



Proposal

The High Definition Television
Marketplace

The state of play today
Prospects for 2004-2006

A Study from Kane Consulting

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Mai 2004

1. Aims of the Study

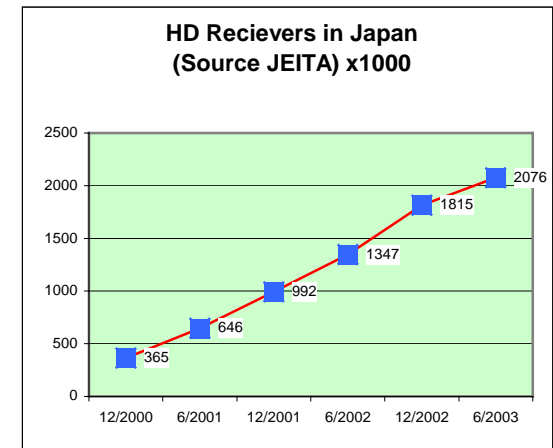
The **state of advancement of High Definition TV** in the world at the start of 2004: USA, Japan, Korea, Singapore, China, Australia, Brazil, Europe (Euro 1080, TF1, ...)

The study will cover the following areas:

- **The consumer equipment** in the USA and Japan, and in countries where an HDTV service has been launched, according to available statistics on sales, prices, screen-types and modes of reception. We will take note of forecasts and the speed of development, and will discuss in particular the impact of Blu-ray DVD HD and Playstation3/other games consoles.
- The **regulatory environment** which has permitted the emergence of HD in the USA and Japan, and the foreseeable situation in Europe, including the differing roles played by private and public broadcasters. We will identify the “virtuous circle” which has operated in favour of HDTV in the USA, Japan, and elsewhere (Australia, Korea, China, Brasil, Belgium, etc.), as well as **format issues**.
- **HD channels** available in the USA, Japan, and elsewhere in the world,
 - Program content of the different HD channels: ie the 8 HD US networks, the 4 Corean
 - Analysis of delivery methods (satellite, Digital terrestrial, cable); and economic model (subscription, Pay-TV, free-to-air).
 - The image formats used in production, distribution and reception (for instance distribution formats used in the USA, defined by the ATSC ‘Table 3’: i.e. 1080/60i (all channels), 720/60p (ABC, Fox)

- TV channels on ADSL, and opportunities for HD distribution on the Internet.

For instance 4% of homes in the USA are equipped with HD/HD-ready TV sets. Fig.1. in Japan:



| Korean channels | #hours /day | Programs |
|-----------------|-------------|----------|
| KBS | | |
| SBS | | |
| MBC | | |
| EBS | | |

- HD program available & produced in the world by category:
 - Films and catalogues
 - Drama, series, soap, documentaries,
 - Sports, shows, games, news,

- The **strategies adopted by the different media groups** who have launched HDTV channels, including the strategies being exploited by Telcos and ISPs regarding video content and distribution (SD and HD).

- **Technology:**
 - **What the main manufacturers are offering**, both professional and consumer level: cameras, servers, software, production systems for both TV broadcasting and other means of delivery, antennae, decoders, receivers).

 - **TVHD technical procedures:** the costs of production and delivery in comparison with those of standard definition (taking into account current and future compression technology).

 - **HD services and HD services providers:** outside broadcast, studios, post production, masterisation & laboratory, broadcast services...



Fig.2. The outside broadcast leader in the USA (National Mobile Television) has already 15% of its fleet in HD.



Fig.3. Comcast (Denver, Colorado, USA): cable operator and producer of new HD channels "INHD"

- The state of play with **standards initiatives** in the areas of HD video formats, decoders, and anti-piracy measures.
- An analysis of the positions of **the major European media groups** with regard to TVHD, their expectations in the area of regulation.

To sum up, we aim to evaluate the real state of affairs in the development of HDTV and of the opportunities presented by the sector in Europe. We will also identify new lines of thinking which the emergence of HDTV in other parts of the world may inspire in the European marketplace. These lines of thinking may well touch on the Internet, cable, or DTT; and we will also look at the conditions for a joint HDTV initiative on the part of the private and public TV channels in Europe. Will the development of HDTV in Europe result in the DTT? Are there alternative scenarios?

