Roadmap for Set-Top Box Data

An Analysis of the STB Data Landscape

By:
Charlene Weisler
Independent Media Consultant

October 2010

Preface

CIMM's two mandates are to innovate in both cross-platform measurement and set-top box data measurement. Starting almost a year ago, CIMM members met with media measurement companies working to aggregate and analyze STB data and realized they were all speaking a different basic technical language. This lead CIMM to hire independent media research consultant, Charlene Weisler, to collect and prioritize terms and definitions to create the CIMM Lexicon. Charlene and I interviewed over 30 companies to create the 800 terms in the Lexicon, which is now available on our website: http://www.cimm-us.org/lexicon.htm.

After completing the Lexicon, CIMM members still felt the need to learn more and develop a stronger point-of-view on the roadmap for the various ways that STB data can be used by the media and advertising industries. So again, Charlene and I interviewed over 58 companies and 85 executives – and we apologize in advance to any companies that weren't included, since there are so many players in this complex ecosystem! From the point-of-view of potential end users, we tried to better understand the challenges and opportunities presented by these game-changing data that are slowly becoming available.

The result is the CIMM Roadmap for STB Data. In the whitepaper, Charlene perceptively points out that the combined knowledge of STB data is similar to the proverbial blind man describing the elephant. Everyone describes their part of the elephant, but there are very few who can see the whole elephant! So the whitepaper is an attempt to describe the "whole elephant" of the STB landscape and to understand how and where various uses of STB data can and will be made available. It's CIMM's point-of-view that the uses of STB data are too valuable and numerous for it to remain an undeveloped asset for the Multi-channel Video Programming Distributors (MVPD's) for long.

So, we hope you enjoy reading our Roadmap and we hope you learn something new, as CIMM members have.

Jane Clarke
Managing Director
Coalition for Innovative Media Measurement

Table of Contents

The State-of-the-Art of STB Data

Introduction

As a next step after the Lexicon, CIMM commissioned a study on the current state of STB data as it applies to understanding its strengths and weaknesses for a wide range of applications. Included in this analysis are feedback and insights from a range of constituents from data originators to data processors to software vendors to end users at advertising agencies and content providers as well as other interested parties such as media industry organizations.

The whitepaper – which summarizes and analyzes the results of the study - is arguably the only complete, holistic appraisal of the STB landscape available today. We have strived to reach out to all sectors of the industry – all those who touch and are touched by the data. The level of cooperation and the comfort that executives from across the spectrum had with the process is a testament to CIMM's position in the industry as an unbiased coalition of the end users of media data.

In addition to an industry overview, a goal of the project is to prioritize an industry road map for the development STB data for a variety of uses such as use by the MVPDs (Multi-Channel Video Program Distributors) for marketing and carriage negotiations, granular analyses of programming and advertising, enabling various forms of segmented or addressable advertising or spending on television promotions, matching with outside databases to enable media buying ROI analyses and development of an audit-ready local or national measurement product, all while operating in a construct that does not violate consumer privacy laws. This whitepaper offers insights into the advantages and challenges of the data with suggestions for a workable STB measurement model to which media companies – from programmers to marketers to agencies - may support and subscribe.

It should be noted that the term "STB data" is arguably a misnomer because clickstream data originates from several sources beyond the box. However we chose to use the more vernacular term "STB data" through-out this whitepaper, rather than the more accurate term "return path data" to describe all clickstream data collected in the environment.

Methodology and Background

As with the STB Lexicon, CIMM received great support and wide participation in the researching of this whitepaper. We cast a wide and deep net for feedback, assuring participants that their responses would be aggregated and anonymized. This enabled us to get honest, insightful and detailed responses.

Our interviewees are culled from all aspects of the industry as it relates to STB data. We mined responses within each industry category by sampling across various job responsibilities such as interviewing buyers, planners, strategists and researchers within agencies and researchers, new business developers and technology experts within data processors and software vendors.

In explaining the different roles of companies currently operating in the STB space, one software vendor aptly compares the STB landscape to the oil industry where the oil itself is in the land of the data originators, the drillers are the data extractors, aggregators and cleansers, the refiners are the data processors and packagers and the customers - networks and agencies – are the consumers.

We interviewed 58 separate companies with 85 policy and decision makers in the following industry categories. Each category had a slightly different sample list of targeted questions. (Please see appendix for the five questionnaires):

STB Industry Categories

- *Data Originators (MVPDs)* - spanning cable MSOs, Telcos and Satcos.
- *Data Processors* – representing major companies that process STB data.
- *Software Vendors* – companies that provide an aspect of STB or other data delivery or analysis whether for stewardship, sales, posting, addressable advertising or programmer scheduling optimization, for example.
- *Networks, Programmers, Content Providers* – spanning broadcast, owned and operated, cable and niche audience networks both large and small, station groups as well as broadcast and cable industry organizations.
- *Agencies and Advertisers* - including Buyers, Planners, Strategists and Researchers and advertiser industry organizations.
- *Hardware manufacturers and research policy accreditation organizations* and others. These companies are folded into the other categories depending on their primary business purpose or constituency.

Interviews by Industry Category

The number of companies and interviewees by category is shown below. Industry associations are counted in the category they represent.

	Companies	*Interviewees*
MVPDs	10	14
Data Processors	11	17
Software Vendors	11	16
Networks, Programmers	12	15
Agencies, Advertisers	14	23
	58	*85*

Executive Summary

Needless to say, there is a wide range of responses to questions regarding the importance of STB data, the strengths and challenges of the data, the priorities of data roll-out and the roles of certain companies and organizations working with the data. Yet there is no constituency who rejected the data outright. On one extreme, boosters of the data describe it as a Holy Grail. On the other end of the spectrum, the negative comments tend to be based on the usability of the data in its current form. There are also significant conflicting recommendations for data improvement and use, depending on the role of the company in the STB data process. What we have tried to do is to differentiate the important general themes from the outliers and to report all in context.

In the early interviews, many of our interviewees expressed frustration on the seeming lack of progress in data implementation. But as interviews progressed, it became clear that each company behaves like the proverbial blind man, each describing their own part of the elephant. There is no one company or source of information that provides the full overview of the STB data industry as it is and as it progresses so there is a certain amount of disinformation in some areas and conflicting agendas and business models in others.

In the overall, there has been significant progress in some of the most important aspects of the data including the recent announcement of coalition of MVPDs, sponsored by NCC Media (provider of stewardship and support for combining and selling local ad inventory to national advertisers), working with the Media Rating Council (MRC) to set standards. This coalition consists of all the major MVPDs from cable MSOs to Satcos to Telcos and looks to be a significant step towards the eventual roll-out of STB data as a potential measurement tool. The coalition is charged with developing a foundational data standard for STB measurement, which includes common terms and edit rules. But at this point, it's not slated to address sampling project-ability. What is clear is that any use of STB data will have to be conducted in a manner that is appropriately respectful of reasonable consumer privacy interests consistent with privacy laws.

Other progress has taken many forms. While there are companies that are following the currency route with some success (especially with local measurement and measurement of the long tail networks), there are others that are building businesses matching STB data to custom databases to help measure consumer purchasing, affinities and ROI, for example. In fact, the STB industry abounds in activity and creative innovation. What it may lack at this time is a cogent direction and an agreed upon framework and end-use purpose from the industry at large.

The value of STB data measurement from the consumers' perspective cannot be under-estimated. STB data promises to democratize audience measurement, allowing niche audiences, highly targeted and ethnic content providers and special interest consumer groups much better representation. The granularity and the larger sampling afforded by STB data will enable marketers to better understand the needs of these types of consumers and their viewing preferences.

The STB landscape is a study in contrasts, depending upon the specific company's business model. Reactions and opinions of STB data ran the gamut from enthusiastic to negative. Some felt powerless to move the metrics forward, citing other companies as the motivators and game changers. Others plunged into the analysis in the early stages to help guide the process. Across company types and even within the same part of the industry (such as between the data processors) what might be a challenge or an advantage of the data to one company can be a non-issue to another. Examples –second-by-second granularity, local measurement, lack of demographics, need for a nationalized sample or the need to compare STB data to the current currency. So priorities vary, sometimes causing delays in data implementation and roll-out and perhaps giving the appearance of stagnation.

In addition, much of the back office work of data cleansing and processing is being conducted over a wide range of highly technical, varied, entrepreneurial companies which operate quietly, efficiently and are often not widely understood. It is difficult to get a full picture of the competitive environment in this area of the business because each of these companies (which range from small to multi-national) has expertly developed its own unique sales position making direct comparison to each other difficult. Some of these companies are also involved in a wide range of products and services that not only influence vastly different areas of the industry but also create competitive spider maps, depending on the product or service. In this scenario, a company can become a "frenemy" of another – a competitor for one product and a customer or partner for another.

There is a pressing concern among many companies that time is of the essence when it comes to implementing STB measurement. Technological changes on the horizon such as measurement apps or new boxes by companies such as Google (who is creating a platform to deliver web content to Android-based set-top boxes and TVs) could soon make the current STBs and the data they provide, obsolete and irrelevant. But there is also some guarded optimism that some of these technological advances could help address some of the data's current shortcomings. An example is the specter of an app that could make a smartphone a TV remote and thus better capture append-able tuning information on the actual user versus the STB.

There are risky unknowns associated with quickly pressing forward towards a STB data "currency". What if the STB tuning performance is significantly different (lower) than the

current currency? Few of the major players want to disrupt the current business model, unless it guarantees to increase revenue. At the same time, how does privacy impact the roll-out of the data? Are data processors willing to indemnify Data Originators in any breech of privacy that results in a consumer lawsuit? And what if one of the MVPDs decides to withhold their data stream from the market? How do we handle these types of potential data gaps? These are important concerns coming from vastly different sides of the business and are currently impeding the full roll-out and accessibility of STB data.

An overall comparison across the five industry categories yielded a range of attitudes:

Ranges of Attitudes Regarding STB Data

♦ *Data Processors and Software Vendors* are generally optimistic and active in their analysis and selling of the data, despite the relatively restricted form and amount of data - largely due to privacy laws and concerns - they can each individually amass. Indeed, they are the ones who are creating a viable business in processing, marketing and selling the data. Recent progress has been made in the field of advanced advertising loosely based on a direct marketing model using iTV.

♦ *Trade Organizations* that represent advertisers, broadcasters, cablers and local station groups are, as a rule, fairly enthusiastic about STB data despite differences in priorities, approaches and next steps. Some describe it as the Holy Grail. There is a great need on the local level for larger samples, a more standardized measurement across markets and more granular data.

♦ *Data Originators (MVPD – Multi-Channel Video Program Distributors)* are generally taking a careful and slow approach, citing privacy as one reason for caution. Their business model is currently based on subscriptions, and they don't want to risk that revenue until privacy concerns are alleviated. They also need to see clear and significant revenue forecasts can be attached to the use of data for measurement products or for segmented advertising. However there is a slow but palpable realization developing that this data can be used internally to ascertain customer satisfaction and in carriage negotiations. Since these uses impact revenue, there is growing enthusiasm about the value of the data. There are some "early adopter" MVPDs who are more actively harvesting their data and creating growing revenue streams for both their subscriber and ad sales business models.

♦ *Agencies* are generally taking a wait and see approach but there are some outliers. Agencies can be broken down into three groups: Early, Middle and Late Adopters. Early adopters are heavily and enthusiastically involved in STB data analysis and implementation. They see a range of uses for the data for their clients such as targeting

optimization and measurement of ROI and reducing waste through addressable advertising and want to be involved in the development phase of the data. Middle and late adopters either temporarily reject its usage or are leaving the analysis and implementation to other companies. They cite the inability to get enough data to analyze, lack of a representative sample, lack of internal resources for this research and the need to attend to clients as their reasons for low involvement at this time. One agency said that STB data will never become the currency if it is only "Nielsen on steroids". STB data must offer a more holistic business view to help prove its value to advance the business and justify the added cost.

