violet

COLOUR OF SURROUND

Violet acoustic design and development

The Inventors

Ashish Aggarwal

Ashish strives to make paradoxes work. He believes that there is a place where science meets art; rational meets emotional; and, uncertainty and ambiguity meets deterministic. This confluence is where a world of incredible and magical experiences are created. Ashish loves products that are simple, elegant and functional. He is constantly trying to crystallize great ideas into meaningful products. His education at Santa Barbara and work for products such as the iPod and companies such as Harman gave him the opportunity to conceptualize Violet.

At SNAP, he is the primary inventor and drives product definition, technology and his colleagues as the CEO. He has a PhD in Electrical Engineering with specialization in digital audio signal processing.

Michael Foley

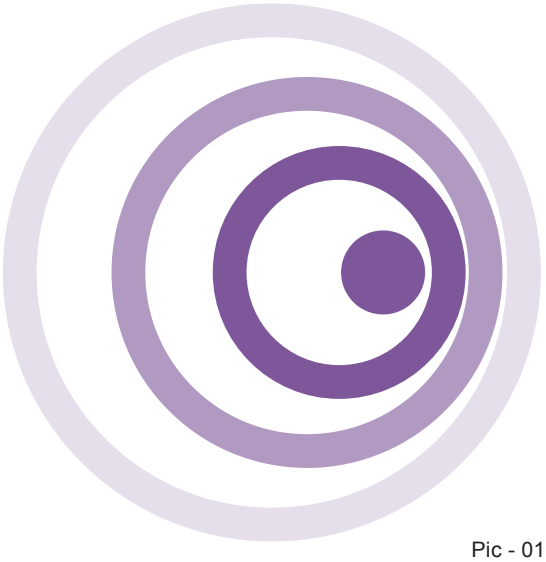
Michael is an industrial designer by training, he believes that all great ideas manifest as a unique amalgamation of experience and sculpture. He attempts to create 'desire' in objects not just a need. Michael constantly attempts to redefine the obvious and look for opportunities that would make a consumer's life easier. Michael is continuously inspired by the perfection of nature. His attention to detail comes from his 13 year tenure at Titan, designing watches including the world's slimmest watch called the Edge.

Michael manages the creative direction at SNAP. He has a design degree from NID in Industrial Design.

The Acoustics

The acoustic design of Violet is driven by a singular goal of achieving a listening experience in a living room that equals or beats the best designed movie theater. The sound of a theater goes much beyond the sound of the speakers. For a great movie experience, it's not enough to have great speakers. You need great speakers that work in perfect synchronization and harmony with each other and with the space they are in this is what we call coherence or "Soundspace".

What is Coherence of Sound & Space?



Pic - 01

'High Fidelity' is the term used to describe good audio systems. Fidelity relates to the accuracy of sound reproduction. Parameters such as frequency range (20Hz to 20kHz), signal to noise ratio (SNR), total harmonic distortion (THD) and power are used by speaker and amplifier designers to measure fidelity of a speaker and an amplifier.

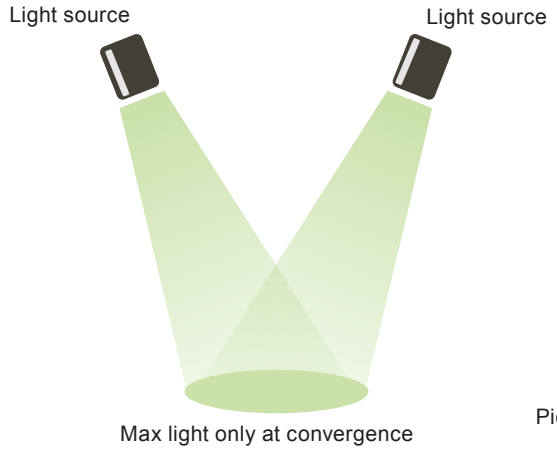
It is well proven science that fidelity alone is not sufficient to describe the quality of sound that human beings experience. In addition to fidelity, we are very sensitive to the timing of each sound. One example of our sensitivity to timing is the experience of rhythm in music. In addition to the fidelity of sound emanating from each speaker, the timing of this sound plays a very important role in how we experience sound and space. When all speakers produce sound with perfect timing, similar to various instruments in an orchestra playing a symphony, we call it coherence. Coherence becomes much more important when watching a movie or a live recording. Typical studio recorded music is experienced on two channel sound, where the effect being created is that of a stage in front with the musicians performing. But in a movie or a live concert, many times, the director wants to place you in the middle of the action. The music director uses ambient sounds to create an atmosphere or mood by accurate timing of each musical sound. And the sound engineer codes the sound so that this can be replicated in your home.

