP1\U18.Data,@\Value20.Data,@010ServoPmpLinSaveP1\U21.Data,@010ServoPmpLinSaveP1\Value21.Data,@09:46:05,2344,70.08,71.22,0,7,4,0,0,0,0,0,101,0.00,18.00,9.46,27.48,94.07,0.00,0,0,2,0,94.07,50,0,0,0,20,0,3,7.3,321,73.1

```

0x00000000 70 22 74 69 60 65 73 74 61 60 70 22 3A 31 30 30 {"timestamp":160
0x00000010 31 39 39 30 30 35 36 37 38 35 2C 22 45 31 30 34 1990056785,"E104
0x00000020 20 45 41 2E 41 4E 4C 2E 43 75 72 72 65 6E 74 58 -EA.ANL.Current[
0x00000030 31 50 22 3A 22 22 2C 22 45 31 30 34 20 45 41 2E 1]":"","E104-EA.
0x00000040 41 4E 4C 2E 43 75 72 72 65 6E 74 58 32 50 22 3A ANL.Current[2]":
0x00000050 22 22 2C 22 45 31 30 34 20 45 41 2E 41 4E 4C 2E "", "E104-EA.ANL.
0x00000060 43 75 72 72 65 6E 74 58 33 50 22 3A 22 22 2C 22 Current[3]":"","
0x00000070 45 31 30 34 20 45 41 2E 41 4E 4C 2E 50 6F 77 65 E104-EA.ANL.Pow
  
```

40 TB/year

```

{
  "timestamp": 1601990056785,
  "machine": "E104",
  "E104-EU.MC6.ActCntCyc": 1169.0,
  "E104-EU.MC6.ActFrcClp": 65.0,
  "E104-EU.MC6.ActPrsInj[1]": 68.62,
  "E104-EU.MC6.ActPrsPmp[1]": 105.0,
  "E104-EU.MC6.ActStsMach": "0A000",
  "E104-EU.MC6.ActTimCool[1]": 13.08,
  "E104-EU.MC6.ActTimCyc": 52.89,
  "E104-EU.MC6.ActTimFill[1]": 6.71,
  "E104-EU.MC6.ActTmpBrfZn[1][6]": 230.0,
  "E104-EU.MC6.SetDescMld": 2331.0
}
  
```

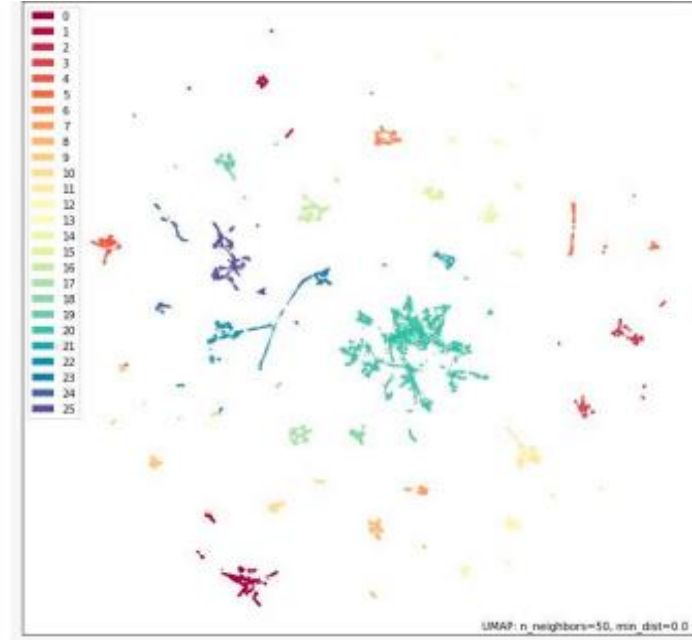
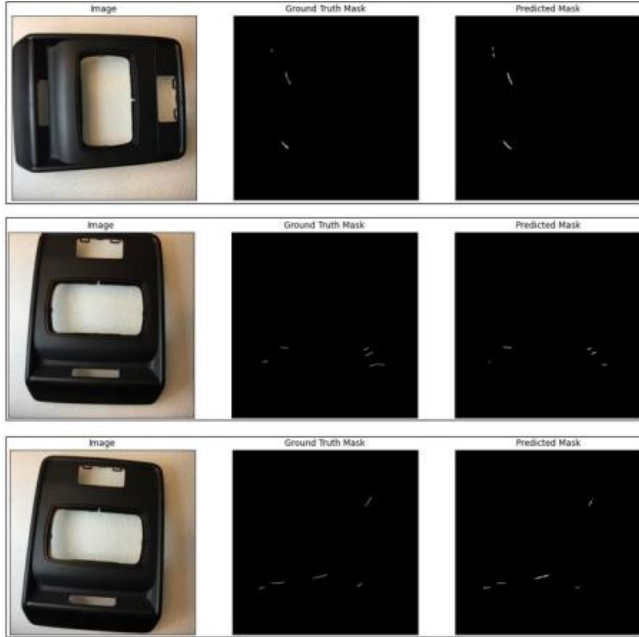
1 TB/year

