The RFZ is quite literally a geometric approach to the implementing the LEDE concept.

Relative to Wes' observation regarding what has become a common misuse of the term LEDE as slang:

The LEDE concept is very well defined. Unfortunately once people became aware of the idea many ran amuck building what they "thought" was an LEDE concept creating many rooms that were anything but, and with so many on so many forums tossing the term about based on an anything but accurate understanding of the concept, I would agree with Wes, as too often commonly used, the term has become at best slang for many, and at worst, nonsense.

Nevertheless, the LEDE concept is very well defined by those who developed it and exists in a very mature form.

(Much as many are using the concept of the ISD and the Haas effect here, attempting to define it b a specific number of ms in time and not understanding how these numbers are derived and how they can be modified by stimuli, as well as other foundational psychoacoustics which directly impact the locational process. Rather than address the subject as if one understands it based upon casual discussion, and then further making pronouncements regarding its use and the evaluation of other concepts based upon incomplete understanding of said concept, I would suggest more instead spend their time researching the literature to learn more 'facts' before passing judgment on other methodologies with only a colloquial understanding of the principles and how they are modified by stimuli.)

As far as the Moulton rooms, I find an amazing disconnect between the colloquial diatribe used to describe the behavior of reflections (which refers to absolutely no solid foundational research) and the principles for execution which result in something MUCH DIFFERENT than what is claimed.

First, let's review his "principles":

http://www.moultonlabs.com/more/real_world_of_project_control_room_monitoring/P3/

The Basic Principles for the Moulton Room:

Assuming a shoe-box, or rectangular, room (the cheapest kind):

1. The room dimensions should have "non-consonant" ratios to smoothly distribute low-frequency room modes. In musical terms, think of, for instance, the intervals of root-tritone-major ninth, or 1:1.41: 2.245 for relative height, width and length – with an 8-foot ceiling that would result in room width of 11'4" and a length of 17'11". Root-fifth-tenth – 1:1.5:2.5 (8' high by 12' wide by 20' long) – would be not good, because the room modes would tend to bunch together, reinforcing each other. Other nice ratios include root-tritone-minor seventh and root-tritone-major seventh.

2. The median plane between the loudspeakers should also be the median plane of the long axis of the room.

3. The reverberation time should be roughly the same at all frequencies between 60 Hz. and 8 kHz., and it should be quite short (ca. 80 to 200 ms.).

4. ***The lateral early reflections (those that arrive at the mix position within 50 ms. of the direct sound from the side walls) should be as loud and spectrally and temporally accurate as possible*** *(i.e. no RPG-type diffusers and no Sonex® or other wall treatments).*

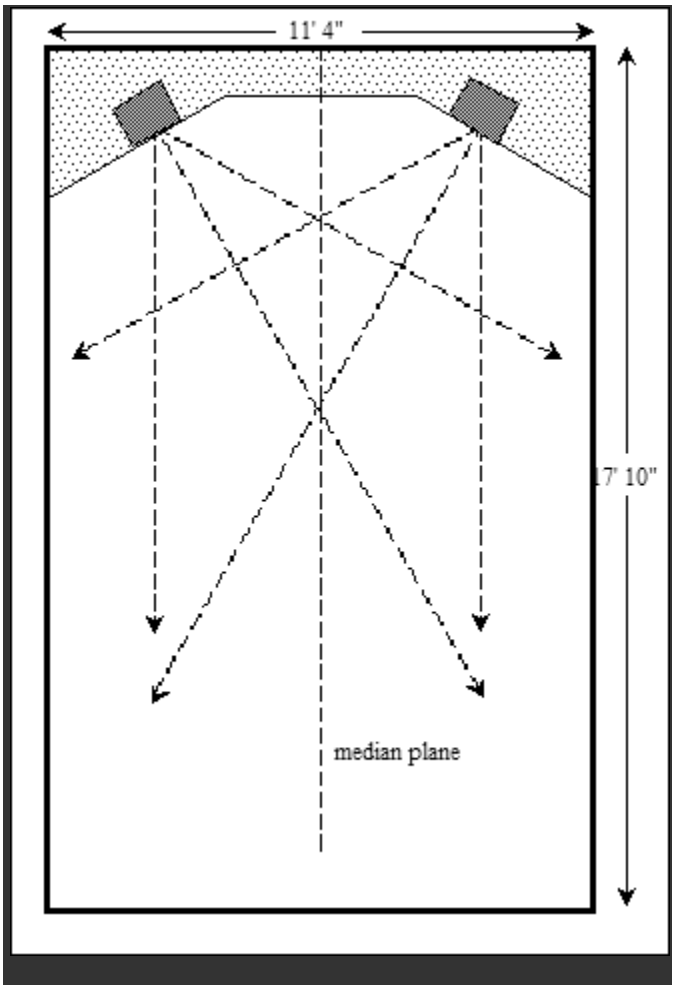
Floor and ceiling early reflections should be damped/diffused as much as is reasonable.

