
JAD Session Summary

MOBILE

TRANSACTION

GATEWAY

To

State of Ohio

Department of Administrative Services

Columbus, Ohio 43215

Battelle
The Business of Innovation



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EXECUTIVE SUMMARY

This report summarizes information collected during two “joint application definition” (JAD) sessions conducted on June 3 and 10, 2004, as part of the State of Ohio, Mobile Transaction Gateway (MTG) initiative.

Battelle and Information Control Corporation (ICC) received a request from the Ohio Department of Administrative Services (DAS) for a requirements assessment and proof-of-concept that would determine the scope and cost of a mobile transaction gateway pilot. Forced to do more with less, State governments like Ohio are pursuing ways to improve the efficiency of delivering services to citizens. This report provides an interim look at the data collection and assessment to date.

The JAD sessions enjoined stakeholders and knowledge-workers from six (6) departments with resources from Battelle and ICC to collaborate on an inventory of State of Ohio mobile user needs and systems support requirements via a three-step process as follows:

1. Identify organizational processes that do or would benefit from mobile enablement
2. Analyze these process to define business requirements
3. Identifying supporting information systems and technical owners for subsequent analysis

The number of participating agencies and potential applications forced some changes in format resulting in more enumeration than drill-down. However, this had the benefit of providing a larger and more representative inventory of needs. Some patterns are already apparent:

- Participants readily identified a range of applications for mobile/wireless enablement for a total of sixty-seven (67) such processes or activities
- Of these, the majority (76%) were envisioned, while a minority (15%) were planned, or in some current state of mobile-enablement (10%)
- Priority was somewhat skewed with a majority ranked as medium or low priority
- Processes in the inventory could be grouped and typed demonstrating common business process/activity patterns across departments, thus indicating common requirements and solutions
- Multiple process types recommend themselves as candidates for further analysis and pilot planning because of their pervasiveness and common workflow

The next steps in this requirements assessment are:

- An architectural analysis and refinement of the process types
- A selection of candidate processes for follow-up interviews with process and system owners

INTRODUCTION

The document summarizes the method and preliminary findings of two “joint application definition” (JAD) sessions conducted on June 3 and 10, 2004, as part of the State of Ohio, Mobile Transaction Gateway (MTG) initiative. These meetings included six (6) participating departments¹:

- Administrative Services (DAS)
- Commerce (DOC)
- Development (DOD)
- Public Safety (DPS)
- Health (ODH)
- Natural Resources (DNR)

Representatives from these six State-of-Ohio departments met with Battelle and ICC in either of two four-hour sessions to jointly define needs of mobile employees, citizens, and special interest groups. These meetings covered project charter, session objectives and scope, method & materials, and the enumeration and description of candidate business processes and activities potentially benefiting from mobile/wireless enablement.

¹ A seventh, Job and Family Services (JFS) was unable to participate.

METHOD AND MATERIALS

Data Collection

In the first session on June 3, two groups were formed of two departments each (DOC with DAS and DPS with DNR). The two teams each worked collaboratively with an analyst to complete the questionnaires, or were interviewed for a description of candidate processes.

The second smaller session of June 10 allowed participants to work as a single group consisting of representatives from DAS/MARCS, DOD, and ODH.

The method enjoined stakeholders and knowledge-workers to collaborate on the identification and definition of mobile user needs via a three-step process:

1. Inventory organizational processes
2. Analyze those process to define business requirements
3. Inventory supporting information systems and technical owners for subsequent analysis

Instruments

Two questionnaires and examples were used to guide the data-collection effort:

- a. The *Organizational Needs Questionnaire* was used to inventory business processes with mobile workforce requirements including existing or planned mobile applications, but also prospective needs of citizens such as alerts, and services for special interest groups. One such questionnaire was completed for each participating organization.
- b. Process Analysis Questionnaire was used to catalogue business requirements for key business processes including goals, resources, and business rules. One process questionnaire was completed per process, time permitting.

The number and representation of agencies and interests suggested a change in questionnaire format between the two sessions:

- The organizational needs questionnaire was simplified for cataloging actual, planned, and envisioned deployments via an attribute assignment. Additional white space was added.
- The process analysis questionnaire was augmented with a choice of templates to capture workflow, process, or context models.

