

600

DOT/FAA/CT-93/62

FAA Technical Center
Atlantic City International Airport,
N.J. 08405

Universal Access System (UAS) Project Plan

**FAA Technical Center
NAS Security Research Program**

Walter Wall
Ralph Yost

October 1993

Document is on file at the Technical Center Library,
Atlantic City International Airport, N.J. 08405



U.S. Department of Transportation
Federal Aviation Administration

NOTICE

This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for the contents or use thereof.

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the objective of this report.

Technical Report Documentation Page

1. Report No. DOT/FAA/CT-93/62		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Universal Access System (UAS) Project Plan				5. Report Date October 1993	
				6. Performing Organization Code	
7. Author(s) Walter F. Wall, Jr. Ralph J. Yost				Performing Organization Report No.	
9. Performing Organization Name and Address Federal Aviation Administration Technical Center Aviation Security Research and Development Service Atlantic City International Airport, NJ 08405				10. Work Unit No. (TRAIS)	
				11. Contract or Grant No. DTFA03-93-C-00042	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Federal Aviation Administration Technical Center Atlantic City International Airport, NJ 08405				13. Type of Report and Period Covered Final Report	
				14. Sponsoring Agency Code ACA-400	
15. Supplementary Notes Preparation of report supported by DCS, Incorporated Bob Baker, Rick Lazarick					
16. Abstract The Universal Access System (UAS) Project Plan details the type and level of the R&D effort necessary to identify, develop, and test a nation-wide UAS. The UAS would be designed to enable air carrier personnel who regularly require access to secured areas to access such areas with minimal operational delay while enhancing the existing airport security posture. The plan presents three fundamental R&D approaches to this project requiring varying degrees of R&D effort and resources. The standard R&D approach is presented in detail with associated costs and schedule. The three major R&D stages are defined; the UAS concept and alternate analysis stage, the Prototype Conceptual Design and Procurement Stage, and the Prototype and Development Stage. The individual tasks involved in each stage are also discussed.					
17. Key Words Airport Access Control, Systems Universal Access Systems, Universal Access Control, Airport Security, Multi-Airport Employee Access to Secured Areas, Aircrew Access to multiple Airport Security Areas.			18. Distribution Statement		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 69	
				22. Price	

TABLE OF CONTENTS

1.	INTRODUCTION	1
1.1	Background	1
1.2	Current Capabilities Practices	4
1.3	Project Plan and Organization	6
2.	UNIVERSAL ACCESS SYSTEM PROJECT OVERVIEW	8
2.1	Univarsal Access System Phase Identification	8
2.1.1	Phase 0 - Mission Need Determination	8
2.1.2	Phase 1 - Concept Exploration/Alternatives Analysis.	8
2.1.3	Phase 2 - Demonstration/Validation	9
2.1.4	Phase 3 - Full Scale Development	9
2.1.5	Phase 4 - Production and Deployment	9
2.1.6	UAS Project Overview	10
3.	R & D PROJECT SCOPE	11
3.1	UAS Concept and Alternatives Analysis	11
3.2	Prototype Conceptual Design and Procurement	12
3.3	Prototype Development & Evaluation	12
3.4	Key Decision Points and Fundamental Approach Selection	12
3.4.1	Standard Approach	13
3.4.2	Truncated Approach	13
3.4.3	Concurrent Approach	13
4.	R & D PROJECT STAGES	15
4.1	STAGE 1 - UAS CONCEPT AND ALTERNATIVES ANALYSIS	15
4.1.1	Task 1 - Survey of Airport Access Control Systems	15
4.1.2	Task 2 - Review of Systems and Standards	16
4.1.3	Task 3 - Development of UAS Alternatives	17

4.2	STAGE 2 - Conceptual Design/Prototype Procurement	17
4.2.1	Task 1 - Write Functional Specifications	18
4.2.2	Task 2 - Prepare Procurement Request Package	18
4.2.3	Task 3 - Prepare Independent Government Cost Estimate	18
4.2.4	Task 4 - RFP Issue, Evaluation, & Contract Award	18
4.2.5	Task 5 - Write Prototype Test Plans	18
4.2.6	Task 6 - Evaluate Systems Maintenance Options	18
4.2.7	Task 7 - Test Sites Identification & Preparation	19
4.3	STAGE 3 - PROTOTYPE DEVELOPMENT & EVALUATION	19
4.3.1	Task 1 - Design, Build, Install, and Operate Prototype.	19
4.3.2	Task 2 - Conduct Laboratory Prototype Tests	19
4.3.3	Task 3 - Conduct Developmental Operational Tests at BWI.	20
4.3.4	Task 4 - Conduct Full Scale Airport Testing	20
4.3.5	Task 5 - Develop Final Design Criteria and Support Documents	21
4.3.6	Task 6 - Publish Final UAS Project Report	21
5.	PROJECT SCHEDULE	22
5.1	MULTI-APPROACH SCHEDULE	23
5.2	STANDARD APPROACH SCHEDULE	24
6.	PROJECT BUDGET	25
6.1	UAS PROJECT BUDGET	25
6.1.1	FAATC	25
6.1.2	UAS Support Contractor	26
6.1.3	UAS Prototype Contractor	26
7.	PROJECT MANAGEMENT	27
7.1	UAS Program Steering Committee	27
7.1.1	Program Manager	27
7.1.2	Project Technical Lead	28
7.2	FAATC PROJECT TEAM	28

LIST OF TABLES

Table Number	Caption	Page Number
2.1.6	UAS Project Overview	9
5.1	Multi-Approach Schedule	21
5.2	Standard R & D Approach Schedule	22
6.1.2	Support Contractor's Costs By R & D Approach	24

TABLE OF APPENDICES

Appendix A	ARINC Transient Crew Security System/Segment Specification (Preliminary), September 25, 1991
Appendix B	Program Requirement
Appendix C	Glossary
Appendix D	References

1. INTRODUCTION

1.1 BACKGROUND

Federal Aviation Regulation (FAR) 107 provides for a secured environment from which air carriers may operate. This is accomplished by requiring airport operators to have an approved airport security program (ASP) which details how the operator will meet the Federal Aviation Administration's (FAA) requirements. In general, these requirements call for the operator to control: access to each air operations area (AOA); personnel movement on the AOA; and to respond to any unauthorized entry or presence in such areas. Prior to the issuance of 107.14, air carrier-issued identification and/or system-wide security controls, such as locks and keys, were typically utilized by transient air carrier crew members. These crew members, needing access at multiple airports, were generally allowed access to their aircraft and immediate work areas without additional airport issued identification/access media or local company escort. Recognizing the inherent security limitations in the initial FAR 107 requirements, the FAA continued to pursue a more definitive control system at the airport level to prevent the unauthorized entry of individuals into secured areas using bogus, stolen or outdated identification/access media. Then in December 1987, a former airline employee gained unauthorized access to a departing aircraft. While in flight, the former employee apparently shot both his former supervisor and the cockpit crew, causing the aircraft to crash killing all passengers and crew aboard. This incident served as a catalyst to expedite the FAA's continuing effort to establish more stringent airport access controls and heighten public concern with the safety of commercial air travel.

In February 1989, the FAA acted on this heightened security concern by amending FAR 107 to require a system, method, or procedure that immediately denies access to secured airport areas to unauthorized individuals including those whose status has changed. The amended section of the rule, 107.14, requires such systems to verify and deny, when necessary, access authority, including time and location restrictions. In order to meet these new stringent access control requirements, airport operators commonly installed computerized access control systems.

During the regulatory comment period on this rule, several aviation industry groups, air carriers, and airport operators asked for additional time to study the operational impact of such a change particularly its effect on employees who require routine access at multiple airports. They also recommended that the FAA require airport access control systems be compatible on a nationwide basis so a common access device could be used by such transient airline personnel. While recognizing that the operational concerns raised had merit in less compelling times, the FAA believed that the public safety concerns being addressed by the change were most important and did not permit additional delay. The FAA also declined to impose a rigid, uniform access control system, stating the additional airport costs and the airport operator's lack of flexibility

in choosing the nature of the access control system employed were unwarranted considering the small number of aviation personnel who would benefit. Specifically addressing the transient air crew access issue, the FAA said that an effort was underway to study the feasibility of an access control system with multi-airport capabilities and any perceived operational problems would be surfaced during that study.

