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THE CONFLUENCE OF LAW AND POLICY IN LEVERAGING TECHNOLOGY: SINGAPORE JUDICIARY'S EXPERIENCE

Richard Magnus*

Fairness is itself a complex notion which takes interesting twists and turns when applied to procedures. For whatever the fairness of substantive outcomes, procedures are one step removed and raise their own problems of fairness.

D.J. Galligan¹

INTRODUCTION

It is a trite proposition today that the information technology (IT) revolution has pervaded the whole realm of human activity.² Experiences in jurisdictions with advanced technology in place confirm that the judicial business, which reflects a territorial jurisdiction's value system and traditions, is not spared.³ Not surprisingly, much has been written about the benefits of technology for the justice system.⁴ But justice is important business.⁵ Improvements generated by technology should complement tested and proven methods of administering justice. Justice must not be on the cutting edge of technology as dignity and due process are too important to be jeopardized through potential system failures or malfunction.⁶ Every justice process invariably consists of several procedural stages, each of which can raise its own problem with fairness even without the intervention of technology. Thus, where court technology is used to enhance a particular procedure, it becomes even more critical for fundamental fairness principles to be observed. A justice system can only gain public trust and confidence if public expectation of fairness in the administration of justice matches the reality.⁷

* Senior District Judge, Republic of Singapore. I am indebted to District Judge Eric Tin for the research.

¹ D.J. GALLIGAN, *DUE PROCESS AND FAIR PROCEDURES* 7 (1996).

² See MANUEL CASTELLS, *INFORMATION AGE: ECONOMY, SOCIETY AND CULTURE* (consisting of *RISE OF THE NETWORK SOCIETY* (1996); *THE POWER OF IDENTITY* (1997); *END OF MILLENNIUM* (1999)).

³ See *JUSTICE AND TECHNOLOGY IN EUROPE: HOW ICT IS CHANGING THE JUDICIAL BUSINESS* (Marco Fabri & Francesco Contini eds., 2001) [hereinafter *JUSTICE AND TECHNOLOGY*]; ORG. FOR ECON. CO-OPERATION & DEV., *SEIZING THE BENEFITS OF ICT IN A DIGITAL ECONOMY* (2003), available at <http://www.oecd.org/dataoecd/43/42/2507572.pdf>.

⁴ See, e.g., RICHARD SUSSKIND, *THE FUTURE OF LAW* (1998).

⁵ Beverley McLachlin, *Judicial Power and Democracy*, 12 SING. ACAD. L.J. 311 (2000).

⁶ The Honorable Chief Justice Yong Pung How, Address at the Technology Renaissance Courts Conference, Singapore (1996).

⁷ See generally Siri Carpenter, *Technology Gets Its Day in Court*, MONITOR ON PSYCHOL., available at <http://www.apa.org/monitor/oct01/technology.html>.

The World Bank cited Singapore as a country with some of the most salient experience in the strategic use of technology in improving access to justice, resource utilization and planning, administration, efficiency, and transparency of the justice system.⁸ Singapore is a city-state smaller than Los Angeles, London or Melbourne. Within Singapore resides an IT-savvy population of about 4.6 million.⁹ As a former British colony, it inherited the common-law tradition and an adversarial justice system. Upon independence, Singapore adopted a written constitution of the Westminster model,¹⁰ which safeguarded individual liberties¹¹ paralleling the U.S. Bill of Rights.¹²

Under the separation of powers doctrine, judicial power is vested in the Singapore judiciary, consisting of the Supreme Court and the Subordinate Courts.¹³ Judicial independence is ensured constitutionally,¹⁴ statutorily,¹⁵ institutionally,¹⁶ and individually.¹⁷ The Supreme Court comprises the Court of Appeal and the High

⁸ Waleed H. Malik, *Judicial Reform in Latin America: Towards a Strategic Use of ICT*, in JUSTICE AND TECHNOLOGY, *supra* note 3, at 300. For an international business perspective, see John Pritchard, *Asia-Pacific Legal 500*, at http://www.legal500.com/as500/frames/si_fr.htm (last visited Sept. 26, 2003). For an academic perspective, see Karen Blochlinger, *Primus Inter Pares: Is the Singapore Judiciary First Among Equals?*, 9 PAC. RIM. L. & POL'Y J. 591 (2000).

⁹ In 2002, 68.4% of Singapore households owned personal computers, 59.4% had home Internet access, and two-thirds of individuals aged fifteen years and above owned a mobile phone. See INFOCOMM DEV. AUTH. OF SING., ANNUAL SURVEY ON INFOCOMM USAGE, available at http://www.ida.gov.sg/idaweb/doc/download/I2387/Annual_Survey_on_Infocomm_Usage_in_Households_2002.pdf (last visited Sept. 27, 2003).

¹⁰ See *Ong Ah Chuan v. Pub. Prosecutor*, [1980–1981] SING. L. REP. 48 (Privy Council); see also *Hinds v. The Queen*, 195 A.C. at 122 (Privy Council, 1977) (giving a succinct overview on Westminster-modeled constitutions).

¹¹ SING. CONST. arts. 9–16, available at http://statutes.agc.gov.sg/act_body_const.html (covering liberty of the person, prohibition against slavery and forced labour, protection against retrospective criminal laws and repeated trials, equal protection, prohibition of banishment and freedom of movement, freedom of speech, assembly and association, freedom of religion, and rights in respect of education).

¹² The Singapore Constitution's fundamental liberties articles nevertheless differ from those in the U.S. Bill of Rights. See *Ong Ah Chuan*, SING. L. REP. at 60 (having evolved from different socio-political contexts).

¹³ See SING. CONST. art. 93.

¹⁴ See SING. CONST. arts. 98, 99, 104, 110 & 111.

¹⁵ See 321 Subordinate Courts Act § 58, 60(2), 68; 322 Supreme Court of Judicature Act § 11(2), 79; 147 Judges Remuneration Act; 147 Judges Remuneration (Annual Pensionable Salary) Order (Order 1).

¹⁶ The Supreme Court and Subordinate Courts are administratively designated autonomous agencies with considerable financial and personnel management autonomy.

¹⁷ All judges and judicial officers must subscribe to an Oath of Office and Allegiance before assuming office. See SING. CONST. art. 97; 321 Subordinate Courts Act § 17. The judicial officers also follow a Code of Judicial Ethics.

Court.¹⁸ The Subordinate Courts comprise District Courts, Magistrates' Courts, the Coroners' Court, the Juvenile Court, and Small Claims Tribunals.¹⁹ More than ninety-five percent of all judicial matters in Singapore are dealt with by the Subordinate Courts where court technology application is extensive.²⁰ This Article will share the Singapore Judiciary's experience in balancing fundamental tenets like the right to a fair trial,²¹ the right to equality,²² the right to legal representation,²³ and access to justice, with efficiency considerations when harnessing technology for the justice process.

