



PULSBEAT MEDIA INC.

Presents

# D9NAMIC

D9 Audio Explained

# D9namic Audio

## Explained

When explaining PulsBeat's D9NAMIC AUDIO, we are often asked if it is "Lossless". In answering this question and explaining D9NAMIC AUDIO, it is important to understand what "lossless" means in the context of our PulsBeat D9namic technology.

Lossless refers to an audio bit by bit comparison. If you claim to be lossless, then you have retained all of the digital data following decompression. All of the compression technologies are simply different types of methods and mathematical models used to "compress" data without the "loss" of a bit, i.e. the digital file that has undergone compression-decompression should be "bit-to-bit" identical to the original in order to be called lossless. **All the data lossless methods have limitations imposed by the laws of physics.**

**PulsBeat's D9NAMIC AUDIO technologies are not bound by such laws that dictate traditional compression methods.**

With traditional compression, the loss of data means a loss of information and in the audio world this means a loss of quality. This is not the case with PulsBeat technologies. PulsBeat uses a completely new and innovative approach that is different in its nature. D9NAMIC AUDIO has been developed with our patented method of information structuring and data formalization for data reduction without loss of quality. In doing so, PulsBeat technology maintains the original fidelity (exactness and preciseness) of the original source recording. This is not possible with any other compression technology. PulsBeat technology does not rely on the laws of physics that have historically limited delivery of high-quality, low bitrate audio files.

The technologies deployed for D9NAMIC AUDIO have been designed for a new music paradigm and while it may not be "data lossless" as has been traditionally used to measure audio quality, PulsBeat technologies deliver lossless fidelity. We do not simply decompress data from the reduced file, rather we reconstruct the signal from the file's harmonic structure. Through this process we generate audio (sound) that is indistinguishable when comparing the quality to uncompressed files. Therefore, relying on a data bit-by-bit comparison is not relevant to measure fidelity.

As a result, we have developed a lossless fidelity audio technology and in doing so, we are able to deliver the preciseness of the original source files at only 70kbps, up to 20x smaller than the original uncompressed file (CD quality). This represents a significant reduction of digital data while preserving all of the original signal.

