

The Internet of Everything AED 17.9 bn Opportunity for Dubai: 2014-2019

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The Internet of Everything (IoE) which Cisco defines as the networked connection of people, processes, data and things, is transforming industries, countries, and communities and serves as the foundation for a global economic opportunity. The long term global impact of IoE may be compared to the impact of the European industrial revolution of 18th century.

Approximately half of the world's population will have network access by 2020, by which time there will be 50 billion physical objects connected to the Internet. The power of the IoE is not the physical connections, but the outcomes they make possible. These outcomes will enable individuals, businesses, governments and other organizations to either do things they couldn't before, or to do things they currently do better, faster, and more safely.

This paper provides an outline of IoE economics for Dubai with particular emphasis on public sector opportunities.

Value at Stake

Cisco defines value at stake as the combination of net new revenues, cost savings, and the value that migrates to organizations and industries that take advantage of new connection based capabilities. With this definition, IoE represents a material economic opportunity for both the public and private sectors. A conservative, "bottom up" economic analysis conducted by Cisco Consulting Services, focusing on use cases that can be operationalized in the short to medium term, estimates a global "value at stake" of \$19 trillion over 2013-2022.

For the global private sector, Cisco estimates the value at stake to be \$14.4 trillion. This equates to a 21% aggregate increase in corporate profits over 2013 - 2022. Cisco estimates that approximately 60% of the global value at stake will be net new value that is created, while the other 40% is "up for grabs," to be claimed by the businesses and organizations that take better advantage of IoE connections at the expense of those that don't.



Cisco Consulting Services (CCS)

For the public sector, the five primary drivers of IoE Value at Stake for the public sector are: 1) employee productivity, 2) connected defense, 3) cost reduction, 4) citizen experience, and 5) increased revenue. Cisco estimates the value at stake to be \$4.6 trillion.

The economic analysis behind these estimates, as well as the use cases included, are described in detail in two white papers published by Cisco Consulting Services in 2013 and 2014.

For Dubai, the analysis work looked at a 5 year period to allow a focus on opportunities that can be realized in the short to medium term.

Dubai

The broad objectives of this exercise were to determine what IoE areas align with the Dubai Smart City vision, are likely to realize the most value, and determine what factors are critical in capturing this value. We find the primary drivers of IoE value at stake in public sector to be aligned with Dubai vision around enabling Life, Economy and Tourism.

Dubai is a unique city. In particular, the factors below cause the relative value of some of the use cases to be different from those of the global IoE opportunities when analyzed for Dubai:

- Health service benefits are lower principally due to a young population (<0.6% over age 65 compare with 13.7% USA)
- Low crime rates reduce benefits from smart lighting and video surveillance (~1/5 crime rate of the USA)
- Higher household density reduces benefits from waste management, electricity and water metering (4.4 people / hh versus 2.5)
- Low unemployment rates (2.57% of economically active Emiratis over 15 years)

Public Sector Opportunities in Dubai

Initial discussions with the Executive Office directed the study towards 17 use cases that were of higher priority for the City. These are listed below in Figure 1. Some use cases consist of multiple components. For example, Public Sector productivity includes mobile collaboration, telework, virtual desktop and travel avoidance. Details of the use cases and the logic behind the calculations are available in a separate document.

Use Cases	
1. Smart Parking	10. Smart Payments
2. Public Transport	11. Connected Learning
3. Smart Street Lighting	12. Smart Toll Booth
4. Disaster Response	

Use Cases	
5. Water Management	13. Video Surveillance
6. Waste Management	14. Smart Transmission Grid
7. Chronic Disease Monitoring	15. Preventative Care
8. Public employee productivity	16. Authenticated Pharmaceuticals
9. Smart Buildings	17. Drug Compliance

Figure 1: Candidate Public Sector Use Cases

Using a series of benchmarks and methods, the work concluded that the value at stake for the public sector of Dubai over 5 years is AED 4.3b as shown in Figure 2. This value is a result of IoE’s ability to help public-sector organizations manage assets, optimize performance, and create new business models. The study used, among other conservative assumptions, an adoption rate of only 60% over five years.