The focus of this article is on video link, electronic data interchange, and broadband technologies that directly impact public court users. Brief mention of systems for judicial-decision support, case management, performance measurement, and public service extension will also be made as they impact the overall quality and performance of the justice process.

I. VIDEO-LINK TECHNOLOGY: PHYSICAL VERSUS VIRTUAL CONFRONTATION?

Video-link technology is used in a wide array of court proceedings in Singapore. For pretrial proceedings, it is used in applications for bail or further

¹⁸ See SING. CONST. art. 94; 322 Supreme Court of Judicature Act § 3.

¹⁹ See 321 Subordinate Courts Act § 3.

²⁰ In 2002, the Subordinate Courts saw a caseload of 381,060 (see SUBORDINATE CTS. OF SING.: ANN. REP. 2002, at 54–55, available at http://www.subcourts.gov.sg/annual_report_2002.htm), while the Supreme Court had a caseload of 9,567 (see SUP. CT. OF SING.: ANN. REP. 2002, at 20–23, available at <http://www.supcourt.gov.sg/publications/2002/index.htm>).

²¹ *Lim Seng Chuan v. Pub. Prosecutor* [1975–1977] SING. L. REP. 136, 142 (Sing. Crim. App.). The right to a fair trial has evolved into a norm observed by modern democratic judiciaries. See G.A. Res. 2200A (XXI), U.N. GAOR, 21st Sess., Supp. No. 15, at 49, U.N. Doc. A/6316 (1966) (article 14(1) of the International Covenant on Civil and Political Rights); G.A. Res. 217A(III), U.N. Doc. A/810 at 71 (1948) (article 10 of the Universal Declaration of Human Rights); *R. v. Winston Brown* 1 Cr. A. R. 191, 198 (Eng. C. A.) 1995 (per Steyn L.J.). Implicit in this right are natural justice principles of fairness and impartiality (or due-process rights in the U.S. context). See RONALD DWORKIN, *A MATTER OF PRINCIPLE* 78 (1985). These principles found expression in the word “law” in articles 9 and 12 of the Singapore Constitution. See *Ong Ah Chuan v. Pub. Prosecutor* [1980–1981] SING. L. REP. 48, 61 (Privy Council); *Haw Tua Tau v. Pub. Prosecutor* [1980–1981] SING. L. REP. 73, 76 (Privy Council).

²² SING. CONST. art. 12(1). The dominant idea behind this equality clause is equal justice, with its origins in article 40 of the Magna Carta: “To none will we sell, to none will we deny, to none will we delay right or justice.” See *Pub. Prosecutor v. Taw Cheng Kong* [1998] 2 SING. L. REP. 410, 428 (Sing. Ct. App.).

²³ The right to counsel and to be defended by a legal practitioner of one's choice is guaranteed under article 9(3) of the Singapore Constitution and 68 SING. CRIM. PROC. CODE § 195.

remand in criminal mentions, pretrial conferences for criminal cases, ex parte applications for maintenance or personal protection orders, mediation of small claims, and co-mediation with foreign judges in cross-border disputes where parties subscribe to Singapore's jurisdiction. For trial proceedings, it is used in the giving of evidence by vulnerable witnesses in criminal trials of specified offences, giving of evidence by accused in proceedings under the Corruption, Drug Trafficking and other Serious Crimes (Confiscation of Benefits) Act, giving of evidence by vulnerable witnesses in *inter partes* application for personal protection orders, and giving of evidence by witnesses in civil trials.

A. Pretrial Usage

Conceptually, applications for bail or further remand via live video link are similar to the live remote first appearances and arraignments in some American states. The advantages of using such technology are that it minimizes delays inherent in transfer of the accused, effects large cost savings through elimination of transportation and security risks, and reduces escape and assault risks.²⁴ Professor Fredric Lederer had identified the primary legal problem inherent in remote arraignments to be the legal right to adequate defence representation.²⁵

Singapore had the benefit of studying comparable legislation in the United States, United Kingdom, Australia, and New Zealand before amending its Criminal Procedure Code (CPC) in 1995²⁶ to give the court discretion to order an accused to appear before it via live video link.²⁷ The idea was first introduced for discussion by The Honorable Chief Justice Yong Pung How at the introduction of the Subordinate Courts' annual workplan.²⁸ The legislative amendments were drafted in close consultation with, and received the support of, the Judiciary, Attorney General's Chambers, Ministry of Home Affairs, Criminal Investigation Department, and Prisons Department. A Practice Direction (PD) was issued to ensure that the accused person's right to counsel, and other rights as an accused, are not affected.²⁹

²⁴ FREDRIC I. LEDERER, NAT'L CTR. FOR STATE CTS., FOURTH NAT'L CT. TECH. CONF., MODERN TECHNOLOGY IN THE COURTROOM: POSSIBILITIES AND IMPLICATIONS (1994), available at http://www.ncsconline.org/D_Tech/CTC/CTC4/202.htm (last visited Feb. 24, 2004).

²⁵ *Id.*

²⁶ See Act 39 of 1995; see also SECOND READING OF THE CRIM. PROC. CODE (AMENDMENT) BILL, 65 SINGAPORE PARLIAMENTARY DEBATES, cols. 38–39 (1995).

²⁷ 68 SING. CRIM. PROC. CODE § 364A(3).

²⁸ SUBORDINATE CTS. 4TH WORKPLAN 1995–1996, CORE VALUES FOR THE ADMIN. OF JUSTICE (1995), available at <http://www.ejustice.org.sg/resourceframe.html>.

²⁹ THE SUBORDINATE CTS. PRACTICE DIRECTIONS: DIRECTION 1 OF 1999 para. 89 (1999), available at http://www.gov.sg/judiciary/subct/practice_dir/pd1of99.pdf (last visited Feb. 25, 2004) [hereinafter PRACTICE DIRECTIONS].

It covers inter alia: application of the video-link facility; taking of last-minute instructions by counsel; prementon interviews by counsel; scenarios when counsel is absent when the case is mentioned; and instances where the court may order that a remanded accused be physically produced. A dedicated telephone is provided in the courtroom. When in use, the video-link system is muted to facilitate any necessary private communication between the accused and his counsel. All these safeguards ensure that the accused's right to counsel is accorded fullest protection.