Violet takes the concept of sound to a completely different paradigm by delivering sound at two levels – fidelity and coherence. Violet can precisely estimate the acoustical

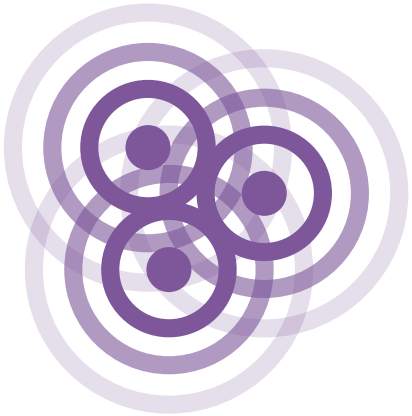
characteristics of the sound in various parts of the room using its space sensing microphone technology. Violet also uses a very high speed digital signal processor and a phase accurate wireless technology which allows for precise control of timing of each signal coming out of the speakers. The system dynamically optimizes the sound in a room, in a manner similar to designing a good movie theater, to give you a coherent sound in any space.

We call this 'coherence' or as Violet would call it 'Soundspace'.

What is Diffused sound?



Pic - 02



Pic - 03

Violet's sound waves engulfing the whole area

Most home theater systems use directional speakers. This means that the sound emanated by the speakers comes out as a narrow beam. That's why while installing, you are asked to point the speakers directionally towards an ideal seating location at the center of the rear surround speakers. When this is done, obviously this is the one spot where you will experience the best or ideal sound. That's why there is the concept of an ideal seating position. Unfortunately, this ideal seating position cannot be altered and seats only one.

That would be fine if you were watching a movie alone. But how many times do you watch a movie alone? The problem being that the more the listener moves away from the 'ideal seating position', the sound quality deteriorates. Just imagine the five speakers as narrow torch lights. The five narrow beams intersect at one point. This point will be the brightest spot. The rest of the room will have various patterns of dark and light. A typical home theater system creates an effect that is similar. If you happen to be sitting at the brightest spot, all is well. But move even a few feet away and there is deterioration of sound. Now imagine that instead of torches, you used five spherical lamps that send light in all directions. Now the lighting will be uniform. The entire room will be flooded with a bright light. This is similar to what Violet does.

Violet solves this problem by designing multi-directional speakers. Basically, each speaker has a diffuser. So instead of sending out a narrow beam of sound, it sends out a field of sound in all directions and creates a 'Soundspace' around itself. As a result you can sit anywhere in the room and you will be enveloped by sound as it is intended to – sound with zero loss.

The uniquely designed omni-directional speakers and space-sensing microphone create an immersive 3D experience that rivals the best movie theaters.

The Design Story

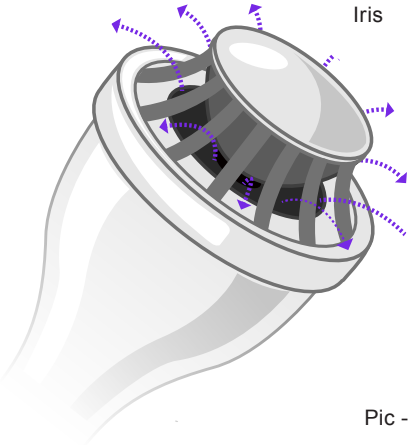
The design story is driven by the desire to 'feel' sound. A sinuous profile is swept along an axis to create an aesthetic form and a superior functionality. The quality of sound is epitomised in the shape of the product. The soft contours persuade you to 'feel' the product, thus in a way creating a sculpture with sound. The form echoes subtle nuances of tactile and visual character through the choice of material and finishes. Craftsmanship and acoustic excellence bring the final experience alive, like no other product today.

Sculpted by wind and water

Pic - 04

The assemblage of Violet is reminiscent of streamlined forms, sculpted by flowing water and wind. The processes used in Violet reflect this streamlined characteristic, urging and compelling you to feel its contours. Its curves are soft yet taut. Spun in aluminum, the body has a fine brushed finish, enhancing the minimalistic, contemporary and symmetrical feel of the product. The spun shell tapers in shape almost intuitively to create a sense of direction for the emanation of a 'pool of sound'.

