

# Industry 4.0

ETAS

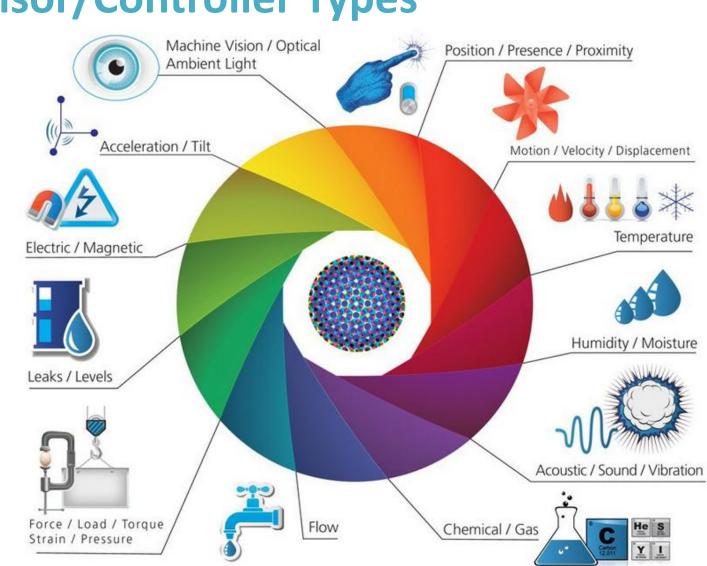
**Riza Durucasugil** Director, Innovation and R&D Strategies Oct 2016

#### **Industrial Revolution** 4. industrial revolution First programmable logic controller \*\*\*\*\*\*\*\*\*\*\*\*\* (PLC), Modicon 084 based on Cyber-Physical 969 Systems 3. industrial revolution uses electronics and IT to achieve further automation First production line, Cincinnati slaughterhouses of manufacturing 1870 complexity 2. industrial revolution follows introduction of electrically-powered mass First mechanical loom production based on the 1784 division of labour 1. industrial revolution follows introduction of water- and steam-powered mechanical manufacturing time 🕨 facilities End of Start of Start of 1970s today

