

PUBLIC-INTEREST FINDING FOR PROPRIETARY-MATERIAL USE

ROUTE: VARDES NO: VAR

PROJECT NO: VAR COUNTY: VAR

PROJECT DESCRIPTION: Programmatic approval.

FHWA OVERSIGHT: YES NO

PROPRIETARY MATERIAL:

Aries Field Processor:

AFPmicro

AFPfusion

Sensoray 22535

1. Description of Need:

The ITS Technology Deployment Division of the Indiana Department of Transportation is seeking approval for the equipment essential to the creation and maintenance of the INDOT ITS network.

AFP is a computer, designed for field conditions. It is using LINUX based operating system, developed and supported by IMS, Inc.

Required functionality includes:

- Support unique addressing in the network using Internet Protocol address.
- Provide interface between existing network (TMC) and vehicle detectors (Microloops or Microwave).
- Provide interface between existing network (TMC) and CCTV camera, including software based digital video coding/decoding and transfer video to TMC and PTZ control commands from TMC to camera.
- Provide interface between existing network (TMC) and Highway Advisory Radios, including storage of the .wav Play Files.
- Provide interface between existing ATIS network (TMC) and Dynamic Message Signs (overhead and portable).
- Provide interface between existing network (TMC) and Travel Time signs.
- Provide interface between existing network (TMC) and Weigh-in-Motion data collection stations.

2. Product History:

These devices have been chosen at the inception of the system approximately 18 years ago and since are the main part of each remote component. Over 600 of AFP are currently being used in Indiana. They demonstrate very high reliability (over 96% uptime) and maintainability. Desired product is currently listed on INDOT Approved Materials List for Traffic Signal and ITS Control Equipment under ITS AFP Controller. Testing was conducted according the **ITM No. 949-10P**

3. Product Availability: AFP, manufactured by Iron Mountain Systems, Inc., is only product on the market, meeting all requirements. Although there are computers on the market carrying LINUX based Operating System, capable of interfacing with some of the vehicle detection and video systems, there is none, which is rugged enough for field conditions and can interface all types of equipment and existing network. There were no attempts by the manufacturers to present their products to be tested to **ITM No. 949-10P**. Google search for Field Processor returns only devices, designed specifically for purpose and sold with the System (purpose) for which they are designed.

4. Product Cost: There is no equipment on the market, meeting the requirements, to make a cost comparison with. The next closest product is Dell Latitude E6420 suite ranging in price from \$1,374.00 to \$4,552.00. However, these products will not communicate with the existing field hardware.

5. Project Compatibility: AFP is the only computer on the market that is compatible with existing ITS hardware. Application matrix below describes which AFP model can be used to interface various (listed) technologies and TMC. The lowest cost AFP model is being selected for any particular project based on the technology needs.

Model \ Application	AFPmicro	AFPfusion	Sensaray 22535
Vehicle detection up to 24 interfaces		X	
Bluetooth Travel time	X	X	
Video Encoder (MPEG4)		X	X
CCTV Control		X	X
DMS Control (Overhead)	X	X	
DMS Control (Portable)	X		
HAR Function	X	X	
Vehicle operation		X	
Cost	\$2,175.00	\$2,600.00	\$400.00

6. Maintenance: Desired equipment is designed such a way, that most of maintenance functions: monitoring up/down time, restoring functionality, updating/upgrading – can be done remotely, which drives down maintenance cost. Training is available on line in Wiki Notes, accessible for tech personnel from any location in Indiana. Low failure rate (less than 5%

including "acts of God") and short order turn around time results in the minimal storage requirement.

7. Engineering Analysis: This application is programmatic by nature and unique not to a specific ITS project, but to the ITS architecture that is already in place. AFP is essential component that allows communication between TMC and field hardware. The specifications are needed for synchronization with existing system and not unique to the specific project.

8. Expanded Economic Analysis: Due to the fact, that there is no equipment on the market to do comparison life cycle analysis, it may be stated that actual yearly maintenance cost is low. Iron Mountain Systems, Inc is providing 5 years warranty for AFP. The average life cycle of the AFP is evaluated as 6 to 10 years. There are units currently in service installed in 2007. Annual replacement rate, including damage done by lightning, is 25 units. With average cost of \$4,500.00, maintenance cost per unit does not exceed \$180.00. Replacement of AFP is predominantly driven by technology progress, rather than wear.

9. Contractual or Performance Implications: Use of desired items does not impose any restrictions on the use of other items on the contracts.

10. Attach Supplemental Documentation: Attached are:

- a) INDOT ITS Architecture;
- b) ITM # 949-10P Field Processor/Controller.

11. Length of Time that Approval is Effective: 10/2014 until 10/2017

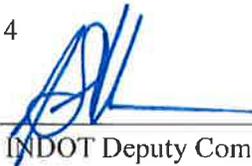
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Field Engineer

INDOT-ITS Technology Deployment Division

Date: 9/15/2014

APPROVED:



INDOT Deputy Commissioner
Engineering Services and Design Support

Date: 9/22/2014

APPROVED:



Federal Highway Administration

Date: 9/25/2014