These changes brought about by FAR 107.14 led directly to the installation of computerized access control systems at all major airports. As a result of this tightening of individual airport access controls, air crew members and other air carrier personnel who previously had access to the AOA, via their air carrier identification badge or through system-wide 107.13 security controls were no longer able to access their work areas. While those air crew members domiciled at a particular airport could still obtain that airport's access control media, they could not use this media to access secured areas at other airports into which they were routinely flying on a daily basis. In August 1989, the air carriers requested a further clarification of FAR 107.14 requirements as they related to uniformed transient personnel. The FAA advised that transient uniformed air carrier personnel, including air crews were not exempt from any of the FAR 107.14 provisions.

The situation is further aggravated by the dynamic nature of air crew activities. Their assignments may be effected by sickness, flight time limitations, and other carrier specific variables. Additionally, flight schedules are often impacted by adverse weather, ATC traffic conditions, or unscheduled maintenance with little advance notice often requiring air crews to transient different airports than originally scheduled. In the case of unscheduled maintenance, airline mechanics are frequently flown in from the carrier's maintenance base due to the complexity and urgency of such repairs. Often these repairs must be made during airport non-operational hours effectively ruling out obtaining a temporary badge at the airport.

In August 1990, during the FAA FY92 budget process, the Airport Security Research Program, recognizing the need for a standard access control system, sought funds to begin research. In that year and the subsequent three years, the Office of Civil Aviation Security did not support such research and the funding request was deleted in each submission of the FAA's budget request.

During this same period, the airline industry continued to voice its concern with the apparent operational difficulties being experienced by transient air crew members and maintenance personnel. Subsequently, the Air Transport Association (ATA) launched a study of the continuing operational problems and methods to resolve the problem on behalf of the air carriers. Coordinating their work with both the FAA and the Airports Council International (ACI), ATA developed the concept of a nationwide access control system for use by air carrier personnel who regularly required access to secured areas at multiple airports. This concept met the pressing operational concerns while improving the overall security of the aviation system. They believed that the concept could be developed in both a timely and cost-effective manner using existing air carrier and government resources. The initial concept called for each individual air carrier to control their data base and down load data directly to the individual

airports nationwide. In August 1991, the ATA and the ACI jointly agreed to a modified version of the initial concept calling for the individual carriers to submit their transient air crew data to a single entity which would be responsible for data base management and distribution to the individual airports.

The ATA proceeded to develop the concept of a nationwide multi-airline, centralized data base access control system, known as the Transient Aircrew Security System (TCSS). Aeronautical Radio, Inc. (ARINC), the airlines' industry wide communications contractor, advised that such a single entity system is possible and would actually be less expensive using existing ARINC lines to most airports. In late 1991, ARINC provided ATA with a preliminary technical system specification document (Appendix A). After considering the TCSS funding projections, the ATA decided to seek government assistance on behalf of its membership. In late 1992, the ATA requested the assistance of the Aviation Security Advisory Committee (ASAC) in developing the TCSS Project. In September 1992, the ASAC established the Transient Airline Employee Access Working Group to review both the operational and security issues involved in providing access to transient airline employees at multiple airports. After conducting an extensive review of the operational and security issues, along with on-site surveys, the Working Group made its recommendations to ASAC. In May, 1993, ASAC approved all of the working group's recommendations for transmittal to FAA for action. The ASAC's final recommendations are summarized below:

1. Airport operators and air carriers should be encouraged to work together locally to solve access control problems. The FAA should reaffirm its policy to permit the use of system-wide FAR 107.13 controls on doors downstream of 107.14 control points such as passenger screening points.
2. The FAA should adopt ICAO/ISO standards for machine - readable cards in preparation for an eventual universal access system.
3. The FAA should exempt airport operators from AIP grant assurances should they disable AIP-funded 107.14 controls downstream of a security checkpoint
4. The FAA should approve Exceptional Screening Procedures permitting separate 107.14 employee access portals upstream of the sterile area.
5. The FAA should immediately rescind the aircraft footprint restriction on domestic carrier personnel, and for foreign air carrier personnel meeting FAA background check requirements.
6. The airline industry and the FAA should jointly move forward to implement a universal access system as soon as possible and federal funds be specifically dedicated to this effort.

While all six recommendations may effect the implementation of a centralized, national access control system, dubbed as a Universal Access System (UAS), Recommendations #1, #2, and #6 specifically address the development of a UAS.

Additionally, the National Materials Advisory Board's Committee on Aviation Security, under the auspices of the National Academy of Science, in its February 1993 report to the FAATC, Aviation Research and Development Service, recommended that FAATC develop:

".. a center of excellence in the area of airport access control technology. Use BWI security demonstration model for testing and evaluating access systems and subsequently, offer advice and assistance to airlines/airports and set standards which will standardize and increase compatibility of equipment and systems at airports." In supporting its recommendation, the Committee stated " The security demonstration model at Baltimore/Washington International Airport (BWI) should be used for testing and evaluating a number of access systems. The results of these activities should be shared with all airport operators/airlines in order to minimize the costs per door controlled at airports, This is not being done and the cost of the mandatory access systems across the U.S. have consequently varied immensely from airport to airport..."

"The committee is concerned that no mention has been made concerning effort by the FAA Tech Center Staff to become well versed and grounded in the area of airport access control technology. The airports and airlines are spending in excess of 500 Mil (million dollars) to install computer based access control systems at airports within the United States. The FAA has not in the past and are not presently able to offer advice and assistance, or set industry standards in this area based upon technical expertise. The airports and airlines are at the mercy of consultants and contractors for the selection of the required systems. This has resulted in a vast number of independent systems using every conceivable medium. No attempt has been made on the part of the FAA to standardize the system or equipment or make any systems compatible with one another. The committee believes that a center of expertise in this vital area should be developed and be resident at the FAA Technical Center."

1.2 CURRENT CAPABILITIES/PRACTICES

Currently, there is no effective system wide means in place to provide access authorization and control for personnel with a legitimate need to access secured areas at multiple airports. As a result, the air carriers and airport operators have adopted several different approaches to alleviating the problem of employee access needs at multiple airports, particularly transient air crew members.

The most common approach to this problem at the airport level is the use of their passenger screening points as alternative access control measures under FAR 107.14 (b). Using this approach, the operator may follow the FAR 107.13 security requirements for all individual AOA access doors downstream of the 107.14 (b) screening point. These requirements permit the use of security devices such as keyed, combination, or cipher locks , so long as such controls are under local control and do not allow similar access at other airports.

Once the transient air crews pass through the screening point, they may be escorted by locally-based employees or use carrier-controlled combination locks to gain access to their work areas and aircraft, with minimal delay. A few carriers and airport operators have chosen to funnel their employees through a separate FAR 107.14 control point. Under this arrangement, both the airport and air carrier employees, including transient carrier personnel may gain the access they need with minimal delay. In one such arrangement, both airport and air carrier personnel use a tunnel, that bypasses passenger screening, to reach the downstream AOA access points. Inside the tunnel there are two card readers controlling tunnel exit into the sterile area leading to the AOA access points. The airport operator controls the reader confirming access status of airport personnel through their airport issued badges. The air carrier using a separate reader does likewise using the carrier issued badge. Employees access their aircraft and work areas through downstream access points using common access codes or keying devices. In a situation such as this, badges or other access media are typically issued to locally-based employees.