18th century

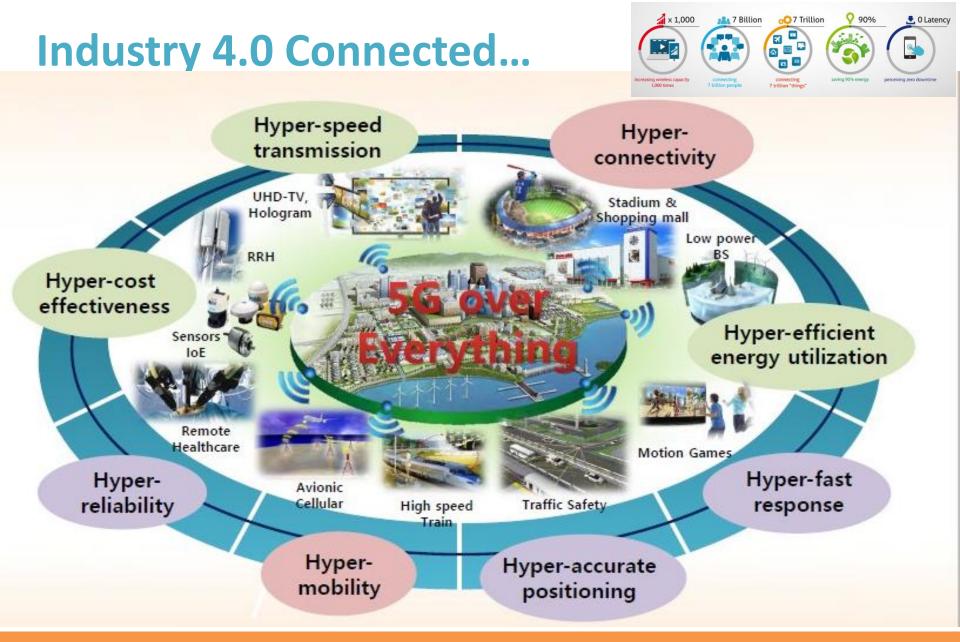
20th century



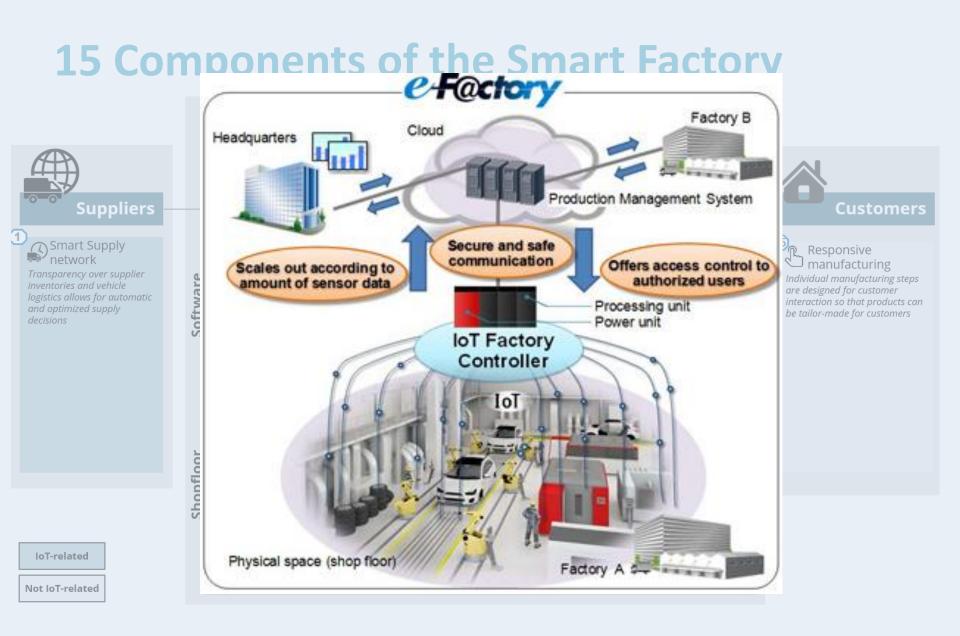


#### Everything that can be Sensed, will be Sensed

### **Sensor/Controller Types**

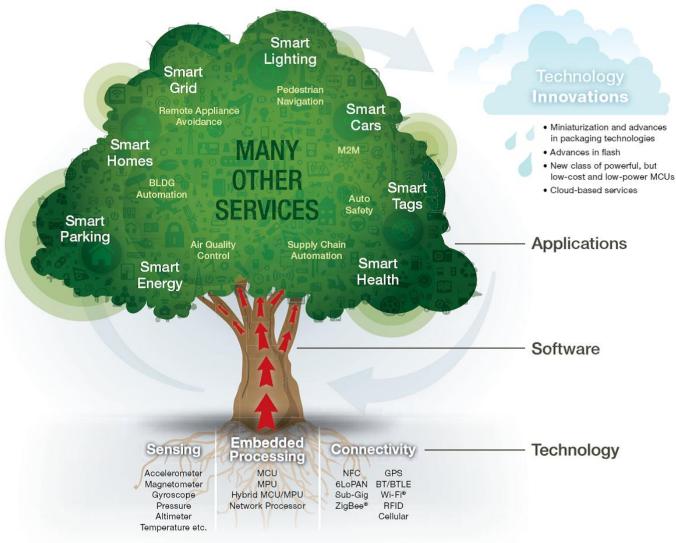


anything that can be connected, will be connected





## **Industry 4.0 Opportunities**





## **Industry 4.0 Cyber Security Risks**



Vehicle Hacking Wireless hacks can alter a car's electronic control units (ECUs) and sensors to affect brake systems, send false tire pressure signals, or start and stop the engine remotely



GPS Spoofing Counterfeit GPS signals can facilitate hijacking or cause collision and damage to ships, aircrafts, drones



Healthcare Device Hacking Implantable Medical Devices (IMDs) that control heartbeats, deliver painkillers or insulin, or measure vital signs to report to doctors and nurses can be jammed and made to fail



Industrial Hacking Foreign hacking groups have been caught infiltrating water control systems for a U.S. municipality



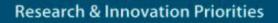
Smart Home Hacking Smart door locks can be opened and lock codes changed remotely to break into a home without any sign of forced entry



Connected-Car Mandate National Transportation Safety Board (NTSB) wants the government to require that all new vehicles be able to wirelessly communicate with other cars to help prevent crashes and increase overall safety



## **Industry 4.0 Summary**



Challenges & Opportunities

• Manufacturing Future Products

• Economic

• Social

• Environmental Domain 1: Advanced Manufacturing Processes Innovative processing for both new & current materials or products

#### Domain 2: Adaptive and Smart Manufacturing Systems

Innovative manufacturing equipment at component & system level, including mechatronics, control & monitoring systems

#### Domain 3: Digital Virtual & Resource Efficient Factories

Factory design, data collection & management, operation & planning, from real-time to long term optimisation approaches