In pretrial conferences for criminal cases, which do not require witnesses' or the accused's attendance, live video link allows the duty prosecutor, who is stationed in his office, to confer with the judge and counsel on triable issues and determine trial days. Live video link is also used for ex parte applications for maintenance and personal protection orders that must be sworn before a magistrate.³⁰ The facility allows applicants to file the applications at Family Service Centres near their homes on designated days. Such applications usually take less than five minutes and when processed via video link, save the applicants travel and waiting time and other opportunity costs. In small-claims cases, the claimant and respondent can similarly have their cases mediated via video link. Video link is also used in Court Dispute Resolution International,³¹ a service provided to parties in cross-border disputes where a foreign judge will appear virtually to co-mediate the dispute with a Singapore judge to provide added judicial perspective for case settlement. In these areas, the extended use of live video-link technology has produced substantial time and costs savings for the parties, while posing no critical fairness issues.

B. Trial Usage

In civil and criminal trials in common-law jurisdictions there is a rule of procedural fairness that evidence should be given in the presence of the parties so that they can effectively meet the evidence against them.³² In the United States, this is enshrined in the Confrontation Clause of the Sixth Amendment: "In all criminal prosecutions, the accused shall enjoy the right to be confronted with the witnesses against him."³³ This has been interpreted by the U.S. Supreme Court as guaranteeing the accused "a face-to-face meeting with witnesses appearing before the trier of fact."³⁴ But the U.S. Supreme Court has since held that the

³⁰ The nature of such relief is civil, but the process to compel attendance of the respondent is criminal.

³¹ Court Dispute Resolution International, Singapore Subordinate Courts, available at http://www.subcourts.gov.sg/info_booklet_cdri.htm (last visited Feb. 25, 2004).

³² See *Halsbury's Laws of Singapore on Evidence*, in 10 BUTTERWORTHS ASIA ¶ 120.398 (2000).

³³ U.S. CONST. amend. VI.

³⁴ *Coy v. Iowa*, 487 U.S. 1012, 1016 (1988).

Confrontation Clause does not guarantee the accused an absolute right to a face-to-face meeting with opposing witnesses at trial.³⁵ The Court held that the Confrontation Clause's central purpose, to ensure the reliability of the evidence, is served by the combined effects of the elements of confrontation: physical presence, oath, cross-examination, and observance of demeanour. The Court further held that this right may be modified only where denial of such confrontation is necessary to further an important public policy, and only where the testimony's reliability is otherwise assured.³⁶

In Singapore, physical confrontation is replaced with virtual confrontation through the use of live video link for vulnerable witnesses (such as young children and victims of sexual offences) to give evidence in a criminal trial. The system ensures the reliability of the witness's testimony while affording the witness an environment conducive to testifying freely and fearlessly against the alleged assailant. The CPC was amended in 1995³⁷ after The Honorable Chief Justice Yong Pung How noted, at the Subordinate Courts' annual workplan, that unlike the United Kingdom and Australia, the existing law in Singapore did not permit the reception of evidence through such means. The amended law requires that evidence given by video link in accordance with the provision be given in the presence of the court, the accused, or his counsel.³⁸ Leave of court is required to adduce evidence by such means and may be refused if the accused may be prejudiced. The provision is sufficiently encompassing to extend to any witness who cannot attend court on account of illness or critical condition, and it is expedient in the interests of justice to allow evidence to be adduced in such manner.

The requirement that video-link appearance must be live and not pretaped ensures that the witness's demeanour can be observed and assessed by the court to make findings of credibility. The witness is not excused from the solemnity and formality of the trial as evidence must be given under oath and subject to cross-examination. If an accused is not represented by counsel, the trial judge must explain to him the process of having a witness testify through video link.³⁹ Where a witness requires an interpreter, the interpreter will interpret the proceedings from open court.⁴⁰ The courtroom and the remote witness room are equipped with the necessary audio and visual infrastructure to ensure parties can see and hear each other clearly. When granting leave, the court exercises wide discretion and power to impose terms and conditions. The court may make an order specifying, restricting, or excluding persons who may be present at the place where the witness

³⁵ See generally *Maryland v. Craig*, 497 U.S. 836, 837 (1990).

³⁶ See *id.*

³⁷ See Act 31 of 1996; 68 SING. CRIM. PROC. CODE § 364A.

³⁸ 68 SING. CRIM. PROC. CODE § 364A(9).

³⁹ Registrar's Circular No. 1 of 1996, para. 7.

⁴⁰ Registrar's Circular No. 1 of 1996 para. 6.

is giving evidence. Thus, the court may give leave for a counselor or guardian to be with a vulnerable witness to provide emotional support if necessary. The court's ability to see and hear the witness live eliminates any risk of such persons tampering with the witness. The court can also order that certain parts of the proceedings be held *in camera* to protect the identity of the vulnerable witness.⁴¹ The court also has broad discretion over the ability of the witnesses to see persons in court or to be seen by such persons.⁴²

The court may also prescribe stages in the proceedings during which a specified part of the order is to have effect, and the method of operation of the video-link system, including compliance with such minimum technical standards as may be determined by the Chief Justice. The court may make any other order deemed necessary in the interests of justice.⁴³ The court may revoke, suspend, or vary an order made for video-link appearance or giving of evidence if: (a) the system stops working and it would cause unreasonable delay to wait until a working system becomes available; (b) it is necessary to ensure that the proceedings are conducted fairly to the parties; (c) the witness must identify a person or a thing or participate in or view a demonstration or an experiment; (d) part of the proceedings is being heard outside a courtroom; or (e) there has been a material change in the circumstances after the court has made an order.⁴⁴ The safeguard is that the court would not grant an application for using live video link if doing so would be inconsistent with its duty to ensure that the proceedings are conducted fairly.⁴⁵ A witness who gives evidence via video link is equally subject to liability for perjury.⁴⁶ Evidence given in breach of the court's order can be ruled inadmissible.

In live video link for witness testimony in civil trials,⁴⁷ the twin concerns are also reliability of the evidence and costs and time savings for parties, particularly if expert and foreign witnesses are required to testify. The Evidence Act was

⁴¹ Proviso to 321 Subordinate Courts Act § 7.

⁴² See 68 SING. CRIM. PROC. CODE § 364A(4)(a)–(e).

⁴³ *Id.* § 364A(4)(f)–(h).

⁴⁴ *Id.* § 364A(5)(a)–(e).

⁴⁵ This was stated by the Parliamentary Secretary to the Minister for Law at the Second Reading of the Criminal Procedure Code (Amendment) Bill in 1995 and the principle is now enshrined in *Id.* § 364A(6).

⁴⁶ *Id.* § 364A(8).