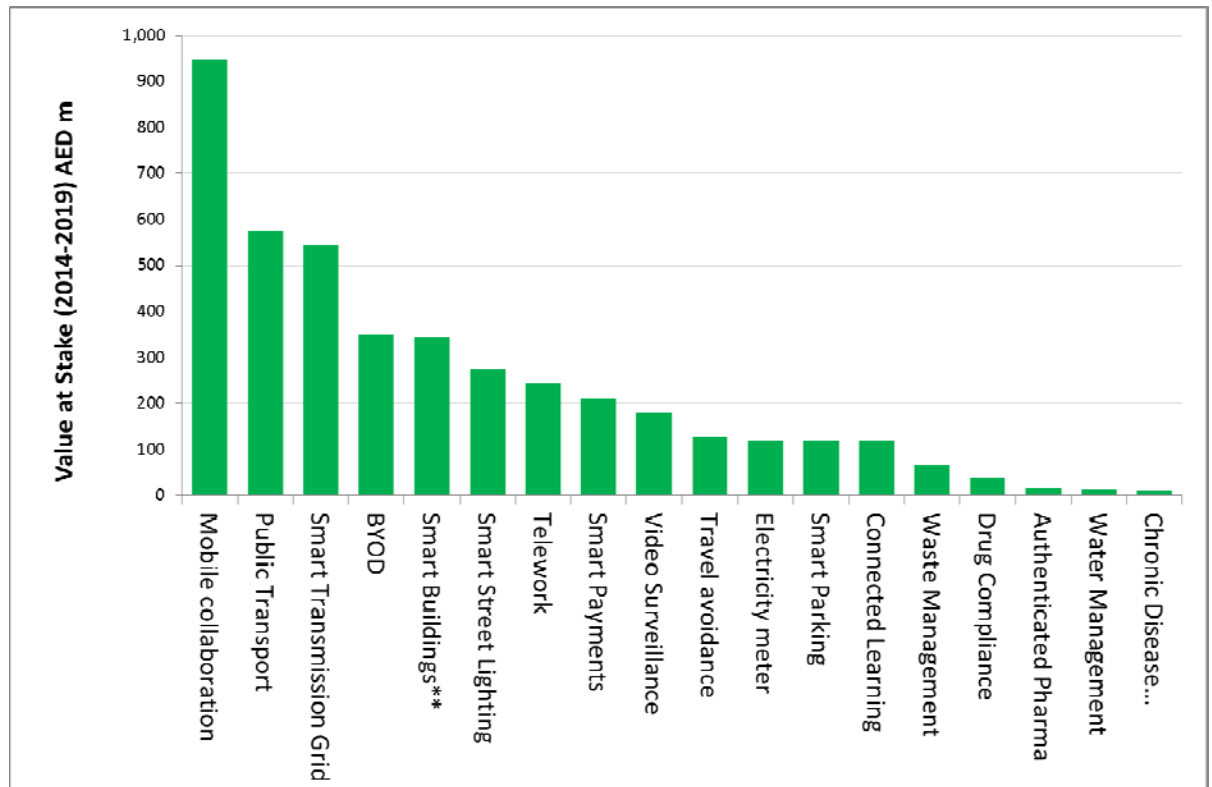


Figure 2: Dubai Public Sector Value at Stake: 2014-2019

The benefits split almost evenly between those that are Agency-focused (48%) and Cross Agency in nature (52%) as shown below in Figure 3.