Data Analysis

The process inventory provided a data set which was analyzed for common patterns of goals, resources, and workflows. Generalized process types were defined iteratively. Individual processes were then grouped and aggregated according to status, priority, and process type.

PRELIMINARY FINDINGS

Participation

Twenty-five (25) individuals participated in the two different sessions, twenty (20) representing State of Ohio Departments. The first session was roughly twice as large as the second and justified the division into two separate working groups.

Table 1. Participation by Session

Count of Session	
Session	Total
All	5
6/3/2004	14
6/10/2004	6
Grand Total	25

Representation

Participating departments were well-represented with a range of internal agencies and working groups (e.g., IT) as was the case for DAS, DOC, DPS, or by sending fewer, but very knowledgeable parties like ODH, DOD, and DNR.

Table 2. Representation by Session by Organization

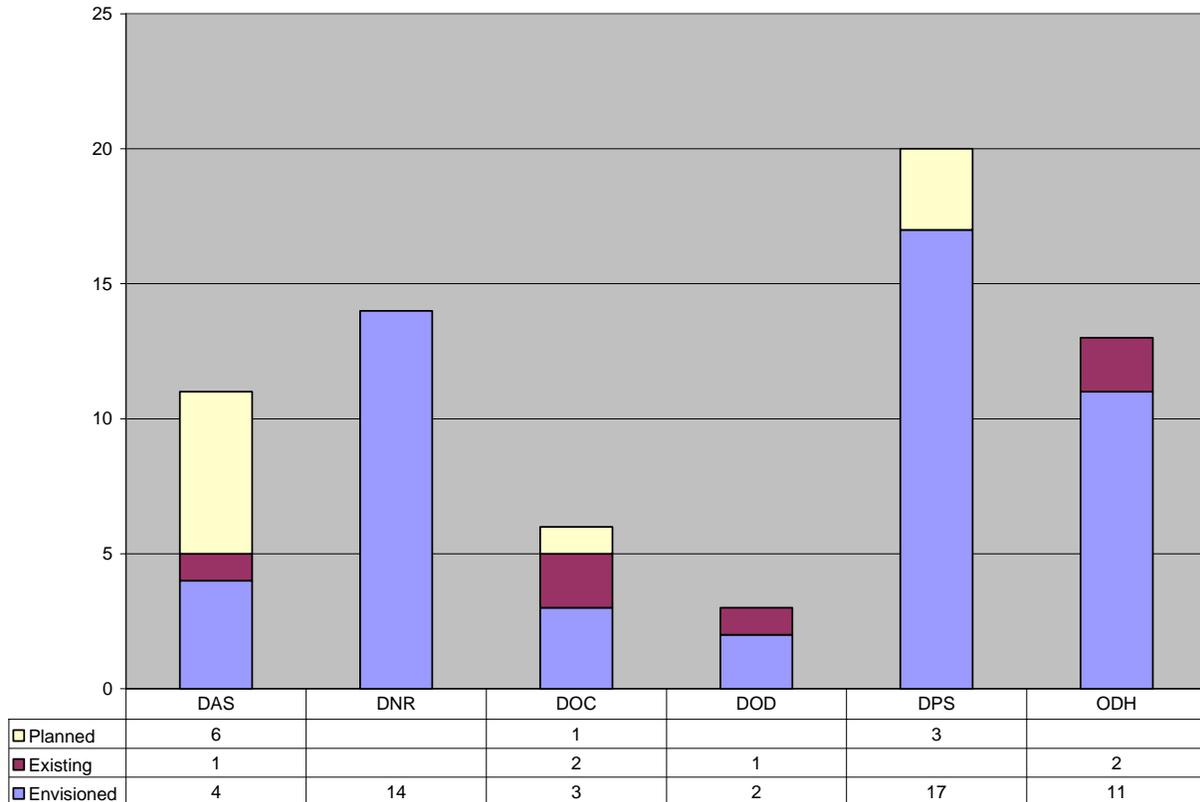
Count of Dept.	Session			Grand Total
Dept.	All	6/3/2004	6/10/2004	
DAS	2	2	1	5
DNR		1		1
DOC		5		5
DPS		6		6
ICC	2		1	3
ODH			3	3
Battelle	1			1
DOD			1	1
Grand Total	5	14	6	25

