



# **IoT Academy**

## **Introduction**

**Dr. Farzad Ebrahimi**  
**CEO & Founder**

**November 2023**



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[ebrahimi@iotacademy.ir](mailto:ebrahimi@iotacademy.ir)

## Farzad Ebrahimi

- CEO of IoT Academy (ITU Academia Member & ITU IoT Center of Excellence in Asia-Pacific)
- Faculty Member in ICT Research Institute
- International Internet of Things (IoT) Speaker & Lecturer
- International Telecommunication Union (ITU) Expert
- Chairman of The corresponding ISO/IEC JTC1 SC41 (Internet of Things and related technologies Standards) in Iran
- Chairman, Member of the founding board and the board of trustees of Non-Commercial Institute (as a NGO) of "Promoting the Internet of Things and data science" at national level.
- Doctor of Business Administration from the University of Tehran, MBA, M.Sc in Electrical Engineering- Telecommunication systems, B.Sc in Electrical Engineering- Electronics.

### Other Records:

- Counselor of the Director of ICT Research Institute
- Superintendent of IT Faculty in Iran Telecom Research Center
- Deputy of IT Faculty in Iran Telecom Research Center
- Head of Multimedia Systems Research Group in Iran Telecom Research Center
- Project Manager, Consultant and Observer of more than 50 Regional and National ICT related Projects.

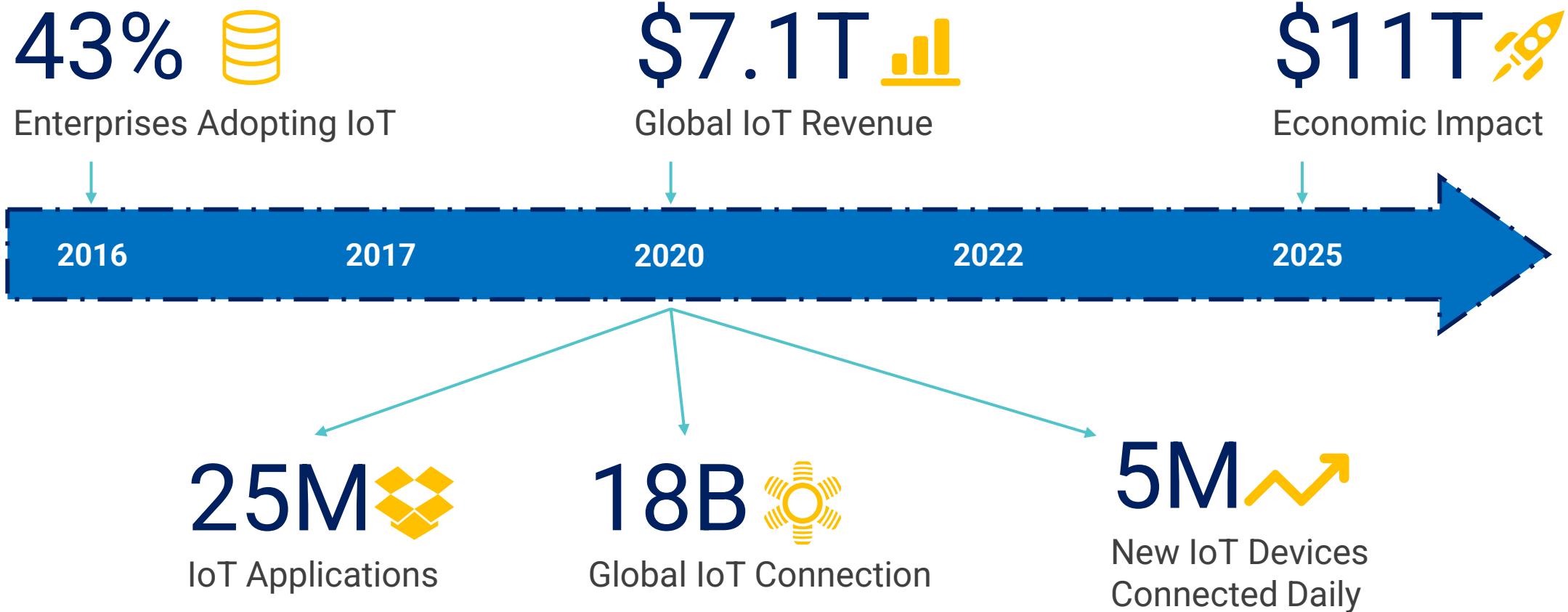
# What is Internet of Things (IoT) ?



The International Telecommunications Union (ITU) defines IoT as follows: "The IoT can be viewed as a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies (ICT)" (Source: Recommendation ITU-T Y.2060).

# THE INTERNET OF THINGS

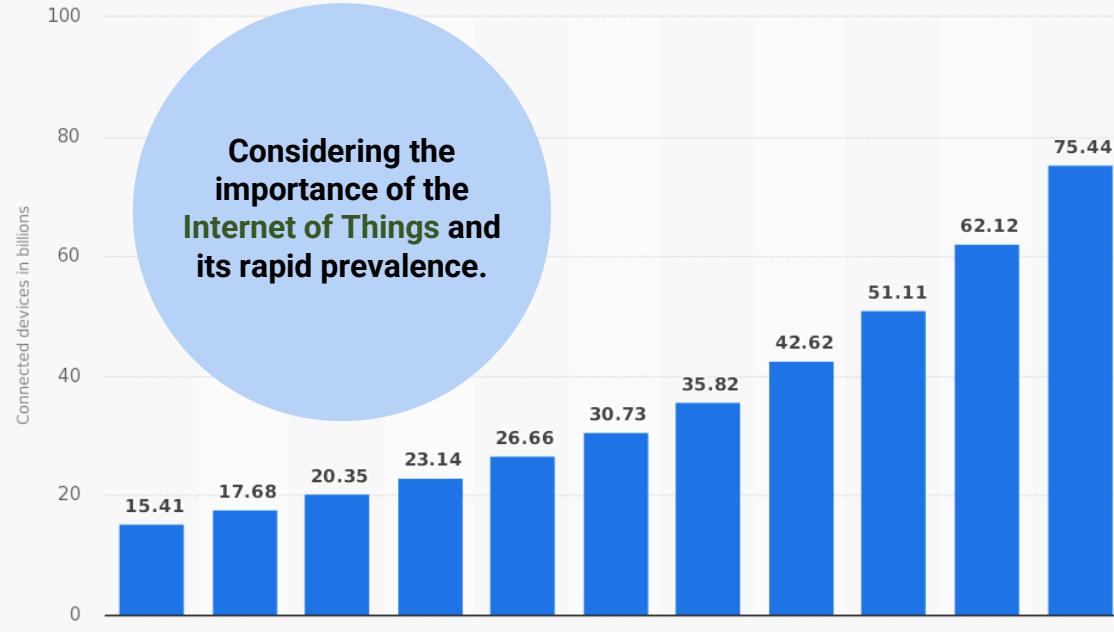
## Towards an IoT Dominated World



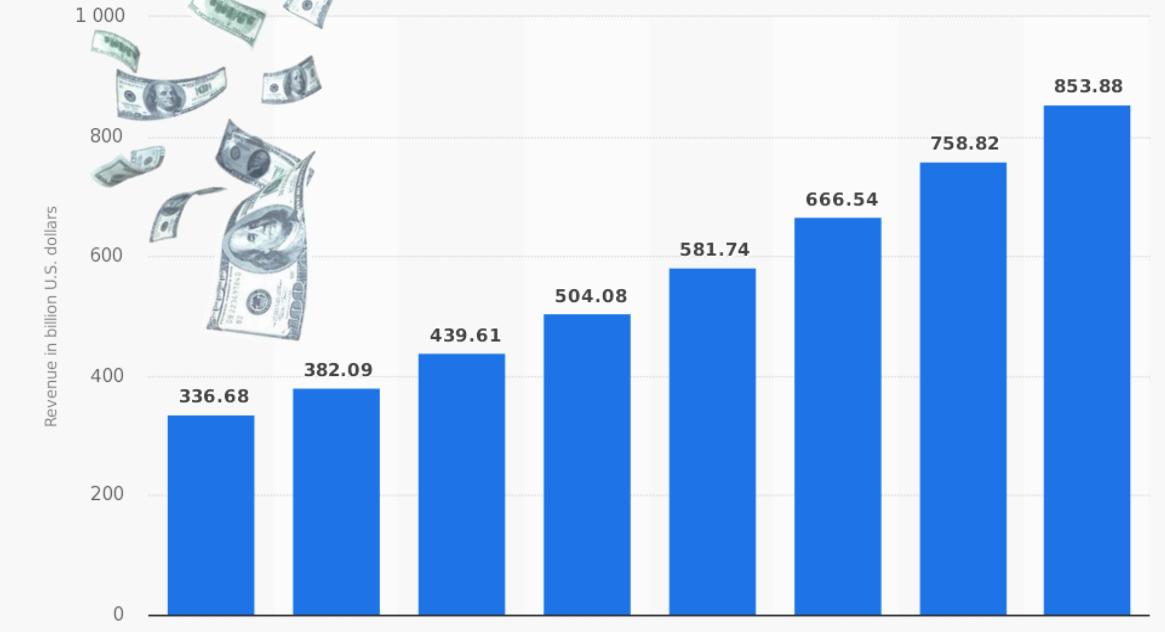
Source: Gartner, Ericsson, IDC, McKinsey, AT Kearney

# What is Internet of Things (IoT) ?

Internet of Things (IoT) connected devices installed base worldwide from 2015 to 2025 (in billions)




Revenue of the Internet of Things in Asia/Pacific from 2013 to 2020 (in billion U.S. dollars)



# INTRODUCTION

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# IOT ACADEMY INTRODUCTION



## VISION :

**“Internet of Things Products and Solutions for Unique Living  
of World People”**

## MISSION :

**“Increasing Citizen Awareness and Empowering Human  
Resources, Organizations and Industries in the field of  
Internet of Things and Related Technologies”**



# IOT ACADEMY INTRODUCTION

## International Telecommunication Union (ITU) Academia Member

Szechenyi Istvan University, Gyor

### INDIA

Centre for Development of Telematics, NEW DELHI

Indian Council for Research on Int'l Economic Relations (ICRIER), NEW DELHI

Indian Institute of Management Kashipur, Kashipur, Uttarakhand

Indian Institute of Science, Bangalore

Indian Institute of Technology Hyderabad, Sangareddy, Telangana

Indian Institute of Technology Madras, Chennai

National Law University Delhi, NEW DELHI

Telecom Centres of Excellence (TCOE) India, NEW DELHI

Visvesvaraya National Institute of Technology (VNIT) Nagpur, Nagpur

### IRAN (ISLAMIC REPUBLIC OF)

Amirkabir University of Technology, Tehran

Faculty of Applied Science of Post and Telecommunication, TEHRAN

ICT Research Institute, TEHRAN

IoT Academy, Tehran

Iran University of Science & Technology, NARMAK, TEHRAN

Tarbiat Modares University, Tehran

University of Tehran, Tehran

### ITALY



Ref: [https://www.itu.int/online/mm/scripts/gensel11?\\_memb=U](https://www.itu.int/online/mm/scripts/gensel11?_memb=U)

## International Telecommunication Union (ITU) Business Partner

 Back to pledges

Name of pledge

**Empowering and raising awareness of citizens from the perspective of digital transformation and the fifth industrial revolution**

Entity

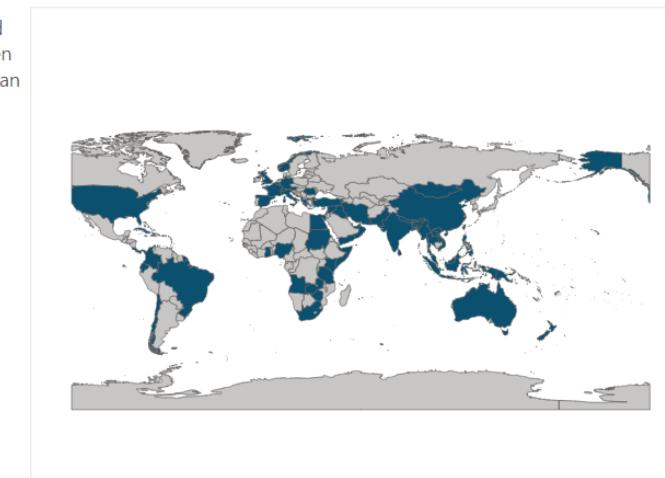
IoT Academy

Location

Iran (Islamic Republic of), Asia & the Pacific

<b>\$1M</b> Estimated financial value (USD)	<b>1.00M</b> Estimated number of people impacted	<b>Programmatic</b> Pledge type	<b>Single</b> Pledge
Focus Areas			
Skills	Digital Inclusion	<b>Target groups</b> Children Indigenous peoples Older persons Other Persons with disabilities Women	<b>7/1/2022</b> Start
Relevant / Local Content...	—		<b>7/1/2027</b> End

IoT Academy will provide international training courses, events and digital contents around the IoT and related technologies, smart cities, industry4.0, industry 5.0, and digital transformation for realizing the increasing citizen awareness, empowering HR & organizations, and research, and development. IoT Academy will empower human resources through its skill-based training program.



