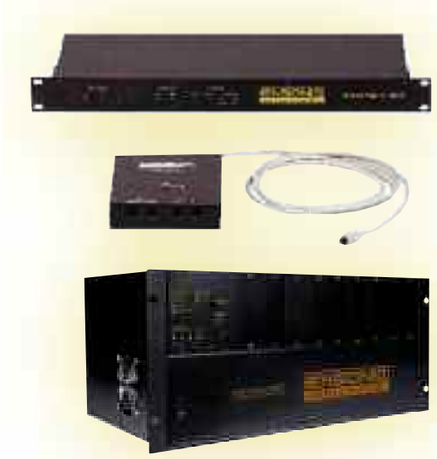
PREVIEW

Ensoniq's PARIS digital audio workstation

Brad Watts gets his hands on an early release version of the eagerly awaited PARIS system, and files this report...



It's taken a while, but someone has finally released a low cost digital editor/recorder to take advantage of a combined Mac and Windows PCI market. Two companies of eminent standing have pooled resources and come up with PARIS (Professional Audio Recording Integrated System), a product that may surprise quite a few people.

One of the two companies is Ensoniq, famous for things like the Mirage sampler, the EPS/ASR range and the very nifty DP/4. The other is Intelligent Devices, the design/coding team of Stephen St. Croix (a regular and popular columnist in the US-based Mix magazine) and Edmund Pirali, who are responsible for plug-ins such as IQ and Pro Audio Analyser. To give you an idea of the type of products these guys are capable of, you need look no further than IQ. It's a ProTools plug-in that analyses the EQ and harmonic content of one sound file and applies it to another and, yes, it works on full program material. Quite a formidable tool when trying to match EQ curves between tracks. As a team, they are responsible for many other DAWs, including the Spectral Synthesis system.

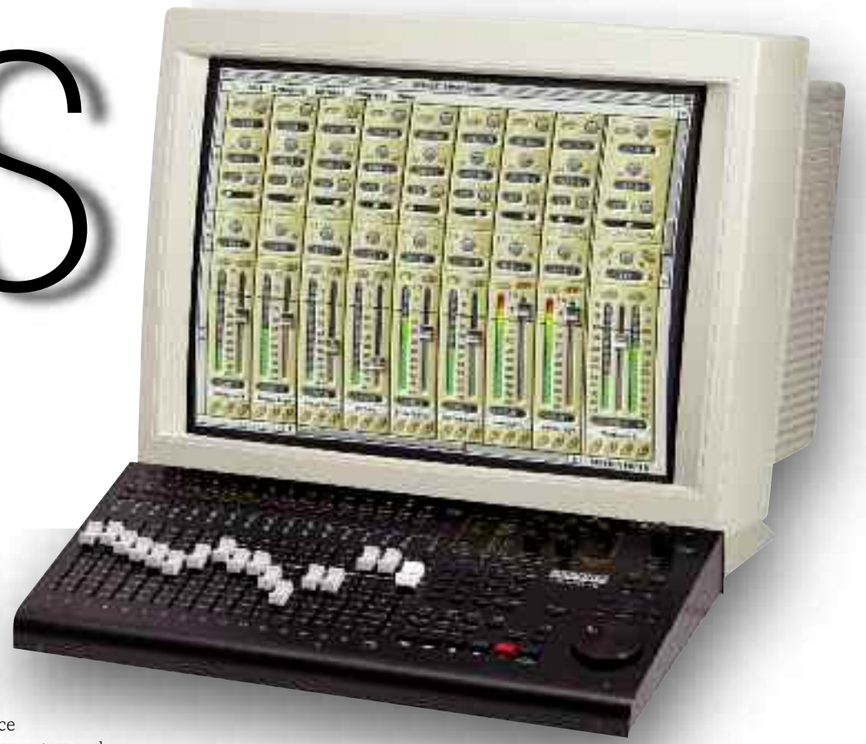
This joint venture meant Ensoniq provided the manufacturing, marketing and support for PARIS, and Intelligent Devices did all the conceptual work, designed the system and developed the software. In fact, it's such a collaboration that both companies' logos appear on the Users Manual. Now you know who's responsible for the goods, let's take a quick spin through a system that promises a lot of recording power to a lot of people, at a price point that has never been seen before.