⁴⁷ This includes proceedings under sections 6, 65A of the Singapore Corruption, Drug Trafficking and other Serious Crimes (Confiscation of Benefits) Act, where a defendant charged with or convicted of a drug trafficking offence or a serious offence has to give evidence in a proceeding where the prosecution applies for a court order to obtain benefits the defendant derived from the offence. Such proceedings are civil in nature. See 321 Rules of Court, Orders 89A and 89B. These rules also cover *inter partes* hearings for personal protection orders that are also civil in nature.

amended in 1996⁴⁸ to provide the legal framework, although this did not prevent the Singapore High Court⁴⁹ from allowing evidence to be presented in such manner before the legislative amendment by relying on common-law principles. The relevant provision is in terms similar with section 364A of the CPC,⁵⁰ save that the Evidence Act extends to witnesses outside Singapore. A probable rationale is that in criminal proceedings it will be against public interest for foreign witnesses, who are effectively outside the courts' jurisdictions and who can perjure with relative impunity, to exonerate an accused by their evidence. Like the vulnerable witness in a criminal trial, the witness who gives evidence via live video link in a civil trial is not excused from the solemnity and formality of the trial as evidence must be given under oath and be subject to cross-examination.

Similarly, leave of court is required for evidence to be given in such manner. In considering whether to grant leave for a witness outside Singapore to give evidence by live video link, the court shall consider the circumstances of the case, including: the reasons for the witness's inability to testify in Singapore; the administrative and technical facilities and arrangements made at the place where the witness is to give his evidence; and whether any party to the proceedings would be unfairly prejudiced.⁵¹ The Singapore Court of Appeal held that the question of unfair prejudice is an overriding consideration in such an application, because section 62A(5) of the Evidence Act provides expressly that the court is not to make an order under that section, or include a particular provision in such an order, if to do so would be inconsistent with the court's duty to ensure that the proceedings are conducted fairly for the parties.⁵²

⁴⁸ See Act 8 of 1996. The provision is 97 Evidence Act § 62A. See SECOND READING OF EVID. (AMENDMENT) BILL, 65 SINGAPORE PARLIAMENTARY DEBATES, cols. 449–57 [hereinafter SECOND READING]. This section was modeled after sections 24, 25 and 26 of the New Zealand Evidence and Procedure Act of 1994, the Australian Law Commission's Evidence (Close Circuit TV) Bill of 1992 and section 32 of the U.K. Criminal Justice Act of 1988.

⁴⁹ The first civil case in Singapore that used video link to receive evidence was *Las Vegas Hilton Corp. v. Khoo Teng Hock Sunny* [1997] 1 SING. L. REP. 341. In this case, the High Court allowed an American legal expert to give evidence from Nevada via video link in the absence of any statutory provision by relying on *Gracin v. Amerindo Investment Advisers* [1991] 4 All E.R. 655. See Charles Lim, *Information Technology and the Law of Evidence—Recent Legislative Initiatives*, 9 SING. ACAD. L.J. 119 (1997); see also SECOND READING, *supra* note 48, col. 454 (Minister for Law's comment).

⁵⁰ There are nevertheless differences. Section 364A restricts the category of criminal cases in which evidence may be given by video link whereas no such restriction exists for civil cases in 97 Evidence Act § 62A. Unlike the CPC provision where a party (i.e., a remanded accused) can appear in court via video link, the Evidence Act provision only allows witnesses to appear via video link.

⁵¹ 97 Evidence Act § 62A.

⁵² See *Sonica Indus. Ltd. v. Fu Yu Mfg. Ltd.* [1999] 4 SING. L. REP. 129. In this case, the plaintiffs applied to the trial judge under section 62A(1)(c) of the Evidence Act for leave to

The implicit preconditions to the court's grant of leave are that the witness must consent to give evidence by such manner, and that the giving of such evidence would not be illegal or otherwise prohibited in the place where the witness will be giving evidence. These preconditions follow from the principle that the court's powers to compel the giving of evidence do not extend beyond its territorial jurisdiction. The quality, efficiency, and accuracy of the proposed transmission, the costs involved, and risks of witness tampering are also important factors. All these are, strictly speaking, policy considerations, but they are no doubt relevant to guide the court in exercising its discretion to grant leave, and if leave is granted, to make orders with appropriate restrictive conditions. Thus, to ensure that the witness will be unaided and unprompted by third parties when giving evidence, and without the benefit of inadmissible materials, the order giving leave may impose restrictions on who may be present where the witness is testifying. Evidence given in breach of the court's order can be ruled inadmissible.⁵³

II. COMPUTER-AIDED PRESENTATION: VIRTUAL REALITY VERSUS RELIABILITY?

A number of the courtrooms of the Subordinate Courts are equipped with computer animation and simulation (or forensic multimedia) technology, allowing visual proximation of the vital elements of real world situations. Whilst such technology is beneficial in augmenting comprehension of the evidence and arguments,⁵⁴ especially in cases involving highly technical and complex evidence, there are legal and policy concerns. In an adversarial justice system, parties need only present the favourable side of their case to win. The wealthier party can leverage the wonders of technology to strengthen the audio-visual presentation of a case to overwhelm the senses and reasoning of the trier of fact. An indigent party, hindered by prohibitive costs of creating such high-quality and persuasive

allow two of their overseas witnesses, unable to come to Singapore, to give oral evidence via video- or television-link facilities. The trial judge refused the application. The Court of Appeal allowed one of the witnesses to give evidence via video link, as it found his evidence to be material and that no prejudice would be caused to the defendants by allowing the application. The Court of Appeal also considered that the plaintiffs had made the necessary attempts to secure the witness' presence in Singapore for the trial, but without any success. There was also no clear way for the plaintiffs to compel this witness to travel to Singapore to give evidence.

⁵³ See *Halsbury's Laws of Singapore on Evidence*, *supra* note 32.