♦ *Networks and Programmers* on the whole tend to be the most pessimistic about the implementation of STB data for measurement. Some network researchers have expressed their impatience for a roll-out that has been promised but not yet delivered. Others say that they do not need the granularity of STB data at this time not only because of inherent data issues such as project-ability but also because they have no long tail networks that would benefit from such measurement. In fact some smaller networks who initially sought to use STB data to sell and post have since shifted to Nielsen citing marketplace demand for it. In addition, niche networks for certain minority audiences have viewership that is predominantly OTA or located in more downscale zipcodes and is therefore not fully captured via the digital STB.

What is the inherent value of the data as a measurement tool? Should the data be used for analytics (internal strategies) or sales (external monetization)? The intended and suggested uses of STB data tended to fall within these general areas:

Uses of STB Data

1. Local measurement especially in the smaller diary markets and in those markets whose compositions are fairly representative already.
2. Measurement for long tail networks currently not rated by Nielsen.
3. Use of database matching to segment consumers by geography or other criteria, particularly for hard-to-reach or niche audiences.
4. Addressable advertising and monitoring of specific campaigns.
5. Within-network strategizing for promo placement and audience flow optimization.
6. Use by cable operators for signal quality, marketing, measuring customer satisfaction and in carriage negotiations.

Despite the ranges of responses by company and by category, there is a general consensus of the issues and needs that STB must address to gain credence as a potential measurement – whether for internal or external use. Here is a list that is more or less in order of priority:

STB Data Issues and Needs

1. Privacy fail-safes that comply with government rules, are reasonably respectful of consumer privacy interests and that indemnify data originators.
2. A common language. Standard terms and definitions and transparent editing rules that address issues like set on/set off and latency.
3. Audited metrics, algorithms, edit rules by objective third party such as the MRC (such as a foundational data standard).
4. Project-able, representative samples for local markets as well as nationally. Because of the different business imperatives of local verses national, there is a need to develop both of these types of samples independently but concurrently.
5. As-run ad occurrence data. The addition of as-run logs (instead of as-scheduled logs) to better match commercial occurrence and programs.
6. Easier, cheaper and standardized append-ability of outside datasets for a range of uses such as addressable advertising ROI.
7. Ability to feed into standard agency systems like Donovan, Mediabank and MSA.
8. Addition of demographics in some form whether via a hybrid approach or through modeling.
9. A way to model the sample for missing elements such as unmeasured sets and co-viewing.
10. The addition of the other promises of STB data such as DVR usage and out of home.
11. Cross platform measurement.

Within some areas, the feedback we received was striking in the range and differences of opinion. Examples:

Ranges of Opinions on STB Data

- Some companies are currently using STB data for posting and do not consider Nielsen a necessary comparison standard while others will not consider using STB data unless it is comparable to Nielsen.
- Some companies are not concerned by the lack of demographics in the data while others say that it is a deal breaker for any standardized roll-out.
- Some companies are bullish on the use of the data to measure local markets, especially current diary markets, while others say that there are more privacy concerns on the local level with not much revenue upside. In addition, some of the locally focused companies see many more challenges in the data for local measurement because of the different ways that ads are served on a local level, the difficulty of ascertaining as-run logs for the ad inventory locally and, in some markets, the relatively large percentage of over-the-air households. (Example: 22% in Milwaukee, a Top 50 market)

- Some companies will not accept use of the data unless full vetting and accreditation takes place while others are less concerned with "perfection", understanding that no measurement system is perfect, and are willing to use the data as is for the unique insights it offers.
- Some companies see a value in the STB data for measurement of the long tail and niche networks. But many of these types of networks have since abandoned STB data measurement for sales purposes because of pushback by advertisers.
- Some companies think that development of a currency from STB data is too far off and too big a project to attempt in the early stages of data development. They prefer to develop ancillary value-added measurements such as addressable advertising in sales and customer retention in MVPDs as first steps. Other companies see a standard currency in some form as an important initial component of a STB data business model.

In fact, the very basis of the raw data is far more complicated than initially thought. Data is collected in various parts of the MVPD pipeline – from the box itself, from various middleware, from various devices associated with the television and even from the cloud. Software Vendors in this space are challenged to collect, cleanse and harmonize all these disparate streams of available data.

The cacophony of voices, the differing priorities and the varying business agendas are not insurmountable barriers to STB roll-out and measurement. But the fear of some is that since the promise of STB data lags the reality, there will be diminishing patience for implementing STB data as a currency or even a secondary promise. Unless the industry can come together and agree upon such basics as standard editing rules and methodologies, STB data measurement will continue to be a wish rather than a reality and the opportunity to improve the measurement of television media using STB data will pass the industry by as technological advances continue to morph the data chain.

Who is in charge? Which type of company has the upper hand to effect change and movement? It depends on who you ask. One might think that Agencies hold the power since they are the buyers of ad time but the Agencies say that the Networks hold the real power because Agencies compete with each other and do not behave as a cohesive block. But the Networks are also competing amongst themselves and do not behave as a cohesive group. Software Vendors who operate under the current currency as agency planning and selling software providers are waiting for the agencies to give the go ahead. Some MVPDs cite the Programmers (Networks) as the fulcrum of change but Networks, Processors and Software Vendors are at a standstill should the Data Originators choke the data pipe.

Is it possible to construct a road map for STB data that will satisfy all constituencies? Anything is possible. To a one, all interviewees state that challenges of the data are fixable, although some indicate that some fixes would be expensive and difficult. There would have to be an element of cooperation and trust across constituencies who might otherwise compete with each other. As a result of all of the feedback, CIMM recommends these steps towards the standardization of STB data for industry use:

Suggested Next Steps for STB Data Roll Out

1. Educate the industry on all aspects of STB data, warts and all, and create greater transparency and dialogue between all interested parties via non-partisan organizations such as CIMM.
2. Develop broad industry consensus and support for use of STB data consistent with privacy law and respectful of privacy interests while also permitting appropriate and reasonable use of data.
3. For the MVPDs, define foundational data sets as part of the consortium of the MRC and NCC. This data will be a starting point to facilitate data harmonization across the MVPDs by the Data Processors.
4. CIMM, possibly working with the MRC, NCC Media and/or Canoe could develop guidelines for construction of representative samples on both a local and national level. Currently the MRC coalition is charged with forming terms and edit rules but not constructing representative samples.
5. CableLabs' SMI (STB Measurement Interface) is a specification for a technical measurement format for STB data for the cable systems. This technical format is currently under review and will help the MSOs meet the foundational standards being created by the MRC. It could potentially be adopted by the Telcos and Satcos.
6. Working with industry organizations specializing in sampling construction, begin to establish project-able and representative local samples and then eventually, a nationally representative sample.
7. Receive accreditation of the agreed upon terms, edit rules and samples by a recognized accreditation organization like the MRC.
8. MVPDs must guarantee in principle to provide data without gaps or lapses in agreed upon delivery cycles.
9. Find a solution for demographics consistent with privacy law restraints either by modeling algorithms, matching to specific datasets or partnering with people metering research companies or finding a technical or device solution.
10. Work with sales service software vendors such as Donovan and MediaBank to expedite the inclusion of STB data within their systems.

What we have found is that there are some companies in today's media landscape who are change-adverse while others run towards it. Considering the struggles of music and print, it makes sense for television industry policy makers to fully explore STB data's potential for enriching the media business model by creating value for clients and data owners.

As indicated above, the industry roadmap should begin with data standardization of terms, definitions and edit rules followed by creating sample project-ability at the local level and then national. Part of this process must include solving over-the-air and non-digital set representation in the measurement as well as solutions to demographics by agreed upon modeling. Throughout this process it is important to maintain transparency and open lines of communication between companies who might otherwise compete.

CIMM therefore recommends that STB data be developed for these main purposes:

1. **As a method of local measurement** – to provide much needed improvement to the current system. There is great support for the development of STB on the local level because of its ability to provide larger sample sizes with greater granularity. While a representative sample is desirable, it is not a deal breaker for these end users at this time. STB data, even with all of its challenges, is considered a vast improvement over the imperfect local measurement currently in place. Because of this, local measurement should have a fairly short timeline for implementation and adoption, perhaps within the next year.

2. **As a granular analytics tool -** whether for MVPDs for marketing diagnostics, for Advertisers in creative testing or for Networks in pod placement optimization. As with local measurement, there is no pressing need for a representative sample and the timeline to implement STB data for this use is short because the data for analytic purposes is available now. An added benefit is that this type of analysis might also help MVPDs valuate the data for revenue purposes.

3. **As a ROI analytic and advanced advertising tool – through database matching**. This offers a range of external secondary uses of the data beyond the scope of a "currency". Appending custom and industry standard databases to STB data for segmentation purposes do not require a representative sample and will enable Advertisers to transform television into a direct marketing tool with revenue producing capabilities.

4. **As an eventual national measurement currency**. There is a recognized need to improve the current national measurement which is hampered by sample churn, respondent fatigue, high non-cooperation rates, under-representation of certain viewer segments and assorted technical challenges. However there is not enough STB data available at

this time to create a national representative sample which is a requirement for stakeholders. It is CIMM's opinion that the advancement of STB data for national measurement has a lower priority in the short term. Judging from the industry feedback, it will take at least three years for STB data to be properly positioned as an auditable national media currency.

Because of its non-partisan reputation in the industry, it is recommended that CIMM take a leadership position in the development of STB uses as set above. CIMM is best suited to foment cooperation between all of the disparate and competing businesses in the space. Since development of a local currency using STB data is already advancing in the marketplace, and since the development of a national currency is still a few years away, CIMM would like to initially focus its efforts on the other uses of STB data, primarily as a measurement tool for addressable advertising and database marketing initiatives. While CIMM is currently pursuing projects in this area, they will continue to support initiatives that could lead to the development of a national currency, even with the realization that any national product roll-out is years away. It is thought that it will better serve the cause of STB data measurement to develop some of these other types of uses first.

The STB Data Landscape – Industry Feedback

This whitepaper strives to cover a large landscape of differing opinion across all company types and media business models as it applies to STB data. An overview of data strengths and challenges is then followed by a detailed account of each company category. The different category questionnaires are located in the appendix.

Strengths and Challenges of STB Data

Set Top Box data was initially viewed as a panacea to some of the challenges of the current media measurement. STB data, for example, is available on a second by second basis and could therefore be used to pinpoint actual commercial performance. But despite the stated advantages (which are not always uniformly shared across companies and categories), there are challenges associated with the data that currently prevent it from being implemented on an industry-wide scale as a currency. Some of these challenges require fuller cooperation and action on the part of data originators, data processors and data end users to be overcome. Other challenges are a matter of hardware and will take time, focus and engineering to ameliorate. Moreover, any consensus approach must be consistent with consumer privacy rights.

There is certain general agreement that the current media currency, while excellent in its own right, needs to do much more to meet all the challenges of measuring the ever evolving media landscape. Fragmentation, cross platform, addressable advertising, interactivity, VOD, DVR use and an ever increasing need for accountability and ROI on the part of buyers require new tools and expanding, synchronistic data sources.

In the end, we see that there is no perfect measurement standard today. Nielsen is to be given credit for creating and maintaining an excellent sample. But the current sample size used to measure today's national and local media in this fragmented, interactive, addressable and cross-platformed media environment is simply not large enough. And in the case of local measurement, the continued use of diaries is seen as an ongoing deficiency. Many respondents said that the current panel measurement faces cooperation rates and viewer fatigue. It is also expensive to maintain and expand the sample.

STB data does not have the challenges of viewer fatigue and non-response. Because it is passive it easily, efficiently and affordably captures tuning. But STB data faces other challenges such as inconsistent editing rules across processors, technological issues such as latency times that vary by box, data gaps and, for some but not all interviewees, the lack of viewer demographics. And no matter what, STB data can never be census level, even though it can evolve into a large, nationalized and project-able sample.

