Programmatic Council
Technical Specifications Committee

DOOH Programmatic Protocols

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v0.9.1 (post DSP Feedback)

The DPAA Creative Specifications were authored by Prohaska Consulting with support from DPAA and its Technical Specifications Committee

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Introduction

Mission:

The Technical Specifications committee was created to develop standards within the place-based advertising ecosystem to enable programmatic ad buying at scale. This includes working with Supply-Side Platforms (SSP) and Demand-Side Platforms (DSPs) to implement the standards enabling sellers and buyers to transact programmatically on digital place-based inventory.

Working Committee:

This committee represents the interests of all DPAA members and the DOOH advertising community. This committee was created with a cross-section of companies to be representative of DPAA members, external platform partners, and facilitated by Prohaska Consulting on behalf of the DPAA.

DPAA Member Companies: Media Companies	DPAA Member Companies: SSP & Platforms	Supply-Side Platforms	Demand-Side Platforms
10Ave	Ayuda Media Systems	Rubicon	Adobe (TubeMogul)
AdSpace Mall Networks	Broadsign		AppNexus
Captivate	DOmedia		Centro
Christie Digital	Vistar Media		Google (DoubleClick Bid Manager)
Clear Channel Outdoor			Videology
Gas Station TV			
Intersection			
Pattison Onestop			
Quividi			
rVue			
Screenvision Media			
Sito Mobile			
Verifone			
ZoomMedia / ClubCom			

The need for standards:

These standards are being developed to provide a framework for the platforms to pass necessary data points. Today, programmatic is a critical aspect of display advertising, but it does not fully capture the unique characteristics of place-based advertisers. These standards will work alongside existing protocols to address the specific needs of place-based media companies as well as advertisers buying place-based inventory. These standards will bring to the place-based industry the benefits of automated buying. These methodologies bring buying efficiency vs the existing manual steps required in working with each media company directly. These specifications are meant to account for the various programmatic opportunities from Open Exchange RTB to Programmatic Guaranteed.

Existing methodology:

While the needs for digital place-based advertising is unique, these specs will leverage (build-upon) existing protocols. As other standards are already in place covering the basic protocols, these specifications will address the unique needs for place-based. The foundation for these specs in the Open RTB 2.5 protocols.

Place-based specific parameters:

There are many unique elements applicable to digital place-based advertising that need to addressed within the programmatic protocols. These include:

- Impressions:
    - One-to-many: The audience (impressions delivered) for place-based advertising will generally delivery more than one impression (one-to-many) vs the one-to-one impression delivery of traditional programmatic. However, in some instances this value may be less than 1 when audience reporting identifies a small audience over an extended period of time (ex. Audited measurement identifies 30 viewers / hour (60 views). As such each view would generate .5 impressions).
    - Decimal value: The basis for the actual number of viewers is based on audited statistics provided by analytics vendors (i.e. GeoPath, Nielsen) which are produced based on weekly, monthly, or quarterly summaries. As such, for each ad display a calculation is leveraged which could result in fractional (non-integer) viewer numbers. The proposed approach is to use decimal values to ensure accuracy (in audience delivery and revenue). The expectation is that the DSP

platforms can accept the fractional values and then ultimately present the totals as rounded integer values.

- Delivery: A delivery of an ad creative is the saleable item. Typically, this would be the impression. However, in this case, this delivery can be viewed by multiple viewers. As such, the impression counts will be adjusted to account for the expected audience (Ex. 1 delivery was viewed by 9 people; therefore, 9 impressions should be recorded). This is a very different consideration to the existing OpenRTB process.

- Creative management: There are many unique considerations tied to creatives.

  - Specs: Due to infrastructure and bandwidth access considerations there are unique formats and encoding standards that need to be managed against.

  - Delivery timing: Often, creatives need to be delivered to the platform in advance of the actual delivery. As such, this transaction may not always be real-time, but instead a "delayed" delivery. Typically, delivery latency will be thirty mins to two hours, though it can additionally require an overnight process.

