DART Enterprise Technology Roadmap

Version 4.1

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DART Enterprise Technology Roadmap

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Document Version History

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4.0	28 Aug 2014	Keith Andrews Enterprise Architect	New version with updated content
4.1	9 Sep 2014	Keith Andrews Enterprise Architect	Added: Standards Organizations; Table of Contents

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Introduction

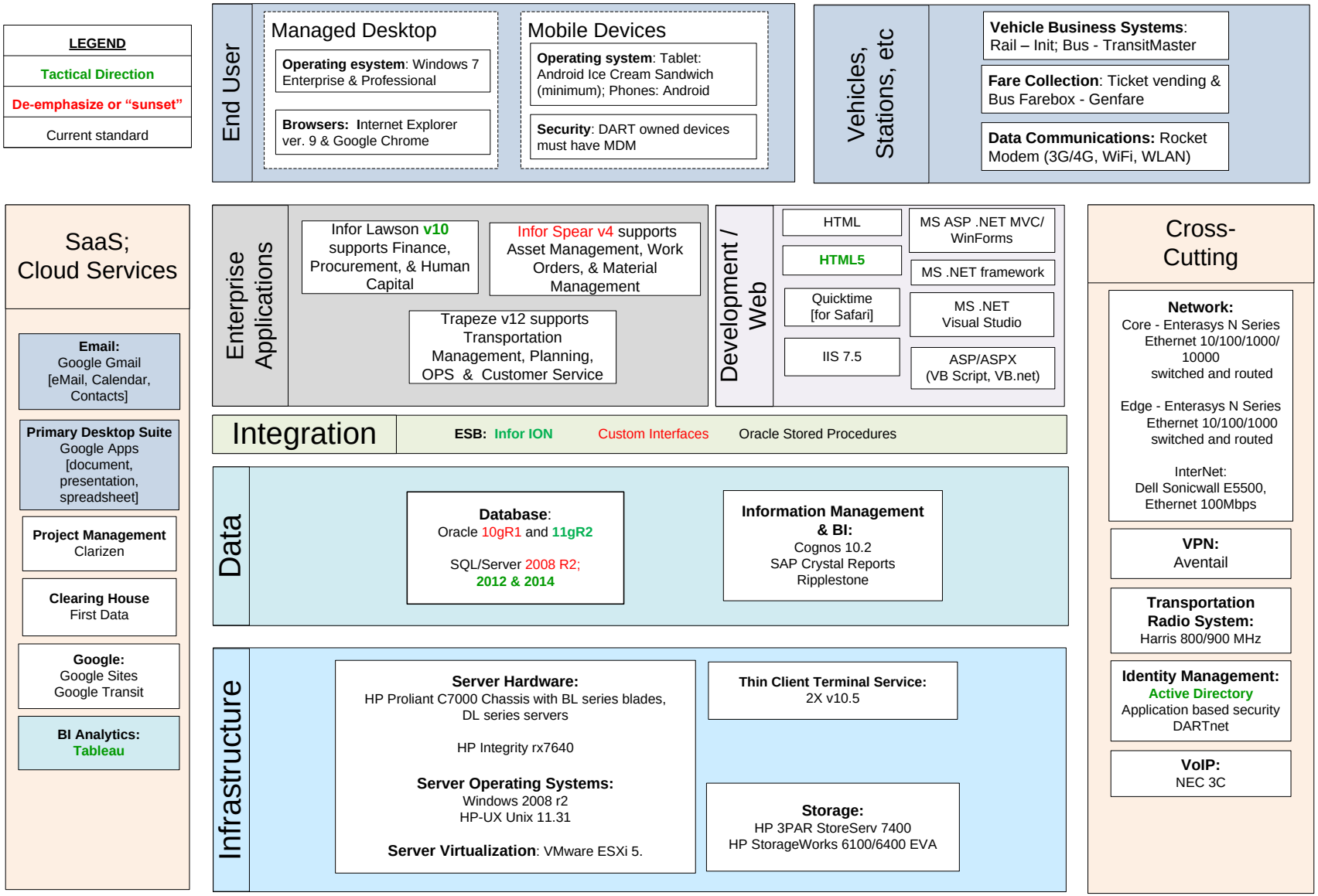
The DART Enterprise Technology Roadmap highlights architectural, operational, and procedural enterprise technology requirements that will be considered in IT software, hardware, and service acquisitions. DART's IT Department maintains this document to inform technology providers of current and planned Enterprise IT directions. Suppliers are required to affirm their review of this document and commit that their products will operate in accordance with this roadmap unless otherwise explicitly documented in their proposals.