Status

Participants readily identified a range of applications for mobile/wireless enablement for a total of sixty-seven (67) such processes or activities. Of these, the majority (76%) were envisioned, while a minority (15%) were planned, or in some current state of mobile-enablement (10%). DPS

cited the greatest number of potential applications (20), followed by DNR (14), ODH (13), DAS (11), DOC (6), and DOD (3).²

Figure 1: Process by Status by Department



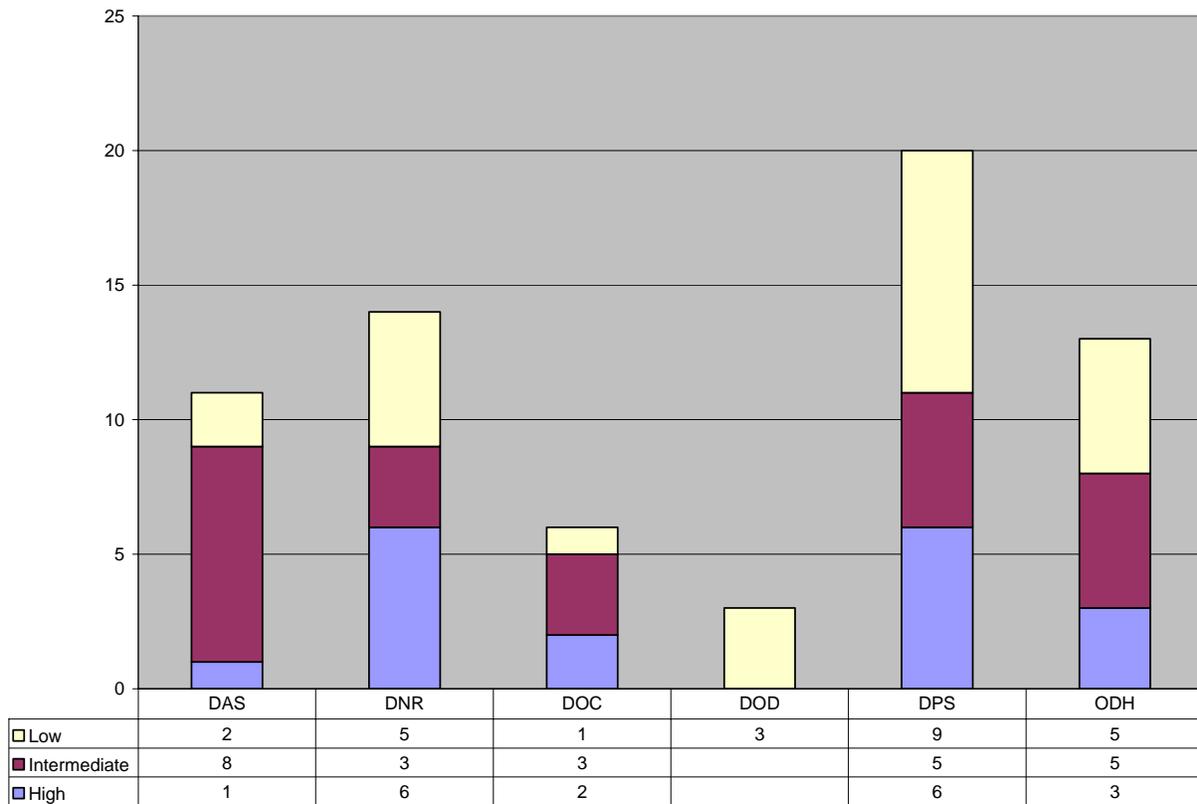
Priority

Priority was slightly skewed from high (27%) to intermediate (36%) and low (37%) priority. Priority was an assignment relative to each department. Where this measure was in question or not explicitly defined by department representatives, priority was assigned according to a rule proposed by DNR:

- High priority to activities involving public safety
- Intermediate priority to those enabling communication and scheduling
- Low priority for enabling processes currently supported via paper processes

² It should be noted that the list of processes produced by each department was completely volunteeristic and constitutes a convenience sample. The inventory is neither probabilistic nor exhaustive. See *Qualifications*.