Domain 4: Collaborative & Mobile Enterprises Networked factories & dynamic supply chains

Domain 5: Human-Centred Manufacturing Enhancing the role of people in factories

Domain 6: Customer-Focused Manufacturing Involving customers in manufacturing value chain,

from product process design to manufacturing associated innovative services

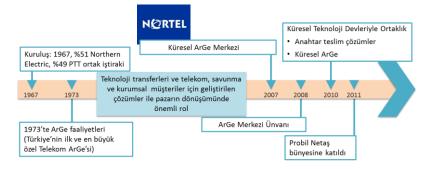


#### Technologies & Enablers

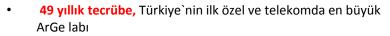
- Advanced Manufacturing
   Processes
- Mechatronics for Advanced Manufacturing Systems
- Information & Communication Technologies
- Manufacturing Strategies
- Knowledge Workers
- Modelling, Simulation & Forecasting



## **Biz Kimiz?**



5 kez Turkiye`nin yazılım ihracat şampiyonu (yıllık 30 M\$ yazılım ihracatı)



- 200+ global müşteriye çözüm üretiyor
- 2008 den beri ArGe merkezi ve Teşviklerden yararlanıyor



- 800+ alanında uzman ArGe Mühendisi
  - Elektrik, Elektronik ve Bilgisayar Mühendisi
  - 25% i Mastır ve Doktoralı



- 25 büyük üniversite ile yakın ilişkiler
  - 8 ortak proje: METU, Boğaziçi, İTÜ ve Özyeğin
  - 10 üniversite ile 20 tez projesi
  - Bilimsel yayınlar

٠

- 13 @ 2013, 3 Makale & 10 Bildiri
- 17 @ 2014, 2 Makale & 15 Bildiri
- 33 @ 2015, 8 Makale & 25 Bildiri





- 2015 Patent ödülü, «En İyi Çıkış Yapan Firma» 3.lük
- 2015 TPE Patent Basvuru Genel sıralamada Türkiye 6.sı,
- Yıllık 70+ patent başvurusu 2016 hedef 100 yeni başvuru



NETAS

### **NETAŞ Solutions towards Smart Urban Life**



Government & Public Entities

#### Governing people in the cities

- Transformation of courts & penitentiaries
- Disaster & Emergency Mgmt Ops. Centers, ..
- Educating crowd for digital age



Energy

`Energy Operators`

- Transforming Utilities Companies to Operators
- Enable changing distributor company in real time



Finance

- 'Bank of the Future'
- Mobile Banking
   ATMs & Virtual Teller Machines
- Smart Unified Communications



Smart Life Centers, Buildings, etc.

Managing crowds in buildings & centers

 Solutions from smart homes and offices to large public areas such as stadiums, shopping malls etc.



Telco

Developing & Building Next Generation Smart Networks

- Technology developer for UC systems
- Has own OSS portfolio
   Stress
- Strong monitoring products



International

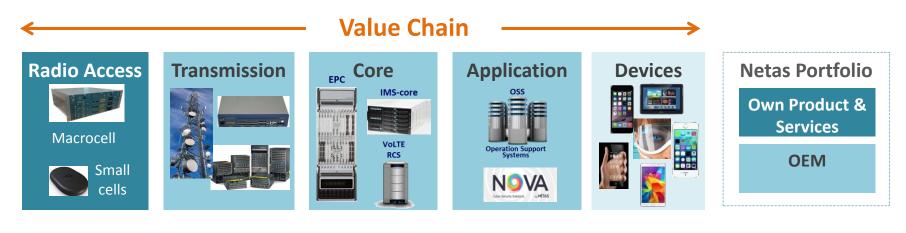
#### Expanding local smart experience to region

 Technology transfer to other countries

Products & Solutions											
Smart Justice Smart Disaster	Smart Automated Meter Reading	Unified Communication Virtualization	Smart Stadiums Smart Malls	OSS solutions for fixed and mobile	Smart Unified Communications						
Smart Disaster Management Smart Education	Smart Cabinets Smart	Cashless ATMs	Smart Access Networks	operators Real Time VAS Monitoring	Network Optimization						
Smart Access Points	Distribution Management		Networks	wontoning							
E-Registration											



