

UTFS_FM_01
Trends in Electronic Fare Media
All Comments Received

Rec'd	Reviewer	Page #	Section #	Comment	Resolution
CM-R	Jennifer Cheng, MTC	13	4.1.0	Disagree with last sentence. Suggest using "could indicate" rather than "would indicate". (Also, "contactless" is misspelled.)	Implemented change as submitted.
CM-R	Jennifer Cheng, MTC	14	4.3.0	Bullet f – Not clear why it is important to specify a max transaction speed in the question, since the transaction speed is not wholly dependent on the card. Suggest that question be made more generic, to ask whether there should be a max transaction speed, and then what that parameter should be.	Bullet reads: <i>How much time should a complete transit fare transaction take to complete before system degradation is noticed?</i>
CM-R	Jennifer Cheng, MTC	14	4.3.0	Bullet g – It should be noted that a read/write distance requirement may be constrained by other factors (e.g., standards, regulations, etc.).	Bullet reads: <i>What is the systems PICC to PCD distance read and write requirement?</i>
CM-R	Jennifer Cheng, MTC	14-15	4.3.0	In general, the questionnaire seems to focus heavily on the card, and perhaps not enough on the application or the system behind the application.	Added references to applications throughout list of questions
CM-R	Jennifer Cheng, MTC	23	4.8.0	2nd paragraph, 1st sentence – Not clear why it isn't a wise procurement decision to buy the reader from the same manufacturer as the card supply. That statement needs more explanation. The benefits of reduced s/w integration and finger pointing are under-emphasized. Integration can kill a project schedule and budget.	Sentence reads: <i>If the reader (PCD) and the smart card are procured from the same vendor, care should be taken to ensure that not only their smart card effectively operates with the PCD.</i>
CM-R	Jennifer Cheng, MTC	23	4.8.0	2nd paragraph – It is inappropriate for an APTA document to call out a specific vendor.	Reference removed.
CM-R	Jennifer Cheng, MTC	24	4.8.0	Bullet j – Disagree that physical mounting should be included in this list.	Bullet reads:

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	Cheng, MTC			should be included in this list.	<i>Physical mounting</i> (Flush or Above mount to determine range from PCD)
CM-R	Jennifer Cheng, MTC	27	5.1.1	1st paragraph – Disagree with the general statement that contactless technology offers significant advantages over contact in terms of cost and the ability to support new application development. Contact cards and readers are less expensive than contactless. Except for applications requiring low transaction speeds like transit fare payment, what can contactless applications do that contact can't?	Sentence reads: <i>Contactless technology offers significant advantages over contact based solutions in terms of overall system operational cost, reliability, security, speed of transaction and the ability to support new application development that necessitates fast transactions.</i>
CM-R	Jennifer Cheng, MTC	28-34	5.1.2, 5.1.3	It is inappropriate for an APTA document to incorporate marketing information from specific vendors. Suggest including a list of websites or other contact information.	Change not implemented
CM-R	Jennifer Cheng, MTC	36-39	5.3.0, 5.4.0	Section reads like vendor marketing material. While it is important for the reader to learn about non-standard smart card products, efforts should be made to present the information in a more objective manner.	Change not implemented
CM-R	Jennifer Cheng, MTC	61	9.5.0	TransLink® is a registered trademark. Please use ® rather than ™.	Change implemented as submitted.
CM-R	Jennifer Cheng, MTC	61	9.5.0	1st paragraph, 2nd sentence – Disagree with the statement that limited functionality was implemented. The card and regional fare payment system are fully functional; the demonstration was limited only in its deployment, i.e., on select routes and stations of	Sentence reads: <i>A few years ago TransLink® launched a demonstration system with nearly full functionality and six separate agencies participating</i>

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				six rather than 20+ transit systems.	
CM-R	Jennifer Cheng, MTC	62	10.0	There have been several previous research studies that documented case studies on smart card systems. Suggest performing a search and including some additional references in this section.	Added the following: <i>The latest market research indicates that between thirty-five and fifty transit agencies have implemented to varying degrees smart card systems as of the year 2001.</i>
CM-R	Jennifer Cheng, MTC	71-73	11.1	Section seems too specific to particular vendors' products.	Change not implemented
CM-R	N. Poling, MARTA	13	4.2.0	Third line from bottom change "contacless" to "contactless"	Change made as submitted.
CM-R	N. Poling, MARTA	18	4.5.0	Last line in section change "advise" to "advice"	Change made as submitted.
CM-R	N. Poling, MARTA	21	4.6.2	The last two sentences in the first paragraph state that security choices are among the most important decisions to be considered in smart card system. This statement needs to be followed up with a discussion of choices and perhaps recommendations. Sections 4.4.0, 4.5.0, 5.3.0, 9.1.0 and 9.4.0 touch on choices but these are not outlined. Such an important statement needs more follow up.	Added the following: <i>Other APTA publications will address this topic in detail.</i>
CM-R	N. Poling, MARTA	24	4.8.0	Paragraph 1 change "poling" to "polling"	Change made as submitted.
CM-R	N. Poling, MARTA	57	9.1	Third line from bottom change "thought" to "though"	Change made as submitted.
CM-R	N. Poling, MARTA	68	LA Case	Last word of second paragraph change "fraud" to "defraud"	Change made as submitted.