The iris of Violet



Pic - 05

An inverted sculptural section of an ellipsoid plays a pivotal role of precisely diffusing sound. Suspended at a point above the speaker unit and held up by a series of translucent arches, the interplay of this inverted form creates a dynamic architectural visual balance.

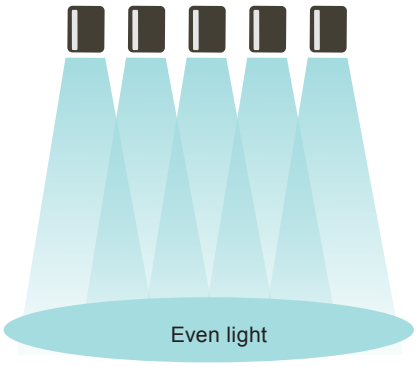
Challenging Stereotypes

Violet has been sculpted into a form that is far removed from the conventions of acoustic devices. This unconventional nature of the device emerged through an interplay of form and sound. The physical manifestation of Violet is deep rooted in its quality of sound: refined, three dimensional and sensorial. The beauty of sound is seen even in silence as it were.

Good Design Award

Pic - 06

The Revolution



Pic - 07

Imagine: freedom from: wires; rigid placement and obtrusiveness of speakers; the geekiness of audio systems; bulky and complicated amplifiers; separate center/left/right/surround channel; choosing between 2.0, 5.1 and 7.1; setting subwoofer cutoffs and speaker configurations; finding the right power rating of your speakers and amplifier; painstakingly matching all your speakers; sitting in one single location, afraid to even move your head because you may miss that great 'sound' moment.

Imagine a world where creating sound was as easy as creating a colorful ambience with light. And creating a true movie theater-like experience was as easy as pressing a button.

Violet 3D is a breakthrough in the way we experience 'immersive' (when one is immersed in the situation, like sitting on a seashore or surrounded by galloping horses in a farm) sound. Violet departs from the concept of rigid speaker channels such as left, center, right, surround and rears. It uses speakers simply as sound producing elements, where each element is utilized as an instrument in a symphony orchestra, so as to create a cohesive and coherent sound that envelope your space. Just like a photographer uses a light meter to measure intensity of light. Violet uses a spatial microphone that senses and controls the color and the timing of the sound coming from every speaker in order to create a space where speakers are in perfect harmony with each other – a coherent 'Soundspace'.

The Genesis

Pic - 08

Our very idea of being is shattered when you realize that everyone's sense of space and time is different. Einstein struck upon this notion when he was staring at a giant clock. The idea of Violet germinated when a friend asked Ashish (the inventor) why creating incredible sound in a room cannot be as simple as plugging in a light bulb. Why can't we create a great theater-like experience by simply placing any number of speakers, anywhere in the room, with no wires? Over 100 years of research in sound, the conventional norms, the understanding of human perception of sound and the physics of sound said that this could not be possible.

However, preliminary findings show that a speaker that sounds poor in an acoustically treated room doesn't sound as bad in a normal room. The proof was glaring in our face that our knowledge about perception of sound was far from being complete. This opened the door to creating a remarkable shift in how we create and perceive sound and space.

About SNAP

Pic - 09

SNAP is a youthful company dedicated to exploring products that challenge the status quo. At heart we are consumers and believe that we design products which make our own life, and lives of millions of others, simpler and richer. SNAP comprises people with diverse backgrounds who are united by the singular goal of improving the quality of life through original, innovative and breakthrough products.

To say we are obsessed with perfection and detailing is to put it mildly. We strive for simplicity like all great products and inventions and persevere to create value for our customers, investors, employees and partners.

The Features

Easy & Quick Installation
(Automated setup)
Violet can be installed in five minutes with touch of a button, unlike conventional home theater systems.

Wireless
(Phase accurate and power adaptive)
Violet replaces wires of conventional home theater systems with a phase accurate and power adaptive wireless technology that beats the best cables.

Place speakers anywhere
(Virtual Speaker)
Violet's patent pending virtual speaker technology allows you to place speakers anywhere in your room removing conventional home theater systems' rigid requirements for speakers' placement.

Sit anywhere to get the best sound
(Spatial sensing microphone)
By use of its patent pending space sensing microphone technology, Violet allows you to freely move about in the room and yet experience the same immersive surround sound effect.

Revolutionary 3D Immersive 'Soundspace'
(Coherence of sound)
Violet creates the same 'coherence' of sound that is experienced in auditoriums, amphitheaters and movie theaters with great acoustics which makes the experience real.