Source: UN, 2018

6/15/2022 1:05:21 PM

## 2023 World IoT Top 500 Summit

For **five consecutive years**, IoT Academy has been ranked among the top 500 IoT companies in the world. In the latest ranking, the IoT Academy has achieved a position among the top 250 global IoT companies for the fifth consecutive year.

Ref: <http://www.wiotc.org/en/news/344.html>

### 2023 WIOTRL Bronze List Top 100 2023 世界物联网排行榜·铜榜100强



No.	Country/国家	Company Name/单位名称	No.	Country/国家	Company Name/单位名称	No.	Country/国家	Company Name/单位名称	No.	Country/国家	Company Name/单位名称	No.	Country/国家	Company Name/单位名称
1	Germany/德国	Arineo 震美奥	21	China/中国	FII 工业富联	41	Iran/伊朗	IoT Academy	61	Israel/以色列	Halio Technologies	81	Germany/德国	Festo 费斯托
2	China/中国	China Logistics 中国物流集团	22	China/中国	CIC 中国智能交通系统	42	USA/美国	Microchip 微芯科技	62	USA/美国	Ayla Networks 艾拉物联网	82	Israel/以色列	Seebio
3	USA/美国	GM 通用汽车	23	China/中国	Dongfeng 东风汽车	43	Canada/加拿大	Transoft Solutions	63	China/中国	CHERY 奇瑞汽车	83	Russia/俄罗斯	Vega-Absolut
4	China/中国	Nokia Shanghai Bell 上海诺基亚贝尔	24	UK/英国	CMR Surgical 希美安	44	Hungary/匈牙利	EPS Connect	64	China/中国	Horizon Robotics 地平线	84	France/法国	Nimbits
5	China/中国	PATEO 博泰车联网	25	UAE/阿联酋	Evrything	45	China/中国	Sysware 瑞为系统	65	China/中国	Hanwei 汉威科技	85	Russia/俄罗斯	Sputnix
6	Japan/日本	Honda 本田	26	Sweden/瑞典	Ericsson 爱立信	46	Austria/奥地利	tttech auto	66	UK/英国	Pick Protection	86	Poland/波兰	Kontakt.io
7	Brazil/巴西	Telefonica Brasil 巴西电信	27	China/中国	Tsinghua Unigroup 紫光集团	47	Australia/澳大利亚	Nordic Semiconductor	67	France/法国	ADAXIS 阿达克西斯	87	Spain/西班牙	Thethings.io
8	China/中国	Gosun 高新兴	28	USA/美国	360Zebra 斑马物联网	48	Norway/挪威	Kongsberg Gruppen	68	Philippines/菲律宾	Controtek Solutions	88	Russia/俄罗斯	WAViO
9	Russia/俄罗斯	GS GROUP	29	France/法国	Coyote System 科特系统	49	France/法国	Inno Tsdi	69	UAE/阿联酋	Du	89	Canada/加拿大	kongsberg geospatial
10	China/中国	hualu 中国华录集团	30	Japan/日本	Denso 电装	50	Iran/伊朗	Javidan Tahjiz Taban	70	UAE/阿联酋	Dubai Technologies 迪拜科技	90	South Korea/韩国	Barun Electronics
11	USA/美国	Ford 福特	31	South Korea/韩国	Nethom	51	Spain/西班牙	Cellnex Telecom	71	China/中国	Unitech Electronics 精联电子	91	China/中国	Ubtech 优必选
12	UK/英国	AstraZeneca 阿斯利康	32	Austria/奥地利	AVL 阿斯特	52	Canada/加拿大	Rogers 罗杰斯	72	Argentina/阿根廷	Globant	92	China/中国	Terminus 特斯联
13	Germany/德国	Auvesy	33	Spain/西班牙	repsol	53	Australia/澳大利亚	Telstra 澳大利亚电信	73	China/中国	China Unicom Digital Technology 联通数科	93	South Korea/韩国	Ajantech
14	Australia/澳大利亚	Myriota	34	Sweden/瑞典	Hexagon 海克斯康	54	China/中国	Handysys 海利时	74	USA/美国	Cyberearson	94	Russia/俄罗斯	thingenix
15	USA/美国	Rackspace	35	USA/美国	Vicarious Systems	55	China/中国	Qinchuan IoT 泰川物联网	75	Norway/挪威	Klaveness Digital	95	Philippines/菲律宾	IoT Philippines
16	Japan/日本	Seiko Epson 精工爱普生	36	Japan/日本	Canon 佳能	56	France/法国	Collectis	76	China/中国	Evoc 研祥	96	Belarus/白俄罗斯	Integral
17	France/法国	Flowbird 飞鸟	37	Germany/德国	HENSOLDT	57	China/中国	Lierda 利尔达	77	USA/美国	Mydeivices	97	Finland/芬兰	Wirespas
18	USA/美国	Sensata 森萨塔	38	South Korea/韩国	Handysoft	58	Israel/以色列	Habana Labs	78	UK/英国	Graphicore	98	Canada/加拿大	TeraXion
19	UK/英国	GSK 嘉善史克	39	Japan/日本	Murata 村田	59	China/中国	DC Holdings 神州控股	79	Ireland/爱尔兰	Wisar	99	UAE/阿联酋	Aramex 阿拉美
20	Iran/伊朗	Hooshmand Robotic Ayandeh	40	Saudi/沙特	aramco 沙特阿美	60	Austria/奥地利	FerRobotics 菲洛博迪机器人	80	China/中国	Wangsu 网宿	100	China/中国	Tuya 涂鸦智能



## 2023 World IoT Top 500 Summit



During the Multilateral Cooperation Forum at the 2023 World Internet of Things Convention (WIOTC), Dr. Farzad Ebrahimi, CEO, and founder of IoT Academy, delivered a thought-provoking speech on the interconnected economy. Dr. Ebrahimi highlighted the critical role played by countries and companies in shaping the market pattern of the digital economy and emphasized the main direction of the investment for multilateral cooperation. His insights shed light on the evolving landscape of the global economy and provided valuable guidance for policymakers and business leaders alike.



# IoT ACADEMY INTRODUCTION

2019

# World IoT Top 500 Summit 2019-2022



2020



2021



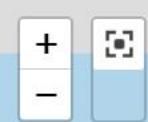
2022

**TOP 100**  
Industry List  
2022 WIOTRL

IoT Academy is ITU IoT Center of Excellence in Asia-Pacific for 2019-2022



Ref: <https://academy.itu.int/itu-d/projects-activities/centres-excellence/coe-cycles/coe-cycle-2019-2022>



ARCTIC OCEAN

NORTH PACIFIC OCEAN

NORTH ATLANTIC OCEAN

SOUTH PACIFIC OCEAN

SOUTH ATLANTIC OCEAN

SOUTHERN OCEAN

ARCTIC OCEAN

NORTH PACIFIC OCEAN

SOUTH PACIFIC OCEAN



Chairman of The corresponding ISO/IEC JTC1 SC41  
(Internet of Things and Related Technologies Standards) in Iran



# Activities and Services

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# IoT Academy Activities and Services





## IoT and the Oil & Gas Industry

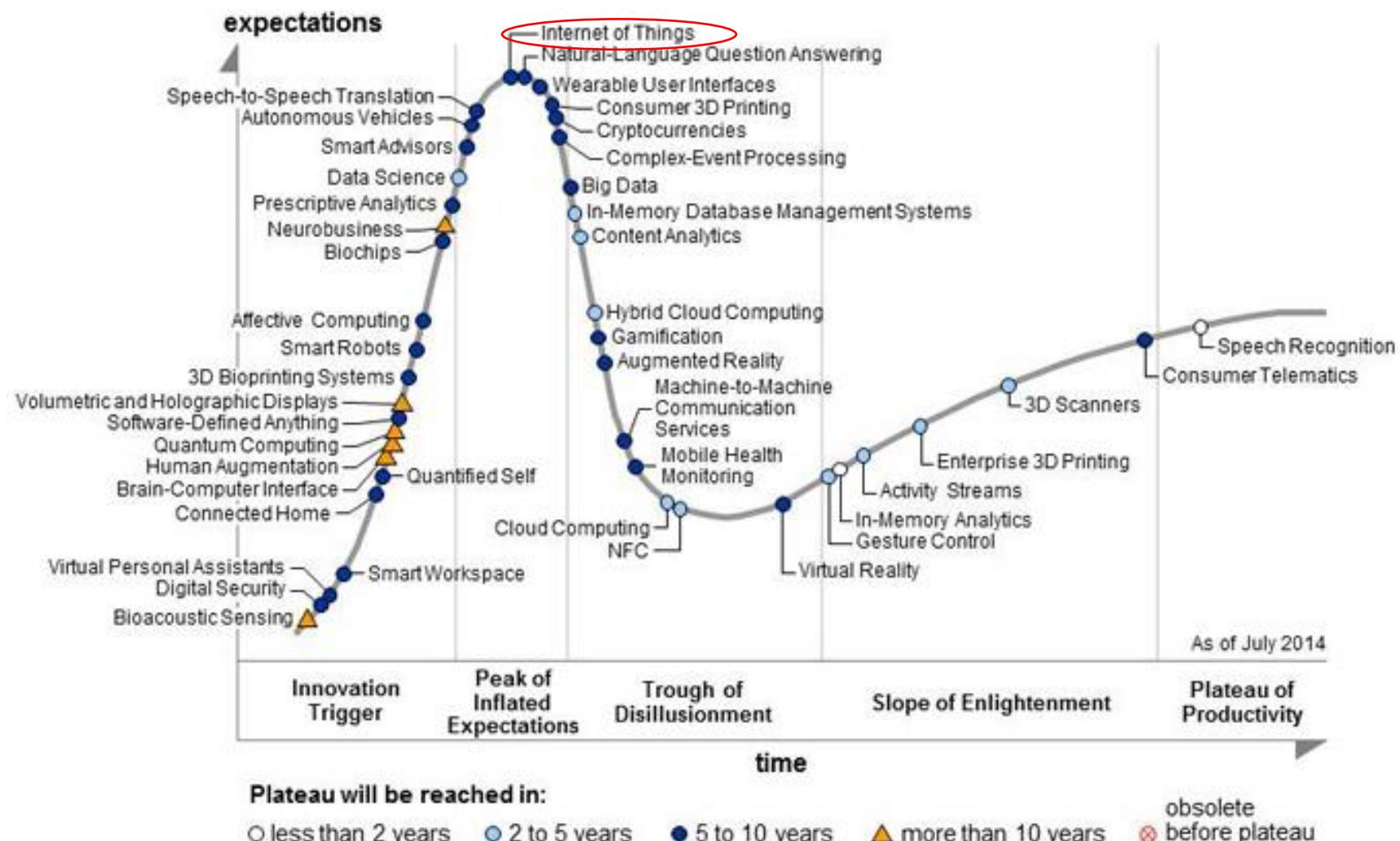
The Industrial Internet of Things harnesses the power of big data to improve efficiencies, particularly in asset-intensive industries such as oil and gas. As more and more machinery becomes loaded up with sensors and connected to the internet, there are predictions that the IoT could slash costs.

