

KUDELSKI GROUP ANNUAL REPORT 2001



All photographs in this document show Kudelski Group employees. They are sometimes in a setting that evokes their company's activity sector.

KUDELSKI GROUP
ANNUAL REPORT 2001

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In a world in which consumers are connecting up to value-added services and executing transactions on multiple platforms, it is essential that content and personal data are protected.

The Kudelski Group is committed to supplying the most advanced solutions, in order to ensure security and preserve privacy in a simple and user-friendly fashion.

MESSAGE FROM THE PRESIDENT

4 Throughout its history, the Kudelski Group has shaped its future through strategic decisions. In 1989 it turned its attention to pay television systems, enabling it to return progressively to profitability following a difficult period. In 1995 the threshold of digital television was crossed with the signing of a contract with EchoStar. This decisive step allowed the Kudelski Group to achieve record growth in turnover, profits and balance sheet solidity.

Each strategic decision is the result of a very complex process in which a vision is given concrete form, turns into a plan and then becomes reality. The strength of the Kudelski Group lies in its capacity to face challenges by transforming them into stages which, once accomplished, appear almost obvious.

Following in the line of previous challenges, the decision of the Kudelski Group to support EchoStar's offer to buy back Hughes and DirecTV was considered to be highly risky by some financial commentators. Nevertheless, it certainly contributed to General Motors' decision in favour of EchoStar's offer.

The Kudelski Group has thus chosen to participate in the EchoStar/DirecTV merger in order to enable its first client (EchoStar) to increase its market share in the United States in a spectacular fashion. True to the philosophy of the Group, the motivation was to ensure that its clients and partners were able to increase their added value in terms both of quality and of quantity. The Kudelski Group has ultimately acted as a catalyst in one of the biggest mergers the television sector has ever seen, with the reward being some extremely interesting spin-offs.

The year 2001 was marked by a series of acquisitions that embodied the strategy of convergence. After SportAccess and Systems in 2000, SkiData, the undisputed leader in physical access solutions, and TicketCorner (ticketing) joined the Group in 2001. Parallel to the field of digital television, the Kudelski Group has thus established a second pillar anchored in the sector of physical access to public places. This area should make up about one third of the Group's earnings in 2002.



Two other acquisitions, Lysis and Livewire, were made in the digital television sector. While Lysis allowed the product range offered by Nagravision to be rounded off with interactive systems and traffic & scheduling, Livewire brought new expertise in decoder software into the Group.

The arrival in the Group of these new companies necessitated significant integration efforts. For the Nagravision teams, the integration was a particularly laborious task, which led to a total restructuring of the existing organization. Over and above these aspects, the process enabled the Kudelski Group to set up a stronger sales and marketing structure which is particularly well adapted to the new demands of the market.

In 2002, the Kudelski Group must improve its structures still further in order to better respond to the expectations of its clients and those of the financial community. Significant steps were taken in that direction in 2001, and these should lead to visible results in 2002.

At an operational level, 2001 was marked by a continuation in growth linked to new digital subscribers, while income relating to complete systems services diminished. The new acquisitions have been an important driving force behind the increase in earnings. Gross profit margins have risen strongly due to both external and internal factors, such as the growth in high value-added earnings.

Despite extraordinary items reducing the profits by 16.3 million Francs, net earnings for the Group climbed to 72 million Francs, a record figure considering that the environment was less favourable than in the past.

In 2002, the difficulties encountered by some operators will have a certain impact on the Group, but optimism remains high for the financial year as a whole. While the environment may be uncertain, we are convinced that our approach is tailored to the new needs of the market. The quality of strategy is decisive in such a context and determines whether market share is gained or lost.

Finally, we would like to thank our shareholders for the confidence they have shown us in the difficult moments, especially when the financial markets became anxious due to the uncertain short term development of some digital TV operators in Europe. In this unstable universe there is nevertheless great hope, which is that of seeing otherwise impossible options take on a concrete form. Once everything has settled down again, it will probably be to the benefit of the Kudelski Group.

Now more than ever, the effort will be sustained in the course of the months to come. Vigilance remains the key.

André Kudelski

KEY FIGURES

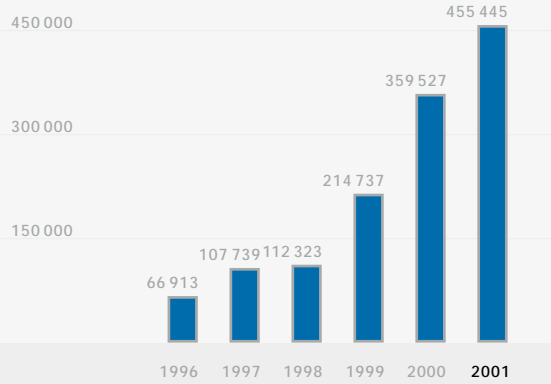
6 A good financial year 2001 in a volatile environment

The Kudelski Group achieved total income of CHF 455.4 M (+26.7%), EBITDA of CHF 102.25 M and net income of CHF 72.1 M (+8.2%), after exceptional items of CHF -16.3 M.

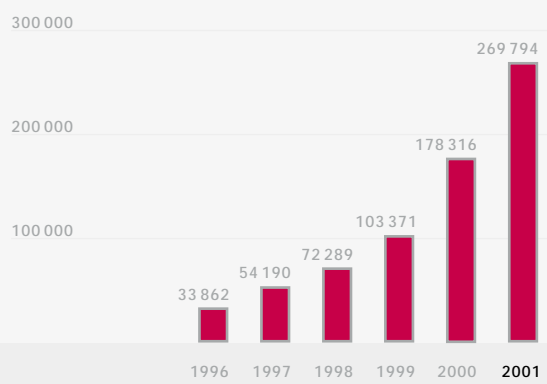
	2001	2000	1999	1998	1997	1996
Total Income	455 445	359 527	214 737	112 323	107 739	66 913
Gross Margin	269 794	178 316	103 371	72 289	54 190	33 862
Operating Income	82 973	75 405	40 388	25 038	17 195	5 816
Net Income	72 086	66 618	35 427	16 468	10 109	2 759
EBITDA	102 247	86 697	50 885	35 253	23 743	10 084
Equity incl. Min. Interests	580 851	693 156	154 208	111 464	56 808	45 825
Net Cash	364 114	543 611	58 663	47 609	10 390	4 637
Number of employees	1 173	425	239	170	141	109

Financial data in KCHF
EBITDA: earning before interest, tax, depreciation and amortization

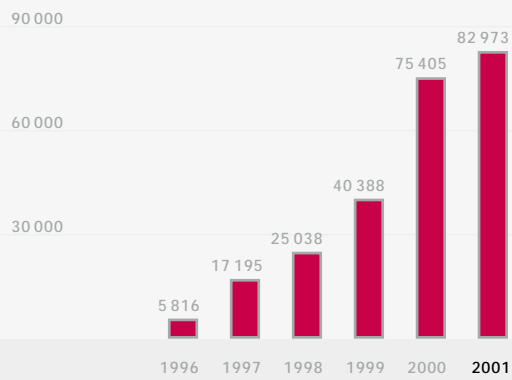
Total Income



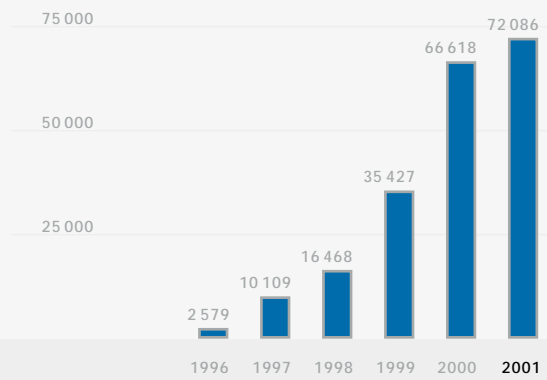
Gross Margin



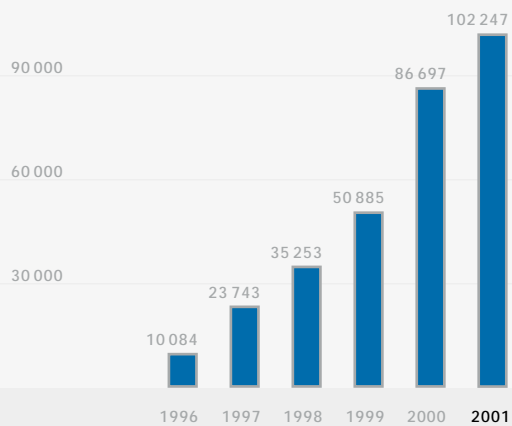
Operating Income



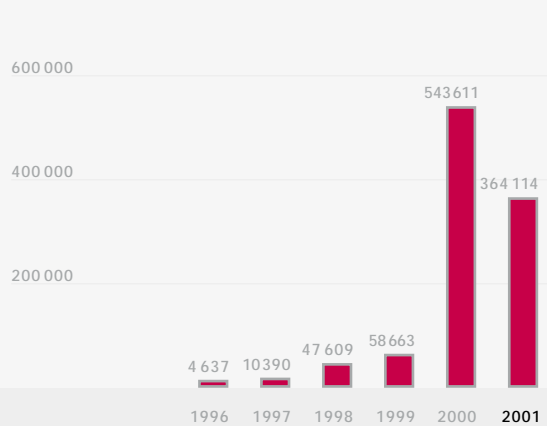
Net Income



EBITDA



Net Cash



MANAGEMENT AND BOARD OF DIRECTORS

8



Claude Smadja



André Kudelski



Laurent Dassault



Patrick Fœtisch



Stefan Kudelski



Norbert Bucher



Gérard Limat

BOARD OF DIRECTORS

André Kudelski (1960) ⁽²⁾

Chairman of the Board and Chief Executive Officer
Joined the Board in 1987

Claude Smadja (1945) ^(1,2)

Deputy Chairman of Board of Directors (since 1.4.2002)
Joined the Board in 1999
President of Smadja & Associates, Strategic Advisory

Norbert Bucher (1931) ⁽¹⁾

Joined the Board in 1992
Former Senior Vice President of Jacobs Suchard SA

Laurent Dassault (1953)

Joined the Board in 1995
Manager of Dassault Investissements

Patrick Fœtisch (1933) ⁽³⁾

Joined the Board in 1992
Lawyer

Stefan Kudelski (1929)

Joined the Board in 1968
Founder of Kudelski SA, former Chairman
of the Board and Chief Executive Officer

Gérard Limat (1940) ^(1,2,3)

Joined the Board in 1995
Director of Terramaris International SA, Dassault Group

The members of the Board are elected for a period
of one year.

Since 1.4.2002:

- (1) Audit Committee
- (2) Strategy Committee
- (3) Remuneration Committee

GROUP MANAGEMENT

André Kudelski

President and Chief Executive Officer (CEO)

Adrienne Corboud Fumagalli (1958)

Corporate Secretary

Charles Egli (1948)

Chief Operating Officer (COO)

Nicolas Goetschmann (1960)

Chief Financial Officer (CFO)

John Markey (1956)

Chief Marketing Officer (CMO)

VICE PRESIDENTS

Jean-Jacques Duvoisin (1943) Finance & Administration

Jean-Philippe Plantevin (1965) Sales

Philippe Stransky (1959) R&D and Projects (CTO)

Michel Varonier (1960) Operations

Claude Werner (1945) Production & Logistics

9



Adrienne Corboud Fumagalli



Charles Egli



John Markey



Nicolas Goetschmann

KUDELSKI GROUP COMPANIES

DIGITAL TV AND BROADBAND INTERNET

Nagravision SA

Nagravision is one of the world's leading suppliers of integrated security solutions for digital television operators and content providers. These advanced solutions enable the deployment and operation of interactive applications on any digital platform. Nagravision also supplies security solutions for the distribution of digital content over broadband networks.

Additionally, Nagravision's security technology is used in electronic voting and cyber-administration solutions designed for governments and public administrations.

NagraCard SA

NagraCard develops security technology using smart cards for digital television and for all applications requiring a high degree of security such as e-commerce, electronic voting and health cards. NagraCard also develops solutions designed for universities and corporations.

Lysis SA

Lysis offers digital television operators, content providers and broadcasters software solutions aimed at creating and operating value-added television services, such as pay-per-view, video-on-demand, Personal Video Recorder and interactive applications. Lysis is a leader in content management and rights management solutions.

Livewire, Inc.

