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AMENDMENT TO PROPOSED MOTION 2015-0151, VERSION 1

Delete Attachment A, Preliminary Report Identifying the Specific Components to be Included in the Strategic Technology Roadmap for Transit, dated March 5, 2015, and insert Attachment A, Preliminary Report Identifying the Specific Components to be Included in the Strategic Technology Roadmap for Transit, dated June 9, 2015.

EFFECT: ***Replaces the Preliminary Report Identifying the Specific Components to be Included in the Strategic Technology Roadmap for Transit with an updated version that includes more detail about how the STRT will address integration with KCIT, financial stewardship, equity and social justice, and regional partnerships and points of integration.***

King County

Preliminary Report Identifying the Specific Components to be Included in the Strategic Technology Roadmap for Transit

Prepared for King County Metro Transit
by IBI Group
with DKS Associates and N-Squared Associates
March 5, 2015 – Revised June 9, 2015

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Table of Contents

1 Introduction

As the opening section of the plan, the Introduction will provide the purpose of the Strategic Technology Roadmap for Transit (STRT) and explain the needs that it will address. The Introduction will help orient the reader to the document by describing the structure and organization of the document. It will also acknowledge the different groups within Metro Transit, as well as its stakeholders, who comprise the intended audience.

1.1 Purpose

The STRT is part of an ongoing strategic planning process intended to improve the way Metro Transit plans and implements new or changing technologies within the organization. It is a tool for defining the significant changes from the current business state that are necessary to achieve Metro Transit's vision.

The purpose of the STRT is to identify:

- A vision for King County Metro Transit's technology program that meets the objectives of King County and Metro Transit's strategic plans and supports Metro Transit's primary mission of delivering transit service; considering the current environment, major initiatives, plans and projects, trends and best practices in the technology and transit industries
- Critical factors affecting the agency's achievement of the vision, including the key inter-relationships, timing, and dependencies between initiatives, as well as internal and external drivers
- A process for assessing and prioritizing Metro Transit's proposed technology initiatives

The need for the STRT arose from many factors, including:

- The increasing role of technology in delivering effective and efficient transit service
- The increasing amount of data that is available to help Metro make better business decisions
- Changes to Metro Transit's regulatory environment, business and technology needs
- Aging existing technologies combined with complex inter-relationships between transit business systems that result in the need to carefully plan system replacements
- A need to prioritize and plan for a variety of major and minor initiatives
- An ongoing need to support budget, schedule and resource allocation decisions

Therefore, within the STRT, we will answer the questions of:

- What are the near-term (2015-2020) technology initiatives and priorities necessary to achieve the vision?
- What is the longer-term (2020) vision for the technology program at Metro Transit?
- What steps should Metro Transit take now to support achievement of the vision?
- What are the implications for capital and operational budget planning?

- What are the implications for maintenance and timely replacement of aging systems?
- How will priorities be identified and assessed going forward?
- How will major initiative phasing be determined?

1.2 Scope of Technology Roadmap

The STRT is scoped to focus on the following:

- Identifying the strategic direction of the transit technology program, and subsequently aligning the appropriate resources needed
- Evaluating impacts and developing mitigation plans as necessary to address changes in King County operating environments. Examples could include areas such as telecommunications as it relates to voice communications with customers, website changes and standards and financial system changes that impact how timekeeping data is interfaced from operator dispatch and work order systems in use in Metro Transit.
- Identifying and categorizing the needs that arise through Metro Transit's internal Transit Technology Oversight process
- Providing a framework within which to evaluate technology projects with a focus on meeting programmatic strategic goals such as Equity and Social Justice, emerging market trends as well as business needs

1.3 How to Use this Report

This section identifies the various potential audiences for the Roadmap and describes how it benefits them. While the General Manager is the owner of the Roadmap, it will be used to communicate vertically and horizontally in the organization, as well as externally.

2 Planning Environment and Context

The purpose of this section is to describe the existing planning landscape within King County and Metro Transit, and how the STRT fits in. The section acknowledges that the STRT will fit within the King County planning framework and be guided by existing County planning goals and objectives. Other internal and external drivers that may influence the Roadmap will also be addressed.