Summarized advantages and challenges of STB data across all interviews and research sources are outlined below. It should be said that these points do not always enjoy full consensus. Often a cited strength for one company was not a compelling factor for another. These will be noted as such.

Overview of Strengths and Advantages

The cited strengths and advantages of STB data include:

♦ **Data Granularity**
This enables buyers and sellers the ability to better pinpoint the actual commercial and its performance. It is then possible to measure the effectiveness of the ad, pod position and pod formation. Granularity of the data is considered a plus for STB data but second by second granularity may not be necessary for some companies.

Note: We were told that different STB boxes deliver data in different levels of granularity. Some can produce second by second data while others offer 5 second by 5 second.

♦ **Larger Sample / Footprints That Approach Nationalize-able Census Level Data**
STB data measurement footprints are expanding as more MVPDs offer more data. Satellite companies are recent additions to some processors along with Telco data and these STB data streams are being merged with some MSO data. The national footprint is slowly expanding and deepening.

While the larger sample size was often cited as an advantage, almost all companies found that the varying footprints (with their inherent skews) were a current drawback. Few companies expect a census but almost every company desires a project-able nationalized sample as a basis for a standard national measurement system.

♦ **Improvement of Local Measurement**
Most companies agree that STB data can greatly benefit local measurement, offering larger samples, more measured local viewing options, greater data delivery frequency and more granular data on the local level than is currently available. But local measurement using STB data is not viewed as a panacea to some companies because of the lack of measurement for over-the-air and non-digital sets. Many companies expressed the need for project-able samples on the local level by market as an important component for a STB-based currency.

♦ **No Minimum Sample**
Some companies said that the larger footprints mean that there are no minimum sample requirements.

♦ **Measurement of Long Tail and Unmeasured By Nielsen Networks**
Because of the larger samples, there is the ability to measure the smaller, long tail networks that are currently not measured by Nielsen. For some companies, long tail measurement was the raison d'etre for STB data while larger networks stated that they are currently well served by Nielsen. Even so, some long tail networks have since migrated to Nielsen measurement and away from STB data ad sales measurement citing industry pressure in the sales marketplace.

♦ **More Stable Measurement of Niche Consumer Groups**
Small sub-groups of desirable consumer groups (such as extremely upscale households) are more easily segmented via STB data that is matched to consumer databases. Sample sizes are larger than via the current currency.

♦ **Larger Local Market Sub-Samples**
Larger samples also enable more stable measurement in all local markets, by zip code, zip +4 or even more granular levels for all available tuning options.

♦ **Ability to Measure Out-of-Home**
Boxes no matter where they are located – offices, second homes, vacation condos, hotels, bars, dorms - produce tuning data that can be captured as part of the measurement. If the box is on, tuning can be captured.

♦ **Ability to Measure Trick Play and DVR Use**
Although not currently available by data processors, it is slated to be rolled out in the future. It is one of the most desirable features of STB data and could help valuate a range of VOD ad inventory.

♦ **Ability to Measure VOD**
Because of the larger sample size and granularity, content providers and advertisers can measure and monetize VOD.

♦ **Measurement Cost**
STB data measurement could be a more cost effective way of measuring media. It doesn't require the cost and labor intensive requirements of maintaining a panel or a metered sample with its churn, fatigue and cooperation challenges. However, the data owners may not make the data available at a reasonable cost.

♦ **Passive Tuning**
STB data reflects passive tuning where the viewer does not have to make any special effort to indicate participation or action. That means that there are no viewer fatigue, non-cooperation or non-response biases. This was uniformly cited as an advantage across all company types.

Note: There are challenges associated with STB data such as gaps that are described in the next section.

♦ **Cross Platform**
STB data offers the potential for single source cross platform measurement that also has a sufficient sample size.

♦ **Data Matching and Fusion**
STB data is merge-able with other databases to help ascertain ROI. This advantage has a caveat – some companies would like a faster, cheaper and easier way to merge these databases with the STB data.

♦ **Addressable Advertising**
STB data enables the ability to measure addressable advertising campaigns and other interactivity (with proper privacy controls) such as voting, polling, T-commerce and telescoping. This results in high target-ability for advertisers on a micro level. Some cited the potential of STB data to include Trick play, iTV, Mosaic, Internet ready TVs but the time line of these added datasets is still to be decided. STB measurement of addressable advertising increases the ability to split ads as a way to increase revenue and buy segmented audiences with less waste.

♦ **Commercials and Commercial Pod Measurement**
There is the ability to examine the performance of individual commercials and commercial pods in greater detail and analyze pod positioning effectiveness, although this requires second by second data, as-run logs and latency edit rules to perfect.

♦ **Click Stream Data**
Other data from the STB includes click stream data from the remote that helps to indicate that someone is actually in front of the television instead of leaving the room with the television set still on. It can also help determine when the TV set is turned off but the STB is left on.

Note: There are some challenges in matching the click stream data to tuning.

Overview of Challenges

Despite the advantages of the data, there are also vexing challenges. Here is a list of weaknesses and suggestions to overcome them:

♦ **Fear of the Unknown**
At least initially, we are unable to estimate STB data's impact on the current advertising business model. Shifting from an established currency that valuates a $2+ billion media industry is risky. What if network performances are lower using STB data? So STB data for some is viewed with caution as a primary currency. Many think the data is best used as a secondary currency, at least to start. Still others feel that, just as People Meters impacted the reported level of viewership for many networks when it was first introduced, the financials of the marketplace will accommodate any shift in performance levels by increasing the CPMs accordingly.

Short term solution: Some companies indicate that they have not had a chance to review the data. Perhaps some Data Processors can offer these companies complimentary test cuts of the data for experimentation and analysis.

Long term solution: The creation of standards, edit rules and metrics, ideally through a generally respected organization like the MRC and its newly established coalition, might offer a way to project performance that could be used to valuate the impact of the data as a primary or secondary currency against the current business model.

♦ **The Equipment**
STBs were not designed for data measurement and are therefore not standardized or best equipped to store, combine and extract detailed data streams. Because of this, there has been some hesitancy on the part of the MVPDs to extract too much data too frequently lest the boxes crash. Customer service is more important than data extraction. Also, different boxes work differently to extract and store the data. There is no standard data output for processing.

The range of box types and their various ages within a MVPD footprint is another type of equipment challenge. Legacy boxes can be up to ten years old in some plants and are said to have less computing power than today's cellphones. These legacy STBs process like 10 year old computers, unable to manage some of today's sophisticated software.

Short term solution: Process the data that can currently be safely extracted from the box within an agreed-upon framework through industry standard processors and audited procedures.

Long term solution: From a hardware viewpoint, work with STB manufacturers to build robust set top boxes that serve this dual purpose – feeding content to subscribers while also retrieving and storing detailed tuning data from the box for measurement purposes. These boxes might also have standardized methods for collecting, extracting, storing and outputting the data but if not, different extraction software could be used to help standardize across different boxes. From a software viewpoint, adopt a standard middleware like True2way to streamline data capture. Future advancements in STB technology will greatly improve the capturing of data across platforms. The recently announced Google TV Box through partnerships with Sony, Intel and Logitech for example could facilitate the cross platform measurement capabilities of TV and internet.

♦ **Privacy Concerns**
Privacy concerns remain one of the challenges to the complete and detailed roll-out of STB data for many (but not all) companies in this space. The industry generally is committed to using STB data consistent with reasonable and appropriate privacy controls. However, for purposes of privacy and STB data, it may be appropriate to differentiate television privacy policy from internet privacy policy.

Short term solution: Testing the efficacy of de-identification for all datasets is an advisable precautionary exercise suggested by one company.

Long term solution: Ensuring that industry practices are consistent with Cable Act privacy restrictions is of utmost importance. In addition, working through privacy issues through dialogue with industry groups, government representatives and consumer advocacy groups may be warranted if significant privacy concerns persist. There is now significant Government focus on privacy issues, so some of these issues may be reconciled within the next couple of years. As to Cable Act restrictions, one MVPD suggested that there is language in the current cable act that allows for going to the household level and that is when there is a billable event where one needs data to help deliver services and content. But how this logic is applied to STB data measurement remains to be seen.

♦ **Terms, Definitions and Editing Rules**
Lack of standards, no consistent editing rules, very different and proprietary editing rules and algorithms by processor were all often cited challenges to the data. Measurement requires editing rules and there is currently one set of accepted editing rules that are used for the current currency. As STB data processors compete in the marketplace, they have independently created their own proprietary sets of editing rules and algorithms to address the unique attributes of the data such as latency, dwell time, SOSO and gaps. But this lack of consistency means that ratings vary by processor for the same program or time period in the same cut of data.

Short term solution: Ideally, the sharing and comparison of editing rules across STB Data Processors would help to establish these needed standards.

Long term solution: In lieu of that for competitive reasons, mediation and accreditation via an organization such as the MRC would also help to establish standards.

♦ **TV Set Off, STB On**
Many subscribers don't turn off their set top boxes when they turn off their television sets. The STB continues to record tuning even though there isn't any. This is one of the most mentioned challenges in the context of editing rules.

Short term solution: Currently, processors have their own editing rules and algorithms regarding SOSO which, if accredited by an organization such as the MRC could help solve this problem. However there is also click stream data from the remote that, once appended to the output of STB data, could be used to accurately gauge end of tuning time at the point that the television set is turned off. However this data is problematic – sometimes containing gaps and difficult to download from the box.

Long term solution: Improvement to the STB hardware and software can help in the collection and appending of the click stream data to help ascertain SOSO. In addition, the development of apps that turn cell phones into television remotes could be another solution to this measurement challenge.

♦ **Data from Processors is Not Nationalized or Representative**
As of today, the processed STB data that is being offered for sale to the marketplace is not considered to be ready to be used for currency level measurement by some companies. One reason is that the data is not project-able, either to a specific market or on a national level. The development of a representative sample – whether local or national – must include weighting for unconnected sets within the home, weighting for homes with no return path data, demographic weights to the projected universe and coverage weights for individual networks both locally and nationally.

Solution: Since different data cuts require different modeling weights, it is advisable to work with established statisticians and organizations such as the MRC who can help guide the process for each specific STB database. Feedback from interviewees suggest that this initiative should begin at the local level and among markets that have certain footprint characteristics that can be used to help project under-represented groups in the digital STB landscape or that would receive an immediate benefit from STB data because they are currently measured by diaries.

♦ **No Single Company is the Source of All the Data for Industry Use**
No one company is in charge of producing STB data and no one sector of the industry has the authority to move the data forward for development as a currency. Unlike the current currency which is controlled by one corporation, STB data originates from many sources with portions owned by many different MVPDs. This makes the coordination and national roll out of the data difficult. The result is that different processors have different cuts of data with little overlap. No one company has the ability to offer all data on a fully national basis. Different footprints, universes, census and market samples result in different ratings for the same program, time period and content source by processor.

This challenge is arguably one of the major deal breakers in making STB data a viable national media currency. Can we get a national project-able sample from the current or future cuts of data? Is the industry prepared to support more than one audience measurement company? Can we be assured that all MVPDs will agree to provide data on a continuous basis with no delivery gaps?

Solution: Some industry consortiums and companies such as the NCC, MRC, CableLabs and Canoe can help address some of these concerns. Canoe represents many MSOs and a large swath of the data footprint of the U.S and ideally it will also reach out to include Satcos and Telcos. The MRC coalition has participation from all types of MVPDs. In addition to these efforts, there also needs to be further discussion through consortiums such as CIMM or CTAM to help bridge other differences. Perhaps as other issues regarding the data are solved, such as privacy and the robustness of the STBs, this issue will slowly resolve.