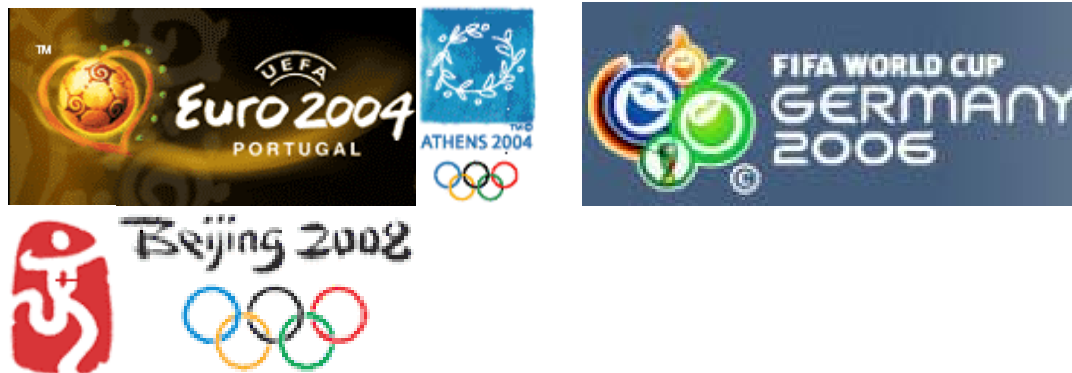


Fig.4. In the next 4 years, all big sports events will be captured and therefore available in HD. This could have a major impact for HDTV emergence, driving the uptake of HD in the home.

2. The proposal

We have completed a first version in April 2004.

The new release will be available at the end of December 2004, for a cost of 8000 Euros including the previous version. Two new updated versions will be available at the end of April 2005 and at end of September 2005 for the price of 4000 Euros each. As with its other studies, Kane undertakes to provide 2 update per year (for the period September 2004 – September 2006) in a sector where evolution is particularly rapid.

Kane publishes since 2001 a study on the computerization of TV news. Similarly Kane publishes a study on Digital Asset Management since 2002.

3. Method and interviews

| | | |
|------|---------|----|
| RTBF | TV (DG) | Je |
|------|---------|----|

Kane has devoted 100 man-days to the production of the study before April 2004, followed by 60 days since then. This has involved:

- Interviews and visits with American, Japanese, Chinese and European groups involved in HDTV
- Visits to manufacturers with relevant equipment on offer
- Attendance at conferences and exhibitions
- Study of relevant documents
- Discussion with the principal relevant media groups and organizations in the world.

3.1. Management

Green : Europe ; blue : North America ; yellow : Asia-Pacific ; brown : South America

| Company | Category | Contact | Title | Country | Town | Comment |
|--------------------------------|----------|---------------------|--------------------------------|---------|---------------------|----------------|
| CNN | TV (DG)) | Chris Cramer | CEO | USA | Atlanta | |
| Discovery HD theater | TV (DG) | Shana Vickers | Manager of Program | USA | Silver Spring-ML | HD Symposium |
| DSL TV | TV (DG) | Franck Abhissira | TPS Deputy General Manager | France | Lyon | Imagina |
| Euro 1080 | TV (DG) | Gabriel Fehervari | PDG | Belgium | Hove | Imagina |
| France Télévisions Interactive | TV (DG) | Laurent Souloumiac | Directeur Général | France | Paris | Visit |
| Mediametrie | TV (DG) | Henri False | Président | France | Levallois-Perret | Imagina |
| Monaco TV | TV (DG) | Antoine Veran | Chief Executive Officer | Monaco | Monaco | Imagina |
| RTBF | TV (DG) | Jean-Paul Philippot | Administrateur | Belgium | Brussel | Visit |
| NHK | TV (DG) | Shinichi Kamiyo | Planning Division, Senior Off. | Japan | Tokyo | Chaîne info HD |
| NHK | TV (DG) | Yoshida Kei | News Director | Japan | Tokyo | Chaîne info HD |
| TF1 | TV (DG) | Pierre Lavoix | Director of Quality | France | Issy les Moulineaux | Imagina |