Figure 2: Process by Priority by Department



Typology and Aggregation

Activities and needs identified through the process inventory could be typed according to similarities and differences in business process/activity patterns involving inputs and outputs, rules and requirements, and goals. These patterns were used to define a preliminary typology of ten categories dsummarized in *Appendix, Process Types* and include:

- Alerts
- Asset Management
- EMail
- Inspection/Audit
- Messaging
- Notification
- Real-time Connectivity
- Reference
- Remote Sensing
- Survey

Figure 3 provides a tabular break-down of process by department by process type. The chart depicts the relative prominence of each process type or category, as well as the degree to which that process type is pertinent to a given department and the set of all participating departments.

Figure 3: Process by Type by Department

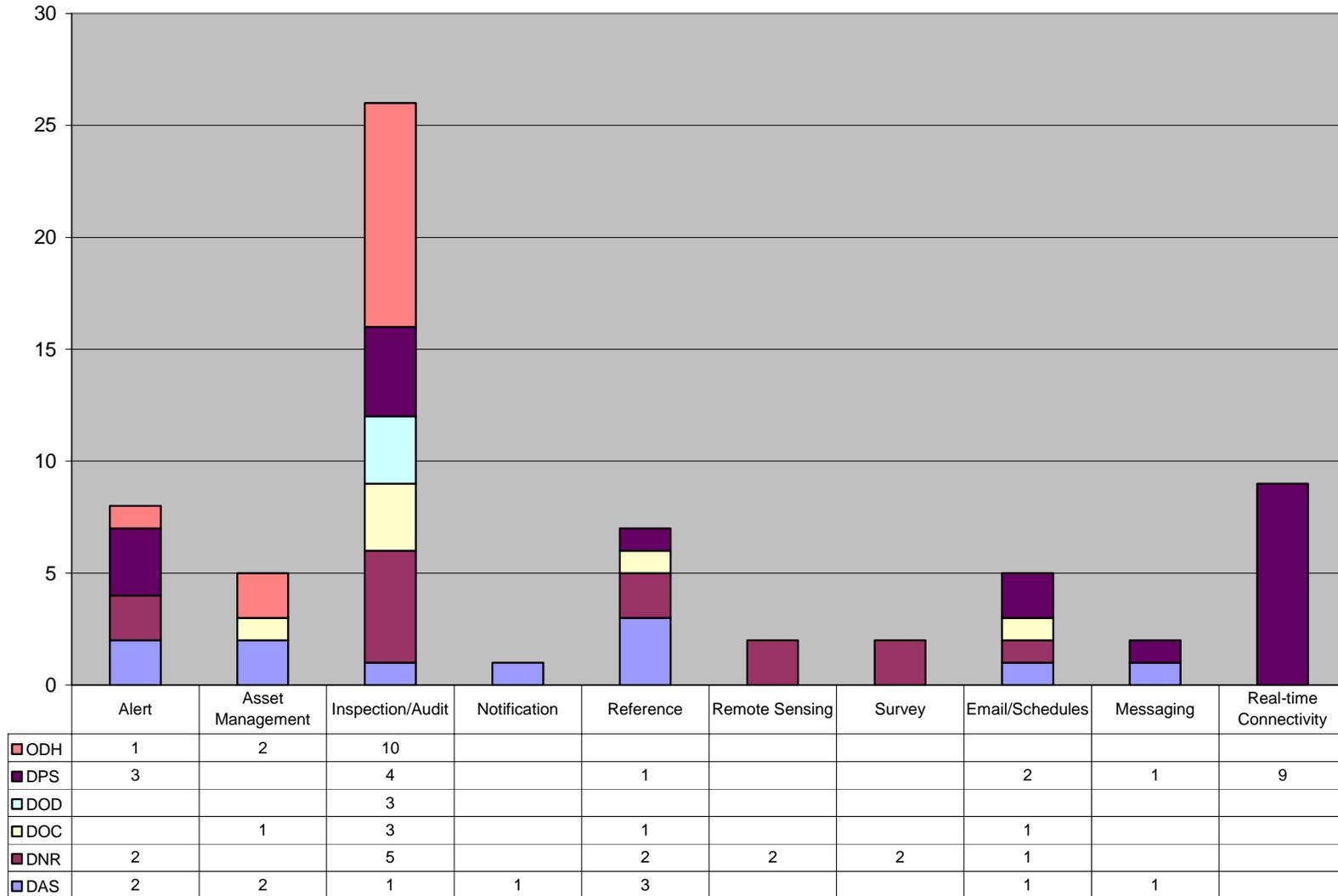


Table 3. Process Type Frequency	
Type	Total
Inspection/Audit	38.81%
Application Access	13.43%
Alerts	11.94%
Document Portability	10.45%
Inventory Management	7.46%
Email/Schedules	7.46%
Remote Sensing	2.99%
Survey	2.99%
Messaging	2.99%
Notification	1.49%
Grand Total	100.00%

- *Inspection/Audit* is the most prominent process type (38%), and the most common. It is an activity that cuts across all departments, accounting for as many as ten applications (ODH). There was an average of 4.3 inspection/audit processes identified per department during these sessions.³
- *Real-time connectivity* is the next most prominent category (13%), but based on the information collected in these sessions, and this preliminary analysis, it applies chiefly to DPS.⁴
- *Alerts* account for 12% of the total and were mentioned by 4 of 6 departments in the context of public safety or the support of DPS infrastructure.

- *Reference*, or information access, accounts for 10% of mentions by four departments and was frequently cited as an adjunct to *Inspection/Audit* processes.
- *Asset Management* and *Email/Schedules*, two adjunct mobile work enablers, have next most frequent mention (both approx. 7%).
- The more specialized requirements and limited (but critical) applications for *Remote Sensing*, *Surveys*, and *Messaging* follow (all at 3%).
- The *Notification* class was least mentioned, but this is likely due to the minimal representation of citizen-consumer representation in these meetings, and the fact that, the strong representation of the mobile workforce allocated such communication to *Email* or *Messaging*.

Process Drill-down