Overview of DART Technology

DART currently hosts internally all its enterprise class systems, except email, with an on-site primary data center and an off-site secondary data center for disaster recovery. Enterprise applications are hosted predominately on virtual servers on the Windows platform, as well as on Unix. Windows servers are standard for other applications. The primary standard database management system is Oracle, with increasing use of SQL/Server. There are significant custom developed interfaces between the various modules of different application suites. However, application middleware based on Apache ActiveMQ will start deployment in 2015. While internal hosting is the preferred platform, DART is not opposed to externally hosted solutions provided all interface and reliability requirements can be met.

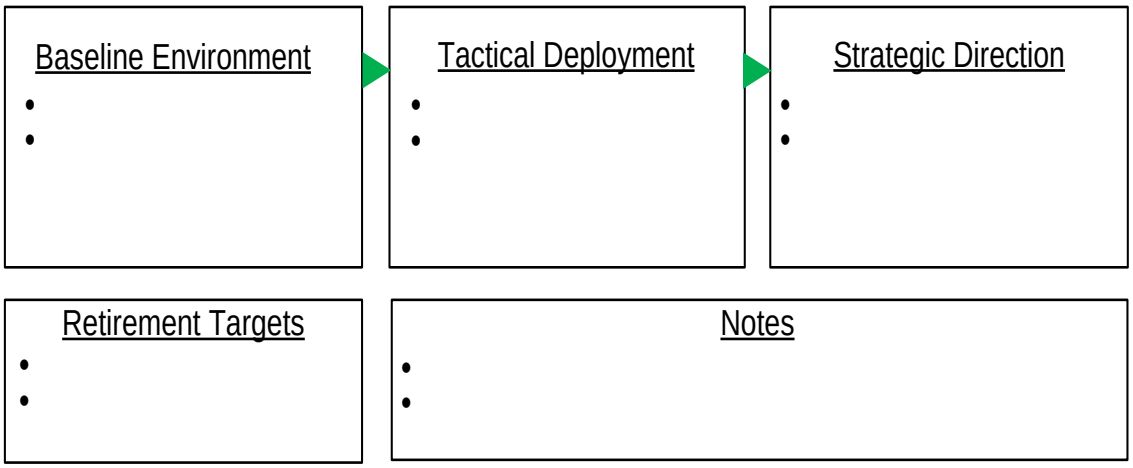
All DART facilities are connected by an MPLS wide area network which also carries voice traffic for VoIP telephony system, with quality of service (QoS) implemented. Bandwidth can be adjusted as demand increases. There is an active project to deploy private Wi-Fi network in all operating facilities.

DART Enterprise Technology Architecture Diagram



DART Enterprise Technology Roadmap

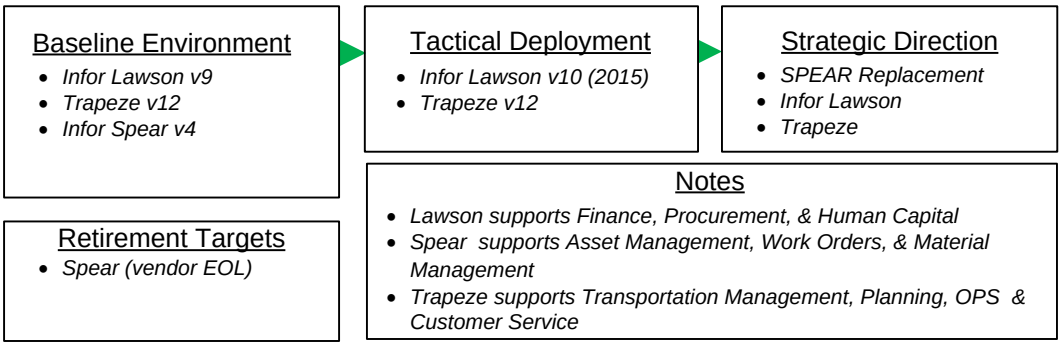
Major categories of DART Enterprise Technology are documented below along with the intended progression of upgrades expected over the next 5 years.