3.2. Producers

| Company | Category | Contact | Title | Country | Town | Comment |
|----------------------------|-------------|--------------------|------------------------------------|-------------|----------------|--------------|
| ABC Australia | TV Producer | Marena Manzoufas | Head of Programming | Australia | Sydney | MIPTV |
| Australian Film Commission | TV Producer | Rosemary Curtis | Manager Marketing | Australia | Sydney | |
| BBC Worldwide | TV Producer | Hazel Wright | Executive Manager | UK | Londres | MIPTV |
| CBC Radio-Canada | TV Producer | Caroline Tyre | Sales Manager | Canada | Toronto | MIPTV |
| Discovery | TV Producer | Ian Sycamore | Production Manager | UK | Londres | HD Symposium |
| Euro 1080 | TV Producer | Leonid Adamopoulos | Program Director | Belgium | Hove | HD Symposium |
| EuroArts | TV Producer | Elmar Kruse | Managing Director | Germany | Berlin | MIPTV |
| France TV Distribution | TV Producer | Hervé Michel | Directeur vente de droits | France | Paris 15 | MIPTV |
| Gedeon | TV Producer | Stéphane Méllière | Président & CEO | France | Paris 11 | MIPTV |
| Globo TV Internat. | TV Producer | Yana Ponte | Sales Manager | Brasil | Rio de Janeiro | MIPTV |
| Going Dutch Prod. | TV Producer | Marc Heijdeman | Managing Partner | Netherlands | Amsterdam | MIPTV |
| Ignition Films | TV Producer | Alison Sterling | Producteur | UK | Bristol | HD Symposium |
| Ignition Films | TV Producer | Terry Flaxton | Réalisateur | UK | Bristol | HD Symposium |
| MBC | TV Producer | Chin Haewon | Marketing Manager | South Korea | Séoul | MIPTV |
| Mico (NHK) | TV Producer | Hideaki Sakamoto | Senior Executive Manager | Japan | Tokyo | MIPTV |
| News12 (Cablevision) | TV Producer | Norm Fein | Sr.Vice President News Dev. | USA | Woodbury-NY | NAB |
| Pathé | TV Producer | Antoine Cochet | Sales Executive | France | Paris 8 | MIPTV |
| Power Television | TV Producer | Eloise Tooke | Managing Director | UK | Londres | MIPTV |
| S4C | TV Producer | Alexandra Leadley | Internat.Sales Executive | UK | Cardiff | MIPTV |
| Shanghai Media Group | TV Producer | Maggie Zhou | General Manager Assistant | China | Shanghai | MIPTV |
| Télé Image International | TV Producer | Stéphane Fournier | Vice Président, Int.Bus.Affairs | France | Paris 8 | MIPTV |
| TWI | TV Producer | Karen Mullins | Senior Intern.Vice President | UK | Londres | HD Symposium |
| TWI | TV Producer | Michael Miles | Directeur de la Photo. (freelance) | UK | Richmond | MIPTV |