Another approach is the use of the exclusive area agreement provision of FAR 107. Where a specific air carrier has a large crew base or leases a large part of a specific airport, the carrier may enter into an "exclusive area agreement" under FAR 107 which permits that carrier to exercise exclusive control over the access points and AOAs in that specific area. The carrier may do so only with the airport operator's written agreement which specifies in the ASP the security controls the carrier shall employ in the area. Under this procedure the carrier may use existing access controls or install a new system in the exclusive area, subject to airport operator's approval. This action appears to facilitate the movement of the carrier's personnel including transient air crew members in that specific area; however, in non-exclusive areas transient air crew access remains problematic.

Another less frequent approach is for the air carrier's locally-stationed employees who have an access badge to escort the carrier's transient air crew members to their aircraft or work areas. This course of action may create delays during peak operating hours at minimally manned stations.

All of these individual, short term approaches fail to meet the system wide concurrent operational and security needs. The use of screening points as alternative access control means(per 104.14b) requires crew members to undergo additional security screening often resulting in significant delays and increasing the volume of persons to be screened. The use of commonly-coded security devices, even as secondary control measures, are only allowable if locally controlled and does not allow the same access at other airports. The use of local station personnel to allow entry for their transient crews negatively effects operations and security. This

type of quasi-escort, personal recognition procedure lends itself to abuse due to time pressures and familiarity. Such abuse may involve leaving gate or ramp doors slightly ajar, blocking their locking device, momentary loaning of airport access cards, etc. All these actions may be rationalized based on the need to get the flight out on time and the lack of any threat perceived from fellow employees. Finally, this quasi-personal recognition procedure actually relies heavily on the transient crew member's uniform and air carrier identification badge in most cases. Yet, there is no regulatory assurance of the integrity of an individual air carrier's identification badge system. Thus, the continuing need is to provide a long term, system wide remedy that addresses all the operational concerns while enhancing the overall security posture of the individual airports and the nationwide aviation system. The concept of a nationwide, universal access system for civil aviation personnel who have legitimate access requirements at multiple airports would meet this need.

1.3 PROJECT PLAN AND ORGANIZATION

The purpose of this plan is to provide a framework in which to discuss the fundamental approaches to the development, evaluation, testing, and implementation of a universal access control system. Each approach is explored in detail including identifying primary tasks, time schedules, major milestones, key decision points, estimated costs, and logistical requirements. The plan is organized as follows:

- a. Section 1. - Introduction.
This section provides background information on the security and operational issues leading to mission need for a national access control system to handle transient personnel. Plan organization information is also provided.
- b. Section 2. - UAS Project Overview.
This section gives an overview of the UAS Project in terms of the FAA acquisition process. The goals and objectives of each phase are discussed.
- c. Section 3. - R & D Project Scope.
This section explains the scope of the R & D effort and general activities in each stage.
- d. Section 4. - R & D Project Stages.
This section discusses the tasks in each of the R & D stages.
- e. Section 5. - Project Schedule.
This section presents the UAS project schedule for research and development tasks. Tentative schedules are provided for all three R & D approaches. A more definitive schedule is also provided using the standard R & D approach.
- f. Section 6. - Project Budget.
A preliminary Project Budget is provided based on the Standard R & D approach. A final Project Budget will be developed after the R & D approach is selected.

- g. **Section 7. - Project Management.**
This section provides a description of the UAS Project management team, the members roles, and responsibilities.
- h. **Appendices.**
The terms and references materials used in this plan are identified.

2. UNIVERSAL ACCESS SYSTEM PROJECT OVERVIEW

Due to the long term nature and high cost of the acquisition and implementation to the airline industry of the UAS on a nationwide basis, the major acquisition phases outlined in FAA Order 1810.If, Acquisition Policy will be followed in explaining the UAS Project. The initial phase of this process is the Mission Need Determination Phase (Phase 0). This phase normally culminates in the decision to proceed to Phase 1, Concept Exploration/Alternative Analysis. If the results of Phase 1 support project continuation, then Phase 2, Demonstration/Validation will be initiated. Again based on Phase 2 results, Phase 3, Full-Scale Development will proceed. The process culminates in Phase 4, Production and Deployment. This systematic methodology ensures that all aspects of the mission need are identified, all possible alternatives are considered and the selected alternative is validated before any commitment to full development.

2.1 UNIVERSAL ACCESS SYSTEM PHASE IDENTIFICATION

The FAA acquisition process provides an appropriate structure for the development of the UAS. Each of the acquisition phases accomplishes critical activities that build on the results of the previous phases. However, the process is flexible enough to be applied to individual projects which might require some deviation from the norm.

2.1.1 Phase 0 - Mission Need Determination

Based on language contained in the House Appropriations Committee Hearings for FY94, a Program Requirement was initiated by ACS in August 1993. After discussions with the FAATC, a final Program Requirement was agreed to. This document provided in Appendix B, describes the need to develop the technical standards and an implementation plan for a centralized, national access control system know as the Universal Access System (UAS). The system will be designed to improve access control security levels while increasing system wide access to authorized employees of air carriers and airports without negatively effecting operations. This project phase does not include any R & D activity.

2.1.2 Phase 1 - Concept Exploration/Alternatives Analysis

During this phase, the scope and magnitude of such a UAS will be explored along with the various alternative UAS systems. A comprehensive survey of existing airport access control systems and available non-industry systems would be conducted providing the basis for subsequent computer compatibility analysis. The completion of these two stages would lead to the final stage in this phase, the development of feasible UAS alternatives. This project phase includes Stage 1, R & D activity.

2.1.3 Phase 2 - Demonstration/Validation

During this phase, the UAS development design criteria, specifications, and testing protocols would be developed. The UAS concept would also undergo developmental testing to demonstrate and validate the concept. A representative number of access control vendors will be contacted and given the opportunity to demonstrate their current systems that may meet this program requirement. These potential Nondevelopmental (ND) alternatives will be evaluated as a solution to this program requirement. This project phase includes Stage 2, R & D activity.

2.1.4 Phase 3 - Full Scale Development

The prototype procurement and evaluation testing will occur during this phase. The testing and evaluation of this prototype will provide the hands-on experience necessary to validate requirements, test specifications, discover unforeseen technical or operational problems, and determine operator requirements. Assuming airport operator/air carrier cooperation, limited, full scale airport testing will be conducted to observe the prototype's operation in the real-world airport environment. All necessary regulatory action to permit universal airport and airline utilization of the UAS would also be completed during this phase. This project phase includes Stage 3, R & D activity.

2.1.5 Phase 4 - Production and Deployment

Based on prototype results and updated specifications, the FAA would provide the aviation industry with the data needed to implement production and deployment. This will ensure that the UAS produced and deployed will meet operational and security requirements along with being compatible with the various airport systems. In its August 1993 Program Requirement, the FAA anticipates that after completion of the full scale test project, the UAS would be implemented over a five year period at 107.14 airports nationwide, particularly Category X and Category I airports. This project phase does not include any R & D activity.

2.1.6 UAS Project Overview

UAS PROJECT OVERVIEW														
ID	Name	1994				1995				1996				
		Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
1	Phase 0 - Mission Needs Determination / No R & D Activity													
2	Phase 1 - Concept Exploration/Alternative Analysis	2/1/94			7/18/94									
3	KDP 1 - Select R&D Approach		◆ 2/1/94											
4	Stage 1 - UAS Concepts & Alternatives Analysis	2/1/94			7/18/94									
5	Task 1 - Survey of Airport Access Control Systems	2/1/94			4/11/94									
6	Task 2 - Systems Review & Requirements Determination		4/12/94		5/23/94									
7	Task 3 - Development UAS Alternatives		5/24/94		7/18/94									
8	KDP 2 - Select UAS Concept			◆ 7/18/94										
9	Phase 2 - Demonstration & validation		7/19/94						7/17/95					
10	Stage 2 - Prototype Conceptual Design & Procurement		7/19/94						7/17/95					
11	Task 1 - Write Functional Specifications		7/19/94		8/15/94									
12	Task 2 - Prepare Procurement Request Package		7/19/94		10/10/94									
13	Task 3 - Prepare Independant Government Cost Estimate		7/19/94		8/15/94									
14	Task 4 - RFP Issue, Evaluation & Contract Award			10/11/94					7/17/95					
15	Task 5- Write Prototype Test Plans			10/11/94					7/17/95					
16	Task 6 - Test Sites Identification & Preparation			10/11/94					7/17/95					
17	Phase 3 - Full Scale Development						7/18/95						7/15/96	
18	Stage 3 - UAS Prototype Development & Evaluation						7/18/95						7/15/96	
19	Task 1- Design, Build, Install and Operate Prototype						7/18/95			12/4/95				
20	Task 2 - Conduct Laboratroy Tests								12/5/95		1/1/96			
21	Task 3 - Conduct Operational Tests at BWI								1/2/96		2/26/96			
22	Task 4 - Conduct Full Scale Airport Tests								2/27/96		5/20/96			
23	Task 5 - Develop Final Design Criteria & Support Docu									5/21/96		6/24/96		
24	Task 6 - Publish Final UAS Project Report									6/25/96		7/15/96		
25	KDP 3 - Implement Final UAS Selected											◆ 7/15/96		
26	Phase 4 - Production & Development / No R&D Activity													
File Name: TESTAPP2.MPP Last Updated: 2/3/94 Prepared by: DCS Inc., SS		Normal  Summary  Milestone  progress 												