## Netas Portfolio & 4G Value Chain



ULAK eNodeB

High Performance Switch & Router Mitel VoWiFi & VoLTE Solution Partnership AGCF

WebRTC Cyber Security

RCS

Terminal Testing

Installation & Maintenance Services



### **Project : Aydem, Gediz OSOS** Smart Automated Meter Reading Systems

Aydem and Gediz – Private electricity distribution and retail sales companies

Netas to provide:

- Software & Hardware infrastructure of Main & DR sites to read subscriber meters remotely (**70,000+**).
- Manufacturing, testing & installation of cabinets, enclosing meters and M2M modems (**30,000+**).
- Installation & Integration of AMRs to floating subscribers (8K)

Features:

- Integration to **27** Business Applications like SAP, CRM, SCADA, Billing etc.
- Allows to connect multiple meter via one modem
- Has smart reporting system
- Allows to control lighting systems remotely
- Monitors cabinet conditions (temperature, vandalism etc.)





						CSCS NET
-	s Ana Sayla ∎Emarter ©Teninat * ≯Hod	enler á Olunalar • 📲 Raporl	r • ANoden bieniei • 1	Headin 1.4am		· als
	Nutraler					
	Thursday 15 August 2013					
	Pegitana Regitana Regitana Terefor Terefor Terefor	Pagitatas Regitatas TimedOut TimedOut	Pieglitatas TimedDat	Registes Pegistes TimetCar TimetCar	1010 1015 1020 Registers Pa	0.25 10.50 10.55 10 g/tatas
				¥.	Detaylar	
THE WAY NO	IND NO Versives		Cellin Gara D	sm Teskat No		020
	012345678012345					Ambanes
	444545573072545	127.0.0.1		0	Property	
	444545573872545 444545573872545	127.04.1		0	Property	\$1.07.2015 13 5642
	444345873012245 444545873012246 122458	127.0.0.1		0 0 0	CIENTIANINE ACMARISACIO	31.87.2013 13.56.62 3055
Contraction of the	44454557802245 44454557802246 125456 44400	127.8.0.1		0 0 0 0	E CENTONINE ACMININESSION INSI	51.07.2013 13 58 62 3656 2660/5328290616
	444349573012345 444349573012346 123456 46433 46433	127.0.1		0 0 0 0	CENTONINE ACMARIGACION INEL SMO	51.07.2013 13 58 62 3656 2860/5328290618 809001130322009064
000	444349873812345 4444549873812346 123456 44433 44433 44433 44435	127.8.1		0 0 0 0 0 0	Reperty CERTORINE ACMANGENERS INF SMO ACCESSOREP	31.87.2013 13.56.82 3556 208011328290616 89900113322005054 172.141.102.182
000	444340578922945 444540578822940 122665 44433 44433 44433 44435 44435	127.8.1		0 0 0 0 0 0	CENTONINE ACMINISTRATION INSI SMO ACCESS/REP ACCESS/REP	31 872813 13 56 82 3855 286015235280618 899001133222005884 172 86 802 182 80
	4434957872545 44434957882549 125456 44431 44431 44435 44439 44437	127.8.8.1		0 0 0 0 0 0 0 0	CERTIONTINE     CERTIONTINE     ACMININGUISE     INGE     SMED     ACCESSCRESP     ACCESSCRESP     ACCESSCRESP	11.872813 15.9682 3555 26601338390616 80900113822003064 172.06102.182 80 1
	4423455582245 4443455582245 12266 44833 44813 44815 44815 44815 44817 44813	127.8.81		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CENTONINE ACMINISTRATION INSI SMO ACCESS/REP ACCESS/REP	11.073831315642 3555 24601533290598 8690013332300598 172.16102.182 80 1 1.16885.7
	4416(5)7002245 4442(6)73002346 12585 4403 4403 4403 4403 4403 4403 4403 440	127.8.8.1		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Agenty CREATENTINE ACMANAGEMENT INF INF INF INF INF INF INF INF INF INF	11.07.2015 13.56.02           3350           286015382300318           B00011303230030864           172.16.102.162           B0           1           1.1058227           Cmexture IEES REVIEW 02.004
	4423455582245 4443455582245 12266 44833 44813 44815 44815 44815 44817 44813	127.8.3		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CRATIONINE     ACMANDATION     MIL     MIL     MIL     MIL     MIL     ACCESSCREP     ACCESSCREP     ACCESSCREP     SOTINATED	11.073831315642 3555 24601533290598 8690013332300598 1722.06102.182 80 1 1.18985.7
	4401037872056 44401037882368 12345 4403 4403 4403 4403 4403 4403 4403 4	127.8.3		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Numity           CLEXTORINE         ACMIVAGENCI           INIO         INIO           INIO         ACCESS/RBIP           ACCESS/RBIP         ACCESS/RBIP           ACCESS/RBIP         INIO           SOTTAMED         INIO           DEVENING         D	11.07.2015 13.56.02           3350           286015382300318           B00011303230030864           172.16.102.162           B0           1           1.1058227           Cmexture IEES REVIEW 02.004
	446(4579022)45 446(46579022)46 12256 4473 4473 4461 4463 4463 4463 4463 4463 4463 446			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Pagenty           8         CRATTORINE           ADMANDERATOR         Ref           INA         Sec           INA         ACCESS/REF           ACCESS/REF         ACCESS/REF	31.87283131310682 3555 26001520130019 800011322203084 80 172.141062182 80 1 1.181022 Contexts 855 REVIEW 02.004 -6552.20,00



