

« The Golden Ears » of Arkamys

Even if the name sounds like a mythological character, Arkamys is more closely linked to the world of technology. The creed of this small French firm, to improve the sound of an audio installation without touching the loudspeakers. Used to working in the shadow of manufacturers, the firm is preparing a media shock this summer, because a new model French car will be using Arkamys know-how.

At the origins of Arkamys there was a frustrated man. The founder, Georges Vieilledent, a self-taught musical composer and sound technician, could not stand the bad quality sound around him. With a spatialisation diploma (the adaption of sound to the spatial conditions), he opened a services company in 1998. Video editors and cinema producers were his first clients. In fact, all old films re-edited on DVD need a freshening up, a sound restoration. The work turned out to be as difficult as restoring an 18th century painting. The crackling must disappear to be replaced by a smoother sound. Then the engineers must apply themselves to restore dimension to the soundtrack. What was achieved in the studio constituted an artistic performance.

Despite the success of the operation, the desire to apply the technology in other domains was felt. Arkamys wants to pass from individual work to industrial services. The man of the moment was Philippe Tour, a specialist in both hardware and software new technologies. He arrived in 2002, became managing director of the firm, while the founder, less impassioned by the industrial side of things, withdrew but remained a shareholder. The product that symbolises the company's change of direction was the Archos 504 multimedia reader in 2006. This change of trajectory, critical for the company, proved to be delicate. In fact, in order to work in large numbers, the audio treatment must be automated, which means translating the information the engineers have in their minds into mathematical formulae, equations and logarithms. Today, not all the adjustments can be automated. We remain on a 50 / 50 distribution between man and machine. "Totally automatic adjustment is impossible because the result would be cold," explains Yann Lecoeur, a sound engineer with Arkamys.

Equations to modify the signal

To improve the sound, three sorts of people are involved; acousticians, sound engineers and technicians specialised in signal treatment. The first stage is done by the sound engineers. Their role is to diagnose the different problems, to do a check-up of the audio system. They are nicknamed the "golden ears" because of their ability to instantly detect and qualify the different sounds. They speak of color, elevation and tone. Then the acousticians and developers come into play. Their job is to convert the information given by the "golden ears" into equations and mathematical formulae to solve the problems. Practically, the original signal enters the system and a computer linked to the installation improves it by adding a code. The team can immediately note the effects of the formula because the modifications occur in real-time. The final validation is always given by the "golden ears" who confirm that the changes correspond with the client's expectations.

This technology rapidly charmed the telephony world such as Sagem or even Nokia.. The Porsche Design telephone benefits from the Arkamys touch. And, we have to admit, the result is impressive. "Watching a video, for example, a plane in flight, the user not only sees the plane move further away, but he also hears it", explains Philippe Tour. "This sound spatialisation enlarges the screen and gives greater comfort to the user." Arkamys is working

with ranking manufacturers such as Continental, Clarion, Magneti Marelli, Blaupunkt or STMicroelectronics. As in telephony, the company supplies them with a digital treatment, that is, coded mathematical formulae, that the manufacturers integrate into their products.

The price of such technology is variable. It depends particularly on the client's budget. It is up to the client to define his expectations and to choose the desired formula in the company's catalogue. "The advantage for the client is that he can create his own sound signature and thus distinguish himself from the opposition", adds Philippe Tour. But the greatest success is yet to come. Effectively, the company, in an expansion phase, foresees a media shock this summer because 95 % of the production of a future French car will be equipped with Arkamys technology. We won't know any more for the moment because the company is waiting for the green light from the carmaker before totally revealing its work.

Two applications : economic and qualitative

Based upon this technology, two approaches are possible. The first is the logic of economy. The manufacturer decides to reduce the materials budget but to avoid that this reduction is synonymous with a lowering of quality he uses digital treatment. Despite using a partner, "the price – performance ratio remains interesting because Arkamys sells its technology as a licence," the businessman emphasises. "In the end, the digital treatment is equal to less than 1 % of the cost of the radio in a car." The other approach is qualitative. The use of this technology becomes a selling point. Thus, the manufacturer increases the quality of his current installations without exploding hardware costs.

"In the automobile industry the scientific community wanted to multiply the number of loudspeakers to increase the sound quality," explains Philippe Tour. "But this solution resulted in costly systems. Our idea is to improve the sound by digital treatment, without touching the loudspeakers." The project is a large one because we have to recenter and raise the sound scene, that is the volume in which the sound evolves, to the level of the windscreen. In fact, in a car, the loudspeakers are located in the doors at the same level as our calves.

But after four years of basic research, adjustments, searching among unused patents and the registration of 4 new patents, Arkamys has found the solution. "We need approximately one week to find the tuning for a car," explains Yann Lecoeur. We measure and calibrate vehicles as a function of their body. We capture the audio imprints that characterise the car in three dimensions." Thus a sedan and a station wagon will require different adjustments and each model will receive a different code at the end of the assembly line. Starting from these measurements it is possible to modify the signal according to the number of people in the car. Thus, with only the driver in the car, the sound scene is displaced to the level of the steering wheel. In the "all passengers" mode the resulting sound envelopes everyone in the car. Thus, each passenger has a sound scene in front of him. The Managing Director confirms, "There is always a difference, we guarantee it, and the result will bluff you."

Global ambition

"To become an automobile industry supplier represents a real challenge," confides Philippe Tour. The challenge seems to have been taken up because the businessman speaks the setting up of new partnerships with manufacturers in the short term. Post production and individual time seem to be complete. The small French firm intends spreading its technology to the entire world. For that matter the Arkamys website is entirely in English. Arkamys aims to

hold 20 % of the world market, about 12 million vehicles. A network of agents is already in place across the globe to promote the Arkamys know-how. The real issue is to sensitize the manufacturers about the interest value of this technology. In other words, create a demand. In the end, the firm would like to work with Rolls Royce and Ferrari, positioning itself as a first ranking equipment supplier and not merely as a technology partner of the manufacturers. The future is difficult to predict, but one thing is certain, we will hear about Arkamys and its “golden ears” in the coming years, at least in France.

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