3. R & D PROJECT SCOPE

The UAS Project will proceed through a series of stages structured to establish a baseline for determining requirements, refining that baseline, testing through the use of a prototype, and evaluating results which could lead to deployment of a nationwide access control system. The initial project stages are concept exploration and full scale development (FSD). Only after the research and testing is completed will it continue to the stages of production and deployment. This plan is primarily focused on the R & D phase of the project, emphasizing those activities that the FAATC has already been tasked to accomplish.

The objective of this R & D project is to develop the technical standards and an implementation plan for a national access control system designed to improve access control security levels while increasing access to authorized airline and airport employees.

The project consist of three major R & D stages:

1. UAS Concept and Alternatives Analysis
2. Prototype Conceptual Design and Procurement
3. Prototype Development and Evaluation

3.1 UAS CONCEPT AND ALTERNATIVES ANALYSIS

The survey of airport access control systems, evaluation of their commonalities and compatibilities, and development of alternative approaches provides the foundation necessary to establish UAS requirements. These activities conducted in a systematic way following established protocols will identify all of the technical, operational, and security requirements that a UAS will encounter during operations. These initial steps will also ensure that the UAS selected for development is the most desirable in terms of performance, schedule, and costs. Although it is possible to develop and install a UAS without such an in-depth understanding, such a UAS could easily be outmoded due to technical advances and unforeseen operational needs, or fail to comply with international standards.

During this stage, information will be collected on the types of airport access control systems currently in use and the frequency of each type. The major types will be grouped and their technical attributes identified. This will be accomplished by selected in-depth airport operator interviews and on-site visits. Next, the manufactures of the major types of access control equipment will be contacted to obtain additional technical information on their specific system and on current trends in the access control market place both domestic and international. Finally, the major domestic and international aviation associations will be queried for similar information on airport access control equipment and operational issues.

The next task is to compile the information collected and analyze it in several ways. These analyses would involve identifying the hardware and software compatibilities of each major equipment group identified. The individual system's capacity, architecture, and coding would

be compared. The machine-readable media used along with networking requirements will also be examined. Through this process, the technical and functional requirements for the development of a nationwide access control system would be determined.

With both the operational and technical needs of a UAS thoroughly identified, the alternative approaches to meeting these needs will be explored. The various types of nationwide access control systems technically feasible can be evaluated in terms of schedule, performance, and costs. Using these criteria, the technically feasible UAS providing the optimum performance and cost benefits may be identified.

3.2 PROTOTYPE CONCEPTUAL DESIGN AND PROCUREMENT

This stage will involve the development of a UAS prototype. Design criteria, specifications, and testing protocols will be developed in support of the prototype. To ensure adequate technical oversight, reviews will be conducted to validate the specifications and design. A baseline will be established and configuration management procedures will be implemented to ensure that change requests are tracked and recorded to manage the current baseline UAS configuration. In addition, problems and issues with the requirements or specifications will be tracked and provided as input to potential configuration changes. Test plans will be developed to ensure that there is a method for adequately testing and evaluating the performance of the prototype relative to operational requirements and technical specifications. The performance evaluation will include reviewing system response and down time.

3.3 PROTOTYPE DEVELOPMENT & EVALUATION

During this stage, the UAS prototype will be implemented. Tests will be conducted in accordance with the Test Plans (see 4.2.5). Both laboratory testing and developmental testing at operational airports is anticipated. Based on the results of these evaluations, updates will be made to the specifications, requirements, design, and configuration of the UAS. The final, successful prototype design and UAS design methodology information will be used to support development of final operational and technical specifications for industry production and deployment.

3.4 KEY DECISION POINTS AND FUNDAMENTAL APPROACH SELECTION

As this project proceeds, several major decisions effecting its outcome must be made at various points in the process. These are identified as Key Decision Points (KDP) and are as follows: KDP 1, R & D approach selection; KDP 2, UAS concept selection; KDP 3, Determination to implement final UAS selected. KDP 1, the selection of a fundamental R & D approach dictates the R & D scope of Stage 1, impacting on both subsequent stages.

The following R & D approaches are presented for consideration:

- a. Standard Approach
- b. Truncated Approach
- c. Concurrent Approach

The approach will largely determine the project's comprehensiveness, timeliness, and costs. Each of these factors has significant merit individually. Thus, the approach must consider the individual importance of each of these factors in achieving the overall project objectives.

3.4.1 Standard Approach

This approach is the most comprehensive and technologically sound approach. It follows a proven systematic methodology to identify, explore, and evaluate the full range of possible alternatives in developing a UAS. Using this approach, a comprehensive survey of existing airport access control systems focusing on their technological capabilities and commonalities would be conducted. Based on the survey results and current access control industry information, various UAS concepts would be identified and explored. These concepts would then be evaluated in terms of cost, schedule, and performance trade offs. The standard approach is more time consuming and costly than the truncated approach; but, less so than the concurrent approach. However, the additional time and cost may be offset by the development of the most cost effective, technologically advanced, and most operationally acceptable UAS.

3.4.2 Truncated Approach

This approach is the least comprehensive in that it relies exclusively on a conceptual UAS previously identified by the airline industry. No independent survey of alternative UAS concepts or evaluation of these alternatives is undertaken. Stage 1 of R & D would consist primarily of a thorough review and evaluation of the industry identified UAS. Appropriate technical or operational modifications might be made; but, the basic, industry-identified UAS concept would be retained. The truncated approach is both the most expedient and least costly of the three R & D approaches. However, the overall success of the entire project rests on premise that the industry-developed UAS concept will prove to be effective, economical, and is operationally acceptable.

3.4.3 Concurrent Approach

This approach combines the advantages of both the standard and truncated approaches. By using a two pronged effort initially, both the comprehensive system survey and intensive review of the industry-identified UAS are accomplished concurrently. This yields the quality alternative evaluation desired along with the expeditious evaluation of the industry UAS. Should the

alternative analysis identify the industry UAS as the best alternative, this would serve to validate that concept. If not, a decision to continue with further development of the industry UAS or initiate a new development scheme would have to be made. Meanwhile, the intensive review of the industry UAS would have proceeded saving considerable time in the R & D phase. The concurrent approach is the most costly approach considering the initial two pronged research effort envisioned.

4. R & D PROJECT STAGES

The R & D portion of the UAS Project is defined in three stages:

1. UAS Concept and Alternatives Analysis;
2. Prototype Conceptual Design & Procurement; and
3. Prototype Development & Evaluation.

This plan details the activities to be performed in Stage 1; the remaining stages are described at a higher level and will be specified at a later date based on the R & D approach chosen and the results of Stage 1 activities.

4.1 STAGE 1 - UAS CONCEPT AND ALTERNATIVES ANALYSIS

The major tasks to be accomplished during Stage 1 are set forth in detail below. Each task is identified along with the activities to be accomplished to complete the task. At the conclusion of this Stage, KDP-2 is reached.