The considerable number of participating agencies in these sessions forced some changes in format resulting in more enumeration of processes than drill-down. However, this had the benefit of providing a larger and more representative enumeration of needs making some patterns readily apparent. These patterns have been captured in the process types.

DOD and DAS completed two process-analysis questionnaires, and DOC leveraged these, the boiler-inspection example, and their experience working on the elevator inspection proof-of-concept to formulate a process model for all DOC compliance inspections.

³ In other words, there may be many more in the field, but this was the information obtained in these sessions, and we don't have the sampling power to generalize beyond our data set. See *Discussion, Qualifications*.

⁴ Viewed at an infrastructural level, *Alerts* and *Messaging* assume real-time connectivity as well, but our categories are also distinguished by patterns of use and implied architectural requirements such as synchronous vs. asynchronous communication.

DISCUSSION

Conclusions

Numerous Opportunities

The considerable number of processes and activities identified in the process inventory indicate a ready perception on the part of stakeholders to identify potential applications of mobile strategies and infrastructure.

The aggregation of these processes into more inclusive categories and the subsequent frequency analysis helps to set priorities for subsequent systems and cost analysis, and pilot planning.

Common Requirements

The cross-tabulation of process types by department demonstrates that there are common needs and applications that cut across departments, suggesting common requirements, and likely, solutions. *Inspections/Audits*, for example, are clearly a behavioral and, likely, an architectural pattern. Common processes and use cases cut across the operations of the various state agencies though system interfaces and quality attributes may differ (e.g., security, availability, etc.). The Commerce team was astute in realizing that their various inspection processes could be generalized, and they made the appropriate adjustments to their process documentation.

Special Requirements

Despite the commonality of some process types, there are others that are more specialized, and may be more limited in application to a given department. For example, because of the sensitivity of the data accessed and redistributed via LEADS, support for this application will impose more stringent security requirements (e.g., multi-factor authentication) that need to be accounted for in both strategy and architecture.

