Digital Signage

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1. SG16 Question under Study 14 "Digital Signage"

ITU-T SG16 Question under Study 14 (Q14/16) is a relatively new question under study, established at the previous session (2013-2016) with the research theme of "Digital Signage". The question chairman (Rapporteur), Kazunori Tanikawa (NEC), and Associate Rapporteur, Shin-Gak Kang (ETRI, Korea) have been promoting standardization as an e-service for presenting information, mainly outdoors. The current work items are shown in Table 1.

2. Digital Signage and the Tokyo Olympics/ Paralympics

Many participants and spectators will be visiting Tokyo for the Tokyo Olympics and Paralympics, and digital signage is expected to be used as a means of providing a wide range of information services out-of-doors, including notices and warnings regarding sporting events, tourism information, and disaster information in the event of emergency. "Demonstration of disaster and other information provision according to multi-language and other attributes using digital signage" was conducted as part of the 2016 Ministry of Internal Affairs and Communications project, "Research contracts regarding regional demonstrations for implementing an IoT hospitality environment." It included discussion of the Tokyo Olympics and Paralympics, and the results have been published as the Digital Signage Consortium (DSC) Operational Guidelines. (http://www.digital-signage.jp/).

In Table 1, the draft recommendations H.DS-PISR, "Service requirements and a reference model on information services in public places via an interoperable service platform," and H.DS-FIS, "Framework for interactive service," were work items proposed by Japan as a base for these guidelines. H.DS-PSR handles requirements for establishing a common operating platform for digital signage, so that information of consistent quality can be provided efficiently and reliably in a multi-vendor, multi-operator environment. H.DS-FIS describes a framework for advanced information services beyond conventional one-way presentation of information by information providers on large-screen displays, linking smartphones to digital signage systems and responding to the characteristics and demands of individuals. HSTP.DS-WDS "Technical Paper on Digital signage: Web-based digital signage," is also important regarding linking with smartphones, so this study is proceeding while exchanging information with W3C, in order to realize a lightweight, richly expressive implementation using Web technologies such as the widely available HTML5.

3. Discussion overview

The SG16 meeting was held from October 12 to 16, 2017 in China (Macau), and the Q14/16 deliberation topics are introduced below.

The objective of this meeting was to complete H.782 "Metadata" (previous abbreviation: H.DS-META), so there were two intervening meetings (teleconferences) to move toward completion, and in this meeting, deliberation focused chiefly on consistency between this specification and related recommendations, and on revising wording. Consent was received at the SG16 Plenary meeting. The basic service specifications

Table 1: Q14/16 Work items

Code	Title	Editor
H.DS-AM	Digital signage: Audience measurement	M. Huh (ETRI), H. Yamamoto (OKI)
H.DS-ASM	Digital signage: Metadata for alerting services	M. Huh (ETRI)
H.DS-CASF	Common Alerting Service Framework for Digital Signage	M. Huh, W. Hyun, H. Park (ETRI)
H.DS-DCI	Digital signage: Display device control interface	S. Kang, C. Lee (ETRI)
H.DS-FIS	Digital signage: Framework for interactive service	K. Tanaka (NTT), S. Kwon, S. Kang (ETRI)
H.DS-PISR	Digital signage: Service requirements and a reference model on information services in public places via an interoperable service platform	K. Tanikawa (NEC)
HSTP.DS-Gloss	Technical Paper on Digital signage: Use-cases regarding interactive services	H. Kim (ETRI), K. Tanaka (NTT)
HSTP.DS-WDS	Technical Paper on Digital signage: Web-based digital signage	S. Kwon (ETRI), K. Tanaka (NTT)

Table 2: Basic service metadata

Category	Summary	Metadata example
Terminal linking	Terminal initialization data, specifications, and operating state.	TerminalId, Location, TerminalStatus, DisplayInformation, CapabilityList, etc.
Connected device related	External devices connected to dedicated terminals	InteractiveDeviceID, Type, Status, EventDataType, EventAction
Content	Content data for presentation	ContentId, Title, Synopsis, KeywordList, Genre, MimeType, Productiondate, etc.
Server	Information regarding various servers	ServerId, Location, Password, etc.
Playlists	Content display sequencing information	PlayListId, Priority, PlayOrder, ContentIDRef, TargetRegion, Duration, etc.
Play logs	Terminal operation data history	LogItemType, ContentIdRef, PlayStatus, StartDateTime, Duration, etc.
Schedules	Data distribution schedule management information	ScheduleId, PublicationDateTime, SendDateTime, DeliveryMethod, etc.

for digital signage (mainly one-way information presentation from service provider to viewer on dedicated digital signage terminals) are summarized in H.780 "Service Requirements", H.781 "Architecture", and H.782, which is discussed here. The basic service metadata is categorized as indicated in Table 2.