Ref: [www.eniday.com](http://www.eniday.com)

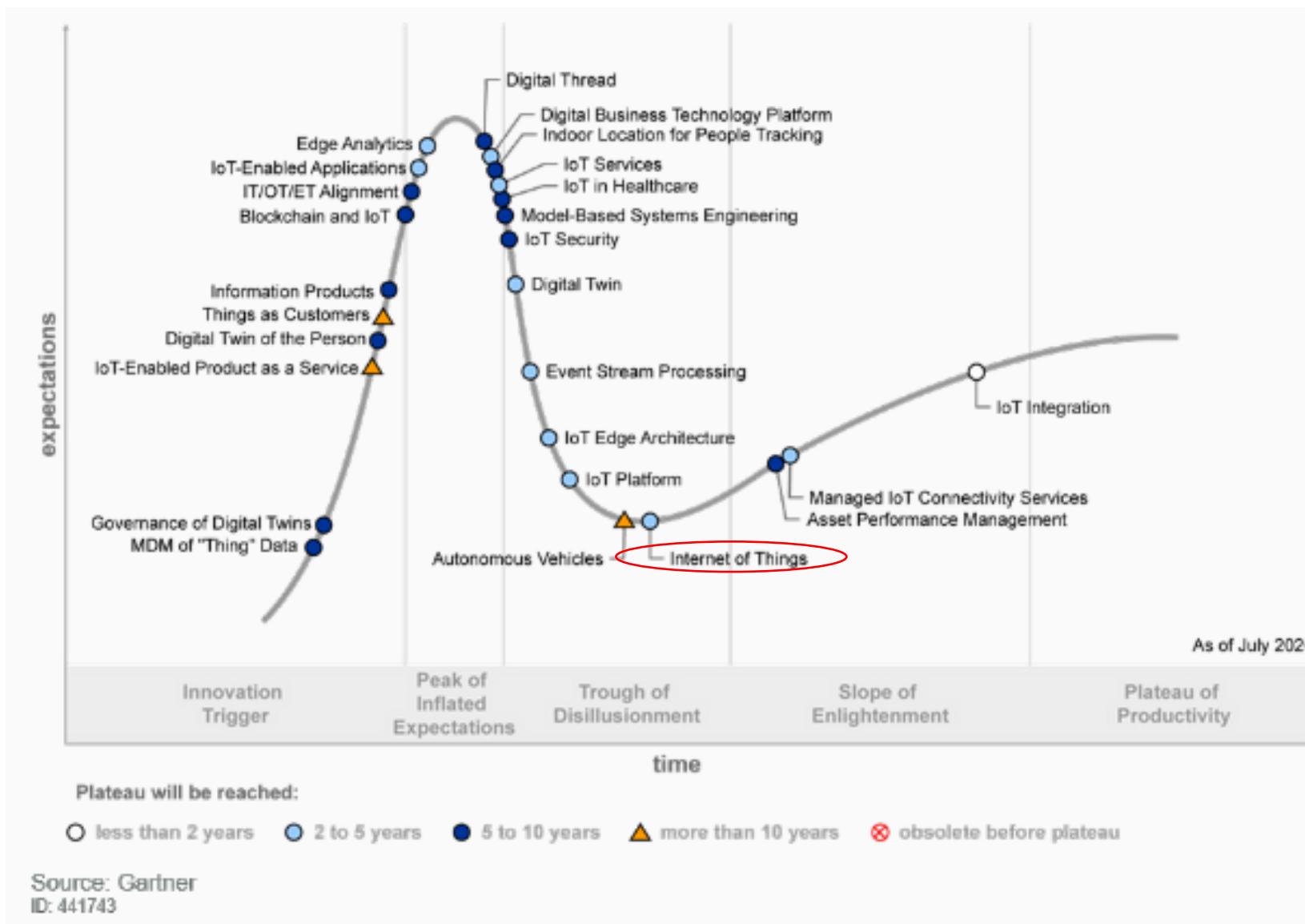
## 5 WAYS THE INDUSTRIAL INTERNET OF THINGS CAN REVOLUTIONIZE THE OIL AND GAS INDUSTRY

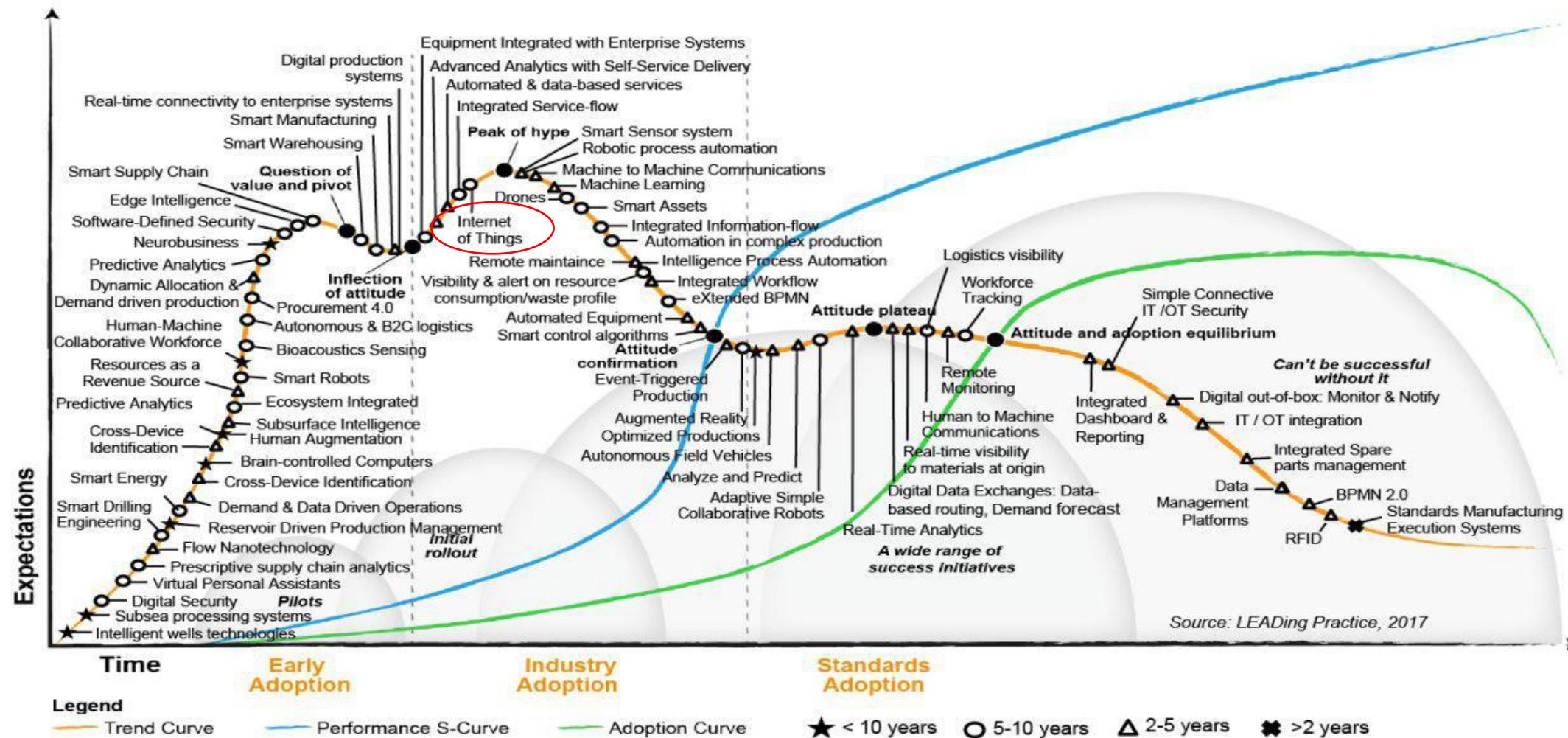
-  1) Improved Operational Efficiency
-  2) Revenue
-  3) Real-Time Data
-  4) Less Safety Risk
-  5) Environmental Footprint

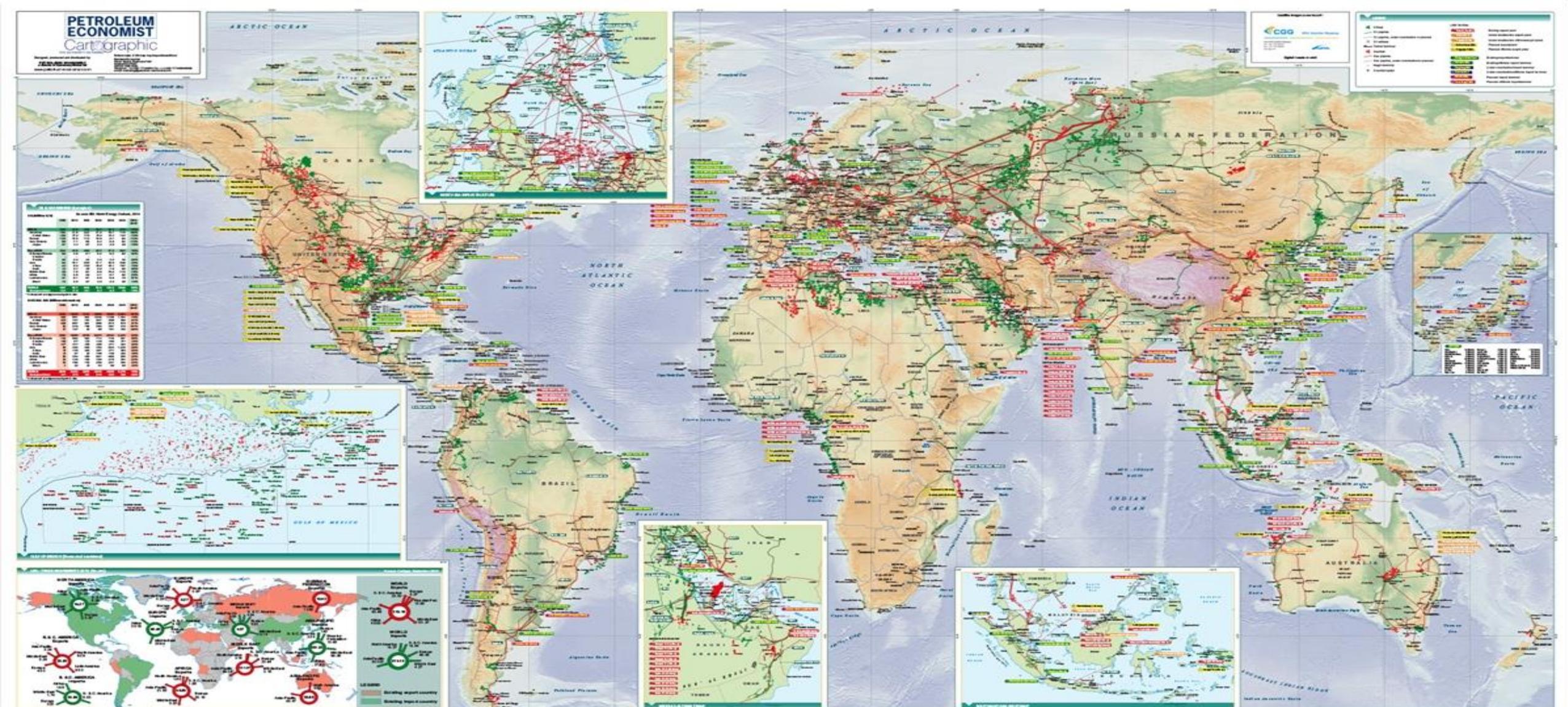
# Hype Cycle for the Internet of Things, 2014



# Hype Cycle for the Internet of Things, 2020







## WORLD OIL & GAS MAP

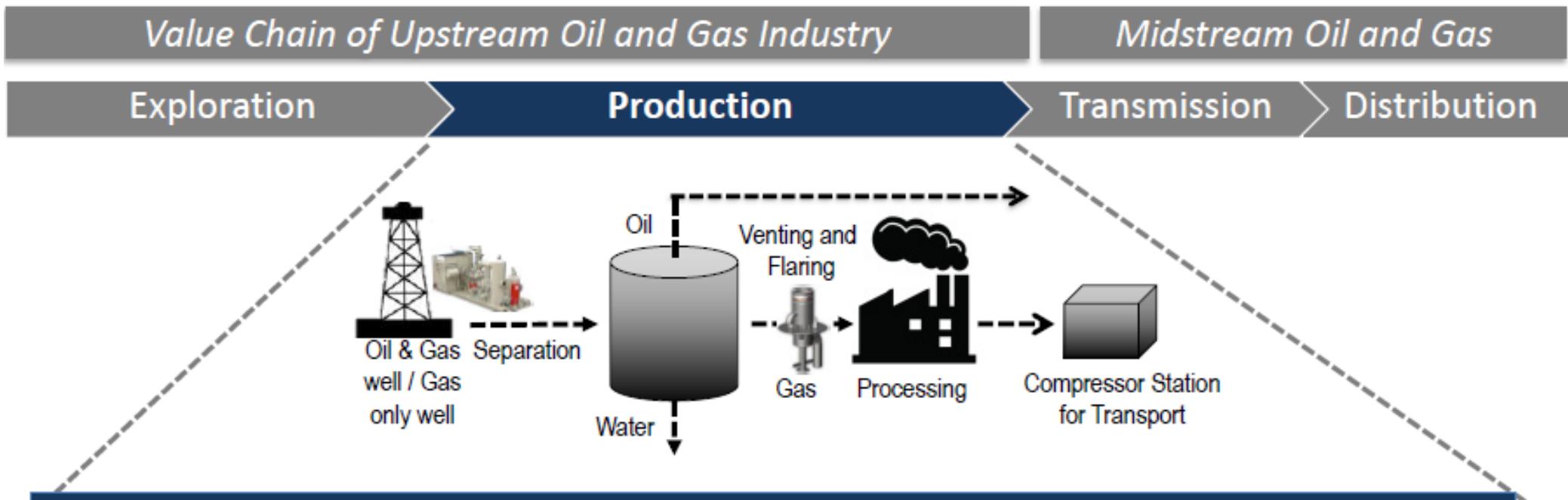
4th edition

Produced by Petroleum Economist, a division of Euromoney Global Limited  
in partnership with