Livewire is an American company specializing in the development of software for digital decoders, particularly for the cable market.

Nagra+ SA

Company equally owned with Canal+ (F). Nagra+ supplies security systems for analog pay television.

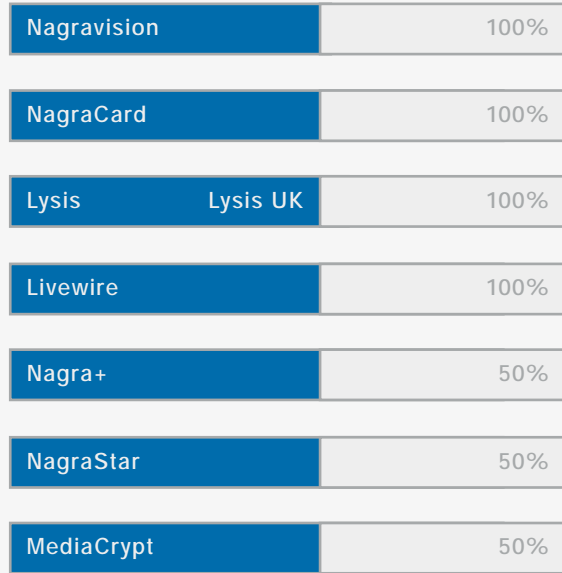
NagraStar LLC

Company equally owned with EchoStar (USA). NagraStar supplies conditional access and smart cards used by EchoStar's Dish Network American satellite television system and its affiliated companies. The company also offers these partners direct support, maintenance, security, development and the implementation of new solutions in response to the rapid evolution of the American satellite market.

MediaCrypt AG

Company equally owned with Ascom (CH). MediaCrypt offers fundamental encryption technology (based on Ascom's IDEA™ algorithm) for secure digital television and broadband Internet transmissions as well as for copyright protection in the media industry.

Digital TV and Broadband Internet



Physical Access and Data Access

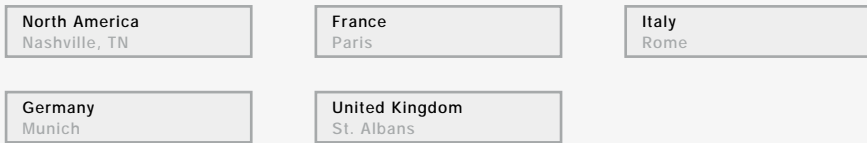


International Support

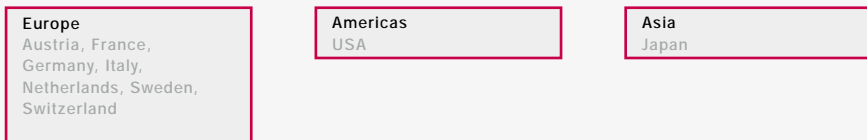
Nagravision



Nagra Audio



SkiData



PHYSICAL ACCESS AND DATA ACCESS

SkiData AG

SkiData offers integrated access and management solutions for ski-lifts, car parks and installations such as stadiums and exhibition or concert halls. SkiData systems include all aspects of managing flows of people, extending from advance ticket sales to access control via administrative back office applications.

TicketCorner AG

TicketCorner is the principal ticketing organization in Switzerland, covering some 10 000 sporting and cultural events every year. In addition to its 220 points of sale, TicketCorner boasts a highly efficient call center and operates the most popular online purchasing site in Switzerland. TicketCorner is one of the cornerstones of the convergence implemented by the Kudelski Group.

NagraID SA

NagraID develops and produces modules and smart cards for contact and contactless identification systems. The company enjoys a high reputation for the quality of its production and its original cold-inserting technique.

Précel SA Précision électronique

Précel is a company specializing in the manufacturing of strategic sub-assemblies for the Kudelski Group. More than 50% of Précel's work is for customers outside the Group.

SportAccess Kudelski SA

SportAccess Kudelski supplies open-ended rights and services management solutions for communities, hospitals, schools, corporations and exhibitions. It also contributes to the management and development of the Group's convergence projects.

e-prica SA

Company equally owned with Galenica (CH). e-prica supplies personalized health card solutions allowing for the secure management and transmission of data in the health sector. These solutions guarantee the protection of information and the privacy of the patient, who alone is able to authorize access to his personal details.

AccessArena AG

The result of a joint venture between Kudelski, Weisse Arena and private investors, AccessArena supplies destination management solutions comprising a global digital platform to which service suppliers within a tourist region are connected. These solutions enable visitors to access different services using just one smart card.

AUDIO

Nagra Audio

Nagra Audio develops and markets portable digital recorders for professionals. Nagra equipments enjoy an unrivalled reputation for quality and reliability and they have received the most prestigious awards (2 Oscars[®], 2 Emmy[®] Awards). Nagra Audio also offers a range of products in the high-end hi-fi sector.

EVOLUTION OF THE KUDELSKI SHARE

1986

GOING PUBLIC

Kudelski Group floated on the secondary market of the Geneva stock exchange. Distribution of 10 000 participation certificates with a nominal value of CHF 100 and launch of a CHF 15 million convertible bond.

1995

ENTRY OF DASSAULT

The world-renowned French group Dassault takes a 25% stake in the share capital of Kudelski SA.

1996

INCREASE IN SHARE CAPITAL AND PARTICIPATION CAPITAL

The share capital is increased from CHF 3 million to CHF 4 million, and the participation capital from CHF 1 661 600 to CHF 2 921 100.

At the same time, the public convertible loan of CHF 15 million, issued in 1986, is fully converted into participation certificates.

1997

THE KUDELSKI PARTICIPATION CERTIFICATE: A SHINING STAR OF THE STOCK LISTINGS

The stock closes the year at CHF 7 250, an increase of 264%, thus producing the second-best performance on the Swiss stock market in 1997. The company's market capitalization is increased fifty-fold.

1998

THE NEW CAPITAL STRUCTURE

As announced two years earlier, the 29 211 participation certificates are converted into bearer shares on 29th July 1998, bringing the number of bearer shares in circulation on the market to 62 961.

Capital increase and first indirect split

In view of the very strong growth in the value of the stock, which attains new heights in the course of 1998, a restructuring of the capital is proposed at the first public general meeting of Kudelski SA shareholders on 26th October 1998. The proposal is approved unanimously.

The share price is divided by 5 + 1 and quoted initially at CHF 3 100 on 10th November 1998. This operation, designed to promote the liquidity and accessibility of the share, meets with unqualified success against a background of stock market turbulence.

The new share capital totals CHF 41 526 600, divided into 377 766 bearer shares (nominal value CHF 100) and 375 000 registered shares (nominal value CHF 10).

This operation provides the company with more than CHF 34 million in fresh funds, thus allowing it to maintain its growth and to successfully implement a strategic investment policy.

Further plaudits for Kudelski stock

After the split carried out during the year, the stock closes the year at CHF 3 800, an increase of 210% making it the best performer on the Swiss stock market over this period. The company's market capitalization totals CHF 1 578 million at 31st December 1998.

1999

KUDELSKI STOCK QUOTED ON THE MAIN SWX MARKET

In order to meet demand from numerous investors and to follow through on the Group's commitments, the Kudelski stock is quoted on the principal market of the SWX Swiss Exchange from 2nd August 1999.

Strong market performance for the Kudelski share

In the wake of 2 exceptional years, Kudelski stock succeeds in remaining at the forefront of the listings in 1999, confirming the growing interest of numerous institutional and private investors.

The share closes the year at CHF 9 500, an increase of 150%, putting it 15th in terms of annual performance on the Swiss market, with shares in technology or with an Internet component blazing a trail. The company's market capitalization totals CHF 3 945 million at 31st December 1999.

2000

CAPITAL INCREASE AND 2ND INDIRECT SPLIT

On 19th May 2000, a capital restructuring proposal is put forward at the Kudelski SA general shareholders' meeting. This proposal meets with unanimous approval.

The stock price is divided by twelve, leaving it at CHF 2 371 on 24th August 2000. The operation is carried out with great success, despite the adverse Stock Exchange climate for high-tech stocks.

The new share capital totals CHF 499 177 200, divided into 4 541 772 bearer shares (nominal value CHF 100) and 4 500 000 registered shares (nominal value CHF 10).

This operation brings the company CHF 475 million in additional liquid assets, allowing it to continue to grow and to successfully pursue a policy of expansion through strategic acquisitions or investments.

Quotation on the SMI (Swiss Market Index) on 1st October 2000

On 1st October 2000 Kudelski stock is incorporated into the SMI together with that of four other companies (Julius Baer, Richemont, Serono and Unaxis). This share index now brings together the 29 Swiss blue chip companies.

Introduction on the MSCI (Morgan Stanley Capital International) on 30th November 2000

On 30th November 2000 Kudelski stock is incorporated into the MSCI. The MSCI is an index produced by Morgan Stanley comprising national indices to reflect a world share market index. The ratio for each country is calculated on the basis of their international economic importance. The MSCI index is a source of reference used greatly by foreign investors following different national markets.

The stock closes the year at CHF 1 800, an increase of 117%, representing the best performance among SMI stock and the 7th best performance overall.

The company's market capitalization at 31st December 2000 totals CHF 8 985 million.



2001

18TH MAY 2001

GENERAL SHAREHOLDERS' MEETING

Following the decision taken by the general shareholders' meeting on 18th May 2001, the nominal value of the Kudelski stock is reduced from CHF 100 to CHF 10 for bearer shares and from CHF 10 to CHF 1 for registered shares; the share price is therefore also split by ten.

2001 is a very nervous and volatile year for the Kudelski stock, which reaches a high of CHF 208.50 and a low of CHF 37.55. Nevertheless, its price puts up better resistance than that of its peers.

The share price does not record any significant variations following the announcement of various acquisitions (Livewire, TicketCorner, Lysis and SkiData) and the financial resources required to integrate these acquisitions into the Group, instead keeping with the trend shown by comparable securities in the technology sector.

Throughout 2001, the recurring rumors of a takeover of DirecTV by News Corp make the share price more volatile. For months on end, the lack of visibility as to the outcome of the transaction makes operators very uncertain. When Kudelski SA announces its support for partner and client EchoStar, the share is particularly badly hit. The temporary fear is then exacerbated by the events of 11th September 2001, which have a negative impact on world stock exchanges.

At the end of December 2001, Kudelski launches a convertible 2.25% bond for a final total of USD 325 million, due in 2009. This convertible bond is very successful and is over-subscribed by a factor of more than ten.

The stock closes the year at CHF 97, down 46.11% compared with the previous year.

The company's market capitalization at 31st December 2001 totals CHF 4 975 525 000.

The bearer share is listed on the principal market of the SWX Swiss Exchange (SMI) and on the Virt-x sector in London.

Its reference number is P 1 226 836 (TK, DJT: KUD, R: KUD).





Frédéric Clauss
CEO, NagraID





THE YEAR OF CONVERGENCE

THE JIGSAW TAKES SHAPE

AN EVOLVING PROFILE

There is no doubt that one of 2001's highlights was the entry of six new companies into the Kudelski Group. Of these, two come from the digital television sector (Livewire, Lysis), while four (e-prica, SkiData, TicketCorner, AccessArena) bolster the Group's non-TV activities.

Whilst continuing to achieve technological developments in digital television, the flagship sector of the company for several years, the Group has been able to move into adjoining territory in order to reinforce and extend the range of applications covered by its technology.

Thus, little by little, the pieces of the jigsaw are coming together and the picture is becoming clearer. While the outline was already clear, the overall picture is taking shape as new elements are added.

Digital media as a gateway

In the reverse process to a company undertaking a spate of acquisitions in order to gain market share and diversify its activities, the Kudelski Group is pursuing the idea of convergence. Although they operate in different fields (health, television, controlled access for public places and ticketing), the new companies that have joined the Group have in common the notion of access.

That access may be logical or physical, the content virtual or real. In both situations, digital media (TV, Internet, mobile phone, PDA, etc.) serve as a means of navigation, of browsing products and of purchasing services. In the case of logical access, the consumption of content also takes place over this type of medium.

THE VIRTUAL WORLD MEETS THE PHYSICAL WORLD

The world is becoming digital... the world is digital! This fact can no longer be denied. It is around technological performance levels measured in terms of flow, capacity or speed that progress is now being made. The advent of broadband networks allows complex content (video images, for example) to be distributed through many different media. It is possible to access data and carry out transactions wherever you happen to be. It is the content that goes to the individual.