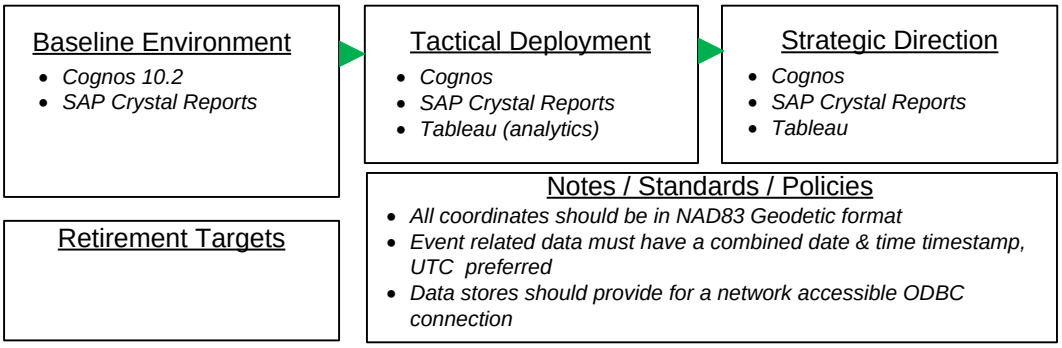
The current status is described under **Baseline Environment**, planned upgrades within 1-2 years are under **Tactical Deployment**, and **Strategic Direction** includes changes anticipated within a 3-5 year horizon. **Retirements** indicates components that will be decommissioned as their replacement capabilities come online. **Notes** provide additional information, emerging and current standards, and DART policy, as appropriate to the technology category.