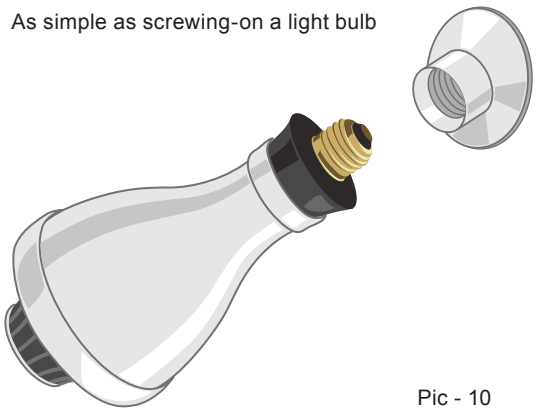
Great new breakthrough aesthetic design
Violet does away with conventional home theater systems that used boxed, boring, voluminous, cumbersome, obtrusive speakers which are not aesthetically pleasing.

FEATURES OF VIOLET

Ease of Installation

Creation of great sound requires a host of technical parameters to be tuned correctly. For instance, the default values of a standard home theater system are set as per studio specifications and not your home. You have to either painfully optimize or compromise on quality of sound.

With Violet, just place the speakers wherever you want, place the space sensing microphone in the center, and press the button. Violet not only figures out where your speakers are and their acoustical characteristics of the room but also senses the basic topography of the room. In the process it succeeds in giving you a perfect home theater experience. Everything is automatic and what's more, it just takes a few minutes. You may also rearrange the speakers as and when you please.

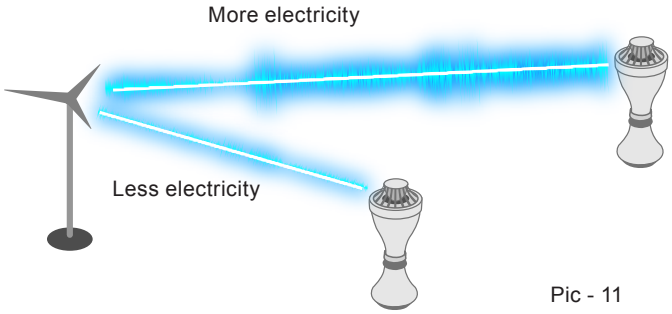


Pic - 10

Wireless

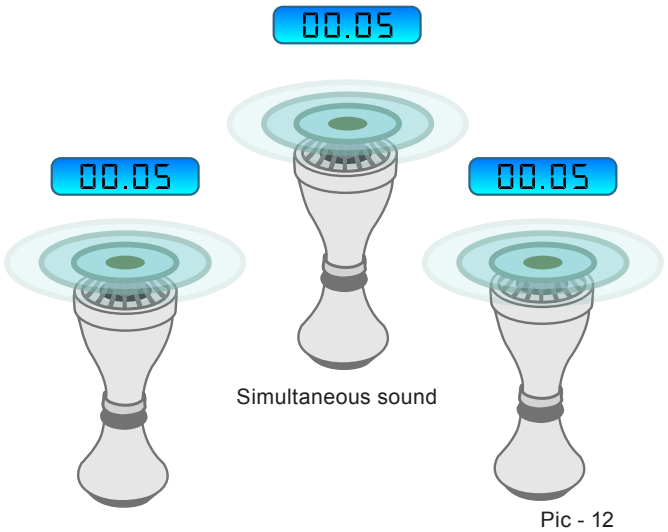
Running wires to speakers is a huge problem. A high quality wire is required to get great sound because it has two key properties – it allows for low interference during signal transmission and it delivers the signal at the same time to all speakers. Violet is a completely wireless system where you can actually screw in the speaker into a light bulb or you can plug it into the nearest power outlet.

Violet's transmitter tackles the problem of interference using its unique Power Adaptive Technology. Unlike typical wireless systems, which beam out the sound signal for the speakers to catch, Violet knows where the speakers are placed and hence sends the sound signal using the minimum power necessary to avoid interference. Violet also dynamically adapts this power to the surrounding conditions giving you the perfect quality digital signal.



Pic - 11

Timing is a very important aspect of home theater system and speakers have to be finely co-ordinated to achieve a great surround sound effect. It is similar to role of a conductor in an orchestra and one of his jobs which is to keep time. Other wireless systems just ignore this problem and lose the surround effect. Violet is obsessed with giving you exactly the effect that movie-maker wants you to have. It does this through a unique Phase Synchronization Algorithm, where the transmitter keeps sending pulses to the speakers. These pulses serve as a drumbeat on the basis of which all speakers can be perfectly synchronized, to the accuracy of 200 Pico seconds.