	Current[1]	Power	Voltage[1]	ActPrsInj[1]	ActPrsPmp[1]	Current[2]	Voltage[2]
0	109.79	13.53	308.40	677.00	10.00	95.15	308.80
1	64.71	41.74	308.75	678.05	62.64	55.93	309.24
2	72.75	37.83	308.98	678.51	51.80	65.23	309.48
3	67.60	32.34	308.57	678.00	51.21	57.81	308.94
4	59.48	34.32	387.43	678.00	65.38	52.09	387.82
6	58.80	43.69	387.73	679.47	60.74	60.51	388.01
6	64.87	43.41	387.71	678.34	53.23	56.50	388.17
7	66.32	44.62	308.46	678.51	55.35	57.45	308.87
8	65.82	39.34	308.27	677.00	44.72	58.60	308.73
9	50.72	34.31	387.90	674.90	59.58	50.63	308.34
10	60.38	36.29	388.31	673.00	63.05	52.55	388.77
11	62.59	42.96	309.76	672.53	49.24	53.51	390.22
12	65.32	41.95	390.18	673.08	60.34	56.91	390.51

Saha daki Büyük Veri Mimarisi ve Yapay Zeka destekleyici çalışmalar



Farplas Yapay Zeka





teaming.ai

Human-AI Teaming
Platform for
Maintaining and
Evolving AI Systems
in Manufacturing



