APPENDIX A

SUMMARY OF THE TRANSIT AGENCY LEADER FOCUS GROUP

Project J-09: eTransit: Electronic Business Strategies for Public Transportation – Task 12: New and Emerging Information Technologies for Public Transportation

NATIONAL LEADERSHIP FOCUS GROUP ON SURMOUNTING CHALLENGES TO TECHNOLOGY ADOPTION

Beckman Center, Irvine, California
August 29, 2006

Meeting Participants:

Ron Barnes, General Manager, Valley Metro RPTA East Valley Operations

John Inglish, General Manager, Utah Transit Authority

T.J. Ross, General Manager, Pace Suburban Bus Service

Michael Setzer, CEO/General Manager, Southwest Ohio Regional Transit Authority

Edward Thomas, Asst. General Manager, Washington Metropolitan Area Transit Authority

Gwen Chisholm Smith, Senior Program Officer, TCRP

Paul Toliver, President, New Age Industries

Robin Cody, Information Technology Manager, BART

Peter Anderson, Chief Information Officer, City of Fort Worth

Matt Burt, Principal Research Scientist, Battelle

Carol Schweiger, Asst. Vice President, TranSystems

Richard Easley, President, E-Squared Engineering

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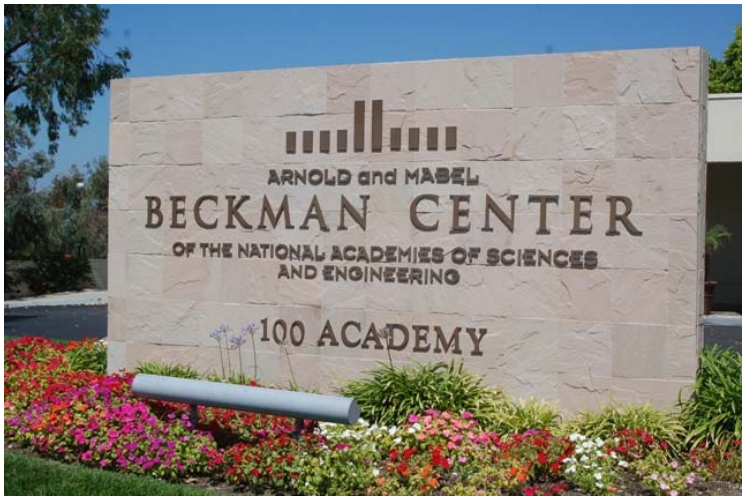

Meeting Agenda:

I. **Welcome and Introductions**

II. **Highlights of BART, WMATA and King County Metro Experiences** *(Presented by Mr. Cody, Mr. Thomas and Mr. Toliver, respectively.)*

III. **What Works and What Doesn't?** *(Facilitated Group Discussion)*

- Institutional (e.g., politics, "selling" the Board, resolving union issues, developing a case for return on investment)
- Financial (e.g., initial funding, funding for O&M, funding for additional staff)
- Procurement and Contracting Processes (e.g., RFP/IFB requirements, selection process, making sure that requirements are used to test)
- Technical (e.g., commercial-off-the-shelf, customization, testing, parallel operation, data maintenance)
- Organizational (e.g., staffing, proficiency of staff, structure needed for technology work)
- Operations (e.g., integrating technology into operations/providing transit service, training, monitoring operations, measuring return on investment)
- Maintenance (e.g., in-house vs. outsourcing, necessary financial and staff resources, obsolescence)

IV. **What Can We Do To Help Other Agencies and the Industry Overall?** *(Facilitated Group Discussion)*

- Prerequisites for Success - what does an agency need in order to successfully apply best practices and what can an agency do that is lacking prerequisites?
- Packaging and Disseminating Recommendations – what can be done to communicate our recommendations to key audiences and promote their adoption by agencies?
- Sustaining Successes – how can technology programs remain successful over the long term?

V. **Wrap Up**

- Recap Major Conclusions
- Any Other Issues to be Discussed?
- Next Steps for this Study

Background:

This one-day focus group discussion is a key component of TCRP project J-09 (eTransit: Electronic Business Strategies for Public Transportation) Task 12 (New and Emerging Information Technologies for Public Transportation). The objectives of the discussions were to:

1. Identify best practices for public transportation technology adoption, focusing on institutional processes, practices, tools and techniques;
2. Identify effective methods for disseminating this information to agencies; and
3. Identify other supporting actions needed to promote adoption of these practices.

Participants were asked to:

- Share their experiences and perspectives, including examples of the specific tools and techniques they found effective (and those less effective);
- Comment on the experiences and techniques shared by other attendees and work with them and the facilitators to distill key best practices; and
- Help identify approaches to engaging other agencies so that they will adopt these practices.

This study is one task in the broader Transit Cooperative Research Program project J-09: eTransit: Electronic Business Strategies for Public Transportation. Project J-09 seeks to identify, develop, and promote research to maximize the benefits of e-commerce and other new technology applications for public transportation and mobility management. The e-Transit research program seeks to develop a road map for transit professionals to understand immediate as well as short-and long-term products and strategies, with an emphasis on quick delivery.

This portion of the J-09 study, Task 12, New and Emerging Information Technologies for Public Transportation, has two primary objectives:

1. Identify best practices for public transportation providers in planning, implementing and operating advanced technologies; and
2. Identify specific technologies expected to emerge over the next ten years that hold particular promise for public transportation agencies.

Motivating this study (Task 12) are the assertions that: 1) The advanced technology that is rapidly becoming pervasive in our society holds tremendous potential for pubic transportation, and 2) Despite some successes, many public transportation agencies have, for a variety of reasons, been unable to take full advantage of technologies. This study is intended to address these concerns by providing agencies with practical methods for technology planning, implementation and operation that have been proven successful by their transportation agency colleagues. Also, by providing agencies intelligence on promising emerging technologies, the study is intended to improve agencies' abilities to anticipate and plan in advance for the next wave of technological applications.

The many challenges or obstacles faced by agencies in capitalizing on the benefits of technology have been well understood for at least a decade (lack of funding, "stove-piped" departments and processes, etc.). Therefore, in order to provide real value, the recommendations of this study must go further, to identify specific, practical methods for overcoming persistent and pervasive challenges. Since opportunities and challenges vary

according to the size and type of agency, it is important that the research and recommendations in this study are tailored to small, medium and large public transportation agencies operating in various settings, e.g., large urban, suburban and rural.

This study includes the following major components:

1. A literature review focusing on identifying best practices as well as promising emerging technologies;
2. Telephone interviews with representatives of public transportation agencies to identify best practices, especially in overcoming traditional obstacles; and
3. A day-long focus group discussion with agency leaders to identify best practices and how adoption of those practices can be promoted.

The results of the study will be documented in the project final report, expected in early 2007.

Research completed prior to convening the focus group consisted of interviews with representatives of public transportation agencies to identify best practices and a literature review which focused on current technologies.