2.1 Relationship to Existing Plans

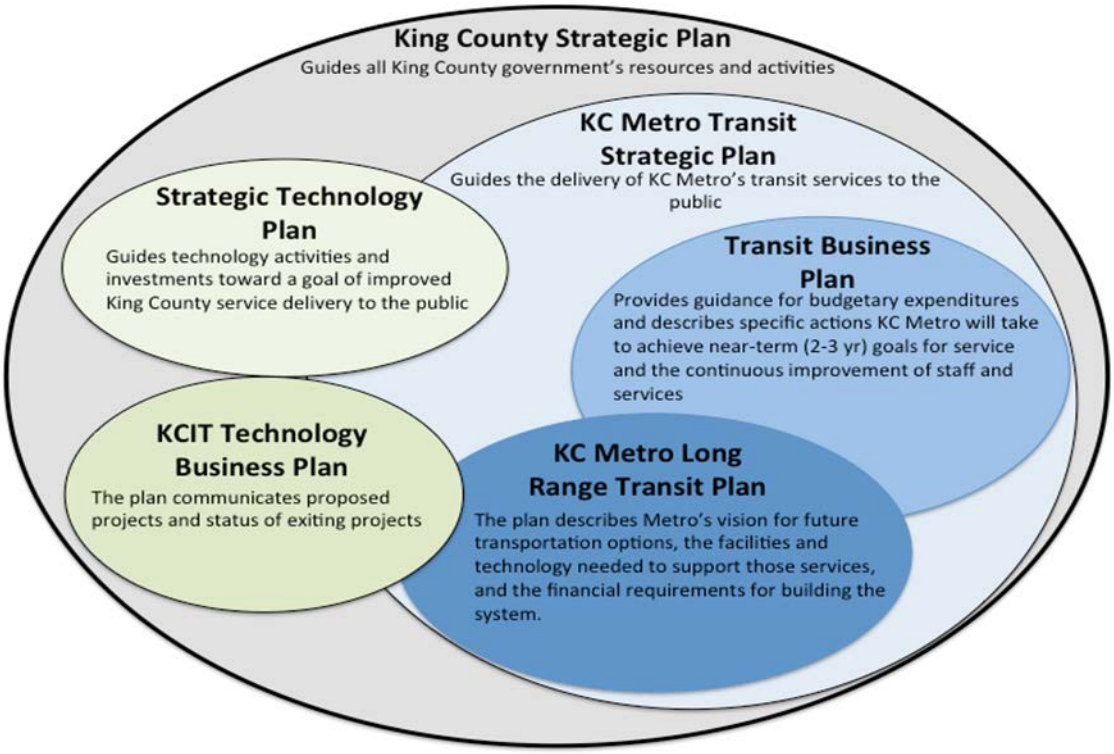
This section will discuss how technology decisions today are supported and influenced by an existing strategic planning framework, which has its own interrelationships and hierarchy.

The following key plans inform and help shape the development of the STRT:

- King County Strategic Plan 2010-2014
- King County Metro Strategic Plan 2011-2021
- King County Strategic Technology Plan (STP) 2013-2015
- Metro Transit Long Range Plan (currently in development)

- Metro Transit 2015/2016 Business Plan
- 2014 King County Information Technology Business Plan
- KCIT Technology Roadmaps

A visual representation of how these plans work together such as the following, will be included:



In addition, the STRT will be developed within the context of the Puget Sound Regional ITS Architecture and be supported by Metro Transit's Enterprise Architecture.

As an example, the section below lays out the review of Metro's Strategic plan with an emphasis on the areas that would or could involve technology investments.

King County Metro Strategic Plan 2011-2021

Metro Transit's Strategic Plan, guided by King County's Strategic Plan, charts a path into the future, addresses internal and external challenges, and lays out a framework for making both near- and longer-term policy and resource decisions. The goals in Metro Transit's plan align with those in the King County Strategic Plan.

The Metro Transit Plan has eight goals summarized in the table below and listed in more detail within Appendix A. They include the goals that state "what" Metro Transit intends to accomplish or services it intends to provide, and "how" goals that articulate how Metro Transit intends to conduct its work.

Goals, Objectives and Strategies in the King County Metro Strategic Plan

1. SAFETY	Keep people safe and secure	• Promote safety and security in public transportation operations and facilities
		• Support regional emergency response and homeland security efforts
2. HUMAN POTENTIAL	Provide public transportation products and services that add value throughout King County and that facilitate access to jobs, education, and other destinations.	• Design and offer a variety of public transportation products and services appropriate to different markets and mobility needs
		• Provide travel opportunities and supporting amenities for historically disadvantaged populations and others with limited transportation options
3. ECONOMIC GROWTH AND BUILT ENVIRONMENT	Support a strong, diverse, sustainable economy	• Provide alternatives to driving alone that connect people to jobs, education, and other destinations essential to King County's economic vitality
	Address the growing need for transportation services and facilities throughout the county	• Coordinate and develop services and facilities with other providers to create an integrated and efficient regional transportation system
4. ENVIRONMENTAL SUSTAINABILITY	Minimize Metro's environmental footprint	• Adopt technology that has the least impact on the environment and maximizes long-term sustainability
5. SERVICE EXCELLENCE	Improve satisfaction with Metro's products and services and the way they are delivered	• Improve transit speed and reliability
	Improve public awareness of Metro products and services	• Use available tools, new technologies, and new methods to improve communication with customers
6. FINANCIAL STEWARDSHIP	Emphasize planning and delivery of productive service	• Manage the transit system through service guidelines and performance measures
	Control costs	• Provide and maintain capital assets to support efficient and effective service delivery