5. The monitors should have as broad horizontal dispersion as possible at high frequency. A good specification would be 3 dB down at 10 kHz at +/- 60° off-axis. ***A great specification, which I'm trying to get with my speakers, is 5 dB down at 16 kHz. at +/- 90° off-axis.*** *Such performance yields spectacular tonal quality and imaging.*

6. The monitors should be approximately 30° off the median plane to the left and right at the mix position.

7. ***The front wall, this is, the wall behind the monitors should be seriously absorptive*** *from 60 Hz. to 20 kHz.*

Take a look at the approximate layout of such a room in Figure 3.



Dave's 8' x 11'4" x 17'11" control room, with monitor shell/absorber fitted. Speakers with a beamwidth of 60° shown. I personally think 60° beamwidth is way too narrow.

Naturally, in real life, you can hardly get room dimensions 'n stuff that are exactly the way you'd like. Usually, you're faced with an existing space that you are trying to adapt to some sort of ideal. The trick is to get as much symmetry as

you can, as long a median plane as possible, and dimensions that are not, repeat not, consonant ratios. To accomplish this, you reduce the length and/or width (by building an inner wall) just enough to get yourself away from really nasty ratios.

Using these fairly simple and straightforward principles, you can construct a playback room that really sounds quite decent, and accepts quite a range of loudspeakers successfully. ***Also, if you are brave, there are some cylindrical diffuser/absorbers you can fit at the back and side walls that will make things even better.*** *The nitty-gritty about how to design/build such a room has to be left for another article or two.*

After a routine approach to treatment of modes, we enter his selection of controlled Q/dispersion speakers (60-90 degrees horizontal)(5), their mounting (soffit) and the topology of the front wall (splayed and absorptive) (6, 7).

Additionally, he specifies the damping all early ceiling and floor reflections (4) and reintroducing laterally arriving reflections to the listening position ~5ms after the arrival of the direct signal.

Rather than create an environment where early reflections are encouraged and later reflections discouraged – claims that have many thinking that it constitutes a 'front to back" or 'reverse LEDE' environment,… a bit of scrutiny will see that what is claimed, and what is implemented are two very different schemas.

First, the selection of controlled Q/dispersion speakers, soffit mounting, and geometrically splayed and absorptive front walls could have almost been lifted directly from the LEDE playbook (similarly with the NER approach). And I can present visual proof that even in the LEDE concept – in fact with workshops lead by D'Antonio, Berger, Davis, et.al., splayed front walls with soffit mounted

speakers were often covered with absorption to minimize diffractive virtual sources.

In fact, the design of the front end, as previously stated, combines, with the absorption of early reflections off the ceiling and floor, and the incident region of the side walls effectively resulting in first order reflections that will be redirected behind the listening position, the practical result is to create an effective "reflection free zone", as the splay combined with controlled Q of 60-90 degrees in a corner mounted configuration of the speakers minimizes or eliminates any substantial gain early first order reflections.

Its déjà vu all over again…

And orienting the speakers in a splayed manner such that the normal incidence of energy is incident in the back lateral boundaries, and combined with the redirected arrival of the side wall incident energy results in an ISD effectively terminating the ISD at a recommended ~5ms.

Thus you do have an early anechoic direct signal interval and an albeit short ISD terminated with laterally arriving high gain ("*should be as loud and spectrally and temporally accurate as possible"*) specular signals. And to top this off, "*if you are brave, there are some cylindrical diffuser/absorbers you can fit at the back and side walls that will make things even better.*"

Eliminate the termination of the ISD and ignore the rear space diffusion and you essentially have an NER topology.

Change the optimal length of the ISD and you have a topology almost lifted directly from the precepts of the LEDE topology! An effectively anechoic early ISD interval, terminated with laterally arriving high gain specular reflections, or, *"if…brave", with diffuse energy sourced from diffusers places on the back and rear side walls "that will make things even better!"*

Indeed.

Personally, I think more work needs to go into the specification of the unusually short ISD, but other than that, the "principles" as stated create essentially what we have been suggesting as a reasonable compromise between the dead room, NER, and an LEDE for the average person here. Namely the creation of an effective ISD (of optimal/maximal length relative to a studio, if applicable, and/or the room itself) with the a high gain laterally arriving specular termination made diffuse if at all possible.

The result is 'essentially' an NER with ISD termination or an LEDE with integral ISD termination but without a significant developed diffuse field. With the termination of the ISD effectively removing all potentially errant location cues of the manufactured later arriving energy and effectively locking he localization and imaging to the front direct sources maximizing the accuracy and translatability of the mix.