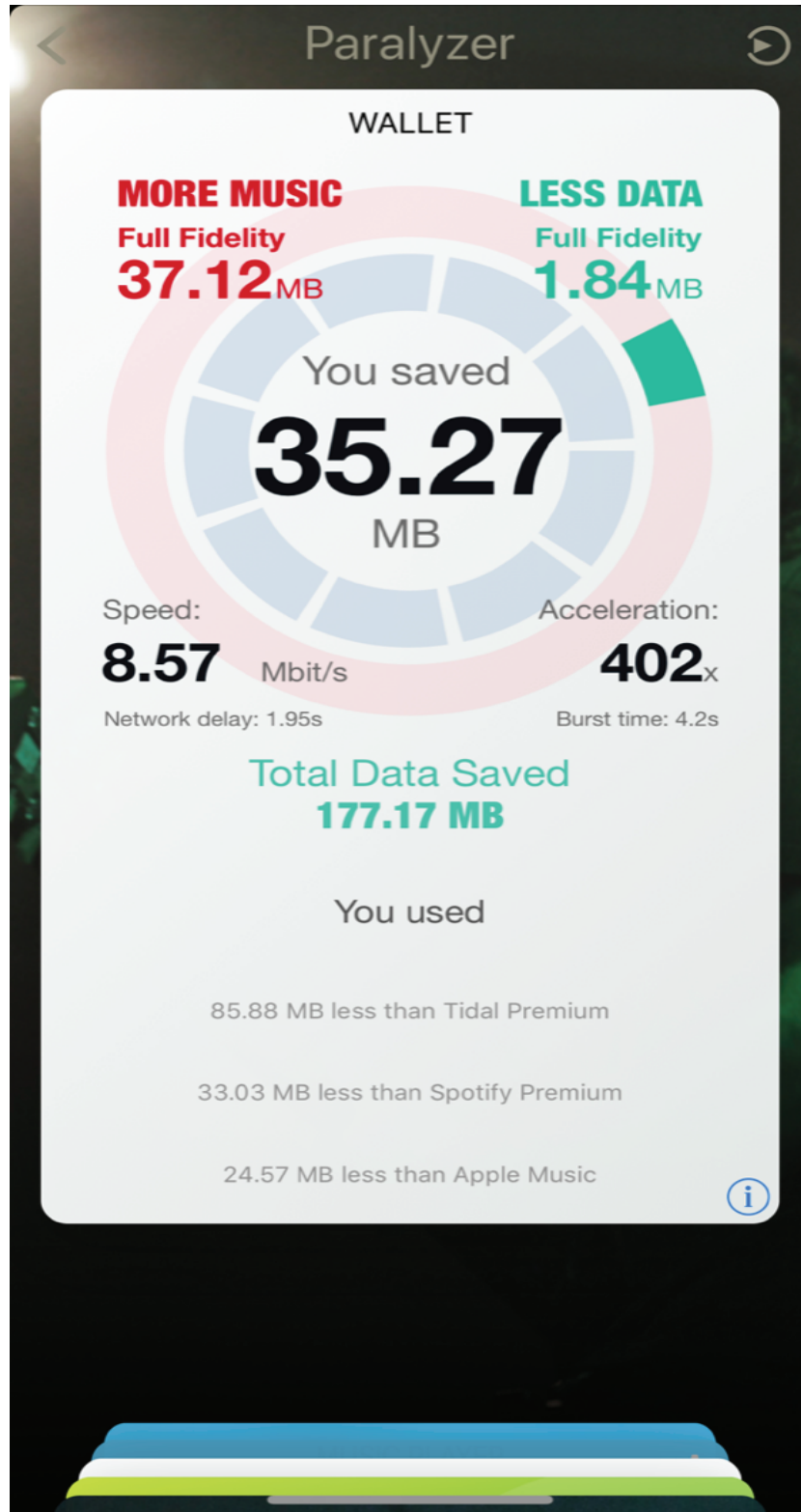
Below is a screen shot of the Data Bank to illustrate an application showing savings in data when listening to a song encoded using D9namic Audio as compared to uncompressed data files from Tidal Premium, Spotify Premium, and Apple Music, all of which provide more or less comparable audio quality. This example shows the data savings for only a single file. An hour of listening would be equivalent to at least 20 times the data savings shown with this example of one song.

Attached are charts and diagrams that illustrate PulsBeat's competitive advantages over other technologies. As you can see, a comparison goes far beyond comparing file size, audio quality or speed of delivery.

**In conclusion, PulsBeat technology provides much more than efficient reduction of data. We represent a new paradigm for digital media representation. In terms of file quality, D9NAMIC AUDIO provides the Highest quality/bitrate ratio on the market.**

Less Data  
Full Fidelity

**D9namic**



# cDM Technological Advantages Summary

## **D9namic**



## The Competitive Advantage

### **Patents**

Grant status in Canada, USA, EU, Russia, Japan, China, Hong Kong (over 104 separate claims subject to these patents)

### **Provides**

Full fidelity experience on devices over mobile networks while saving over 75% of bandwidth consumption

### **Represents**

Massive advancements in speed, efficiency and monetization of mobile communications

### **Synchronization**

Fully synchronized interlinking of multi media over agnostic networks

### **Data Networks**

Significant increase in network efficiency

### **File Quality**

Full fidelity - No loss of file (sound) quality with much less data

### **File Size Reduction**

20 times reduction of the 44.1 / 1/16 stereo (5% of original)