Ins and Outs

PARIS systems are available in three different 'bundles'. Each bundle includes a cross-platform CD and software for both PC and Mac, the EDS1000 PCI card, and a very snazzy hardware controller which we'll look at a bit later. What distinguishes each bundle is the type of interface supplied. The basic system, Bundle One, features the 'Interface 2' audio interface, with two audio inputs and two audio outputs. Bundle Two comes supplied with the 'Interface 442' and is probably where most users will want to start. The 442 is a single rack-mount unit sporting four audio inputs and outputs, plus coaxial S/PDIF I/O and BNC word clock I/O.

Bundle Three comes with what is called the 'Interface MEC'. This is essentially a 442, but has nine expansion slots for additional I/O cards. The MEC (Modular Expansion Chassis) will accept a mixture of cards (such as XLR input and output analogue modules, TRS analogue module, an ADAT optical interface, an AES/EBU interface, etc.), up to the EDS1000 card's load limit of twenty inputs and outputs. At that point another EDS1000 card can be added to the host computer for more polyphony (i.e. channels) and I/O additions. The MEC also has a headphone jack and level control for those not-so-quiet moments alone.

The Interface 2 and the Interface 442 have 20-bit converters with balanced 6.5mm TRS jacks, and are globally switchable between +4dBu and -10dBV level standards. [Editor's Note: PARIS is a 24-bit system, and supports 24-bit word sizes via the digital I/Os. According to Ensoniq, the Interface MEC offers 24-bit converters and should be on sale by the time you read this preview.] The Interface 2 and 442 supplied with the preview unit didn't bat an eyelid during the time I used it. Interestingly, both units are powered from the EDS1000 card and therefore aren't fussy about any particular power-up order between the host CPU and audio interface.



Upgrading from one bundle to another is simply a matter of purchasing the appropriate interface. The design also ensures you won't be left with any redundant equipment after upgrading. The Interface 2 can be connected to the Interface 442 or the Interface MEC, adding its inputs and outputs to the system.

All for One and One for All Card

The nerve centre of the PARIS system is the EDS1000 PCI card. It's blessed with six DSP chips that are, in fact, the same Ensoniq designed DSPs found in the DP Pro effects unit. Known as ESP2s (Ensoniq Signal Processors), each chip provides 26 MIPS of DSP grunt and 24-bit signal processing. The effects are as you'd expect from Ensoniq: clean and clear. Each track within the PARIS software has access to these effects either as an insert or via the eight auxiliary sends. The effects include dynamics (mono and stereo), chorus, delays, and reverbs (plate, room and non-linear). In addition, the EDS1000 card also provides four bands of full parametric for 16 live audio channels. (In use, the transparent submixing capabilities of version 1.5 software allows this EQ to be used on all 128 tracks simultaneously.)

What's quite unique about the PARIS effects is that they will share processing power between the ESP2 chips and whatever CPU the system is installed on. (When installed on the Mac, you'll find a PARIS Preferences folder that contains a fabby little folder named 'Plug-Ins', so I'll let you ponder that one while Ensoniq continues with effects development.) According to Ensoniq's specs, each card provides recording of up to 16 tracks simultaneously. On playback, a single card is capable of replaying PARIS' maximum of 128 tracks simultaneously, via a clever and transparent submixing technique supplied with version 1.5 software (due for release at the Winter NAMM show, January '98). To increase the number of simultaneous record tracks, I/O and DSP capabilities, simply add another EDS card and appropriate interface.

The Controller

What makes PARIS even more exciting is the dedicated controller, aptly named the 'Control 16', which gives access to most of the functions within PARIS. It's a desktop-type controller not much larger than your average computer keyboard. It sports seventeen 100mm faders (sixteen channels and one master) with Select and Mute buttons above each channel. The faders, while not Penny & Giles, are indeed smooth enough for delicate mixing and automation edits. You also get the assistance of automation 'null point' LEDs above each fader. To the right of the faders are the transport buttons and a very heavy jog/shuttle wheel. Above the transport buttons are a numeric pad, buttons for punch, loop points and

Above: PARIS Control 16 and mixer screen. Opposite (from top): Interface 442, Interface 2 and Interface MEC.

markers, and five infinitely variable knobs for EQ, panning and auxiliary sends. There's even a monitor level knob (which fortunately isn't infinite!) with a mute/dim button. The buttons all have a definite click to them and are similar in feel to those on a Kurzweil K2xxx.

All this control information is transferred to the EDS card via a single Ethernet 10BaseT cable – that's all, no power cables and no dodgy Midi implementation between the Controller and the software. It seems Ensoniq have taken many of the better features from other controllers and melded them all into the Control 16 with marvellous results. Finally, the casing is as sturdy as it should be, plate metal and finished in studio black.