Prior to the meeting, participants were given a "read-ahead" packet of information to use in preparing for the meeting. In their packet they were given a brief summary of the study findings to date which focused on the obstacles to technology implementation and utilization previously identified through interviews and the literature review. ***The objective in sharing these observations in advance was to promote attendees' consideration of how to overcome them, which was a major focus of the focus group discussions.***

Challenges/Obstacles

1. Even successful agencies face serious obstacles. The interviews focused on agencies considered to be particularly successful in adopting advanced technologies. Even these agencies reported facing many challenges and obstacles, not all of which they feel they have completely overcome.
2. Even more successful agencies often lack the resources to systematically investigate emerging technologies. Most agencies are focused on replacing aged technology systems like automatic vehicle location systems, or integrating existing technology systems that have been deployed at their agency in stand-alone configurations. With most of the focus on taking better advantage of current, well-established technologies, most agencies do not have the resources to devote to anticipating emerging technologies, at least not in any systematic way. The primary source of such information is the off-the-clock reading and networking done by staff members who are personally interested in technology.
3. Many obstacles are deep-seated and will likely require some degree of "paradigm shift" within agencies and the industry. The TCRP "New Paradigms" research identified a number of problems associated with traditional approaches to providing transit services, including these related to technology implementation:
    - Fragmented responsibilities, conflicting policies and goals, and stove-piped funding mechanisms across and within transportation agencies;

- Organizational culture and dynamics posing barriers to change and deep-seated, change-resistant perspectives and attitudes on the part of many industry managers and many in the labor force;
- The failure of the quality of the customer experience to fully emerge as the dominant focus of most agencies and the continued emphasis of operational, output-based performance measures; and
- A history of slow adoption of advanced technologies, or stated conversely, the absence of any wide-spread precedent or expectation for technology innovation throughout the industry.

4. Most challenges/obstacles are well established. Obstacles cited by interviewees align closely with those documented in the literature and which have surfaced through forums such as the May 3, 2005 APTA and ITS America-sponsored summit of public transportation agency general managers. Obstacles cited by interviewees include:

    - **Inadequate Funding** – A shortage of funding for all aspects of technology-related implementation and operation, including planning and especially operations and maintenance.
    - **Shortage of Expert Personnel** – Among other things, this can contribute to an over-reliance on consultants during the planning and procurement phases of technology deployments. When consultants are not sufficiently familiar with the nuisances of the agency, the result can be "cookie cutter" approaches. The absence of adequate in-house expertise also leads to a void in long-term and unbiased support of the systems after the consulting contracts have expired.
    - **"Turfism"** – Both among internal agency business units and among agencies, turfism inhibits coordination and contributes to stove-piped applications, redundancy/inconsistency, and inefficiency.
    - **Long Project Timelines** – These delay benefits and further hasten the already short life spans of many technologies. Technology is constantly changing and is therefore a "moving target;" long project timelines compound the challenge. "By the time a project is fully up and running it's all obsolete and needs to be upgraded."
    - **A Shortage of Leaders** – These include "champions" and "visionaries", especially among senior management and agency Boards. "It's all about the leader." "You have to have someone who is entrepreneurial; motivated; someone willing to do the 'full court press' to build support and funding…somebody has to be thinking about it (use of technologies) all the time; have an innate interest." Champions may only provide "temporary" stability, since they come and go.
    - **Less Than Fully Supportive Agency Culture/Climate** – Many agencies have a deeply-rooted culture that is risk averse and non-entrepreneurial. "Organizational self-image" is important, including an agency "ethos" that includes some risk taking.
    - **Less Than Fully Supportive Community** – Lack of community support for transit overall, and especially for the expenditure of transit resources on technology.

- **Complex, Resource-Intensive Procurement Processes** – Related to the lack of standard, off-the-shelf solutions as well as requirements for full competitive solicitations.
- **Small Vendor Markets** – These limit competition, perpetuate proprietary and "custom" applications, and suppress innovation and movement toward standardization and interoperability. "Nothing is truly off-the-shelf; everything has to be customized." Agencies must continue to pay vendors to update and customize technologies. Some agencies view vendors as more focused on selling new products than on providing replacement parts over the long term. Lacking backward compatibility (stemming from a lack of standards), new components cannot be plugged into older systems, meaning that the entire system must be replaced.

I. Welcome and Introductions

Mr. Toliver, Chair of the Panel, welcomed the participants and went over the goals for the day's discussions.

II. Highlights of BART, WMATA and King County Metro Experiences

Three of the TCRP panel members shared their experiences and lessons learned with the meeting participants. The complete presentations are included at the end of this meeting summary.

BART BUSINESS ADVANCEMENT PROGRAM PRESENTATION HIGHLIGHTS

In his presentation on BART's Business Advancement Program, Mr. Cody stressed that although technology is the enabler, leadership is a core competency that is critical to a program's success. He noted that 42% of implementations fail due to leadership problems; 27% fail due to organizational and cultural issues; and 23% of failures are due to people issues. Only 4% of failures are due to technology issues.

From his experience he has found there are six keys to success through capable leadership:

1. Business case analysis and develop
2. Identify the stakeholders
3. Project management capabilities
4. Bring in outside help when needed
5. Understand the labor environment
6. Change management processes – important in addressing behavior issues

With regard to the change management process, Mr. Cody discussed the tools for cultural change.

1. Metrics
   - Qualitative not subjective
   - Platform for collaboration
   - Describes the “Cultures” values
2. Structure
   - Improves process/consistency
   - Promotes accountability
   - Eliminates duplication
3. Programs
   - Explains the “What” and “Why”
   - Not a “Spectator” Sport
   - Allow for grieving

Mr. Cody also discussed the two sides of resistance - Union Leadership and Management; and the component pieces of that make up each side’s resistance perspective.

WMATA TECHNOLOGY DEPLOYMENT STRATEGY PRESENTATION HIGHLIGHTS

In his presentation on WMATA’s Technology Strategy, Mr. Thomas discussed the deployment challenges and the Information Technology Capability Pyramid that WMATA developed to address the challenges. The goals addressed in the pyramid are:

1. Establishment of Information Technology Operations
2. Foundation of Information Technology Infrastructures
3. Enterprise-Wide Applications
4. Enterprise-Wide Services and Information

Mr. Thomas also discussed what WMATA is currently doing and the timeframes and estimated costs for the projects. He discussed current technology deployments such as real-time bus and train information and METRO trip planning available through several electronic platforms (internet or PDA). He noted that industry-wide there has not been a lot of deployments with regional, multimodal traveler information.

In addition to current deployment efforts, Mr. Thomas also discussed WMATA’s next generation deployment of their Integrated Customer Communication System Public-Private Partnership (ICCSP3). This system will provide real-time information to customers; maximize revenue generation potential, and enhance customer and employee security. Mr. Thomas discussed their program deployment strategy, the program components, the project phases, industry interest in the project, industry outreach and research on international best practices. He stressed that managing risks associated with a project is a major key to the project’s success. Another important key, he discussed, was providing enough funding to adequately address the large communication budget that is required for a program’s success. He cited the London Underground example where annual communication funding was increased from $30 million USD to $330 million USD when they partnered with CBS as their communication vehicle.