⁵⁴ See FREDRIC I. LEDERER & SAMUEL H. SOLOMON, NAT'L CTR. FOR STATE CTS., FIFTH NAT'L CT. TECH. CONF., COURTROOM TECHNOLOGY — AN INTRODUCTION TO THE ONRUSHING FUTURE (1997), available at <http://www.ncsc.dni.us/ncsc/tis/CTC5/103.htm> (last visited Feb. 25, 2004) (stating that seventy-five percent of what we learn is through our eyes; we are five times as likely to remember something we see and hear rather than hear alone; most importantly, *people are twice as likely to be persuaded* if the arguments in a group (such as during jury deliberations) are buttressed with visual aids).

presentation, may be perceived as being unfairly disadvantaged. The issue that must be addressed is whether parties can be said to have equal access to justice. Evidentially, the reliability of such presentation, whether as demonstrative or substantive evidence, also must be carefully weighed against its potential prejudicial effect. This is the question with any admissible evidence, and Professor Lederer was right to state that such evidence posed no new legal problems.⁵⁵

Singapore's answer to the issue of reliability is found in section 68A of the Evidence Act, which allows demonstrative evidence to be given in the form of charts, summaries, computer output or other explanatory material if it appears to the court that the material would likely aid the court's comprehension of other evidence that is relevant and admissible according to the Evidence Act or any other written law.⁵⁶ The evidence that is to be given by any party must be so voluminous or complex that the court considers it convenient to assess the evidence by reference to such materials. There is no restriction on what material can qualify as an aid. Such evidence, however, is merely an aid to explanation and comprehension, and cannot be received as proof of the facts or opinion stated therein, which must still be proved by relevant and admissible evidence.⁵⁷ Strictly speaking, such aids to comprehension are not evidence but merely explanatory of the evidence, and they are inadmissible to the extent that it goes beyond the demonstrative purpose and supplies new evidence.

The court is empowered to regulate the manner in which evidence may be given by way of an aid to comprehension. It may direct the party to provide such material in a specified form and require that the other party be furnished with copies of the materials and the identity and address of the persons who prepared the material to the other party within a period that it specifies.⁵⁸ The person who prepared the demonstrative evidence must be called for or be available for cross-examination in case the accuracy or fidelity of the material is challenged. The court can exercise its discretion to disallow such materials on the ground of prejudicial effect based on common-law principles.⁵⁹ On the question of how such evidence may unfairly prejudice the minds of the trier of fact, suffice to say that in Singapore, which has no jury system, judges are legally trained triers of law and fact who, unlike the layman juror, will apply judicial reasoning to discern a meritorious case from one that is only strong in its presentation. Any risk of unfair advantage is thus more illusory than real. Accordingly, the indigent party is not denied equal access to justice even if unaided by such demonstrative evidence as long as it can advance its arguments and evidence cogently to prove the merits of its case.

⁵⁵ LEDERER, *supra* note 24.

⁵⁶ This section, modeled after section 50 of the Australian Commonwealth Evidence Act of 1995, was introduced as Act 8 of 1996.

⁵⁷ See 97 Evidence Act § 68A(2).

⁵⁸ See 97 Evidence Act § 68A(3).

⁵⁹ See *R. v. Baker* [1989] 3 N.Z.L.R. 635; see also *R. v. Quinn* 2 Q.B. 245 (1962).

III. ELECTRONIC DATA INTERCHANGE: PAPERLESS AND CASH-FREE COURTS?

The Singapore judiciary is legally empowered to accept the filing of documents, the creation or retention of such documents in the form of electronic records, or payment in electronic form.⁶⁰ In the Subordinate Courts, electronic data interchange (EDI) technology has been introduced in (1) the Electronic Filing System (EFS) for civil suits under the Magistrate's Court and District Court monetary limit;⁶¹ (2) Web-based electronic filing for the Small Claims Tribunal (SCT);⁶² and (3) Automated Traffic Offence Management System (ATOMS), which permits electronic payment of fines.

A. EFS

The EFS envisions paperless courts to avoid the problems associated with the administration of vast amounts of paper — misfiling and loss of documents, delays in file retrieval, and shortage of storage space. It also aims to reduce the labour-intensive nature of modern litigation by reducing reliance on court clerks and process servers for the manual filing and service of pleadings and applications. These policy objectives are served by the provision of four electronic services — filing, document extracting, service of documents, and information retrieval. Multiple parties can have simultaneous access to court documents. Information-management systems can track cases and generate progress reports and notices to ensure efficient case management. Parties can obtain copies of cause papers using remote access or from the service bureaux (for those without remote access). Law firms can serve documents on, and correspond electronically with, other law firms. Lawyers can search the requisite information from their offices or through the service bureaux instead of examining dusty casebooks.⁶³

The Evidence Act was amended in 1996 to introduce the necessary evidentiary and procedural rules.⁶⁴ Order 63A of the Rules of Court allows the Registrar of the

⁶⁰ See 88 Electronic Transaction Act § 47.

⁶¹ A Magistrate's Court has a monetary jurisdiction of up to S\$60,000 (321 Subordinate Courts (Variation Of Magistrate's Court Limit) Order); a District Court has a monetary jurisdiction of up to S\$250,000 (321 Subordinate Courts (Variation Of District Court Limit) Order).

⁶² See 308 SCT Act § 5.

⁶³ The objectives and benefits of EFS were set out succinctly in the keynote address by the Honorable Chief Justice Yong Pung How at the launch of the Electronic Filing System, Singapore Supreme Court, available at <http://www.supcourt.gov.sg/supcourt/upload/speeches/1997/DOC202.pdf> (last visited Feb. 25, 2003).

⁶⁴ Act 8 of 1996; see also SECOND READING, *supra* note 48, col. 453. Under 97 Evidence Act § 36A, the Rules Committee "may make rules to provide for the filing, receiving and

courts to establish an electronic filing service whereby specified documents may be filed, saved, delivered or otherwise conveyed by electronic transmission through a network service provider. Under the rules, only registered users are authorized to use the EFS. The network service provider is appointed by the Registrar with the Chief Justice's approval. Law firms and other litigants are identified by an authentication name and code. Requirements as to signature are complied with by the application of the litigant's authentication code or the Registrar's facsimile signature. The rules provide for a presumption as to the identity of the sender of the document and that it has been accurately transmitted. The presumption is activated by the Registrar's certificate. The rules provide for determining the date a document is filed and for determining the point at which time begins to run for service of documents filed electronically. Other registered users can receive electronic service of documents. The documents that may be filed electronically are specified in the PDs, which prescribe the procedure for applying to be a registered user and for filing through the service bureaux operated by the network service provider.

Since its implementation, the EFS has not posed any legal or security problems or fairness issues. The number of originating processes and interlocutory applications filed through EFS has in fact increased.⁶⁵ While filing through EFS is mandatory for almost all civil proceedings, litigants with no computing facilities can turn to the service bureaux. The indigent litigant may apply for government legal aid to have the EFS fees and charges waived. There is thus no issue of unequal access to justice. The migration from the paper medium to a paperless forum is more than a technical issue. It is also cultural, as mindsets have to change. Since the inception of EFS, the courts have issued a series of PDs to assist parties in accommodating and adjusting to the use of EFS. One PD guides parties on the operational aspects.⁶⁶ Another PD allows postponement of compulsory implementation to cater to the Bar's request for more lawyers to be trained in the use of EFS and for more law firms to acquire and install the necessary hardware.⁶⁷

recording of evidence and documents in court by the use of information technology in such form, manner or method as may be prescribed." The rules may:

- (a) modify such provisions of the [Evidence] Act as may be necessary for the purpose of facilitating the use of electronic filing of documents in court; (b) provide for the burden of proof and rebuttable presumptions in relation to the identity and authority of the person sending or filing the evidence or documents by the use of information technology; and (c) provide for the authentication of evidence and documents filed or received by the use of information technology.