Qualifications

- The findings discussed in this interim report are preliminary. Category definitions and process assignment will undergo modification as follow-up interviews and concept design refine the requirements and constrain the solution.
- While interpretations are readily applied to the data collected from these two brief sessions, and seem intuitive, they are not generalizable. Because this is a convenience sample (not a census or probabilistic sample), the validity of our interpretations is limited to the set of sixty-seven (67) processes collected in these sessions.
- Because of the number of perceived needs, viz., the number of processes inventoried in these two sessions, process drill-down on any one process was limited and must be pursued for the subset of pilot candidates in a follow-up data collection.

Next Steps

This interim report has provided a view of the data as a partial guide to target pilot processes for follow-up assessment. The next steps include:

- A selection of candidate processes for follow-up interviews with process and system owners
- An architectural analysis and refinement of the process types

APPENDIX

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PROCESS INVENTORY

<u>Dept.</u>	<u>Process</u>	<u>Status</u>	<u>Priority</u>
DAS	Access to Portal	Planned	Medium
DAS	Amber Alerts	Planned	Medium
DAS	Homeland Security Alerts	Planned	Medium
DAS	Inventory Management	Envisioned	Medium
DAS	Inventory Management	Planned	Medium
DAS	Job Postings	Planned	Medium
DAS	License/Registration Notification	Planned	Medium
DAS	Outlook Mobile Access	Existing	Medium
DAS	Site Information	Envisioned	Low
DAS	Suspicious Activity Report	Envisioned	Low
DAS	Trouble/Service Management	Envisioned	High
DNR	Camp Reservation System Access	Envisioned	Low
DNR	Dam Safety Inspection	Envisioned	High
DNR	Email/Schedule Access	Envisioned	High
DNR	Emergency Notification	Envisioned	High
DNR	Facility Information	Envisioned	Low
DNR	Field and Stream Data Collection	Envisioned	High
DNR	Gas and Oil-Well Safety inspection	Envisioned	High
DNR	Ground-Water and Well Safety Inspection	Envisioned	High
DNR	Land Surveys	Envisioned	High
DNR	Lost Visitor/Child Locator/Information Service	Envisioned	Medium
DNR	Mine Safety Inspection	Envisioned	High
DNR	Pollution Incident Reporting Assessment	Envisioned	High
DNR	Rain-Gauge Notification System	Envisioned	Low
DNR	Stream-Gauge Notification System	Envisioned	High
DOC	Elevator Inspection	Planned	Low
DOC	Email/Schedule Access	Envisioned	High

DOC	Fire Code Enforcement	Envisioned	High
DOC	Inventory Synchronization	Existing	Medium
DOC	Labor and Safety Inspection	Existing	Medium
DOC	Reference Volume Access	Envisioned	Medium
DOD	Grant Compliance Enforcement	Envisioned	Low
DOD	Grant Eligibility	Envisioned	Low
DOD	Household Energy Inspection	Existing	Low
DPS	Access to Crash Reporting	Planned	Low
DPS	Access to LEADS Application	Envisioned	Medium
DPS	Access to RIMS	Envisioned	Low
DPS	Digital image Upload Capability	Envisioned	Low
DPS	Disaster Damage Assessment	Envisioned	High
DPS	Disaster Incident Response	Envisioned	High
DPS	Email/Schedule Access	Envisioned	Medium
DPS	Email/Schedule Access	Envisioned	Medium
DPS	Field Device Software Maintenance	Envisioned	High
DPS	Liquor License Enforcement	Envisioned	Low
DPS	Mobile Disaster Field Office Connectivity	Envisioned	Medium
DPS	Mobile Driver Examinations	Envisioned	Low
DPS	Organ Donor Look-up	Envisioned	Low
DPS	Public Safety Bulletin Cascading	Planned	High
DPS	Real-time Conferencing	Envisioned	Medium
DPS	Stream-Gauge Alert System	Envisioned	High
DPS	Title Inspections	Envisioned	Low
DPS	Upload Traffic Citations	Planned	Low
DPS	Vehicle Safety Inspections	Envisioned	Low
DPS	Weather Alerts	Envisioned	High
ODH	Asbestos Inspection	Envisioned	Low
ODH	Bio-Terrorism Response System	Existing	High
ODH	Blood-alcohol Testing	Envisioned	Low
ODH	Expense Reimbursement	Envisioned	Medium
ODH	Grant Compliance Enforcement (Via SPESS)	Envisioned	Medium