♦ **No Single Source of Data in MVPD Hardware Technically**
The STB is only one area where the data is generated. There exists a continuum of locations from points in the central server, to other intermediate point servers, to the last edge device like a remote. The data exists 1.) On the STB itself in the form of real time linear streams, 2.) Start Over – A linear stream that is not delivered by the linear processor in a collection stream but by a server. This, along with switch digital is a multiple streaming technique where the data is obtained by the STB but is retrieved through a resource manager server in the head-end (which is a different server).
3.) On-Demand content (not including Start Over) which is all VOD and network DVR. 4.) Local storage instances with the DVR which include individual and multi DVR from one master to multiple DVRs where the servers are in the home. Here the data is collected at the home and pushed upstream. 5.) Applications that substitute for channel layout such as competing virtual channels on separate channels or overlays that air simultaneously on one channel. The data is located in yet another server. 6.) Finally there is data across

all other sources which are a complex matrix of Start / Stop / Dwell / Trick / Pod / Fast Forward / Rewind as well as context data whether full screen or a banner or parental controls, for example. And all this data has its own cleansing challenges.

Solution: Current data processors that directly interface at the operator level are grappling with these issues and are presently finding solutions. In the future, it is possible that cloud based solutions will be able to provide a workable interface for the myriad of data streams from the media environment.

♦ **No Demographics**
Unlike the current currency, STB data only offers household level and box usage. Networks tended to cite this as a disadvantage. Other companies including some agencies do not see this as a disadvantage or a hindrance to a STB data measurement roll-out because the data can be matched to certain purchases at the household level and against segmented consumer purchasing segments.

Solution: This will vary by company and maybe solved with future technology, provided appropriate privacy controls are employed. More processors are merging the STB data with other databases that offer not only demographics but also purchasing behavior. This data should be appropriately de-identified. Another solution is the creation of an opt-in panel for demographics. But there is no general agreement as to whether an opt-in approach is the best way to gain a representative sample for demographics. Still another solution could be in a hybrid approach, partnering with a company that has people meter data.

♦ **No Way to "Post"**
STB data firms are not currently set up to transmit their data to the agencies for a post analysis of a media buy.

Short term solution: STB processor companies must begin to work with companies such as Donovan, MediaBank and MSA to create a media data transaction entry way and stewardship capability for STB data at the agencies.

♦ **Not a Complete Viewing Environment Such As OTA and Non-Digital Sets**
Only digital sets are measured. Those sets without set top boxes are not measured. This includes analog over-the-air non-digital sets and ancillary sets in out-lying rooms such as garages and some children's bedrooms. This is more of an issue locally where over-the-air can exceed 20% of an individual market.

Solution for a national sample: Currently pegged at about 8% of all sets nationally, over- the-air (OTA) sets are considered a "melting ice cube" by some companies because their numbers are diminishing every day. Ancillary sets in out lying rooms are often used for DVD and gaming. While these sets will not completely disappear and would be valuable additives to measurement, there are three opinions on the issue – the tuning on these sets can be extrapolated via an opt-in sample, develop in-home weights that can be modeled in some form or consider this tuning out of the realm of the core type of usage that the currency seeks to capture. All of these have been suggested by various respondents.

Solution for a local market sample: For those local markets where over-the-air and non-digital sets represent a significant percentage of the market, seek accredited modeling of available data by individual market, starting with a cross section of various market types. It was suggested that markets that are 100% cabled (such as San Diego) could be used to ascertain over-the-air viewing patterns for those homes in that market that only watch broadcast television.

♦ **Not a Complete Viewing Environment – Viewer Groups**
Populations that reside in areas of a DMA that are not heavily digital or who are less likely to subscribe to satellite are less likely to be represented in STB data. This includes Hispanics who tend to view in-language over-the-air or who reside in zip codes that are not yet wired by MVPDs for digital service to any great degree.

Solution: Just as over-the-air can be modeled from certain markets viewing patterns so too could Hispanic viewership be ascertained from markets where you must subscribe to cable to get any signal at all. It was said that Hispanic tuning in San Diego, for example, over-indexes because cable is the only way to get television in that market.

♦ **Not the Current Ad Market Business Model**
There is a dominant and entrenched media buying currency system that has been in place for over 50 years. This currency, with its methodologies and standard metrics, is the calibrator and valuator of the media sales industry. It exerts its control over the market not only through the ubiquitous use of its measurement metrics but also by enabling data access via proprietary and third party interface systems that are used industry-wide for network performance comparisons. Even though members of the agency and network community admit that there are problems with the current currency, they have built their decision-making business around it. It has been said that because media buyers are not researchers, they are not interested in knowing if the data is correct.

Solution: It behooves the industry to actively explore new measurement solutions for their changing marketplace – both within and independent of the current currency. Some interviewees have suggested that there is no reason to restrict the media buying industry to only one standard currency because just like purchasing a car, there may be different decision triggers (size, mpg, safety etc) that resonate depending upon specific needs and wants. Open discussions and partnerships between data users across the industry spectrum could encourage evolutionary progress.

♦ **Not the Current MVPD Business Model**
STB data is not currently part of the business model for MVPDs and therefore is given a low business priority. Currently the business model is focused on such things as customer satisfaction, tiering, churn and network / content offerings. This often accounts for over 90% of the company's revenue. Revenue from the data is miniscule by comparison. This means that improving the data extraction technology behind the boxes and pulling data from them at the risk of box default are not high priorities. It also involves shifting engineering priorities from projects where revenue potentials are clearly understood and realized such as HD offerings. Data extraction also requires bandwidth that might otherwise be used to expand channel offering to subscribers. So although the industry is moving to an ad sales model, it is not there yet.

Solution: There are more MVPDs that are realizing the value of the data as evidenced by the Canoe and MRC initiatives. And since there are more uses for the data internally at these companies for customer satisfaction analysis and carriage negotiations, the issue of STB data monetary value does not appear to be quite as instrumental as previously thought. Internally at one operator, STB data is described as a bathroom; It is not a revenue producing portion of the business but you still need to have it and maintain its quality.

♦ **Data Valuation for MSOs, Telcos, Satcos and Other Sources of STB Data**
How do we price the data at its origination source? What is the STB data worth? Are some footprints worth more than others? These questions pose a unique challenge for a STB based currency since the owners of the data are not the ones who would process it and prepare it for measurement. And since the field is still in its infancy, it is unclear as to what the data is worth to end user customers.

Solution: The solution rests with the MVPDs. If they can initially offer access to the data at a low price entry point for Processors, pricing can be ascertained based on the resulting demand and pricing growth can be adjusted accordingly.

Detailed Feedback from Industry by Company Category

Feedback was garnered from industry leaders in the following areas – advertising agencies (including researchers, planners, strategists and buyers), programmers / networks (from large broadcasters to small cablers and from local broadcast, stations and cable groups), data owners / originators (from MSOs, Telcos and Satcos), data processors, software providers and industry organizations – to ascertain their views on the current state of the data, including what would need to be done to make the data usable both in the short term and in the long term as well as advantages and challenges of the data. Are there challenges that cannot be overcome? What should we, the industry, be doing differently?
(Please see appendix for sample questionnaires from each constituency)

Comparison across Categories

Many interviewees agreed that one of the first jobs to tackle for STB is local measurement, followed by the measurement of the long tail networks. However, the national approach being taken by Canoe is a notable exception to this local imperative. STB data affords larger sample sizes that offer stability and needed granularity to measure the small sub-sets of the television landscape.

As a group, Networks and Programmers tended to be more pessimistic about the future of STB data and its ability to overcome its perceived shortcomings to become a currency. Demographics, nationalization of the sample, lack of common standards and the data's performance vis a vis the current currency were often cited as data issues.
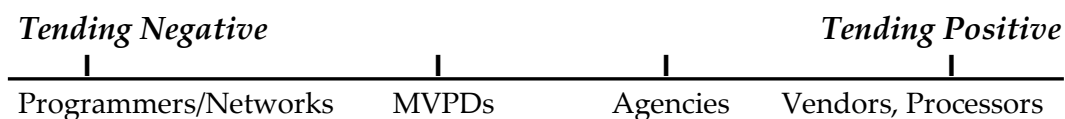
This contrasted sharply with some early adopter Agencies who did not see the lack of demographics as a problem or the need to be comparable to Nielsen as a drawback. And yet Agencies as a group had wide ranges of opinion regarding STB shortcomings. "The promise of the (STB) data is still there but the reality is disappointing" said one agency researcher.

There were some interesting differences in the requirements of STB data from Agencies to Networks. Some agency researchers did not see the need for STB data results to replicate or match to the current currency while most network researchers sought some form of replication and comparison.

MVPDs face their own unique set of challenges concerning the data including privacy, hardware vulnerability and question of resource allotment when there is the inability to valuate the data at this time. Data Processors and Software Vendors, on the other hand, have the most to gain from STB data as a measurement tool and are therefore the most optimistic about its potential.

Overall Attitudes on STB Data in Regard to Creating a Currency

Tending Negative   *Tending Positive*

Programmers/Networks   MVPDs   Agencies   Vendors, Processors

Advertising Agencies

We interviewed a range of agency executives – from research, planning, strategy and buying – and found that agency involvement in STB data ran the spectrum of acceptance and use. Some agencies are already deeply involved in vetting STB data and are interested in being involved in the early stages of its measurement. These early adopters are advocates of the data as a form of currency that might run parallel to or eventually replace the current currency. Some "middle-adopter" agencies are just starting to examine the data and have not yet formed an opinion of STB data use and metrics. Still other agencies, the "later-adopters" are relatively uninvolved in the data at this time for a variety of reasons, preferring to rely on the current measurement standards. Yet all agencies professed interest in learning more about the data.

Clients may influence the degree to which their agencies are involved in STB data. Those agencies with experimental or more forward thinking clients are much more involved in STB data usage while those agencies with traditionally minded clients are not. As one agency researcher said, "It depends on what type of clients you have at your agency as to whether you can use this (STB data) to buy and sell. Some ask for online video and others ask why they are even buying cable – it is a full range."

All of our Research department interviewees said that they have some-to-great influence on metric policy-making within their agency. So addressing the concerns and highlighting the advantages of the data to the agencies' researchers can help to encourage that agency to use STB data as some form of metric in the buying process, whether as an adjunct measurement or as a form of primary or secondary currency.

Despite the level of STB data involvement, Agencies generally expressed the need for STB data to have a representative sample, standard editing terms / rules and deliverability via such systems as Donovan or MediaBank. But some said that because the business models are different for the agencies, there is a basic disconnect between what agencies and the programmers want from STB data.

Some said that agencies are not concerned about the range of differences in ratings levels (whether higher or lower) generated by the use of STB data but that they are concerned about improving the quality of the ratings. "Agencies get paid no matter what the ratings report while local media will seek the highest accredit-able ratings possible so as to generate more money. Stations are not interested in measurement accuracy but rather in generating the highest acceptable ratings for the lowest cost." Further, it is thought that if ratings garnered from the STB are lower than those reported by the current currency, the savings realized from dropping the current currency could be used to offset the possible decline in ad inventory value.

Early Adopter Agencies

Early adopter agencies have research departments that are highly involved in the planning, buying and overall research policy making. "Research across the whole company has a significant impact on new sales currencies" said one agency researcher. These agencies were more likely to agree to use STB data in current upfront negotiations as well as in experimental uses such as data matching, addressability and in posting. In fact these types of agencies have already agreed to post on STB data for some long tail networks that are not currently measured by the current currency.

When asked about their optimal media currency, these agencies listed the following attributes - high quality, job changing measurement that has statistical reliability, the ability for 360 degree measurement, granularity, flexibility, commercial ratings, the ability for measuring addressable advertising and more granularity for assessing commercial performance and ROI.

While other types of agencies and other types of companies in the industry cited the lack of demographics as a challenge to current STB data output, lack of demographics was not considered an issue for these agencies, even within addressable advertising. "Household targets approximate reaching the actual person. We do 'sensible matching' to a channel lineup which will then approximate demo matching. We can approximate samples that measure more reliably" said one agency researcher.