4.1.1 Task 1 - Survey of Airport Access Control Systems

Initially, the FAATC will conduct a preliminary broad-based data collection effort of airport access control systems currently in use at domestic airports. The objective of this data collection effort is to identify the major systems in use, the number of airports using particular systems, and the general characteristics of these systems. Based on this data, a more in-depth field data collection effort will be conducted using more detailed questionnaires and on-site visits at selected airports. The objective of the field effort is to obtain comprehensive information, both operational and technical, on the predominate access control systems identified during the preliminary data collection efforts. This information would include technical data on the individual system's architecture, storage capabilities, reader medium, transmission modes, etc. Following receipt and analysis of this information, the manufacturers of the access control systems examined during the field effort will be contacted for technical literature and information on their specific systems. Their views on the current and future trends in access control systems, both domestic and international will also be solicited. Their input will serve to validate technical data gathered during the field survey and to identify potential advancements in access control technology.

The following activities will be accomplished during this task:

- a. Pre-Data Collection Activities;
- b. Preliminary Data Collection;
- c. Field Data Collection;
- d. Interview of Equipment Manufacturers; and
- e. Review of aviation industry and government literature.

4.1.2 Task 2 - Review of Systems and Standards

The purpose of this task is to analyze the existing universe of airport access control systems to identify the differences in their operating system software, hardware, reading devices, and keying devices which would have to be recognized by any UAS. The architecture of those access control systems previously identified including their operating systems, data base capacities, data storage methods (centralized or distributed), and communications interfaces will be reviewed. This review will be conducted under the premise that an acceptable system must meet ICAO/ISO/ANSI standards (see explanation below). If it does not, it will be considered technically unacceptable.

This review would also include a detailed examination of the individual airport system's reading and keying devices. Our preliminary survey will identify the variety of reading devices used and their method of activation at the target airports. Next, the keying device (again a card in most cases) must be carefully examined. The access code may be placed on or in the card in a number of ways. The code may be placed on the card medium by optical bar codes and magnetic stripes or embedded in the card as magnetic slugs or Weigand wires, to name a few. Finally, the security of the keying device must be considered. Security measures include photographs of the holder, signatures, various card compositions, and holograms. By comparative analysis of these individual system characteristics, the general needs of any UAS may be determined.

The identification of the various standards used in the airport access control systems along with those standards used elsewhere in the aviation industry is necessary to ensure maximum standardization and compatibility of any UAS. The standards identified will be checked for conformity to existing domestic and international aviation communications and security standards. These standards reviewed will include those issued by the American National Standard Institute (ANSI), the International Civil Aviation Organization (ICAO), and the International Standards Organization (ISO). This review will ensure that the system meets the standards premise. If no common standard is identified during the field survey or standards review, existing system commonalities will need to be identified from which a common standard for the UAS could be derived.

The potential industry users of the UAS will be solicited for information of their general needs in terms of anticipated transaction traffic, combination access control/employee identification card use, and specific operational concerns. The generic requirements for any UAS must consider both the technical and functional needs of the users. The previous systems analyses and industry contacts will have also identified many of the technical and functional needs of any UAS. The FAA Technical Center Project Team identified in Section 7.2, will also be tasked to help identify any additional technical or operational needs a UAS must meet. With this additional input, the basic requirements of any UAS may be established.

A report detailing the results of these analyses and the preliminary UAS requirements will be published for interim project management review. The following activities will be accomplished during this task:

- a. Review of Existing Systems;
- b. Identification of Industry Standards;
- c. Identification of Operational Needs; and
- d. UAS Requirements Development.

4.1.3 Task 3 - Development of UAS Alternatives

Based on the UAS requirements established, the alternative methods of fulfilling these technical and functional requirements will be explored. Each alternative will be explained in terms of performance, time schedule, and cost criteria. The performance will be evaluated against both individual and system requirements. Cost estimates will consider the availability of "off the shelf" software and hardware. Schedule estimates will also consider the commercial availability of system components and anticipated equipment development time. Both the schedule and cost estimates are heavily dependent on the full cooperation of the aviation industry and as such are subject to change.

Depending on the weight given to each of the performance, schedule and cost criteria, one or more of the alternatives will be the most desirable. An interim summary report presenting the alternatives will be published at the conclusion of this task. The following activities will occur during this task period:

- a. Comparison of Requirements with Alternatives;
- b. Identification of Major Scheduling or Cost Problems;
- c. Individual Alternative Cost Analysis; and
- d. Publish Interim Report of Findings.

4.2 STAGE 2 - CONCEPTUAL DESIGN/PROTOTYPE PROCUREMENT

During this stage, the UAS concept would also undergo design development to demonstrate and validate the concept. A representative number of access control vendors will be contacted and given the opportunity to demonstrate their current systems that may meet this program requirement. These potential Nondevelopmental (ND) alternatives will be evaluated as a solution to this program requirement. Also, the necessary preparations will be made to hire a qualified contractor to design, build, and install the UAS prototype. The following tasks will be completed during this stage.

4.2.1 Task 1 - Write Functional Specifications

Based on the field research and vendor demonstrations, the UAS baseline functional requirements will be further refined and the design criteria for the prototype developed. Contract specifications incorporating the refined functional requirements will then be written.

4.2.2 Task 2 - Prepare Procurement Request Package

This task involves a number of procurement-related activities. These activities are listed below:

- a. Develop a statement of work.
- b. Complete Request For Procurement (RFP) documentation.
- c. Develop required support and planning documents.

4.2.3 Task 3 - Prepare Independent Government Cost Estimate

Develop an independent government cost estimate for prototype design, development, installation, and operational support during testing.

4.2.4 Task 4 - RFP Issue, Evaluation, & Contract Award

During this Task, the UAS RFP will be issued to contractors and their proposals evaluated. Based on the evaluation results, a contract will be negotiated and awarded to a specific contractor for prototype design, development, installation, and operational support during testing.

4.2.5 Task 5 - Write Prototype Test Plans

A test plan will be written detailing the test measures and procedures to be followed in testing the prototype's as-built performance against system specifications. The plan will call for a systematic testing approach evaluating both individual and system performance characteristics against baseline specifications. Individual and system test procedures will be incorporated in the plan.

4.2.6 Task 6 - Evaluate Systems Maintenance Options

The various options for maintaining and operating the prototype system will be explored in terms of personnel, training, technical support, and environmental needs. The most cost-effective option will be identified.

4.2.7 Task 7 - Test Sites Identification & Preparation

This task involves identifying potential prototype test sites that allow for transmission of UAS information from multiple air carriers to multiple airports. Coordination with each participating air carrier and their host airport operator will be necessary to ensure proper preparations are made for the UAS prior to installation and testing at their location. Written working agreements with cooperative air carriers and airport operators should be obtained along with any necessary regulatory waivers. The UAS on-site support requirements for physical space, telecommunications, electrical power, and security will be negotiated with the air carriers and airport operators. All on-site preparations should be concluded prior to the contractor's installation/connection of the UAS Prototype at the airport or air carrier location.

4.3 STAGE 3 - PROTOTYPE DEVELOPMENT & EVALUATION

During this stage, the prototype contractor will design, build, install and operate the UAS prototype. The contractor will provide detailed documentation to support validation of the design against requirements and of the "as-built" system against the design. In addition, the contractor will be required to support testing efforts that will verify system response times, redundancy capabilities, and impacts on operational activities. Information gleaned from these laboratory and airport operational tests will be documented and used to improve the UAS design. All documentation will be updated to ensure that the final UAS baseline conforms with the specified UAS. At the conclusion of this Stage, KDP-3 is reached.

4.3.1 Task 1 - Design, Build, Install, and Operate Prototype

Prototype contractor will design, build, and operate the prototype to verify conformance with baseline specifications. The contractor will conduct factory verification test of the UAS prior to delivery to test site. The contractor will coordinate any design or factory test issues with the FAATC. The prototype contractor will also be required to relocate the prototype as necessary. Factory acceptance testing will be conducted by the contractor to verify conformance to RFP specification. FAATC will approve/disapprove factory acceptance tests.