Certifiable AI for
human autonomy



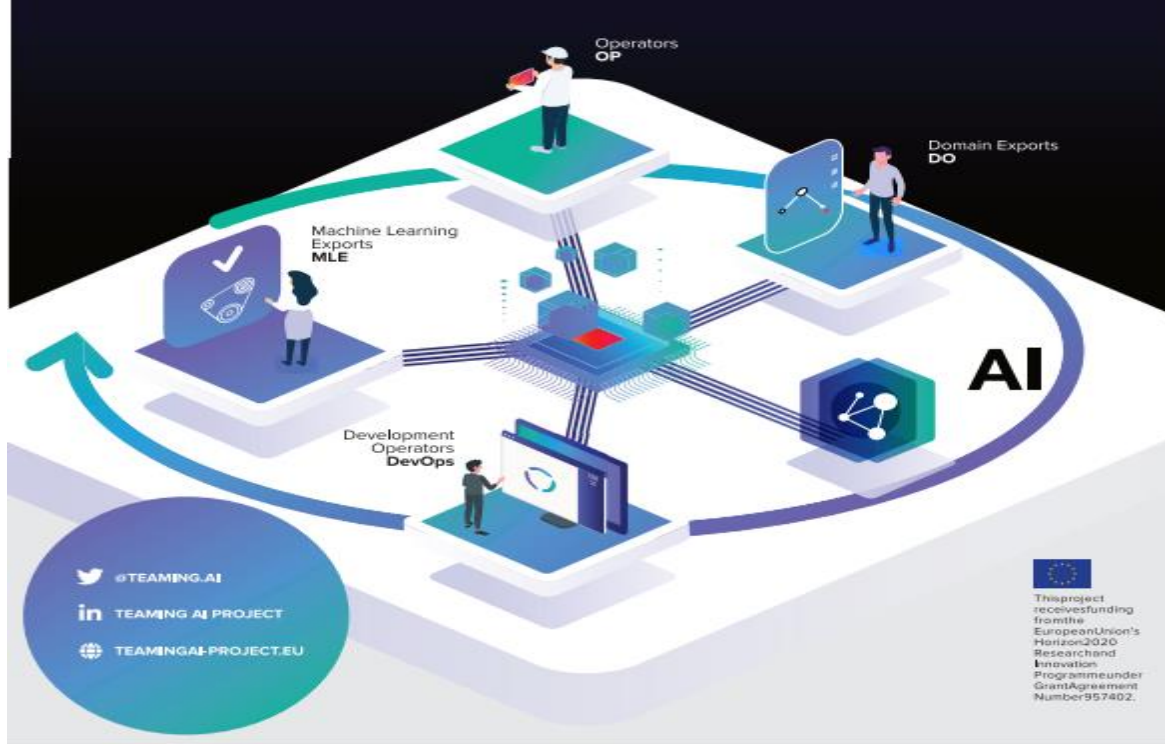
Improved adoption
and acceptance of AI



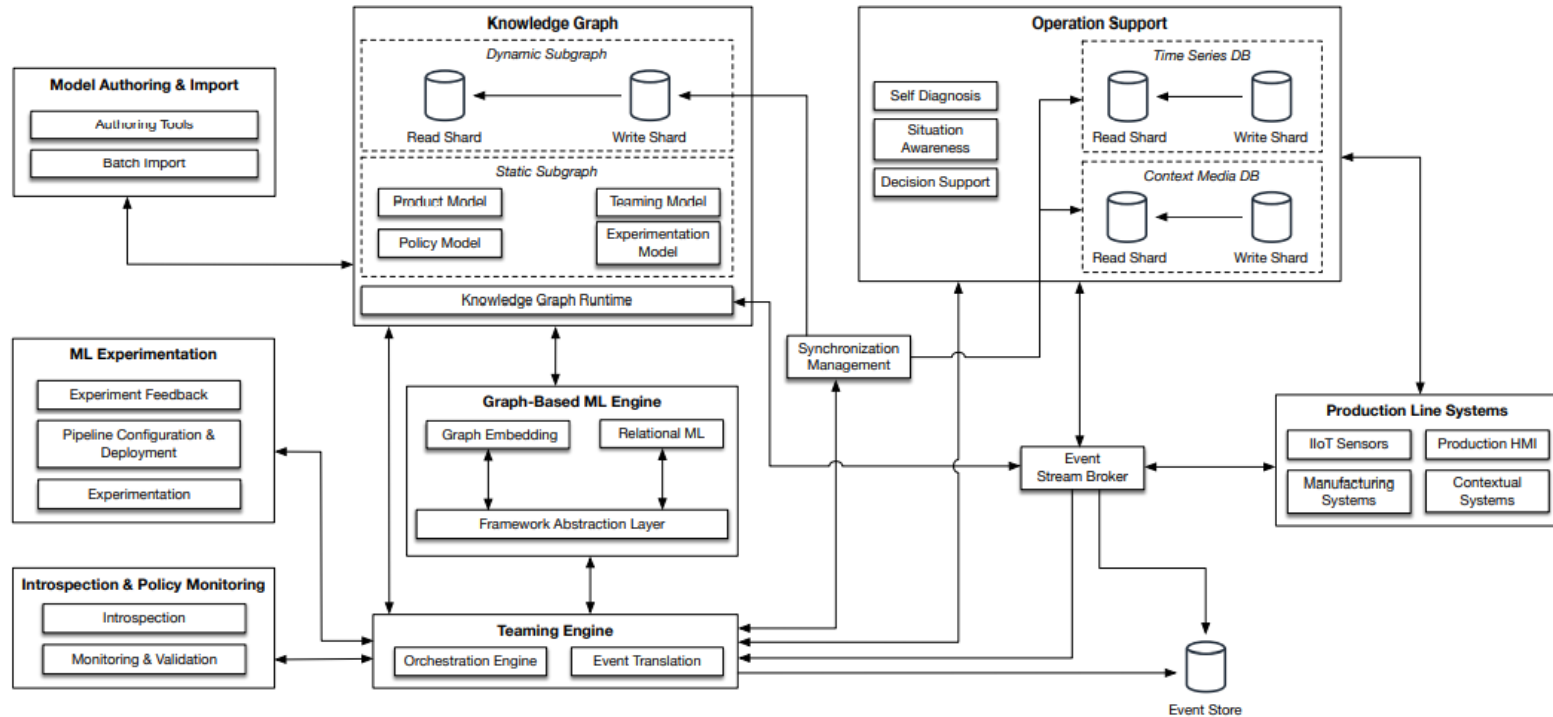
Reduced setup time
and maintenance cost



More flexible
production processes



Reference Software Architecture For Human-AI Teaming in Smart Manufacturing



Philipp Haindl, Georg Buchgeher, Maqbool Khan, and Bernhard Moser. 2022. Towards a Reference Software Architecture for Human-AI Teaming in Smart Manufacturing. In *New Ideas and Emerging Results (ICSE-NIER'22)*, May 21–29, 2022, Pittsburgh, PA, USA. ACM, New York, NY, USA, 5 pages. <https://doi.org/10.1145/3510455.3512788>