Alongside this, there are many situations in which you have to go to the content in person: going to the theater, watching a football final from the stand or hurtling down snow-covered slopes... these are activities where the individual needs to gain physical access to a service.

In both cases, digital technology plays a role in controlling access to content. The needs are the same: to identify the user, to control access and to guarantee security.

Initially, the fact that the Kudelski Group, which is known for its pay-TV solutions, also supplies access systems for ski-lifts or thermal baths may have raised a few eyebrows. Today, the relationship between these two types of solutions is becoming clearer.

In effect, the consumer is gaining access to both the virtual world and the physical world: for example, he or she reserves and pays for a concert ticket over the Internet and then enters the venue in person.

MOBILITY, CONVENIENCE AND SIMPLICITY

This combination of two worlds brings mobility, simplicity and convenience to the life of consumers. However, although these advantages are appreciated, under no circumstances do they replace the need for security or the protection of privacy.

The strength of the Kudelski Group lies in intuitively making extremely complex technology available to the user so as to simplify his or her life while providing security and protecting personal data. As just one example of this simplicity: multifunctional cards (AccessArena, SportAccess, NagraCard) allow users to gain access to several different services (ski passes, drinks, equipment hire, hotel etc.) using a single card.

From the perspective of service or content providers, smartcard-based access systems constitute a powerful tool for managing relations with their customers. Thanks to databases, traders are familiar with the habits, preferences and profile of their customers and are thus in a better position to target the services they offer, to provide discounts and customer loyalty schemes etc.

A SECURITY HUB

The Kudelski Group offers solutions allowing operators, service providers or content suppliers to control access to their services and facilities and to protect their content. Additionally, these solutions give users the opportunity to benefit from those services in a simplified manner while protecting their privacy.

Due to their transactional, or even economic character, under all circumstances these activities need a means of allowing the person to be identified, his or her rights to be controlled, access to be granted or refused, the security of the transaction to be guaranteed and both the content and the user's personal data to be protected.

The Kudelski Group is therefore a security hub for a whole range of applications.

The distinctive quality of these applications is that they address the different activities that go to make up any individual's life: leisure, work, citizenship, health, etc.

Thus, far from distancing itself from its core business, the Kudelski Group is deploying its resources wherever its digital security technology has its *raison d'être*. One only needs to look at the expansion of digital technology to understand that *raison d'être* and to measure its potential.

MASTERING INTEGRATION

NEW COMPANIES IN THE GROUP: WHY AND HOW?

24 When tackling the topic of the integration of new companies into the Group, one is really posing two questions. The first (the “why”) invites comments on the purpose behind incorporating a new body into an existing structure: where will it find its niche?; what will it have to offer?; what are the synergies that are going to be created? and so on.

The second question concerns the “how” and the different implications with regard to human resources, products, markets and customers.

The question of “how” has really come to the fore for certain companies. This is the case in particular for the ones working in fields where the Kudelski Group already has a presence and where products or applications may overlap.

LYSIS / NAGRAVISION: AN INTEGRATED STRUCTURE

Among the new companies to have joined the Group in 2001, Lysis is the one where the greatest attention has had to be paid to the integration process. In fact, Lysis supplies highly specialized products in the field of digital television, a field that is also the preserve of Nagravision.

The benefit in this acquisition thus lies, of course, in the complementarity of Lysis and Nagravision solutions, particularly in interactivity and the management of content and rights. The combination of products allows the Group to control the complete chain from the production of content through to its consumption, opening up opportunities for the creation of medium and long-term added value. Thus the integration of the two companies with each other greatly strengthens the positioning of the Group in the area of digital television.

Managing overlapping areas

However, while complementarity may predominate, there are also areas that overlap. Consequently, integration work has involved grouping together activities that had common features while making the most of the technologies, products and, of course, the human resources of the two entities.

In order to achieve these objectives, joint analysis was undertaken by external consultants and by a group comprising Lysis and Nagravisio personnel. This work allowed advantage to be taken of the synergies between the two companies in an atmosphere of openness and creativity.

In this manner, new opportunities have been identified in terms of products and technologies, offering prospects for the development and expansion of the Group's range of solutions. The process is also designed to improve its cost structure.

An operational entity

Launched in May 2001, shortly after the acquisition of the company, the integration process came to a close in December of the same year. It was conducted with the objective of preserving to a maximum extent the interests of customers, partners and staff. Despite this and due to the merging of certain activities, it did not prove possible to offer all colleagues a position within the new structure. The human resources department offered support to those people leaving the business in order to assist them to take their professional careers in a new direction.

The integrated structure was fully operational by 1st January 2002, allowing the Group to benefit from a reinforced digital television sales force and from new skills for the R&D body.

ARRIVAL OF SKIDATA: NEW CHALLENGES FOR SPORTACCESS

Following investments in SportAccess and Systems in 2000, the acquisition of SkiData in August 2001 added an important plank to the structure that the Kudelski Group is building in the physical access sector.

SkiData is one of the world's largest suppliers of electronic physical access control solutions. The company enjoys a strong position in systems for car parks and sporting or leisure facilities (amusement parks and exhibition halls). It is the market leader for access solutions for ski resorts.

As SportAccess and SkiData operate in the same market sectors, it proved necessary to provide the physical access branch of the Kudelski Group with a coherent structure that would make the best possible use of synergies and resources.

Thus some of the SportAccess workforce will form the new SkiData platform for western Switzerland in Sion. As for the other employees, they will continue to work for SportAccess under the new strategic directions laid down for the company at the start of the year 2002.

SportAccess is reorienting its activities in a complementary manner, notably with its new MultiSpAK line designed for communities, hospitals, schools, corporations and exhibitions.

TICKETCORNER:

A CORNERSTONE OF CONVERGENCE

E-commerce represents the common denominator in the convergence between digital TV, Internet, mobile telephony and access to public places: a convergence based around providing security for the transactions carried out through these different media.

In this regard, the acquisition of TicketCorner represents an important phase in the strategy of the Group. Today, in addition to some 220 sales points, TicketCorner is already successfully using technologies such as Internet or mobile telephony, notably the WAP system. TicketCorner brings to the Group its distribution networks as well as direct access to consumers. Its expertise therefore perfectly complements the Kudelski Group's core activity sectors.

Synergies with other companies from the Group

SkiData, which equips numerous facilities with its access control systems, is already working with TicketCorner in order to harmonize the ticketing systems and the electronic installations that handle the use of tickets.

Potential synergies are also becoming apparent between TicketCorner and the digital television pole: in the medium term, the Group hopes to market launch an integrated electronic ticketing service that will allow customers to reserve seats at events thanks to interactive digital television and to obtain direct access to the gates, thereby offering customers a new and highly convenient service.

Going beyond technological matters, being part of the Kudelski Group, TicketCorner will benefit from the access to international markets.

ACCESSARENA: SHARING KNOW-HOW

A joint venture created by the Kudelski Group in December 2001 with the Graubünden tourism group Weisse Arena and private investors, AccessArena offers a global digital platform bringing together operators and service providers from a tourist region and allowing guests to use all those services with a single smart card.

In the 2002-2003 winter season, a solution will be implemented in the resorts of Flims-Laax where visitors will be able to use ski-lifts, hire sports equipment, get into their hotel room, use public transport etc. in the easiest and most straightforward manner thanks to the ArenaCard.

SportAccess is contributing to the development of the AccessArena system with regard to the project's technical specifications and management. The Valais-based company will take responsibility for developments linked to electronic banking services and electronic access.

As the supplier of the physical access system for the Flims-Laax ski-lifts, SkiData is also a strategic partner in this business.

In addition, the TicketCorner ticketing platform will form part of the network, allowing customers to order the services they require through standard TicketCorner sales points.

In future, the potential availability of services managed by AccessArena through digital television will constitute another example of the harmonization of technologies designed to offer value-added services to operators and service suppliers in order to maximize convenience for users.

We are at the heart of convergence.

LIVEWIRE: AN IMPORTANT ROLE IN CONVERGENCE

Through the technology that it provides in the sphere of software for digital decoders, Livewire, which was acquired in April 2001, constitutes an asset for the Kudelski Group on more than one level.

On the one hand, it provides expertise and products that are indispensable to the Group in the context of the integration of Nagravision's STB (Set-Top-Box – decoder) platform into its customers' architecture.

On the other hand, the decoder represents an important element in the convergence of digital television with the physical access sector: for example, it will allow ski passes to be written into SkiData smart cards. Thus, located at the very heart of the decoder, Livewire technology constitutes one of the elements of the infrastructure within which convergence will be able to take place.

E-PRICA: ANOTHER FACET OF THE GROUP

The product of the partnership between Kudelski and the pharmaceutical group Galenica Holding, e-prica was set up in February 2001. For the Group, the creation of this company marks a further stage in the expansion of applications using its technology.

e-prica's technology is the result of the fundamental developments achieved by the Kudelski Group in digital television since 1995. It is based upon the concept of a secure relational database integrated into each smart card, thus allowing high-quality performance to be combined with security.

Protection of privacy

While the Kudelski Group is already putting its technological know-how at the service of leisure (television), sport (access to ski-lifts, stadiums), culture (access to theatres, cinemas) and professional applications (transfer of secure data, access control to conferences), it is also now becoming involved in this other facet of life, offering its services to each individual as a patient.

The philosophy behind the Kudelski Group's expansion involves playing a part wherever human activity needs a means of protecting transactions, data, and thus privacy.







Thierry Gattlen
CEO, SportAccess Kudelski



CONSOLIDATION OF EXISTING ENTITIES

BETTER CONTROL OF PROCESSES

E-VOTING ACTIVITY TAKEN OVER BY NAGRAVISION

The work of Polirights (integrated solutions for electronic home voting and interactive cyber-administration applications) has been integrated into Nagravision structures in Cheseaux. However, Political Rights SA has retained an office in Geneva.

This transfer came naturally in the sense that since 1995 the Kudelski Group had been developing the technology on which Polirights solutions are based (relational databases integrated into smart cards) for other applications requiring the same particular security attributes.

NAGRA ID JOINS THE GROUP ON A 100% BASIS

The company NagraID, in which Kudelski previously had a 50% holding, was fully taken over in 2001 in order to ensure better control of processes and production planning. Such control is particularly important given the increase in smart card production volumes entrusted to NagraID by Kudelski Group companies.

LEMAN CONSULTING: INTELLECTUAL PROPERTY MANAGEMENT

Since the creation of an Intellectual Property Department at Nagravision, the number of patent registrations has increased to a remarkable extent.

Encouraged by this first step, the Kudelski Group decided to continue in this direction in 2001 by creating a company fully devoted to the management of intellectual property, not only for companies belonging to the Group but also for outside customers. Leman Consulting SA, based in Nyon, currently employs four people.

The portfolio of patents and trademarks held by the Kudelski Group contained around 180 certificates in 1999; today it comprises almost 650 certificates worldwide. This sharp increase is partly due to new companies joining the Kudelski Group but also, and to a large extent, to the great creativity of the Group's engineers. The contribution made by inventors from the Lysis company has further increased the number of registrations.

Leman Consulting also brings its skills to bear in cases of disputes relating to patent rights.

MORE EFFICIENT MANAGEMENT TOOLS

THE HUMAN RESOURCES CHALLENGE

The challenge that the Kudelski Group Human Resources department faces boils down to one clear priority: to tailor human resources management to the new reality of the business, which from having been an SME has become an industrial group. So as to be in a better position to deal with this situation, a manager has been appointed specifically to address this task.

The mission of the Human Resources entity is to offer employees services that are in line with market practices and to provide them with the chance to enjoy medium and long-term self-development opportunities inside the Group, while maintaining a working environment that promotes the business development of the Group.

Cheseaux: a skills center

In the medium-term, Cheseaux will become an HR skills center at the service of companies belonging to the Group. Therefore, the task of the Human Resources Department is to define a broad common framework within which each company will be able to position itself according to its specificities. In the immediate future, the priority is to offer those companies a service as good as or better than the service they enjoyed within their previous structures.

The number of staff employed by the Group has greatly increased in the space of a year. This fact underlines the need to reinforce HR management and ensure that it can be applied to all companies within the Group, allowing not only for more efficiency but also economies of scale.

Offering greater mobility

As in any business, the greatest challenge lies not in recruitment but in the retention of talent. Every day CVs flood into the Cheseaux head office, as the high profile of the business both in technology and in the public eye generates a great degree of interest.