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CM-R	N. Poling, MARTA	69	LA Case	"Based on this evaluation, LACMTA elected to pursue the smart card system without magnetics." I think this statement needs to be followed up by a full discussion of all the media being used by LACMTA (flash passes, day pass on paper receipt, paper transfers). It also needs to be pointed out that LACMTA is a POP system.	Added the use of flash passes.
CM-R	N. Poling, MARTA	87	12.0	Third line from top change "contactless" to "contactless"	Change made as submitted.
CM-R	G. Garback, WMATA	0		APTA's address is incorrect. It is 1666 K Street NW and the zip is 20006.	Change made as submitted.
CM-R	G. Garback, WMATA	0		Replace "Note" with "Not" in second sentence.	Change made as submitted.
CM-R	David McIlwraith , ERG	25	5.0	Diagrams should be provided without reference to contributor. If reference is essential, it should be in a table or figures or a footnote. This applies throughout the document.	Change not implemented.
CM-R	David McIlwraith , ERG		5.0	Examples of cards from specific manufacturers should be placed in an appendix. The current layout emphasizes a small number of manufacturers (who are contributors to the document), providing a biased impression rather than an educational document.	Change not implemented.
CM-R	David McIlwraith , ERG	38	5.4	Although section 5.3 covers non-standard smart cards (only Sony), the Cubic GO card has its own section. This not only provides a very biased impression, but seems to promote a non-	Change made as submitted.

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				standard, proprietary card, which goes against the whole purpose of the UTFS activity.	
CM-R	David McIlwraith, ERG	56	9.0	Table 9-01 has no caption. Presumably it is included as an example of a card data format, but this is not clear.	Change implemented as submitted. Table is entitled: <i>Smart Card Issuer Record Format Table (Example)</i>
CM-R	David McIlwraith, ERG	62	10.0	The case study section does not include actual operating transit smart card implementations: WMATA, Tranlink and Ventura County. Additionally, King County Metro produced a report on implementing a regional smart card system based upon the results of a pilot they performed which may be relevant.	Change not implemented.
CM-R	Bob Murray, BART	4	About the Reader, Para 2	Change to read "We must focus not only on the future technology...."	Change implemented as submitted
CM-R	Bob Murray, BART	4	About the Reader, Para 3, sentence 4	Change to read "... electronic fare media technology encompassed by standards for media selection...."	Change implemented as submitted
CM-R	Bob Murray, BART	6	Introduction, Para 1, sentence 2	Change to read "The transportation industry is driving many aspects of this innovation and therefore multiple options are now being made available".	Change implemented as submitted

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CM-R	Bob Murray, BART	6	Introduction, Para 2	Change to read "The transit industry has become a significant user of electronic media and is increasing its use of the various technologies daily. Other industries... electronic media. Electronic media is now common to applications in all of these industries. The coexistence... fare media products have made progress during 2001 and 2002."	Change implemented as submitted
CM-R	Bob Murray, BART	6	Introduction, Para 3, sentence 1	Change to read "... electronic media products that can fulfill the ...	Change implemented as submitted
CM-R	Bob Murray, BART	6	Introduction, Para 3, sentence 6	Change to read "... that are either making their way into the industry as of the publishing date of this document or ...	Change implemented as submitted
CM-R	Bob Murray, BART	6	Introduction, Para 3, sentence 7	Change to read " ... IN addition, this section provides a degree ...	Change implemented as submitted
CM-R	Bob Murray, BART	7	Introduction, Para 2. last sentence	Change to read " ...and direct which fare media is best ... payment system.	Change implemented as submitted
CM-R	Bob Murray, BART	7	Introduction, Para 3, last sentence	Change to read " ... enough information is provided about widely adopted ...	Change implemented as submitted

