CIMM TAXI initiative
Trackable Asset Cross-Platform Identification

M&E sector rollout executive briefing

April 2013

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coalition for innovative
media measurement

Executive summary

What is TAXI?	**Trackable Asset Cross-Platform Identification** ▶ An industry initiative to accelerate video asset identification and trackability standards across the M&E supply chain. ▶ Designed to spark widespread adoption of existing open-standard asset registries (EIDR and Ad-ID) for professional video content and advertising.
Why should it matter to you?	**More than $2 billion annually in M&E sector video content and advertising revenue upside** ▶ TAXI enables increased speed, transparency and accountability in media measurement, resulting in efficient markets and higher overall spend. ▶ TAXI makes it simpler to deploy desirable "applications" that will improve many aspects of the M&E sector content and advertising experience, and reduce friction within and between M&E supply chain companies. **More than $500 million annually in M&E sector cost savings** ▶ TAXI helps the industry reduce costs associated with numerous time-consuming, low-value manual activities around asset-related data collection, aggregation and mapping. TAXI also helps reduce errors. ▶ TAXI enables media workflow automation by simplifying and standardizing communications within and between M&E entities. **Less than $500 million in one-time adoption costs across the M&E sector**
How do we know this will work?	**28 companies across the M&E content and advertising supply chain demonstrated how to make TAXI both operationally and economically feasible** ▶ Envisioned M&E supply chain benefits enabled or accelerated by TAXI during a six-month feasibility study. ▶ Evaluated how TAXI can be implemented into existing workflows through five separate M&E supply chain proofs of concept.
What do you need to do?	**Register, operationalize and measure to become "TAXI Compliant" by December 2014** ▶ Begin **registering** all newly-created video assets with the EIDR and Ad-ID registries. ▶ **Operationalize ID flow-through** – from video post-production through internal and external video asset distribution points for all new programming and advertising video assets. ▶ Integrate TAXI in how you **measure and report** video asset viewing activity within all your metering, reporting and analytics platforms.

Executive summary
Why TAXI matters to the M&E supply chain

TAXI has the potential to enable or accelerate an estimated

US$2.5 billion *or more* in annual economic benefit

within the content and advertising supply chain once adopted across the M&E sector.

Video ad spend motivated by better measurement:

- 2% to 3% increase in ad volume (**> US$1.5 billion**)
- 1% to 2% price premium (**> US$500 million**)

Operational cost savings enabled through workflow automation:

- **More than US$500 million** across the M&E supply chain

M&E sector becomes TAXI Compliant

Period of increased innovation

Video advertising spend

Spend on innovation

Investments in adopting TAXI

2013   2014   2015   2016   2017

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Executive summary
Top-line economic benefits and investment requirements

TAXI has the potential to enable or accelerate an estimated
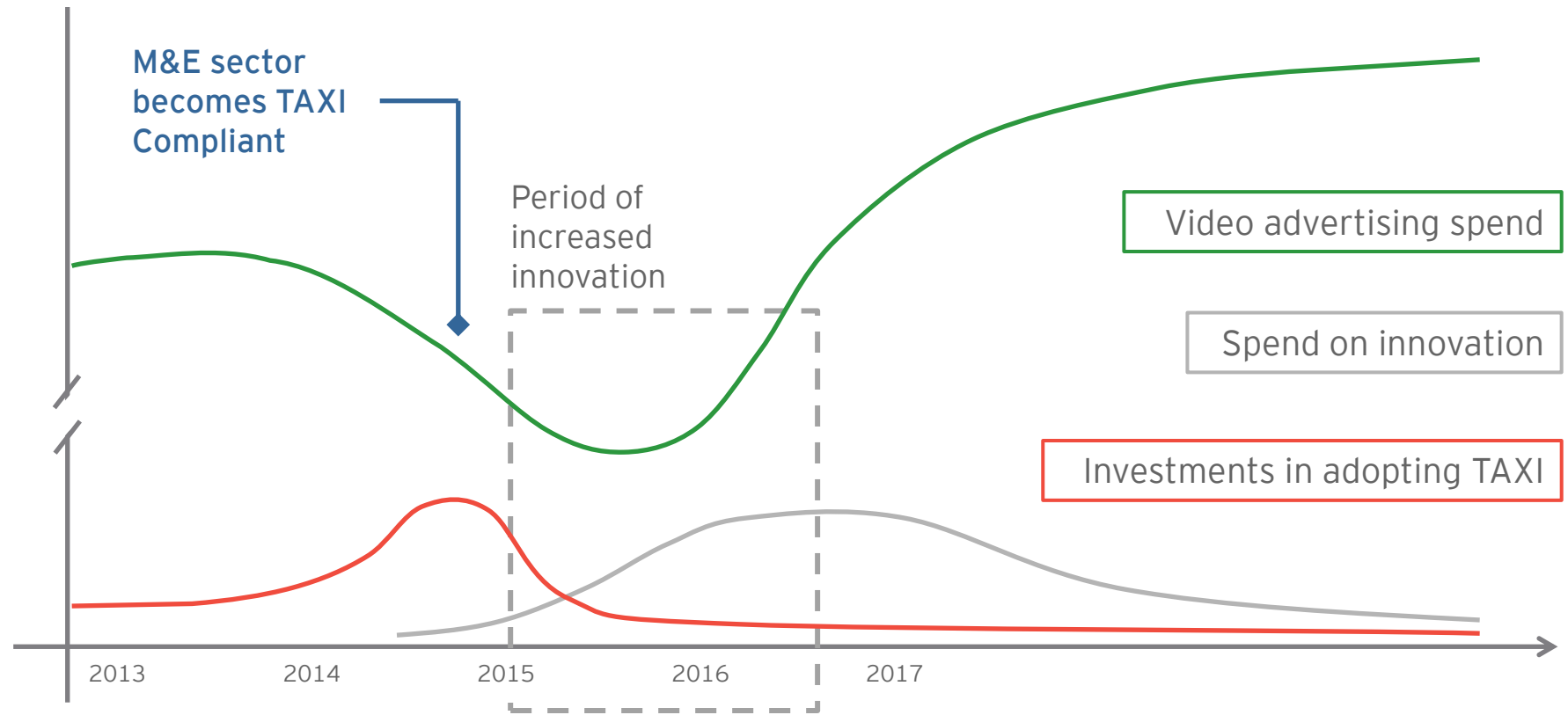
US$2.5 billion *or more* in annual economic benefit

within the content and advertising supply chain once adopted across the M&E sector.

▶ These year-over-year benefits will increase over time as the industry deploys any number of innovative "applications" that are simpler to implement and operate because of TAXI.