[www.abnamro.com](http://www.abnamro.com)





- IoT offers the ability to help companies compete on cost by improving productivity:
  - Enable predictive maintenance vs. preventative maintenance
  - Improve process flow achieved by monitoring changes in operating conditions
  - Increase productivity and reduce accident frequency with real time monitoring of assets

# Key Drivers of Today's IoT Adoption

## Cheaper Technology

- Sensors
- Processors

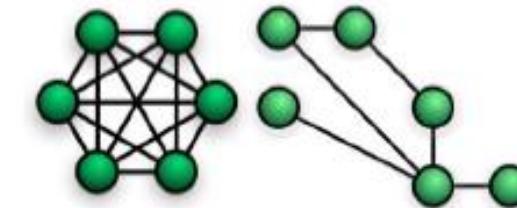


## Better Infrastructure

- Cellular technology
- Mesh networks



3G 4G LTE



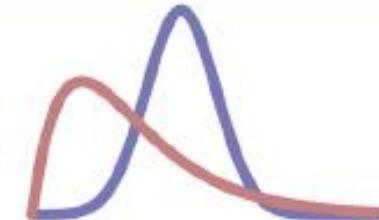
## Inexpensive Storage

- Cloud data storage
- Hardware costs



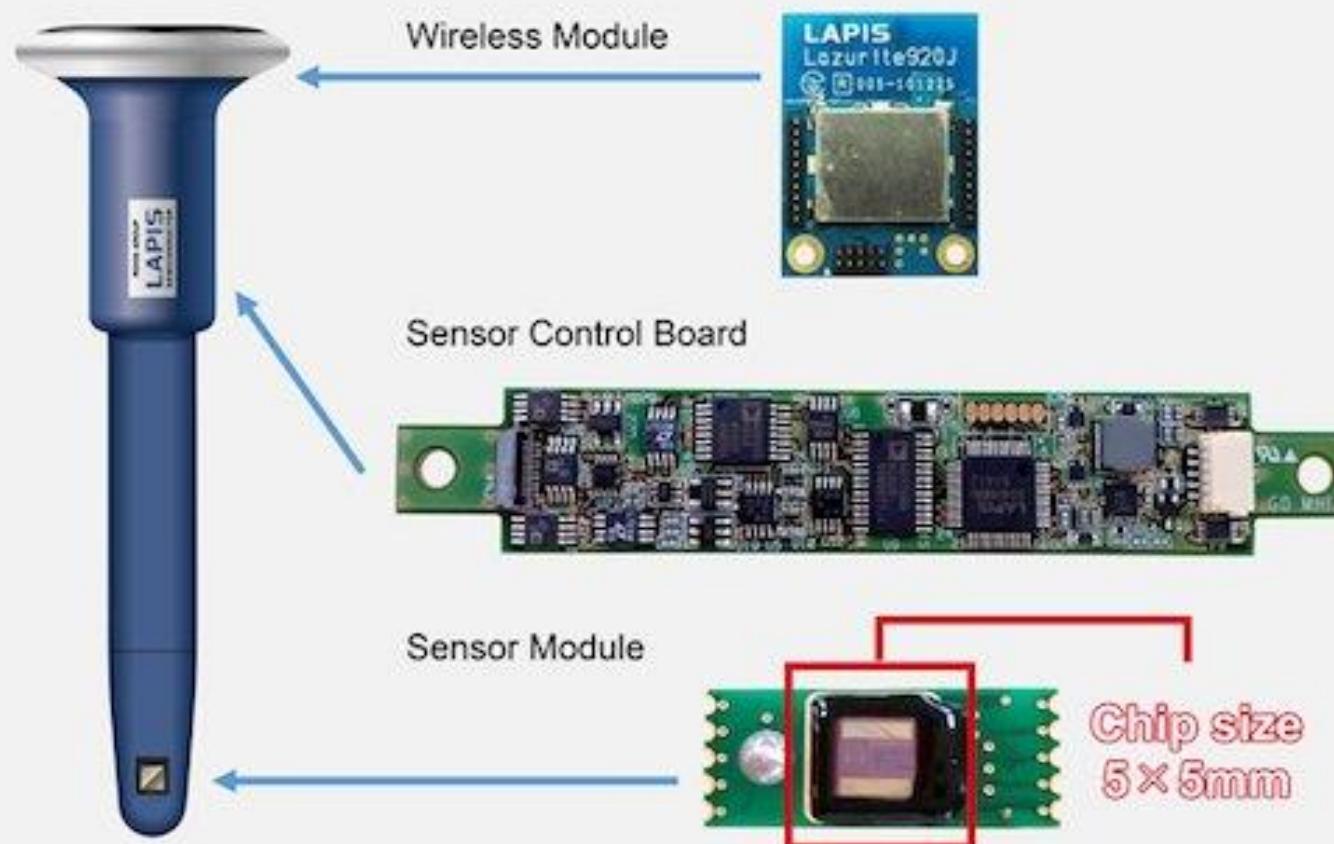
## Big Data Analytics

- Hadoop, etc.
- 3<sup>rd</sup> party analytics

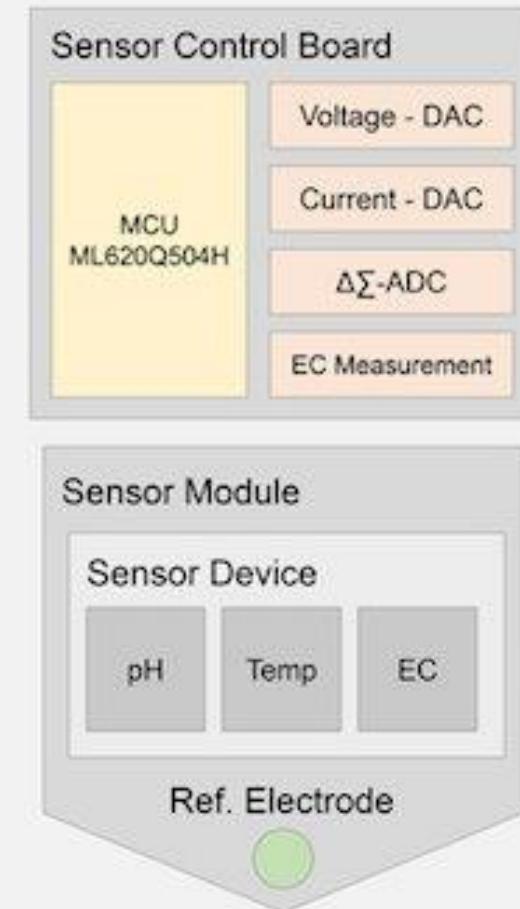


# IoT Sensor Block Diagram

## Compact Semiconductor-Based Design



## Block Diagram



# Harvard Business Review

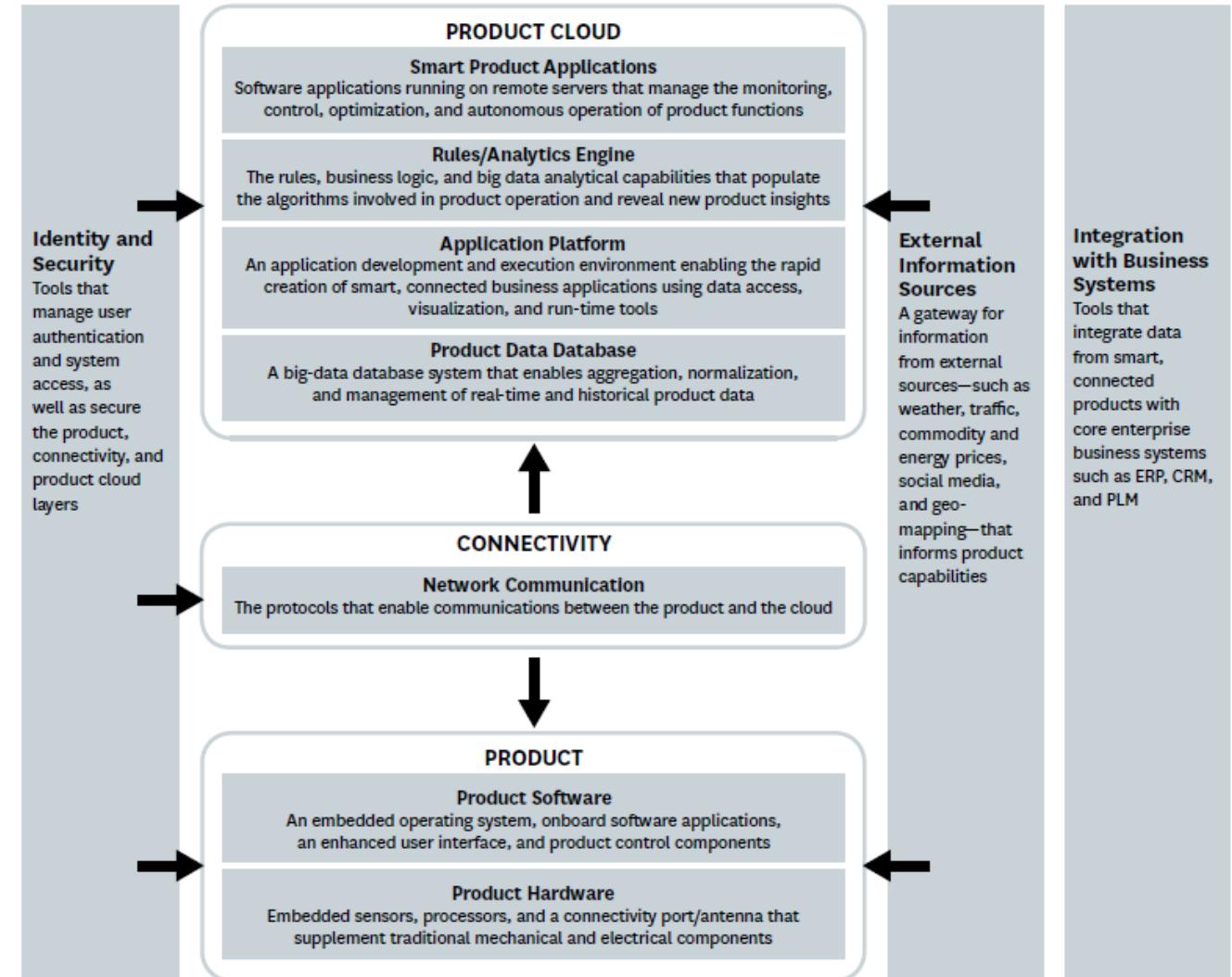
NOVEMBER 2014  
REPRINT R1411C

**SPOTLIGHT ON MANAGING THE INTERNET OF THINGS**  
How Smart,  
Connected Products  
Are Transforming  
Competition

by Michael E. Porter and James E. Heppelmann

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# IoT Architecture

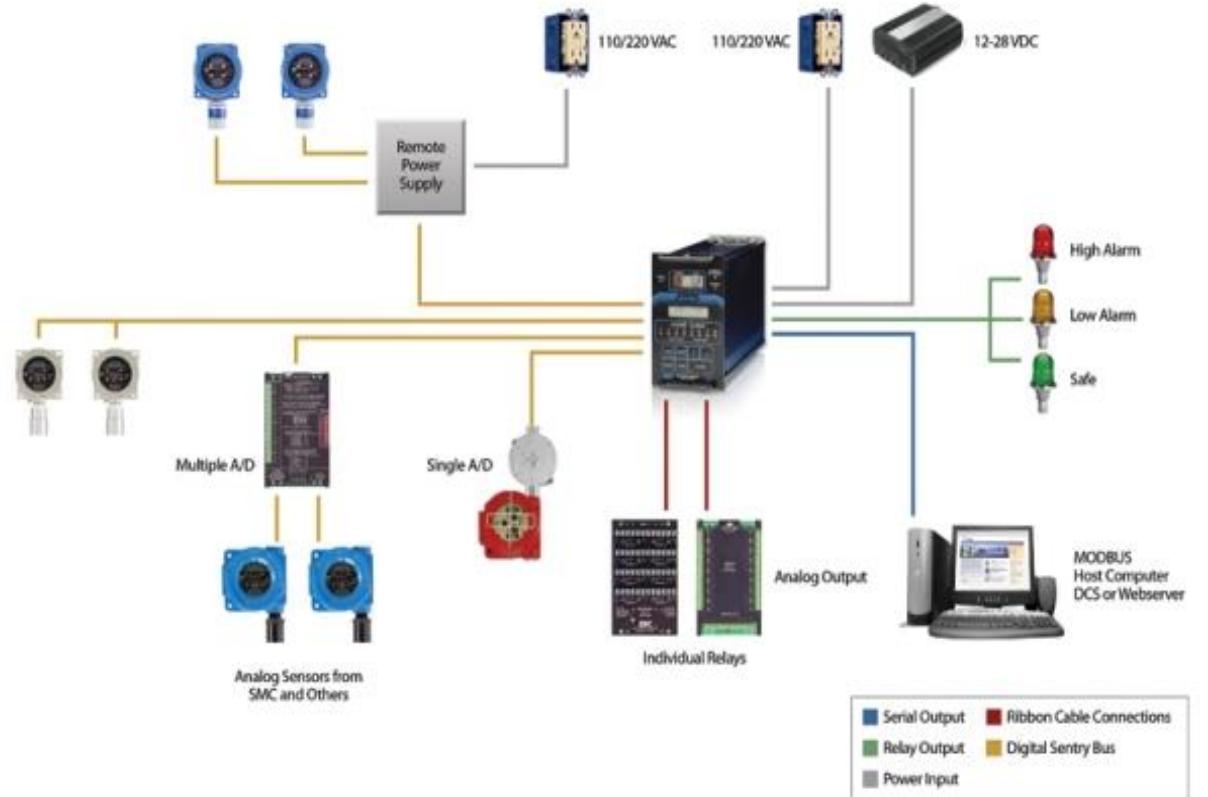


# DEVELOPING IOT PRODUCT

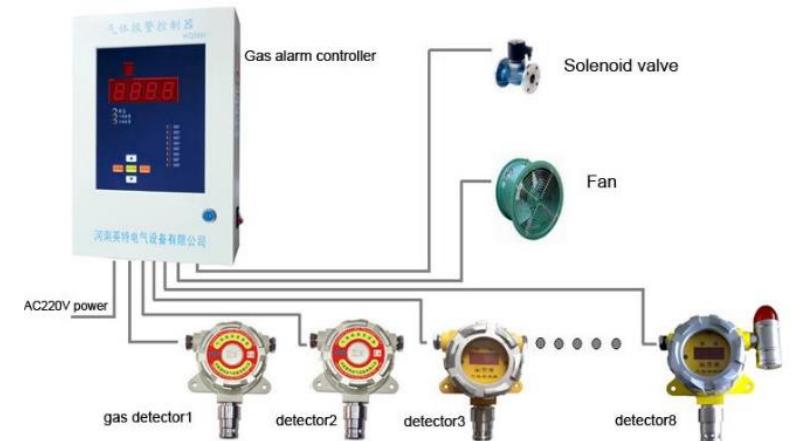
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## IoT-based Gas Detection Systems

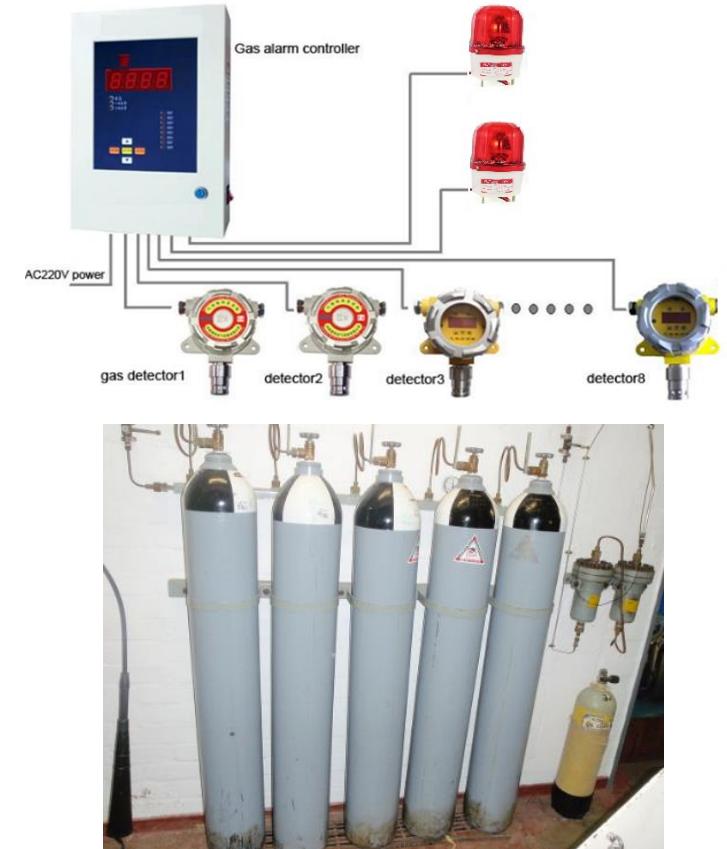