As mentioned above, H.DS-PISR is an important discussion theme for Japanese participants, introducing a usage concept for the Interoperable Service Platform that is now under consideration. Figure 1 presents a concept in which, in the upper part of the figure, original data is sent from information sources, in the center it is converted to a common format by the Interoperable Service Platform, and is then distributed to dedicated digital signage terminals or terminals owned by viewers. It also shows the potential for use in combination with external cloud services.

In the figure, data is sent directly to terminals through the

Figure 1: Concept of Interoperable Service Platform

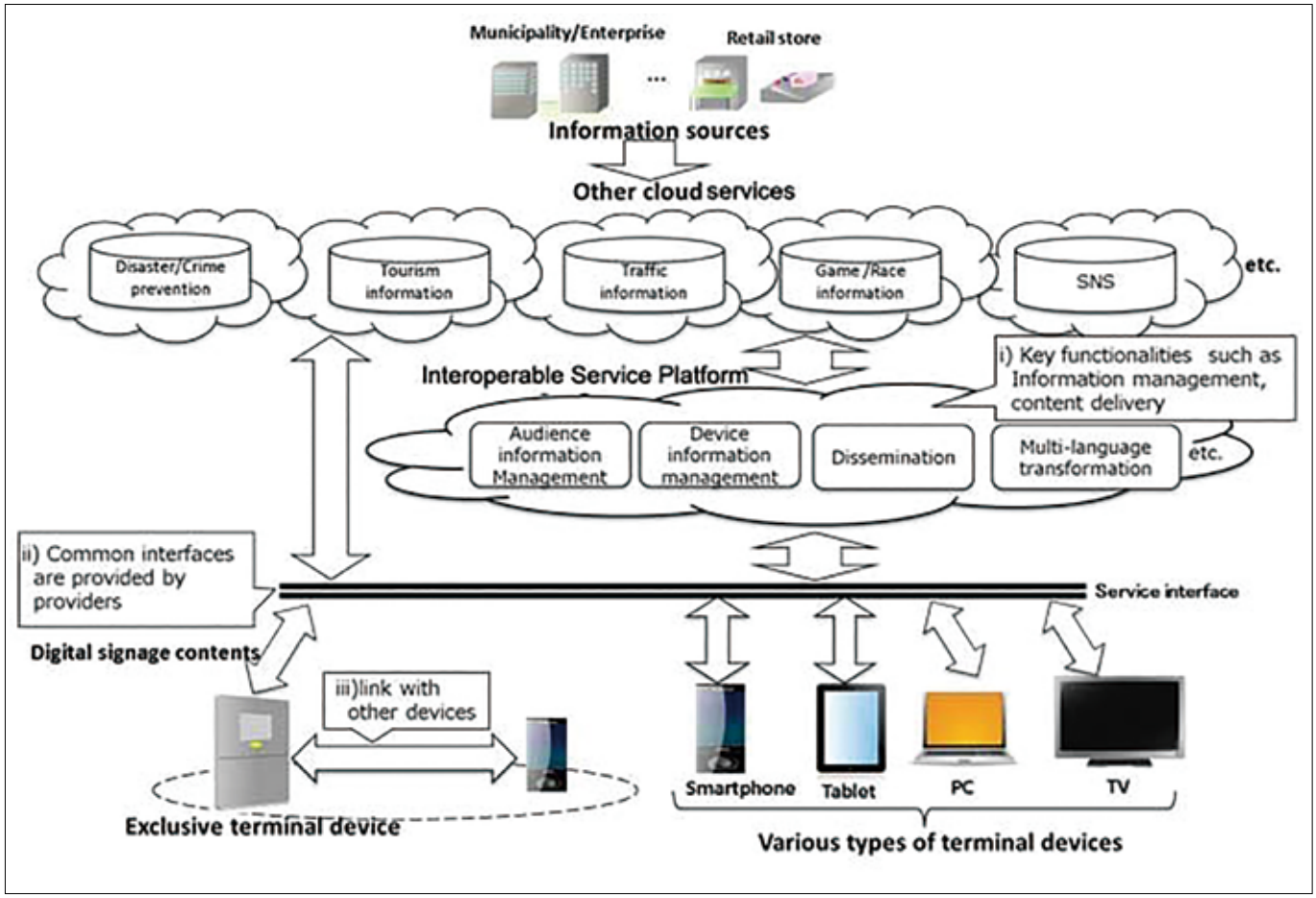
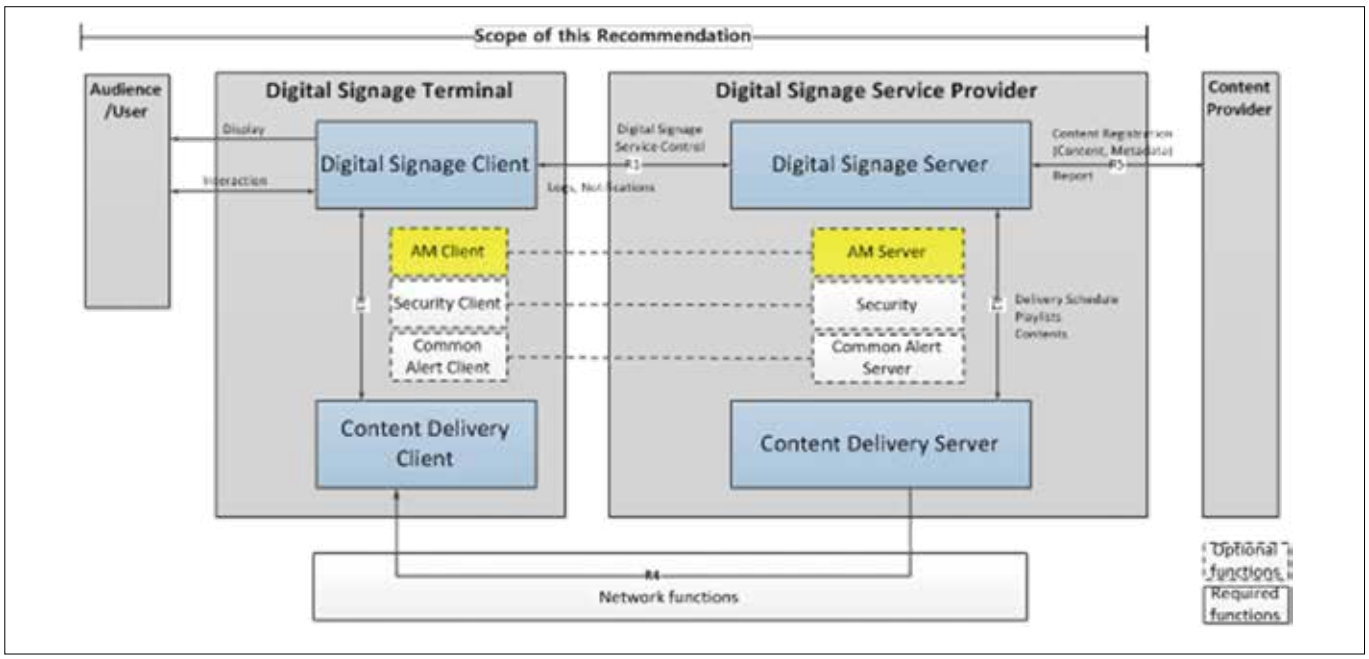