STB data need not be compared to the current currency for this group, although any differences in performance between the data and (the current currency) must be explained. Comments on the subject include:

"I am not sure that (the current currency) is high quality but they do a good job of getting information from panel-based system. I like passive measurement that we get from STB data"

"We have done deals using STB data for those networks not currently measured by (the current currency). It is transparent and we use the second by second data"

"(STB data company) doesn't have to match the current currency. (The current currency is) not perfect truth. We compare but we will not bastardize the end product to match the existing numbers"

"If the STB ratings are different from (the current currency) I would want to know why. Are there more men in the STB footprint? But calculation of rating is not identical. What is the business need of the current currency? Is it commercial rating? Live+1? Live+3? I need to know full viewing. It is okay to use the (STB) data now knowing that it is imperfect. We will work with vendors to get new usability. We want to be in the developing mode rather than after it's developed."

When asked what they needed from the current currency that they are not getting now, these early adopter agencies said they required more data base matching capabilities. Currently it is too cumbersome, time consuming and expensive to data match. They would like to see more automation in this area as well as a termination of the diary methodology for local measurement. "The diaries are awful."

One of the primary needs from STB data in the short term is a connection with log files and commercial logs. This is needed immediately. Following that, the data also has to flow into all buying systems (Strata, Donovan, Mediabank) with an eye towards auctioning inventory which offers speed, granularity, reliability, automation, flexibility and transparency. There is also a need for a more representative mix of STB data and links to ads as well as agreed upon methodology and standards, a good interface, more and easier data base matching. And the data matching has to be timely – if there is buying intent a month ago, is the product already purchased by the time the addressable ad is fed to that home?

Some agencies suggested that standards be proposed by STB companies and they should all meet come to an agreement. "We need to agree on the basics, edit rules. I don't mind lots of players but they need to agree on edit rules. We want a mega panel with weights to make it more representative. Include out of home and other devices by partnering with other data." A show of support by the industry is also important – "The data must be supported and invested in by the television industry."

Household addressability is needed in long term. "(Data Processor company) has good local data and heat maps which are new but does not cross dayparts and networks. Need full household level addressability at scale across the US." These agencies said that they want to plan, buy and execute, if not at the household level then at least at the zip code level. They want to buy what they want, when they want to buy it in real time.

These agencies stated that there is a need for scale from STB data, especially locally, as well as data methodology standards. They stressed that local measurement is especially important and urged STB data companies to find the solution to placing viewing and content in same system with the ability to dig to the household level. Then viewing data must be defined in real time with a combination of standardized reports and customized applications in the same system. Pressure will be made to bear on the STB Data Processors and others in the STB data space to be more transparent. These types of agencies need to understand what isn't working with the data - how much of the viewing behavior is real and how much is wrong and what are the measurement norms.

Bringing STB data up to an industry standard will require the following:

1. Understand how to project non STB usage among STB households
2. Project non return to return path capable boxes
3. Project non STB household's viewing
4. Offer broad geographic distribution with the proper representation of key groups (Cable, Non-cable, Satellite and Telco)
5. Find a privacy appropriate solution to persons demographics, either by collecting or imputing
6. Find a way to uniform the national and local ratings methodology
7. Introduce privacy appropriate geo targeting capabilities (via zip code, Prizm)
8. Offer commercial ratings with multiple stream capability
9. Produce transparent and consistent ratings methodology
10. Create Cross-Platform measurement with the ability to monitor and collect online video viewing via TV set and report in a single database.
11. Include the ability to collect online non-video usage.
12. Include an Open Source operating system that allows for loading of applications
13. Create an open data standard to ensure ability to access data with proprietary software
14. Offer the ability to identify and report Interactive usage and / or informational requests (such as instant purchase and more information)
15. Offer fully addressable solutions.

These agencies recognize that the media landscape is evolving. The concern is that lethargy and fear will prevent the industry from facing these oncoming changes in a timely manner. Pushback on STB data is occurring at many levels. For example, performance for certain networks may be lower using STB data than it is by using the current currency. But according to these agencies, these networks are only losing audience that they never had. In addition, inaction on such game changers as STB data is very risky. "Kodak and Tower - what happened to them for photos and music will happen to us. We cannot put our heads in the sand."

Middle Adopter Agencies

Those agencies that are exploring STB data but have not extensively rolled it out into its buying metric strategy tend to view STB data as a possible measurement tool to be used with a level of caution.

When asked about their optimal media currency, these agencies were no different from other types of agencies and stated elements such as household ratings, demographics, psychographics, second by second increments, strong elements of privacy, data matching to the household, ability to measure addressable advertising, understand DVR usage, provide the ability for dynamic ad insertion, measure tune-away for the creative, VOD versus SVOD, free versus ad supported, interactivity connected to it and purchase data matched to television viewing.

STB data can provide much of this, but it is challenged to develop a nationally representative and project-able sample. Many challenges were listed including the lack of demographics (which could be modeled), the technical limitations of the box itself, privacy concerns and the ability of the data to be retrievable through the standard agency data systems like Donovan. However this last requirement is only necessary for buying and not necessary for simply an analytics tool. All of these challenges, while fixable, will take time

When asked specifically about STB data's potential as a media currency, researchers and buyers delineated between what they see as the primary buying currency (usually Nielsen) with its traditional standards of measurement forming the basis of negotiation and what might be termed the secondary currencies that are being used as surrogates for the primary currency. "The key word here is 'currency'" one agency researcher stated. "We can buy and sell off of it. A currency in the traditional agency sense - based on negotiations. So what is acting as a regular currency and what is a surrogate currency such as IAG." STB data would have to be validated by the current currency. However, the creation of unique sales-oriented STB data metrics by certain Data Processors held appeal for these agencies because these metrics provide new and useful information beyond the current currency. But as a currency, these agencies stated that STB data has not yet been fully vetted and will need to meet the rigorous measurement demands of marketplace before any decisions are made.

And yet while these middle ground agencies are not gravitating to STB data as a primary currency, they are also not necessarily supportive of the status quo. The current currency has problematic in-tab rates and a limited sample size where many viewing sources are still unmeasured. There is not enough granularity to measure actual ad performance and the panel approach is considered intrusive and it is difficult to get respondent cooperation,

especially in certain types of homes. Both the sample and the viewer demographics are becoming more fragmented and thus are changing. These agencies want finer segments and while they can estimate these finer segments from the current currency, these estimates lack a certain confidence level. "We don't want to over-deliver because then the client says that we have overspent." There was support for melding national with local data to create a better connection between the two sources to make it easier to model.

Stated one agency researcher, "(The current currency) is the lie we agree to abide by. Confidence is at an all time low … so we are looking for other solutions. We will push forward on anything that gives us better information and confidence. And the next step towards that is that we have looked at STB information, working with (X) manufacturer, (X) data processor, invested with (X) company to understand nuances and to see what can and can't be done. We know the promise is there but it is still a distance away. We have not used STB data for negotiation. It is not strong enough or the information we need. We are using it directionally." Nielsen is used as the yardstick to measure the accuracy and efficacy of STB data within these types of agencies. As one strategist said, "I need to be able to project out to the (current currency) universe to make sense of it. STB is not as much of a currency as it is an informer." Other agencies in this category cited Nielsen's transparency as an asset that trumps the lack of transparency with STB data. "For all the faults we have with Nielsen I can at least tell what they have."

As STB data opens up the value of TV to more clients, especially niche ones it becomes more feasible to think of it in terms of an industry measurement. These agencies suggested starting with a local roll-out – perhaps a one market test case or other controlled test – that could be shared with clients to show progress.

Later Adopter Agencies

Researchers at these agencies are using STB data for analytics, not for buying. They were much more likely than the middle adopter agencies to see STB data as more challenged, requiring standardization and more transparency even for analytics use. "We need more confirmation that the number and sample is representative of current population." Heavily modeled metrics will be difficult to calculate and predict and will not pass inspection from the procurement officers who seek audit-ability from the data. STB data also gives false positives and negatives caused by SOSO and it does not offer demographics

These agencies were generally more satisfied with Nielsen because it is auditable and provides a level of comfort to clients. They see STB data as a secondary measurement, possibly as an auxiliary evaluative tool at this time. Because of this, STB data does not have

to match the current currency. "I really do not care how the (STB company) data today compares to NTI. We do not compare MRI and Simmons magazine audiences nor for that matter, NSI and NTI program ratings. Each service has its own biases and it is up to the end user to decide which is right for them. As a matter of fact, I do not believe the (STB company) and NTI data - even the cut-back DBS sample - should match. If they did, then who needs (STB company) and their larger sample? In all probability, minute by minute data has more stability especially when looked at for commercial audiences considering the rating levels we are seeing today for all networks." One agency interviewee said that if STB data is just "Nielsen on steroids" its added cost would not justify its use. But if STB data is used in unique ways that could help advance the business it would justify the added cost and industry use.

The current currency lacks exposure level to individual ads and it is thought that STB data could fill this need. Other advantages of STB data include larger sample sizes, lack of respondent fatigue, second by second increments, overall effectiveness for ad measurement including how much of the ad is watched, competing advertising, creative testing that indicates if one ad is stronger than another, the ideal pod structure, pod number and pod position.

Some late adopter agencies were resigned to the fact that historically, Nielsen has always bested any competitor. In the case of STB data, it is thought that Nielsen will win over any competitor because they hold the key to demographic measurement. "No one can live without demo ratings anymore – we can't quite break away from that." In addition, Nielsen is in the best position to tie ratings to STB data.

Rep Firms and Industry Organizations

Firms which represent local broadcast and cable television constituencies as well as advertising agencies and advertisers have somewhat divergent views on the potential of STB data for their respective businesses. For local broadcasters, it is not only the type of data that the STB delivers, it is also the inherent differences in the local broadcast, national broadcast and local cable sales models.

Local and national broadcasters have different data needs. Current local measurement is simple and basic while national measurement is much more complex and flexible. There is a fear from local broadcasters that STB data decisions will be made on the macro, national level effectively cutting local broadcast measurement needs out of the decision-making process.

Compared to local cable, local broadcast appears to lack as-run logs which are needed for audience delivery matching and posting for spots. Local cable has a proprietary system which is provided free to the agencies and contains, among other things, as-run logs for viewership to spot matching.

Broadcast television reps, groups and industry organizations expressed some concern about the use of STB data on a local level because it does not include measurement of over-the-air and non-digital homes, thus under-representing viewership for their constituencies. In addition, they say that the complexity of local avails – with sub DMA insertions at the head-ends and many ads occupying the same spot – makes it difficult to ascribe viewing to specific ads within a local market.

Other STB data limitations from a local broadcast perspective include:
- Different calculations and ratings results from different processing vendors.
- Vast amounts of granular data that need to be gathered, recorded, sorted and delivered are considered to be a major hurdle and a barrier to entry.
- Geography. In some markets new installs may have patchy distribution.
- Possible lack of cooperation - Cable and Satellite will not easily give up zip code coverage to make maps because that is competitive information.
- All cable head-ends are different.
- Manage expectations on delivery because this is not overnight data. There is a lag time.
- Still no natural demographic data by viewer sex / age.
- Out of home viewing is significant. STB data does not solve that measurement problem yet.
- Only digital boxes with back channel communication are reported and there is no over-the-air viewing or basic cable box / wall tap. A typical house has a mix of TV signal sources.
- Digital boxes (with hundreds, if not thousands of channels) amplify splintered viewing patterns.

But even with all the limitations listed above, local broadcasters acknowledge that the current local measurement system is not perfect either, using inconsistent and obsolete methodologies which make it difficult to sell across markets. (The methodologies range from people meters in large markets, household meters in intermediate sized markets and diaries in smaller markets.) In the small markets, paper diaries based on viewing recall are snail mailed which is insufficient to meet the needs of today's media environment. But even in the larger markets, the number of people meter boxes is insufficient to measure the full range of viewing options. So although STB data consists only of digital homes, it does offer consistent measurement as well as larger sample sizes and the ability to combine and fuse with transactional data.