## Common Oil & Gas Detection Systems



# Gas Detection Systems – Current Situation

- Number of Channels (1, 2, 4 and 8 Channels are Common)
- Limitation in Number of Sensors and Alarms
- Repeater Limitations (1 extra system, short distance)
- Commercial Limitation for higher number of channels (for example 16, 32 and 64 channels)
- Most of them did not have remote accessibility
- Unable to display multi-system information simultaneously
- Additional features like Low/High Pressure Oxygen Bank Monitoring



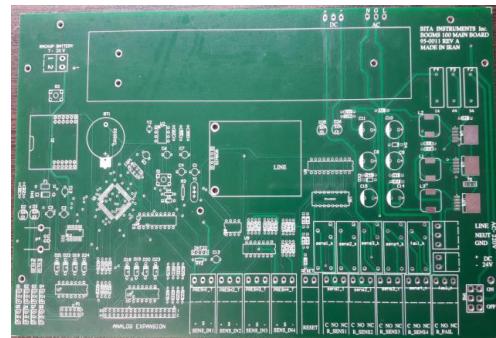
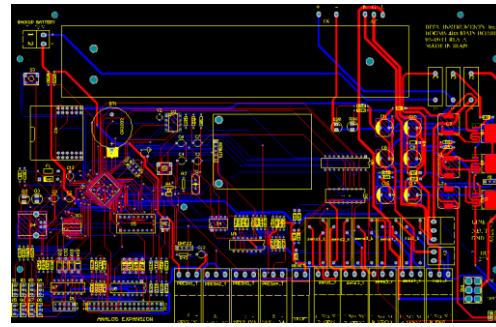
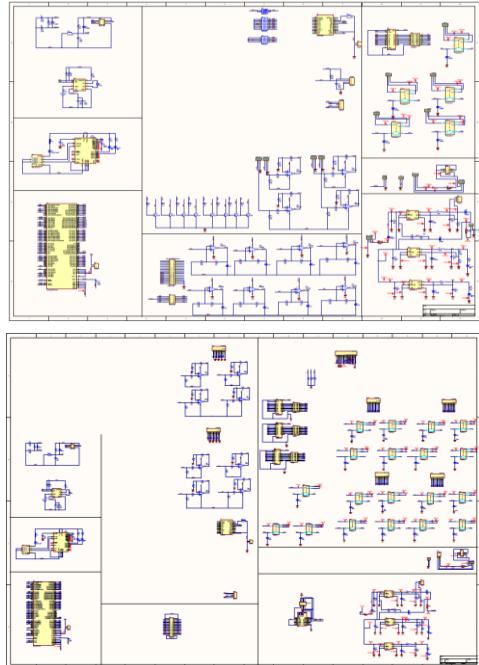
# Internet of Things Features

- Sensors are connected to each other and the Internet
- Sensors send their data (API based) through Gateway to an IoT Platform (Cloud)
- There is no limit to the number of sensors and alarms
- Any Time/ Any Place/ Any Things Connection
- There is no limit to the distance and Repeater
- There is no Limitation for higher number of channels (for example 16, 32 and 64 channels)
- Access to the Detection system and Sensors data through Mobile phone, Desktop and Web Application
- Able to display multi-system information simultaneously
- There is no limitation for additional features like Low/High Pressure Oxygen Bank Monitoring

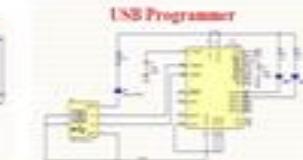
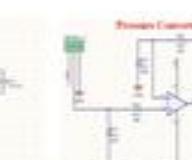
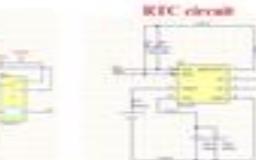
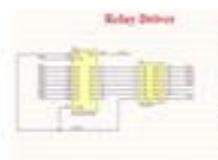
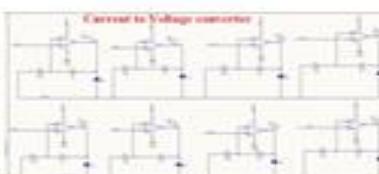
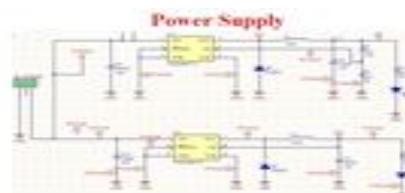
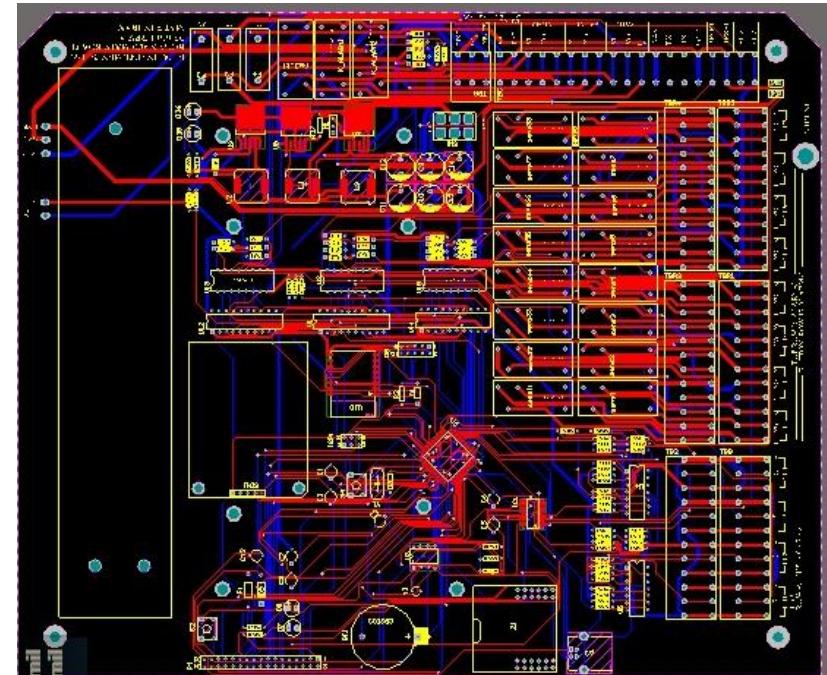
Define the required priority proposal