4.3.2 Task 2 - Conduct Laboratory Prototype Tests

The prototype will be installed initially in the laboratory at the FAA Technical Center for testing purposes. Such laboratory testing will enable the UAS prototype to be operated under various transaction loads, using several different interfaces, and reader heads. This type of initial testing is not possible at an operational airport due to the significant risk of disrupting air carriers'

operations should the prototype fail or not operate as expected. The initial installation will be closely monitored to ensure that the specifications have been met and that validation testing may be accomplished in a prompt and effective manner. If an "off-the-shelf" system is identified, the scope of the laboratory testing may be reduced significantly. However, such testing will still be necessary to work out the initial hardware and software customization problems likely to be encountered during its initial installation & operation.

A test plan will be written to validate the prototype's performance characteristics against the established requirements. The prototype will operated in a test mode to determine its actual transaction capacity, response times, system security, and reliability. The interim test results will be reported to project management. Initial laboratory tests will allow the prototype to be constructed, connected with several different access control systems' interfaces, and loaded with data from several air carriers. The prototype may then be operated at various levels without risk of flight disruptions should the prototype fail or not perform to functional specifications.

4.3.3 Task 3 - Conduct Developmental Operational Tests at BWI

Assuming BWI's continued agreement to act as a testbed airport, the prototype will be moved and reinstalled there. In addition to the performance characteristics tests in Task 2, the prototype's compatibility with an operating airport access control system and keying devices will be tested. In addition, its ability to receive and translate employee data from several air carriers will be ascertained. During this period, any software or hardware modifications needed to effectively integrate the UAS in the various airport access control systems will be identified. Feedback from both the airport operator and the various air carriers using the UAS will be obtained. An interim test report incorporating this information will be issued and used as the basis for any UAS modifications required prior to multi-airport testing.

4.3.4 Task 4 - Conduct Full Scale Airport Testing

In order to proceed with this task, the full cooperation of several airport operators and their tenant air carriers is essential. The airport operator's and tenant air carrier's early agreement to fully participate in the project is the most critical selection factor. The anticipated testing would involve a minimum number of Category X and Category 1 airports that handle high volumes of transient airline personnel, particularly air carrier hubs. Of those airport operators willing to participate, airports using the major types of access control systems identified during the previous airport survey would be selected. During this Task, the UAS's ability to maintain its responsiveness, reliability, and security under multi-airport, multi-carrier use will be tested. An interim test report will be provided to management. The prototype contractor will continue to be responsible for relocating, reinstalling, operating, and maintaining the prototype system as necessary.

4.3.5 Task 5 - Develop Final Design Criteria and Support Documents

Based on all the test results and operational feedback, the UAS baseline requirements will be refined and final system specifications written. All system documentation including operational and training manuals, maintenance manuals, and interface documents will be updated and published. Supporting documents for any needed policy or regulatory changes to support the UAS will also be prepared at this time.

4.3.6 Task 6 - Publish Final UAS Project Report

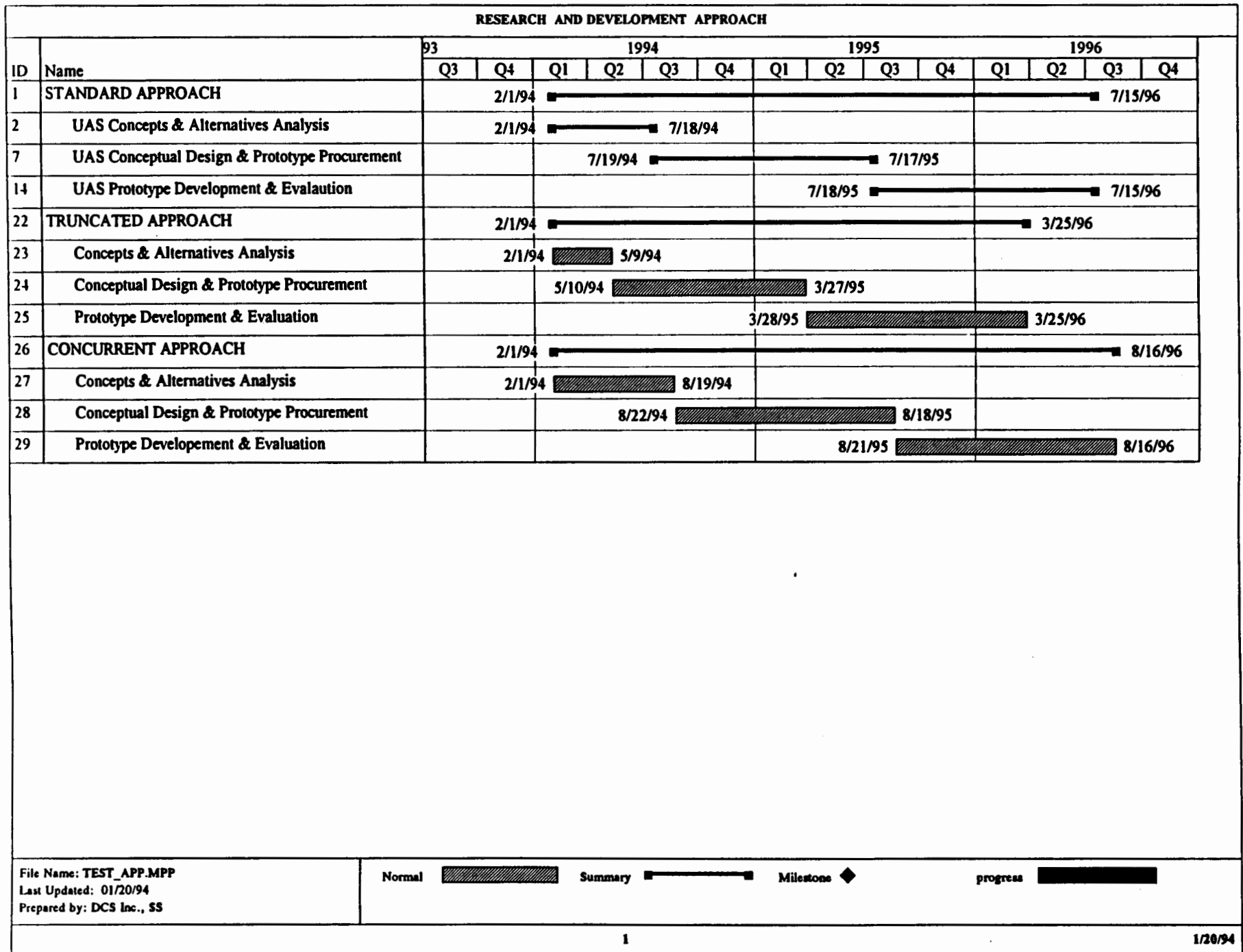
This report will incorporate all previous interim reports along with final system evaluation information. It will include recommendations for any technical modifications prior to full deployment, supporting regulatory or policy actions, and tentative deployment schedule and cost data.

5. PROJECT SCHEDULE

This section presents the UAS Project schedule for research and development tasks. Tentative schedules are presented for all three identified R & D approaches. A lower level schedule is also included for the standard R & D approach.

The most critical determinants of the project schedule are the degree of cooperation from the aviation community, the existence of any common standards in airport access control system architectures, and the promptness of regulatory waivers which may be necessary which may be necessary for testing purposes. If delays are caused by the individual operators, the individual airport operators, air carriers, and access control manufacturers who are not responsive to survey requests or technical information requests, the schedule will be adjusted accordingly. If no common standards are in use in the existing access control systems architecture, a UAS standard will have to be derived from the existing universe and standards. This will be a very time consuming problem that would extend the schedule. Finally, any necessary regulatory waivers usually involving FAR 107, FAR 108, and FAR 191 need to be available expeditiously. The lack of such expeditious regulatory action may hold up survey activities and field testing activities impacting adversely on the schedule.