36 However, beyond the potential prestige linked to the Group's name or reputation, it is the services provided and the potential for personal development that are the decisive elements in the duration of each employee's career within the Group. Thus, one of the essential HR concerns is to offer employees greater internal mobility. To this end, the introduction of internal skills assessments will allow a better evaluation to be made of the suitability of an individual to a particular position, hidden talents to be discovered and opportunities to be identified in the most open and proactive manner possible.

The Human Resources department has also devoted itself to the organization of events designed to promote contact between members of staff and to support the emergence of a new corporate culture.

IMPROVING CUSTOMER SERVICE

The growth of the Kudelski Group has led management to establish a new integrated management system designed to optimize all processes, whether on an internal level (Back Office) or in relation to customer-oriented activities (Front office). This initiative seeks to achieve a significant improvement in the quality of customer service while the number of customers is continually increasing.

Based upon an ERP/CRM (Enterprise Resource Planning/Customer Relationship Management) solution that includes Internet technologies, the system facilitates access to information, simultaneously providing global and specific views. It constitutes a high-performance tool, particularly for analytical and decision-making processes.

The first phase of the system went live on 1st January 2002 with the following objectives:

- To set up a common applications platform for the financial and commercial management of companies administered from Cheseaux;
- To set up a common management framework for deployment and facilitate the integration of new companies into the Group;
- To allow information to be shared between the different business units;
- To ensure that financial data relating to business management is made available more quickly by rationalizing the accounts closure process.

The second phase, which will be rolled out over 2002 and 2003, will include optimized Management of the Supply Chain (SCM), of Relationships with Customers (CRM) and of Human Resources (HRM). This phase will bring to a close the implementation of all the system's new business functions.

WHAT IS THE ADDED VALUE FOR CUSTOMERS?

Process rationalization promotes better interaction with customers. For example, the availability of more detailed information contributes to even more thorough monitoring of orders and deliveries. Furthermore, the closer monitoring of costs and income through project accounting will accelerate decision-making in relation to current and future customer projects.

Secondly, the integration of an optimized supply chain and customer relations management solution will reduce response times thanks to information sharing centered on customer relations.

DIGITAL TELEVISION

PRESENT THROUGHOUT THE BROADCASTING PROCESS

DIGITAL TELEVISION: INTERACTIVE VIEWERS

The switch from analog to digital is continuing throughout the world. The number of homes equipped with digital TV sets has increased greatly over the last four years. They currently account for around 5% of the global market but could reach 20% in 2005 and 45% in 2010 according to certain estimates.

Digital television already allows for the provision of customized television services. Viewers can become active, whereas they were merely passive with traditional television. For example, they can program their TV set to watch the channels that interest them, they can order videos, surf the web etc. Thanks to these new services, operators can increase their per subscriber revenues.

The next phase in the evolution of television is that where viewers become interactive: they can communicate with other spectators, play interactive games, place bets, make purchases, carry out bank transactions etc., all from the comfort of their own armchair in front of their TV set. It is the quality of the content that will stimulate interest among users.

As a result of its strong market penetration, television is an important medium for information and services. Through its basic offer (television channels), it brings in an audience, and thereby represents an ideal medium for all service and content suppliers interested in reaching a large number of people.

Digital television has a potential that greatly surpasses the boundaries of television and therefore remains at the center of the Kudelski Group's development strategy.

FROM THE CREATION OF CONTENT TO ITS DISTRIBUTION

With the acquisition of Lysis, the Kudelski Group has strategically expanded its offer in the digital television and broadband Internet sector.

The combination of the Nagravision and Lysis products allows the Group to maintain a presence throughout the entire content distribution chain, from creation to consumption, simultaneously managing content and rights (products provided by Lysis) and guaranteeing the secure distribution of data (Nagravision solutions).

Security is essential, as the value of information must be preserved throughout the entire process in order to protect the interests of copyright owners, service operators and viewers.

The Kudelski Group has customers that use the full range of its digital television products. The integration of the Lysis and Nagravision sales forces contributes to better serve these clients.

NAGRAVISION AS INTEGRATOR

Today, Nagravision has gone well beyond simply fulfilling the role of supplying conditional access systems and smart cards. Operators expect more than this, and Nagravision wins appreciation from its customers as a global system integrator.

Conditional access is a central element of a pay TV system, through the function it fulfills and through its permanence in the overall architecture. Nagravision therefore holds a key position that provides it with the ideal expertise in the implementation of digital pay TV platforms.

Basing itself upon its deep understanding of technologies and markets, Nagravision offers operators global turnkey solutions including all the software and hardware components required for the launch of digital services.

Hong Kong Cable Television and TV Cabo (Portugal) are among the most recent examples of customers that have asked Nagravision to act as the integrator for their digital television platforms.

One of Nagravision's strengths lies in the open architecture of its solutions and in their potential to be integrated with other technologies. The company's independence from the large media groups is also an important asset. Thus Nagravision offers operators unparalleled flexibility in the configuration of their installations.

In this perspective, one of the most significant aspects of the integration of Lysis into the Kudelski Group is the fact that Lysis content management and copyright management products have been kept independent from Nagravision's conditional access system. Thus, while Nagravision may benefit from Lysis' access to content suppliers, operators have the option to use alternative security systems to Nagravision.

THE IMPORTANCE OF PARTNERSHIPS

Nagravision has continued to work intensively on technological integration with suppliers of other elements of the platform, in order to provide operators with the most flexible solutions.

These include both products developed by Kudelski Group companies and products supplied through partnerships.

During the year 2001, Nagravision continued to cooperate with a large number of decoder manufacturers. Thanks to this approach, the company is able to offer television operators an active maintenance service for the decoders installed in the homes of consumers. This maintenance includes the remote upgrading of decoder software and downloading of new functions.

In addition, in 2001 Nagravision established several partnerships with suppliers of interactive applications such as games, sports etc. in order to include this type of solution in its overall product offering.





Ted Grauch
Président, Livewire



Alan A. Guggenheim
CEO, NagraStar





HOLDING ALL THE TRUMP CARDS

46 Nagravision conditional access system and its management modules (subscribers, authorizations etc.); its NagraIP broadband version; Lysis' SmartContent and iDTV products; video-on-demand and multimedia-on-demand solutions; streaming technologies on mobile devices; developments in the field of decoder software (PVR, Livewire products); the new generation of smart cards and fundamental encryption technology: thanks to these products, the Kudelski Group is strongly positioned on a high-growth market.

It clearly holds many trump cards to further consolidate its place among the major players in the information technology sector.

INTERACTIVE APPLICATIONS

The acquisition of Lysis necessitated work to integrate the characteristics and strategies of the interactive television solutions supplied by the two companies.

Nagravision reached agreements with retailers such as Fresh-IT, Two Way TV and Visiware. For its part, in 2001 Lysis sold the first Korean-language Electronic Program Guide (EPG) on MHP (Multimedia Home Platform) standard to Korea Digital Broadcasting for its new satellite television service.

Interactive applications represent a high value-added complement to the basic digital pay TV product.

On the one hand there are applications providing access to content such as films, music, games made available to subscribers on demand and, on the other, applications allowing subscribers to carry out transactions such as voting, playing games during broadcasts, placing bets etc.

Video-on-demand (VOD) is particularly appreciated by subscribers. It represents a further step in the evolution of pay television which initially offered subscription services, then pay-per-view services. Today, with applications such as video-on-demand, pay TV's offering is more diversified, more flexible and more interactive.

VOD: security and content management

Nagravision's VOD solution breaks down into five principal components:

- encryption at the level of content storage
- encryption at the level of content transmission
- an authorization module
- a content management system
- a user interface for navigation on the set-top-box

The content management system is the Lysis iDTV product, the market leader in this sector. It is an integrated solution allowing for the creation of a broadcasting schedule and the management of copyright payments. It is designed for pay TV, for pay-per-view and for the management of VOD channels.

A Nagravision VOD solution was developed in 2000 and Nagravision has continued to establish partnerships with the major players in the VOD market.

Multimedia-on-demand

The video-on-demand concept and technology can also be transposed to media other than television: PCs, mobile terminals such as telephones or PDAs etc. Thus, VOD is emerging from traditional broadcast transmission networks to enter the IP (Internet Protocol) world where not only can audio-visual content be transmitted on demand, but also data, games etc. It therefore becomes multimedia-on-demand.

In this context, content owners are particularly sensitive to the problem of security. They demand a high level of protection so as to preserve copyrights and to ensure that data is not received, copied and redistributed illegally.

Nagravision offers proven solutions to respond to these concerns: the conditional access system (CAS), used by numerous digital television operators throughout the world, and NagraIP, a security solution specially designed for IP network operators.

PVR: A DECODER WITH A HARD DISK

The latest Nagravision access control technology caters for the functions required for PVR (Personal Video Recorder), a decoder with a hard disk that offers numerous benefits:

- It allows for the storage of data (notably for video-on-demand) in encrypted form. In tandem with the decoder, the smart card only allows a film to be decrypted by a subscriber who has acquired access rights, thus counteracting the proliferation of illegal copies.
- It acts like a sophisticated video recorder to provide added convenience: the user can interrupt viewing of a live broadcast and pick it up again later from the point at which he had stopped.
- It can serve as a medium for promotional content: during low-traffic periods (e.g. during the night), the operator sends a few films to its subscribers who can then watch them subsequently.
- It meets the needs arising from the advent of multimedia-on-demand. With its integrated computer, it functions as a modem, a decryption device, a tuner, a microprocessor, a payment terminal and a storage unit whilst remaining easy to use.

SECURITY OVER BROADBAND NETWORKS: NAGRAIP

NagraIP uses Nagravision's conditional access technology developed for digital television and transposes it to broadband networks employing IP protocol, such as xDSL networks, fiber optics, digital cable and the Internet. This solution opens up a new market to Nagravision, that of telecommunications operators.

NagraIP includes modules for security and for content management and associated rights. This solution offers two options. The first involves encryption of the content (a film for example) in real time during transmission to the end user. The second allows the data to be pre-encrypted as far upstream as possible, namely with the distributor, or even the creator of the content. Consequently, the content sent to the video server is secure and NagraIP prevents any pirating at this level as well as from end to end of the transmission chain.

The NagraIP solution and the Lysis content management product SmartContent are in the process of being integrated. The benefit lies in being able to offer content suppliers and distributors a management tool combined with a security component.

STREAMING OVER MOBILE NETWORKS: A NEW NAGRAVISION PRODUCT

Over the year 2001, Nagravision carried out feasibility studies in relation to the application of its security technology in a rapidly developing sector: value-added services for mobile communications. In particular, this work related to streaming solutions over mobile and wireless networks.

Nagravision already proved its ability to provide content security and to apply its basic technologies for streaming solutions, notably during the 2002 annual meeting of the World Economic Forum in New York.

At a technical level, in addition to the deferment of their deployment, third generation (3G) mobile networks will not provide the bandwidth anticipated, which continues to limit the type of content that can be transmitted.

Consequently, demand on the part of operators is still relatively weak for these types of applications, as their economic viability has yet to be fully established. The content provided to users will determine their degree of interest in the service, and consequently that of the operators.

A real take-off of this market is anticipated within the next two or three years. Nagravision has created a bridge between its technology and mobile networks and stands ready. In the meantime, Nagravision can focus its attention upon broadband solutions where demand and markets are more firmly established.

MOBILE TELEPHONY: MULTIFUNCTIONAL CARDS

In 2001, the Kudelski Group devoted substantial effort to exploring the potential for applying its technology to the field of telecommunications, more specifically around mobile terminals with smart cards.

These efforts have borne fruit, as the Group is well advanced with a project for the design and implementation of multifunctional cards with a major telecommunications operator. One of the objectives of this project is to promote the card as a medium offering users the option to access numerous services (information, bank transactions etc.) over a mobile phone; in addition, the mobile phone will allow them, for example, to reserve tickets for shows or ski passes and to gain physical access to the site.

This development in the work of the Kudelski Group represents a key element in a strategy that involves offering a platform incorporating all applications through a smart card: student card, health card, ticketing, physical access etc.

Through this project, the Group is combining its expertise in card technology and in card management infrastructure on a network.

The benefit of such a platform lies in the diversity of the applications that it supports and in the fact that it allows interaction with the mobile network subscribers. Thus a service provider is in a position to send its customers information about its products, to set up customer loyalty schemes etc.