Figure 2: Collection of audience information



service platform, but to this point, most of the study has focused on having content converted by the service platform and then sent back to the systems of each service operator, who will then distribute it to their terminals.

At the previous meeting, H.DS-PIS was treated as a requirements document, but at this meeting, Japan submitted additional high-level system requirements reflecting the content of the guidelines mentioned earlier, as well as metadata specifications, and these were approved. System requirements needing consideration include specifications for terminal Push notification services. Metadata needing consideration includes data shared between Interoperable Service Platform and service providers and required for content conversion, such as content creation and creator data. It is also expected that guidance services will use requests from viewers and attributes from their smartphones (language type, terminal type, etc.), so requirements for the handling of Personal Identifiable Information (PII) were also added. These were based on Recommendation X.1058, issued by ITU-T SG 17, which handles cross-disciplinary security issues. The document is to be completed at the next SG16 meeting, in July.

H.DS-AM "Audience Measurement", examines requirements, system functionality and metadata for gathering information about digital signage viewers, such as the number of viewers and staying times. As shown in Figure 2, collection of audience information is considered an additional functionality for digital signage (dotted lines). It is based on the H.741 series of specifications already released, on collection of IPTV viewer data. This meeting focused discussion on overall consistency of specifications and defining terminology. The document is also to be completed at the next SG16 meeting.

4. Future plans

Two intervening teleconference meetings, in March and May, are planned before the next SG16 meeting, to work toward completion of H.DS-PISR, H.DS-AM, and H.DS-DCI. We are anticipating that the Tokyo Olympics and Paralympics will provide an opportunity to raise awareness of digital signage as a public resource, and we need to study and organize use cases and system specifications toward advanced use of this resource. We continue to look forward to active participation from Japan in the relevant fields.

Cover Art

Ichikawa Ebizou (Picture of kabuki actor Ichikawa Ebizou (1833). It is said that he is playing the role of Toba no Houou (1103-1156).)

Utagawa Kunisada (1786–1865)

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