7. PUBLIC ENGAGEMENT AND TRANSPARENCY	Increase customer and public access to understandable, accurate and transparent information	• Explore innovative ways to report to and inform the public
8. QUALITY WORKFORCE	Attract and recruit quality employees	• Make Metro an employer of choice and cultivate a diverse and highly skilled applicant pool

Each of the goals, objectives, and strategies summarized in the above table will directly inform not only the goals, objectives, and strategies for this Roadmap, but also the prioritization efforts for the projects and initiatives discussed in Sections 4.1 and 4.2. These goals, objectives, and strategies, therefore, together with the King County Strategic Plan 2010-2014, form the foundation from which the Roadmap will be built. Furthermore, grounding the Roadmap specifically in the King County Metro Transit Strategic Plan highlights a vital cornerstone within the foundation of all of the effective planning that has come before—namely that all technology decisions for Metro must be driven by the strategic and business needs of Metro. Not only does the specific language of King County Metro Transit goals, objectives, and strategies support this, the internal and external drivers reviewed in Sections 2.2 and 2.3 further clarify the specific challenges and opportunities of Metro's business, operating, and planning environment.

2.2 Internal Drivers

This section will identify and analyze internal factors affecting Metro Transit technology initiatives.:

The following table provides a sample list and assessment of internal drivers that will be addressed in the final report. This list is a sample only.

STRT Internal Drivers[1]

INTERNAL DRIVER	ASSESSMENT
Increasing costs	Service reductions will lead to a reduction in positions involved in the direct delivery of service, and the cost per hour will likely increase as a result. Efforts to contain costs and find new efficiencies will continue to be a major focus for Metro.
Aging infrastructure -- state of good repair	Metro's capital infrastructure is aging. The need for investment continues to grow as major portions of the system were constructed at the same time and are approaching the end of their useful lives at about the same time.

[1] The first four items in the table below are adapted from the Business Plan.

INTERNAL DRIVER	ASSESSMENT
Changing customer expectations	Information technology is an area where expectations continue to change rapidly as new capabilities come to market. Customers expect real-time information, accessible through portable devices, about bus service and disruptions.
Increasing use of technology	Metro's technology needs and dependencies are increasing in the face of more systems that are critical to the basic operation of the organization.
The large amounts of data generated by different systems, and the need for complex, integrated analyses	Data complexities drive the need to design and implement a robust and flexible enterprise-wide transit data architecture and implement change management processes to ensure data integrity and business continuity
Metro Transit's commitment to continuous improvement	New initiatives will potentially need to demonstrate an improvement over the current state in order to move forward.
Many, and sometimes complex, demands for technology services when there are limited resources, create challenges in balancing priorities between customers and between business needs	The growing demands for technology support will likely result in increased requests for new projects and system upgrades being presented to decision makers. To support this decision making process, the Roadmap's technology assessment and prioritization process will need to occur on a regular basis.
Technology silos, where purchased applications were designed and implemented relatively independently, resulting in integration challenges, data inconsistencies and slowed operational processes.	As Metro installs new technologies, enterprise architecture and integration considerations should be part of the planning and design process. The need for thoughtful, integrated infrastructure planning and data integration has grown as Metro's technology environment has become more complex. Transit customers and decision makers want richer, more accessible information that requires integration of databases and/or analysis tools.
Complex project oversight processes add significant time and effort to technology decision making and project implementation efforts	Overly-complex processes can have many impacts, including: Benefits are not realized as quickly Labor costs increase Solutions can be outdated by the time they are implemented, causing dissatisfaction Risk of integration and operational issues when older technologies are implemented
Technology impact of tunnel transition	As the Downtown Tunnel transitions away from joint use, a number of technology decisions must be made about what will be installed to support tunnel operations and communications in the tunnel.

2.3 External Drivers

This section will identify and analyze external factors affecting Metro Transit technology environment.

The following is a sample of the way this information will be presented in the final report.