Increased granularity and comparability in media measurement	Increased speed, transparency and accountability in video content and advertising measurement ➡ greater overall spend	US$2b to US$3.5b
Reduction in "low value" labor-intensive processes	Media workflow automation within and between M&E entities ➡ significant operational cost savings	US$500m to US$1.5b

	During the TAXI adoption period	Beginning after M&E sector TAXI adoption
Estimated one-time adoption costs across the M&E supply chain over roughly 24 months	**US$500m**	

TAXI net recurring economic benefit	Direct TAXI annual economic benefit that will grow with applications "enabled" by TAXI	> US$2b	> US$2.5b

Executive summary
What needs to be done: Become "TAXI Compliant" by December 2014

1

Register video assets with EIDR and Ad-ID registries

▶ **Begin registering all new content and advertising assets.** EIDR and Ad-ID have made registration simple and cost-efficient.

▶ **Coordinate with vendors** to embed registry communications within asset transcoding, management and storage systems.

2

Operationalize asset and ID flow-through

▶ Support your organization in **driving ratification of ID-to-asset binding technology standards.**

▶ **Operationalize digital and on-demand video asset ID flow-through.** File-based workflows will be easier to adapt.

▶ **Explore technology-enabled methods** to embed IDs within streaming broadcast video assets from post-production through distribution, consumption and measurement.
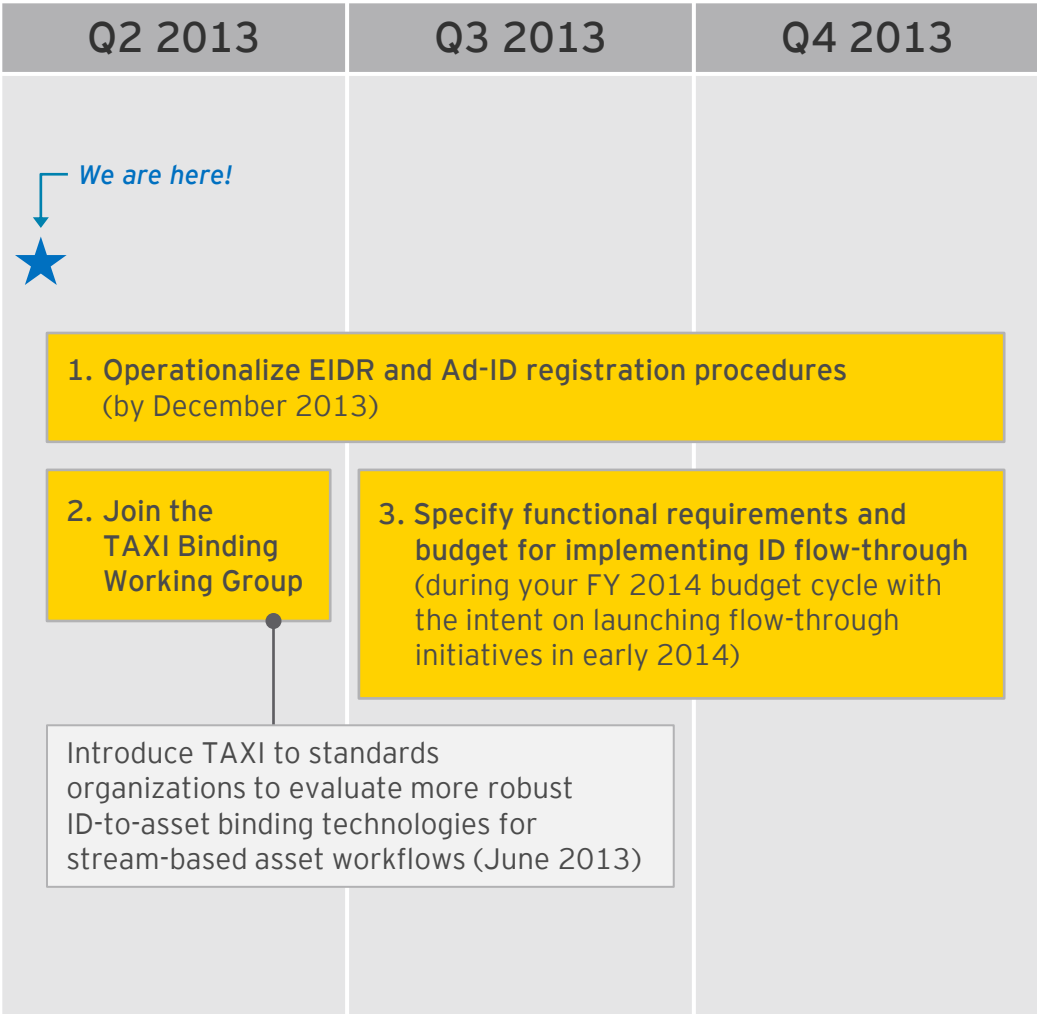
3

Embed TAXI in all media measurement and reporting

▶ **Make it a requirement** that all internal and third-party measurement use TAXI as a primary key.

▶ **Drive ad delivery and content monetization business model transformation** in ways not previously enabled before TAXI.

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Executive summary
Immediate next steps for 2013

1. Begin registering video assets with the EIDR or Ad-ID registries:
   a) Establish metadata standards for your organization (Q2 2013).
   b) Develop registration procedures and protocols (Q3 2013).
   c) Automate TAXI registration within your media asset management workflows (Q4 2013).

2. Commit to participation with standards organizations to develop scalable, industry-wide ID-to-asset binding technology specifications:
   a) Identify and assign one or more qualified broadcast engineers to represent your company (Q2 2013).
   b) Provide sufficient time and economic support to these engineers so that they are able to drive outcomes through an industry working group (beginning Q2 2013).

3. Specify functional requirements and budget for implementing ID flow-through (Q4 2013).

Q2 2013	Q3 2013	Q4 2013

We are here!
★

1. **Operationalize EIDR and Ad-ID registration procedures** (by December 2013)

2. **Join the TAXI Binding Working Group**

3. **Specify functional requirements and budget for implementing ID flow-through** (during your FY 2014 budget cycle with the intent on launching flow-through initiatives in early 2014)

Introduce TAXI to standards organizations to evaluate more robust ID-to-asset binding technologies for stream-based asset workflows (June 2013)

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TAXI: a deeper view

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What is TAXI?
Trackable Asset Cross-Platform Identification

TAXI is about **identifying entertainment and advertising assets** across distribution platforms and **establishing standards for multi-channel asset tracking.**

123456 789012

▶ **Like a UPC** for all video programming and advertising assets

▶ An initiative to **accelerate** existing video asset identification standards: EIDR and Ad-ID

▶ Establishes cross-sector protocols for **video asset registration, ID flow-through** and **transaction measurement and reporting**

▶ A **foundation layer** for many critical content and advertising "applications"

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What is TAXI?
Trackable Asset Cross-Platform Identification

EIDR

► *Founded by:* MovieLabs, CableLabs, Comcast, Rovi and others.