3.3. TV-channels technical management

| Company | Category | Contact | Title | Country | Town | Comment |
|----------------------|----------|---------------------|-----------------------------------|-------------|----------------|-----------------------|
| ABC | TV (DT)) | David Converse | Vice President & Director Engin. | USA | Burbank | Responsible O&O |
| ABC | TV (DT)) | Grafton Mouen | Senior Program.Analyst, SI | USA | New York | |
| BBC | TV (DT)) | Andy Quested | Production Modernisation | UK | Londres | Projet Holby/HD |
| Carlton Television | TV (DT)) | Simon Fell | Controller, Operat.&Engineering | UK | Londres | Techno. Émergent |
| CBS | TV (DT)) | Nell Donovan | Director, News Marketing | USA | New York | Distribution affiliés |
| Comcast Media Center | TV (DT)) | Fred Baumgartner | Director, Engineering | USA | Littleton-CO | |
| Comcast Media Center | TV (DT)) | Tom Schomburg | Director, Engineering | USA | Littleton-CO | |
| Discovery | TV (DT)) | Greg Larvenz | Director of Engineering | USA | Miami-FL | Projet centre HD |
| National Geographic | TV (DT)) | A. Cody Claxton | Director of Technical Operations | USA | Washington-DC | Banque numérique |
| NBC | TV (DT)) | Frank Accarrino | Vice Pres. News, Ent.&Fac.Ope. | USA | New York | |
| NBC | TV (DT)) | Peter Smith | Vice Pres. Techn.Planning and E. | USA | New York | Projet centre HD |
| NBC | TV (DT)) | Ralph C.Olsen | Manager, Netw.Ope.&Cont.Dist. | USA | New York | |
| NBC | TV (DT)) | Richard Lahti | Director Engineering & Production | USA | Los Angeles | |
| NBC | TV (DT)) | Ronald J.Lynah | Director, Program Operations | USA | New York | |
| NBC | TV (DT)) | Todd Donovan | Manager, edit.Eng.&Maint | USA | New York | Projet news |
| News 12 | TV (DT)) | Milan Krainchich | Director of Operations | USA | Woodbury-NY | Chaîne info HD |
| NOB | TV (DT)) | Rob ten Siethoff | Chief Technology Officer | Netherland | Hilversum | Centre diffusion |
| NTV | TV (DT)) | Kenji Noshi | Tecnology Planning, Gal Mger | Japan | Tokyo | Chaîne info HD |
| Starz Encore | TV (DT)) | James Porter | Execut. Direct. Post Prod.B.O. | USA | Denver-CO | |
| Starz Encore | TV (DT)) | Tom Mikkelsen | Vice pres., Product.& Operat. | USA | Denver-CO | 4 chaînes HD |
| SWR (ARD) | TV (DT)) | Dr. Robert Fischer | Archive Manager | Germany | Baden-Baden | Groupe archive ARD |
| TSR | TV (DT)) | Jean-François Sauty | Directeur des Systèmes | Switzerland | Genève | |
| TWI interactive | TV (DT)) | Max Haot | Sen.Intern. Vice Pres.World.Prod. | UK | Londres | Filiale IMG |
| Warner | TV (DT)) | Brian Mc Kay | Technical Manager | USA | Los Angeles-CA | |
| Warner | TV (DT)) | Jinha Kim | Director R&D compression | USA | Los Angeles-CA | |
| Warner | TV (DT)) | Kevin Froning | Director Engineering& Maintenance | USA | Los Angeles-CA | |

3.4. Broadcast manufacturers

| Company | Category | Contact | Title | Country | Town | Comment |
|--------------------------|--------------|-------------------|-------------------------------|-------------|--------------------|--------------------|
| Alcatel | Manufacturer | Pierre Barnabé | Vice Président | France | La Défence | Imagina |
| Avid | Manufacturer | Miguel Ferros | Eur.Product Marketing Manager | UK | Pinewood | Europe, HD Product |
| Avid | Manufacturer | Straker Coniglio | Broadcast Manager (ventes) | Singapore | Singapour | For Asia |
| BBC Technology | Manufacturer | Kevin Ivey | ex CNN, Chef du projet ESPN | USA | Meridian-MS | |
| Digicast | Manufacturer | Jin - E Kang | C.E.O. | South Korea | Séoul | |
| Envivio (France Telecom) | Manufacturer | Julien Signes | Président | USA | San Francisco-CA | Headquarter Rennes |
| ETRI | Manufacturer | Jin Soo Choi | Team Leader/ Senior Member | South Korea | Daejon | |
| EVS | Manufacturer | Jacques Galloy | Director & CFO | Belgium | Ougrée | |
| Harris | Manufacturer | John L.Delay | Director DTV Studio Products | USA | Mason-OH | |
| HP | Manufacturer | Glenn Hall | Media Industries Consultant | UK | Bristol | |
| KWS Electronic | Manufacturer | Helmut Schenk | C.F.O. | Germany | Grosskarolinenfeld | |
| Lumière HD | Manufacturer | Adrien Haubrich | DVHD/FinalCutPro | USA | Point Pleasant-NJ | DVHD/FinalCutPro |
| Lumière HD | Manufacturer | Frederic Haubrich | Specialist DVHD/FinalCutPro | USA | Point Pleasant-NJ | DVHD/FinalCutPro |
| Nokia | Manufacturer | Reider Wasenius | Senior Project Manager | Finland | Espoo | MIPTV (multimedia) |
| Omneon | Manufacturer | Geoff Stedman | Vice President of Marketing | USA | Sunnyvale-CA | |
| Panasonic | Manufacturer | Gilles Bribant | Sales Manager | France | Saint-Ouen | |
| Panasonic | Manufacturer | Nigel Wilkes | HD Business Developm.Manager | UK | Bracknell | |
| Panasonic | Manufacturer | John Funnell | Technical Product Manager | UK | Bracknell | |
| Ross | Manufacturer | Steve Romain | Nat.&Key Accounts Manager | Canada | Iroquois | Obvan & mixers |

