Aviation research proposal sample

Engineering, Aviation

NEXTGEN FOR SMALL AIRPORTS

Project Proposal

Abstract

The proposed research will be an in-depth assessment of what is required to purchase and utilize NextGen for Airports in a small airport scenario. The NextGen system has already proved itself in small and large airports in the United States of America. It is innovative technology is constantly evolving to provide greater benefits down the line. NextGen's future capabilities will include improvements to enhance accessibility and safety for piston and turbine powered general aviation aircraft. These additional enhancements are particularly valuable for small airports.

Aviation has historically followed an upwards growth curve that is expected to continue in the future. NextGen will help airports large and small by increasing the capabilities of large airports to accommodate increased commercial airliners by tracking rerouting small aircraft to nearby small airports during heavy use periods.

The research will include the financial, logistical, environmental, and insurance benefits of installing and using improved technological systems. Today aviation needs small airports to facilitate the continuation of general and commercial aviation. Many large airports need receiver and satellite airports to accommodate general aviation traffic and prevent its interference with commercial aviation traffic. This research will concentrate on how NextGen can contribute to this.

Proposal

Examine the Feasibility of Utilizing NextGen for Small Airports

Statement of the Project

The United States Federal Aviation Admisistration clearly sets out an overview of " Why NextGen Matters" in the following section from its PDF publication NextGen for Airports.

NextGen is a comprehensive overhaul of our National Airspace System to make air travel more convenient and dependable, while ensuring your flight is as safe, secure and hassle-free as possible. In a continuous rollout of improvements and upgrades, the FAA is building the capability to guide and track air traffic more precisely and efficiently to save fuel and reduce noise and pollution. NextGen is better for our environment and better for our economy.

• NextGen will be a better way of doing business.

• NextGen will reduce aviation's impact on the environment.

• NextGen will help us to be more proactive in preventing accidents with advanced safety management.

• NextGen will get the right information to the right person at the right time.

• NextGen will lay a foundation to continually improve air travel and strengthen the economy.

• NextGen will help communities make better use of their airports.

• NextGen will enable us to meet our increasing national security and safety needs.

• NextGen will bring about one seamless global sky.

This project will examine the intricacies of obtaining, installing, managing,

and using NextGen in a small airport. It will also look at establishing staff training and continuing education to maximize NextGen's capabilities. The research will also assess the effects of future NextGen improvements and capabilities expansion. The topics that are to be analyzed examined, and discussed are costs, legal issues and benefits, potential insurance benefits, to effectively maximize the potential of NextGen. This includes any additional technology and equipment needed along with other airport improvements that will possibly be made.

There are many facets to this and if one part fails it could lead to the failure of the whole project. Complete information and preparation will help guarantee greatest success. This means not just knowing the features and benefits, but also being forearmed with the knowledge needed to avoid the potential pitfalls and pratfalls. Therefore, the start is to allow for a comprehensive assessment to serve as a basis for the implementation of NextGen in a small airport. The research will determine the probability of success and what resources will be necessary for that success.

Program Outcomes Addressed

Critical thinking. The student will apply knowledge at a synthesis level to define and solve problems within professional and personal environment. In order to address as far reaching a system as NextGen and its use in a small airport scenario the reseracher will need to employ critical thinking through all phases of this project. This is particularly true in regards to resources, regulations, environment and the social and cultural impact of increased air traffic. All date will need to be thoroughly analyzed in order to highlight problem areas.

Quantitative reasoning. The student will demonstrate the use of digitally-enabled technology (including concepts, techniques and tools of computing), mathematics proficiency & analysis techniques to interpret data for the purpose of drawing valid conclusions and solving associated problems. Quantitative reasoning will be necessary in all phases of the process, from initial information gathering, through installation and initialization. NextGen represents the future of Aviation in the United States and Internationally. Because there are anticipated innovations pending it will also require ongoing personal development regarding quantitative reasoning.

Information literacy. The student will conduct meaningful research, including gathering information from primary and secondary sources and incorporating and documenting source material in his or her writing.

NextGen is about information, from the initial research sourcing to the data that will be used once the system is installed, up and running everything about NextGen is information. How it is researched, sorted and used. That is one of the most intrinsic values of the system.

Communication. The student will communicate concepts in written, digital, and oral forms to present technical and non-technical information.

This project will be developed in Microsoft Word and formatted in the APA style. This will allow for written communication. The final delivery of the project will be via e-mail. After the initial written document is complete a Microsoft Power Point presentation will allow for the inclusion of speech and graphics as the final elements of communication

Scientific literacy. The student will be able to analyze scientific evidence as it relates to the physical world and its interrelationship with human values and

interests.

