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Business, Industries

Background: We are enjoying the fruits of science for along time and this modern era is producing the sweetest fruits of all. Most ofthe things around has is redesigned and reshaped with the touch of science. Ithas increased our capacity in every front. Smart technology has found its wayto everything but the electrical system has not changed a lot.

The electricsystem or the grid system has not evolved much with smart technology and theyare still relying on the age old system. Our traditional grid system was an excellentachievement that contributed to build the modern world as we see it now. Thegreat minds behind this achievement would be ashamed to see that we have notbeen able to take it to the next level. Smart grid has been introduced as asolution to this problem.

Our traditional grids are unidirectional in operationwhile smart grids are bidirectional in design (1). Apart from theunidirectional electricity, information is flowing simultaneously. It offersthe use of smart technology and device to device communication for a bettertomorrow. Sustainability is the main goal of this system and by achieving this goal, we can ensure a better tomorrow. The smart grid can be defined in many ways, itis an electric grid system where different operational and energy measures arecombined together like smart meters, smart appliances, renewable energyresources and energy efficient resources. They are able to communicate witheach other and offer services and features that are impossible to achieve withtraditional grid systems (3). The infrastructure for this system is expensive, but the output and the sustainability are incomparable.

Introduction: I am simply fascinated with thisnew technology and see this as an opportunity to reshape the future of ourworld. Every new thing comes with challenges and the smart grid also has itschallenges. I want to work with this new technology and find smart solution. Attaching renewable energy sources to the smart grid system is one of thechallenges of this technology. Though the idea is brilliant, there are lots ofchallenges associated with this system. Electrical power industry is goingthrough a lot now a days. The demand for electricity is rising every day, ourenvironment is also at a huge challenge due to the carbon footprint that powerindustry is leaving along with other industries (1).

Changing a whole systemneeds time and as the system is not fully functional yet there is a lot to dealwith. Security is one of the major concerns for this system (2). As everythingwill be controlled with automated smart tool and information of various typeswill be flowing from device to device, there is a potential risk of beingattacked by hackers. We have moved to a virtual world and cyber security hasbecome a nightmare for us.

If we accept the new technology and let them tocontrol our energy usage, then controlling the safety of this informationbecomes vital. We want to work with information security to make the wholesmart infrastructure and management subsystem of smart grid a true blessing forhumanity. Literature review: Thosepromises that smart grid has to offer is mind blowing. Just thinking about anelectrical system that is self-healing increases that delight (1).

I havestudied articles from the IEEE power and energy magazine. Apart from thecomparisons between traditional grids and smart grid, there are lots ofinformation that was helpful to build up the proper knowledge that will help mein my future work. I had the chance to widen my knowledge in this particularfield and learn about the challenges that lies ahead. It has also provided uswith the motivation to work for the smart grid and help it to achieve its goal. I believe despite all the challenges that we discuss about smart grid one dayit will be the reality for us and that will be truly remarkable. Objectives: Smart grid will use lots of smartdevices for the proper implementation of this system (2).

With smart devices, there will be software to add their functionality and tackle differentsituations. By monitoring this flow of information or simulating the way theyare supposed to act can provide us with lots of valuable data. With thispriceless data, we will certainly be able to point some flaw or weakness andpoint some solution to fix them. Without ensuring the privacy and safety ofcustomers the countless points of the smart grid will simply become pointless. Encryption of data and other important encapsulation of sensitive tasks willtake the smart grid system unquestionable (4).

Methodology: As the theory is already here, there is no need to make a new one. I simply want to follow the deductiveapproach for my research. I want to collect data as much as possible by usingvarious scenarios and think about a possible solution for the problems thatwill appear inevitable. Data is the main resource for a research. I can give myargument and also provide a

counter argument based on my understanding, butnothing stands firm in front of true data. I understand the importance of dataso I am going to collect data by creating situations that are the leastexpected.

This will help me to complete my study. Expected results: I want tomake sure that the world can enjoy the full benefit of smart grid without anysecond thoughts. I am determined to find out some weakness of the communicationsystem and provide solutions to make the system fit for every situation. I wantto make sure that we are not sacrificing our privacy and personal security tosustain the environment. Research plan: I want to spend some more time tostudy more articles and previous works to widen the depth of our knowledgeabout the system.

After that I will start collecting information and studyabout different security systems, including encryption methods to secure thewhole communication process. Then I will start analyzing the data exhaustivelyto look for potential gap that can be vulnerable for us. I want to repeat thewhole process several times to make sure nothing goes away unnoticed. Finally, I want to work with the betterment of security and proper encryption of thewhole system. Publication plan: With myexemplary work i want to make sure that our work is acknowledged and publishedby well-known publishers. I have high hopes to go for IEEE to publish my work. The topic is extremely related to IEEE so their acknowledgement will certainlybe the best achievement for me. Study Members: I like to work independently.

So Ihave decided to finish my work alone.