  - Creative encoding or adjustments: Creatives will be received by the SSP platform and converted to the necessary formats for delivery to all platform's publisher customers. As such, real-time delivery will not occur. This needs to be done once for every new creative. As such, the initial creative delivery will be skipped (to enable conversion) and subsequent plays will be delivered. Note: campaigns can still be trafficked with 1 or more creatives.

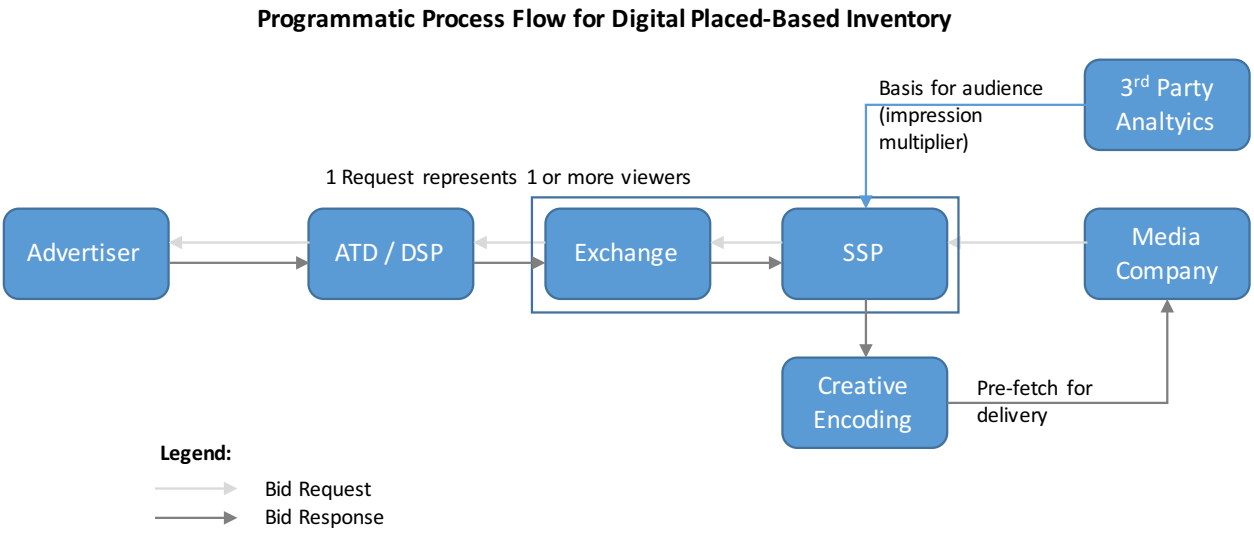
- Video pixels: Video is traditionally tracked with quartile pixels to verify start through completion. In place-based advertising, these values are always 100%.

- Demographics: The audience is a collection of users, not a pre-defined user. As such, additional data elements need to be shared for accuracy.

- Real-time: As there are unique creative requirements the transaction will not be real-time, but instead introduce some latency (a few mins to a few hours) in the delivery from the original bid time.

- Pricing: Pricing will be based on CPM (cost per thousand impressions). Each bid request will follow the "One-to-many impressions" value. The impression value will typically be greater than 1.

Process flow:



Note: as the creative is pre-fetched, the initial selection of an ad where the creative has not been processed will be skipped from display (pending encoding and delivery to the platform). Subsequent impression requests will be eligible for delivery (post encoding). A separate platform level creative caching integration between an SSP and DSP can significantly improve this process.

DPAA Programmatic Specs:

These digital place-based programmatic specs are extensions build upon the IAB's OpenRTB API Specifications v2.4 (Jan 2016). These standards are the basis for existing connections that DPAA member companies have with buying platforms. These standards do not adequately support the unique requirements for digital place-based advertising. The OpenRTB framework enables custom extensions to be created to account for variations. The unique place-based criteria can be included within these newly developed DPAA extensions.

DPAA DOOH Extensions:

Object BidRequest (3.2.1)

The BidRequest contains all the basics tied to the impression requests. The attributes will be used as follows:

Attribute	Status	Notes
id	Required	
imp	Required	
site	Will not be used	
app	Required	
device	Required	
user	Will not be used	
test	Optional	
at	Required	
tmax	Required	Maximum time in milliseconds. 1 second (tmax=1000) will be the default value, vs the typical 120.
wseat	Optional	
allimps	Optional	
cur	Optional	
bcat	Optional	
badv	Optional	
bapp	Optional	
regs	Optional	

Modifiers are needed to account for latency (delayed ad delivery).