### **Transfer Response Speeds**

Up to 800 x accelerated delivery of full fidelity audio

### **Bandwidth Consumption**

Reduced file size provides 75% data savings

# Progressive Industry - Key Parameters



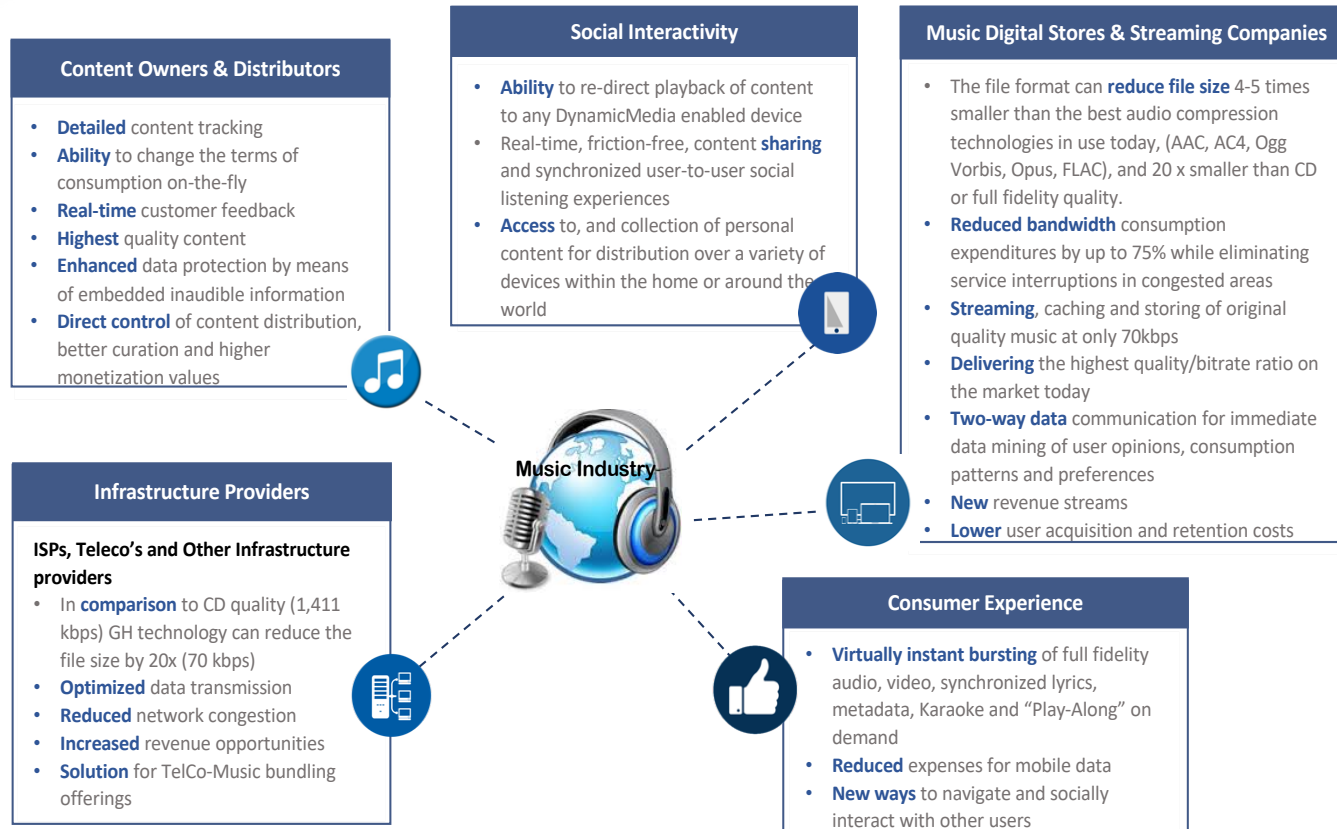
Today		PulsBeat Technology Advantage
<ul style="list-style-type: none"> <li>Standard data speed via a CDN channel</li> <li>High cost of congestion-free delivery</li> <li>No use of Deep learning or Big data Analysis for delivery</li> </ul>	<b>Transfer speed</b>	<ul style="list-style-type: none"> <li>Up to 800x accelerated delivery of full fidelity audio content</li> <li>PB "Fluid Transfer" of audio, video and voice data without service interruption. Near zero costs for congestion free delivery</li> <li>Includes Deep learning and Big data Analysis for cognitive optimization of the delivery speed</li> </ul>
<ul style="list-style-type: none"> <li>CD Fidelity Audio is currently unavailable over mobile networks</li> </ul>	<b>File quality</b>	<ul style="list-style-type: none"> <li>Original CD Audio Fidelity, 1411 kbps data rate represented by reduced data set (DM file) at 70 kbps without loss of quality</li> <li>No service interruption, even in highly congested areas</li> </ul>
<ul style="list-style-type: none"> <li>4-5x reduction in file size (data set) of 1411 kbps audio with significant loss of quality</li> <li>High rate of data interruption even in limited congested areas</li> </ul>	<b>File size reduction</b>	<ul style="list-style-type: none"> <li>20x reduction in file size (data set) from 1411 kbps audio to 70kbps without loss of quality</li> <li>Insignificant rate of data interruption in highly congested areas</li> </ul>
<ul style="list-style-type: none"> <li>Over 5 sec sound object resolution identification</li> <li>Unreliable synchronization between two or more sound sources over independently operated networks</li> </ul>	<b>Granular analysis</b>	<ul style="list-style-type: none"> <li>Less than 25 milliseconds sound object resolution identification</li> <li>Providing highly reliable synchronization between two or more sources over independently operated networks</li> </ul>
<ul style="list-style-type: none"> <li>Single content monetization model, no ability to monetize device to device connectivity</li> </ul>	<b>New ways to monetization</b>	<ul style="list-style-type: none"> <li>Up Multiple content revenue multiplication via smartFunctions<sup>2</sup> monetization of immersive experience</li> <li>Geofencing and time slot action driven revenue models</li> <li>Various business opportunities of friction free device-to-device, user-to-user connectivity monetization</li> </ul>
<ul style="list-style-type: none"> <li>Annual estimated cost of bandwidth for streaming USD 325m<sup>1</sup></li> </ul>	<b>Recurring cost reduction</b>	<ul style="list-style-type: none"> <li>Annual estimated cost of bandwidth for streaming USD 81 m<sup>1</sup> with DM Technology</li> <li>DM annual saving potential USD 244m or 75%</li> </ul>
<ul style="list-style-type: none"> <li>Linear listening, no immersive experience. Absence of any content SmartFunctions<sup>2</sup></li> </ul>	<b>On demand functionalities</b>	<ul style="list-style-type: none"> <li>Immersive listening experiences with GH's SmartFunctions<sup>2</sup></li> </ul>

