DEVELOPMENT OF AN INTERNET / INTRANET-BASED, CUSTOMIZABLE PERSONAL HOME PAGE SYSTEM FOR TRAINING AIR WING FOUR’S TRAINING MANAGEMENT SYSTEM 2

GRADUATE PROJECT REPORT

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PREFACE

The genesis of the Personal Home Page (PHP) system was a requirement by the U.S. Navy to train aviators more effectively using fewer resources. Although major training management systems like TMS2 had recently been developed to gather and analyze aviation training data, there was still a need to disseminate the information more effectively to the people who used it on a daily basis. The PHP system was developed as a web based adjunct to TMS2 for the purpose of making real-time mission-critical data more readily available to students and instructors, and to thereby increase the quality and quantity of aviation training conducted at Training Air Wing Four (TRA WING-4 or CTW-4). Although the system was originally proposed as the “TMS2 Personal Home Page System,” during development it was renamed “MyTMS2” by popular demand and will be henceforth referred to as such.
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BACKGROUND

Naval Air Station (NAS) Corpus Christi is a Naval Aviation Training Base operating in conjunction with NAS Pensacola, NAS Whiting, NAS Meridan, and NAS Kingsville to train and prepare all future Naval Aviators and Naval Flight Officers to fly operational fleet aircraft. Additionally, in accordance with directives issued by the United States Congress, the armed services (Army, Navy, Air Force, Marine Corps, Coast Guard) are integrating their training efforts to decrease the redundancy of training facilities and assets. Further, in cooperation with various foreign governments that cannot afford to maintain their own flight training programs, Congress has directed that U.S. Armed Forces aviation training organizations train large numbers of foreign students. These requirements have significantly increased the demands being placed on Naval Aviation training facilities, and there has been no corresponding increase in the numbers of aircraft, training bases, or instructors. In fact, TRAWING-4 (based at NAS Corpus Christi) and TRAWING-6 (based at NAS Pensacola) are experiencing the same reductions in available Manning and equipment that most military organizations have been experiencing during the 1990s. As a result, there is a compelling need to increase the efficiency with which available assets are used to conduct required training.

With the realization that military downsizing is inevitable and that aviation training requirements will continue to increase, military leadership has begun to implement a number of programs designed to make more effective use of available assets. A recent example of the Navy’s commitment to this goal has been the employment of the Thomas Group. This consulting agency is being paid in excess of $17 million dollars over a three
year period to suggest and help implement process improvements in the Naval Aviation training pipeline.

Another important area that Navy leadership has targeted for improvement is process automation. The Navy has been quick to adopt new technologies in their weapon systems, but it has been very slow to put new technology to work on administrative and operational tasks, preferring instead to rely on paperwork and a large pool of enlisted manpower. With enlisted ranks thinning and projected to continue thinning for the foreseeable future, it has become imperative that manpower-saving technology be employed to fill the gap.

This increased emphasis on automation during the mid-1990s was the genesis for four new programs (STASS-FLIGHT, TIS, TMS2, and TIMS). The first of these programs was an extension to an existing program called STASS that was designed to track all Navy classroom-based training, and it was dubbed STASS-FLIGHT. The program’s charter was to track all important aspects of Naval Aviation training and provide local statistical information to the commands in the field, in addition to supplying up-line data feeds to various legacy systems used by planners in Washington DC and elsewhere. Development of this program began in 1994 and was scheduled to roll out in three phases, the first of which was due to be put in place by October of 1995. Meanwhile, the Navy had purchased a new jet training aircraft from British Aerospace called the T-45 Goshawk to replace aging TA-4 Skyhawk trainers at NAS Kingsville, NAS Chase (since closed), and NAS Meridian. As part of the purchase of these aircraft, a computer system
was commissioned to support them and do all the things that STASS-FLIGHT had been chartered to do. This new information system was called TIS and came online with the introduction of the new aircraft in 1995.

Although the introduction of TIS met the needs of TRAWING-2 in Kingsville and TRAWING-3 in Meridian, STASS-FLIGHT experienced a number of setbacks and phase one of the system was not available on schedule. As a result, local commanders at TRAWING-4, TRAWING-5, and TRAWING-6 began to look to local talent to develop small systems to fill the gap before the eventual introduction of STASS-FLIGHT. Among these homegrown systems was a small one begun at TRAWING-4 in 1994 that was eventually dubbed Training Management System (TMS). TMS was successful enough at TRAWING-4 that both TRAWING-5 and TRAWING-6 adopted many of the modules of the program for their own use. By mid-1997, STASS-FLIGHT still had not put phase one of their system in the field, and TMS had developed into a full-blown system that met nearly all of the requirements of the original charter set out for STASS-FLIGHT.

The fact that active-duty instructor pilots developed TMS meant that it was passed down from one generation to another every two or three years. A recent group that took over the program renamed it TMS2 and replaced all its major components with new components modeled after the old ones, but updated for changing requirements and developed with more modern tools. Aging TMS applications at TRAWING-5 finally began to be replaced by STASS-FLIGHT phase one beginning in January of 1998. At
TRAING-6, the newer TMS2 system was adopted to replace their aging TMS components beginning in May of 1998. As these events developed, the Navy had purchased a new primary training aircraft called the T-6A Texan from Raytheon Corp., and part of the contract included the development of a Navy-and-Air-Force-wide aviation training computer system that would replace all existing systems including TIS, STASS-FLIGHT, and TMS2. The name of the system is TIMS, and Logicon and Flight Safety are developing it under contract from Raytheon. It is scheduled to come online in the third quarter of 2001.

With the lifetime of TMS2 set by contract, the developers of the program continue to expand and improve upon the system because it is a critical part of the day-to-day operations of over four thousand Navy instructor pilots, students, and administrators at TRAINGs 4 and 6. Additionally, it is likely that the developers of the TIMS system will adopt many of the ideas and capabilities of the systems that it is scheduled to replace. Although the TMS2 system tracks all necessary data and provides real-time statistical information about flights, student progress, student performance, and flight scheduling, access to this information had been restricted to leaders and planners using PCs connected directly to the Base Area Network (BAN). This restriction and the need to overcome it was the genesis for the web-based MyTMS2 project.

The goal of the MyTMS2 project was to make real-time, mission critical data available to instructors and students any time of the day or night from any location that had access to a computer, a modern web browser, and the Internet. Since much of the information is
sensitive, it was also a requirement that security be implemented that is sufficient to properly restrict access to the data. So that data would be presented succinctly, the system was also required to allow each user to customize the presentation of data to a limited degree.
INTRODUCTION

Having understood the Navy’s need for MyTMS2 and established basic functionality requirements for the system, the process of designing, building, and testing it could begin. Building MyTMS2 involved several challenges with respect to network design, security, existing system integration, and database performance that will all be explored in the coming pages. In addition, changes to the original design specification, which were made necessary by Navy administrative decisions and fiscal considerations, will be discussed and explained. Important and popular additions to the system that were not part of the original functionality requirements, but which were added on as a result of user feedback, will be pointed out. Some time will be spent describing the process by which the system was tested, validated, in some cases changed, and finally finished and deployed. Next, the functionality of the deployed system and some real-world usage statistics will be looked at with an eye towards determining the success or failure of the program as a whole. Finally, a look will be taken into the future of MyTMS2 including ideas that have already been put in motion and other ideas that will have to wait for TMS2 developers to find more time and money.