The Soft Bits

At first glance the PARIS software seems overly colourful, almost pretty. This seems to annoy a lot of people when they first look at the screen, but I must say that after five minutes with the system you don't give it another thought. This is what the graphical user interface idea is all about, less wear and tear on the eyes and brain and therefore better work output. I actually think Mr St. Croix has done a great job with it. The metering is readable from a distance, you're not spending extra seconds looking around for a particular key press (everything updates from the Control 16 anyway), and the colour scheme is quite soothing as it isn't trying to depict a mixing console.

The main windows are the Mixer window and the Editing window. The Mix window is configurable for each project and the Edit window follows a similar line to most audio editors with time laid out left to right and tracks running down the page. A time-line, or 'Now-line' as it's dubbed by Ensoniq, travels over the arranged regions as you would see in any audio/MIDI sequencer. Here you can zoom in to one sample's resolution for fine edits or zoom out to view the whole piece. When playing while at the finest zoom resolution, the waveforms literally rocket past oscilloscope-style with no redraw

PARISIAN ARCHITECT — Greg Simmons talks to PARIS designer Stephe St. Croix

Greg Simmons: As a person who has designed quite a few digital audio workstations, what are the most exciting things you have done with PARIS?

Stephen St. Croix: The most exciting thing with PARIS is this: 'No Lies'... Seriously. I am amazed at the amount of deception in digital audio workstations. I know how it happens, because of marketing pressures, and I know why it happens, because of real limitations. The original design crew says, "Oh, we've got to do this and this" and everybody says, "yeah, we can do that", but then they run out of horsepower or hardware bandwidth, and realise they can't do it. Meanwhile, the marketing department has made a big noise about it. I've been consistently agitated over the years by lies, and I wanted to design something that was honest.

GS: So where did you start?

SSC: I looked at some of the leading systems, and asked myself five questions: What do they do? What don't they do? What do they say they can do, but actually can't do? Are they stable? What does it really cost a client to live with one of these systems for five years? The picture was appalling. These systems don't do much, but they do more than anybody else. That tells us that the industry hasn't started yet, it is not 'real' yet. There are many things they don't do, but nothing stupid... they're not dumb products. And now, more important for me because this is a pet peeve of mine: what do they say they can do, but actually can't do? That list is impressive. There is a great deal of misrepresentation, and it's not just limited to the leading systems. There are lots of lies out there, and I hate that shit. Who is going to tell the user the truth? Somebody has to.

GS: How did PARIS originate?

SSC: Ensoniq approached us, or we approached Ensoniq, I don't remember. They make hardware and we make software...

GS: When you say 'we', are you referring to your company, Intelligent Devices?

SSC: Yes. Intelligent Devices was formed from a freelance team of people who had designed lots of other DAW packages. There are two other people that do the core of the design. I do the conceptual work, sitting there for endless hours while my friends are surfing, getting tans and being fed grapes by blondes on beaches. I spend my time going, "no, I'd rather sit in this dark room and look at a computer". I do the graphics, I do the interface concepts. I make the decisions on what it should look like and feel like. Edmund Pirali is head of the coding team, and he's scary. Within two or three weeks after meeting him, I decided I was never going to code again, and I never have. It's like, you're a real hot rock guitar player and you're pretty proud of yourself, and then you bang up against Les Paul or Eddie Van Halen, and you kind of think, "Gee, maybe I shouldn't do this any more"...

GS: Speaking of coding, you're creating and upgrading Mac and PC versions of PARIS simultaneously. That's rather unusual in this market. What software are you using?

SSC: There's a product by Microsoft that is a cross compiler. You write your code, and it gives you a Windows version that is pretty good. Then it gives you a Mac version that bites – it's horrible. Our team did something that at first I was very nervous about, but now it is the part of the project that I am happiest about. Edmund developed what he calls an 'abstraction layer'. It knows about Ensoniq's ESP2 DSP engine, the Power PC engine and the Pentium engine. We compile on Code Warrior and our abstraction layer simultaneously kicks out Windows and Mac versions. They act the same and they look the same, and they appear within seconds of each other.

GS: Sounds like a great advantage for the future...

SSC: Upgrades. Updates. Add ons. It's all amazing.

GS: What if you want to take advantage of something special, such as the MMX features on a Pentium?

SSC: We just add it to the abstraction layer. We are already multiple processor supporting. There's nothing to it. If your OS can talk to it, we can talk to it.

GS: You were saying that you make software and Ensoniq make hardware...