| Company | Category | Contact | Title | Country | Town | Comment |
|-------------------------|--------------|--------------------|----------------------------------|-----------|-------------|--------------------|
| Sony | Manufacturer | Kaoru Tachibana | BD Develop.Div. Gal Mgr | Japan | Tokyo | Blu-ray |
| Sony | Manufacturer | Kevin Wakeford | Head of High Definition business | UK | Basingstoke | Europe, HD Product |
| Sony | Manufacturer | Kozo Kaminaga | Chief R&D Strategy Officer | Japan | Kanagawa | Stratégie groupe |
| Sony | Manufacturer | Shigeru Kato | Broad.Disc Sen.Gal.Mger. | Japan | Tokyo | Blu-ray |
| Sony | Manufacturer | Shinji Hanatani | President, B&P Company | Japan | Kanagawa | Corporate Strategy |
| Sony Busin. Europe | Manufacturer | Niels Thomas | General Manager, Media | UK | Weybridge | |
| Sony France | Manufacturer | Gérard Bizeau | General Manager Broad.Busin. | France | Paris 17 | |
| Sony France | Manufacturer | Hiroshi Tsukiji | General Manager | France | Paris 17 | |
| Sony France | Manufacturer | Pascal Kerloch | Produit Cinealta &HD | France | Paris 17 | HD Product |
| Sony France | Manufacturer | Patrick Ribourg | Senior Sales Manager | France | Paris 17 | |
| Sony France | Manufacturer | Philippe Poels | PDG | France | Paris 17 | |
| Thomson/Grass Valley | Manufacturer | Alexandre Arnodin | Sales North Asia | China | Pékin | |
| Thomson/Grass Valley | Manufacturer | Didier Huck | VP Public Affairs | France | Boulogne | |
| Thomson/Grass Valley | Manufacturer | Eric Dufosse | Director | USA | Beaverton | |
| Thomson/Grass Valley | Manufacturer | Matthew Allard | Product Mgr Servers&News prod. | USA | Beaverton | |
| Thomson/Grass Valley | Manufacturer | Patrice Thefaine | Sales Manager | France | Cergy | |
| Kondo Broadcast Systems | Integrator | Toshio Sakisaka | Sales Department | Japan | Tokyo | |
| Videodata | Integrator | Marcelo P.Blum | Application Manager | Brasil | Sao Polo | |
| FNAC | TV Retail | Victor Jachimowicz | Lab Test Manager | France | Clichy | 15 countries |
| Astra | Telco | Thomas Wrede | Senior Systems Engineer | Luxemburg | Bersdorff | Imagina |
| EADS Telecom | Telco | Eric Theron | | France | | Imagina |