teaming.ai





Programme	H2020-NMBP-TR-IND-2018-202 "TRANSFORMING EUROPEAN INDUSTRY"
Topic	H2020-DT-FOF-11-2020 "Quality control in smart manufacturing (IA)"
Call for proposal	H2020-NMBP-TR-IND-2018-2020
Funding scheme	IA - Innovation Action



i4Q projesi 2020 yılında fonlanmıştır.

- **Goal:** Proje kapsamında büyük boyutlu data akışına sahip bağlantılı üretim sistemlerinde IOT tabanlı endüstriyel data servis hizmetinin geliştirilerek, yapay zeka destekli akıllı üretim sistemlerini içerisinde barındıran uygulamaların gerçekleştirilmesi amaçlanmaktadır.
- **Farplas Rolü:** Partner ve son kullanıcı
- **Consortium Structure:** 11 ülkeden 24 partner
- **Budget:** €9,9 m

ID	Participant organisation name	Acronym	Logo	Country	Size	Role
1	ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS	CERTH		Greece	RO	R&D
2	ENGINEERING - INGEGNERIA INFORMATICA SPA	ENG		Italy	LARGE	TECH
3	IBM ISRAEL - SCIENCE AND TECHNOLOGY LTD	IBM		Israel	LARGE	TECH
4	INSTITUTO TECNOLÓGICO DE INFORMATICA	ITI		Spain	RO	TECH
5	KNOWLEDGEBIZ CONSULTING-SOCIEDADE DE CONSULTORIA EM GESTAO LDA	KBZ		Portugal	SME	TECH
6	EXOS SOLUTIONS SL	EXOS		Spain	SME	TECH
7	IKERLAN S. COOP	IKER		Spain	RO	R&D
8	BIBA - BREMER INSTITUT FUER PRODUKTION UND LOGISTIK GMBH	BIBA		Germany	HSEE	R&D
9	UNIVERSITAT POLITÈCNICA DE VALENCIA	UPV		Spain	HSEE	R&D
10	TECHNISCHE UNIVERSITÄT BERLIN	TUB		Germany	HSEE	R&D
11	UNINOVA-INSTITUTO DE DESENVOLVIMENTO DE NOVAS TECNOLOGIAS-ASSOCIACAO	UNI		Portugal	RO	R&D
12	TTTECH INDUSTRIAL AUTOMATION AG	TIAG		Austria	LARGE	IMP
13	CE.S.I. CENTRO STUDI INDUSTRIALI SRL	CESI		Italy	SME	IMP
14	AIMPLAS - ASOCIACION DE INVESTIGACION DE MATERIALES PLASTICOS Y CONEXAS	AIMP		Spain	RO	IMP
15	FUNDINGBOX RESEARCH APS	FBR		Denmark	SME	SPEC
16	LABORATOIRE VIRTUEL EUROPEEN DANS LE DOMAINE DE L'INTEROPERABILITE DES ENTREPRISES	IVLAB		Belgium	OTHER	SPEC
17	DIN DEUTSCHES INSTITUT FUER NORMUNG E.V.	DIN		Germany	OTHER	SPEC
18	PRAVO I INTERNET FOUNDATION	LIF		Bulgaria	OTHER	SPEC
19	WHIRLPOOL EMEA S.p.A.	WHI		Italy	LARGE	USER
20	BIESSE S.p.A.	BIES		Italy	LARGE	USER
21	FACTOR INGENIERIA Y DECOLETAJE S.L.	FACT		Spain	SME	USER
22	RIA STONE FABRICA DE LOUCA DE MESAEM GRES SA	RIAS		Portugal	SME	USER
23	FARPLAS OTOMOTIV ANONIM SİRKETİ	FARP		Turkey	LARGE	USER
24	FIDIA SPA	FIDIA		Italy	LARGE	USER