⁶⁵ For originating processes alone, statistics of the Subordinate Courts show that in year 2000, 39,805 writs were filed via EFS; in 2001, 47,112 were filed; in 2002, 44,969 were filed; and for the first nine months of 2003, 38,882 were filed.

⁶⁶ See PRACTICE DIRECTIONS, *supra* note 29, at Direction 3.

⁶⁷ See *id.* Direction 4.

Initial concerns over costs of litigation led to reduction in the EFS service bureaux handling fee and extension of waiver of EFS service bureau surcharge.⁶⁸ EFS moved to a Web-based platform in 2001 and was gradually extended to other proceedings⁶⁹ and originating processes.⁷⁰ Most recently, the Chief Justice appointed an EFS review committee to take stock of the system in the context of the experience gained and the advancements in technology. These steps indicate the Singapore judiciary's pragmatic, cautious, and consultative attitude in introducing new technology to improve the justice process.

B. E-Filing for SCT

The SCTs provide a quick and inexpensive forum for resolution of small claims⁷¹ arising from contracts for sale of goods, contracts for provision of services, or tortious damage to property (excluding motor accident claims). Dedicated to providing laypersons affordable access to justice, the SCTs forbid legal representation⁷² and determine disputes by observing principles of natural justice,⁷³ according to the substantial merits and justice of the case unconstrained by strict legal forms and technicalities.⁷⁴ The legislation was amended in 1997 to allow lodgment of claims "by electronic facsimile or any other prescribed electronic means."⁷⁵ The court also promulgated rules governing lodgment of claims.⁷⁶ The SCT e-filing system currently allows certain bulk users, such as town councils and utility companies, to lodge claims electronically through the Internet,⁷⁷ and this will soon be extended to the public. The system provides customized claim forms for different users of the SCT as well as a generic claim form. Both forms are downloadable from the SCT Web site.⁷⁸ The Web site also provides a downloadable "do-it-yourself-kit" with detailed instructions and checklists to assist SCT users. A tele-response system guides the users via a fax-on-demand service. The system also provides a consultation (the session where parties try mediation to

⁶⁸ *See id.* Direction 1; *id.* Direction 3.

⁶⁹ *See id.* Direction 3.

⁷⁰ *See id.* Direction 1; *id.* Direction 5.

⁷¹ Small claims are civil claims up to S\$10,000, or, with parties consent, up to S\$20,000. *See* 308 SCT Act, Small Claims Tribunals Order; *see also* General Information, Jurisdiction of the Small Claims Tribunals, at http://www.smallclaims.gov.sg/SCT-General_Info.html.

⁷² 308 SCT Act § 23(3).

⁷³ *Id.* § 30.

⁷⁴ *Id.* § 12(4).

⁷⁵ *Id.* § 15(6).

⁷⁶ 308 SCT Rules 11A–11F.

⁷⁷ Since 2000, there have been 68,537 e-filings of small claims, or an average of 17,134 yearly (statistics provided by Research and Statistics Unit, Singapore Subordinate Courts).

⁷⁸ *See* Small Claims Tribunals, Singapore Subordinate Courts, at <http://www.smallclaims.gov.sg> (last visited Feb. 25, 2004).

settle their dispute) calendar that permits authorised claimants to select the consultation date from a list of available dates. The claim is deemed lodged on the day it is transmitted electronically, as recorded in the Registrar's computer account. Like the EFS, the SCT e-filing system, whilst conveniencing the users and reducing unnecessary paper work, poses no fundamental fairness issue. In fact, this initiative was rated highly in Accenture's "eGovernment Leadership—Realizing the Vision" in 2002 alongside other strategic online applications of the United States, United Kingdom, and Australia.

C. ATOMS

ATOMS leverages EDI technology for e-payment of fines for strict liability minor traffic offences. The supporting legal framework was introduced in 1996.⁷⁹ Before the technology was introduced, all such offenders had to appear physically in court. They usually pled guilty or compounded the case with the department. With the legislative amendment, only a first time offender may enter a plea of guilty at a computer terminal designated by the Registrar for that purpose within the prescribed time, and may pay the fine fixed by the supervising Magistrate in advance. Then the Registrar transmits a record of the plea and the fine paid in advance to the supervising Magistrate, who, upon satisfying himself that the fine has been paid, convicts the offender *in absentia* and records the fine paid as the sentence passed. The supervising Magistrate may, at his discretion and at any stage of the proceedings, direct and enforce the personal attendance of the offender. The system does not cover repeat offenders who must still attend court so that relevant antecedents can be made known to the court for the appropriate sentence.

The system comes in the form of user-friendly twenty-four-hour kiosks located islandwide⁸⁰ and was jointly developed by the Subordinate Courts, the prosecuting agencies for minor traffic offences, and the IT vendors. Fines are paid through the offenders' bank automated teller machine cards.⁸¹ This "virtual criminal court" has enhanced access to justice by dismantling spatial and temporal barriers, allowing minor traffic offenders to pay the fine within a prescribed period at his convenience. In 1996, the Subordinate Courts assessed the potential annual savings from the implementation of ATOMS at S\$113,000.⁸² An estimated twenty-five percent of the total number of first-time traffic offenders have opted to plead guilty through

⁷⁹ See Act 31 of 1996. The amendment now finds expression in section 137A of the CPC.

⁸⁰ There are currently about 185 such stations in Singapore.

⁸¹ See Rule 4 of the CPC (Pleading Guilty by Electronic Means) Regulations of 1996; see also 68 SING. CRIM. PROC. CODE § 137A(6).

⁸² See SECOND READING OF THE CRIM. PROC. CODE (AMENDMENT) BILL: 66 SING. PARLIAMENTARY DEBATES, col. 509 (1996) (speech of the Parliamentary Secretary to the Minister for Law).

ATOMS.⁸³ This has resulted in a substantial decrease in the work volumes at the physical courthouse and has significantly reduced judicial and other court-support manpower otherwise required to deal with these minor cases. Precious court time is thus freed for more serious cases. Payment of fines via ATOMS is a noncompulsory option open to first-time traffic offenders. Those who think they have a genuine defence, or wish to exercise the right to be heard, or the right to be represented by counsel with a view to making representations to the department concerned to have the charge withdrawn, can continue to do so in the physical courthouse. This initiative thus presents no fairness or evidentiary issues.