CRITICAL SUCCESS ELEMENTS TO SURMOUNTING CHALLENGES TO TECHNOLOGY ADOPTION IN KING COUNTY, WA PRESENTATION HIGHLIGHTS

Mr. Toliver shared with the participants the critical elements in successful program deployment that he learned during his tenure as the Director of the Department of Transportation for King County in Washington State. The critical elements are:

1. The Champion
2. The Technology Vision
3. Customers
4. The Organization (Sr. Management)
5. The Plan

The first critical element, the 'Champion,' articulates the program's vision with passion and emotion, he or she speaks to stakeholders in a 'common language' and articulates the vision over and over throughout the program implementation. Mr. Toliver noted that the vision should specifically focus on the technology that's necessary to achieve the overall corporate vision.

The 'Technology Vision' should be customer focused, it should speak to meeting or exceeding customers needs and desires. It should focus on near term implementation as opposed to the distant future. It should also speak to the role and strategy for research and development.

In Mr. Toliver's experience, the 'Customer' is more inclusive than just the end user of the particular service. In addition to riders/users, he also included taxpayers, policy makers, employees and the media in his definition of the customer. He noted a good deployment should meet or exceed the customers' needs through the use of technology.

Mr. Toliver discussed input and areas of concern stressed by senior management in King County. Issues such as continuous improvement, lowering costs, empowering employees, residents and visitors are important and should be considered.

Lastly the implementation 'Plan' typically spans three to five years. When developing the plan it is important to remember that implementing new and emerging technologies is as much about change as it is about the technology itself.

FOCUS GROUP DISCUSSIONS

After the three presentations, the meeting participants discussed lessons learned, throughout their careers, during their respective technology deployments. Participants followed the talking points as presented in the meeting agenda, but also included additional topics as needed to enhance the discussions. Throughout the day's discussions the meeting facilitators utilized flip charts to capture the important points made in each of the discussion areas. The complete flip chart notes, exactly as they were captured during the meeting, are included at the end of this discussion summary.

III. What Works and What Doesn't?

With regard to 'What works and what doesn't,' participants discussed the issues as contained in the agenda, and provided important points for each (as presented in the flip chart notes). The majority of the discussion time, however, focused on institutions issues. The participants shared with each other what they believed to be key factors for a successful technology deployment. The key factors fell into three areas: IT Knowledge at the Executive Level, Business Case Development/ROI and user/functional requirements which will determine which technology will be deployed.

Key Factors in Technology Success

1. IT Knowledge at the Executive Level – The executive level should have knowledge and understanding of the capabilities of effective information technology systems. It is important that the executive level has access to knowledgeable cost information as well as realistic benefits that can be expected when making IT investment decisions. It is equally as important for the executive level to communicate and learn from their peers within other transit organizations. IT knowledge at the executive level can facilitate technology deployment decisions/options during the budgeting process.

2. Business Case/ROI – Currently there doesn't appear to be an obvious best practice for developing a business case. Many times the industry doesn't fully appreciate the assets/resources it has which can be leveraged during the project. For example, why would CBS pay billions to the London Underground? Transit has tremendous real estate resources as well as potential revenue resources.

   It is also important to assure that costs are appropriate; it is a mistake to low-ball cost projections in order to get approval from upper management. It is also a good practice to benchmark at the beginning of the project to provide a starting point from which future progress can be measured. It was recommended to reality test ROI assumptions at the executive level. ROI as it relates to transit. The industry could benefit by better defining ROI from the transit perspective.

   When discussing ROI with the board of directors (BOD), look for ways to speak in "business terms" using analogies that they understand. Look for common elements of understanding. Focus on ROI outcomes. Also address the needs of the board AND educate them on the needs of the organization. Have the board accept the mission, vision and policy regarding technology. It is also important to have a CEO that supports the project.

   In some instances it may be advisable to work with board members one-on-one to better assess individual concerns, perspectives and to belay issues or get a better understanding of issues that will need to be addressed before the full board. Be aware that there are different types of boards. Prior to interactions with the BOD assess not only the individual members' issues but also the board culture. For example, some boards are interested in costs and ridership numbers and take a 'balance sheet'

approach while other boards are more interested in improving customer satisfaction levels.

In addition to the BOD, discussion with Operations and Labor are also key. Operations personnel need to understand why the projects are being proposed and support their implementation. Develop a strategy for working with the unions and be prepared to deal with resistance. Input from unions is very useful in developing requirements. Training is very important at all levels of the organization.

All documents for the project should be open and available to everyone involved.

Caveat: Many times it is impossible to make everyone happy.

3. Technology – Important to establish user and functional requirements early on in the project not at the design level. Define service from a data profile perspective. Know your core business. Trust your in-house personnel capabilities for technology design and deployment. Be prepared to outsource technical requirements building if needed to augment staff capabilities.

IV. What Can We Do To Help Other Agencies and the Industry Overall?

The participants discussed certain factors/conditions that must be in place, to the greatest extent practicable, prior to beginning the technology deployment process. It is important that agencies contemplating technology deployments be aware of these prerequisites and understand that for any deployment there will be a minimum set of 'ingredients' that must be in place for a successful deployment. The key is to assess and understand the prerequisites - and to then address any shortcomings if necessary.

Prerequisites for Technology Success – *(What does an agency need in order to successfully apply best practices and what can an agency do that is lacking prerequisites?)*

The participants acknowledged that in addition to keys to success during the deployment, there are also prerequisites for successful deployment that are just as important that should be assessed. Any prerequisite deficiencies need to be acknowledged and addressed.

All agreed that many times agencies do not have the necessary prerequisites for success in place. One participant estimated as much as 50% of agencies are in this position.

Important prerequisites include:

- Overall program direction and 'picture' of the program in five years
- Vision/Plan: Adequate Study or Plan (need to know how to do a good study)
- Leadership: Supportive CEO that believes in the project and desires change
- Appropriate staff, funding, and climate
- Community Support
- Infrastructure
- Resources

If the prerequisites need to be addressed or augmented, this should be done in parallel rather than serial, prior to deployment.

Packaging and Disseminating Recommendations – *(What can be done to communicate our recommendations to key audiences and promote their adoption by agencies?)*

The participants discussed the best way to use technology to facilitate information dissemination. Several ideas were presented including presenting the information at the APTA General Manager's conference; a report on the 'State of Technology;' utilizing traditional and new media; newsletters, development of a trusted resource (web portal, e-zine); and BOD education.

Sustaining Success – *(How can technology programs remain successful over the long term?)*

The major themes for sustaining success focused on human capital issues, program structures, component life cycles, and the system engineering approach. Participants stressed retaining a quality staff through compensation, outsource consideration (equipment and services), and change management documentation. In addition to understanding the components of a successful deployment it is important to consider and plan for operations, maintenance, life cycle replacement schedules and costs to keep the program successful. Good decision making in terms of calculating risks, thinking creatively when change is in order, making the hard decisions, and knowing when to exit also contribute to a programs' sustainability.

V. Major Conclusions:

To wrap up the day's discussions, the participants reviewed their notes and the flip charts and provided what they believed to be the ten most important conclusions to be gleaned from the information presented that day. Participants stressed the importance of institutional issues; assessing the realities of a potential deployment in terms of resources, capabilities, and measures of success; and opportunities that may or may not be obvious – but should be considered.

Below is a concise version of the ten major conclusions. The expanded list is included in the flip chart notes.