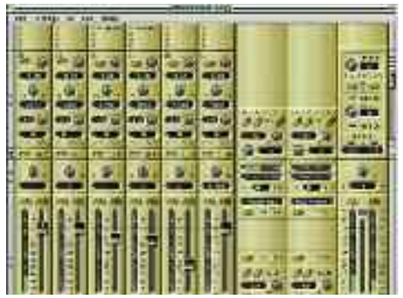
SSC: We make really good software. Ensoniq make really good hardware for very low money because they have silicon design facilities and they autoload and wave solder surface-mount boards, all in-house. They're big. Ensoniq delivers 160,000 sound cards to Gateway every month.

GS: ...and they've got their own DSP chips.

SSC: Oh yeah, the ESP2 chip. We were lucky enough to talk to them before that chip was done, and made architectural requests which were honoured. We got to say, "oh, that's pretty cool, but it really needs to be able to do this, and we need this width and this versatility". We wanted more DSP flexibility than the other systems. For example, with Pro Tools, once you grab a DSP it never lets go, so you can't use it for anything else. To avoid that problem, we wanted dynamically allocated DSPs. We got them.

GS: The ESP2 chip is also in Ensoniq's new DP Pro processor...

SSC: Correct. There are six of them on the card, which is pretty amazing when you consider that there are only two of them in the rack mount DP Pro. A single ESP2 chip is roughly the same as a good 56000 series DSP chip from Motorola; not one of the monster high speed Symphony versions, just the usual 56000 series. But the ESP2 is better suited to its purpose, because it's a purpose designed chip. How many functions can it perform? That depends on the type of functions. You may be able to get 16 really high quality multi-band EQs on one chip, but it might take one and a half chips to do a good reverb.



Mixer page, showing inserts at top and expanded view of one band of EQ.

delay. Editing is region-based so your original files aren't destroyed, and audio can be saved in either PARIS native file format, or as SDII or WAV files. Projects can also be swapped between Mac or PC platforms (thank you, thank you, Ensoniq). Initially the Edit window seems like most others, until you begin using it. Zooming is done via the window scroll bars. Crossfades are quickly executed from here as well, with a neat 'dovetail' arrangement between regions. You merely drag the crossfade section around to be as long or short as you like. Very intuitive.

The other departure into new editing realms is 'Free Form Editing'. In Free Form mode, tracks of audio can be placed onto the same track or 'instrument' so that the only audio that plays is the audio placed on the uppermost track. When you cut a piece out of a track, the audio below it will 'surface' to be heard. It works almost like a mono or single voice track, if you think of it in terms of polyphony. Putting together complex vocal comps is child's play. Then, when you go back to the normal 'Constrained Mode' editing, the multiple tracks that were playing from one audio 'instrument' get folded back into one audio track. It's quite like the nested folder feature in Emagic's Logic software. Have a look at the screen shots for some extra detail.

I think Ensoniq and Intelligent Devices have a very useable product on their hands. For the money, you get a system that will run on a Mac or a PC, and includes Mac and PC versions of the operating software, a solid control surface, and an upgrade path that will see you through however many I/O additions you require. It

GS: Why six chips? Did you tell Ensoniq that's how many you needed, or did they tell you that's how many you were allowed?

SSC: They wanted to go less, but we said we needed six because the real world demands it. Everybody accepts that if you buy a DAW, you'll be making certain compromises. There are things you can do with a razor blade and tape, and with patch bays and insert points, that you can't do on a DAW. They say the compromise is worth it, because you get all the benefits of working in the digital domain, and yada yada yada. But the compromise is not worth it. So we told Ensoniq that with four DSPs it's going to be pretty good, but with six, we can break new ground. No compromises. So they gave us six.

GS: Does every channel have a set amount of processors dedicated to it?

SSC: No. The total power provided by the six ESP2 chips exists as a common pool of DSP, and is dynamically allocated. The only things that are permanently allocated are the default EQs – every channel has four 20Hz to 20kHz EQs, each with five different modes. With 16 channels per I/O card, that's a total of 64 real-time EQs.

GS: PARIS can play different sample rates simultaneously. This level of real-time sample rate conversion requires extensive DSP power, doesn't it?

SSC: When you've got enough DSPs, you can do anything. PARIS has enough DSP power to gear box [sample rate convert] tracks on the fly, so if you want to keep them at different sample rates, you can. Or, if you decide to go to one sample rate for everything, PARIS will convert them permanently for you.