Use case	5 year Value @ Stake (AED m)	Type
Mobile collaboration	950	X agency
Public Transport	575	Agency
Smart Transmission Grid	544	Agency
BYOD	350	X agency
Smart Buildings**	345	X agency
Smart Street Lighting	274	Agency
Telework	246	X agency
Smart Payments	211	X agency
Video Surveillance	180	Agency
Travel avoidance	127	X agency
Electricity meter	119	Agency
Smart Parking	118	Agency
Connected Learning	118	Agency
Waste Management	66	Agency
Drug Compliance	39	Agency
Authenticated Pharmaceuticals	18	Agency
Water Management	13	Agency
Chronic Disease Monitoring	12	Agency
Preventative Care	7	Agency

Figure 3: Public Sector: Detailed Value at stake: 2014-2019

Themes

The use cases can be combined into four overarching themes as shown in Figure . This classification allows a clearer focus and the development of stakeholder map to facilitate change and investment.

Theme	5 year value at stake (AED m)
Public sector productivity Telework, Collaboration, BYOD, Smart Building	1,892
Transport Buses, Parking, Street Light, Travel Avoidance	1,094
City Management Video Surveillance, Water, Electricity, Waste	378
Other <i>Incl. cases in health, learning, transmission grid and smart payment</i>	949

Figure 4: IoE Themes

Private Sector Opportunities in Dubai

A detailed analysis of the private sector was not undertaken as part of this work, though a simple scaling approach provides some information on the materiality of these benefits. Using the scaling ratio provides a private sector estimate of AED 13.6bn. This provides a total public and private sector estimate of AED 17.9bn over the 5 year period.

Implications and Recommendations

Maximizing value creation, Dubai should combine use cases as much as possible rather than approaching them individually. This allows for providing services at a marginal cost (Figure 5). This also calls for a level of initiative governance with cross-agency mandate and coordination capabilities, and an implementation roadmap that appreciates the dependencies between use cases to create seamless experiences.



Figure 5: Dubai IoE transformation is maximized when cities combine IoE use cases.

The economic analysis provides an additional component in making the case for change and connected development in Dubai. In particular:

- Develop a city-wide view in budget allocation for smart city initiatives that is cross-agency in its governance and coordination. This addresses the issue of concentrated costs and distributed benefits
- Redesign services and government processes to take new connected capabilities into consideration

- Measure smart city success in a way that is different from the current departmental KPIs. A city dashboard should provide views for decision makers, operational staff, residents and tourists with location and context sensitive personalized information
- Share access to systems, collaboration tools and business insights across all agencies. This calls for better virtualized technology capabilities in a 'fog' environment, and also calls for rethinking the context within which technology partners can add value
- Use Dubai's smart city initiative and IoE framework messaging directing it towards some of the existing priorities such as public sector excellence, city experience and others.
- Identify an initiative owner with cross-agency mandate and coordination capabilities, and develop an overarching implementation roadmap with dependencies identified.
- Drive a priority 'theme' for more detailed use-case designs, and functional, technical and organizational requirements.

To test the above, Dubai should pilot a cross agency use case such as those related to public sector employee productivity, and some critical use cases that are more within the control of a single agency such as those related to transportation or city management. This pilot would both demonstrate the value of the approach along with highlighting any barriers and issues to adoption.

Conclusion

The connection of things, people, data and processes is transforming industries, communities and countries, and represents a global economic opportunity. For Dubai, the IoE value at stake is significant and, more importantly, aligns with its smart city vision as a way to transform the life and economy in the city.

Our conservative estimate of the IoE value at stake for the public sector is AED 3.4bn, resulting from the improved asset management, optimized processes and new innovative business models and services.

We focused on a set of specific use cases – all applicable in the short to medium terms – that will drive citizen satisfaction, cost savings, revenue generation and employee productivity. These will further unlock a larger value at stake in the private sector in Dubai estimated at AED 13.6bn, bringing the total value at stake for Dubai to AED 17bn over 5 years.

To maximize value, Dubai should combine uses cases as much as possible rather than approach them individually. This calls for governance with a cross-agency mandate and coordination capabilities, and an implementation roadmap that appreciates the dependencies and links between different use cases to create seamless experiences.