► *Asset types covered*: Audio-visual assets, which can be both physical and digital video objects, that are part of the movie and television supply chain.*

► *Construct*: **A digital object identifier (DOI) based** opaque ID designed to be unique for each registered asset.

► *EIDR adoption*: Launched October 2010 and has since developed strong partnership commitments from all six major studios and cable service providers covering 80% of US cable subscribers. The registry is projected to include close to one million film or television titles by the end of 2013.

Ad-iD

► *Founded by:* The 4A's and the ANA.

► *Asset types covered*: Advertising assets (print, video, digital, voice).*

► *Construct:* Specified characters to represent advertiser prefix plus additional characters to represent each unique advertising asset. An additional suffix-digit is used to designate assets in SD or HD quality.

► *Ad-ID adoption*: Approximately one-third (750) of US national advertisers are using Ad-ID.

* While these registry scopes include asset types beyond video, TAXI's scope has thus far been limited to video distributed through linear, digital and mobile distribution.

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Why should TAXI matter to you?
TAXI will enable US$2.5b+ in annual economic value

Asset registration | **ID flow-through** | **Measurement and reporting** → **"TAXI Compliant"**

Increased speed, transparency and accountability
in video content and advertising measurement ➡ greater overall spend

⬆ **US$2b to US$3.5b**

- Cross-platform asset identification standards ➡ common language for cross-platform measurement
- Common language for media measurement ➡ cross-platform comparability with increased speed
- Faster cross-platform comparability ➡ higher confidence in value of ad spend
- Higher confidence in value ➡ less fear of wasted spend
- Less waste ➡ greater overall year-over-year spend

Media workflow automation
within and between M&E entities ➡ significant operational cost savings

⬇ **US$500m to US$1.5b**

- Cross-platform asset identification standards ➡ common language for media transactions
- Common transactions language ➡ communications protocols between disparate systems
- Standard communications protocols ➡ workflow automation
- Workflow automation ➡ reduction or elimination of redundant, resource-intensive tasks
- Reduction in redundant tasks ➡ year-over-year cost savings

These "direct" foundational benefits make many M&E industry initiatives easier to deploy

Fewer barriers to deploying cross-platform dynamic ad insertion	Enablement of new anti-piracy tools and methods	More complete long-tail content monetization	Accelerated digital content locker adoption	Improved automated content recognition
Less complex second-screen integration	More granular media ratings	On-the-fly media asset assembly	Reduced asset storage and transmission costs	Simplified and less-costly media reconciliation

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Why should TAXI matter to you?
Increased speed, transparency and accountability → greater overall spend

Hypothesis: Difficulties tracking assets across a fragmented web of distribution points constrain growth in an increasingly complex ecosystem.

1. M&E companies repeatedly assert that comparable, cross-platform media performance data would remove a significant barrier to growth in digital ad buying.

   ▸ Brands also spend less than they might otherwise on traditional platforms because they know big dollars are wasted (a la John Wanamaker's "50%" adage).

2. One indication of how transparency and accountability promote increased trade is IDC's growth estimates for transparent digital ad marketplaces. IDC asserts that greater ad effectiveness – and therefore campaign efficiency – will drive 71% CAGR in ad spending through open RTB marketplaces.[1]

   ▸ Publishers reported **nearly 100% median display ad price increases** when using more transparent advertising (RTB) trading exchanges vs. opaque ad networks.

   ▸ Agency executives reported **a minimum of 20% (and as much as a 150%) improvement in ad effectiveness**, which increased campaign efficiency and improved ROI.

How does TAXI address this hypothesis? TAXI establishes a "primary key" for transaction logging and measurement. TAXI makes it both faster and easier to get a complete and accurate measurement picture across disparate data sources.

TAXI eliminates guesswork in merging and comparing data from internal and a variety of external measurement sources. The time required between media consumption and data analysis is therefore compressed, and visibility into programming and advertising consumption is increased.

▸ "Are the 'Ol<u>u</u>mpics' a sporting event? And how do you find all the naming variations for 'Two and a Half Men' … or is it '2½ Men'?" (*Janice Finkel-Greene, Mediabrands EVP of Buying Analytics*).

▸ "As the tail of viewing gets longer and fatter, we have to have a system of identifying all content regardless of where and when it is consumed. Only when we have this will we see the type of growth that digital deserves." (*Charles Kennedy, ABC Television President of Research*).

TAXI simplifies and accelerates data aggregation and analysis, which improves transparency:

(A) Marries transaction data from disparate sources across all distribution points

(B) Reduces errors previously caused by manually "mapping" disparate names for the same asset

Asset ID (TAXI)	MSMT	Platform	House Asset Name
10.5240/1E32-E87D-0E51-BFED-A37D-R	Kantar	Linear TV	Rookie Blue
10.5240/1E32-E87D-0E51-BFED-A37D-R	Rentrak	Linear TV	Rookie Blue 307
10.5240/1E32-E87D-0E51-BFED-A37D-R	Rentrak	VOD	Rookie Blue Season 3 Ep 07: Leap of Faith - 07/19/12

Asset ID (TAXI)	House Asset Name	Length	Air Date	Start Time	Kantar - Live	Rentrak - Live
JJCC0305H	Clean & Clear Advantage	30	7/23/2012	9:16:26 PM	1.90%	
			7/26/2012	8:58:47 PM	0.88%	
			8/6/2012	8:17:00 PM	1.92%	
			8/8/2012	9:27:17 PM	1.53%	
			8/11/2012	8:36:56 PM	1.09%	
	JOHNSON & JOHNSON; CLEAN & CLEAR	30	7/23/2012	9:16:21 PM		3.72%
JJDM0097000H	Aveeno Daily Moisturizing	15	7/23/2012	8:30:41 PM	2.79%	
			7/24/2012	11:40:35 AM	1.19%	
				2:46:20 PM	1.15%	
			7/25/2012	8:22:19 PM	2.12%	
			7/26/2012	9:34:14 PM	2.77%	
			7/27/2012	1:10:48 PM	2.54%	
			8/6/2012	11:52:41 AM	1.25%	
	JOHNSON & JOHNSON; AVEENO POSITI	15	7/23/2012	8:30:36 PM		3.95%

[1] "Real-Time Bidding in the United States and Western Europe, 2005-10," IDC, October 2011
info.pubmatic.com/rs/pubmatic/images/IDC_Real-Time%20Bidding_US_Western%20Europe_Oct2011.pdf

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Why should TAXI matter to you?
Increased speed, transparency and accountability → greater overall spend

What are the results of speed, transparency and accountability?

1. **Comparability:** TAXI enables media networks to more easily value equivalent inventory across distribution platforms.