## IoT based Gas Detection System (H2S & LEL)

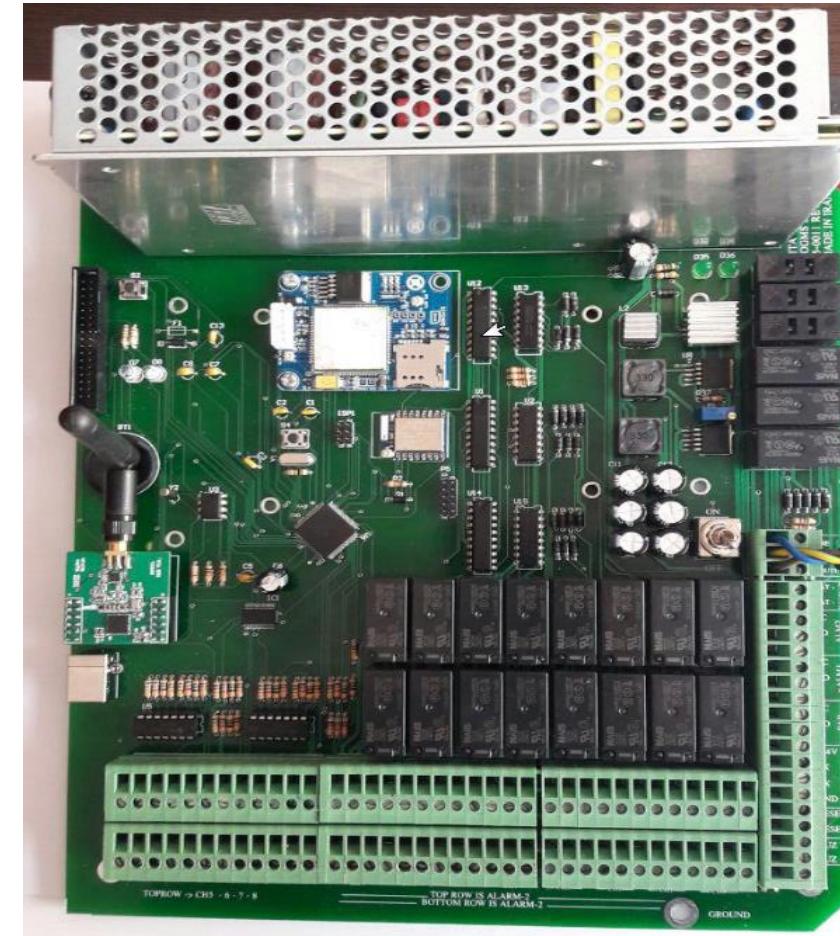
## Design of Required Hardware



Proteus v8.3,  
Altium  
Designer 2016,  
IDE Atom



## Design of Required Hardware



## Design of Required Hardware



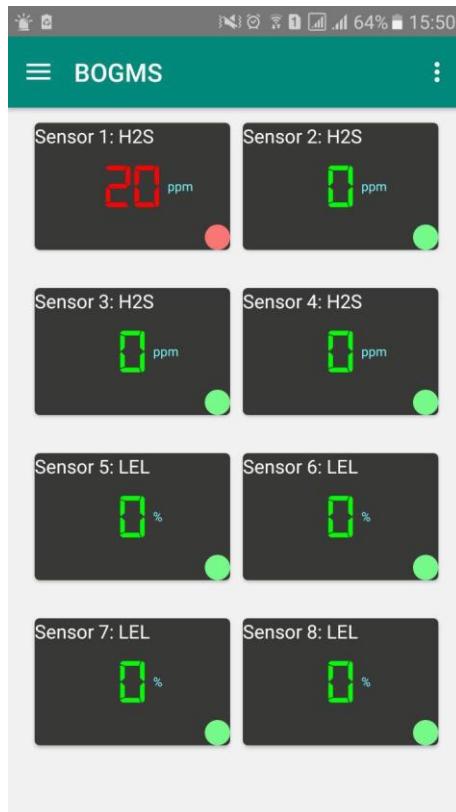
## Design of Required Hardware



## Selecting IoT Platform

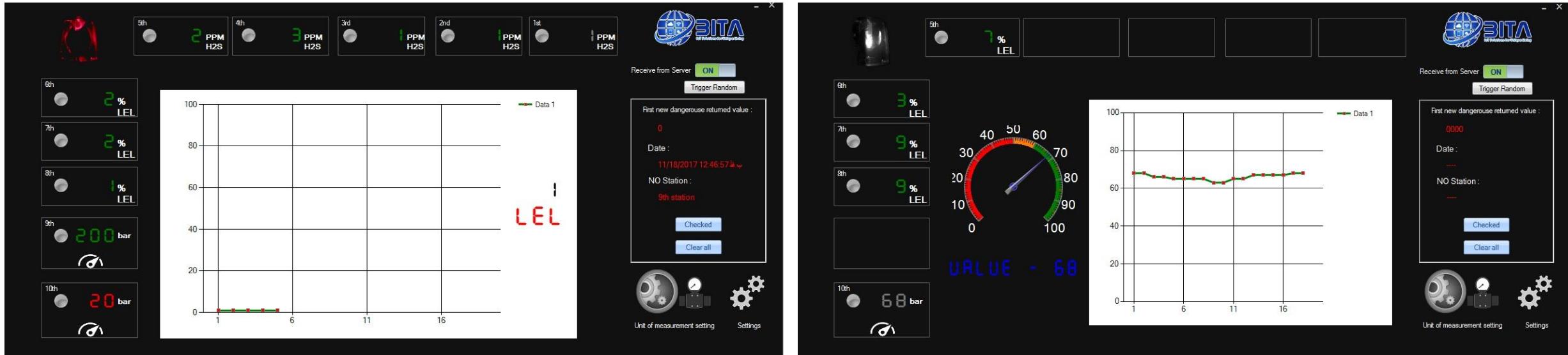


## Design and Implementation of Mobile & Desktop Application



Android Studio, Xamarin, React native

## Design and Implementation of Mobile & Desktop Application



## Testing the System



# Developing IoT product

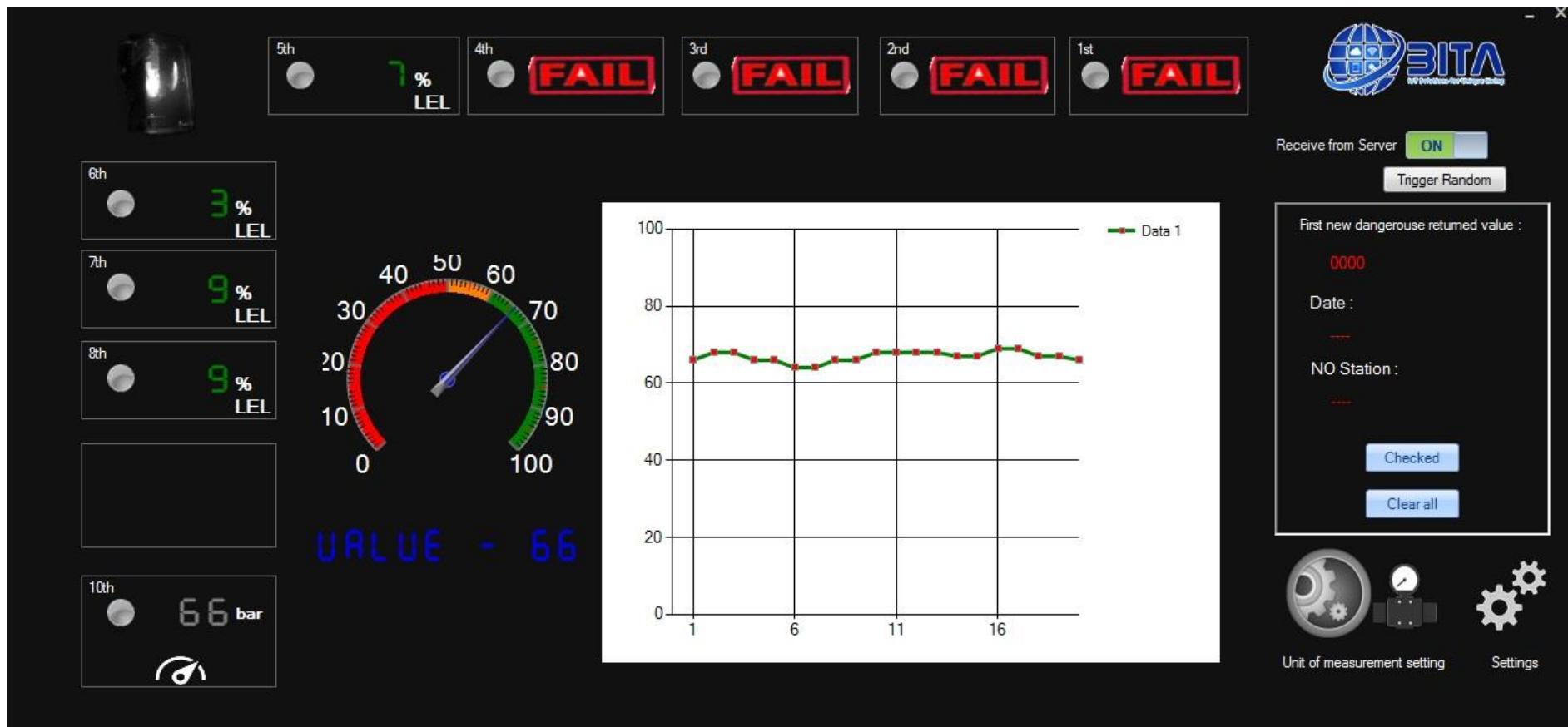
## Testing the System



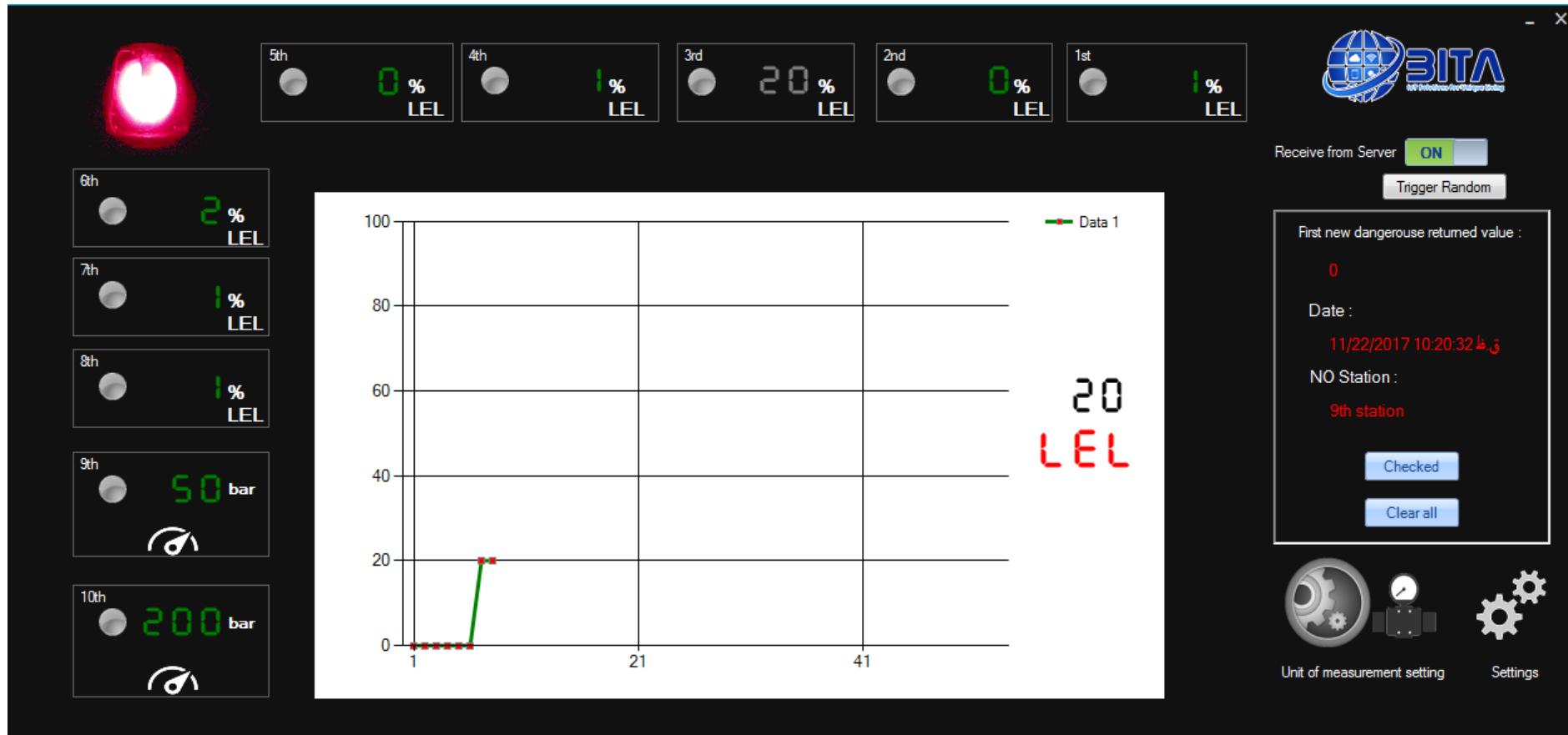
## Testing the System



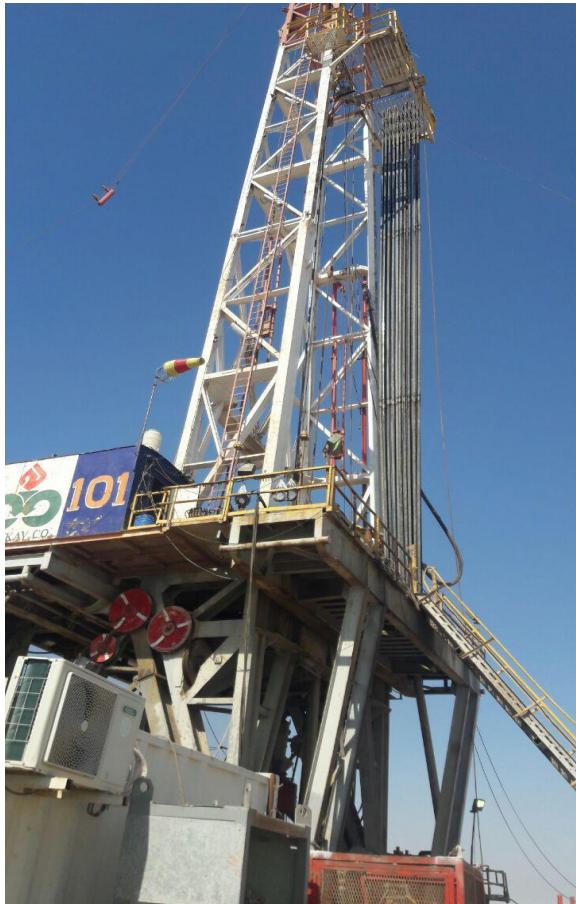
## Testing the System



## Testing the System



## Testing the System



## Testing the System



# Technical specifications of the products

## About the IPS-BITA Gas Monitor

The IPS-BITA is a fixed-mounted, continuous-monitoring, real-time feedback instrument. This multiple channel gas monitor is capable of detecting gas at up to eight locations with consideration of adding more channels based on the need (It can be customized).