IV. BROADBAND TECHNOLOGY: REALITY OF A VIRTUAL COURT?

Leveraging broadband Internet is a necessary development for the Singapore judiciary.⁸⁴ Launched in 2002, JusticeOnline (JOL)⁸⁵ is a strategic initiative⁸⁶ that successfully conflates broadband Internet and videoconferencing technologies, positioning the Singapore courts as the first cybercourts in the world.⁸⁷ JOL is a multiparty communication platform that connects the courts, law firms, and other government agencies involved in the administration of justice. It allows for holistic delivery of court services through the Web. Lawyers may book their online hearings on the Web, queue virtually, appear at hearings from the comfort of their offices, and check their bills on the Web. It also translates into substantial cost savings in terms of travelling and waiting time, heightened productivity and higher quality of work for the lawyers. The courts benefit as they can increase their hearing capacity without having to build more courtrooms and chambers to accommodate the parties. While use of JOL lessens the traditional emphasis on the brick-and-mortar courthouse, it seeks to maintain essential judicial traits of visibility, transparency, and access to justice. Overall, JOL should further

⁸³ Since 1996, the ATOMS had registered 54,786 users, or an average of about 7,000 per year for the past eight years (statistics provided by the Research and Statistics Unit, Singapore Subordinate Courts).

⁸⁴ The Singapore Government network is already broadband enabled. In 2002, two in five Singapore residents age ten and above used broadband. *See* INFOCOMM DEV. AUTH. OF SING., SURVEY ON BROADBAND & WIRELESS USAGE IN SING. (2002), available at http://www.ida.gov.sg/idaweb/doc/download/12389/survey_on_BB_and_wireless_usage_in_spore_2002.pdf (last visited Feb. 25, 2004). In 2001, 78.9% of local Internet users were aware of online government transactions while 31.9% transacted online. *Id.* at n.86.

⁸⁵ *See* Justice Online, at <http://justiceonline.com.sg> (last visited Sep. 29, 2003).

⁸⁶ *See* JEFF LEEUWENBURG & ANNE WALLACE, AUSTL. INST. OF JUD. ADMIN., TECH. FOR JUSTICE REP. 5 (2002), available at <http://www.aija.org.au/tech3/report.pdf> (last visited Feb. 25, 2004).

⁸⁷ *See, e.g.,* Michigan Cybercourt, at <http://www.michigan.cybercourt.net>. The cybercourt in the State of Michigan deals only with e-commerce cases. Singapore's JOL goes further as it covers civil, criminal, and family proceedings.

streamline the administration of justice in a networked society, enabling Singapore's legal services to be more innovative, competitive, and valuable.

Government grants were available to help early participants set up the necessary station in office and subsidize their monthly broadband charges.⁸⁸ A PD was issued to cover the types of hearings, guidelines, informational Web sites, use of JOL, prescribed times and conventions, queuing priority, court etiquette, adjournment of JOL hearing, and disbursements allowed for using JOL.⁸⁹ As JOL is still in its infancy, it covers mainly noncontentious civil interlocutory applications, and pretrial conferences for criminal cases and family proceedings, which are usually dealt with in the privacy of the judges' chambers. As the system develops, more applications can be built on the existing infrastructure and a virtual justice system with the public accessing online Singapore's judicial proceedings can be a reality. Pending further developments to JOL, it is unlikely that any fairness issue will surface for the present as the PD and the guidelines have sufficiently covered the procedural aspects to ensure no party is unfairly disadvantaged.

V. SYSTEMS FOR JUDICIAL DECISION SUPPORT, CASE MANAGEMENT, PERFORMANCE MEASUREMENT, PUBLIC SERVICE EXTENSION

It is the Singapore judiciary's experience that a fair, efficient, and responsive justice system must be supplemented by a holistic IT system for judicial decision support, case management, performance measurement, and public service extension. By their nature, these systems pose no fairness issues. Instead, the strategic deployment of such systems ensures judicial decisions of a consistently high quality, expedition and timeliness in justice delivery, and enhanced public access to justice.

From the courtroom and chambers computers in the Subordinate Courts,⁹⁰ judicial officers can access a plethora of information online via Intranet to assist them in the decision-making process. Information Management and Precedents Resource System (IMPRESS), a text-search database, allows quick searches for local case precedents. LawNet's Legal Workbench provides access to the Versioned Legislation Database (for primary and subsidiary legislation and the bill supplements), Singapore Parliamentary Reports System (Hansards), local reported case precedents, unreported local judgments, digests of both reported and unreported cases, results of appeals, treaties and conventions, and a legal journals index. The Sentencing Tariff and Research Tool allows research on sentencing

⁸⁸ See Chief Justice Yong Pung How, Address at the launch of Justice Online, Singapore Supreme Court (June 28, 2002), available at http://www.supcourt.gov.sg/supcourt_upload/speeches/2002/DOC164.pdf (last visited Feb. 26, 2004).

⁸⁹ See PRACTICE DIRECTIONS, *supra* note 29, at Direction 3.

⁹⁰ There are presently 742 personal computers serving the Subordinate Courts.

benchmarks, precedents and principles. The Judicial Officers' Database permits online access to electronic bench manuals comprising working and practice papers, and compendiums on specific subjects prepared by judicial officers. The Intranet-based e-library complements the courts' physical libraries by providing virtual services such as enquiry, reference and collection (for both physical and electronic documents), e-mail alert services on latest judgments, electronic compilations of newly acquired books and newly reported cases, links to external Web sites of the courts of other jurisdictions and law-related organisations, and customized Lexis-Nexis Intranet Solutions. Through the Internet-based e-Justice Judges' Corridor,⁹¹ judicial officers can interact freely with foreign judges and legal experts who subscribe to this listserv to discuss issues of common interest with the help of a moderator.

The Singapore Case Recording and Information Management System is an online integrated case-management system for criminal justice.⁹² The system tracks the life cycle of cases, manages the case dockets systematically, schedules hearings and charts timelines automatically, tracks and traces a case by functionality, facilitates bail processing and payment of fines and fees, automates generation of notices, summonses, warrants and correspondences, and generates statistical reports. All the functions ensure efficient case and process management; fast generation, retrieval and verification of case information and historical data; and the sharing of nonclassified information with other agencies to streamline the administration of criminal justice.