DART Enterprise Technology Roadmap

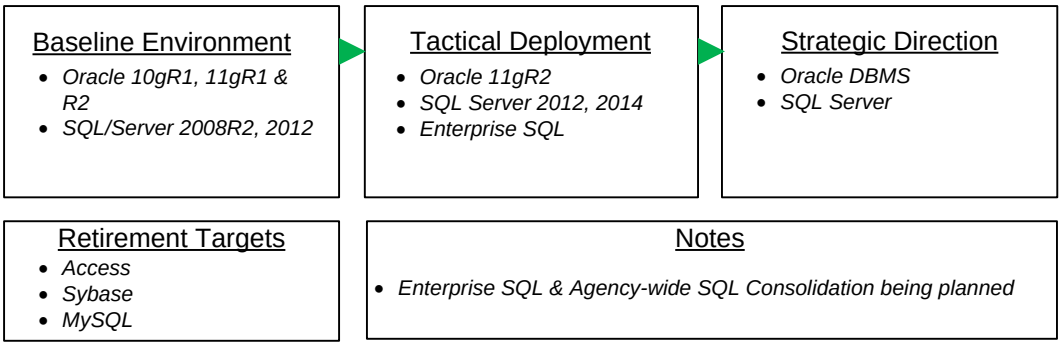
Enterprise Applications



Business Intelligence

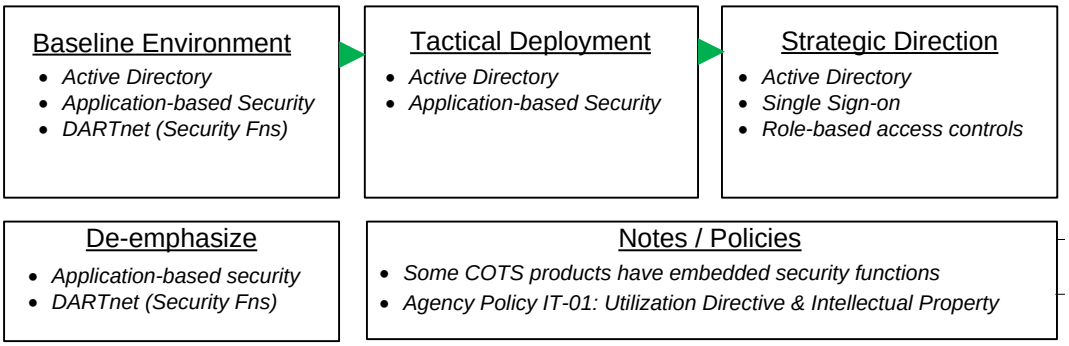


Database

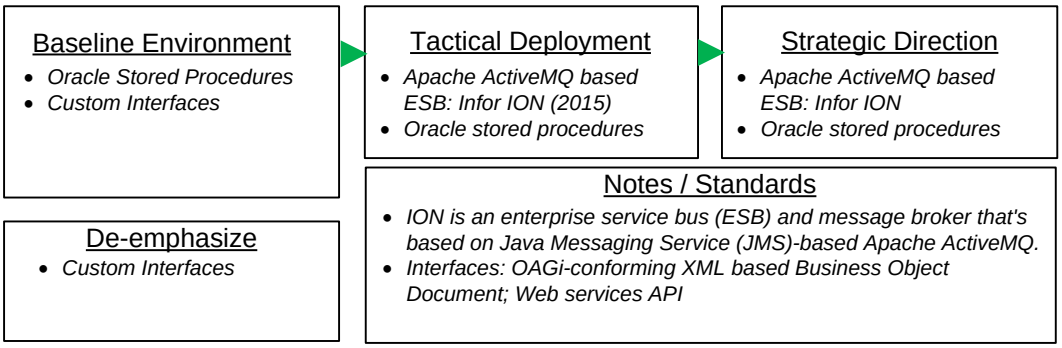


IT Security & Identity Management

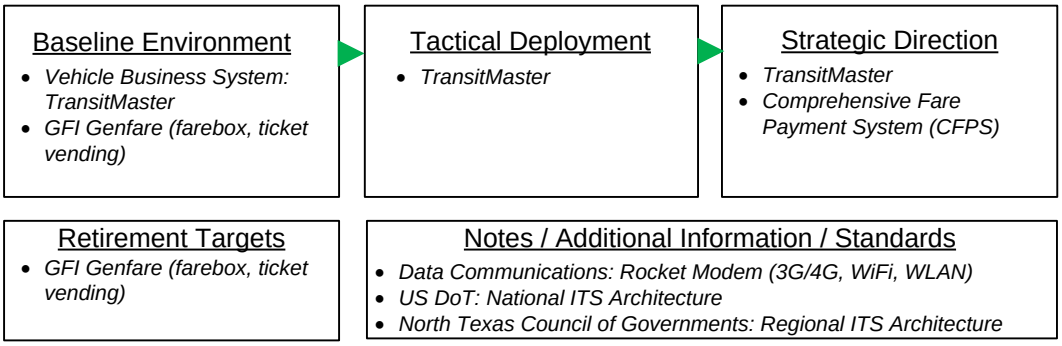
DART Enterprise Technology Roadmap



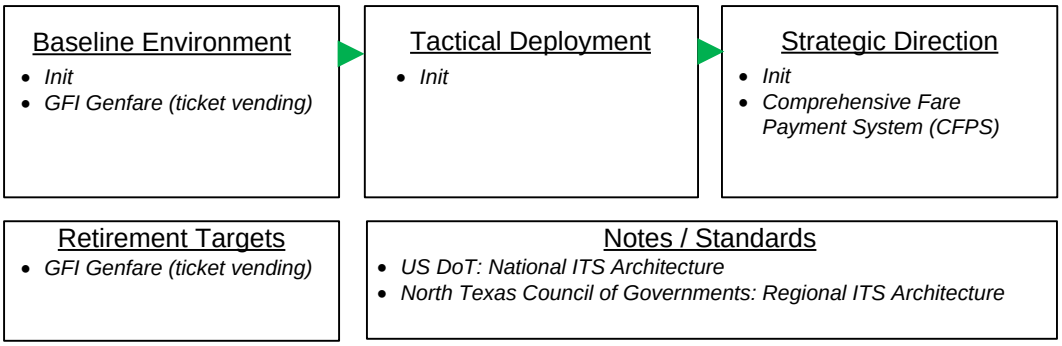
Integration



Vehicle Systems - Bus



Vehicle Systems - Rail



Development / Web

DART Enterprise Technology Roadmap

Baseline Environment	Tactical Deployment	Strategic Direction
• *Microsoft .net* • *Visual Studio*	• *Microsoft .net* • *Visual Studio*	• *HTML5* • *Microsoft .net* • *Visual Studio*