So the ability of STB to provide performance information daily (rather than just during the four sweep periods) and in finer increments than quarter hour or daypart is recognized as an improvement over the current currency and somewhat mitigates STB measurement deficiencies. In fact, some local broadcasters are of the opinion that STB data will eventually replace the current currency which is very expensive to maintain and has problems with its measurement infrastructure.

Broadcast reps would like to see standard edit rules set and careful modeling done on a market by market basis. The data would need to be processed by standard industry systems such as Donovan. They also want assurances that the MVPDs are committed to providing data on an ongoing basis and will not drop delivery any time in the future.

Local cable television reps have been very active in the roll-out of STB data, first grappling with the issue of privacy on Capitol Hill and taking ongoing steps to ensure compliance with privacy laws and now forming a coalition of all MVPDs from MSOs to Telcos to Satcos headed by the MRC. This coalition is charged with creating hard guidelines for the data including common language of terms, definitions and edit rules so that the data is consistent and comparable across providers and usable as a "more democratic" form of measurement. Challenges to the data are similar to national networks in that the agencies must be open to accepting the use of the data and has to be able to access the data via the standard measurement systems.

Agency and advertiser industry groups are enthusiastic about the data, especially for targeting purposes. To them, STB data is seen as "the Holy Grail. On an aggregated basis it is the repository of everything that television and video advertisers would want, according to some interviewees. The data is parse-able on aggregated basis to down to small footprints and also offers the opportunity to measure the effectiveness of address-able advertising. "STB data is a procurement officer's dream – it offers accountability for money spent against advertising and is target-able just like it is for other types of consumer products." It is thought that STB data could be a viable competitor to the current currency because it consists of consumer 'mini-verses' (rather than one universe) which advertisers want for targeting purposes.

Programmers / Networks / Station Groups

Included in this category are the broadcast networks, niche networks – both broadcast and cable - all sizes of cable networks and local station groups.

While one might assume that the measurement needs of all these constituencies vary, it appears that no matter what size the network is or the segment of the viewing population it targets, the net/net measurement decision is the same. All networks eventually decide to be measured by Nielsen.

So in that context, the conclusion is that programmers and networks are arguably the most pessimistic about the potential for STB data measurement. While most agreed that STB data offers data granularity (offering a large enough sample for highly niche networks and audience segments), the ability to match to other data sets and passive, real time measurement, the perceived challenges of the data tend to outweigh the advantages.

Challenges include the lack of common definitions, edit rules and national project-ability. Not all television sets in the home are measured and the reporting of only live viewing at this time by the processors further under-represents overall viewing, according to the larger cable and the broadcast networks. "The goal is to measure video tuning - everything used to view must be measured." The lack of transparency among the data processors was also a concern. "I know what I don't know about the Nielsen panel. I don't know what I don't know about STB data and that is what concerns me."

Many network executives also cited the lack of demographics as a challenge but there was not full agreement on this. There is some realization across parts of the media industry that demographics have been a measurement of convenience and not the ultimate solution in gauging the efficiency of an advertising buy. "My personal ideal would have the ability to fuse (STB data) with other databases for advertisers to develop ROI and segmenting goals to evaluate media. A currency not based on demos."

Larger networks with a vested interest in the status quo have the most to lose in the introduction of a new currency that adds a myriad of tiny competitors to the mix. So although rarely articulated as such, the fear of de-valuing the current business model is a strong disincentive to rolling out STB measurement without careful (read: slow) due diligence. So while there is an expressed interest in parsing the data for internal insights and experimental research, STB data as a potential measurement currency might be perceived as a looming threat by some networks. And yet, some executives realize that there could be a potential cost savings with a measurement tool that does not require the expense of maintaining a sample. "The biggest networks pay over $100 million (for measurement). That is a high amount of money for the measurement we get. If you start from scratch with that money you can come up with a better system."

Networks targeting minority audiences held conflicting views on the value of STB data for measurement, depending on their target audience. Networks which are generally more

upscale are well served by a measurement based on the digital STBs while Hispanics who primarily view over-the-air and often live in more downscale zip codes are not.

Industry pressure is on smaller and niche networks to sign on to the current measurement currency. While networks tend to say that "There is no perfect measurement. There is no perfect measurement service," several unmeasured networks who were using STB data to sell have since decided to switch to Nielsen. Their reason: "Despite our ongoing commitment to alternative metrics and methods, we've hit a wall with our ad sales prospects and Nielsen (for now) is the only key that opens the next door."

But despite this, there is an acknowledgement that STB data can become a game changer. "The current measurement is so expensive and is a monopoly. With STB data you don't have to add equipment and recruit people. The infrastructure is done and it saves money. It is the byproduct of an existing business. The barrier to entry ends and the data is available to anyone who wants to license it."

There were some variations in opinion based on each company's business model as to the next steps for STB data roll-out. National services recommend that STB measurement begin on the local level and larger national networks see an advantage in STB data for measurement of long tail networks. Yet, local broadcasters, despite their anger at Nielsen, see several problems in local STB measurement and some niche cable networks have reluctantly found that STB data alone was not enough to fully compete at the agencies. Some network researchers preferred a hybrid approach of STB data combined with the Nielsen sample or other consumer behavior databases while others felt that the data just needed to benchmark to the current currency.

For STB data to go forward with this constituency there must be greater acceptance of STB data in the sales process at the agencies with the ability to post and steward for buys. In addition, edit rules and standards must be established. "We must have an agreed upon set of edit rules – for both hardware and measurement. I want to be able to break out the data by MSO, Satco and Telco for example because viewing is very different across types. The strength of STB data is sample size but it needs accuracy and reliability of a carefully structured sample. STB data appears to have promise but the more you look at it the more it is disappointing."

Stations groups representing hyper local to regional to national constituencies suggested that creating a representative sample could best start at the local level where there is the ability to get larger samples and where the current measurement is inadequate. The market list might

include: Denver, Grand Rapids, Little Rock, Atlanta metro, Sacramento-Stockton-Modesto, Knoxville and Minneapolis. It was noted that hyphenated DMAs that are composed of several different towns may grow at different rates in different types of homes. Even for local broadcasters, whose business model relies largely on over-the-air homes, the ability to get data more than four times a year and with more viewing sources via STB data would be a great improvement over the current currency. It was also suggested that over-the-air homes could be modeled from STB data by analyzing viewing from boxes that are primarily broadcast viewing

Data Originators (MVPDs)

Generally speaking, Data Originators from MSOs to Telcos to Satcos tend to view STB data with some ambivalence, although there are some early adopter MVPDs who have been mining the data for years. These companies are very active internally in tackling data extraction and finding creative ways to utilize the data for certain clients and constituencies.

While the potential of the data looms large, there is nothing substantive about it as of yet to tempt many of the MVPDs to shift priorities and divert significant resources to the cause. And there are risks. There is a hardware risk in extracting the data, a privacy risk among subscribers, the government and in the "court of public opinion" and there are business risks - both internal and external. Internally the question is - Do you divert bandwidth, manpower and funds away from the core business model on a potential revenue stream that has not yet been quantified and valuated? Externally - Do you provide STB data on a local market level that can be used by competitors to possibly sell against your local ad sales efforts?

With the exception of one MSO, MVPDs stated that technically, the data is not difficult to extract from the boxes. But it is hard to justify using more QAM for data retrieval instead of using that bandwidth to add more channels for subscribers. There is currently more revenue potential for added channels, high definition and VOD than for the data. "The cable business model is franchise, pipe, content and billing. To do that we don't need data unless it is for VOD or phone."

Yet, extracting the data has its complications and considerations. The data might be easy to extract but it can be difficult to extract it cleanly and in a normalized form. Data quirks such as gaps and channel line-up changes must be addressed. The boxes were not built for data collection measurement. For those companies who use underlying software instead of

switched video, it is not built to share software like an operating system. Also, the way data is harvested and returned is intertwined with the editing rules and chosen metrics and can change the way the data is retrieved from the box. Without industry standards and a common language, data pulled from the box can vary in granularity and quality from data originator to data originator, requiring more processing and cleansing for the end-user. As different end-use companies apply various editing rules to datasets, it is possible that there will be different performance results for the same cut of data.

In addition, many MVPD plants consist of vastly different box types and ages, further challenging consistent data harvesting. Unlike other consumer devices such as cellphones which are updated almost every year, legacy STBs are rarely updated and can be up to ten years old. Therefore it can be said that these boxes have the processing capacity of a ten year old computer making it difficult for them to handle certain new software.

There is a general consensus that boxes and data collection will improve over time because of an evolution of both the hardware and software. Internet ready TVs will necessitate a change in data delivery and extraction and the advancements of addressable advertising could begin to provide MVPDs the revenue incentive to further improve STB data harvesting and use. In fact, ad targeting could be a prime motivator in encouraging originators to place resources against data collection for ad sales purposes.

To a one, privacy concerns are a primary focus and companies are waiting for some resolution from the government on this issue as it relates to data collection and use. According to one Data Originator company, there are complicating issues. The Cable Act is vague when it comes to the data and is therefore subject to interpretation. It is referred to in three key areas of the Act - anonymization, aggregation and consumer privacy policy. But otherwise there is silence on the issue about STB data in the law. This vagueness can cause differences in legal interpretation that varies by company. An example - One interviewee said, "We found that there are a couple of carve outs in the Cable Act that allows for going to household level – when it is a billable event, when we need data to deliver a particular service or if we are subpoenaed." The net sum is that until privacy is fully addressed and settled, the industry will understandably be loath to release large swaths of granular data to outsiders. MVPDs should continue to explore proceeding with STB data collection and use in a manner that would not violate privacy laws.

Interestingly, the potential value of the data for MVPDs may not be in its resale to measurement companies but in its internal marketing application for customer satisfaction and carriage negotiations. STB data can be used to improve content decisions, maximize channel positions, make offerings more diverse and optimize promo messages. If operators

know which channels are not being watched, a decision can be made to free up bandwidth, for example. This has a direct impact on revenue and helps improve customer satisfaction and therefore the business model.

There are MVPDs who are now aggressively working with the data and creating revenue streams from it. They use STB data in a myriad ways from posting at the insertion level, ascertaining time shifting behavior and C3, calculating reach and frequency, measuring interactive, VOD, PPV and channel line-up optimization, for example. These companies have spent years investing time, energy and money to analyze and define the data so it can be shared with external clients to help optimize their media mix buys.

Data Processors

Data Processors are those companies who are in the business of processing the data with the explicit purpose of either maintaining or creating new measurement metrics and interfaces – whether for a currency, sales ROI and optimization or other data measurement and insight capabilities. These companies are reliant on the MVPDs for the raw data and, depending upon the Processor, may also be reliant on various Software Vendors who cleanse the data in preparation for data ingestion into the Data Processors proprietary systems. With many of the Data Processors, STB data forms the basis of their business model and informs their competitive standing. Therefore the gross amount, the footprint and the granularity of their cuts of STB data hold huge competitive advantage for these companies, as do the degree of creative application and depth of metrics they are able to devise with their respective cuts of data.

Data Processors tend to fall into two camps – those that operate within the arena of the established industry standard currency and those who are carving out new uses for the data beyond the current spots and dots sales and stewardship model. Those competing with the current standard have added challenges in that they are often compared to that standard and need to be able to demonstrate at least parity and ideally superiority to the established business norm. For the company whose business model relies upon the standard current currency, the challenge is to find reliably delivered streams of STB data that can be used to improve the currency methodology without risking the current measurement veracity.

Because of the importance of STB data to their respective business models, Data Processors are among the most optimistic about its potential and are scrambling to differentiate their capabilities as well as competitively position themselves as primary and secondary currency creators. Some are actively seeking MRC accreditation as one way to differentiate. Some are

acutely familiar with the specifications of the current currency while others are less so because they are engaged in data analysis and positioning that goes beyond the scope of the current currency.