External drivers affect Metro's choices and decisions with respect to technology investments and operations, and these drivers often combine to result in ever-higher expectations from customers. For example, in the age of always-connected personal mobility, when real-time information, social media dialogue and feedback and electronic payment are ubiquitous, there are high expectations for government accountability and transparency. New technologies make it possible for people and organizations to interact and share information with a frequency and ease that has not previously been possible. As well, customers increasingly expect to be able to "pull" custom information (e.g., access a real-time passenger information app on a smart phone) rather than have "bulk" (non-custom) information pushed to them via text or email.

STRT External Drivers

EXTERNAL DRIVER	ASSESSMENT
Rapidly changing technology, including changing approaches to technology architectures	The rapidly changing technology market place poses a myriad of issues for Metro and KCIT. Changes to new architectures, such as cloud architecture, pose design, selection, and integration issues. Constantly changing versions create testing, training, and resource issues.
Regional partnerships and the expectations of integrated services, data, information, and modes	Metro has regional partnerships with a wide range of other agencies, including Sound Transit and other transit agencies in the region, cities in King County, and the Washington State Department of Transportation. The partnerships may address data and revenue sharing, use of similar technology applications, shared communication networks, and other facets of technology in the region. As a result, Metro can't make some technology decisions in isolation and decision making can become slower. Further, some of the partnership needs may raise issues and challenges for standardization within King County.
Expectations for a higher level of customer-driven service	Increasing expectations for real-time information and integrated, location-aware information via constantly changing communications channels push an expectation for near-immediate responsiveness and availability of information via the customer's preferred media.
Expectations of government accountability and transparency	More data sets and information pieces are expected to be available, creating additional needs for guidelines for information storage and easy access, plus a need for additional tools and resources to make more information available.
The developer community's high interest in building new applications using transit data	The data needs of the third party developers drive a need for new software tools and procedures for making data available more quickly, with fewer errors, and with less staff resources being required
Increasing use of mobile technology by employees and the public	Higher usage of mobile technologies by employees and the public drive a need for a robust, fast network with adequate traffic capacity. Also, ongoing discussions about information dissemination techniques are needed.

EXTERNAL DRIVER	ASSESSMENT
National standards, initiatives and policies impacting the transit technology environment	National transit data communication standards have encouraged vendor software upgrades that impact a transit agency's data architecture. The Federal Transit Administration is pushing for better procedures and tools for ensuring a "state of good repair" for transit assets. A significant nation-wide trend toward “open transit data” has pressed Metro to make transit service data available more quickly with fewer data issues.
New fare payment technology options becoming more available	Vendor software and hardware options for fare payment technology may drive different data and technology architectures
Rapidly changing technology lifecycles create new training needs and have impacts on needed staff skill sets	The ability of County staff to assess, implement, and maintain technology solutions is impacted by the amount and quality of the training they have received and their skill levels
Increasing push for connected vehicles and regional standardization	Technology advances with respect to connected vehicles have been moving relatively quickly, accelerating the need for discussion with regional partners on standards. Metro Transit, with a suite of regional partners, recently participated in pursuing a USDOT Connected Vehicle grant.

3 Strategic Technology Vision

This section will present a longer-term vision of the technology program at Metro Transit in the post-2020 time frame. It is not a list of projects, but rather a discussion of the technology investments that are needed now to deliver the strategic objectives identified in the King County and Metro Transit strategic plans.

3.1 Vision

The vision statement is intended to be a big-picture, forward-looking statement of what the technology program at Metro Transit will do and become, through the implementation of the Roadmap.

As an example, a draft vision could be:

Metro's technology program supports transit's goals and meets business needs by providing secure, reliable, flexible and cost-effective technology solutions that measurably demonstrate continuous improvement; are intuitive for end-users; deliver accurate and accessible data for a wide range of users and uses; and are integrated with regional transit initiatives.

3.2 Goals and Objectives

This section will identify the goals and objectives for Metro Transit’s technology program.

While the goals, objectives and strategy work is continuing, the following presents an example of what will be included in this section.

Goal: Effective Application of Technology. A technology program that aligns with, and supports the realization of, Metro Transit's commitment to continuous improvement and strategic goals, while providing effective technology tools to appropriately meet business needs.

Objectives:

Effectively apply technology to meet transit business needs relating to efficiency, productivity, safety and reliability

Develop and follow a prioritization process that is straightforward and can demonstrably meet the needs of internal customers

Goal: Excellence in Customer Service. Add value to key Metro Transit initiatives that expand service and enhance the customer experience.

Objectives:

Deliver accurate, integrated real-time information

Support new and advanced yet accessible fare collection media

Goal: Quality Information. Deliver easily-accessible, accurate and usable data to a wide range of internal and external end user.