Retirement Targets	Notes / Standards
•	• *HTML5 (emerging)* • *Web services: IIS, Apache, WebSphere*

End User: Desktop / Laptop

Baseline Environment	Tactical Deployment	Strategic Direction
• *Windows 7 (Enterprise & Professional)* • *Internet Explorer v9* • *Chrome* • *Thin client (default)* • *No user administrator rights*	• *Windows 7 (Enterprise & Professional); Windows 9 (tbd)* • *Internet Explorer v10/11* • *Chrome* • *Thin client (default)* • *No user administrator rights*	• *Windows 9 or ?* • *Internet Explorer* • *Chrome* • *Thin client (default)* • *No user administrator rights*

Retirement Targets	Standards
• *Windows Vista & XP*	• *Thin Client Terminal Service: 2X v10.2* • *Primary Desktop Suite: Office 2007 & GMail; Secondary: Google Apps [document, presentation, spreadsheet]* • *Laptops have local storage and critical applications for mobility*

End User: Mobile Devices

Baseline Environment	Tactical Deployment	Strategic Direction
• *Tablet: Android Ice Cream Sandwich (minimum)* • *Smartphone: Android*	• *Windows tablets are being evaluated*	

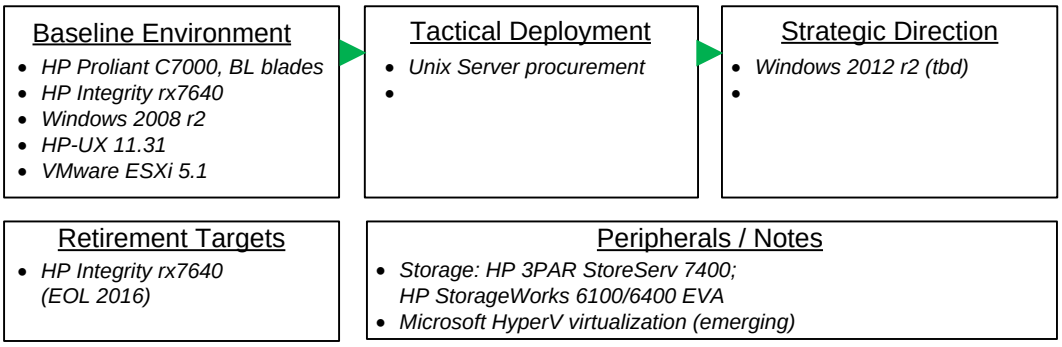
Retirement Targets	Notes / Standards
	• *BYOD policy under development* • *DART owned mobile devices must have MDM installed*

Voice & Data Communications

Baseline Environment	Tactical Deployment	Strategic Direction
• *Routing: Enterasys N Series* • *Edge: Dell Sonicwall E5500* • *VoIP: NEC 3C*	• *Router Replacement Procurement* • *Edge: Dell Sonicwall E5500* • *VoIP: NEC 3C* • *Private WiFi 802.11ac*	•

Retirement Targets	Standards
• *Enterasys N Series (vendor EOL 2016)*	• *Ethernet 10/100/1000/10000; switched and routed* • *LAN/WAN: MPLS / Opteman* • *IEEE 802.11ac (wireless)*

Infrastructure



Partial List of Technology Standards and Standards Organizations

American Institute of Certified Public Accountants (AICPA)

American Public Transportation Association Standard for Transit Communication Interface Profiles

Information Technology Infrastructure Library (ITIL)

Institute of Electrical and Electronics Engineers (IEEE)

International Organization for Standardization (ISO)

National Institute of Standards and Technology (NIST)

North Texas Regional ITS Architecture (NCTCOG)

Society of Automotive Engineers

The Open Group

U.S. Department of Transportation: Federal Transit Administration (DOT / FTA)

U.S. Department of Transportation: National ITS Architecture

World Wide Web Consortium (W3C)