   ▶ Expands premium inventory as spots become exchangeable.

   ▶ Creates the opportunity to establish trade rules for cross-platform make-goods and ADUs.

2. **Confidence:** TAXI reduces gaps in measuring media asset performance.

   ▶ Fewer unknowns = fewer wasted impressions.

   ▶ A dollar spent will produce closer to a dollar of benefit.

Greater overall marketplace spend. Ad spend may initially decline as advertisers pull back from wasted inventory. But as measurement improves, so will ad marketplace innovation, which will create the visibility needed to increase ROI, and thus, overall ad marketplace spend.

M&E sector becomes TAXI Compliant

Period of increased innovation

Video advertising spend

Spend on innovation

Investments in adopting TAXI

2013   2014   2015   2016   2017
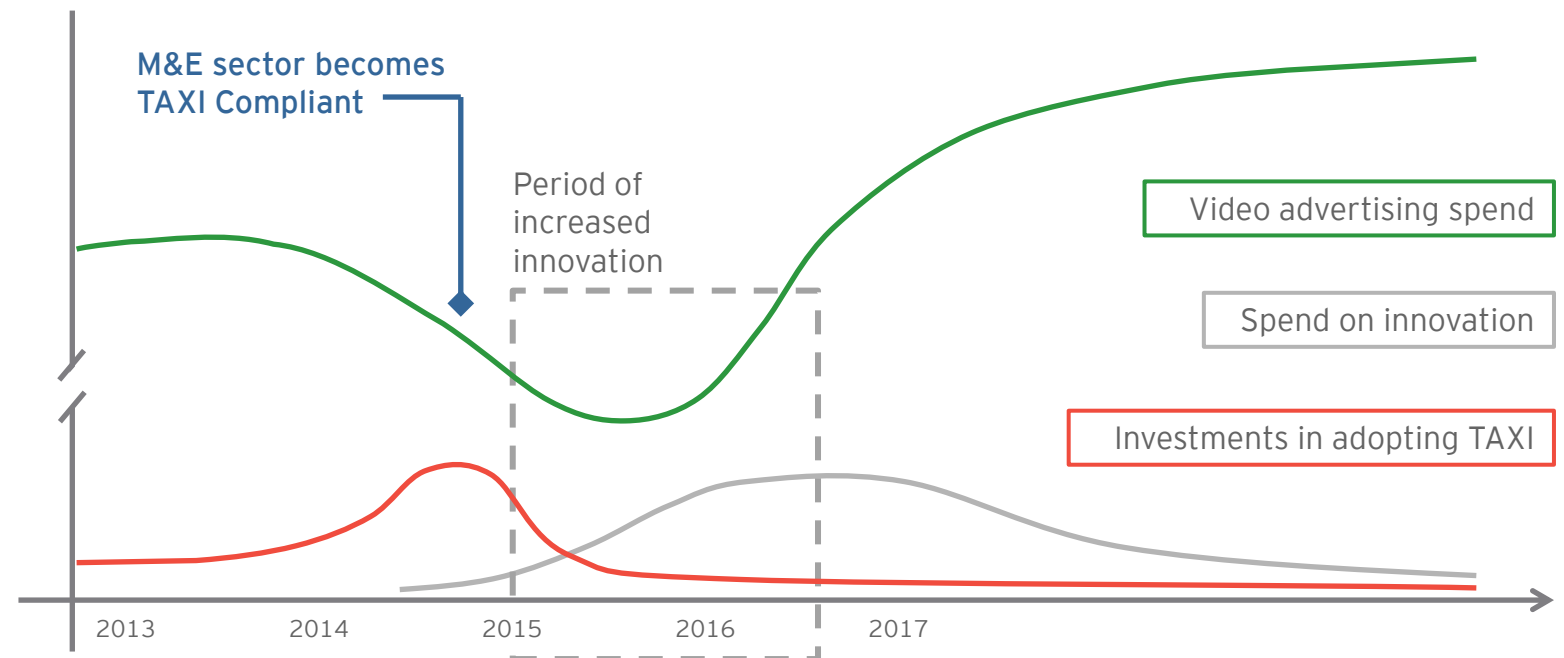
TAXI impact: $2 billion to $3.5 billion more in annual US video ad spend

On top of $70 billion in US video ad spend, PoC participants projected that existing advertisers will spend more, and a small number of new entrants will spend on the long-tail for the first time when the industry can rapidly provide comparable cross-platform ad transaction metrics.

▶ 2% to 3% increase in ad volume when fast, comparable metrics make it easier to evaluate ad spend ROI: **$1.4 billion to $2.1 billion annually**

▶ 1% to 2% price premium when sellers can demonstrate a higher value attributable to every impression: **$700 million to $1.4 billion annually**

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Why should TAXI matter to you?
Media workflow automation drives enormous operational efficiency → lower costs

Hypothesis: Core media operations costs will drop when uniquely identified assets and metadata can be automatically passed between systems.

1. Duplicative, manual data entry steps not only add labor costs to the supply chain, but also result in errors that directly impact content monetization.

   ▶ The ANA asserts that "the supply chain is unproductive and messy because much of it is mired in old, analog-based processes. … The lost productivity in time, rework and errors costs the industry **$1 billion to $3 billion annually.**" (*Bob Liodice, ANA President and Chief Executive Officer*)

2. One aspect of this waste is the low-value time and effort associated with mapping and reformatting data from one source to another.

   ▶ One large agency estimates that 200 of its digital media planners spend 50% of their time sourcing, aggregating and reformatting ad transaction data. That equates to roughly **US$10 million in digital agency fees** spent on these low-value tasks, rather than on higher-value analysis and digital planning activities. Extrapolated across the $70 billion US video advertising marketplace, this one example of waste costs advertisers **$124 million annually**.

How does TAXI address this hypothesis? TAXI's open-standard ID enables M&E technology providers to automate workflow between production, asset management, storage, distribution and measurement hardware and software.

TAXI will enable system-driven automation by creating a layer of data compatibility between production and post-production systems, and downstream asset management and storage, distribution, transmission and measurement technologies. TAXI will create a bridge for the exchange of asset-related information across the supply chain.

▶ TAXI enables "key once, use many" when systems automatically transfer descriptive metadata to and from registries, thus reducing cycle time and errors currently associated with duplicative manual data entry.

▶ The TAXI-enabled supply chain of the future will include automated aggregation and normalization of transaction data from disparate sources, using EIDR or Ad-ID as the primary keys.