1. Institutional/Organizational issues are the most important.

2. Not everyone will be happy.
   - Unions
   - May have to settle for 'informed consent'
   - May not be able to do everything you want
   - May have to proceed with series of 'small bites'
   - Focus on your core business
   - Know your core strengths
   - Break major deployments into manageable bites

3. Be realistic in terms of what can and cannot be accomplished.

4. Not every agency is ready for the deployment because prerequisites are not in place.

5. Be prepared to do a limited number of things well - focus on quality over quantity.

6. Need strong ‘Evangelism’ – getting the right information to the right people through the right channels.

7. Success does not automatically self-perpetuate – requires continued commitment and efforts.

8. Recognize in which phase of evolution the industry currently exists – in the early stages of an industry evolution. This is an opportunity for transit to be the lead. Systems Engineering is very important.

9. The technology/data is not the end product; how it is utilized is.

10. ROI – be realistic; realize the true “value” of the data and who values it.

Focus Group Meeting Flip Charts

INSTITUTIONAL

- Create policy that supports IT/ITS and reporting to high levels
- Make logic/rationale for investment explicit, simple/direct
  Communicate in business language that leadership understands
- Identify ROI (be realistic about costs) both cost savings and other key factors, e.g., customer satisfaction
- Very different approaches to establishing ROI for customer—oriented investments (vs. back office systems)
  (Surveys key metric)
  "Sell" community pride
  Use analogies to private sector
- Know what your customers (all, not just riders) want/need
- Focus on board members individually. Address their individual issues. "Behind the scenes." Understand the culture that the board reflects
- "Sell" rationale to unions but be prepared for continued resistance
- "Rank and file" union input most useful in developing requirements. Focus on union leadership for overall buy-in
  Have an appropriate strategy for unions, specific to your agency/environment. May be "everybody has to win" or "not everyone will be happy."
- Agencies need to establish, develop, and "trust" in-house expertise—at least enough to effectively supervise consultants
- Be realistic in assessing your in-house capabilities and tailor your strategies appropriately. May mean "buying the data/service."
- (Future approach—J.I.'s proposal)
  Pool resources among agencies across common needs/projects.

FINANCIAL

- Fully consider revenue opportunities associated with transit assets. Be creative. Use technologies.
- Make either/or funding decisions explicit.
- Regulations (e.g., buy American)
  Restrictive so sometimes have to use more local $$ to buy from the international market
- Public-private, public-public partnerships

PROCUREMENT/CONTRACTING

- Whenever possible use COTS
- Explore cost sharing/revenue generation with private sector

TECHNICAL

- Clear specs up front.
  <functional requirements>
  Temporal vs. spatial vs. etc.
  Have to fully embrace/consider the technical details – either in-house or hire out
- Trust in-house staff to design and deploy technology

ORGANIZATIONAL

- ITS Department with direct line to GM and interacts with other departments
- Educational element for boards (treat each board as a unique customer)?
- Need to understand context
- Executive that understand tech.

OPERATIONS

- Make sure ops folks understand their role and also get their buy-in. They understand the positive impacts.
- Do not underestimate the value and need for training!

MAINTENANCE

- System satisfies the needs of the maintenance (and ops) personnel (on purpose!)

PRE-REQUISITES

- Directional commitment, including technology
- Future picture (5 years from now)—clear focus picture of the agency (on a regular basis)
- Not a project-by-project effort, but demo extension of first 2 bullets
- Do you need a certain type of culture?
  Have to have a plan that suits your culture
  CEO job is to say it every day
    - Creates psychological change—you can get organization ready
- CEO or Asst GM has to provide support and be at the helm
- How do you reach the CEOs who do not know?
  Bring along those who are enlightened
  More than visionary to make it work
- Analogy—businesses fail
- Measures, campaigns
- Dynamic, exposure is a key

- Accountability issues
  Need to show the benefits
  Non-believers (skepticism in investments)
  Some leaders not convinced about technology
- Volpe Core Technology study
- Attach performance measures
- We need a vision
- Have an agency to be given trust and funding and political will
  Can't break it in
  Leadership, infrastructure, processes
- Have to be able to generate info quickly
- Getting data into a form and using it
- Access to info very important
- Have a problem being successful if community not behind agency
- Resources are important.
- Leveraging non-transit resources
- Match technologies with interests (vignettes)

DISSEMINATION

- How can we use tech for dissemination?
- GM Conference (APTA)
- Report on State of Tech
- Needs to address (State of Tech)
- Should be talking to non-transit interests
- Web portal where you can go to get info that's run by a Google like corp.
- Model house/APTS showcase
- Work with auto makers
- Disseminating knowledge of tech
- Use traditional and new media,
  new communications technologies (e.g., VCAST)
- Evangelize!
- Learn/emulate other industries with their marketing techniques
- Educate board members on importance of investments
- Board member meetings/training
- Newsletter
- Info gap and misinformation
- Compendium of documents?
- Trusted Resource (web portal, E-Zine)
- Validation by an industry person
- Selected, targeted document
- Need critiquing of technology

(analogy is legislative analysis)

- Ask 4 agencies to describe what they are doing…
- Independent organization to foster technology into operations (Virtual GM) forum

SUSTAINABILITY

- Pay and keep good people
- Build rational pieces/building blocks-do not do it all at once
- Build replacement schedule into planning
- O&M and replacement expenses
- Knowing when to exit
- Know what your core business is
- Disclose all up-front rather than in pieces
- Outsource it? Incorporate into a lease or do you own it? --Address life cycles
- Monitor and report performance
- New evolution of development
- Framework?
- Resources?
- Professional capacity?
- Have to move people from denial to anger
- Have to take calculated risks?
- Systems engineering
- Willing to not be unique/change business processes
- Willing to make hard decisions

MAJOR CONCLUSIONS

1. Institutional/organizational issues most important:
   -Leadership
   -Vision/plan
   -Willing to change business processes
   -Involve stakeholders early, meaningfully
2. Not everyone will be happy
   -union
   -can't do <u>everything</u>
   -focus on <u>core</u> business (consensus)
   -"informed consent"
   -can't do everything at once—small bites
3. Be <u>brutally realistic</u>
   -what can we do?/not do?
   -sell or do not sell based on full life cycle costs

4. Not every agency is ready/capable (prerequisites)
   -Leader/CEO
   -vision/plan
5. Do things well – do not try if you aren't in it for the duration
   Quality over quantity
6. Two distinct dissemination challenges:
   -Need to do better job of getting:
      Right info to right people in the right channels
      "evangelize"
      Independent, trusted industry org. (e.g., Consumer Reports)
   -Agencies not always ready to benefit from info
7. Success does not automatically self-perpetuate
   -requires continuing commitment and effort
   -Have to make hard decisions
   -Have to pay our in-house experts
   -Have to do final part of system eng.: monitor, optimize
8. Recognize that we are in the early stages of an industry revolution
   -Systems engineering!!! Requirements, monitoring, etc.
   -Going through major growing pains
   -An opportunity – public transportation can be a lead
   -Lots of examples – look beyond ourselves
      International
      Private business
   -It's hard work, not easy
9. It's not the technology/data, it's what you do with it!
   -convert data to useable information
   -need a plan/strategy for managing, analyzing and using data
   -need the hardware, software, and people in place to convert data to info
10. ROI!
   -Realistic
   -comprehensive (life cycle, replacement, etc.)
   -unlock value inherent in our data and other assets (facilities, row, etc.)