Objectives:

Build authoritative information and data services

Reduce error, rework and data inconsistency

Goal: Adaptability. Ensure that applications, data and infrastructure that is secure and robust, while staying flexible to support rapidly-changing needs and policies.

Objectives:

Build a lifecycle enhancement and replacement schedule for all systems

Refine the life cycle management process to plan for technology "refreshes"

Goal: Maintainability. Be maintainable within available or obtainable resources.

Objectives:

Maintain an up-to-date inventory and periodically assess business and technical fit

Dedicate appropriate resources for operations, maintenance, and asset replacement

Strategically plan and fund a maintenance program that aligns KCIT and Metro Transit priorities, acknowledging new funding models

Provide appropriate training to maintain new and existing technologies

Goal: Strategic Thinking. Implement a program that reflects a thoughtful and forward-looking planning and prioritization process, and demonstrates a balancing of user needs.

Objectives:

Verify new projects incorporate business owner input and are a "fit" within the STRT priorities and evaluation criteria

Move forward with key, approved initiatives, such as advancement of integrated real-time information and cashless fare collection technologies

Define roles, responsibilities, and processes for transitioning and maintaining a project

Be able to identify and communicate resulting programmatic support needs to KCIT

Adopt transit industry best practices and seek feedback from multiple perspectives

3.3 Strategies

This section will identify vision and goal-supporting strategies to address the technology trends and internal and external drivers impacting Metro Transit.

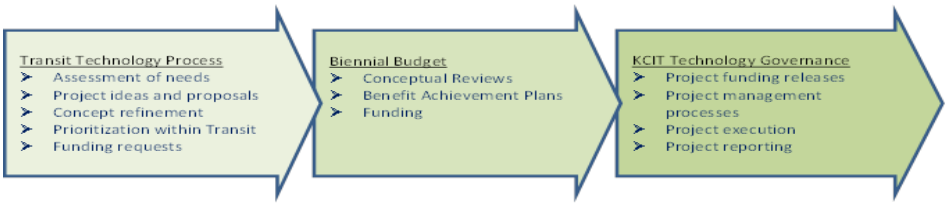
Strategies will be identified which support the goals and objectives developed in section 3.2. This section is still in process and will be completed as the goals and objectives are developed. Strategies may include individual project identification, using technology to improve efficiency, techniques for getting customer feedback, forming partnerships to address specific needs and/or responding to changes in the technology landscape.

4 Strategic Technology Roadmap

This section will provide the Strategic Technology Roadmap, guided by the vision, goals and strategies identified in the previous section. This section will first outline the process that is used to ensure that projects on the roadmap meet the criteria for inclusion described in previous sections of this document. This will be followed by the roadmap itself.

4.1 Assessment and Prioritization Process for Technology Initiatives

This section will identify the process for strategically identifying and assessing technology initiatives to determine if and how they fit into the living Roadmap for achieving the technology vision for Metro Transit. This section will include a description of Metro Transit and King County's Technology Governance Processes and how those processes support the assessment and prioritization of technology initiatives. Visually the governance process can be shown as:



4.1.1 Managing Technology Changes

This section will identify an approach and recommendations Metro Transit can use to anticipate and get ahead of technology changes and trends. This will include a disciplined approach to change management that addresses lifecycle as well as how to position Metro's systems and processes for the future. As outlined in the internal and external drivers sections, changes comes in a variety of directions and this process needs to provide a way to assess the impact of the potential changes. Impacts on goals such as Equity and Social Justice and customer satisfaction need to be considered when looking at change.

4.1.2 Financial Considerations

This section will identify processes and strategies for budget planning, considering the market trends impacting financing and the services delivery model. Adherence to the Financial Stewardship goal will be discussed in this section.

4.1.3 Maintaining the Investment

This section will identify related maintenance implications and recommendations, such as ownership changes of projects as they transition from implementation to operations. Issues such as State of Good Repair and adequately providing for the ongoing maintenance of systems will be addressed in this section.

4.2 Metro Transit Project Roadmap

This section will include the technology efforts (projects in many cases) aligned with the goals and objectives outlined earlier. The Roadmap will look at the period of 2015-2020 with particular emphasis on what is currently being done, what is on deck to be done and what needs to be done but isn't yet scheduled. This work will inform the 2017/2018 technology budgeting process through the oversight and governance process discussed in section 4.1.

5 Moving Forward

This section will identify a set of recommendations for moving forward with the near-term program, and will also identify an approach for updating and maintaining the Strategic Technology Roadmap for Metro Transit as a living document. Included in the recommendations will be a KCIT-Metro developed assessment of the current oversight processes and how and if those processes need to be revised to respond to the changing business environment and technology landscape.