LIVEWIRE: SOFTWARE FOR DECODERS

Despite the fact that US cable accounts for more than 60% of the American television market, the analog/digital conversion has taken place at a slow rate. More than 80% of all connections are currently still analog. Yet digital technology allows for the offering to be multiplied by 6 to 8.

Today, the cable market is controlled by the Motorola/Scientific Atlanta duopoly. In the longer term, this picture is going to change and Kudelski aims to carve out a place for itself with partners in order to benefit from the market evolution.

Already, the acquisition of Livewire in April 2001 is allowing the Kudelski Group to increase its capacity in the field of software for decoders, in particular in the American cable sector.

Livewire was founded in 1993. The initial contacts with the Kudelski Group date back to 1997, the year Nagravision became one of Livewire's customers.

In 2000, Nagravision sought to expand its skills in the software for decoders and Livewire was identified as the ideal partner.

Initially based around consultancy services, Livewire now generates an ever-greater proportion of its revenues from the sale of licenses for its software to a growing number of decoder manufacturers. However the consultancy work is important in the sense that it allows Livewire to retain an overview of the American cable market.

NAGRAVISION: GOOD PROGRESS ON THE MARKETS

50 Nagravision remained one of the major players in its sector in 2001, continuing to make good progress thanks to the acquisition of new customers and to the success of its existing customers.

EUROPE

United Kingdom

The United Kingdom is leading the way in the transition to digital, notably through the strong growth in digital cable with operators such as NTL* and Telewest*, both of which are equipped with Nagravision solutions and have recorded good growth.

In 2001, a contract signed with Omne Communications, a cable operator with more than 100 000 potential subscribers in the medium term, confirmed Nagravision's strong position in the British cable market. Omne plans to offer its subscribers a range of interactive services.

Switzerland

In its domestic market, Nagravision has been selected by Teleclub, one of the leading Swiss pay TV operators, to supply the conditional access system for its new digital platform. Teleclub is moving from an analog service (broadcast using the Nagravision system) to ten digital channels and is offering its subscribers several new packages comprising films, sport and Disney channels.

Germany

Germany represented one of the Group's greatest European success stories in 2001, as Nagravision achieved its first significant breakthrough into the digital cable market. Xtend/Eutelsat chose the Nagravision conditional access system for the distribution over German cable networks of its VisAvision foreign language channels.

For a long time the German cable market was not exploited commercially, as it was under the control of Deutsche Telekom, which did not wish to sell its cable network. In 2001, Deutsche Telekom changed its policy, and parts of this network started to be sold off. This opening up of the market offers promising opportunities both to operators and to Nagravision.

Central and Eastern Europe

Eastern Europe remains an important market. The Kudelski Group has already established a strong presence there with its customer Polsat in Poland.

In 2001, it was the turn of the Hungarian market to be conquered: Antenna Hungaria selected Nagravision for its digital television program distribution system designed for Hungarian cable operators.

Most Central and Eastern European markets are still broadcasting in analog. The move to digital is taking place very gradually due to the investment required for the anticipated consolidation of the leading operators to take place. Nagravision will remain active in these markets in order to seize the opportunities.

Iberian peninsula

In the Iberian market, NagraVision's principal customers, such as TV Cabo in Portugal and Ono, Quiero Television and Via Digital in Spain, have seen an increase in the number of their subscribers.

As in other countries, this market is currently experiencing a trend towards a consolidation among the leading operators. However, this potential restructuring of the market could have the effect of slowing down both the sales of new systems and the increase in subscriber numbers.

THE AMERICAS

United States

The highlight of the Kudelski Group's business on the North American continent remains the close relationship that it has with the operator EchoStar*. A strategic partnership has linked the two groups since 1995 and was strengthened by the creation of a joint company, NagraStar, in 1998.

EchoStar broadcasts more than 500 channels by satellite using a NagraVision system and continues to record a significant increase in its subscriber numbers, in excess of 6.8 million in 2001. In order to support its growth, which it has maintained since it commenced business in 1995, the operator has launched a number of satellites. The most recent, EchoStar VII, was put into orbit in February 2002. Two other satellites should again be launched in 2002-2003.

For EchoStar, the year 2001 was marked by the announcement of its buyout of Hughes Electronics, owner of DirecTV, number one in satellite television in the United States. This buyout, which was supported by the Kudelski Group, should be finalized through the approval of the American regulatory authorities during the course of 2002.

Should this deal take shape as anticipated, the merger between EchoStar and DirecTV will necessitate technological adjustments in order to render the two systems compatible. These adaptations will probably consist of the upgrading of the DirecTV system.

New customers

In addition, among new NagraVision customers in the United States in 2001 was PanAmSat, which chose NagraVision for the broadcasting of programs designed for cable networks in India. The benefit in this contract also resides in the fact that this model should serve for other larger-scale PanAmSat projects.

NagraVision continues to enjoy a strong presence in business TV. A system sold to ETNetworks, a leading operator in this sector, confirms this position.

Canada

In 2001, BellExpressVu*, which features amongst NagraVision's most important customers, recorded strong growth in its subscriber numbers.

South America

NagraVision continues to make progress in this part of the world, particularly in Brazil where three systems are currently in operation: Teleserv in Aracaju, TV Show, a UGC company in Fortaleza and ACOM, which is located in Rio de Janeiro, but possesses concessions in other regions of the country. Other projects are under discussion and should come to a conclusion in 2002.

ASIA

In 2001, NagraVision achieved a significant breakthrough in one of the flagship regions of Asia: Hong Kong. Hong Kong Cable Television Limited, the principal supplier of pay TV services in Hong Kong, chose its conditional access system to carry out the transition from analog to controlled access digital. The plan is for the switch to be finalized before the 2002 soccer World Cup.

For the year 2002, China remains the strategic market with the greatest potential for NagraVision in Asia. Having already established a strong presence in this market since 1999 (twelve digital cable networks with DVN Holdings equipped with its solutions), NagraVision continued to expand in 2001 thanks to a contract with He Nan Cable TV in the Zhengzhou region (He Nan Province).

* Number of «operator» subscribers and number of «conditional access» subscribers

For most of NagraVision's principal customers (such as Telewest, NTL, EchoStar and BellExpressVu), the number of decoders installed is significantly greater than the number of subscribers, as calculated by the operators.

In fact, both in the USA and in Europe, subscribers are counted according to the number of contracts that an operator has with its customers (the subscribers). However, a subscriber may have several decoders covered by one contract. This is particularly true in the United States, whereas in Europe, in general, one subscriber equals one decoder.





André Laux
CEO, SkiData







SMART CARDS

WELL-PROTECTED DATA

58 As a security component, the smart card is at the center of the convergence model. In fact, the entire sequence of the card's software and hardware platform is used both for pay TV and for other applications.

NagraCard works with the different companies belonging to the Kudelski Group (Nagravision, AccessArena, SportAccess, TicketCorner, SkiData and e-prica) in order to provide its expertise as well as a common coherent technical base from which it will be possible to achieve convergence.

The card locks up access authorizations securely; it can also contain a means of identifying individuals, an element that is crucial for certain applications such as health cards (e-prica), electronic voting or e-commerce (for example through television). One of its significant features resides in the fact that the user's sensitive data remain under his or her own control.

PKI CERTIFICATES: ELECTRONIC SIGNATURE

Nagravision has been using its own PKI (Public Key Infrastructure) technology since 1990 in order to ensure the security of transactions relating to access to information, particularly in the context of digital television. Now, Nagravision is extending this technology to applications requiring individual identity to be authenticated over the Net when that person wishes to access a service.

The new generation smart card developed by NagraCard and containing the management of PKI certificates was set up in 2001 with digital television operators that are customers of Nagravision. It also served as the basis for different access control systems (logical and physical) for important Kudelski Group projects, notably the World Economic Forum and the universities.

WORLD ECONOMIC FORUM

Since 1999, the Kudelski Group has been working with the World Economic Forum as the supplier of its physical access control solution. In 2001, this partnership was renewed for a further three years and it now includes new services: streaming (both secure and non-secure) over mobile devices (pocket computers, mobile phones etc.) and additional services on the card which combine the possibilities offered by both contact and contactless technologies (respectively access and e-purse functions for example).

During the 2002 event, which was held in New York, participants had the option to view sessions on demand over their iPAQ PDAs (Personal Digital Assistants) or the Internet, from any terminal connected to the World Wide Web. This new service is the result of cooperation that has been established between Kudelski and the technological partners of the World Economic Forum, namely Compaq, Microsoft and Accenture.

A NEW CONCEPT: E-EDUCATION

NagraCard has developed a concept known as "e-education", which comprises a secure system based upon a multifunctional smart card designed for universities and other higher educational establishments.

This solution allows both students and staff to access different services (photocopiers, canteens, libraries, sports facilities etc.) in a secure and customized manner thanks to a smart card. In addition, this serves as a means of legitimation and can be used for physical access and for logging into the I.T. network securely.

In 2000, the University of Neuchâtel became the first institution to be equipped with such a system; Fribourg and Berne also signed contracts for similar installations in March and July 2001, respectively.

These projects represent one element in a discussion taking place at a national level in Switzerland between universities and federal science and technology colleges with a view to the establishment of a common technological platform.

In Switzerland, this is a sizeable potential market as it covers 12 universities and higher educational establishments, or 110 000 students and 33 000 staff. NagraCard has promising prospects in this market.

On an international level, contacts have already been made with a view to deploying this technology on a wider scale.

A VIRTUAL CAMPUS

Acting as a technical partner, NagraCard has taken part in discussions concerning the creation of a virtual campus bringing together all the universities and science and technology colleges in Switzerland.

A virtual campus gives students the option to follow courses from home using a PC or equipment linked to a cordless network such as PDAs or mobile phones. Different contents are made available:

- Live lectures that the student can attend without the constraints of location;
- Recorded lectures; this constitutes an on-demand option;
- Duplicated lecture notes made available through a database;
- Certificates and diplomas sent to the student.

Content is stored on a server in encrypted form and can be accessed by the student provided that the latter is correctly identified over the Net thanks to his or her smart card.

This technical solution also allows universities to exchange documents, data and lectures securely, and to identify individuals who log onto their services.

A concept such as this calls for different technologies that are available within the Kudelski Group and are used, in particular, in its digital television solutions: the production of cards (NagraID), smartcard-based security technology (NagraCard), the video-on-demand solution and streaming over broadband networks (Nagravision).

An initial virtual campus project is due to be put into place in 2003. Due to its command of technologies and its position in the Swiss education sector, NagraCard is strongly placed to take part in this project, the potential of which is extremely promising.

PHYSICAL ACCESS

SKIDATA: WORLD LEADER

60 SkiData represents an important acquisition for the Kudelski Group; not only does it provide the Group with a degree of technological skill and expertise unparalleled in its sector, but it also provides new markets such as car parks.

SkiData's product range includes all-encompassing solutions designed to control the flow of people and vehicles (its two main sectors) and to handle transactions (payments, number of tickets etc.). Operators thus have powerful tools at their disposal that allow them to acquire a better knowledge of their customers and to establish customer loyalty schemes.

WORLD NUMBER ONE IN SKI-LIFT ACCESS

In 2001, the "Ski" division excelled itself with its "direct-to-lift" solutions, a concept that is achieving great success. Thanks to SkiData's www.my-skipass.com website, skiers can reserve their ski passes for more than 30 resorts covering five countries (United States, France, Austria, Finland and Norway).

The server sends the request to the resort, checks that payment has been made and sends the access rights. Skiers go directly to the ski-lift and pass through the turnstiles after presenting their card, glove or watch to electronic readers. A reservation by Internet is sent to the piste access points within 15 minutes.

One of the principal trends in the skiing sector is that of offering guests at resorts the option to access different services (ski-lifts, the hiring of sports equipment, skiing lessons, purchases from commercial outlets, opening a user's hotel door etc.) via a single electronic data-carrier. In this regard, SkiData's Keymotion concept is perfect for the implementation of such solutions as it is designed to lend itself to multiple applications.

This concept, which has proven its worth in the ski sector, is gradually being extended to other leisure activities, thus contributing to the implementation of the Kudelski Group's convergence project.

In addition, the skiing market is in the process of evolving towards a consolidation of operators. Consequently, SkiData has adapted its approach by offering an overall solution designed for operators managing ski resorts that are organized into networks. As an example, SkiData is supplying a centralized management system to SkiWelt Amadé in Austria, the largest skiable area in the world to be organized as a network, combining 20 resorts.

