**Spring 2022 - SEC 601 - Take-Home Assignment 1 to be done individually**

In this first assignment, students, individually, are requested to investigate the field of R&D in UAE while identifying the current **trends, challenges, priorities** as well as building a **roadmap for the near future.** You can draw a big picture of UAE R&D in the field of IT or a small picture, mainly focusing on a very narrow and specific topic.

Research and development (R&D) include activities that companies, governmental agencies, and more and more applied research centers, and to a certain extent universities undertake to innovate and introduce new IT products, software services, and systems. It is often the first stage in the development process. The goal is typically to take new products and services to market and add to the company's bottom line. R&D is separate from most operational activities performed by a corporation. The research and/or development is typically not performed with the expectation of immediate profit. Instead, it is expected to contribute to the long-term profitability of a company. R&D may lead to patents, copyrights, and trademarks as discoveries are made and products created.

Difference between R&D and research. Basic research is aimed at a fuller, more complete understanding of the fundamental aspects of a concept or phenomenon. This understanding is generally the first step in R&D. These activities provide a basis of information without directed applications toward products, policies, or operational processes. Applied research entails the activities used to gain knowledge with a specific goal in mind. The activities may be to determine and develop new products, policies, or operational processes. While basic research is time-consuming, applied research is painstaking and more costly because of its detailed and complex nature.

We will be focusing this term **on e-government and e-services** that are paving the road for smart cities and smart governments. You should consider the entire UAE R&D eco-systems, including all stakeholders engaged in the creation, design, engineering, funding, management, and uses of e-governmental services, systems, and services. This includes citizens (final users of the services and systems), governmental agencies, IT companies providing the IT logistics (data clusters, software producers), startups (creating new services), funding agencies, as well as those doing research (from fundamental to very applied), also training clusters.

**What is and Why E-government and services**. It promises to move a lot of citizen-government transactions online. When it is fully functional, citizens no longer must show up in person waiting a long time to get or submit forms, apply for benefits, or permits, or make payments when the government offices open from 9 to 5. Instead, all these time-wasting steps can be handled over the Internet 24 hours a day and 7 days a week. Fundamentally speaking and according to statistica:

*“E-government (or electronic government) refers to the use of information and communication technology for government services and functions. It involves a wide range of digital interactions between governments and their citizens, world leaders, businesses, and international organizations. Due to the ever-increasing number of internet users and the continuous global uptick in online usage, this technology-driven form of governance has become almost indispensable in recent years: All around the world, governments are establishing online presences, launching digital services, and embracing e-government as part of the digital transformation of everyday life.*

UAE has successfully deployed an entire e-service ecosystem, one of the top 10 in the world. UAE provides more than 6,000 federal and local e-services. At the federal level, there are 2,635 federal digital services. They can be classified as follows:

* 2,126 transactional digital services
* 180 informational services
* 110 commercial services
* 134 social services
* 85 seizural (189 of these are priority services).

**How much are big UAE e-services systems and e-system?** UAE e-services eco-system is comparable to Estonia, Denmark, and Finland which resulted from years of R&D activities, billions of dollars invested, and well the active implications of huge numbers of develops, testers, innovators, managers, etc.

Some of the **challenges (NOT LIMITED TO THIS) that need to be addressed are related to the long-term sustainability of such a big system of e-services, its usability/user experience, cybersecurity as well as data privacy, accountability (in case there is a problem with an e-service, who is legally responsible), accessibility for elderly people, people of determination, and kids/teenagers who their safety is being questioned in the digital world.**

This take-home assignment is to prepare a report of about 4000/5000 words (excluding references) on the status of research and development (R&D) in the UAE. Further details about the content and format of the report will be discussed in class.

Some useful links from where you can start investigating include (not limited to this):

* <http://unesdoc.unesco.org/images/0018/001899/189958e.pdf>
* e-estonia.com (can be used as a case for a benchmark with UAE e-services)
* <https://en.wikipedia.org/wiki/E-services> (good introduction to e-services to start your investigation)

Referencing and formatting style: We recommend to IEEE and IEEE access magazine (format of your document, optional). Font 12 Times, spacing 1.5

* <http://journals.ieeeauthorcenter.ieee.org/wp-content/uploads/sites/7/IEEE_Reference_Guide.pdf>