GS: Apart from the six ESP2 DSP chips on the card, PARIS also takes advantage of the host computer's CPU. Is it doing a Cubase VST trick?

SSC: Exactly. You know, VST is amazing, but there's nothing VST can do about the hardware limitations of the host computer, and when you hit them, you hit them. The nice thing about PARIS is its intelligence. It uses its own DSP chips on the card, and when they're used up, it checks the computer's CPU. If you've got something good, it automatically grabs the CPU and adds it to the horsepower. So at any given time, when you turn a knob or make an adjustment, you don't even know, you may be using the card or you may be using the computer.

PARIS' EDS1000 PCI card, containing six Ensoniq ESP2 DSP chips.

GS: You said earlier that PARIS 'doesn't lie'. Does that mean all its specified features are things it can do with just the DSP chips?

SSC: Yeah. Everything we spec refers to the DSPs only, so you'll always have at least that level of functionality. But because PARIS also uses your computer's CPU, you could get more functionality than specified, and its power automatically grows when you upgrade your computer. In fact, you can even change platforms when you upgrade, from PC to Mac or vice versa, because the PARIS package contains everything you need to run on either platform - including the software.

GS: Speaking of software, PARIS looks almost identical on either platform…

SSC: I am a Mac guy. I don't like Windows at all. I was at a recent trade show in New York, happily demoing PARIS to somebody on a kiosk that wasn't on my stage. And I was showing it and he was saying, "What's it like on Windows?" and I said, "It's the same, but Windows sucks so I won't show it to you in Windows". Then another guy points to the left hand side of the window frame and says, "Isn't that the Windows bar?"… I had just done a 15 minute demo on the Windows version of PARIS and didn't know it. That is how much the same they are.

GS: What about the user interface?

SSC: PARIS is an emulator of a physical world. Many of the functions are accessible in multiple ways, by using pull-down menus or key commands or buttons. The idea here is, why make the customer learn again? Why not make everything work in as many ways as possible so that the first thing the customer tries is likely to get the job done. So you can crossfade by slamming two pieces of audio together, or by putting them together and hitting the cross fade button, or by pulling down the crossfade menu. That's what I mean. If you push the play button, it plays. If you push the space bar, it also plays. Whatever approach the customer is used to using on other systems and equipment will probably work with PARIS. Why make the poor guy learn the way you want to think?

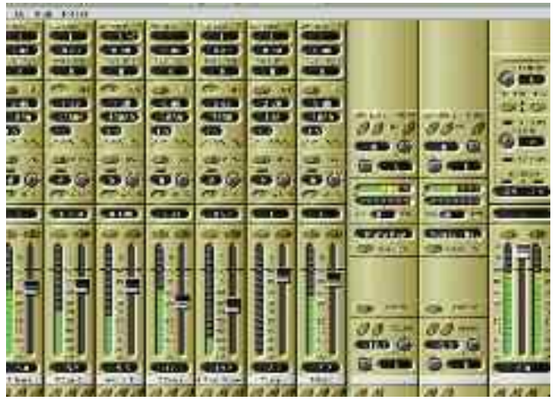
GS: And the control surface?

SSC: PARIS is the only DAW I know of that has a real studio monitor with stereo solo-in-place. It's got a mix bus, and a monitor bus with mute, mono, dim, and its own level control for studio monitoring. You use it like a real studio. There are individual hardware outputs on the back of the I/O interface.

GS: That's something sorely missing on many computer-based DAWs. You buy the system and then you have to buy a little mixing console to go with it…

SSC: …and you still won't have solo-in-place. Everyone has given up features they've grown up with in a real studio, just to get into a DAW. I don't want to do that any more. With PARIS, you can have inserts in every strip. You could take channel 15 and bang a compressor in there in line, and then bang an echo in line. Software or hardware. You have enough inputs and outputs.

GS: And this is done via the patchbay screen?



Mixer page, showing auxiliary sends at top and collapsed view of one band of EQ.

certainly shows that professional digital editing has come to a point where everyone, not just the wealthy, can get their hands on it. The software, even at this early release stage, shows great promise. I'm sure as Ensoniq and Intelligent Devices build up the PARIS user base, and listen to what those users require, we'll see a recording/editing system that competes strongly with the more expensive systems we're used to.

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- *Electric Factory, Phone: +61 (0)3 9480 5988 Fax: +61 (0)3 9484 6708*

Price

- *PARIS systems start at $5999 RRP for the basic PARIS 1 (Bundle One) package, which includes all software, the EDS1000 PCI card, the Control 16 control surface, and the Interface 2 two channel analogue I/O interface.*

Newsflash!