Extension: DOOH

Attribute	Description	Type	Status
displaytime	Expected time in epoch seconds UTC the ad will be shown. This is an estimated display time used for day & time targeting.	Int64	Required

Object Imp (3.2.2)

The Object Imp will be utilized as follows:

Attribute	Status
id	Required
Banner	Required
Video	Optional
Audio	Will not be used
Native	Will not be used
Pmp	Optional
Displaymanager	Optional
Displaymanagerver	Optional
instl	Required
tagid	Optional
Bidfloor	Optional
Bidfloorcur	Optional
Clickbrowser	Optional
Secure	Optional
Iframebuster	Optional
exp	Optional

The Impression object will need to account for the updated impression value as the actuals viewers are typically going to be greater than 1 impression.

Extension: DOOH

Attribute	Description	Type	Status
impmultiply	Adjustment to represent the number of expected viewers (delivered imps) expected to see the ad. Note: the source of this value is declared in 3.2.16	Float (value >=0)	Required

- Note: ImpMultiply is proposed as a non-integer value to reflect the accuracy of the available data and the associated pricing associated with the delivery. The assumption is that the DSPs will aggregate the real numbers (non-integer) values to ultimately present the aggregated delivery totals as integer based values.

Object Banner (3.2.3)

This object will be used for image and for video executions.

Attribute	Status
w	Required
h	Required
format	Optional
id	Optional
btype	Optional
battr	Optional
pos	Required
mimes	Optional
topframe	Required
expdir	Will not be used
api	Optional

While the creative sizes will account for the unique specs the text based resolution will need to be clarified.

Extension: DOOH

Attribute	Description	Type	Status
dpi	This identifies if there is a minimum DPI for any text-based elements of the creative to ensure it is clearly legible and clear on the display.	Integer	Required
exposetime	This identifies the exposure time per view that the creative will be displayed before refreshing to the next creative. Value will be represented in seconds	Integer	Required
width	This identifies the actual physical dimension width (inches) of the ad creative's display size measured in inches. As the defined pixel sizes identify the standards, dependencies and considerations may vary based on whether the display will be on a tablet sized screen vs posters vs billboards	Integer	Required
height	This identifies the actual physical dimension length (inches) of the ad creative's display size measured in	Integer	Required

	inches. As the defined pixel sizes identify the standards, dependencies and considerations may vary based on whether the display will be on a tablet sized screen vs posters vs billboards		

Object Video (3.2.4)

This object will only be used for media consoles accepting the VAST protocol. Animated gifs (no audio "video") will deliver as a banner (3.2.3). The object will be utilized as follows:

Attribute	Status
mimes	Required
minduration	Required
maxduration	Required
protocols	Recommended
protocol	Optional
w	Optional
h	Required
startdelay	Optional
linearity	Required
skip	Will not be used
skipmin	Will not be used
skipafter	Will not be used
sequence	Optional
battr	Optional
maxentended	Value=0
minbitrate	Optional
maxbitrate	Optional
boxingallowed	Optional
playbackmethod	Required
delivery	Optional
pos	Recommended
companionad	Will not be used
api	Optional
companiontype	Will not be used

Object Audio (3.2.5)

This object will not be used as this is not a delivery format utilized.

Object Native (3.2.6)

This object will not be used utilized.

Object Format (3.2.7)

This object is not expected to be used.

Object Site (3.2.8)

This object will not be utilized. The content will be identified as Apps (3.2.29) as opposed to Sites.

Object App (3.2.9)

The App name will be used (vs Site (3.2.8)) as this is a non-website environment.

Attribute	Status
id	Optional
name	Required
bundle	Will not be used
domain	Optional
storeurl	Will not be used
Cat	Recommended
sectioncat	Will not be used
pagecat	Will not be used
ver	Will not be used
privacypolicy	Optional
paid	Will not be used
publisher	Required
content	Optional
keywords	Optional

Object Publisher (3.2.10)

This identifies the media company selling the opportunity and will be used to identify the provider (media company).