5.1 MULTI-APPROACH SCHEDULE



5.2 STANDARD APPROACH SCHEDULE

STANDARD RESEARCH AND DEVELOPMENT APPROACH															
ID	Name	93	1994				1995				1996				
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	STANDARD APPROACH		2/1/94												7/15/96
2	UAS Concepts & Alternatives Analysis		2/1/94												
3	Survey of Airport Access Control Systems		2/1/94												
4	Systems Review & Requirements Determination			4/12/94											
5	Development UAS Alternatives			5/24/94											
6	Analysis Complete				◆ 7/18/94										
7	UAS Conceptual Design & Prototype Procurement			7/19/94											
8	Write Functional Specifications			7/19/94											
9	Prepare Procurement Request Package			7/19/94											
10	Prepare Independant Government Cost Estimate			7/19/94											
11	RFP Issue, Evaluation & Contract Award				10/11/94										
12	Write Prototype Test Plans				10/11/94										
13	Test Sites Identification & Preparation				10/11/94										
14	UAS Prototype Development & Evalaution							7/18/95							7/15/96
15	Design, Build, Install and Operate Prototype							7/18/95							
16	Conduct Laboratory Tests								12/5/95						
17	Conduct Operational Tests at BWI									1/2/96					
18	Conduct Full Scale Airport Tests									2/27/96					
19	Develop Final Design Criteria & Support Docu										5/21/96				
20	Publish Final UAS Project Report											6/25/96			
21	Prototype Implementation Complete													◆ 7/15/96	
File Name: TEST_APP.MPP Last Updated: 01/20/94 Prepared by: DCS Inc., SS Normal Summary Milestone ◆ progress															
1 1/20/94															

6. PROJECT BUDGET

This section provides cost estimate for the Standard R & D approach. The constraints mentioned in Section 5.1 will impact project cost estimates in most cases. If the individual airport operators, air carriers, and access control manufacturers are not responsive to survey requests or technical information requests, many additional staff hours will be needed to coordinate activities and to independently develop technical and operational data on the various airport access control systems. If no common standards are in use in the existing access control systems architecture, again additional staff resources will be needed to derive such a UAS standard. Delays in needed regulatory waivers and approvals will also result in schedule slippage that will result in the expenditure of additional time and resources to meet project deadlines.

6.1 UAS PROJECT BUDGET -- STANDARD R & D APPROACH

FAATC	Project Manager, 2.5 Man Years	\$ 275,000
	Laboratory/Support Equipment	35,000
	Administrative Support	5,000
	Subtotal	315,000
Support Contractor	Manpower Required, 3.2 Man Years	400,000
	Travel Costs	
	Stage 1 17,500	
	Stage 2 15,000	
	Stage 3 37,000	69,500
	Subtotal	469,500
Prototype Contractor	Devel., Build & Operate Prototype	750,000
	Operate, Relocate & Travel	500,000
	Subtotal	1,250,000
GRAND TOTAL		\$2,034,500

6.1.1 FAATC

The Center will provide management services, laboratory support, and administrative services for the length of the UAS Project.

6.1.2 UAS Support Contractor

This contractor will be responsible for the initial research, prototype concept definition, analysis of UAS concepts and alternatives, testing & evaluation, and program support to the FAATC. This contractor will conduct testing at various locations providing written test evaluation reports to project management staff. Initial planning estimates of the supporting contractor costs are set forth below.

6.1.3 UAS Prototype Contractor

This contractor will be responsible for the design, construction, installation, and operation of the UAS Prototype. This company will also be required to relocate, reinstall, operate, and maintain the prototype at the various test sites during the entire test period. This variable along with many others will be identified and explored during the initial R & D stages conducted by the support contractor. A rough magnitude of cost estimate for this work is 1.0 - 1.5 million dollars.

7. PROJECT MANAGEMENT

The program management configuration for managing and conducting Phase One of the UAS Project is outlined below. The project management team consists of FAATC staff, including a support services contractor. Initial team member functions are described in the following sections. An updated and more complete functional description will be provided once the management team for performing subsequent project phases is in place.

7.1 UAS PROGRAM STEERING COMMITTEE

FAA's Assistant Administrator for Civil Aviation Security (ACS-1) and the Director of the Technical Center (ACT-1) will provide guidance to the Project Team.

- a. Approve performance goals and objectives and acquisition strategies for the overall program.
- b. Maintain high visibility and solicit ongoing support for the UAS Project.

7.1.1 Program Manager

The manager of NAS Security Research Programs for the FAA Technical Center's Aviation Security Research and Development Service, Requirements Analysis and Integration Division (ACA-400) has been designated to serve as UAS Program Manager. This individual will be responsible for:

- a. Carrying out Steering Committee directives concerning security system acquisition and implementation;
- b. Leading UAS Program planning efforts and defining resource requirements;
- c. Reviewing all deliverables for the conformity with FAA quality standards;
- d. Conducting quarterly review sessions to discuss program status and resolve any identified UAS problems;
- e. Revalidating the approved mission needs statement at major UAS Program milestones;
- f. Providing management leadership and oversight to keep the UAS Program operating consistent with DOT/FAA statutes, regulations, orders, policies and procedures; and
- g. Ensuring that all personnel and related resources necessary to address program requirements are made available.
- h. Holding project team members accountable for program accomplishment within time and budget constraints.
- i. Presenting and defending UAS at key decision points.

7.1.2 Project Technical Lead

An engineer within AC-400, NAS Security Research Program, is the UAS Project Technical Lead. This individual reports directly to the Program Manager and is responsible for:

- a. Handling all technical project issues and complying with reporting requirements.
- b. Overseeing UAS Project technical direction.
- c. Participation in UAS budget submissions and justifications.
- d. Planning and scheduling FAA Technical Center Project Team sessions, briefings to assess progress, and making technical project decisions.
- e. Controlling and distributing all UAS documentation for program approval or technical reference.
- f. Performing all functions as Contracting Officer's Technical Representative.
- g. Supporting Technical Reviews
- h. Developing Prototype Test Plans & Procedures
- i. Coordinating Laboratory & Airport Evaluation Efforts
- j. Conducting Prototype Evaluation
- k. Developing Evaluation Reports for FAATC
- l. Developing Training Programs and Manuals

7.2 FAATC PROJECT TEAM

The FAATC Project Team is comprised of technical representatives from all the major stakeholders in the UAS Program. It is established to:

- a. Provide valuable experience from other similar security system acquisition projects;
- b. Ensure that the operational needs of the user communities are satisfied through participation in structured walk through of the UAS prototype; and
- c. Provide technical input for resolving critical issues and barriers to effective system development and implementation.

Appendix A

**ARINC Transient Crew Security System/Segment
Specification (Preliminary), September 25, 1991**

The information contained in this Appendix is Company Proprietary. Aeronautical Inc. has granted limited permission to the FAA Technical Center to reproduce the TCSS specification, but has restricted its distribution to only the FAA and Department of Transportation organizations. The specification is on file and is available upon request from the FAA Technical Center, Aviation Security Research and Development Service, ACA-400, to FAA or Department of Transportation sources.

ARINC

2551 Riva Road
Annapolis, Maryland 21401-7465
410-266-4000

January 31, 1994
File: 01-FAA

Mr. Ralph Yost
ACA-400
FAA Technical Center, Bldg. 315
Atlantic City Airport, NJ 08405

Dear Mr. Yost:

Pursuant to our phone conversation on Friday, January 28, 1994, I have attached a copy of our Transient Crew Security System Specification Proposal.

ARINC authorizes you to include the attached document in the Universal Access System Project Plan and to perform the necessary reprinting.

A copy of our letter to the FAA Contracts Officer concerning the release of this information is attached.

