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DOCUMENT FOR :

Decision	
Discussion	
Information	X

INTRODUCTION

Connectivity is important for all users. The attached paper provides information about ACIF's activities investigating the provision of any-to-any connectivity for users of text-based communication, particularly those with disabilities..

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Standards developments relating to people with disabilities

Mainstreaming interactive text and video services

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Summary

- **Real-time Text and Video Services for people with disabilities are starting to be brought into alignment with mainstream services**
- **Issues include:**
  - **Standards that align with mainstream needs and needs of people with disabilities**
  - **Interworking with existing text and video services for people with disabilities**
  - **Access to Emergency Services for real-time communications of All Types**

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Introduction

- **People who have hearing or speech impairments are often prevented from using basic telephony communications**
- **Some countries have legislation requiring that some form of real-time text telecommunication capability is provided as part of PSTN**
- **Sometimes text in one direction and speech in the other is used – multimedia !**
- **Real-time video for 'signing' and lip reading is also desirable**

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Introduction

- **Hearing problems increase with age**
- **Increasing number of people in older age groups in many countries means the <u>user need for alternative to telephone is growing</u>**
- **Separation of people with disabilities from mainstream services is putting them at further disadvantage**

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Early fixed network text services

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- **The solutions in the past were initially based on redundant Teleprinters and special modem technology – called TTYs (or TTDs)**
  - **Baudot character coding and unique modems**
  - **TTYs are modern now but Interface is 'dated'**
- **<u>Standards</u> were developed but tended to be <u>country specific</u> and some were <u>non-mainstream</u>**
- **Real-time text communication technologies based on ASCII and commonly supported modems (eg. V.21/Bell103) have been developed but take-up was limited due to <u>interworking problems</u> between old and new technology**

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Fixed network text services

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- **New term is 'Text telephone' or 'Textphone' - *TXP***
- **USA and Australia use TTY; Europe uses a variety of different protocols**
  - **English-based character set of current Textphones has limited uptake in Asia**
- **ITU-T developed *V.18* that provides interworking between 8 Textphone protocols**

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Fixed network text services

- **V.18 also specifies <u>a new textphone protocol called '*V.18 mode*</u>' that is consistent with mainstream multimedia telecommunications**
- **Initial ideas were that there would be V.18 textphones but uptake has been slow**

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Mobile network text services

- **Analogue mobile could support TTYs but digital mobile has difficulties supporting TTY**
- **USA E911 mandated access to emergency services**
  - **but only old TTY textphones mandated**
  - **different solutions developed for different mobile access technologies**
  - **No migration plan toward new technologies**
- **SMS text messaging useful but not a replacement for real-time text conversation**

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Mobile network text services

- **3GPP developed a special modem for GSM and 3G called "Cellular Text Telephone Modem" (CTM)**
- **It has special features that allow for limitations of the mobile access**
  - **Modem tones low in voice spectrum**
  - **extensive forward error correction**
- **Australia is currently evaluating CTM for use on GSM, CDMA and UMTS/3G**
  - **Trials to date are very encouraging**
- **But CTM is an interim step**

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Internet text services

- **Many interactive text services were based on providing text communication over speech connections because they were 'everywhere'**
- **New developments are concentrating on using the <u>Internet</u> to provide <u>real-time (or near real-time) text communication</u>**
- **Email is a non-real-time text service**
  - **Very useful**
  - **Not a replacement for real-time conversational text or text/speech**

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Internet real-time text services

- "Text-over-IP" or ToIP is currently being developed in IETF and ITU-T SG16
  - IETF concentrates on protocol
  - SG16 concentrates on systemic issues
- ToIP makes use of standard multimedia service definitions (F.700) and protocols plus it aligns with V.18 Textphone Recommendation
  - Text presentation protocol T.140 is key

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Internet real-time text services

- ToIP also makes use of standard Internet protocols such as UDP, RTP, UTF-8 character set
- ToIP is being designed so that it is part of the suite of services supported by the key Session Initiation Protocol (SIP)
  - Voice + video + text
- Work is proceeding on including ToIP as part of SIP-Phone

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Gateway Interworking

- **The main issue is 'How to *interwork* with users of current and new Textphones?**
- **Current thinking is strongly in favour of *Gateways* between the PSTN/Mobile world and the Internet world**
- **A Gateway could also be used to provide *interworking* between different fixed network Textphone protocols, and between fixed and mobile Textphone protocols**

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Gateway Interworking

- **Gateways are a means of :**
  - **Interworking between old and new textphone protocols**
  - **Interworking between real-time and messaging text services eg. SMS, email**
  - **Facilitating the migration to mainstream text services**
  - **Concentrating the text issues into one location rather than having to modify whole networks**

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Sign Language and Lip Reading

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- **Sign language is the first language of most deaf people**
  - **This needs *real-time video* for other than face-to-face conversation**
- **Lip reading is also used extensively**
  - **It also requires *real-time video***
- **Real-time video has been expensive**
  - **for terminals and for 'call time'**

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Sign Language and Lip Reading

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- **Developments that are making video more accessible**
  - **Improving QoS capabilities in the Internet**
  - **Less costly Broadband accesses**
  - **Lower cost of transmission in Internet**
- **Standards are being developed by ITU-T**
- **Mainstream Internet video specs., as supported by SIP protocol, will probably be used**

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Emergency Service Issues

- **<u>Real-time text and video services</u> will need** *access to Emergency Services* **(911, 112, 000 etc)**
- **Standards development in *Emergency Services must apply to ALL real-time telecommunication services***
    - **Not just VoIP but also ToIP and Video-over-IP**
- **Standards must allow different Implementations of Emergency Services**
    - **<u>*Same*</u> *or* <u>*different*</u> *Emergency Servers* for Voice, Text and Video**

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References

- **ITU-T Recommendations**
    - **300 bit/s modem (V.21 or Bell103)**
    - **Operational and interworking requirements for textphones (V.18:2000)**
    - **Framework Recommendation for multimedia services (F.700 etc)**
- **IETF RFCs and drafts**
    - **Draft ToIP (draft-manyfolks-sipping-toip-01.tx)**
    - **RTP for Text (RFC 2793)**
    - **RTP (RFC 1889)**
    - **UDP (RFC 768)**
    - **Draft SIP Phone requirements (draft-sinnreich-sipdev-req-03.txt)**
    - **Draft Emergency Services for Internet Telephony Systems (draft-schulzrinne-sipping-emergency-arch.txt)**
- **3GPP specification**
    - **Cellular Text Telephone Modem (CTM) (TS 26.226 V5.0.0)**

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