▶ Data flow-through within a given entity's operations and between supply chain participants will be accelerated while error rates will decline.
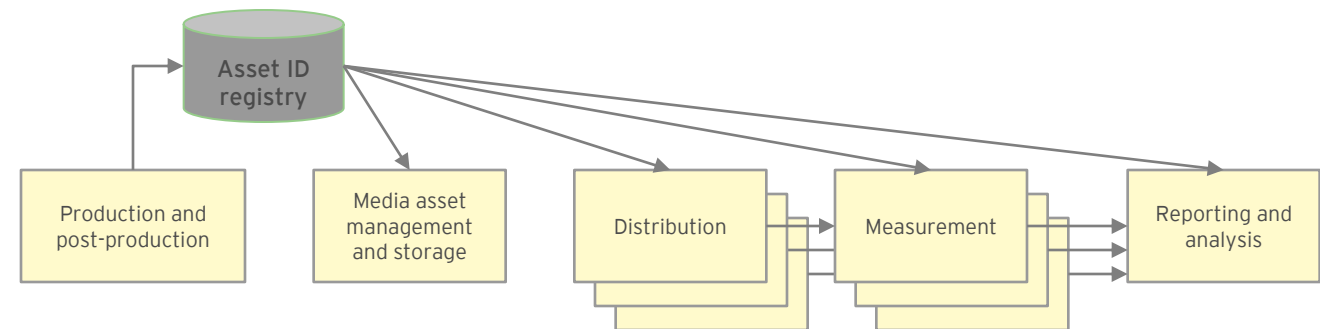
TAXI impact: Between $500 million and $1.5 billion in annual cost savings

1. TAXI will enable significant cost savings by reducing low-value data manipulation activities. Furthermore, talent redeployment to higher-value data analysis (rather than data mapping) will generate additional economic upside through ad marketplace efficiency and effectiveness.

2. If TAXI were to address even 50% of the ANA's assertion, its impact on workflow costs would yield between $500 million and $1.5 billion in savings across the M&E supply chain.

Why should TAXI matter to you?
It drives US$2.5 billion+ in annual economic benefits to the M&E supply chain

Asset registration

ID flow-through

Measurement and reporting

"TAXI Compliant"

TAXI benefits to the M&E supply chain

Greater speed, transparency and accountability
in video content and advertising measurement

US$2b to US$3.5b

Media workflow automation
within and between M&E entities

US$500m to US$1.5b
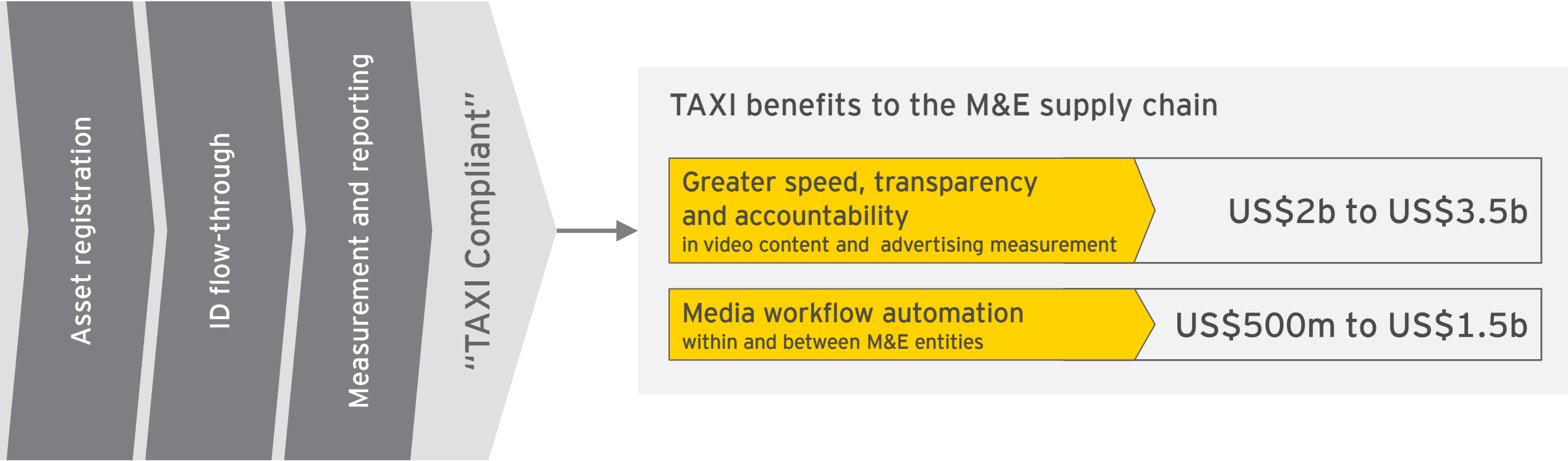
Estimated TAXI *annual* economic benefits from industry-wide adoption

US$2.5 billion to US$5 billion

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Why should TAXI matter to you?
Because the year-over-year benefits far outweigh one-time adoption costs

TAXI PoC participants collectively believe that broadcast and cable networks (the "media networks"), followed by traditional MVPDs, will need to spend the most to become TAXI Compliant. Costs will primarily be concentrated in NOCs and broadcast centers and in systems that support the commercial operations function.

► Media networks estimated spend figures ranging from high six to mid seven figures each (costs that are controllable by coordinating with common infrastructure vendors, such as Harris).
► Agencies anticipated investments generally in the low six figures each (costs that can be trimmed if coordinated across holding companies and with key vendors, such as MediaOcean, DoubleClick and FreeWheel).
► Our sample size was too small to estimate cost figures for MVPDs (e.g., cable, telco and satellite); their costs are likely to be on the same scale as the media networks.
► All the participating media research vendors indicated that embedding EIDRs and Ad-IDs into their solutions was possible, and based on client needs, would be prioritized in the normal upgrade cycle. Costs varied greatly depending on each vendor's existing capabilities to handle third-party identifiers.

Collectively, and estimated across the industry, one-time adoption costs should not exceed US$500 million.

PoC participants anticipated that the most significant effort and investment will be concentrated in the following activities:

Because of inherent differences between individual M&E companies, these activities may be incomplete and may not occur within the business functions presented. This outline is meant as a planning guide only.

Media networks

► Upgrades to sales, traffic and research systems to accommodate TAXI.
► Changes to content prep and asset management tools to enable TAXI embedding and flow-through
► Changes to master control and NOC channel chains to enable TAXI flow-through to as-run logging.
► Modifications to existing first-party digital reporting solutions to enable measurement with TAXI.
► Upgrades to existing business intelligence solutions to enable reporting on TAXI.
► Operational costs in content prep and comm ops associated with TAXI compliance.

Ad agencies

► Changes to creative production tools to enable TAXI embedding and flow-through.
► Upgrades to research and sales systems to accommodate TAXI.
► Upgrades to existing broadcast and digital campaign management solutions to enable trafficking, reporting and billing on TAXI.
► Modifications to existing first-party digital reporting solutions to enable measurement on TAXI.
► Upgrades to existing BI solutions to enable reporting on TAXI.