For those Data Processors who are creating new metrics that are beyond the scope of the current currency, opportunities abound with relatively little marketplace restriction. These companies are creating new ROI metrics that, while not replacing the current currency, are proving to be ample secondary promises and strategic sources of actionable information. These companies are less invested and therefore less involved in forging a nationalized sample but are nonetheless interested in addressing any STB data concern and challenge. "We don't see STB as ever being a pure ratings or a pure currency. We do see a sample size that can be merged into other databases creating a single source product. There is not going to be a pure STB currency." These companies need to demonstrate the business value of their metrics and STB data approach to potential clients which is challenging unto itself. Recent advancements in this area include an iTV advertising initiative between Canoe and the ANA called "CEE MEE" ("Connection, Emotion and Experience of interactive television" correlated with "Measurement, Efficiency and Engagement" metrics).

However many Data Processors are caving out a business proposition within a market sector that is already rigidly established by one research supplier who has the advantage of owning and thus controlling their own data and whose output is the bread and butter of the ad sales marketplace. This is the only area of the STB data landscape where there is a generally accepted, deeply entrenched data standard that both informs and forms the financials of the market and interfaces with all primary ad sales monitoring systems. Often described as a monopoly, Nielsen is the standard bearer of television measurement, credited with having developed a notably rigorous sample that has served media companies well for over half a century. It is not perfect – there is criticism of the meager sample size for long tail and certain niche networks as well as antiquated methodology on the local level - but it is "the known" and that provides a certain level of comfort for some sections of the industry. Yet, as the media landscape continues to fragment with increasing choices of content and viewing options it is generally acknowledged that the status quo must change or evolve so as to better address all types of challenges.

For the current currency leader, their unique challenge is how to best utilize STB data to improve their measurement with the understanding that, unlike their sample, they do not control or own the data and must purchase it along with other competitors in the open market. While they may be able to eliminate competitors for certain strands of data via proprietary contracts they can't entirely amass and control all of the available data in the STB marketplace. This poses a significant challenge to them because its business model has been based on owning and controlling the measurement samples as well as the data output. Understandably, they are taking a cautious and competitive stance in the STB arena,

advocating a hybrid methodology where the STB data is merged in some form to their panel. "We prefer to start with a measurement source that can be drilled to the panel. Then compliment that with STB to add fidelity to data we are already collecting. STB does not measure people. It is not enough for a currency." They also believe that their panel should be the benchmark to the nationalization of the STB sample, a viewed shared by some other companies in the STB space.

Most Data Processors (including the current industry leader) tend to describe STB data as a panacea to long standing measurement challenges citing its stability with the larger sample size, data granularity, the passive nature of data collection and the ability to fold in other data sets as specific and valuable advantages. In addition, long tail network and local market measurement, the ability to view patterns of customer segments beyond age and gender, ascertaining program and promo tune-away as well as commercial avoidance and enabling the ability to create new ROI tools were seen as immediate benefits and opportunities. Ascertaining trick play, out of home and individual commercial and detailed pod information were seen as longer term measurement advancements. The Data Processors are only constricted by the amount, level and quality of the data they currently receive from the MVPDs. Therefore, as more, granular and detailed data is released to them, all of these desired measurement potentials could be realized. According to one Processor, there is also the hope that STB data could help lower the cost structure of collecting the data for the current media measurement currency.

But exactly what to do with this data and how to handle and apply the data often generates varied and opposing opinions between the Processors creating a tacit challenge to STB data acceptance as any type of standard currency. Should the STB data become part of a hybrid measurement either by benchmarking to or fusing with the current currency or should it become an ROI tool that melds with consumer purchasing and behavioral databases or can it stand as a measurement currency on its own merits? Opinions vary and it depends upon where their respective business model sits in the competitive landscape – whether they currently have a stake in the current currency, whether they are angling to be bought out by current stakeholders or whether they are new "movers and shakers" intent on creating their own mark on the industry. So pronouncements from these companies must be viewed through a filter of self interest.

That is not to say that the work being done by Data Processors is all hype and competitive parry – there are some dramatic breakthroughs in the application of the data by these companies and their contributions to the cause of STB data measurement is inestimable. But the marketplace positioning of these companies against each other perpetuates confusion and hurts the perception of and confidence in STB data as a form of currency. Without common terms, definitions, editing rules and measurement standards it is impossible to compare STB

data results for the same cut of data between these companies. Data rules and algorithms are opaque and private. The claims of the representative-ness of certain cuts of the data need to be proven. "If you have 200k STB in LA they represent 200k STB in LA. There should be a reality check of claims." In sum, the competitive business practices of the Data Processors contribute to marketplace confusion, enabling the proliferation of disinformation about the efficacy of STB data use in the industry.

But this confusion can be stemmed. The Data Processors who have a vested interest in creating a nationalized, representative sample will have to address how to best create that sample. The universe is not just based on geography it is also based on individual channel coverage – both nationally and locally because coverage varies by market. There are also the oft-stated STB data challenges such as SOSO, exclusion of over-the-air and non-digital boxes, possible exclusion of some second homes or less affluent homes, lack of demographics and the quality and consistency of the data impacted by such things as data gaps and channel line-up changes.

All of these challenges are fixable. It is strongly recommended that an organization such as the MRC take an active role in the establishment of a common set of terms and edit rules that enable STB data to be formalized for industry use in some basic form. In addition, the industry is calling for the formation a nationalized, representative sample that goes beyond terms, definitions and edit rules. Data Processors must understand that there is an inherent industry benefit in creating and forwarding a full range of measurement standardization initiatives. And after the foundational data and its protocol are established, these companies can then let the competitive rules of the marketplace continue.

There in an inevitable sense of change and transformation in the marketplace with internet-based competitors entering the television measurement arena. With the advent of internet ready television sets in early 2011, time is of the essence for the more traditional television-based measurement companies to make their mark in the industry. Continued infighting only unnecessarily delays fuller industry-wide STB data measurement acceptance.

Software Vendors

Software Vendors serve as the intermediaries between MVPDs and other clients in the space, offering software solutions that can range from data cleansing to signal quality to addressable advertising inventory monitoring solutions. Other Vendors included in this whitepaper work directly with the Agencies, providing them with ad sales stewardship systems used in buying and planning. These particular Vendors are not greatly involved with STB data at this time but could prove to be pivotal in the roll-out and acceptance of STB data measurement by the Agencies.

What makes STB Software Vendors different from STB Data Processors is that the Vendors are sellers of software solutions that aggregate raw data (either through EBIF or Switch Digital Video for STB data) in preparation for delivery to clients. Software Vendors tend to be less concerned with certain aspects of data quality such as weighting and representative-ness and tend to apply only rudimentary edit rules for some aspects of the data such as SOSO and latency. They don't tend to talk about data as "currency". Many describe themselves as software application providers that don't analyze or sell the data. "The data flows up. What the operator does with it is up to the operator. If (a client) wants ad level data, we have that."

Software Vendors can have complicated business models because they serve as software intermediaries to clients on all ends of the data pipeline. Products with their own unique sets of competitors are offered as services that sometimes engage those same competitors as clients. So Vendors tend to be policy neutral because they are focused on client customization projects rather than developing pan-industry standards. For that reason their business footprints can seem amorphous. "Whoever owns the data vision will dictate where the industry is going"

Because they are building unique business models that are additive to and not duplicative of the current measurement currency, they have access to vast streams of data at the source and are ardent supporters of the data and its capabilities. To the Software Vendor companies, STB data is simply a question of numbers – how many homes and STBs are being processed. And because the data is generally being used for analytical issues such as promo optimization and addressable ad campaigns, there is less of a need for national project-ability at this time. They say that "common standards would be useful," but most of these companies use advertiser defined segments that are not necessarily standardizable nor do they need to be at this time.

Depending on their business model, Vendors tend to be the software workhorses. For example, those involved with addressable advertising are able to determine actual viewing by monitoring the network, telling the STB which ad is to be played and then either feeding that ad to the network or switching the STB to another channel to play that ad. They are also data specialists who can capture data wherever it resides and find ways to interface with a myriad of different vendor systems. Those who perform as data aggregators and cleansers start by collecting data from its various sources at the MVPDs.

Interestingly, the STB is only one area where data is generated. There is a continuum of places from the central server to the last edge device and intermediate points in between with data collecting in devices, gateways and clouds. Software Vendors collect and normalize all this linear, click stream and interactive "STB activity data". For example, linear real time data is collected off the actual STB, guide user data is collected off the guide server,

click stream data (any click on the remote - volume, mute, SOSO etc that does not impact linear) and interactive activity (such as VOD) are collected from other middleware and any cloud-based data (such as a remote server DVR) is collected from the cloud.

One Provider lists the streams as such:

- The STB itself where there are real time linear data streams.
- Start Over which is a linear stream that is not delivered by the linear processor. This data is in a server and not in a collection stream.
- Switch digital video which has a multiple streaming technique. The data is obtained in STB but it is more logical to get it in a resource manager server in head end which is a different server.
- On demand content (not including Start Over) which includes all VOD and network DVR tuning is another source of data.
- Local storage locations for the DVR including individual and multi DVR from one master to multiple DVRs and servers in the home. The data is collected at the home and is pushed upstream. Also, there are variations on DVR play-out.
- Applications that substitute for channel layout such as competing virtual channels or the ability to overlay simultaneous application data. This is located in yet another server.
- Miscellaneous data streams across all sources which are a complex matrix of different data types - start / stop / well / trick / pod / fast forward / rewind – for example. And these need to be reviewed in the context of the tuning sessions whether full screen, a banner present, parental controls etc.

All have cleansing problems and harmonization challenges for all of this disparate data.

Companies that use STB data to measure addressable ad campaigns do not tend to cleanse the data, preferring to leave it as granular as possible. And while there is a desire to set up parameters and standards, those needs vary by client. Different clients have different editing rule preferences. But the lack of industry standards and edit rules as well as the need to manage and address consumer sensitivity in regard to privacy are seen as fixable challenges for STB data roll-out. As with other types of companies, Software Vendors would like to see the data integrated into Donovan and MediaBank but this is not as crucial to their STB business model as say, Agencies, Networks and Data Processors.

Software Vendors said that the value of data is manifold. It offers service providers a way to better manage their businesses with such features as signal quality monitoring and other customer satisfaction tools. The data can also be used to help increase revenue for content providers, specifically via targeted advertising, as well as provide better measurement

credibility of media consumption where there is currently a lack of data. "STB data is for understanding programs so you can see who is watching. It is used for selling ads. Data has a way to show ROI."

But the challenges to the Software Vendors are many and are somewhat different from other types of companies in the STB data space. Many of the cited challenges are in the data collection process, starting at services provider level where the data business is chaotic, informal and lacks cohesion across provider companies. There are also major disconnects across the delivery spectrum from the data provider to the content firms and research companies. Finally, there is no data leader in the industry who says that they will do the tough job of establishing the standards and rules. It has been said ruefully that "Data is the blue collar of the media business."

When the Software Vendor offers data management solutions, they find that there is no roll up strategy available after the data extraction takes place. The data originates on a very local level and there is no aggregation of the enterprise. MVPDs who are franchised in more than one local market area often lack consistency of systems across their footprint so one brand of software could be functioning in one place and a different software is in another.

Within data cleansing process, 25% of the effort is spent accessing the data while 75% of the effort is spent in the actual logistics of cleaning. And while data credibility is very important, there is no one who is accountable if STB data is wrong or has gaps. Data reliability is a challenge as is the lack of standardization within the collection process. Datasets can become fragmented upon extraction and there is a need for a central clearing house. Not all STBs are created equal. Older STBs that don't carry certain applications are considered too old to participate in the data collection process. With Satcos only a percentage of the STBs respond because the box must be connected to a phone line. With return path cable, it is said that between 5% and 10% of the STBs have non-response where the data is permanently lost. And finally there are various problems with the physical infrastructure from simply bad wiring to a bad box.