3.5. Services providers & experts

| Company | Category | Contact | Title | Country | Town | Comment |
|--------------------------|---------------|--------------------|-------------------------------------|-----------|---------------------|--------------|
| Altered Images | Post Prod. | David Johnson | Sales & Marketing Director | GB | Shepperton | HD Symposium |
| Evolutions TV | Post Prod. | Dave Tidey | Chief Operating Officer | GB | Londres | HD Symposium |
| Frontierpost | Post Prod. | Neil Hatton | Managing Director | GB | Londres | HD Symposium |
| FSL Value Solutions | Post Prod. | Peter Stanley | Assistant to CEO | GB | Londres | HD Symposium |
| Mikros | Post Prod. | Maurice Prost | PDG | France | Paris 10 | |
| NATS | Post Prod. | Duncan Smith | Facility Director | GB | Londres | HD Symposium |
| RiffGLPipa | Post Prod. | Vincent Lamy | PDG | France | Paris 15 | |
| Transatlantic Video | Post Prod. | Patrick Dumez | Directeur | France | Paris 15 | |
| The Hospital | Post Prod. | Chris Collingham | VP Technology and Facilities | GB | Londres | HD Symposium |
| CTV (National Mobile TV) | OBvan service | Bill Morris | International Business Director | GB | Londres | HD Symposium |
| National Mobile TV | OBvan service | Mark Brooks | Directeur Technique | USA | Flushing Meadows-NJ | |
| Outside Broadcast | OBvan service | Ludo Kerkhofs | Managing Director | Belgique | Rotselaar | MIPTV |
| Outside Broadcast | OBvan service | Timo Koch | Commercial Manager | Belgique | Rotselaar | MIPTV |
| Television Mobile Ltd | OBvan service | Bart J.Arnold | Managing Director | Irlande | Cork | HD Symposium |
| VCF (Euromedia) | OBvan service | Hughes Stavaux | Directeur Technique | France | Saint-Cloud | |
| Ambassade de France | Experts | Arnault Vuillermet | Directeur de Production | USA | Los Angeles-CA | Imagina |
| Baskerville | Experts | Jessica Sandin | Mobile Location Analyst, Editor | GB | Londres | MIPTV |
| Cathay Consultants | Experts | Kevin Dauphinee | Managing Director | Chine | Pékin | |
| CNC | Experts | Jean Menu | Dir. Multimedia et Industries Tech. | France | Paris 16 | |
| CST | Experts | Yves Louchez | Directeur Général | France | Paris 18 | |
| EURO 1 | Experts | Hardy Heine | Expert TV Numérique | Allemagne | Brème | MIPTV |
| Indépendant | Experts | Stephane Singier | Consultant | France | Paris | Imagina |
| TVB Europe | Experts | Reinhard E.Wagner | German Correspondent | Allemagne | Cologne | NAB |

| Société | Catégorie | Personne rencontrée | Titre | Pays | Ville | Commentaires |
|--------------------------|-------------|---------------------|-------------------------------------|-----------|---------------------|--------------|
| Altered Images | Post Prod. | David Johnson | Sales & Marketing Director | GB | Shepperton | HD Symposium |
| Evolutions TV | Post Prod. | Dave Tidey | Chief Operating Officer | GB | Londres | HD Symposium |
| Frontierpost | Post Prod. | Neil Hatton | Managing Director | GB | Londres | HD Symposium |
| FSL Value Solutions | Post Prod. | Peter Stanley | Assistant to CEO | GB | Londres | HD Symposium |
| Mikros | Post Prod. | Maurice Prost | PDG | France | Paris 10 | |
| NATS | Post Prod. | Duncan Smith | Facility Director | GB | Londres | HD Symposium |
| RiffGLPipa | Post Prod. | Vincent Lamy | PDG | France | Paris 15 | |
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| Ambassade de France | Experts | Arnault Vuillermet | Directeur de Production | USA | Los Angeles-CA | Imagina |
| Baskerville | Experts | Jessica Sandin | Mobile Location Analyst, Editor | GB | Londres | MIPTV |
| Cathay Consultants | Experts | Kevin Dauphinee | Managing Director | Chine | Pékin | |
| CNC | Experts | Jean Menu | Dir. Multimedia et Industries Tech. | France | Paris 16 | |
| CST | Experts | Yves Louchez | Directeur Général | France | Paris 18 | |
| EURO 1 | Experts | Hardy Heine | Expert TV Numérique | Allemagne | Brème | MIPTV |
| Indépendant | Experts | Stephane Singier | Consultant | France | Paris | Imagina |
| TVB Europe | Experts | Reinhard E.Wagner | German Correspondent | Allemagne | Cologne | NAB |

4. Deliverables

The study will be delivered to subscribers at the end of December 2004.

Dublin, and will be a conference session producer at IBC 2003. He is European chairman of the Global Society for Asset Management.

5. Consultants/experts

4 consultants: Adrian SCOTT, Jean-François de LAUZUN, Charles BEBERT, Pascal BAP,

Adrian SCOTT has spent his entire career in the field of broadcast journalism and its technology. He majored in journalism at the University of North Carolina, and then returned to his native Scotland to join Radio Clyde as a reporter and presenter. He subsequently worked as a producer and presenter at LBC and IRN, before becoming part of the launch team at TV-am where he was Head of Planning, News Editor and Editor-of-the-Day (executive producer).

Having used an early version of the BASYS newsroom system at TV-am, he was recruited by ITN (who had recently acquired the BASYS company) as European Operations Director with primary responsibility for Sales and Marketing of the BASYS system. He was instrumental in increasing BASYS's turnover from zero to £6m in five years and the customer base from 2 to over 100.