The Justice Scorecard (JSC) (integrating Net Economic Value and Six Sigma systems) measures court performance against the Subordinate Courts' strategic objectives by using a set of critical success factors.⁹³ JSC was adapted from the Balanced Scorecard,⁹⁴ and the Singapore judiciary was the first judicial sector application of the Scorecard.⁹⁵ The system (running on Gentia Release 3.0.5) tracks the performance of the courts according to three key perspectives: the community perspective measures accessibility and convenience to court users, quality of justice, fairness and timeliness in case disposal; the organizational perspective charts the efficiency of internal work processes, use of technology and innovation; the

⁹¹ See eJustice, Singapore Subordinate Courts, at <http://www.ejustice.org.sg/> (last visited Feb. 25, 2004).

⁹² In 2002, criminal cases (including regulatory offences) accounted for about sixty-five percent of the courts' caseloads. See SUBORDINATE CTS. OF SING.: ANN. REP. 2003, available at http://www.subcourts.gov.sg/annual_report_2003.htm.

⁹³ SUBORDINATE CTS. OF SING.: ANN. REP. 2001, at 100, 106. The Justice Scorecard was mentioned in the Top 10 Court Web site Awards for 2002. JusticeServed, at <http://justiceserved.com/top10sites.cfm> (last visited Feb. 25, 2004).

⁹⁴ See ROBERT KAPLAN & DAVID NORTON, THE BALANCED SCORECARD (1996).

⁹⁵ See ROBERT KAPLAN & DAVID NORTON, THE STRATEGY-FOCUSED ORGANIZATION (2000).

employee perspective assesses job satisfaction, commitment, training and development of the judicial officers and the staff.

A critical component of court performance is corporate administration. All judicial officers and staff have individual e-mail accounts. The dominant e-mail culture greatly facilitates and expedites daily communication and corporate decision making. Leave applications are electronically submitted and processed. The Electronic Division Conference allows court administrators to discuss issues through a listserv. All these applications are built on LotusNotes. The Web-based application system allows for calling of quotations, raising of purchase orders, procuring of items and external services, and payment to suppliers — all of which is done online.

The Subordinate Courts are dedicated to enhancing public access to justice service and information. The Electronic Alternative Dispute Resolution (e@dr) is an online dispute resolution service for e-commerce transactions, including consumer, contractual and intellectual property disputes. The disputants only need to agree to use e@dr and have email addresses. The court's jurisdiction is based on parties' consent. Unlike traditional court adjudication, a civil suit or claim need not be filed. The process begins with the submission of a form to the e@dr Web site. Information exchanged during mediation is kept confidential. The service has since been extended to town council claims for rapid recovery of outstanding conservancy charges.⁹⁶

The Subordinate Courts' award-winning main Web site provides an array of public information including how to locate the most appropriate dispute resolution forum, obtain legal aid and free services by court support groups and volunteers, as well as containing online services, court news, downloadable forms, updated hearing lists, useful links, frequently asked questions, and reference materials.⁹⁷ Dedicated Web sites of the Family Court⁹⁸ and Juvenile Court⁹⁹ allow public access to caselaw and academic articles. These Web sites and e-services not only serve as a useful knowledge-management framework, they enhance the transparency of the justice system by educating the public and facilitating communication between the public and the judiciary.

In the future, the Subordinate Courts will experiment with Free Space Optics, a wireless technology that provides better network connectivity between court

⁹⁶ See Singapore Subordinate Courts, Civil Justice Division, at <http://www.subcourts.gov.sg/Civil/index.htm> (last visited Apr. 16, 2004).

⁹⁷ See <http://www.gov.sg/judiciary/subct> (last visited Feb. 25, 2004). It won the Top 10 Court Web site Awards for year 2003; see also JusticeServed, at <http://justiceserved.com/top10sites.cfm> (last visited Feb. 25, 2004).

⁹⁸ See Family Court, at <http://www.gov.sg/judiciary/subct/family> (last visited Feb. 25, 2004).

⁹⁹ See Juvenile Court, at <http://www.juvenilecourtofsg.gov.sg> (last visited Feb. 25, 2004).

buildings. If proven reliable, this new technology can be creatively applied for future courtroom projects. The courts are also testing a biometrics-based system that can pave the way for the admission of complex DNA evidence in court in the near future.

VI. CONCLUSION

Technology can foster greater access to justice without compromising fairness or eroding due process. ATOMS and SCT e-filing show that consumer-friendly technology, which requires little training, can be strategically employed and made acceptable and convenient to end users. The extensive use of live video link and broadband technologies in various justice processes and court services can increase efficiency, enhance productivity, reduce delay, and make the justice process more cost effective. EFS and SCT e-filing system show that with EDI technology, issues of data integrity, confidentiality, and security must be adequately addressed. The various judicial decision-support systems can support but not substitute the knowledge, skills and judgement of human beings. Analysis of these systems demonstrates that the decision-making process and the quality of decisions can be improved with complete and accurate information provided online. The court Web sites, e@dr, and JSC further illustrate that technology, when properly harnessed, can enhance the role of the court as a service institution, and improve the quality of justice.¹⁰⁰

EFS, ATOMS, and JOL show that private-sector investment can be leveraged to improve judicial service delivery standards. Strategic partnerships with the private sector and collaboration with other public sector institutions can promote the use and absorption of technology across the economic spectrum, with special attention to the direct users. These justice stakeholders' involvement in technology policy development can help share new perspectives and rigour in court technology innovation. However, the courts must be careful that any strategic collaboration in, and the use of, court technology must not colour the perception and reality that the judiciary is independent and impartial. This is only possible if the judiciary leads in the innovation process and adheres steadfastly to fundamental fairness principles when relying on technology. Technology roadmaps are also necessary to assess research capabilities, identify relevant trends, ascertain the judiciary's and the community's needs, and guide in the allocation and prioritization of scarce judicial resources.¹⁰¹

¹⁰⁰ The observations in this paragraph are adapted from the technology evaluation criteria proposed by The Honorable Chief Justice Yong Pung How at the Technology Renaissance Courts Conference (Singapore, 1996).

¹⁰¹ The observations in this paragraph are adapted from the Pentagon of Technology Innovation principles proposed by the Chief Justice. The Honorable Chief Justice Yong Pung How, Remarks at the Sixth Court Technology Conference, Los Angeles, Ca. (1999), available at <http://www.ejustice.org.sg/resourceframe.html> (last visited Feb. 25, 2004).

Fairness to the parties, integrity and efficiency of the justice process, reliability of evidence given with the aid of technology, and public perception of the justice process are legal and policy considerations that must be weighed carefully when technology is used in the courtroom. The Singapore judiciary's experience demonstrates that finding the right balance is not impossible, and that creative and holistic use of technology in internal work processes and public service delivery can make the justice system more efficient and transparent, thus engendering greater public trust and confidence in the judiciary and respect for the rule of law.