## **Project: Smart Stadiums & e-Ticketing**

### Turkish Football Federation's Project to transform all into smart stadiums

- **31** Stadiums now, more to come every year
- c.\$60m business
- Netas to provide :

#### <u>Per Stadium</u>

- Stadium Backbone Network
- Security Control Room
- Stadium System Room
- Surveillance Systems
- Controllers and Turnstiles
- Portable Card Readers

#### **Central Management System**

- Main & Disaster Recovery Datacenters
- (ref customers : hurriyet.com, passo.com.tr) :
- Integrated CRM & Ticketing & Security Systems
  - Card Management
  - Loyalty Management
  - Fan Management
  - E-Ticketing
  - CRM
  - Business Intelligence
  - Content Management
  - Card Personalization
  - Blacklist Management



#### **Highlights**

- Built on Microsoft Technologies (Microsoft Dynamics, MS SQL Server, Sharepoint, Power Builder)
- Real time communication with Access
   Controls for access permissions.
- Real time ticket transfer via Web/SMS
- Priority sales integration with GSM operator
- Details access control reporting integrated with ticketing BI





### **Project : AYDES**

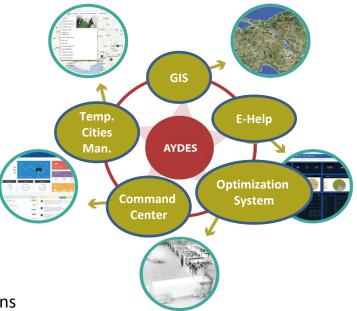


### **Disaster Management & Decision Support System**

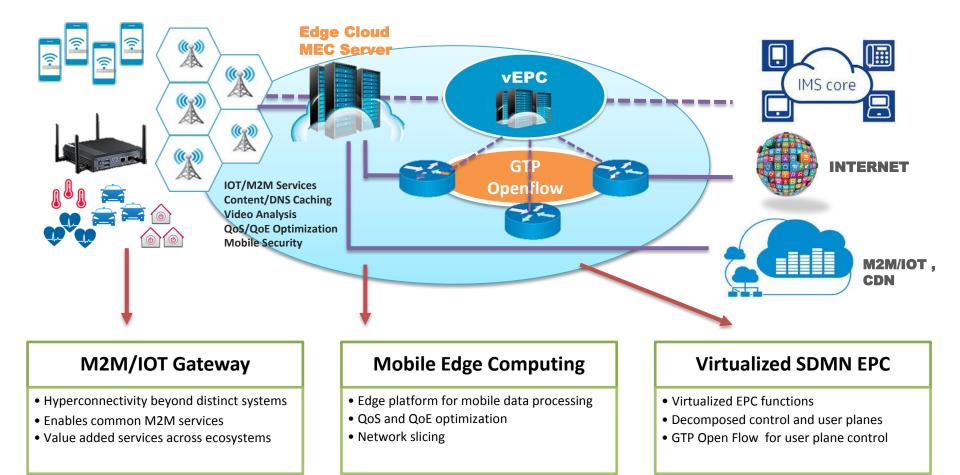
Turkish Prime Ministry Disaster and Emergency Management Presidency (AFAD) requirement for a GIS based umbrella decision support system to monitor and manage each phase of integrated disaster management.

Netas to provide an integrated platform for:

- Early warning and forecasting
- Modeling and simulation
- Situational awareness
- Efficient resource management
- Robust decision support mechanism
- Central command and control structure
- Redundant, secure and seamless system infrastructure
- Integrating with corresponding institutions and organizations
- Developed software integrated with c.30 different e-government services



### Netaş 5G Projects



#### Technology center with E2E 4G solutions laboratory



## **Thank You**