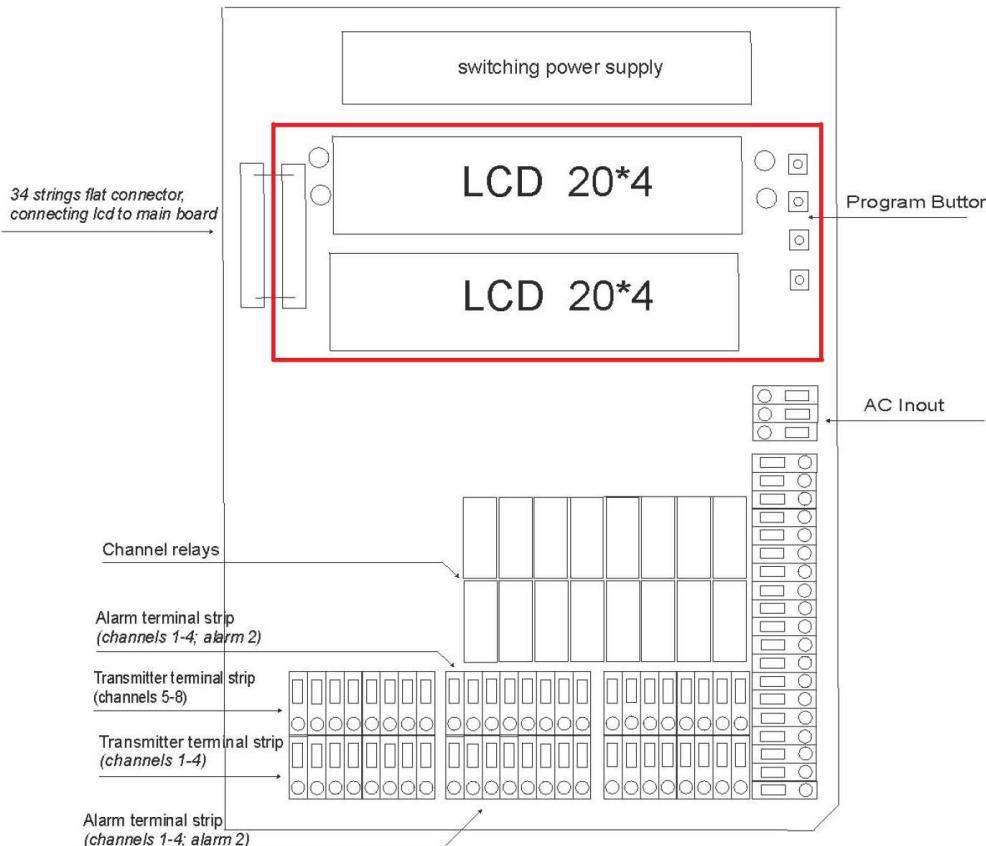
The display screens simultaneously display the gas readings of all active channels in real-time and it will send all channel's data to the base monitoring station far away from the field through the internet via 802.11 protocol or GSM. The IPS-BITA includes audible and visual alarms that warn you of hazardous gas conditions. The alarm circuit includes two levels of gas alarms. The fail circuit alerts you to failures in the gas transmitter(s) or IPS-BITA. At the same time, these alarms will be sent to the base monitoring station and alarms will be shown in the desktop and mobile application that is provided to the employer of the field.

It also has the ability of adding wireless alarms in the field and out of the field. These alarms all connected to the IPS-BITA through 802.15 protocol. The system is protected from noises of the field and alarms can be connected from up to 1000 meters.

The Configuration menu allows to change channel and calibration settings.

IPS-BITA Gas Monitor Specifications

Input Power	100 to 240 VAC or 24 VDC
Detector Head Input Type	2 or 3 wire 4-20mA transmitters
BOX Dimensions	12.5 in. H x 11.0 in. W x 4.4 in. D (31.8 cm H x 27.9 cm W x 16.3 cm D)
Board Dimensions	11.33 in. H x 9.37in. W x 4.96 in. D (28.8 cm H x 23.81 cm W x 12.6 cm D)
Power Dimensions	7.75 in. H x 1.49in. W x 3.93 in. D (19.7 cm H x 3.8cm W x 10cm D)
Weight	10.4 lbs. (without AC line cord)
LCD size	2 LCD 20*4
Storage Temperature	-4°F to 158°F (-20°C to 70°C)
Environmental Conditions	For indoor or outdoor locations (Type 4X) • 2000 meter max altitude • Maximum humidity: 80% relative • Pollution Degree 2 • Installation Category II
User Controls	• Reset switch • Program buttons: ESCAPE, UP (YES), DOWN (NO), and ENTER
Relays	CSA Rated for 3 amps at 115 VAC resistive, Form C
Communication Networks	Wifi (IEEE 802.11 b/g/n Wi-Fi) Sim808(Quad Band GSM / GPRS) (IEEE 802.15.4)

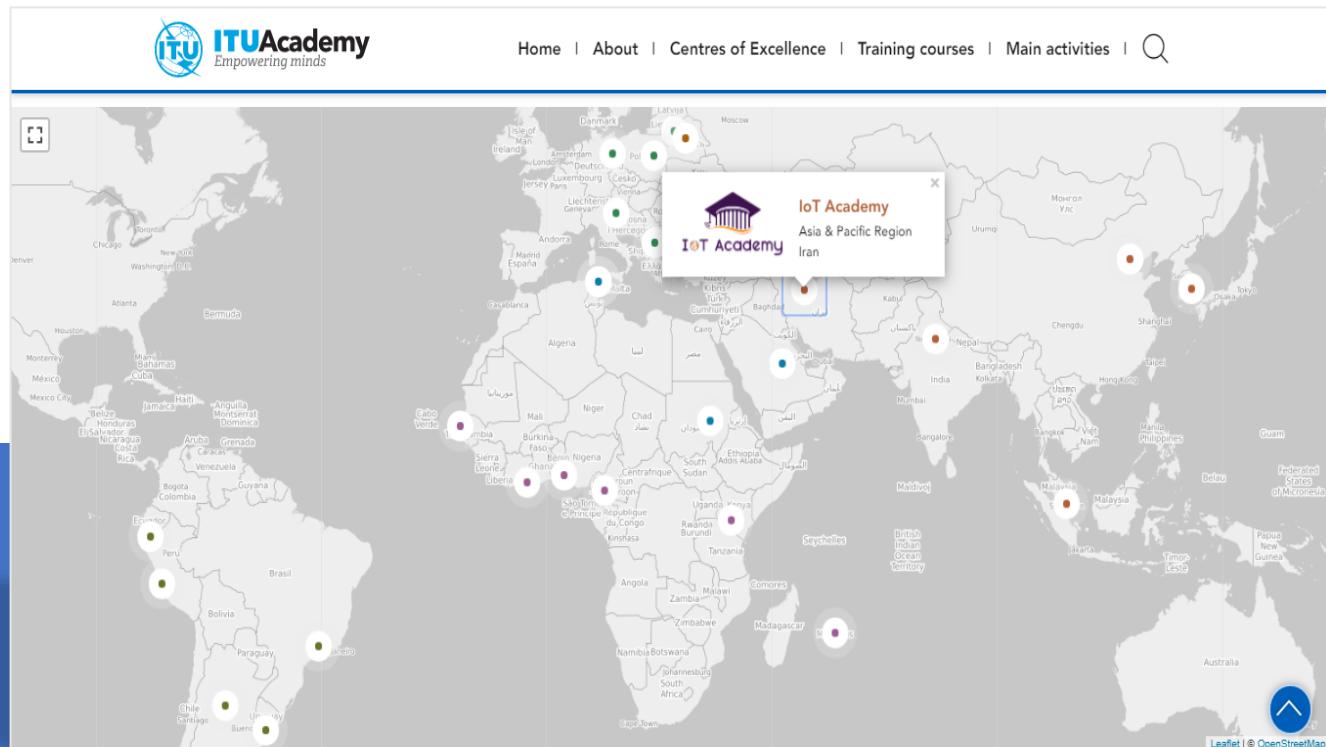


# IOT ACADEMY CERTIFICATES

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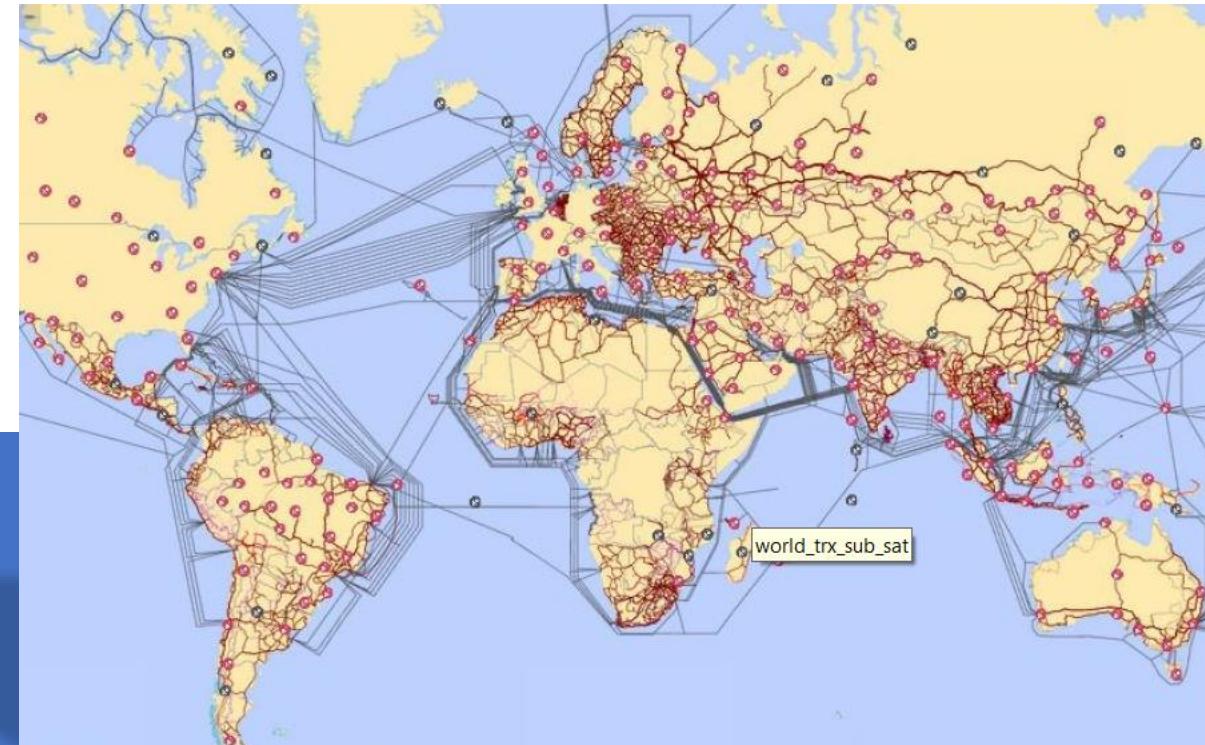