Digital and MVPDs

► Upgrades to sales, traffic and research systems to accommodate TAXI.
► Changes to content prep and asset management tools to enable TAXI embedding and flow-through.
► Changes to master control and NOC channel chains to enable TAXI flow-through and as-run logging.
► Modifications to existing first-party digital reporting solutions to enable measurement on TAXI.
► Upgrades to existing BI solutions to enable reporting on TAXI.
► Operational costs in content prep and comm ops associated with TAXI compliance.

Media researchers

► Upgrades to existing tracking mechanisms, including watermarks or fingerprints and digital tags to accommodate TAXI.
► Upgrades to existing BI solutions to enable reporting on TAXI.

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How do we know this will work?

Because 28 M&E entities spent more than two years proving it

TAXI Feasibility Study and PoC timeline

Logos used with permission
Some participating entities not listed

October 2010: CIMM launches TAXI.

March 2011: Ernst & Young completes a six-month TAXI feasibility study
- The M&E industry wants TAXI.
- TAXI is conceptually feasible.
- The value of TAXI, relative to costs, needs to be proven.

Summer 2011: Fifteen M&E companies, Ad-ID (ANA and 4A's) and EIDR (MovieLabs and CableLabs) agree to design a TAXI PoC.

October 2011: CIMM launches PoC design initiative.

April 2012: Ernst & Young vets PoC design with M&E industry. Twenty-eight M&E industry entities sign on to participate:
- 14 media networks, ad agencies and advertisers.
- Three digital distributors and MVPDs.
- Five media research vendors.
- Four M&E technology service providers.
- Ad-ID and EIDR.

April 2013: CIMM and Ernst & Young release the TAXI PoC results and implementation plan:
- There is a **US$2.5 billion case for TAXI with widespread support** – one that far outweighs an estimated US$500 million in one-time adoption costs across the M&E supply chain.
- Although implementing TAXI will not be simple, the costs and operational challenges are manageable.
- **Bottom line:** The M&E sector needs TAXI. It is both technically and operationally feasible. The industry is ready to move forward!

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How do we know this will work?
TAXI Proof-of-Concept tests and results

TAXI PoC test goals: Simulate how TAXI may be adopted within content and advertising supply chains, for the purpose of:

1. Validating that media companies can assign IDs to assets and register those assets through existing registries (EIDR and Ad-ID) with appropriate metadata
2. Demonstrating how media networks and agencies can simulate ID flow-through from asset origination through distribution, consumption and measurement
3. Estimating the value of aggregated cross-platform, asset-centric media measurement data from multiple sources

What we tested	What we demonstrated	What this means
Asset registration ▶ Nine media networks and agencies assigned EIDRs and Ad-IDs to 38 distinct video content and advertising assets.	▶ **Simple, low-cost:** The registration process was straightforward. Most M&E companies anticipated they would incur insignificant costs and effort to register assets, populate metadata and obtain IDs. ▶ **Existing registries work:** EIDR and Ad-ID registries can handle multiple video asset classes (e.g., long-form and short-form programs, clips, ads, promos).	**Asset registration should be on everyone's "do now" list** ▶ **EIDR and Ad-ID have made registration simple and cost-efficient.** Networks and agencies should implement this standard practice for all new video content and advertising assets. ▶ **A coordinated vendor-upgrade approach can hold technology investment costs down,** since a small number of asset management vendors serves the M&E sector.
ID flow-through ▶ Each PoC participant demonstrated how IDs will need to flow within and between internal and third-party workflows. ▶ Participants also tested an open-standard technology solution for binding IDs to assets in the broadcast television distribution domain.	▶ **As expected, legacy broadcast workflows are the most costly and complex:** Technology hurdles required that participants manually shuttle IDs through legacy broadcast infrastructure. ID flow-through in the broadcast TV domain, while possible, will be difficult and costly to implement. ID flow-through for file-based workflows (e.g., digital, VOD) will be much less costly to implement; many networks and agencies are already identifying video files with house IDs. ▶ **Technology-based ID-to-asset binding is both feasible and necessary:** Several PoC participants demonstrated one possible binding solution that, if adopted, can keep ID flow-through implementation costs to a minimum. This method, which uses the closed-captioning space, has several limitations, but it may suffice for a "v1.0" TAXI rollout.	**Focus on file-based workflows until broadcast binding standards are resolved** ▶ **Start with digital video and VOD ID flow-through.** Keeping IDs and assets together within file-based asset workflows is dramatically less challenging (and costly) to implement. Get these operational first. ▶ **Figure out binding for broadcast video before tackling flow-through in this legacy domain.** The industry needs to agree-upon a viable, scalable binding technology that will work with today's legacy broadcast distribution infrastructure. The technology tested in this PoC is certainly a candidate. Establish a working group with the support of organizations such as SMPTE, ATSC, SCTE, NABA, AMWA and CEA.
Measurement and reporting ▶ Five media research vendors and each of the participating agencies and media networks demonstrated that cross-platform consumption data can be compiled into a single data set from multiple sources.	▶ **TAXI makes it relatively easy to compare multiple data sources:** Minimal effort was required to merge cross-platform asset-centric consumption data from multiple sources representing broadcast TV, VOD and digital distribution platforms. ▶ **Ease of comparison dramatically reduces costs, effort and cycle time:** Research executives were able to estimate quantifiable data management-related cost reductions and improved time-to-results.	**"Apples-to-apples" cross-platform comparison is just the beginning** ▶ **Transparency and accountability will improve media marketplace dynamics.** TAXI makes it easier to obtain comparable asset-centric consumption data, helping to create greater marketplace transparency and accountability, which will boost overall spend. ▶ **TAXI will spark a wave of innovation.** TAXI will make it easier for the industry to implement "applications" that will further improve the content and advertising marketplace.

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How do we know this will work?
More on the technology-based ID-to-asset binding test

TAXI binding test goals: Demonstrate that an existing technology can be used to bind IDs to assets so that they can survive normal distribution through the broadcast supply chain with minimal modifications to existing infrastructures. Binding test steps were:

1. Prepare media by embedding the identifier into the MXF container
2. Encrypt the identifier and "bind" it to closed-captioning space (CC4 was used during the test)
3. Simulate satellite transmission to demonstrate that the identifier will survive distribution to affiliates
4. Simulate over-the-air ATSC transmission to demonstrate that the identifier will survive distribution to consumers

ID-to-Asset Binding Working Group

- ▶ Ad-ID
- ▶ Arbitron
- ▶ Comcast
- ▶ EIDR
- ▶ Fox
- ▶ Kantar
- ▶ NBCU
- ▶ Nielsen
- ▶ NTC
- ▶ Viacom

What we demonstrated: Closed-captioning (CC) is one possible method to bind EIDRs and Ad-IDs to commercial broadcast video assets.