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CM-R	Bob Murray, BART	10	4.0, Para 1	Suggest that tables be numbered 4-1 instead of 4-01.	Change not implemented.
CM-R	Bob Murray, BART	10	4.0, para 1, last sentence	Change to read “ ... products and their association with standards.	Change implemented as submitted
CM-R	Bob Murray, BART	10	Table 4-01	Magnetic cards, center “Test Methods”	Change implemented as submitted
CM-R	Bob Murray, BART	10	Table 4-01	Magnetic cards, ISO15457, Change to read “Thin Flexible Cards Physical, Magnetics, Tests”	Change implemented as submitted
CM-R	Bob Murray, BART	10	Table 4-01	Optical Memory cards, center “Test Methods”	Change implemented as submitted
CM-R	Bob Murray, BART	11	Table 4-01	Contactless Smart Cards, what parts of 14443?	Change implemented as submitted
CM-R	Bob Murray, BART	11	Table 4-01	I believe that European standards should be added to the table where known and applicable.	Change not implemented.
CM-R	Bob Murray, BART	12	4.1.0, para 1, sentence 3	Change to read “In particular the banking industry was in search of a method of payment worldwide which is more secure than magnetic stripe cards, i.e. credit cards.	Change implemented as submitted

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CM-R	Bob Murray, BART	12	4.1.0, para 2	<p>Change to read “There are advantages associated with contact based smart cards over that of contactless. The first being the high probability that a transaction will be completed since many of the contact readers are designed to capture and lock the card until the transaction is completed. This prevents the possibility of a transaction “tear”. A “tear” occurs when a smart card transaction is abruptly terminated in the midst of writing a transaction to the card. Most pay telephones on the other hand do not capture the card and therefore “tearing” of the payment transaction can still occur. Secondly, contact cards are not subject to RF interference since emission of RF energy is not employed. Third, contact card readers on average are less costly to manufacture than contactless readers. Lastly, contact cards have been issued for over a decade in high volume which has effectively established proven international standards, high security and volume manufacturing by many companies.”</p>	<p>Para reads: There are advantages associated with contact based smart cards over that of contactless. The first being the high probability that a transaction will be completed since many of the contact readers are designed to capture and lock the card until the transaction is completed: This prevents the possibility of a transaction “tear”. A “tear” occurs when a smart card (PICC) transaction is abruptly terminated in the midst of writing transaction data to the PICC. Most pay phones on the other hand do not capture the card and therefore “tearing” of the payment transaction can still occur. Secondly, contact cards are not subject to RF interference since there is no activation of RF emitting energy. Third, contact card readers on average are less costly to manufacture than contactless readers. Lastly, contact cards have been issued for over a decade in high volume, which has effectively established proven international standards, high security and volume manufacturing by many companies.</p>

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CM-R	Bob Murray, BART	13	4.1.0, para 4	Change to read "For transit fare gate or farebox entry and exit purposes, contact cards represent significant increases in transaction times or dwell time. Inserting a contact smart card into a card reader slot at a fare gate or farebox also presents a physical challenge for patrons with disabilities. One of the most costly attributes of operating a transit agency is the cost incurred to provide maintenance. A well understood contributor to system maintenance cost is keeping any physical point of electrical contact clean to insure system functionality. Contact cards which require electrical contacts have exhibited costly card and reader replacements due to harsh environmental conditions and vandalism."	Para reads: For transit fare gate or farebox entry and exit purposes, contact cards represent significant increases in transaction times or dwell time, physical challenges of inserting these cards into a card reader slot (Less friendly toward patrons with disabilities). One of the most costly attributes of operating a transit agency is the cost incurred to provide maintenance. A well understood contributor to system maintenance cost is keeping any physical point of electrical contact clean to insure system functionality. Contact cards requiring a point of electrical connectivity that has exhibited costly card and reader replacements due to harsh environmental conditions and vandalism.

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CM-R	Bob Murray, BART	13	4.1.0, para 5	Change to read “Contact card technology is now often integrated with contactless technology providing a dual interface card product. This type of card product bridges both technologies but at an additional cost per card. Some applications use these two technologies to achieve a contact card banking transaction for loads/transfers while the contactless mode is used for expenditures. It is worthy of mentioning that several banks and credit card organizations are now sampling or experimenting with contactless card banking transaction loads/transfers and expenditures. One of the reasons put forth by the banking community for using contacts during loads/transfers is to reduce the potential for fraud. However, many industry experts believe the security of contactless cards to be equal to contact cards. The early but limited success of contactless card products would indicate the eventual end to contact smart cards.”	Para reads: <i>Contact card technology is now often integrated with contactless technology providing a dual interface card product. This type of card product bridges both technologies but at an additional cost per card. There are some applications that use these two technologies to achieve a contact card banking transaction for loads/transfers while the contactless mode is used for expenditures. It is worthy of mentioning that several banks and credit card organizations are now sampling or experimenting with contactless card banking transaction loads/transfers and expenditures. The early but limited success of contactless card products could indicate the eventual end to contact smart cards.</i>
CM-R	Bob Murray, BART	13	4.2.0, para 1, Sentence 1	Change to read “ ... commonly used terms for ...	Change implemented as submitted
CM-R	Bob Murray, BART	13	4.2.0, para 1, sentence 2	Change to read “ ... These devices are often ...	Change implemented as submitted