1. Based on a case study including the 8 largest streaming service providers \* 2. SmartFunctions: see appendix for more information  
Private & Confidential

# Benefits to Market Participants



## How PB provides competitive advantage across industry's key parameters



Pulsbeat – Business Plan


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# Functional Comparison – Case Study



## PulsBeat's Cognitive Format vis-à-vis Traditional Audio Codecs

As opposed to any other of today's audio formats PB's DynamicMedia format delivers a full array of modern, highly demanded services and experiences.

Traditional Formats	FUNCTIONS	DynamicMedia Format
 <p>AAC, HE-AAC, MP3, AC3, Vorbis, WMA, SILK, OPUS</p>	X	Full Fidelity at low bitrates (70 kbps) <sup>1</sup>
	X	Fully Searchable Data
	X	Link embedded
	X	Meta Data Helix <sup>2</sup>
	X	Data Bursting
	X	Additional smart functions
	X	AudioDNA.
	X	MultiSTREAM <sup>3</sup>
	X	MultiSTEM <sup>4</sup>
	X	SmartSYNC
X	DataSteganography (Non-audible)	



This format provides full fidelity at tiny file sizes, it is fully searchable and synchronizable, can be used for data steganography for intellectual property protection and other applications and provides many other functions.

1. **Original** CD Audio Fidelity, 1411 kbps data rate represented by reduced data set (DM file) at 70 kbps without loss of quality.
2. **Meta Data** Helix or "DNA like" mechanism that enables retrieval and replication of exchange data which is permanently associated with the content. (see appendix for more information).
3. **MultiSTREAM** allows users to switch between the different audio sources on demand. *For example: an Mp3 quality song and a CD quality version of the song can be sent (and played back) in parallel.*
4. **MultiSTEM** enables simultaneous encoding and user driven, real-time, playback, of multiple individual stems or "tracks" on-demand. For example, users can add or remove vocals from a song for "instant Karaoke" or "instant play-along", on demand.
5. **SmartSYNC** allows all types of media fully synchronized with each other, even across different networks.
6. **DataSteganography** or steganography content prohibits rights infringement and protects ownership rights.