Attribute	Status
id	Required
Name	Required
Cat	Required
Domain	Recommended

Object Content (3.2.11)

This section is not expected to be utilized.

Object Producer (3.2.12)

This section is not expected to be utilized.

Object Device (3.2.13)

The device attributes need to be appended with the device venue to accurately identify the opportunity.

Attribute	Status
ua	Recommended
geo	Required
dnt	Will not be used
lmt	Will not be used
ip	Recommended
ipv6	Recommended
devicetype	Recommended
make	Optional
model	Optional
os	Optional
osv	Optional
hwv	Optional
h	Optional

w	Optional
ppi	Optional
pxratio	Optional
js	Optional
geofetch	Optional
flashver	Optional
language	Optional
carrier	Optional
connectiontype	Optional
ifa	Optional
didshal1	Optional
didmd5	Optional
dpidshal	Optional
dpidmd5	Optional
macshal	Optional
macmd5	Optional

Extension: DOOH

Attribute	Description	Type	Status
devicevenue	This identifies the venue of the console.	Integer	Required. (See Appendix A for valid values)

Object Geo (3.2.14)

This object will be used

Attribute	Status	Notes:
Lat	Required	
Lon	Required	
Type	Required	Use “Mobile Location Services”
Accuracy	Recommended	
Lastfix	Optional	
Ipservice	Optional	
Country	Recommended	
Region	Recommended	
Regionfips104	Optional	
Metro	Recommended	
City	Recommended	
Zip	Recommended	
Utcoffset	Recommended	

Extension: DOOH

Attribute	Description	Type	Status
positiontype	Descriptor identifying whether the media console is in a fixed position (ex. billboard, elevator, mall) vs a console that might move (ex. Ferry, taxi)	Integer	Required 0=fixed, 1=move

Object User (3.2.15)

While user attributes (viewer audience in the DPB context) is critical, it is not user ID specific. As such, the additional audience attributes will be added in 3.2.16 (Data).

Object Data (3.2.16)

The Data object is intended to capture additional information about the user. Within the DOOH environment, the fields will reveal attributes about the expected viewers, not just an individual user.

Data records may come from one or more sources and each source will be provided uniquely.

Note:

The passing of data records could also be solved via a Deal ID relationship as it sometimes done in traditional digital buying. This would entail setting up Deal IDs for a unique audience profile and establishing that accepted parameter between SSPs and DSPs. See section 3.2.20 (Deal)

Extension: DOOH

Attribute	Description	Type	Status
dataprovider	This identifies the source of the audience related data	Integer	Required (0=GeoPath, 1=Nielsen, 2=Quividi, 3=Publisher research, 4=Other)
agerange	This identifies the pre-defined age ranges	Integer	Optional (See Appendix B for values)

agerangepercent	This identifies the percentage of the given age range band to the overall audience enabling buyers to determine percentage of composition of the audience.	Integer	Optional
hhirange	This identifies the pre-defined household income ranges	Integer	Optional (See Appendix C for values)
hhipercent	This identifies the percentage of the given household income range to the overall audience enabling buyers to determine percentage of composition of the audience.	Integer	Optional

Object Segment (3.2.17)

This object is not expected to be utilized.

Object Reqs (3.2.18)

This object is not expected to be utilized.

Object PMP (3.2.19)

This section can be utilized as specified.

Object Deal (3.2.20)

This section can be utilized as specified.

Optionally, this section may also be utilized to accommodate data attributes (see Data 3.2.16). The application within Deal ID would not account for sending over all demographic data but instead aligning to a key audience segment desired and where that audience characteristic makes up the majority (negotiated w/the buyer) of the audience.

Bid Win & Execution Response:

General parameters:

The win notification will include parameters to identify if the placement was won and delivery confirmation. The response notifications will be finalized upon live testing of platform integrations.

- Win Notification: A win notification will be send under selection. This will be in advance of actual delivery.
- Impression served notification: The impression served notification will be sent highlighting 1) the time of delivery and 2) the impression multiplier for accurate DSP logging of the delivery.
- Video playback: Pixels will be fired for Viewability measurements at the quartile (25%, 50%, 75%, 100%) points.
- BURL: (Billing URL) impression served notification to be used as the billing & delivery notification.