In addition, SkiData has introduced new intelligent access gates that accept a broader range of technologies and card formats. This approach opens up to new ticketing companies the option to include in their product range ski resorts where SkiData has a presence.

In 2002, the division aims to develop the American and Japanese markets in particular. For the latter country, new software capable of recognizing Japanese characters was developed in 2001.

A pioneer in ski-lift access and currently number one in this sector, SkiData has reached third place worldwide for its car park access solutions, confirming the international recognition of its products and its brands.

KEYMOTION: A UNIVERSAL ELECTRONIC MEDIUM

For the user, one of the most attractive aspects of SkiData's product range resides in the variety of data carriers: Swatch Access snow pass, ski gloves, keycards, etc.

These carriers can be used with more than 3 000 SkiData installations worldwide. They also allow reservations to be made over the Internet or from mobile phones (SMS or WAP).

To date SkiData has issued more than 8 million watches, gloves and cards.

The advantage in this concept lies in the fact that consumers can use the same Keymotion carrier for different activities, whether that involves skiing, attending a concert, etc.

Operators also stand to benefit from this solution as it facilitates communication between platforms and therefore their interoperability.

In the future, one can easily imagine the addition of services such as ticket reservation via digital television.

NUMBER THREE IN THE WORLD FOR CAR PARK ACCESS

SkiData is the company that is recording the greatest growth in the car park access systems sector. In 2001, it supplied 25% of the world's new car park access installations. 470 new car parks have been equipped with its solutions over the past year, representing a rate of two new car parks per day for every working day of the year.

In contrast to its principal competitors, who are predominantly concentrated in a limited number of large markets, SkiData has established a significant presence in the car park sector of many countries. This situation reflects the growth dynamic within which the company finds itself and the international recognition achieved by its products.

In 2001, a breakthrough was achieved in the United States with 85 new installations. SkiData aims to significantly increase its foothold in this market in 2002. Other new markets were conquered in 2001, including in particular several airports (Berlin, Tempelhof and Heathrow), to add to those of Munich and Amsterdam.

SkiData occupies the position of market leader in several European countries, notably in Great Britain, where its solutions are in place in the car parks of the country's principal airports as well as in numerous municipal car parks and car parks managed by the private sector.

In addition, in Hong Kong SkiData has installed a cash-free, smart card-operated system. In Europe about twelve years ago, SkiData became the first company to introduce this type of system.

Remote and centralized management

Among its technological innovations in 2001, SkiData introduced a new concept involving the centralized management of a number of car parks. The system allows the operator to interact remotely with car parks, to control the opening and closing of barriers, to obtain statistical information on transactions, etc.

In 2002, SkiData plans to introduce an Internet-operated reservation system for car park tickets. This type of solution is of particular benefit to airports as it spares travelers the worry of finding a parking space. Consideration will also be given to connecting a theater or concert ticket (for example) with a parking space so as to avoid delays at payment machines on the way out of events.

A RINGSIDE SEAT WITH HANDSHAKE

Quite apart from ski resorts and car parks, SkiData is also very active in the "events" sphere and provides its solutions for numerous installations such as sports stadiums, amusement parks, exhibition and concert halls, etc.

Among innovations in 2001, a pre-sale module provides the option to reserve tickets via the Internet. The Austrian football league has introduced this function for most of its stadiums.

On the commercial level, several major contracts were signed in 2001 including the installation of access solutions for all football stadiums in Hungary (amounting to 500 entry points), for exhibition halls in Italy (Genoa, Milan, Bologna and Rimini) and for the Cité des Sciences in Paris.

Handshake: a flexible formula

Handshake is the name given to the SkiData software interface that forms the basis for integrated access management designed for these types of facilities. The Handshake solution offers a flexible formula that links existing systems with automatic access control carried out by SkiData. It is compatible with all standard ticket formats and therefore allows for full multi-channel ticketing. In addition, operators do not have to change their equipment in order to adopt such a system.

Thanks to an integrated CRM (customer relations management) module, Handshake provides operators with data concerning the visitors' transactions, thus creating the basis for effective marketing techniques.

Lastly, when it comes to smartcard-operated systems, the cards can be used to make payments in shops and restaurants on the site, if the operator wishes to add in this function.

RESIDENTIAL ACCESS: PROMISING DEVELOPMENTS

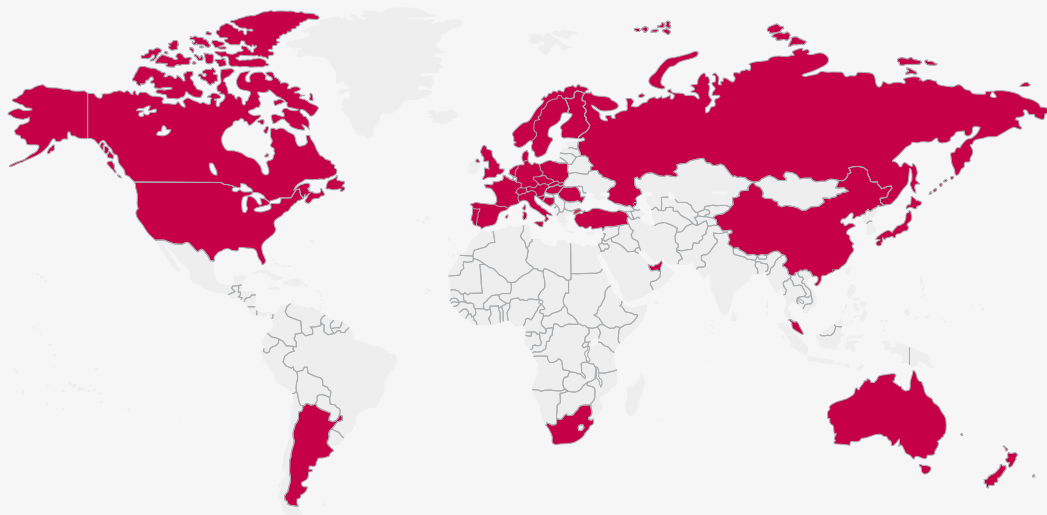
Outside its core sectors, SkiData is also emerging into the building and housing management sector. In 2001, SkiData was chosen by the German DePfa Bank that owns 6.2 million residential properties in Europe, to install access and payment systems. The first phase of this project is focusing on the implementation of management and payment systems for communal washing machines at residences.

AN EVEN MORE EFFICIENT SERVICE IN 2002

In 2002, SkiData plans to launch onto the market a platform common to all applications. It will serve as the basis for modular solutions that are specially adapted to the needs of each sector. This type of approach will allow R&D work to be rationalized and will reduce the time required to customize a product for a customer.

In addition, but still with a view to improving its service, SkiData is establishing overall processes for the issuing of upgrades to its software so that all customers reap the benefits of new versions and can obtain them by simply downloading them wherever in the world they may happen to be.

Skidata: systems installed worldwide









George Egloff
CEO, TicketCorner



SPORTACCESS KUDELSKI: NEW STRATEGIC OBJECTIVES

70

SportAccess' new direction was officially presented to shareholders in January 2002. It focuses upon two areas:

- MultiSpAK, an evolving rights and services management solution for communities, hospitals, schools, corporations and exhibitions;
- project management and development solutions for Group activities linked to convergence (such as AccessArena).

THE FIRST MULTISPAK PROJECTS

Technically, MultiSpAK consists of an evolving software solution based upon the use of the contactless smart card, which becomes a single medium for different services:

- badge customization
- management of accreditations
- electronic purse
- access rights management (buildings, activities that must be paid for etc.)
- time management
- management of telephone communications
- management of restaurants and cafeterias
- integration of automatic machines
- cloakroom management

In addition, it possesses all-encompassing administrative and reporting functions.

The SUVA clinic in Sion uses the MultiSpAK solution. Thanks to a single smart card, patients and staff from the clinic can access the different premises to which they are allowed entry, make purchases from automatic machines and from the kiosk, make telephone calls from the different stations provided to this end and pay at the cafeteria.

For the cafeteria application, SportAccess has developed a user-friendly touch-screen software that, besides monitoring accounts and transactions, allows for the centralized management of sales from several different cash desks.

SportAccess works very closely with NagraCard, particularly with regard to projects for multifunctional cards. Being involved in all the applications linked to the contact smart card, NagraCard not only provides the security component for these solutions, but also on a more general level its knowledge of smartcard-based systems.

SOFTWARE FOR ALLOCATING TAKINGS

In the context of the restructuring of the Kudelski Group's physical access sector, the "ski" activities have been integrated into SkiData. However the Valais SkiCard, introduced in 1999, in collaboration with the company's principal customers, is still overseen by SportAccess.

The Valais SkiCard is a single pass in the form of a contactless smart card that already covers 14 resorts, from Verbier to Crans-Montana.

In addition to the design of the Valais SkiCard system itself, SportAccess has developed software allowing statistics and the allocation of takings between ski-lift operators to be calculated electronically according to how many skiers have passed through. This solution has been implemented in the Four Valleys.

ACCESSARENA: A CONVERGENCE SHOWCASE

Readily described as a “convergence showcase”, the solution that will be implemented by AccessArena on the Flims-Laax site is an example of its partnership with other players within and outside the Kudelski Group.

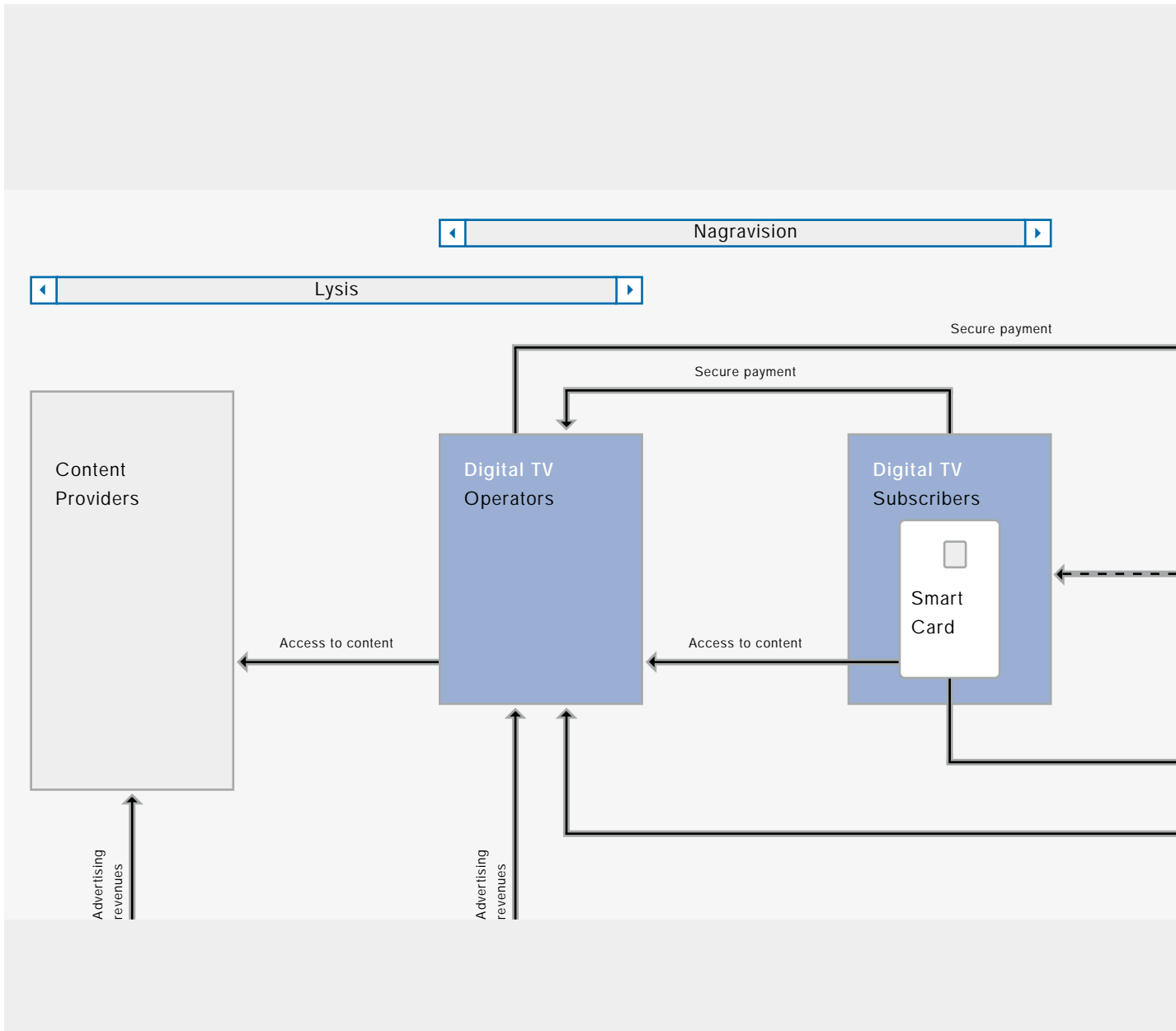
In fact, it calls upon the engineering skills of SportAccess, which develops the platform; NagraCard, for the security and smart card aspects; and NagraVision, which supplies the technological tools allowing payment to be managed over television, Internet or mobile networks.