San Francisco Bay Area Rapid Transit District

BART's Business Advancement Program

Robin Cody

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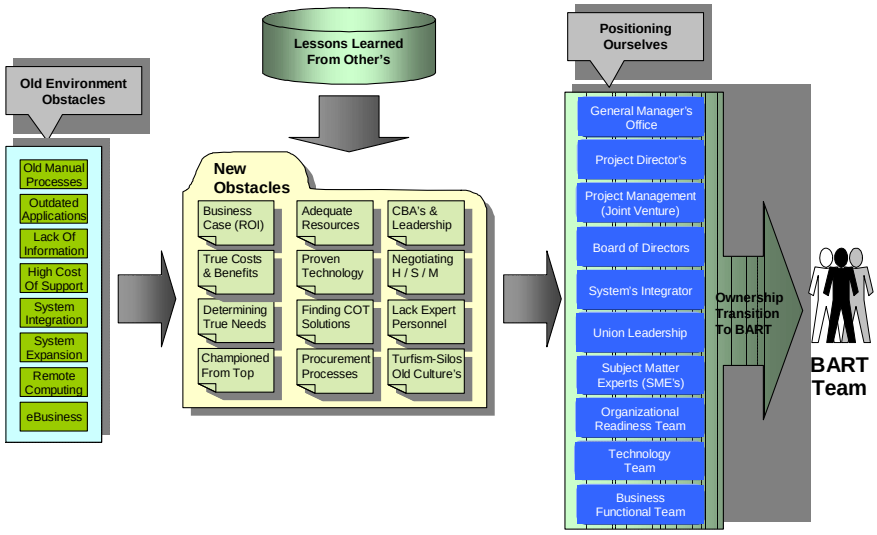
Bay Area Rapid Transit District

August 29, 2006

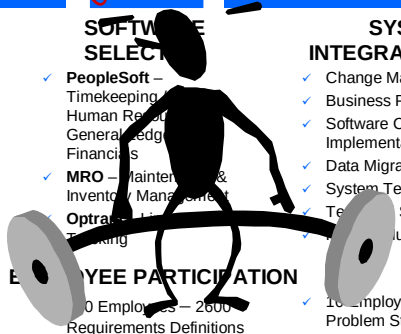
It's Hard To Envision The Future
When You Haven't Caught Up To The Past!

Facing Our "Obstacles"



3-Phase Transformation Process

Phase I	Phase II	Phase III
2001 - 2002	2003	2004 - 2008
Prepare, Focus (completed)	Select / Validate (completed)	Design, Configure, Deploy
		Business Transformation



BUSINESS ANALYSIS

- Current State Assessment
- Analysis of BAP Options
- Investment and Funding Options
- Tactical Planning
- Software Select Planning

SOFTWARE SELECT

- **PeopleSoft** – Timekeeping / Human Re[illegible] General Ledg[illegible] Financials
- **MRO** – Mainten[illegible] & Inventory Management
- **Optra[illegible]** [illegible]

SYSTEMS INTEGRATOR SCOPE

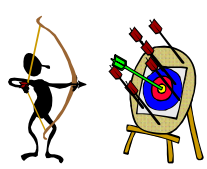
- Change Management
- Business Process Reengineering
- Software Configuration And Implementation
- Data Migration
- System Testing
- Te[illegible] Staff Training
- [illegible]uction Support

E[illegible]YEE PARTICIPATION

- 300 Employees – Readiness Survey
- [illegible]0 Employees – 2600 Requirements Definitions
- 80 Employees Assisted Source Selection Committee by participating in Software Demonstrations
- 1[illegible] Employees Helped Develop Problem Statement
- 30 Employees Assisted Source Selection Committee
- Union Leadership Assisted Source Selection Committee

Success Rate *

ERP / EAM Implementations



84% Fail | 16% Finish

*Standish Group Survey - 1999

Why Implementations Fail:

42% Leadership

27% Organizational & Cultural Issues

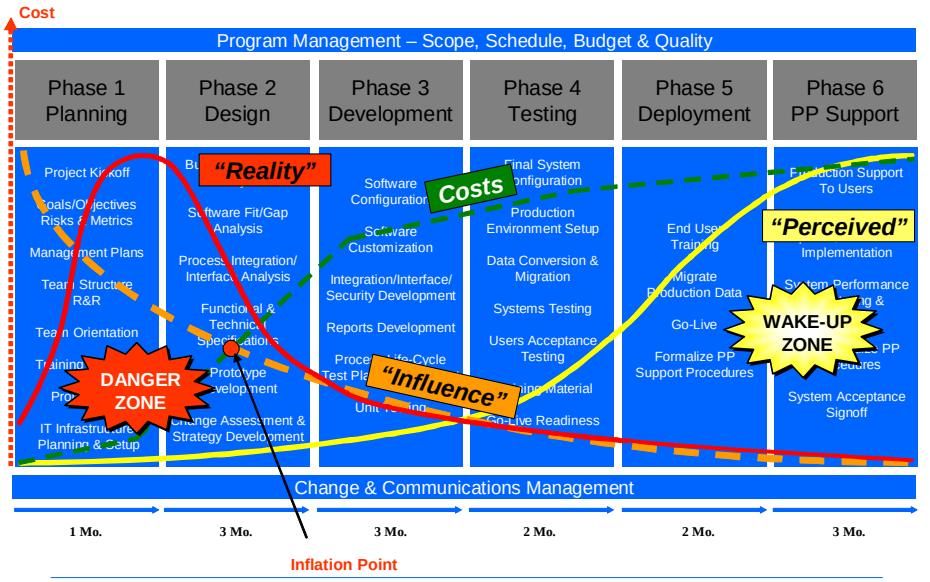
23% People Issues

4% Technology Issues
Other 4%

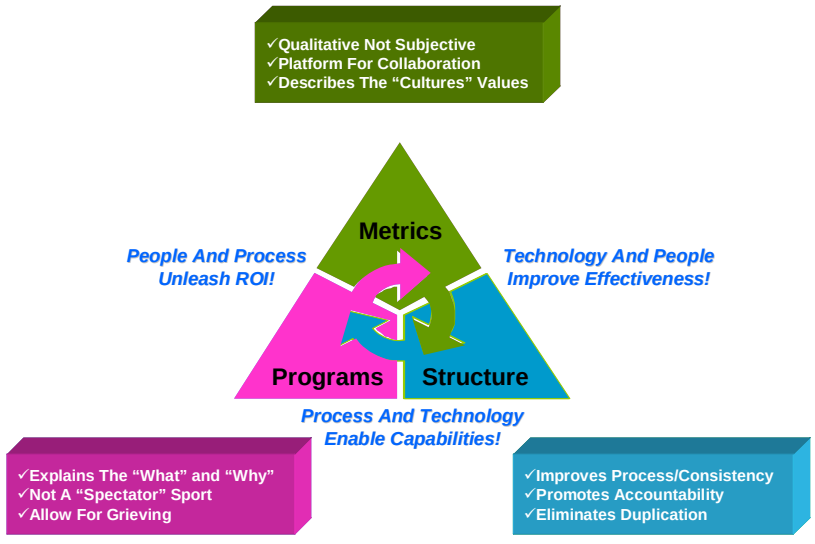
Source:
Organization Dynamics, Jim Markowsky