About Us

About the DPAA:

The Digital Place Based Advertising Association (DPAA) leads the Digital Place Based and Digital Out of Home (DOOH) industry as marketing to consumers *outside* the home is experiencing aggressive growth versus advertising *inside* the home, which is continuing its fragmented decline.

The DOOH growth is due to societal shifts where people are spending more time out and about in urban areas. Additionally, the proliferation of digital screens outside the home with their ad-friendly capabilities, coupled with the fragmentation of ad opportunities inside the home, paves the way for this continued ascension of media spend to DPAA members. The important and wide use of mobile and location data has further empowered these screens to become powerful targeting mechanisms offering up new means of addressability and attribution.

DPAA fosters collaboration between advertisers, agencies, ad-tech, mobile companies, location data, software, hardware and others while providing guidelines, standards, best practices and industry-wide research all promoting the effectiveness of digital place based advertising.

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About Prohaska Consulting

Prohaska Consulting solves digital complexity in the media and marketing ecosystem to grow clients' revenue. Its advice and training on processes and practices, technologies and tools enable clients around the world to succeed as they navigate increasingly sophisticated systems, ever larger data sets and rising consumer and customer expectations.

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Appendix A: Device Venue

Name	ID
AIRBORNE	1
AIRPORTS	2
AIRPORTS_BAGGAGE_CLAIM	3
AIRPORTS_IN_TERMINAL	4
AIRPORTS_LOUNGES	5
ATMS	6
BACKLIGHTS	7
BARS	8
BENCHES	9
BIKE_RACKS	10
BULLETINS	11
BUSES	12
CAFES	13
CASUAL_DINING_RESTAURANTS	14
CHILD_CARE	15
CINEMA	16
CITY_INFORMATION_PANELS	17
CONVENIENCE_STORES	18
DEDICATED_WILD_POSTING	19
DOCTORS_OFFICES	20
DOCTORS_OFFICES_OBSTETRICS	21
DOCTORS_OFFICES_PEDIATRICS	22
FAMILY_ENTERTAINMENT	23
FERRIES	24
FINANCIAL_SERVICES	25
GAS_STATIONS	26
GOLF_COURSES	27
GYMS	28
HOSPITALS	29
HOTELS	30
JUNIOR_POSTERS	31
KIOSKS	32
MALLS	33
MALLS_FOOD_COURTS	34
MARINE	35

MOBILE_BILLBOARDS	36
MOVIE_THEATER_LOBBIES	37
NEWSSTANDS	38
OFFICE_BUILDINGS	39
PHONE_KIOSKS	40
POSTERS	41
QSR	42
RAIL	43
RECEPTACLES	44
RESORTS_LEISURE	45
RETAIL	46
SALONS	47
SHELTERS	48
SPORTS_ARENAS	49
SUBWAY	50
TAXIS_WRAPPED_VEHICLES	51
TRUCKSIDE	52
UNIVERSITIES	53
URBAN_PANELS	54
VETERINARIAN_OFFICES	55
WALLS_SPECTACULARS	56
OTHER	57

Appendix B: Age Ranges

ID#	Gender	Age Range
1	Female	All
2	Female	15-17
3	Female	18-24
4	Female	25-34
5	Female	35-44
6	Female	45-49
7	Female	50-54
8	Female	55-64
9	Female	65+
10	Male	All
11	Male	15-17
12	Male	18-24
13	Male	25-34
14	Male	35-44
15	Male	45-49
16	Male	50-54
17	Male	55-64
18	Male	65+
19	Persons	15-17
20	Persons	18-24
21	Persons	25-34
22	Persons	35-44
23	Persons	45-49
24	Persons	50-54
25	Persons	55-64
26	Persons	65+

Appendix C: HHI Ranges

ID#	HHI Range
1	0 - $24,999
2	$25,000 - $39,999
3	$40,000 - $59,999
4	$60,000 - $74,999
5	$75,000 - $99,999
6	$100,000+