AccessArena is putting the destination management concept into effect: operators and service providers in a given tourist region may be linked into a common digital platform allowing them to manage their customer database effectively.

Visitors will enjoy simplified payment of and access to the different resort services (ski-lifts, hotel rooms, restaurants, public transport, etc.). A single smart card opens the door to all activities.

As with ticketing, which is at the crossroads of convergence, the destination management concept acts as a gateway between the digital television and physical access areas.

CONVERGENCE: CREATING GATEWAYS



New revenue opportunities

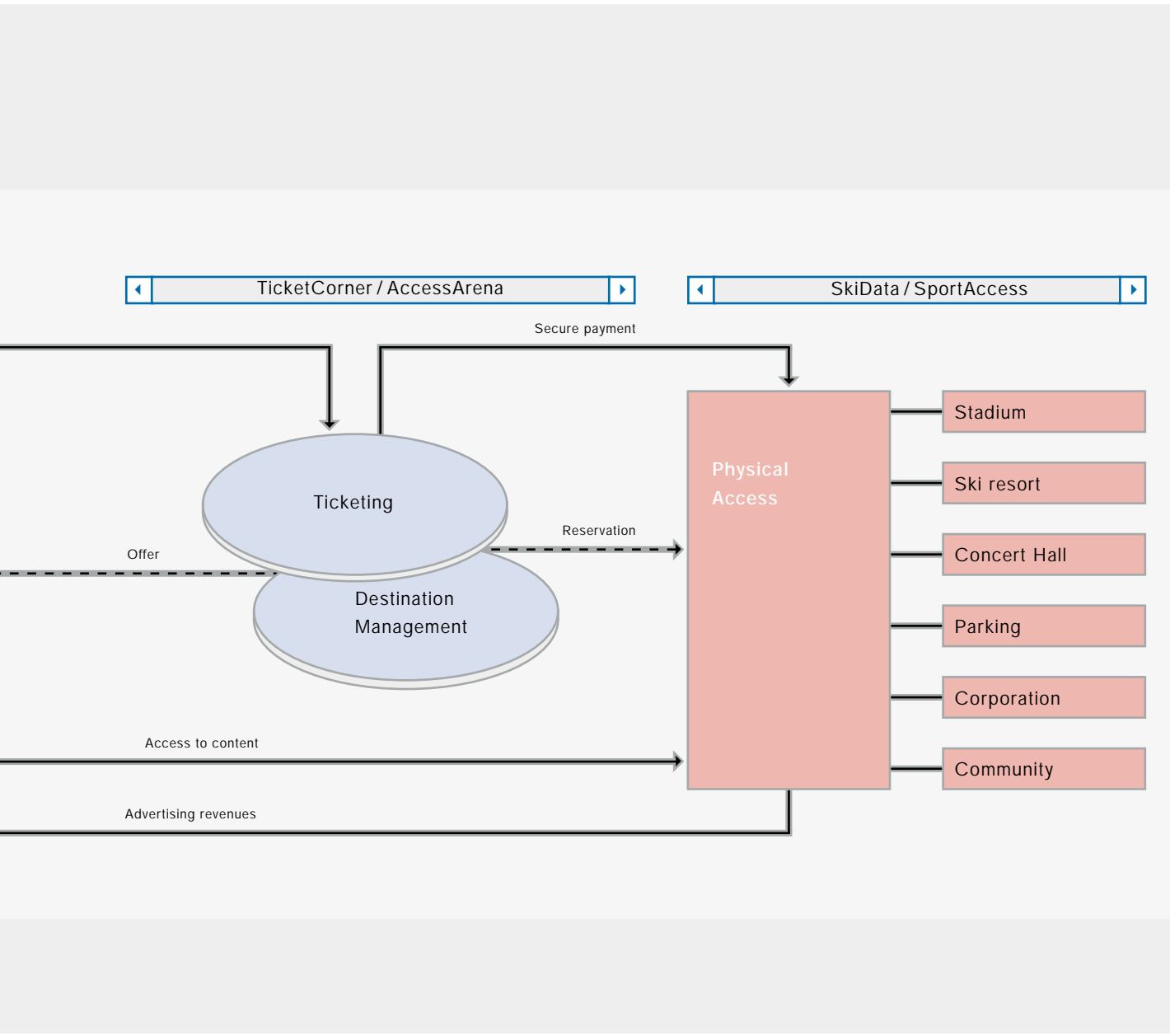
Thanks to the gateways that are created between the worlds of digital television and physical access, as part of the convergence dynamic implemented by the Kudelski Group, new revenue-raising opportunities are becoming available to television operators, notably through advertising.

Secure payment

Kudelski solutions ensure secure payment during the process through which subscribers acquire access rights, whether this involves access to "virtual" content (TV broadcasts) or "physical" content (ski slopes, shows, car parks etc.). The convergence concept presents revenue-sharing opportunities for the Kudelski Group.

Access to contents

Thanks to the decoder/smart card combination, subscribers have access to content provided by operators; they can also make reservations for activities outside the home and gain physical access to them.



TICKETCORNER: DIRECT ACCESS TO CONSUMERS

74 Whatever the activity (a visit to a museum or an amusement park, skiing etc.), the technical infrastructure revolves around the idea of the ticket. How to sell it or buy it, how to receive it, how to use it. Ticket distribution networks play an important role, allowing the maximum number of customers to make reservations and to gain easy access to the site or activity of their choosing.

The presence of TicketCorner alongside the SkiData, SportAccess and AccessArena companies allows useful synergies to be achieved in the context of access control projects that are located at the crossroads between different technologies.

In particular, TicketCorner works with SkiData in order to ensure that the tickets issued are compatible with the installations providing access. To this end, new tickets have been developed.

The integration of access systems with ticketing represents a significant advantage both for operators and promoters (reduction of operating costs) and for the consumer, for whom convenience and ease of access are enhanced.

EVEN MORE EFFICIENT DISTRIBUTION CHANNELS

The great strength of TicketCorner lies in its direct access to consumers. Its multiple distribution circuits reach a vast clientele quickly and efficiently. The reservation system can cope with large volumes of transactions simultaneously: the 12 500 tickets for each of the two concerts given in Zurich by the group U2 were sold in seven and twelve minutes, respectively.

The massive expansion of sales networks represents one of TicketCorner's main achievements in the year 2001.

Agreements signed with the Chemins de Fers Fédéraux (Swiss Federal Railways) have allowed for the introduction of 100 new sales points. Partnerships with the major retail chain Manor and large publishing houses strengthen still further TicketCorner's proximity to its customers.

Partnerships with organizations have been renewed, thus strongly backing up the close relationship that TicketCorner maintains with its customers.

In order to bolster its service to event organizers in French-speaking Switzerland and in neighboring France, a TicketCorner branch has been opened in Cheseaux, within the Kudelski Group's head office.

THE LARGEST SWISS E-COMMERCE GATEWAY

TicketCorner introduced Internet reservations in January 1999. The site soon boasted dazzling growth. Six months after its launch, on-line ticket sales had already doubled. Today, www.ticketcorner.ch is the principal Swiss gateway for on-line reservations with 3.8 million connections in 2001, an increase of 50% compared to the previous year.

One of the factors in this success is the option it gives users to customize the site free of charge according to their personal taste. Targeted information is sent to them in order to inform them about events likely to be of interest. By the end of 2001, more than 80 000 people were benefiting from this service, representing 78% growth over the previous year.

TicketCorner has also undertaken an experiment in selling products alongside tickets: thanks to the partnerships established with Directmedia and Swiss Destination Management, it is possible to purchase a CD while reserving a ticket for a concert through the TicketCorner gateway. This experiment has produced very positive results and has revealed a very interesting potential.

INTERNATIONAL EXPANSION

TicketCorner enjoys a solid financial foundation and a good grounding in the Swiss domestic market. In terms of structure, know-how and key figures, it is among the leading ticketing agencies in Europe. These assets are now allowing TicketCorner to seek to extend its activities internationally.

Its capacity to handle a multilingual working environment and the excellent relationships that it maintains with foreign promoters, through the sale of Swiss allocations for events taking place beyond the country's borders (music festivals, the Olympic Games etc.), give TicketCorner definite competitive advantages.

Expansion efforts will initially focus upon Switzerland's neighboring countries.

SOME FIGURES THAT SPEAK VOLUMES

- No. 1 for ticket sales in Switzerland
- 15 years in the business, 169 staff
- A 90% brand recognition rate in Switzerland
- More than 5 million tickets handled in 2001
- A service that covers more than 10 000 events
- 220 affiliated sales points
- A telephone exchange with 85 extensions – multilingual call management
- Number one for on-line (Internet) sales in Switzerland
- The capacity to issue 100 000 tickets per hour

FIFTY YEARS OF HISTORY

THE SPIRIT OF NAGRA

76 The NAGRA era began fifty years ago. Half a century separates the first Nagra I professional tape recorder, a technological marvel that was ahead of its time, from the extremely high-performance digital security solutions of the present day. Down through different eras and across the full range of its activities, the Kudelski business has always demonstrated that it had a complete mastery of technology and a vision that gave it a head start.

It is difficult to sum up fifty years of business or to name products and describe how they changed. Likewise, it is not easy to set developments in the sector in which the business originally grew up, Nagra Audio, alongside those in information technology, a sector that came into existence ten years ago.

While product lines have developed side by side and cater for quite different markets, they have a common spirit, a particular quality born out of the essential requirements that have always guided the company as it has progressed: innovation, quality and reliability.

This is the spirit of the NAGRA brand, whether we are talking about Nagra Audio, which laid the foundations for this philosophy, about NagraVision, about NagraCard or about other companies that have joined the Kudelski Group more recently. Institutional values are essential elements of a business culture.

Today, the Group is among the most important players in each of the different sectors in which it operates. This is a position that is opening up highly promising prospects for the future.

HISTORICAL BACKGROUND

1951

Birth of the first portable recorder, the Nagra I.

1959

Release of the Nagra III.

1965

First Nagra SN (Série Noire) miniature device.

1984

First Nagra VPR-5 video recorder.

1986

The company is listed on the stock market.

1989

Canal+ adopts Kudelski's access control system for pay television.

1991

André Kudelski succeeds Stefan Kudelski.
First million analog decoders sold.
The company concentrates its activities on conditional access television.

1992

Creation of Nagra+, a joint venture between Kudelski SA and Canal+.
Launch of the Nagra-D, the first portable digital recorder.

1995

First order (from EchoStar) for a Nagravision digital system, marking the arrival of Nagravision on the North American market.

1996

85% of sales are achieved in the pay TV sector.

1997

Nagravision (digital systems) breaks through in Europe. Digital pay television becomes the company's core business sector.

1998

Nagravision conquers the British cable market.
Creation of NagraStar, a joint venture with EchoStar.
Creation of NagraCard.
First systems offering mixed pay TV/Internet solutions.

1999

Against a background of convergence between television and other digital content (Internet, games, MP3, HTML, etc), the Kudelski Group creates the first encryption systems designed for broadband networks.
Creation of MediaCrypt (encryption algorithms) and investment in NagraID (production of modules and smart cards).
The company becomes a holding company.

2000

Kudelski stock listed on the SMI (Swiss Market Index) and on the MSCI (Morgan Stanley Capital International).
Investment in SportAccess Kudelski (physical access) and in Polirights (electronic voting and cyber-administration).
The Group continues to expand in the field of secure distribution of digital content over broadband networks.

2001

Creation of e-prica (health cards), a joint venture with Galenica.
Acquisition of Livewire (software for digital decoders).
Acquisition of TicketCorner (ticketing).
Acquisition of SkiData (physical access).
Acquisition of Lysis (rights and content management for digital television).
Creation of the AccessArena joint-venture (destination management).