PARIS 3 Systems (including the MEC Interface) have started shipping and we expect to see Version 1.5 software running at the Winter NAMM show in Los Angeles in January '98. Stay tuned for a comprehensive review once we get our hands on one!

SSC: Correct. Routing is done on the patchbay screen, but an insert is done directly on the channel. Every channel strip has an insert area, and you instigate it right there. And PARIS is the only DAW that allows you to do that. It's the only DAW that can plug an insert in while playing… in real time. And I think that's pretty important. You know why? Because you can do it in the real world. So I want to be able to do it in the virtual world.

GS: In the real world, I can take a tape from one studio to another and play it. The equivalent to that in DAW world must be file formats. How does PARIS deal with these?

SSC: Not only does PARIS convert competitive formats, but there are several formats it doesn't convert – it runs them like they are. You bring your ProTools project in, and PARIS deals with it directly, no conversion. When you're finished, it will still be a ProTools file. You could take it and work on it in ProTools if you wanted. Isn't that great? Nobody does that, and I don't get it. You have to do that in a real studio.

GS: That sounds pretty cool…

SSC: Right. But if you want to use the really cool PARIS tricks – like Free-Form Editing, which is a three dimensional editor I'll tell you about later – then you'll have to convert to PARIS' native file format. But it's smart, it does it for you. By the way, PARIS files on a Mac also run on the Windows version, and are totally swappable.

GS: Let's talk about Free-Form Editing now.

SSC: Free-Form Editing is why PARIS exists. We give you two editors. The standard little kids' editor for those of us who are little kids, or are old kids who did way too many drugs in the sixties, or are otherwise impaired. It's a standard linear editor, with 16 real tracks, two buffer tracks, and a whole bunch of jails to keep things in. Each track is assigned a number, and a track is a track.

Then there's the grown up Free-Form Editor, where the whole universe changes and nothing is as you are used to. It takes a little thinking, a little learning, and it will spook you for a day. Here's how it works. In Free-Form, there are no tracks at all. The time domain still matters, left to right matters, that's the only thing that stays the same. Instead of tracks, you get 'instruments'. An instrument can have any number of tracks or chunks of audio assigned to it, which all become the same colour. The playing order is hierarchical within an instrument, so PARIS will always play the track that has the highest position on the screen. If you cut a hole in the middle of a track, PARIS drops down to the next track in the hierarchy, plays that track for the duration of the hole, then jumps back up to the original track. In Free-Form world, time consuming tasks like comp'ing tracks suddenly become very easy and intuitive. And there are no limits to the number of tracks allowed in an instrument – you can have as few or as many as you need to get the job done. And you can solo and mute instruments, just like individual tracks.

Free Form Editing.

GS: I think we'll use some screen dumps to illustrate the point effectively. Do you have any closing comments… a mission statement, perhaps?

SSC: My mission? Very simply, total world dominance in all markets. The reason I say that is because we have a product that works. It works better than anything else out there. It is multiples faster and a fraction of the price. What would your mission be if you could do that? It's very hard not to sound like I'm selling because I use the terms 'best' and 'fastest'. But it is. The reason it's the best is because we went into it saying, "Let's look at what we can do before we sign this contract. If I can't make it the best thing possible at this point in my career, I'm not interested". PARIS has got 64 real-time EQs and they are non-destructive. It is faster than anything in the world. You can buy PARIS – the card, a four channel rackmount interface and the control surface – for $7,000 (AUS). You don't have to be a drug dealer to be able to afford it. But it's still difficult to convince some people that PARIS is real, because it does not cost $30,000.

The reason I did PARIS with Ensoniq was because I had designed for them in the past, and was aware of their technical abilities in hardware and marketing. They would take care of those things, and we would do what we do best, which is conceive and design and update the application. From the very beginning, we are simultaneously shipping on Mac and Windows - nobody has done that before. The promise was that we could make the best DAW that has ever been made, at a price that was shocking [read: cheap].

PARIS is what I want to finish my album on, which is in fact why I started designing it in the first place. I wanted something that played when I hit play, without waiting seven seconds or more. I wanted something that recorded 24-bit. I wanted something real. I can't believe it, but I got it. The design philosophy survived the manufacturing phase, and how often does that happen?

GS: What advice do you have for anyone designing a new digital audio workstation?

SSC: Don't! I have a number of acquaintances in the field of genetic engineering, and that is maybe a little worse. But the nice thing about genetic engineering is th