# IoT Academy Certificates



Ref: <https://academy.itu.int/centres-excellence/coe-cycles/coe-cycle-2019-2022>

# IoT Academy Certificates



Ref: [https://www.itu.int/online/mm/scripts/gensel11?\\_memb=U](https://www.itu.int/online/mm/scripts/gensel11?_memb=U)

# IoT Academy Certificates









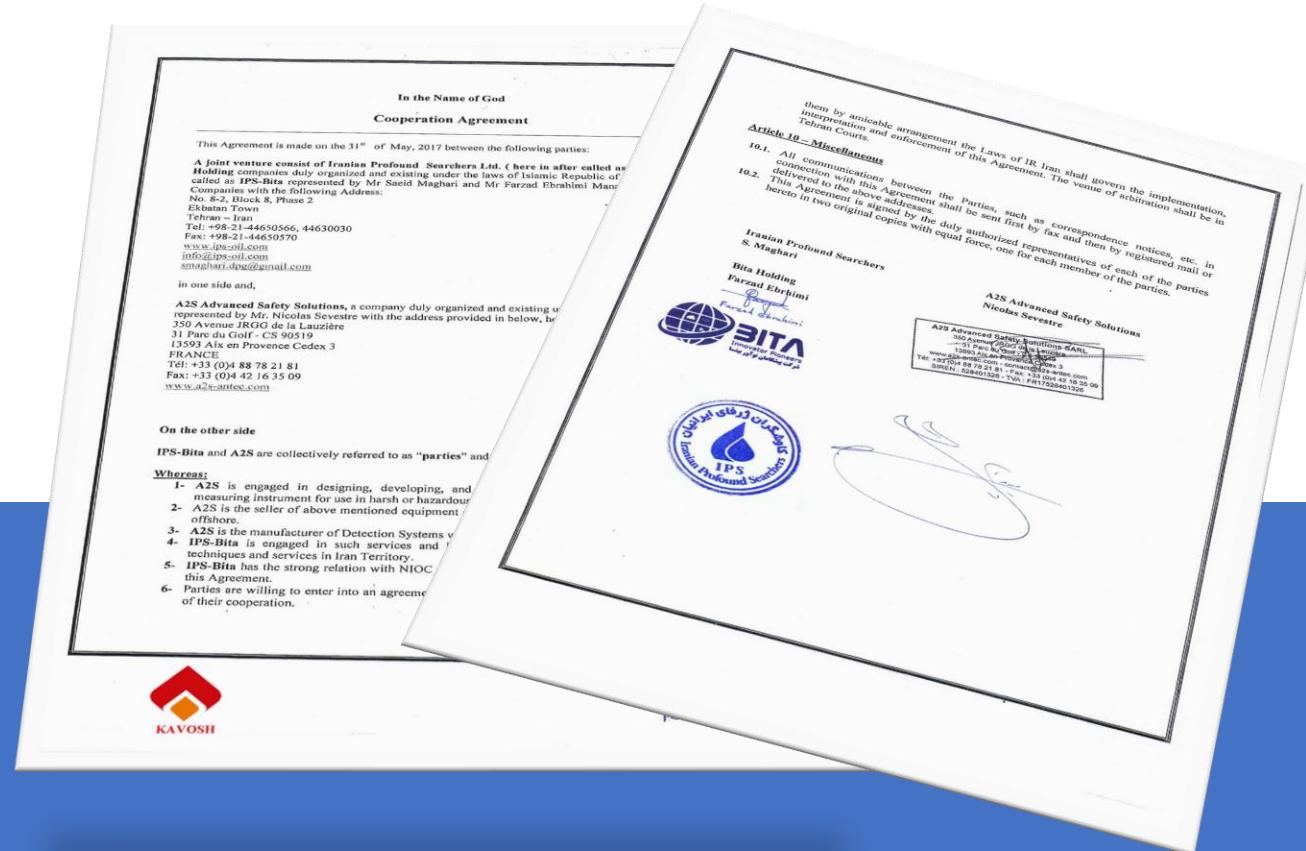
# IOT ACADEMY INTERNATIONAL COOPERATION

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# IoT Academy International Cooperation





2019

**MEMORANDUM OF AGREEMENT**

BETWEEN  
IOT ACADEMY - IRAN  
&  
QUALIES AND INNOVATION STRATEGIES - OMAN

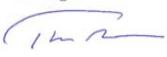




**V. Good Faith & Fair Dealing**  
The Parties' relationships to achieve the objectives fixed by this MOA and any question that may arise thereunder shall be subject to and interpreted according to the principles of good faith and fair dealing.

**VI. GOVERNING LAW & DISPUTE RESOLUTION**  
This MOA and all the relevant issues shall be governed by the laws of Switzerland. In the event that any dispute relating to this MOA cannot be resolved by settlement between the parties, the dispute shall be settled through arbitration. The seat of arbitration will be Muscat, Oman, and the language of arbitration will be English.

Done and signed on 24 July 2019 in two originals in English language, both text being equally authentic.

On behalf of and for IoT Academy	On behalf of and for the Qualies and Innovation Strategies
	
Farzad Ebrahimi Chairman & Founder	Thomas Andersson Chairman
Signature	Signature

Date: July 24<sup>th</sup>, 2019

Official Stamp



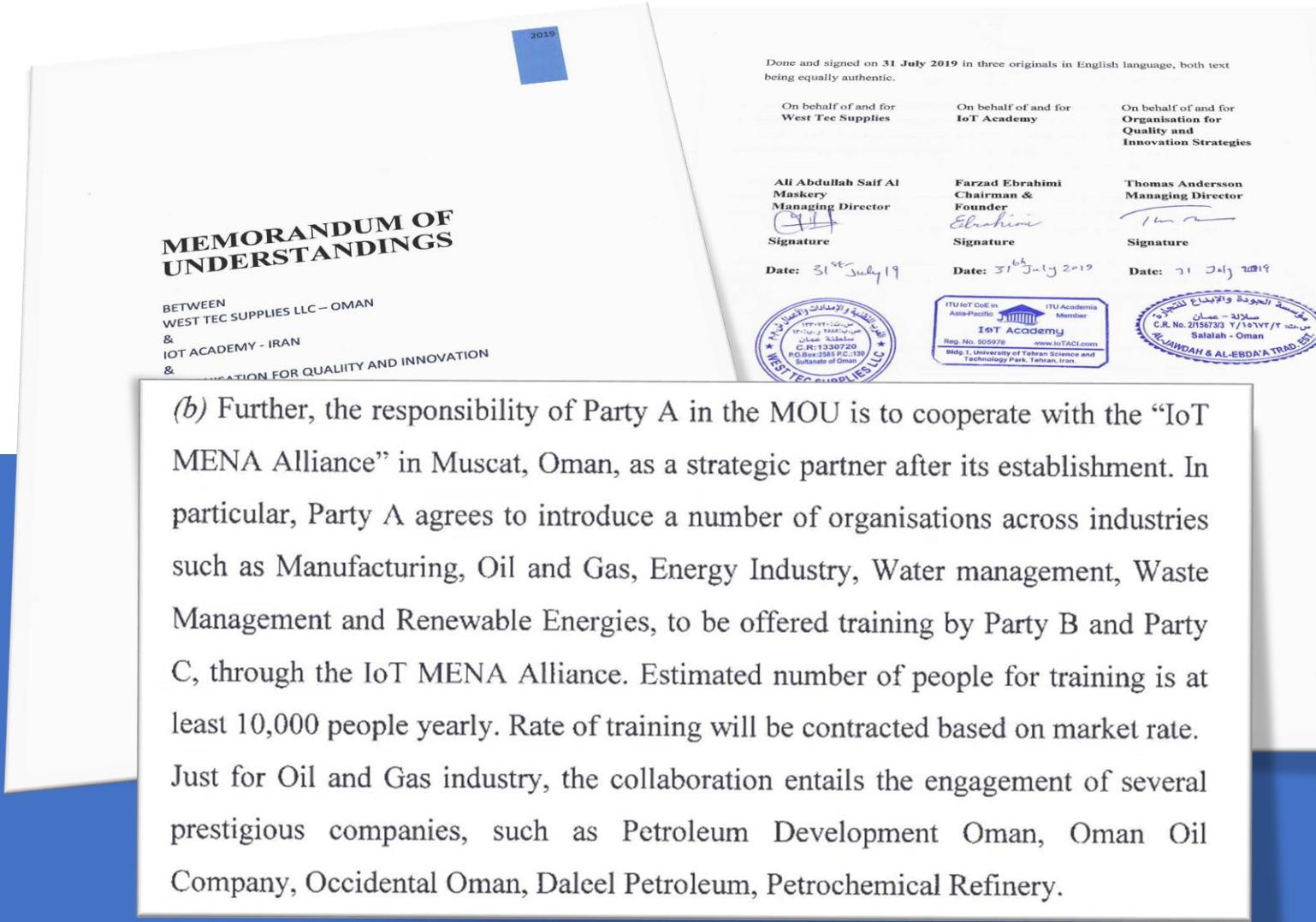
Date: July 24<sup>th</sup>, 2019

Official Stamp



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2019

## MEMORANDUM OF AGREEMENT

**BETWEEN**  
BEIJING HAODEE AERONAUTIC SCIENCE AND TECHNOLOGY CO. LTD - CHINA  
**&**  
BITA HOLDING - IRAN

**MEMORANDUM OF AGREEMENT**

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(e) Nothing in this MOA shall confer or be deemed to confer on either Party any right or license to use the information and IP rights other than for the explicitly authorized purposes during the term of this MOA.

**V. Good Faith & Fair Dealing**  
The Parties' relationships to achieve the objectives fixed by this MOA and any question that may arise thereunder shall be subject to and interpreted according to the principles of good faith and fair dealing.

**VI. The Detailed Items To Be Carried Out**  
Both sides agree to carry out a visit trip to China or Iran in the near months and make a further detailed plan of cooperation in Iran. A new contract will be discussed and signed by both sides based on this MOA.

This Memorandum of Agreement (MOA) signed on 24 January 2019 in two originals in English language, both text being equally authentic.

On behalf of and for HaoYee Co. Ltd - China  
Reagon Yang, Pengliang  
CEO & Founder  
Signature   
Date: 2019-01-24

On behalf of and for the Bita Holding - Iran  
Farzad Ebrahimi  
CEO & Founder  
Signature   
Date: 24/01/2019

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2019

## MEMORANDUM OF AGREEMENT

BETWEEN  
IOT ACADEMY - IRAN  
&  
IOT CENTER - PAKISTAN



IoT Academy



IoT Center

**VI. GOVERNING LAW & DISPUTE RESOLUTION**

This MOA and all the relevant issues shall be governed by the laws of Switzerland. In the event that any dispute relating to this MOA cannot be resolved by settlement between the parties, the dispute shall be settled through arbitration. The seat of arbitration will be Istanbul, Turkey and the language of arbitration will be English.

Done and signed on 4 February 2018 in two originals in English language, both text being equally authentic.

On behalf of and for the  
IoT Academy - Iran

Farzad Ebrahimi  
Chairman & Founder

Signature  

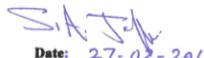

Date: 04-02-2019

Official Stamp

  
IoT Academy  
شرکت دانشگاه اینترنت اشیاء  
سازمان حاصل، شماره ثبت: ۸۷۶۵-۵

On behalf of and for the  
IoT Center - Pakistan

Ammar Jaffri  
CEO

Signature  


Date: 27-02-2019

Official Stamp

  
CIT  
Center of Information Technology  
Karachi Institute of Technology



# There are countless opportunities for IoT Oil & Gas Industry

Upstream	Midstream	Downstream
Asset Tracking	Tank Farm Monitoring	Perimeter Security Sensors
Vehicle Monitoring	Field Crew Monitoring	Perimeter Video Camera
Remote Video	Remote Video	Mobile Asset Tracking
Machine Monitoring	Pipeline Monitoring	Vehicle Monitoring
Site Monitoring	Terminal Access control	Production Sensors
Well Head Monitoring	Asset Tracking	IoT Cloud Storage
Security/Access Sensors	Flow Meter Connectivity	Lone Worker Wearables
Lone Worker Tracking	Pipeline Monitoring	Contractor Tracking
Rig Monitoring	Wellhead Monitoring	Refinery Monitoring
Tank Monitoring	Cargo Shipping Monitoring	

# CONTACT US



## IOT ACADEMY

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