NAGRA AUDIO

78 Over the course of 2001, Nagra Audio concentrated its efforts in three areas: consolidating its sales network, improving its level of service and tightening overall control of its product development and production processes.

CONSOLIDATION OF SALES

Nagra Audio has principally developed its sales in growth markets through its subsidiaries in France, Germany, Great Britain, Italy and the United States. Large radio broadcasting organizations (Radio France, RTL, Europe1) have chosen Nagra to upgrade their studios during the transition to digital. As these organizations have significant influence in Europe, these sales open up promising opportunities for Nagra to win the approval of other radio stations when they make the transition.

Additionally, Nagra Audio has strengthened its network in high-potential markets such as the Middle East, the Far East, Latin America and the Mediterranean region. In certain instances, new distributors have been identified.

The hi-fi range, which enjoys enormous prestige, receiving recognition in the form of numerous awards, has attracted new distributors of high repute. They have been rigorously selected for their specialist skills and their suitability with regard to Nagra's image as a prestige brand. In 2001, this network of specialists, which is able to advise well-informed audiophiles and to offer them high-fidelity products, grew in density in Europe and the United States and greatly increased its presence in growth markets such as Korea, Singapore and Hong Kong.

SERVICE IMPROVEMENT

Thanks to its high-performance distribution networks and to a reinforced sales team, Nagra is in a position to offer its customers an even higher quality of service and follow-up.

Nagra has laid the emphasis upon personalized service maintained throughout the lifetime of a product. Training represents the cornerstone of this process. Training is provided for users and for maintenance technicians and constitutes the primary guarantee of an effective after-sales service.

TIGHTER CONTROL OF PROCESSES

In parallel, developments, procedures and controls are fully integrated and all products are manufactured directly, according to the most stringent standards.

The quality of the equipment is verified, from the selection of electronic components through to the final tests. This complete and all-encompassing control over processes allows the company to guarantee exceptional reliability and longevity for all its equipment. As an example, quite a few NAGRA III machines (launched in 1957) are still in use.

This constant attention to quality lasts beyond the manufacturing stage. Nagra experts provide customers with support throughout the life cycle of the product. Maintenance is provided on a truly continuous basis: even equipment that is no longer produced can be repaired.

A NEW DIGITAL PRODUCT: THE NAGRA V

The uninterrupted success of the NAGRA-DII in the cinema market has led Nagra Audio to develop a new digital product, the Nagra V.

This new machine, which has won the praise of specialists, is distinguished by its possession of a removable 2GB cartridge (borrowed from the world of I.T.) in place of an open tape. This medium allows a very high quality two-hour recording to be made and then allows the data to be transferred to the editing station within a few seconds. The Time Code indicator that it incorporates ensures perfect sound-to-image synchronization.

Light and portable, the Nagra V is particularly suited to outside recordings. This machine, which is the digital counterpart of the Nagra IV-S with Time Code, was long-awaited. It will be launched on the market in Europe from the beginning of 2002, and will be presented to the American market at the NAB exhibition in Las Vegas in April.

HI-FI: A NEW RANGE FOR HOME CINEMA

In 2002, Nagra Audio will introduce a new range of digital/analog converters and a "home cinema" processor. These machines allow digital flow from a CD player, a DVD player, and even DVD audio and SACD to be decoded. They will allow sound oscillation effects hitherto reserved for cinema auditoriums to be reproduced at home.

NAGRA AND THE MONTREUX JAZZ FESTIVAL

Since the Festival was first established in 1966, Nagra Audio has regularly been asked to make recordings. As the year 2001 marked the 50th anniversary of the Nagra brand, the business chose to specifically highlight its partnership with the Montreux Jazz Festival by becoming an official sponsor for the first time.

As in the past, Nagra equipment recorded the concerts given in the Stravinsky auditorium, providing continuity in the archives that are established year after year. This time, the series of Casino concerts were also immortalized there, preserving a high-fidelity recording of the finesse of more acoustic performances.

This event also provided an opportunity for Nagra to promote its image as a business that places particular emphasis on the listening experience of the customer. Maintaining a high profile within workshops led by musicians, the Nagra teams gave talks on their equipment to specialists and to the general public.

DIRECTORY

KUDELSKI GROUP HEADQUARTERS

KUDELSKI SA
22, route de Genève
P.O. Box 134
1033 Cheseaux
Switzerland
Tel. +41 21 732 01 01
Fax +41 21 732 01 00
info@nagra.com
www.nagra.com

DIGITAL TV AND BROADBAND INTERNET

NAGRAVISION SA

22, route de Genève
1033 Cheseaux
Switzerland
Tel. +41 21 732 03 11
Fax +41 21 732 03 00
nagravision@nagra.com
www.nagravision.com
Nagra Audio Division
audio@nagra.com

NAGRAVISION SA

Abteilung Technopark
Technoparkstrasse 1
8005 Zurich
Switzerland
Tel. +41 1 445 39 40
Fax +41 1 445 39 41
nagravision.zh@nagra.com

NAGRACARD SA

22, route de Genève
1033 Cheseaux
Switzerland
Tel. +41 21 732 05 60
Fax +41 21 732 05 61
nagracard@nagra.com
www.nagracard.com

LYSIS SA

8, Côtes-de-Montbenon
1003 Lausanne
Switzerland
Tel. +41 21 341 97 00
Fax +41 21 341 97 97
hq@lysis.com
www.lysis.com

LYSIS UK Ltd

334 Chiswick High Road
London W4 5TA
United Kingdom
Tel. +44 208 742 77 19
Fax +44 208 742 83 97
uk@lysis.com

LIVEWIRE, Inc.

828 Ralph McGill Blvd
Suite 318
Atlanta, GA 30306
USA
Tel. +1 404 525 0940 (ext-100)
Fax +1 404 525 0790
tedg@lw.net
www.lw.net

NAGRA+ SA

22, route de Genève
1033 Cheseaux
Switzerland
Tel. +41 21 732 03 11
Fax +41 21 732 03 00
nagraplus@nagra.com
www.nagraplus.com

NAGRASTAR, LLC.

22, route de Genève
1033 Cheseaux
Switzerland
Tel. +41 21 732 04 00
Fax +41 21 732 04 01
info@nagrastar.com

NAGRASTAR, LLC.

90 Inverness Circle East
Englewood, CO 80112
USA
Tel. +1 303 706 5700
Fax +1 303 706 5719
info@nagrastar.com

MEDIACRYPT AG

Technoparkstrasse 1
8005 Zurich
Switzerland
Tel. +41 1 445 30 70
Fax +41 1 445 30 71
info@mediacrypt.com
www.mediacrypt.com

PHYSICAL ACCESS AND DATA ACCESS

SKIDATA AG

Untersbergstrasse 40
5083 Gartenau
Austria
Tel. +43 6246 888-0
Fax +43 6246 888-7
info@skidata.com
www.skidata.com

TICKETCORNER AG

Riedmatt-Center
Postfach
8153 Rümlang
Switzerland
Tel. +41 1 818 31 11
Fax +41 1 818 31 10
info@ticketcorner.ch
www.ticketcorner.ch

NAGRA ID SA

12, rue des Champs
Case postale 1419
2301 La Chaux-de-Fonds
Switzerland
Tel. +41 32 924 04 04
Fax +41 32 924 04 00
info@nagraID.com
www.nagraID.com

SPORTACCESS KUDELSKI SA

10, rue de l'Industrie
Case postale
1950 Sion
Switzerland
Tel. +41 27 323 09 10
Fax +41 27 323 09 11
info@sportaccess.com
www.sportaccess.com

e-prica SA

Werkstrasse 27
3250 Lyss
Switzerland
Tel. +41 32 387 89 11
Fax +41 32 387 89 12
info@e-prica.com
www.e-prica.com

ACCESSARENA AG

Hofwisenstrasse 24
8153 Rümlang
Switzerland
Tel. +41 1 818 18 08
Fax +41 1 818 18 09
info@accessarena.com
www.accessarena.com

PRECEL SA

Précision Electronique
10, Vy-d'Etra
Case postale
2009 Neuchâtel
Switzerland
Tel. +41 32 753 56 56
Fax +41 32 753 56 67
info@precel.ch
www.precel.ch

INTERNATIONAL SUPPORT

Nagravision

Spain

NAGRAVISION IBERICA S.L.
C/Principe de Vergara, 112, 4º
28002 Madrid
Spain
Tel. +34 91 590 3950
Fax +34 91 562 8757
nagravision.iberica@nagra.com

United Kingdom

NAGRA KUDELSKI (GB) Ltd
Abbey House
18-24 Stoke Road
Slough SL2 5AG
United Kingdom
Tel. +44 1753 722 120
Fax +44 1753 722 033
nagravision.uk@nagra.com

Germany

NAGRAVISION SA
Auf der Heide 32
31141 Hildesheim
Germany
Tel. +49 5121 878 814
Fax +49 5121 878 815
nagravision.germany@nagra.com

USA

NAGRAVISION
2041 Rosecrans Avenue #350
El Segundo, CA 90245
USA
Tel. +1 310 335 5225
Fax +1 310 335 5227
nagravision.usa@nagra.com

Brazil

NAGRAVISION
P/a Tecnoworld
Rua Beira Rio, 57, 8º andar
Sao Paulo - SP
CEP 04548-050
Brazil
Tel. +55 11 3846 6001
Fax +55 11 3845 8198
nagravision.brasil@nagra.com

Singapore

NAGRAVISION SA
302 Orchard Road
Tong Building #07-02
Singapore 238862
Tel. +65 6836 6720
Fax +65 6836 6717
nagravision.asia@nagra.com

China

NAGRAVISION SA
Rm 7002
Overseas Chinese Mansion
129, Yanan Road West
Shanghai 200040
China
Tel. +86 21 6248 0908
Fax +86 21 6248 5512
nagravision.china@nagra.com

China

NAGRAVISION SA
Rm 2, 3/F, Beijing Kerry Ctr,
North Tower
No. 1 Guang Hua Road
Chao Yang District
Beijing 100020, China
Tel. +86 10 8529 8893
Fax +86 10 8529 8866
nagravision.china@nagra.com

Nagra Audio

USA
NAGRA USA, Inc.
240 Great Circle Road
Suite 326
Nashville, TN 37228
USA
Tel. +1 615 726 5191
Fax +1 615 726 5189
audio.usa@nagra.com

France
NAGRA FRANCE Sarl
118/130, avenue Jean Jaurès
75019 Paris
France
Tel. +33 (0)1 42 03 9900
Fax +33 (0)1 42 08 8920
audio.france@nagra.com

Italy
NAGRA ITALIA Srl
Viale Europa, 55
00144 Rome
Italy
Tel. +39 06 59 10 932
Fax +39 06 59 10 932
audio.italy@nagra.com

Germany
NAGRA KUDELSKI GmbH
Tegernseer Landstrasse 161
81539 München
Germany
Tel. +49 (0)89 697 1207
Fax +49 (0)89 691 1964
audio.germany@nagra.com

United Kingdom
NAGRA KUDELSKI (GB) Ltd
3U Long Spring
Porters Wood
St. Albans Herts. AL3 6EN
United Kingdom
Tel. +44 (0)1727 810 002
Fax +44 (0)1727 837 677
audio.uk@nagra.com

SkiData

USA
SkiData Parking Services USA, LLC
Building 1 EB
Chimney Rock Road
Bound Brook, NJ 08805
USA
Tel. +1 732 805 9510
Fax +1 732 805 9610
info@skidatausa.com

Japan
SkiData Japan
Hibiya Central Building
1-2-9 Nishi-Shimbashi, Minato Ku
Tokyo 105-0003
Japan
Tel. +81 3 55327286
Fax +81 3 55327373
skidata@excite.co.jp

Switzerland
SkiData (Schweiz) AG
Werkstrasse 10
9444 Diepoldsau
Switzerland
Tel. +41 71 737 93 93
Fax. +41 71 737 93 00
info@skidata.com

Other subsidiaries

- Austria
- France
- Germany
- Italy
- Netherlands
- Sweden

(Please contact the SkiData head office in Austria)

KUDELSKI SA

22, route de Genève

1033 Cheseaux

Switzerland

Tel. +41 21 732 01 01

Fax +41 21 732 01 00

info@nagra.com

www.nagra.com