"These Are Usually Business, Not Technical Issues"

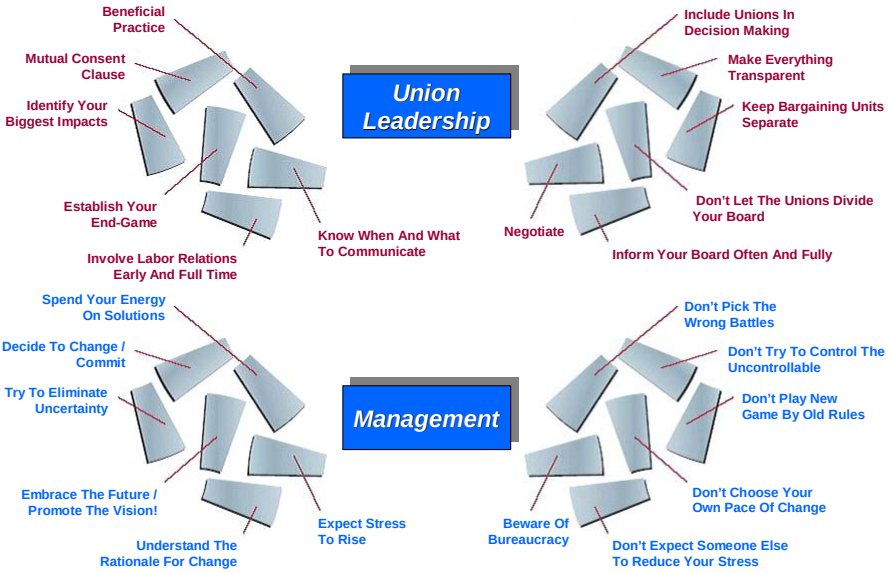
The "Danger" Zone



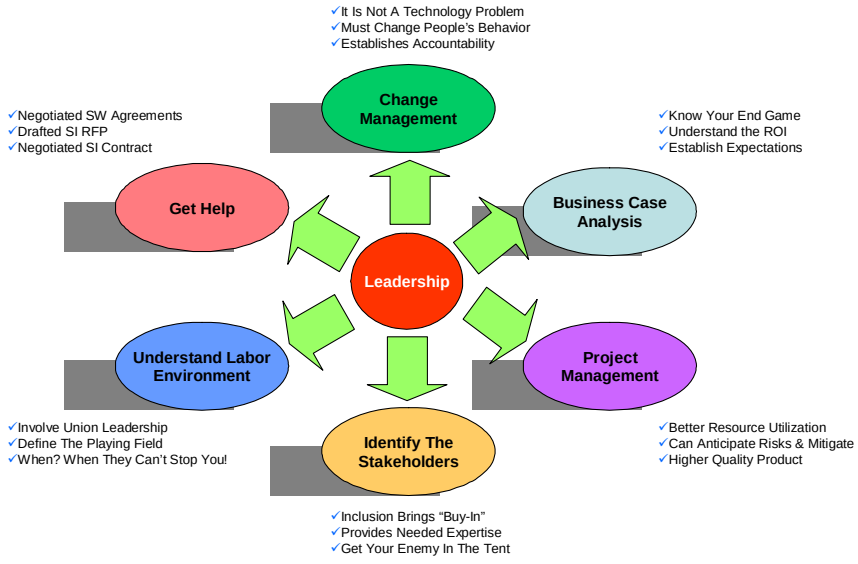
Tools For "Cultural Change"



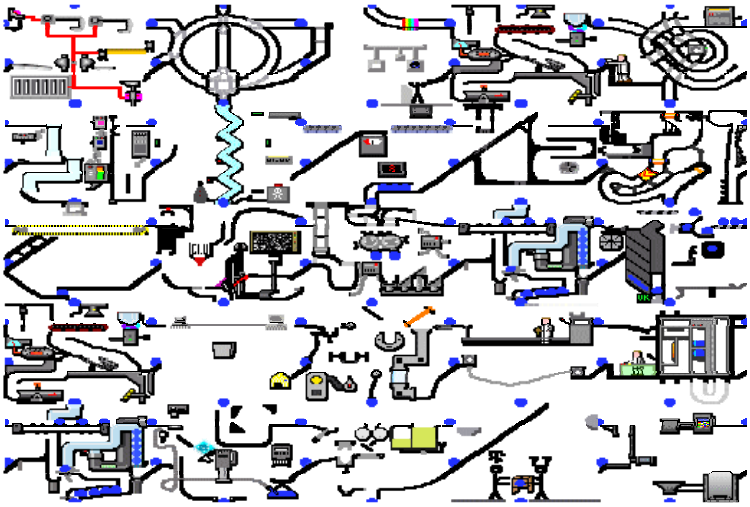
The Sides Of Resistance



Our "Key" Strategies



“It All Comes Together”



The Enterprise Resource Plan (ERP) Implementation Diagram!

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY (WMATA)

Technology Deployment Strategy

Presented to:
National Leadership Summit on
Surmounting Challenges to Technology Adoption

Edward Thomas, AGM for Planning and Joint Development

August 29, 2006

Technology Deployment Strategy

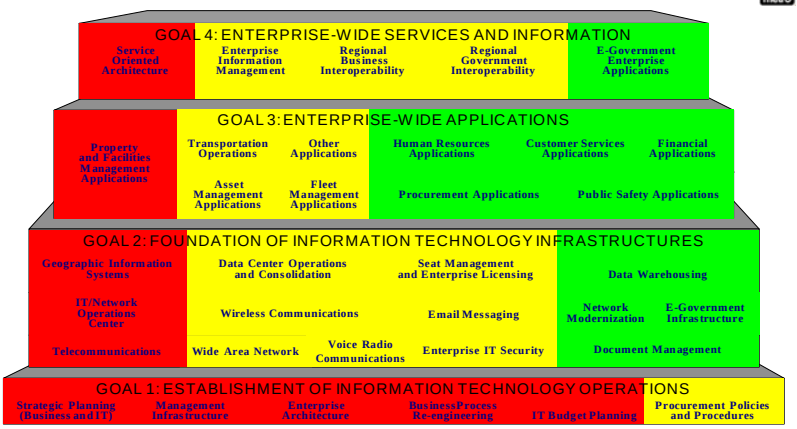
Overview

- Essence of the WMATA challenges
- What are we doing about it – planning and thinking strategically
- Next generation technology deployments

2

WMATA Technology Deployment Challenges

Information Technology Capability Pyramid



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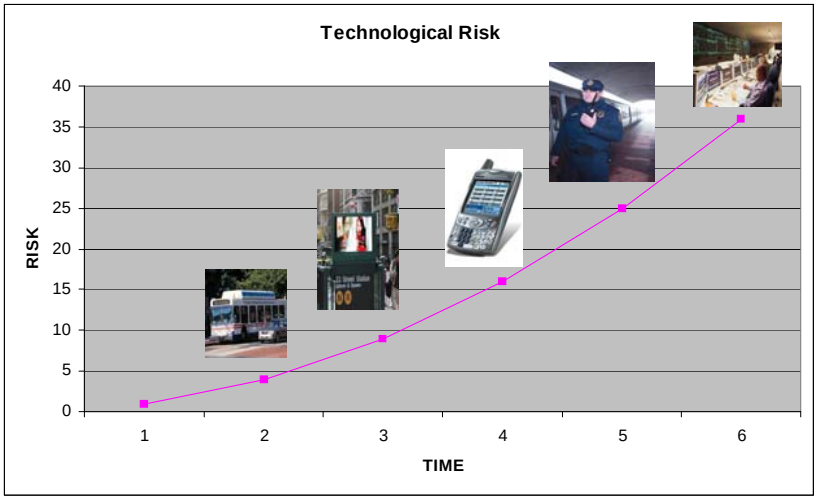
WMATA Technology Deployment Challenges