1. Media identifiers can be embedded into the MXF file container.
2. EIDR and Ad-ID metadata can be inserted into the MXF files in conformance with standards such as AS-03 and AS-12.
3. EIDRs and Ad-IDs can be encrypted and un-encrypted in the closed-captioning space, though further work is needed if this method is to be commercialized.
4. EIDR separation characters may have to be removed to accommodate field limitations, but this will not affect functionality.
5. Closed-captioning data can be preserved through satellite distribution to affiliates.
6. EIDRs and Ad-IDs transported by the closed-captioning method can survive ATSC transmission to an end-user device.
7. The closed-captioning method, in conjunction with ID3 tagging, could work for mobile.

The limited broadcast binding test proved to be successful.

The use of the closed-captioning space represents an inexpensive binding methodology that is available to broadcast and cable networks today. It is a possible broadcast binding solution.

However, there are limitations to this methodology, mainly associated with maintaining the fidelity of the CC message across broadband and mobile devices and through encrypted MVPD transmissions. Further, "reading" the CC message with metering systems that require audio signatures will not be possible.

Thus, while a CC-based solution is viable in many cases, over the longer term, we recommend the industry turn to one or more technical standards organizations – such as SMPTE, AMWA, NABA, CEA, ATSC and/or SCTE – to develop more robust, scalable technical standards that satisfy a wider set of use-cases.

What do you need to do?
Become "TAXI Compliant" in 2013 … and demand compliance from your partners

1 Register all new video assets
- ▶ **Begin registering all new content and advertising assets.** EIDR and Ad-ID have made registration simple and cost-efficient.
- ▶ **Coordinate with vendors** to embed registry communications within asset transcoding, management and storage systems.

2 Operationalize asset and ID flow-through
- ▶ Support your organization in **driving ratification of ID-to-asset binding technology standards.**
- ▶ **Operationalize digital and on-demand video asset ID flow-through.** File-based workflows will be easier to adapt.
- ▶ **Explore technology-enabled methods** to embed IDs within streaming broadcast video assets from post-production through distribution, consumption and measurement.

3 Embed TAXI in all media measurement and reporting
- ▶ **Make it a requirement** that all internal and third-party measurement use TAXI as a primary key.
- ▶ **Drive ad delivery and content monetization business model transformation** in ways not previously enabled before TAXI.

What do you need to do?
Recommended two-year implementation timeline

CIMM is advocating an assertive timeline that gets "TAXI version 1.0" adopted across the M&E sector before the end of 2014.

TAXI PoC participants indicated that such a timeline was feasible with the caveat that certain technical and operational solutions may be sufficient to get entities started, but would need to be hardened and scaled in 2015 and beyond.

January 2013	January 2014

Operationalize EIDR and Ad-ID registration procedures (by December 2013)

Assign engineers to the Binding Working Group

Specify functional requirements and budget for implementing ID flow-through (during 2014 budget cycle, but not later than December 2013)

Implement ID flow-through for file-based asset workflows (by June 2014)

"TAXI Compliant" by December 31, 2014

Adopt and implement a "v1.0" ID flow-through technology for stream-based asset workflows (by September 2014)

Introduce TAXI to standards organizations to evaluate more robust ID-to-asset binding technologies for stream-based asset workflows (June 2013)

Integrate TAXI into asset-centric measurement and reporting (by December 2014)

Participating M&E organizations outlined significant activities within their businesses that will need to be initiated in order to adopt TAXI. Further outlined are several recommended steps designed to drive additional business benefits.

Because of inherent differences between individual M&E companies, these activities may be incomplete and may not occur within the business functions presented. This outline is meant as a planning guide only.

Planning guide legend

Required implementation and day-to-day operations activities (in black text, inside the bar)

Affected business functions

Recommended activities (in green, outside the bar) to achieve additional benefits

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What do you need to do?
What **media networks** need to do to become "TAXI Compliant"

	Production and post-production	Research	Ad sales	Commercial ops and digital ad ops	Media prep, NOC and broadcast engineering	Billing and finance
One-time implementation	2. Develop asset registration process with EIDR and Ad-ID registries. 1. Establish a process to hand off IDs to distribution partners.	4. Build automated transaction log ingest, aggregation and normalization capabilities. 3. Establish automated dashboards to align asset-centric transaction data with audience-centric cross-platform ratings data from third parties. 2. Build a structure to segregate creative asset types (e.g., full-length programming, clips, promos). 1. Establish requirements for inclusion of Ad-IDs and EIDRs in relevant watermarking, fingerprinting, tagging and captioning processes as required by third-party research and ACR vendors.	2. Update ad sales systems to handle EIDR and Ad-ID registration data. 1. Require that Ad-IDs be included in all insertion orders and trafficking instructions.	4. Upgrade insertion systems to handle cross-platform dynamic ad insertion and improved inventory optimization capabilities. 3. Establish single-source storage, transcoding and transmission capabilities using EIDR and Ad-ID as keys. 2. Establish schema for linear and digital video coding and tagging in order to enable occurrence-level playout reporting capabilities for all video playout sources. 1. Update trafficking, scheduling and inventory systems to handle EIDR and Ad-ID registration data.	4. Implement ID and metadata flow-through technologies within the NOC so that EIDR and Ad-ID can be passed through post-production, content management, storage and distribution systems. 3. Implement technologies to inextricably bind IDs to assets for broadcast/streaming distribution. 2. Develop ID exchange technologies to enable ID flow-through to distribution partners and third-party media measurement. 1. Update distribution logging systems, where necessary, to include EIDRs and Ad-IDs.	2. Develop capabilities to automatically ingest, normalize and present cross-platform playout logs and ratings data. 1. Update financial systems to handle EIDR and Ad-ID registration data.
Ongoing operations	1. Register all new video programming assets with EIDR. 2. Perform periodic QA to validate metadata accuracy in EIDR and Ad-ID registries.	1. Include Ad-IDs and EIDRs in relevant watermarking, fingerprinting, tagging and captioning processes as required by research and ACR vendors.	1. Accept buy-orders and trafficking instructions only for registered ads.	1. Establish automated procedures to prevent assets from being scheduled for playout without an asset identifier and minimally-required metadata 2. Establish cross-platform ad inventory optimization procedures.	1. Establish controls to verify that information is flowing through automation systems. 2. Provide IDs for file-based video assets (and metadata where required) to downstream distribution partners. 3. Insert IDs into streaming video assets using an agreed-upon ID-to-asset binding technology. 4. Establish asset de-duplication techniques.	1. Add and maintain asset IDs within rate tables governing programming and ad deals. 2. Develop and distribute asset-specific P&L data to improve financial decision making. 3. Integrate financial data into ad-centric and program-centric reporting dashboards.