Pic - 12

Place anywhere for great sound

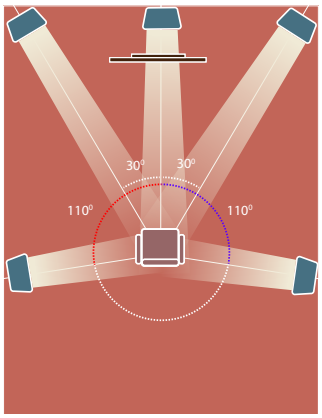
All home theater systems rigidly tell you where you must place your speakers – 30 degrees for left and right and 110 degrees for surround. The distance and the height are also specified tightly. Essentially, all of them assume that you will design your living room in a perfectly symmetrical way and that your home theater system will get top priority over anything else – be it a painting, a lamp or a family photo.

When the sound engineer creates the DVD with 5.1 audio signals, he assumes that the five speakers are placed exactly as per the specifications. This is the reason why other home theater systems insist that you place the speakers precisely as instructed.

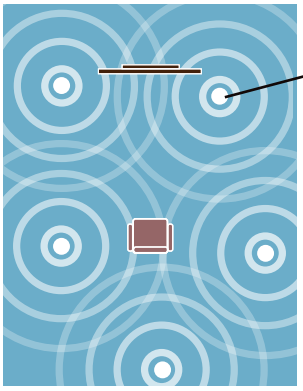
Violet, on the other hand, works like magic and lets you place any number of speakers wherever you want. Violet uses a patent-pending Virtual Speaker Technology. Violet dynamically re-engineers the recording to suite the position of your speakers.

This simply means you can place any number of speakers and wherever you want. You will still get exactly the same sound that the music director intended. No other system comes anywhere close to achieving this.

Dolby placement



Violet random placement



Pic - 14

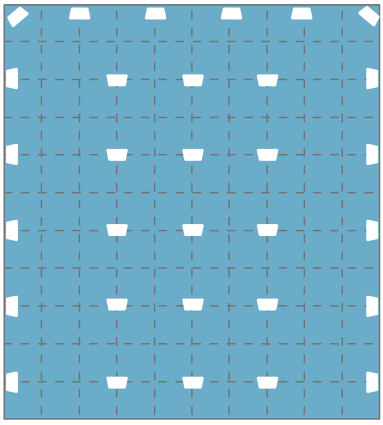
Like a movie theater, sit anywhere for great sound

Movie theaters are designed by trained acoustic engineers by first carefully measuring the acoustics of the theater at known points on a geometric grid. The sound through speakers is then optimized to create a uniform sound experience on all locations. Knowing the geometric grid is very important aspect of sound optimization. It is impossible to do measurements at a perfect geometric grid at home and hence other surround sound systems, at best, optimize sound at one point or average of multiple points.

Violet has invented a Space Sensing Microphone technology which allows acoustic measurements at three precise points in the room using which it is able to accurately estimate sound at points on a geometric grid in the room. Using digital signal processing technology, similar to one in design of movie theaters, Violet achieves a kind of virtual bubble that occupies the full room. It then fills this bubble with 'Soundspace' – a spatial sound experience that is in perfect harmony. It visualizes a pattern of speakers, to create this sound space and then it adjusts the signal, volume of timing of the existing speakers to simulate this pattern of speakers. So what you get is a bubble where you are placed, right in the thick of the action where the director wanted you to be.

Dolby placement

Top angle of theatre design for speakers



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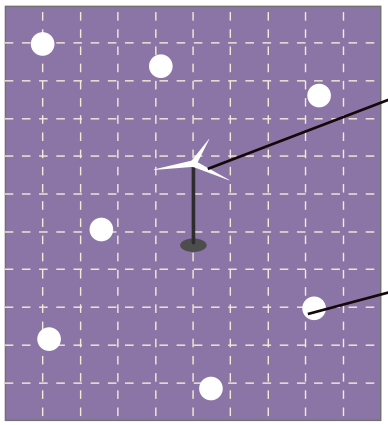
Violet random placement

Top angle of violet placement in room



Pic - 16

Revolutionary Immersive 3D Sound

The sound we experience goes much beyond simple 'fidelity' of speakers something which most other sound systems focus on. The space of sound is created by putting multiple speakers in a room. Violet takes the concept of sound to a completely different paradigm by delivering sound at two levels fidelity and coherence.

For fu rther details or demo contact:

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