Implementing the NextGen system will mandate a full understanding of the airport environment. This will include climate history, prevailing weather patterns, anticipated seasonal variances, macroclimate and microclimate contributions and terrain studies.

Cultural literacy. The student will be able to analyze historic events, cultural artifacts and philosophical concepts.

Life long personal growth. The student will be able to demonstrate the skills needed to enrich the quality of life through activities which enhance and promote lifelong learning.

There implementation of cutting edge systems like NextGen requires the people working in a small airport to not only expand their understanding of the technology but to come together as a team and help each other reach their maximum potential as an individual and as a part of the team. Once a person has enjoyed that type of experience the deep learning of the interpersonal skills remain life long.

Aeronautical science. The student will demonstrate an understanding and application of the basic and thus advanced concepts of aeronautical science as they apply to the aviation/aerospace industry for solving problems.

NextGen is the future of aeronautical science in the United States; it was developed by the Federal Aviation Administration to provide a consistent platform across the content to use the current technology to its best advantage and to be there as innovations in aircraft and aviation technology evolve. NextGen uses satellite procedures to improve the safety and efficiency of air travel and transport. It is designed to evolve along with

future aeronautical science developments. These are some of the technological issues to be thoroughly studied in this proposed research project. NextGen makes the most of modern technology like satellite procedures to provide airports, aviators, their passenger and cargo with the most up to date experience possible. In addition to its assistance to the individual airports and pilots, it also maximizes air traffic patterns around the globe. The weather conditions in participating airports will be available to pilots in real time. NextGen tracks aircraft in flight so there will no small lost aircraft and it can help facilitate rescue efforts. Its metrological capabilities can route aircraft away from pending weather events and recalibrate their flight paths sometinmes to a small airport they may initially not been aware of.

Aviation legislation and law. The student will engage and discuss to present an understanding and application of basic concepts in National and International Legislation and Law as they pertain to the aviation/aerospace industry.

NextGen is the new system presently being launched by the U. S. Federal Aviation Administration. In order to initiate it in a small local airport it will be necessary to work with every from the local Real Estate Zoning commission to the United States Federal Government. As there may be Federal Funds available for those small ariports that install NextGen early in the roll out process that will require additional legal skill sets. Since there may be tax offset available as well, both locally, and on the State and Federal levels another set of regulations and laws are encountered. As commercial aircrafts grow larger an increasing number of private international aircraft are being

routed away from the International Air Transportation Hubs. Because of its in transit capabilities Next Gen would make a small airport more attractive to these flights.

Aviation safety. The student will compare and discuss in written and spoken formats an understanding and application of basic concepts in aviation safety as they pertain to the aviation/aerospace industry.

The top concern in aviation is to depart and arrive safely. The next priority is to maximize the in air experience. The FAA created NextGen system with all these factors in mind. NextGen allows for takeoff assistance, tracks aircraft during flight, guides the plane in for a landing and contributes to facility management. NextGen maximizes the use of modern technology such as satellites procedures and advanced technology to provide aviators, their passenger and cargo with the safest and best possible aviation experience. In addition to its services to the individual pilots, it also contributes to maximizing air patterns around the globe, as the conditions in each participating airport will be available to pilots in real time. NextGen also tracks aircraft in flight so the will no longer be the fear that a small aircraft has simply gone missing. Because it also has metrological capabilities it can route aircraft away from pending weather events and recalibrate their flight paths so that they can take advantage of a small airport they may initially not been aware of.

Aviation management and operations. The student will present and illustrate an understanding and application of management activities as they apply to aviation/aerospace operations.

The proposed plan thoroughly encompasses aviation management. Proper

implementation of NextGen will encompass everything from gathering information and writing an application for a FAA grant to how it improves the landing guidance procedures. The proposed research will involve all key factors of proper airport management. The anticipated increase in transient aircraft from commercial airports will bring airport facility improvement to the forefront. Training and continuing staff education plans will involve proper management of personnel and resources. Implementing NextGen will involve examinations and evaluations of the past and current operations. Thoroughly understanding the small airport will be necessary in order to develop the optimum course of action, along with the alternate plans needed to move into the National Aviation Administrations NextGen system.

References

Federal Aviation Administration. (2011, 09). NextGen for Airports PDF Publication. Retrieved 30 13, 2013, from Federal Aviation Administration: http://www. faa. gov/nextgen/media/NextGen_for_Airports_9_2011. pdf

U. S. Federal Aviation Administration. (2013, 05 13). NextGen for Airports. Retrieved 05 30, 2013, from U. S. Federal Aviation Administration: http://www. faa. gov/nextgen/qanda/airports/