Very truly yours,



Tony Martelli
Sr. Director
Aviation Service Management

vlj

Enclosures

ARINC

2551 Riva Road
Annapolis, Maryland 21401-7465
410-266-4000

January 31, 1994
File: 01-FAA

Mr. Brian Anderson, Contracting Officer
Federal Aviation Administration (FAA/ASU-340B)
800 Independence Avenue NW
Washington, D.C. 20591

Ref: ARINC Transient Crew Security System ("TCSS") Specification and Cost Proposal/Estimate

Dear Mr. Anderson;

In 1992, ARINC produced the referenced Specification in an effort to define the requirement for a TCSS for the air transport industry. Shortly thereafter, ARINC prepared a cost proposal to develop such a system. Both documents are ARINC's proprietary property and have been copyrighted by it, and will be labelled accordingly.

Two activities associated with the FAA, the FAA Technical Center and the Volpe National Transportation Systems Center ("VTNSC"), have been studying various approaches to the TCSS problem. Both of these activities have requested to use the ARINC proprietary TCSS Specification or Cost Proposal as part of their reports.

ARINC is pleased to provide these documents with no requirement for compensation, provided they are properly safeguarded and used.

As the approach developed in the specification is proprietary to ARINC, the TCSS Specification may only be used by the FAA, or the Department of Transportation, internally for purposes of evaluating TCSS approaches. It may not be used or referenced in any subsequent Request for Proposals, Statement of Work or other document which would lead to a contract with any party other than ARINC.

The ARINC Cost Proposal is ARINC business-sensitive property. It may be used internally by the FAA, or the Department of Transportation, for developing cost estimates for TCSS approaches. The ARINC burden rates and other business-sensitive information contained therein may not be released outside the FAA, or the Department of Transportation.

Mr. Brian Anderson

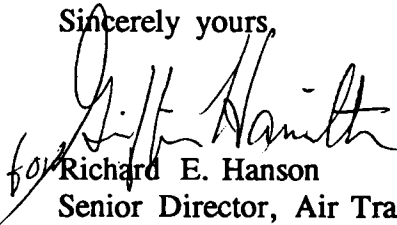
January 31, 1994

Page 2

ARINC requests, and hereby claims, confidential treatment of all this information under the Freedom of Information Act ("FOIA"), the rules of the FAA and Department of Transportation and applicable law. Please notify the undersigned, with a copy to ARINC's corporate Secretary, in the event such information is requested by a third party under FOIA.

ARINC is providing the requested documentation directly to the FAATC and the VNTSC. A copy of this letter will be attached to the material provided.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Rich E. Hanson", is written over the typed name. The signature is stylized with a large initial "R" and a long horizontal stroke.

for Richard E. Hanson

Senior Director, Air Traffic Services Management

cc: Ralph Yost at FAATC
J. Robert Juliano at VNTSC

Appendix B

Program Requirement

4.5 UNIVERSAL ACCESS SYSTEM

SPONSOR: ACS

PRIMARY POC: Linda Bruce, ACP-110
(202) 267-8553

ACS PRIORITY: HIGH

1. PROGRAM AREA: NAS SECURITY

2. MISSION NEED: Pilot groups and air carriers have been pursuing relief from Federal Aviation Regulations (FAR) Part 107 access control requirements for transient employees, particularly aircrews. As a result of working with the industry to resolve this issue, ACS has committed to developing the technical standards and an implementation plan for a centralized, national access control system or a Universal Access System (UAS) designed to improve access control security levels while increasing systemwide access to authorized employees of air carriers and airports.

a. Background: Air carriers and pilots have claimed that the incompatibility of varying airport access control systems has hampered the movement of flightcrews and consequently delayed flights. The industry tried unsuccessfully to implement a centralized access system to accommodate aircrews, but eventually turned to the Aviation Security Advisory Committee (ASAC) for assistance when the cost forestalled implementation. As a result, the ASAC formed the Transient Airline Employee Access Working Group in September 1992. "This group recently recommended that FAA develop standards, fund and facilitate the implementation of a UAS."

b. Current/Programmed Capability: Currently there is no effective system wide means in place to provide access authorization and control for personnel with a legitimate need to access restricted areas at multiple airports. Due to differing airport security access control systems nationwide, aircrews must either obtain a separate access media at every airport to which they fly or be escorted through security access points.

Design standards and criteria are required to steer the industry toward a standardized, national access control system to increase system wide access for authorized personnel to perform their duties and improve overall airport access control security FAR 107.14 was designed to provide.

3. REQUIRED DELIVERABLES

a. By the end of October 1993, develop a project plan that identifies the tasks, schedule, major milestones, key decision points, costs and alternative funding sources to accomplish the following:

- conduct a survey of various domestic and international systems, methods and procedures currently used and/or planned for implementation by airport operators for controlling access to secured areas of their airports
- evaluate incompatibilities in computer hardware and software systems, machine-readable cards and electronic coding, and other methods/procedures for access control that could be adapted for a universal access system
- develop feasible alternative approaches including cost, schedule and performance trade-offs
- develop design criteria, specifications and testing protocols
- evaluate options for system maintenance
- procure/integrate prototype system
- conduct laboratory and/or airport test at developmental test bed airport
- collect test data and evaluate prototype
- plan, coordinate and conduct full scale airport testing
- develop final design criteria, specifications, technical information to support policy and/or regulatory actions
- publish report of test results

b. Upon ACS review and approval—including coordination between the sponsor and the ASAC if appropriate—this requirement will be revised to reflect those tasks, milestones and key decision points included in the approved project plan for a universal access system.

c. At the completion of the full scale test project, results and subsequent adjustments shall be presented to ACS and, as appropriate, coordinated between the sponsor and the ASAC. After appropriate modifications to the system and any associated standards that are required to be established, it is planned that the system will be implemented over a five year period at 107.14 airports nationwide, particularly Category X and Category I airports.

Appendix C

Glossary

GLOSSARY

ACI	Airports Council International
AIP	Airport Improvement Program
ANSI	American National Standards Institute
ASP	Airport Security Program
AOA	Air Operations Area
ASAC	Aviation Security Advisory Committee
ATA	Air Transport Association
BWI	Baltimore Washington International Airport
FAA	Federal Aviation Administration
FAATC	Federal Aviation Administration Technical Center
FAR	Federal Aviation Regulation
KDP	Key Decision Point
ICAO	International Civil Aviation Organization
ISO	International Standards Organization
UAS	Universal Access System

Appendix D

References

REFERENCES

Federal Information Resource Management Regulations (FIRMR)

DOT 4200.16A, Advance Acquisition Planning and Annual Procurement Plans

GAO 1919, Report to the Secretary of Transportation, Aviation Security: Improved Controls Needed to Prevent Unauthorized Access to Key Airports, January 1988

Aviation Security Research and Development Plan, Federal Administration Aviation Technical Center, March 1992

A Technology Assessment of the Enhanced Airport Security Demonstration Project at Baltimore Washington Airport (BWI), November 1992

Federal Aviation Regulation 107 Airport Security, February 8, 1989

Federal Aviation Regulation 108 Airplane Operator Security, July 17, 1991

FAA Order 1650.7B, Civil Aviation Security Program Guidelines, Mar 3, 1987

FAA Order 1700.8D, Standards for Preparing, Printing, and Distributing Federal Aviation Formal Technical Reports. February 27, 1992

FAA Order CT 1710.2B, Preparation and Issuance of Formal Reports, Technical Notes and Other Documentation, February 13, 1992

FAA Order 1810.4B, FAA NAS Test & Evaluation Policy, Oct. 22, 1992

FAA Order 1810.6, Policy for Use of Nondevelopmental Items (NDI) in FAA Acquisitions

FAA Order 1810.If, Acquisition Policy, ACQ-10, March 19, 1993

FAA Order 2500.8A, Funding Criteria for Operations, Facilities, and Equipment (F&E), and Research, Engineering and Development (R,E&D) Accounts

FAA - STD - 026, NAS Software Development

FAA - STD - 018a, Computer Software Quality Program Requirement

Workshop Report, Committee on Commercial Aviation Security, February 1993
Air Carrier Standard Security Program