I4Q Projesi

- Proses yeterlilik sürecini dijital ortama taşımak
- AI ve Dijital ikiz teknolojilerine göre üretim süreçlerini güncellemek
- Güvenilir block zincir tabanlı veri mimarişi altyapısı oluşturmak

 farplas PILOT PARTNER Read More	 ITI INVESTIGATE TO INNOVATE TECHNOLOGY PROVIDER Read More	 AIMPLAS INSTITUTO TECNOLÓGICO DEL PLÁSTICO IMPLEMENTER PARTNER Read More
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Call: Horizon 2020- Building a low-carbon, climate resilient future:
Green Vehicles(**Lightweight Focus**)

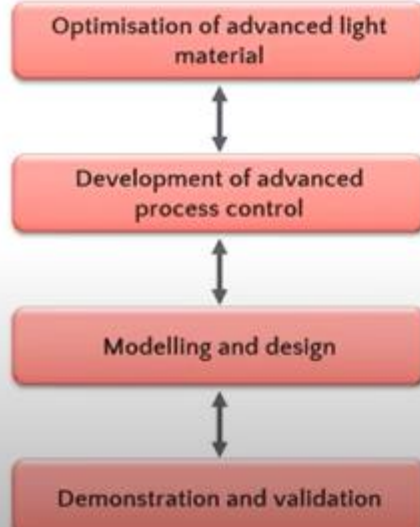


- Adoption of circular economy principles in the automotive industry
- Proposing a disruptive innovation that will bring open-loop recycling to the forefront of automotive injection moulding.
- Will use machine learning and artificial intelligence to optimise the input of recycled materials and injection moulding process to deliver high-quality parts and will introduce sensors to monitor LCA

.



IMPLEMENTATION



- ✓ The feedback of these activities will give inputs for *environmental and social assessments*
- ✓ An *exploitation plan* for the results of the project will be performed
- ✓ *Communication and dissemination* activities will be running through the project implementation

Goals

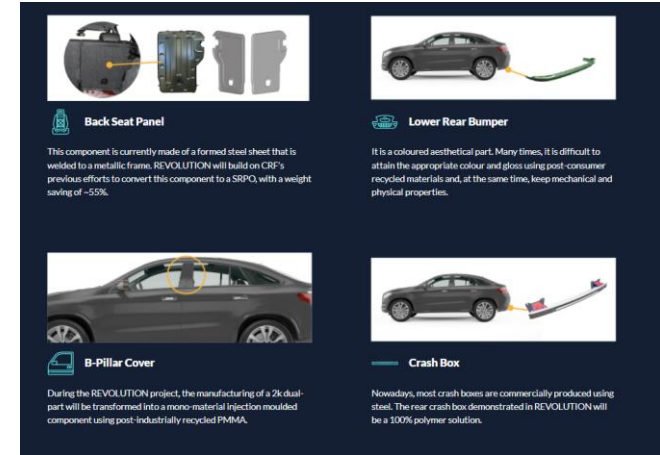
- ✓ AI enhanced material Development and Injection Proces
- ✓ Increase recycled material performance with state-of-the-art process monitoring & automated dosage systems.
- ✓ Designing lightweight Crash Box, Lower Rear Bumper, B-pillar and Rear Back Seat Panel by using recycled material.
- ✓ Digitalize Product Life Cycle

Partners



- Idener
- VTT
- Imec
- Tofas
- Maier
- Basell
- Iconiq
- Farplas
- Fraunhofer
- Clariant
- Altuglas
- Heathland
- Norner
- FIAT Scpa

Use Cases



Budget

Total Project Budget
: **5 M €**

Farplas Budget :
560 K €

- **Summary**

- ✓ Revolution project is an example of automotive and surrounding R&D ecosystem embodies major challenges and solutions related to Horizon Calls
- ✓ Revolution is one of the project that will introduce methodology for controlled Circular transition in automotive and other sectors, Is also a good example of Industry 5.0 .



<https://revolution-project.eu/>



<https://www.linkedin.com/in/project-revolution-296435204/>



<https://twitter.com/RevolutionH2020>



[h2020revolutionproject@gmail.com,](mailto:h2020revolutionproject@gmail.com)

Potentials

AI for human empowerment (AI, Data and Robotics Partnership) (RIA)

AI, Data and Robotics for Industry optimisation (including production and services) (AI, Data and Robotics Partnership) (IA)

Farplas Graphene experience + Network

Farplas Funds and Projects Contact;

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zeynepyumrutas@farplas.com

<https://www.farplas.com/innovation/#rd-projects>

<https://www.farklabs.com/startups-better-future-path/>