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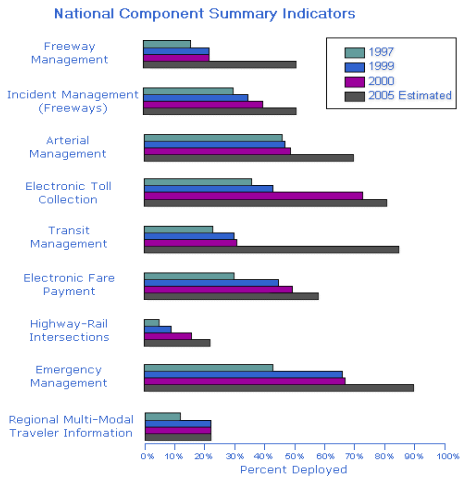
WMATA Technology Deployment Challenges



5

What are we doing

Planning Context

? Corporate Strategic Plan–Routes to the Future (2002 – 2027)

? Ten Year Capital Plan (2003 – 2013) - $12.2B

? Metro Matters Five Year Capital Program - $3.3B

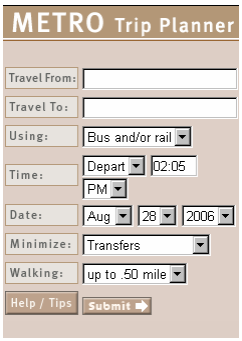
? Dedicated Funding Proposal (2008 – 2018) - $3.0B

? IT Strategic Plan (2008 – 2018)

? Development of an Integrated Customer Communication System Public-Private Partnership (ICCS P3)

6

What are we doing



7

WMATA Next Generation Deployments

ICCS P3 Program Goals

? Provide real time information to customers

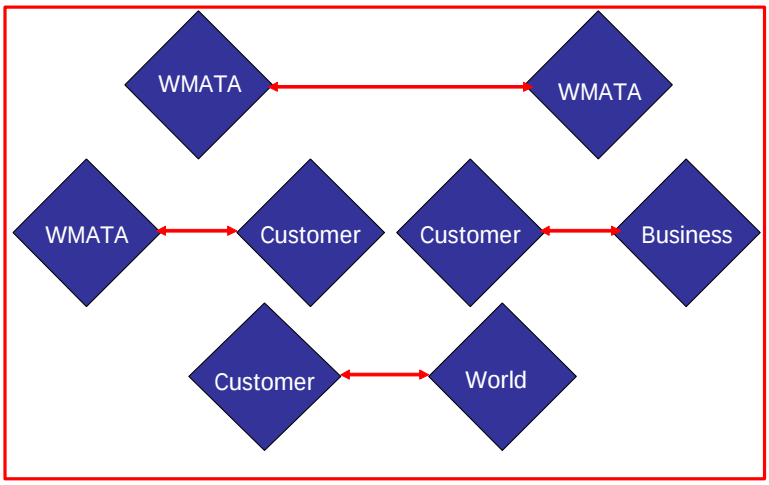
? Maximize revenue generation potential

? Enhance customer and employee security

8

WMATA Next Generation Deployments

ICCS P3 Vision



9

WMATA Next Generation Deployments

ICCS P3 Program Strategy

- Promoting public-private partnerships
- Involving the Board in program development
- Incorporating an industry outreach effort
- Building system architectures (integration plans)
- Conducting backbone operational tests
- Selecting based on best value
- Negotiating the award

10

ICCS P3 Program Components

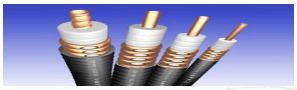
Program Elements

Customer Communications Center

In-Vehicle and In-Station PIDS+

Communication Infrastructure

Communication Infrastructure Options



Leaky Coaxial Cable System (LCCS)

Distributed Antenna System (DAS)

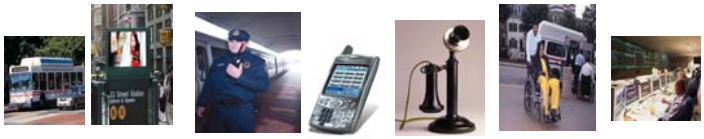
Wi-FI / Wi-Max

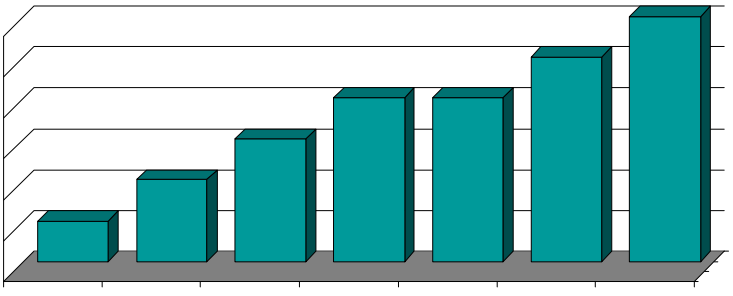
Broadband over Powerline(BPL) System

Integratable, Interoperable & Scalable

11

ICCS P3 Program Phases





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ICCS P3 Program

WORK PLAN

	ACTIVITIES	LEAD/SUPPORT
1	Conduct Industry Technology Symposia	PLJD/CIO
2	Hire Telecommunications Expert	PLJD/CEPM
3	Conduct Technical Work	
	3A Gather/Document Information on Best Practices	PLJD
	3B Receive and Evaluate REOI responses	PLJD/PRMT
	3C Test Infrastructure Technology options	CEPM
	3D Build Communication System Architecture	CIO/PLJD
	3E Conduct Market Research	CMCS/PLJD
4	Prepare and Issue Request for Proposal	PLJD/PRMT
5	Hire Systems Integrator	PLJD/CEPM/CIO
6.	Select Short List of P3 Teams	PLJD/CEPM/ CIO/CFO/PRMT
7	Negotiate with Short Listed Teams	COUN/PLJD
8	Award Agreements to one or more P3 Teams	PRMT/PLJD

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Industry Interest in ICCS P3

Initial REOI – January 5, 2006

Prospects	Infrastructure Technology	Role/Component
Verizon/Nextel Consortium	Leaky Coaxial Cable System (LCCS)	Open Access System/Total ICCS
Dianet		Neutral Host System/Total ICCCS
Ericsson		Neutral Host System/Total ICCS
Aldridge		Neutral Host System Equipment
InSite Wireless		Neutral Host System/Total ICCS
EMS Wireless		Neutral Host System/Total ICCS
Powerwave	DAS	Neutral Host System/Total ICCS
ClearLinx		Neutral Host System/Total ICCS
National Grid Wireless		Neutral Host System/Total ICCS
American Tower		Neutral Host System/Total ICCS
ADC Technology		Neutral Host System
Mobilisa	Wi-FI/ Wi-Max	In-Station Wi-Fi
IP Everywhere	BPL	Open Access System/Total ICCS
IBM		Team Leader/System Integrator
SAIC		Team Leader/System Integrator
Ontira		Component/Traveler Services
Granite		Component/Telephone Management