ODH	Lead Inspection	Envisioned	Low
ODH	Nuclear Inspection	Envisioned	Medium
ODH	Nursing Home Complaints	Envisioned	High
ODH	Nursing Home Inspection	Existing	Medium
ODH	Radon Inspection	Envisioned	Low
ODH	SNS Stockpile Management	Envisioned	High
ODH	STD Monitoring	Envisioned	Low
ODH	X-Ray Inspection Program	Envisioned	Medium

PROCESS TYPES

<u>Category</u>	<u>Definition</u>
Process type ...	maps to/includes those mobile activities with the following characteristics or needs:
Alert	Supports the Federal and State government's commitment to public safety and emergency management by facilitating inter-agency awareness and communication. Includes the advertisement, subscription, and acyclic broadcast of notifications and information that are event-driven and of emergency nature. Examples include DHS and EMA alerts.
Asset Management	Supports the State's responsibility to analyze current and projected asset conditions and to evaluate economic trade-offs among alternative investment options for cost-effective investment decisions and public service/safety through the collection or verification of the existence, type, number and condition of assets in a place of storage or deployment. Examples include inventory, fleet, and vaccine management.
Email	In support of efficient workforce management, email and schedules provide adjunct communication channels that support inspections and intra-agency communication work-distribution requirements.
Inspection/Audit	Supports the State's responsibility to monitor environmental, workplace, building, vehicle, and industrial device compliance to safety and other operational or fiduciary standards such as program or grant service via field inspection activities that have been identified as necessary, numerous, and geographically distributed.
Messaging	Supports public safety and emergency management response via two-way wireless text messaging capabilities, particularly via Research in Motion (RIM) devices or enabled MCTs and as an adjunct to real-time alerts (flood alerts, Amber alerts).

Notification	Supports a public service where employees/citizens may be notified of pending business obligations or opportunities with the State via mobile messaging on a subscription basis. Distinguished from an alert as non-emergency in nature. It is assumed to be one-way multicast communication via subscription pending further inquiry.
Real-time Connectivity	Supports the State's commitment to insure public safety and manage emergencies via field-based activities that predominantly cite the need for real-time network connectivity for application access, including bandwidth requirements for effective two-way synchronous data communication.
Reference	Supports public and work-force safety and mobile-field-force efficiency via timely access to both dynamic and static data and informational resources. Examples include state and federal repositories of law-enforcement information, safety codes, manuals, and operational guidelines and procedures. Supports public/customer service through ready access to public information.
Remote Sensing	In support of public safety, emergency forecasting and management, requires remote sensing capabilities to obtain data collected by devices deployed in the field on a periodic or ad hoc basis, where such data is a necessary input to downstream processes used in event and disaster prediction, notification, or control. Applications include stream and rain gauges.
Survey	In support of natural resources management and the delivery of social and transportation services, facilitates the data collection of physical or population characteristics of natural or built environments according to coordinate location, correlated features, cartographic or collateral data. Examples include geological, wildlife, and environmental surveys and transportation studies.

ACRONYMS

CAP	Common Alerting Protocol
DAS	Department of Administrative Services
DHS	Department of Homeland Security
DNR	Department of Natural Resources
DOC	Departments of Commerce
DOD	Department of Development
DPS	Department of Public Safety
EMA	Emergency Management Agency
GPS	global positioning system
IC	The Industrial Compliance Division of the Department of Commerce
ICC	Information Control Corporation
JAD	Joint Application Definition/Development
JFS	Job and Family Services
MTG	Mobile Transaction Gateway
ODH	Ohio Department of Health
PDA	Personal Digital Assistant
RIM	Research in Motion