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CM-R	Bob Murray, BART	13	4.2.0, para 1, sentence 3	Change to read "... both a wireless (RF) or contactless device as well ...	Change implemented as submitted
CM-R	Bob Murray, BART	13	4.2.0, para 1, sentence 4	Change to read "This document discusses, for the most part, contactless ...	Change implemented as submitted
CM-R	Bob Murray, BART	13	4.2.0, para 1, sentence 5	Change to read "The term smart card ... throughout this document."	Change implemented as submitted
CM-R	Bob Murray, BART	13	4.2.0, para 1, sentence 9	Change to read "... or Hybrid (Differentiated circuits) and sometimes referred to as a combi-card."	Change not implemented
CM-R	Bob Murray, BART		4.2.0, para 1, sentence 11	Change to read "... especially in three industries, financial, security and transportation."	Change not implemented
CM-R	Bob Murray, BART		4.2.0, para 1, sentence 12	Change to read "Interestingly enough, the focus ..."	Change not implemented
CM-R	Bob Murray, BART		4.2.0, para 1, sentence 13	Change to read "... being fueled by the ever improving ..."	Change implemented as submitted

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CM-R	Bob Murray, BART		4.2.0, para 1, sentence 15	Change to read "At odds is the priority set by each of the three industries on the requirements to satisfy ..."	Change not implemented
CM-R	Bob Murray, BART		4.2.0, para 1, sentence 16	Change to read "It is not the intention of this document to side with ... applications while keeping financial and security interests in mind."	Change implemented as submitted
CM-R	Bob Murray, BART		4.3.0 c.)	Change to read "What level of card durability or life ..."	Change not implemented
CM-R	Bob Murray, BART		4.3.0 d.)	Change to read "... or the system population of cards?"	Change implemented as submitted
CM-R	Bob Murray, BART		4.3.0 h.)	Change to read "How secure must the card be?"	Change not implemented
CM-R	Traci Rozier, CTA	50	6.3	General comments regarding clarity of discussion of Optical Memory Cards (ex. clarification needed regarding LaserCard and Ultracard, and questions regarding footnotes.)	Changes made and submitted as version 1.40
CM-R	Gary Yamamura, 3PCI	Various	Various	General grammar edits.	Changes implemented.
CM-R	Robert Reavis, BART	Various	Various	Numerous general grammar edits.	Changes implemented.

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CM-R	Walt Bonneau, 3PCI	9-10	3.0	Acronym list needs modification.	Acronyms list was modified to contain: CID, NFC, CDMA
CM-R	Walt Bonneau, 3PCI	29	5.0	Format figures	Figure 5-02 and 5-03 were re-formatted
CM-R	Walt Bonneau, 3PCI	60	9.2	Format figures	Figure 9-02 was re-inserted (ITSO Module flow)
CM-R	Walt Bonneau, 3PCI	Various	Various	<p>Numerous general grammar edits:</p> <p>Fixed various errors including: thethe, a a, no spacing on ISO entitlments, etc.</p> <p>Corrected and made consistant the proper use of ISO naming such as: ISO 14443 s/b ISO/IEC 14443</p> <p>Edited the term smart card with PICC where appropriate</p> <p>Updated the Near Field Commuicates section to include: ISO and IEC latest standards approval</p> <p>Addressed the open comments inserted by R. Reavis and corrected them throughout the document. This included the addition of "Tear" usage.</p> <p>Inserted Page-Breaks where needed, several were now missing</p> <p>Corrected the front/cover page as follows: Date</p>	Changes implemented.

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				<p>modified to... February 14, 2004, Version 1.50</p> <p>Corrected the APTA copyright page to list years 2003-2004.</p> <p>Corrected the Table of Contents</p> <p>Reformatted the various tables where logos were removed so that no empty columns remain.</p>	

Rec'd Codes:

CM-R: Comment received during committee review period

CM-V: Comment received during committee voting period

TF-R: Comment received during task force review period

TF-V: Comment received during task force voting period