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Industry Interest in ICCS P3

AMENDED REOI - AUGUST 15, 2006

Proposal Areas		Number
Communications Infrastructure		7
Total ICCS		9
System Integrators		3
Sub-system Components		11
	TOTAL	30*

See Appendix for details

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ICCS P3 Program Industry Outreach

APTA/FTA Best Practices Study Mission

London

Paris

Munich

Toronto

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ICCS P3 Program Timeline

							Seek Board Approval to Award Agreements to one or more P3 Teams (8)
						Hire System Intetgrator (5)	
						Select short list of P3 Teams (6)	
					Issue	Negotiate with	
				Evaluate Infrastructure	ICCS P3 RFP (4)	short listed Teams (7)	
				Technology Test Results (3C)			
				Complete Preliminary			
				Communication System			
			Build Communication	Architecture (3D)			
		Produce Results of	System Architecture (3D)				
		EOI Evaluation (3B)	Develop ICCS P3 RFP (4)				
		Participate in APTA / FTA	onduct Market Research (3E)				
	Receive REOI Responses	Best Practices					
	Hire Telecommunications	Scanning Tour (3A)					
	Expert (2) - P2D						
	Test Infrastructure						
	Options (3C)						
Conduct							
Technology							
Symposium II (1)							
July 28	August 15	September 22	October 15	November 15	February 15	April 30	June 30

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ICCS P3 Program

APPENDIX

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Industry Interest in ICCS P3
AMENDED REOI – June 19, 2006

REVISED EXPRESSIONS OF INTEREST - AUGUST 15, 2006

NAME	Type of Company
STV Incorporated • SAIC • Clark Construction • Greystone Partners	TEAM Approach including Systems Integration, Construction, Advertising
InSite Wireless	Owner/Operator of DAS systems
Dianet • Andrew Corporation • Edwards and Kelcey Technologies	Neutral Host Developer of DAS networks Additional partners may include media and financial services providers which can allow for video, music, and financial downloads to customers.
ClearLinx	Design, implement and operate Open Wireless Networks on a Distributed Antenna System (DAS)
ALSTOM TRANSPORT	Complete Integrated Customer Communications System

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Industry Interest in ICCS P3
AMENDED REOI – June 19, 2006

REVISED EXPRESSIONS OF INTEREST - AUGUST 15, 2006

NAME	Type of Company
Appear Networks	Customer Communications
Presidio Corporation	VOIP, LAN, Wireless Cisco Systems
Mediachase	Program Management & Software Integrator
ACS State and Local Solutions	Systems Integrator
APCO	Wi-Fi/Wi-Max
IBM	Systems Integrator
Great American Digital • Nomad Digital • Intel Solution Services	Wi-Fi Operator Network Design Project Management
Technology Solution Providers/ • Indra	Paratransit Integrated Traveler Management System
ADT Security Services, Inc.	CCTV, Security, Fire Alarm Systems
DS3 Data Vaulting	Data Management and Recovery Systems

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Industry Interest in ICCS P3
AMENDED REOI – June 19, 2006

REVISED EXPRESSIONS OF INTEREST - AUGUST 15, 2006

NAME	Type of Company
ETA Groups • URS • Siemens • CBS Outdoor	Complete Integrated Customer Communications System
Transit TV	Customer Communications
Metro Media Live	Media and Advertising Company
JM Fiber Optics, Inc. • TransitVUE	Passenger Information & Messaging System Transit Security System
APPTIS • Appear Networks • Cisco • Sprint (Cellular) • HP • First Mutual • Cox Media • Cox Communications • XM Satellite Radio • Sprint	Total Integrated Customer Communications System

Industry Interest in ICCS P3
AMENDED REOI – June 19, 2006

REVISED EXPRESSIONS OF INTEREST - AUGUST 15, 2006

NAME	Type of Company
PARSONS • Appear Networks • Cisco • Mobilisa • Parsons Transportation Group	Mobility Design Equipment Network Design/install Systems Integrator/Project Manager
The Washington Post • Onestop Media Group	PID System with Content Provider
Digital View	Digital Screen Media Networks
Outermesh	Proximity based Advertising/Marketing Electronic Coupon
TRN Washington, LLC (The Rail Network, Inc.)	Metrorail, Metrobus and Station Video Displays
General Electric Company (GE) • GE Transportation • NBC Universal • GE Global Media & Communications (Financing)	Total Integrated Customer Communications System. Includes System Integrator

TCRP
National Leadership Summit on Surmounting Challenges to Technology Adoption
August 29, 2006
7:30 AM – 3:30 PM
Beckman Center, Irvine, California

The Champion

The Champion

- Vision
- Passion and Emotion
- Articulates Vision
- Common Language
- Over and Over, Anywhere At Any Time
- Specifically the vision is focused on technology that's necessary to achieve the overall corporate vision.

Technology Vision

- Customer Focus – Speak to meeting or exceeding customers needs and desires
- Focus on near term implementation as opposed to the distant future.
- Speak to the role and strategy for research and development

Customers

- Riders/Users
- Taxpayers
- Policy Makers
- Employees
- Media

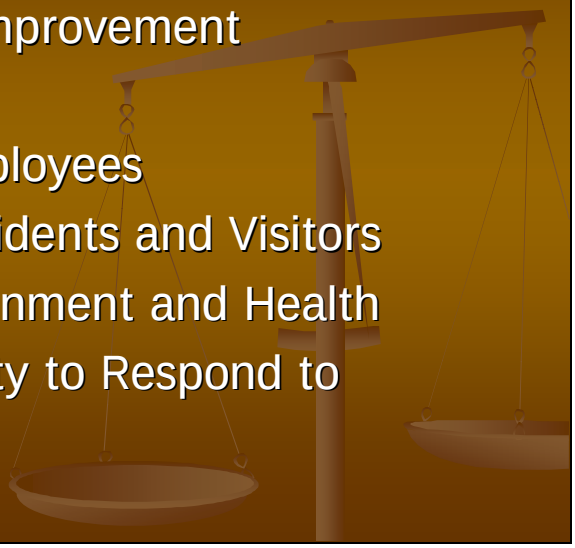
Meet or exceed their needs through the use of technology.

Examples of what Seattle customers said…

- Convenient and user friendly access to up-to-date and accurate information
- More information about routes, schedules, fares and how to ride the bus.
- Passengers at stop wanted to know is the bus on time.
- Fare payment to be easier.
- Employees wanted easy access to information they needed to do their job.

The Organization (Senior Management) said…

- Continuous Improvement
- Reduce Cost
- Empower Employees
- Empower Residents and Visitors
- Protect Environment and Health
- Increase Ability to Respond to Change



The Plan

- Develop a 3 to 5 year implementation plan.

Remember that implementing new and emerging technologies is as much about change as it is about the technology itself.