When BASYS was eventually acquired by Avid, Adrian became Avid's European Broadcast Market Manager, and then when BASYS was spun off as iNews, VP of EMEA Marketing. In 2000 he joined Autocue as Director of Marketing, and presided over the rebranding of Autocue's newsroom products.

In mid-2002 he became an independent consultant, and now advises a variety of broadcasters and manufacturers on technology, journalism and workflow issues, especially news automation and Media Asset Management.

He is a member of the IBC Exhibitions committee, the Management Council of the IABM, and the Royal Television Society. He is a consultant to News World, produced the technology sessions at News World 2002 in

Jean-François de LAUZUN (born in 1950) is engineer of "Ecole Polytechnique" in France in 1970.

He has an early career in the process engineering at Technip, and then turned to IT technology services, where he founded and developed 2 companies in the area of optimization software for transport and for project management . He created a new project management system which was implemented in major banks and industries regarding multi-project scheduling of engineering and IT departments: Dexia, BNP, Matra Espace, BRED, Peugeot, ...

He created a transportation optimization software which is used by several regional bodies : Maine& Loire, ...

He then had a career in large IT project management for several major operations at France Telecom, PPR, ABN-Amro, SMABTP, Procter & Gamble.

He has participated in several projects for market sizing (Avid, BBC T, IBM) and for Kane's operation in HDTV studies.

Charles BEBERT (born in 1950) is engineer of the "Ecole Nationale des Mines de Paris" in France, and has a Master in Physics. He became a specialist of IT strategy and has since then worked as a consultant in 16 countries in the world. He founded Kane in 1986, based in Brussels and in Paris. In 1992, he started to work for the media sector: television, cinema (Babelsberg Studio in Germany), audiovisual service providers, audiovisual attractions in theme parks. He is specialised in benchmark studies regarding the media businesses as Kane produces and up-date several studies such as Newsroom, Media Asset Management, Location Based Entertainment, Digital Cinema...

He worked in 2002 inside the "Mission Couveinhes" regarding the evolution of the audiovisual services providers for Culture and Communication French ministers Mrs.Tasca and later Mr.Aillagon.

He is member of the Commission Supérieure Technique of the CNC in France and of the B.K.S.T.S. in the UK. He is European vice president of G-SAM.

Pascal BAP is an engineer, and a graduate of the Ecole Centrale de Paris. He is a specialist in post-production and digital imaging, and was a software development engineer at Thomson group in 1984, before becoming a co-founder of TDI (Thomson Digital Image) which developed Computer Graphic Image Design software and related services. He subsequently became founder and managing director of the graphics company **Ex-Machina**, which produces rides, high-end CGI films and special effects for films.

By 2000, Ex-Machina had a staff of 100 and Pascal established a subsidiary in Japan with Xavier Nicolas. Clients include Toyota, Dentsu, Panasonic, Sony Pictures, and Iwerks

He has produced many ground-breaking CGI films such as Trekken, Sub-oceanic Shuttle, and Mad Racers.

Pascal left Ex-Machina after the takeover by Ecoutez-Voir, and later became Development Manager of Duran-Duboi.

He has been a Kane consultant since 2001.

Pascal has produced conferences at Siggraph and at Imagina, and is a member of the CST.

5. Kane's references

Kane's references for comparable benchmark studies and reports are the following for 2001-2003.

- BBC Regions, BBC, France2, France3, France Télévisions, France Télévisions Publicité, Arte, RTLTVi, RTBF, TSR, ARD (Germany), Internews New York & Moscow, RFO, ORF (Austria), Newsworld, Newxchange, EBU among broadcasters
- Avid Europe, Dalet, IBM Europe, Harris USA, Sony Europe, CapGemini/Ernst&Young Europe, Grass Valley (Thomson), Blue Order, Vizrt among manufacturers for the broadcast industry.

Kane 's development team is managed by Adrian Scott and Charles Bebert.

Our most recent assignment is to investigate server-based playout and production installations in the world for Avid Europe as well as Harris Automation in the USA. For Harris, we are also investigating MAM markets in broadcast, and secondary markets including sports, a driving force in TVHD.

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