Through all of this, the data reliability issue for Vendors is not married to the need to improve the current currency because it is not part of their current business model. When these companies talk about the challenge of data reliability they are talking about the ability to cleanly and confidently extract data from its various raw sources. The manipulation of the data after extraction and cleansing is for their end users to decide.

Software Vendors agreed that all of these challenges are fixable but it is an expensive undertaking requiring a major investment and cannot be accomplished quickly.

They also noted that the media landscape is evolving where the consumption of content is moving off television and migrating to the computer and mobile. These companies realize that they must find ways to measure who is watching, where and when they are watching and how long they are watching across all these devices. Some Vendors are currently working on cross platform solutions. "We are interested in other (data) potentials that go beyond enhancing current media currency. Our model is like the web – real time and behavioral, cloud based, cross platform, campaign management, in and out of home usage and server delivery issues. Video is moving to a different delivery paradigm such as web based information systems and we need to prepare. We are moving rapidly because technology is enabling it now. Six categories we think are a good direction are real time data, the web where data is oriented to audience and not to content, application data, identity merging data between applications and server research, in home network set of effects and interactions and out of home web cloud environment where transactions also occur. We are building delivery platforms, voice and home tele-presence, video conferencing and broadband wireless. We want to be able to collect data from all pipes that enter the home."

Conclusion and Next Steps

Different companies in different parts of the industry have different goals for STB data. An appraisal of all the responses indicates that there may be some generally accepted next steps starting with developing a common language of terms, definitions and edit rules, followed by developing representative samples. From there it is necessary to consider the various business models for companies occupying this space.

This leaves us with the questions - Is there an ultimate goal that will satisfy all companies? Is it possible to form an objective, generally accepted use of STB data? Ostensibly, the goal of STB data measurement would be to create a better, more accurate media measurement whether for local or national and for internal or external analytics consistent with consumer privacy laws. This measurement would not only provide a confident assessment of who watched (on an anonymous, de-identified basis absent opt-in), what they watched and how long they watched, it would also provide where they watched (in or out of home) and how they watched (linearly or via trick play and on what screen).

CIMM therefore recommends that STB data be developed for these main purposes:

1. **As a method of local measurement** – to provide much needed improvement to the current system. There is great support for the development of STB on the local level because of its ability to provide larger sample sizes with greater granularity. While a representative sample is desirable, it is not a deal breaker for these end users at this time. STB data, even with all of its challenges, is considered a vast improvement over the imperfect local measurement currently in place. Because of this, local measurement should have a fairly short timeline for implementation and adoption, perhaps within the next year.

2. **As a granular analytics tool -** whether for MVPDs for marketing diagnostics, for Advertisers in creative testing or for Networks in pod placement optimization. As with local measurement, there is no pressing need for a representative sample and the timeline to implement STB data for this use is short because the data for analytic purposes is available now. An added benefit is that this type of analysis might also help MVPDs valuate the data for revenue purposes.

3. **As a ROI analytic and advanced advertising tool – through database matching.** This offers a range of external secondary uses of the data beyond the scope of a "currency". Appending custom or industry standard databases to STB data for segmentation purposes does not require a representative sample and will enable Advertisers to transform television into a direct marketing tool with revenue producing capabilities.

4. **As an eventual national measurement currency**. There is a recognized need to improve the current national measurement which is hampered by sample churn, respondent fatigue, high non-cooperation rates, under-representation of certain viewer segments and assorted technical challenges. However there is not enough STB data available at this time to create a national representative sample which is a requirement for stakeholders. It is CIMM's opinion that the advancement of STB data for national measurement has a lower priority in the short term. Judging from the industry feedback, it will take at least three years for STB data to be properly positioned as an auditable national media currency.

Because of its non-partisan reputation in the industry, it is recommended that CIMM take a leadership position in the development of STB uses as set above. CIMM is best suited to foment cooperation between all of the disparate and competing businesses in the space. Since development of a local currency using STB data is already developing in the marketplace, and since the development of a national currency is still a few years away, CIMM would like to focus its efforts on the other uses of STB data, primarily as a measurement tool for addressable advertising and database marketing initiatives and is currently pursuing projects in this area.

It has been said by one interviewee that "Data is the lifeblood of our ecosystem." While we can't go from zero to a currency overnight, we can attain our respective goals through careful, cooperative, transparent and incremental actions that take into account the business needs of all constituencies and reasonable consumer privacy considerations. If the STB data can show value, it will justify the costs against it. It is up to all members of the industry to work together to help demonstrate that value.

APPENDIX

CIMM State of the Art of Set-Top Box Data Questionnaire
Agencies and Advertisers

CIMM is exploring the state of set top box data to better understand how it can be used in the media industry. As part of this study, we are including feedback from agencies and advertisers. We are interested in knowing what you think about STB data in general as well as your thoughts on the ideal STB measurement model that media companies – from programmers to marketers to agencies - will support and subscribe. Thank you for your time and feedback.

Name _____

Title _____

Agency_____

Department / Area of Responsibility_____

Accounts_____

1. If you could construct the optimal media currency, what attributes would it have? These attributes could already be available or could be something created in the future.
2. What do you need from the current measurement currency that you are not getting now?
3. What do you think that STB data is capable of measuring – now and in the future?
     Now –

     Future -

4. What are your short term and long term requirements for a media measurement system?
     Short term (within a year) –

     Long term (within 5 years) -

5. What are the strengths of STB data that would improve the current currency?
6. What are the strengths of STB data that might be used to form a unique, new currency?
7. What are the challenges that STB data faces in improving media measurement?
8. Which of these challenges are fixable? How?
9. Which of these challenges are ingrained and un-fixable? Why?
10. What needs to be done to STB data that will make the data more suitable to your needs?
11. If you had to design your ideal STB measurement product what would it have? What would it do for you?
12. Do you have any other thoughts or opinions about STB data?

APPENDIX

CIMM State of the Art of Set Top Box Data Questionnaire
Network and Programmers

CIMM is exploring the state of set top box data to better understand how it can be used in the media industry. As part of this study, we are including feedback from networks and programmers. We are interested in your opinion about Set Top Box data in general and your feedback as to the ideal STB measurement model that media companies – from programmers to marketers to agencies - will support and subscribe. Thank you for your time and feedback.

Name _____

Title _____

Company_____

Department / Area of Responsibility_____

1. If you could construct the optimal media measurement that could be used as a currency, what attributes would it have? These attributes could already be available or could be something created in the future.
2. Does your optimal media measurement system include STB data? Why or why not?
3. What do you need from the current measurement currency that you are not getting now?
4. What do you think that STB data is capable of measuring – now and in the future?
   Now –

   Future -

5. What are your short term and long term requirements for a media measurement *system*?
   Short term (within a year) –

   Long term (within 5 years) -

6. Are there any specific companies or current measurement systems that would be required to be part of the roll-out of STB data as a currency?
7. What are the strengths of STB data that would improve the current currency?
8. What are the strengths of STB data that can be used to form a unique, new currency?
9. What are the challenges that STB data faces in improving media measurement?
10. Which of these challenges are fixable? How?
11. Which of these challenges are ingrained and un-fixable? Why?
12. What needs to be done to STB data that will make the data more suitable to your needs?
13. If you had to design an ideal STB measurement product what would it have? What would it do?
14. Do you have any other thoughts or opinions about STB data?

APPENDIX

CIMM State of the Art of Set Top Box Data Questionnaire
Data Originators (MVPDs)

CIMM is exploring the state of set top box data to better understand how it can be used in the media industry. As part of this study, we are including feedback from companies who generate STB data. We are interested in your opinion about Set Top Box data in general and your feedback as to the ideal STB measurement model that media companies – from programmers to marketers to agencies - will support and subscribe. Thank you for your time and feedback.

Name _____

Title _____

Company_____

Department / Area of Responsibility_____

1. How difficult is it to extract STB data from the set top boxes?
2. How important is STB data to your company's current revenue model?
3. Do you see STB data, as a measurement product, as part of your company's revenue stream? If so, how long do you think it will take for STB data to become a viable, revenue producing business for your company?
4. Do you have a separate department or headcount against a STB data revenue model initiative
5. Is your company willing to put extra resources against the STB data part of the business?
6. What are the challenges to bringing STB data to the marketplace?
7. What are the advantages of bringing STB data to the marketplace?
8. How is privacy impacting the roll-out of STB data in your company, if at all?
9. If privacy is currently a concern, how long do you think it will take for privacy issues to dissipate?
10. What types of software are needed, if any, to help extract and process STB data for transmission to clients and processing companies?
11. Which outside companies do you currently work with on STB data?
12. Do you have any other thoughts or opinions about STB data?

APPENDIX

CIMM State of the Art of Set Top Box Data Questionnaire
Data Processors

CIMM is exploring the state of set top box data to better understand how it can be used in the media industry. As part of this study, we are including feedback from companies who process STB data. We are interested in your opinion about STB data in general and your feedback as to the ideal STB measurement model that media companies – from programmers to marketers to agencies - will support and subscribe. Thank you for your time and feedback.

Name _____

Title _____

Company_____

Department / Area of Responsibility_____

1. If you could construct the optimal media measurement that could be used as a currency, what attributes would it have? These attributes could already be available or could be something created in the future.
2. What does STB data offer that the current measurement does not provide now?
3. What do you think that STB data is capable of measuring – now and in the future?
   Now –

   Future -

4. What are your short term and long term goals for a new media measurement *system*?
   Short term (within a year) –

   Long term (within 5 years) -

5. What are the strengths of STB data that would improve or enhance the current currency?
6. What are the strengths of STB data that can be used to form a unique, new currency?
7. What do you think are other uses of STB data beyond any potential it may have for a currency?
8. What are the challenges that STB data faces in improving media measurement?
9. Which of these challenges are fixable? How?
10. Which of these challenges are ingrained and un-fixable? Why?
11. What needs to be done to STB data that will make the data more suitable to your customers' needs?
12. What feedback have you received from users of your systems that could be used to improve STB measurement?" Are these suggestions doable? If not, why?
13. If you had to design your ideal STB measurement product what would it have? What would it do for you?
14. How do you create a national sample?
15. Do you have any other thoughts or opinions about STB data?

APPENDIX

CIMM State of the Art of Set Top Box Data Questionnaire
Software Vendors

CIMM is exploring the state of set top box data to better understand how it can be used in the media industry. As part of this study, we are including feedback from companies who create software for STB processing. We are interested in your opinion about STB data in general and your feedback as to the ideal STB measurement model that media companies – from programmers to marketers to agencies - will support and subscribe. Thank you for your time and feedback.

Name _____

Title _____

Company_____

Department / Area of Responsibility_____

1. What type of STB data do you currently process and how much cleansing is needed?
2. What do you think that STB data is capable of measuring – now and in the future?
    Now –

    Future -

3. What are your short term and long term goals for a new media measurement *system*?
    Short term (within a year) –

    Long term (within 5 years) -

4. If you could construct the optimal media measurement that could be used as a currency, what attributes would it have? These attributes could already be available or could be something created in the future.
5. What are the strengths of STB data that would improve or enhance the current currency?
6. What are the strengths of STB data that can be used to form a unique, new currency?
7. What do you think are other uses of STB data beyond any potential it may have for a currency?
8. What are the challenges that STB data faces in improving media measurement?
9. Which of these challenges are fixable? How?
10. Which of these challenges are ingrained and un-fixable? Why?
11. What needs to be done to STB data that will make the data more suitable to your customers' needs?
12. If you had to design your ideal STB measurement product what would it have? What would it do for you?
13. How do you create a national sample?
14. Do you have any other thoughts or opinions about STB data?