Key to colors

Black text = Required activities

Green text = Recommended activities

What do you need to do?
What **programming distributors** need to do to become "TAXI Compliant"

Content acquisition	Media sales	Commercial ops and ad ops	Media prep, NOC and engineering	Billing and finance

One-time implementation

Media prep, NOC and engineering:
6. Implement technologies to inextricably bind IDs to assets for broadcast/streaming distribution.
5. Establish content prep process to pass EIDR and Ad-IDs through content management, storage and distribution systems.
4. Implement ID and metadata flow-through technologies within the NOC through broadcast operations.
3. Coordinate with ad sales and commercial ops to develop occurrence-level playout reporting capabilities for all video playout sources.
2. Develop ID exchange technologies to enable ID flow-through to distribution partners and third-party media measurement.
1. Update distribution logging systems to include TAXIs.

Commercial ops and ad ops:
4. Establish automated video ad asset ingest capabilities.
3. Upgrade insertion systems to handle more dynamic ad insertion and optimization capabilities.
2. Establish schema for digital video player beacons and tagging.
1. Update trafficking, scheduling and insertion systems to handle EIDR and Ad-ID registration data.

Media sales:
2. Establish ability to produce and provide daily asset-centric, occurrence-level summary reports for digital (mobile and web) distribution.
1. Establish ability to produce and provide daily asset-centric, occurrence-level summary reports for VOD.

Content acquisition:
1. Establish mechanism to track asset IDs in existing rights systems.

Billing and finance:
2. Update financial systems to handle EIDR and Ad-ID registration data.
1. Develop playout log and ratings data import automation capabilities.

Ongoing operations

Content acquisition:
1. Enforce policy requiring EIDRs (and, where applicable, Ad-IDs) to be provided with distribution copies received from content providers.

Media sales:
1. Include EIDRs and Ad-IDs in any standard reports provided to media network and agency partners.

Commercial ops and ad ops:
1. Verify existence of a valid asset identifier and complete metadata prior to scheduling ads for playout.
2. Establish cross-platform ad optimization procedures.

Media prep, NOC and engineering:
1. Establish periodic QA procedures to validate metadata accuracy in EIDR and Ad-ID registries.
2. Provide file-based video assets with IDs (and metadata where required) to downstream distribution partners.

Billing and finance:
1. Add and maintain asset IDs within rate tables governing programming and ad deals.
2. Develop and distribute asset-specific P&L data to improve financial decision making.
3. Integrate financial data into ad-centric and programming-centric operations reporting dashboards.

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What do you need to do?
What **advertising agencies** need to do to become "TAXI Compliant"

	Production and post-production	Strategic planning	Media planning and buying	Trafficking and distribution	Research and analytics	Billing and finance

One-time implementation

- Media planning and buying: 1. Develop automated buy-order flow-through technologies (agency to media network) for original and amended buys.

- Trafficking and distribution: 2. Develop ID exchange technologies to enable ID flow-through to media distribution vendors, video ad technology partners, networks, publishers and agency partners. 1. Upgrade campaign management systems to accommodate Ad-IDs and, as necessary, EIDRs (for inventory avails).

- Research and analytics: 1. Develop capabilities to automatically ingest, normalize and present cross-platform playout logs and ratings data.

- Billing and finance: 2. Automate post-buy discrepancy reconciliation procedures. 1. Add fields for Ad-IDs in media payment and client billing systems.

- Strategic planning: 1. Establish automated dashboards to align asset-centric transaction data with audience-centric ratings data from third parties.

- Production and post-production: 1. Develop asset registration process with the Ad-ID registry.

Ongoing operations

- Production and post-production: 1. Register all new video advertising assets with the Ad-ID registry. 2. Perform periodic QA to validate metadata accuracy in Ad-ID registry.

- Media planning and buying: 1. Include Ad-IDs in buy orders and traffic instructions.

- Trafficking and distribution: 1. Establish automated procedures to prevent assets from being trafficked without an asset identifier and minimally-required metadata 2. Provide video assets with IDs (and, as needed, private metadata not in the Ad-ID registry) to downstream video ad distribution partners.

- Research and analytics: 1. Establish QA procedures to validate the existence and accuracy of IDs in ads trafficked by the agency (e.g., monitor tags, validate flow-through to logs and measurement reports)

- Billing and finance: 1. Maintain Ad-IDs within media outlet rate tables.

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What do you need to do?
What **media research companies** need to do to become "TAXI Compliant"

Product development and engineering	Data management and analytics	Reporting

One-time implementation

Product development and engineering

7. Establish process to capture EIDRs and Ad-IDs associated with all daily linear network playout.

6. Establish process to measure MVPD VOD program and ad occurrences using EIDRs and AD-IDs as keys.

5. Establish process to capture EIDRs and Ad-IDs through digital video player beacons/tags.

4. Build a structure to segregate creative asset types (e.g., full-length programming, clips, promos, ads).

3. Update variables in tags and beacons to capture and read EIDRs and Ad-IDs.

2. Validate TAXI interplay with code/signature receipt, size of payload, latency, compression, etc.

1. Set up queries and data tables to read and pull EIDRs and Ad-IDs from these registries and media networks/distributors.

Data management and analytics

4. Set up process to automatically identify content that has an associated EIDR or Ad-ID.

3. Establish ability to produce and provide daily asset-centric, occurrence-level summary reports for digital (mobile and web) distribution.

2. Establish ability to produce and provide daily asset-centric, occurrence-level summary reports for VOD.

1. Embed EIDRs and Ad-IDs in master data.

Reporting

1. Add EIDR and Ad-ID roll-ups as dimensions in reports, dashboards and other outputs that are provided to clients.

Ongoing operations

1. Access EIDR and Ad-Id registration data.

2. Aggregate and normalize data from networks and distributors with asset IDs.

1. Analyze occurrence-level data using EIDR and Ad-ID in order to reduce processing time and improve accuracy.

Key to colors

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In addition, the **EIDR and Ad-ID registries** need to prepare for the dramatic increase in asset registrations.

Scaling considerations for these registries include:

1. Sizing hardware and software that will scale sufficiently as demand increases.

2. Implementing or expanding QA procedures.

3. Expanding live customer service and support capabilities.

4. Establishing a network of implementation partners to assist M&E entities in integrating registration with existing media asset management infrastructure.

5. Working with common industry technology vendors to embed APIs and/or create automated software hooks into the registries.

6. Working with industry trade associations to update standard contract template terms and conditions that include registry-appropriate language.

In addition, the registries may wish to engage a qualified auditor to address such functions as de-duplication, data quality and registration security controls.

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