
MMD API Documentation

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Introduce

This documentation discuss the MMD API, the following topic are included:

- *API Concepts*
- *API Reference*

Contents

2.1 MMD API Concept

2.1.1 Introduce

MMD API, or MMD commands, are sets of **JSON** format message to manipulate MMD scenes, objects and buffers. The typical usage of MMD API would be display alarms, create animations or display customized information panel upon various of MMD objects.

2.1.2 Methods to invoke MMD API

There are 4 ways to invoke MMD API:

- Javascript method call in browser
- P2 server
- Message Queue
- ...

2.2 API Reference

2.2.1 ObjectCommand

Base Class, commands which inherits from ObjectCommand will have following methods build-in.

Table 2.1: **Parameters**

Name	Required	Description
id	No	Get object by ID
uid	No	Get object by UID, e.g. user define ID
ids	No	Get objects by ID array
uids	No	Get objects by UID array
fromBuffer	No	Get content from buffer, would be one or more objects, or command results
toBuffer	No	Buffer to save command results

2.2.2 Buffer

CopyBuffer

Copy content of source buffer to target buffer, content in target buffer will be overwrite.

Note: This command only apply to object buffers

Table 2.2: Parameters

Name	Required	Description
fromBuffer	Yes	source buffer path
toBuffer	Yes	target buffer path

Example

- copy buffer by full path

```
1 {  
2   "cmd": "CopyBuffer",  
3   "fromBuffer": {"ObjectManager": "RunBuffer/buffer1"},  
4   "toBuffer": {"ObjectManager": "RunBuffer/buffer2"}  
5 }
```

- copy buffer by relative path

```
1 {  
2   "cmd": "CopyBuffer",  
3   "fromBuffer": "buffer1",  
4   "toBuffer": "buffer2"  
5 }
```

NOTE

- buffer1 same as {"ObjectManager": "RunBuffer/buffer1"}
- buffer2 same as {"ObjectManager": "RunBuffer/buffer2"}

MergeBuffer

Copy content of source buffer to target buffer, content in target buffer will be reserved.

Note: This command only apply to object buffers

Table 2.3: Parameters

Name	Required	Description
fromBuffer	Yes	source buffer path
toBuffer	Yes	target buffer path

Example


```

1 {
2   "cmd": "MergeBuffer",
3   "fromBuffer": {"ObjectManager": "RunBuffer/buffer1"},
4   "toBuffer": {"ObjectManager": "RunBuffer/buffer2"}
5 }

```

SubtractBuffer

Delete objects in target buffer which are identical to objects in source buffer.

Note: This command only apply to object buffers

Table 2.4: Parameters

Name	Required	Description
fromBuffer	Yes	source buffer path
toBuffer	Yes	target buffer path

Example

```

1 {
2   "cmd": "SubtractBuffer",
3   "fromBuffer": {"ObjectManager": "RunBuffer/buffer1"},
4   "toBuffer": {"ObjectManager": "RunBuffer/buffer2"}
5 }

```

SetObjectsToBuffer

Assign object to buffer.

Table 2.5: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
toBuffer	Yes	target buffer path

Example

- refer object by uid

```

1 {
2   "cmd": "SetObjectsToBuffer",
3   "uid": "obj01",
4   "toBuffer": {"ObjectManager": "RunBuffer/objsBuffer"}
5 }

```

- object uid list

```
1 {
2   "cmd": "SetObjectsToBuffer",
3   "uids": ["obj01", "obj02"],
4   "toBuffer": {"ObjectManager": "RunBuffer/objsBuffer"}
5 }
```

- refer object by id

```
1 {
2   "cmd": "SetObjectsToBuffer",
3   "id": "dg23dvw41hrdve",
4   "toBuffer": {"ObjectManager": "RunBuffer/objsBuffer"}
5 }
```

SetBufferValue

Assign value to buffer.

Table 2.6: Parameters

Name	Required	Description
toBuffer	Yes	target buffer path
value	Yes	value to be set

Example

- empty buffer

```
1 {
2   "cmd": "SetBufferValue",
3   "toBuffer": {"ObjectManager": "RunBuffer/buffer1"},
4   "value": ""
5 }
```

2.2.3 Control

CreatePlacement

Create object.

Table 2.7: Parameters

Name	Required	Default	Description
uid	Yes		UserID
bundleId	Yes		Model ID
parentId	No	Current floor or park	Parent Object ID. Note: Only supports floor or park as parent.
parentUid	No	Current floor or park	Parent Object UID. Note: Only supports floor or park as parent
transformProxyId	No		Reference Object ID, if specified, pos, rot and scl are relative to reference object
transformProxyUid	No		Reference Object UID, if specified, pos, rot and scl are relative to reference object
transformProxyFromBuffer	No		Reference Object from Buffer, if specified, pos, rot and scl are relative to reference object
pos	No	[0, 0, 0]	Object Position Note: if transformProxy is specified, pos is relative to transformProxy object, otherwise is relative to parent object.
rot	No	[0, 0, 0]	Object rotation in 3-element tuple as Euler angles, use alternatively with quat, unit: degree. Note: if transformProxy is specified, rot will based on transformProxy object co-ordinate, otherwise based on parent object. see <i>Euler Angles</i>
quat	No	[0, 0, 0, 1]	Object rotation specified by a 4-element tuple, use alternatively with rot. Any rotation can be determinate by a single axis with rotation angle. Give a axis (x, y, z) and a angle θ , rotation can be calculated as $\text{quat} = [$
2.2. API Reference			

Example

```
1 {
2   "cmd": "CreatePlacement",
3   "uid" : "object01",
4   "bundleId": "F933B1A524B94050BC7A82B15D2057F5",
5   "transformProxyUid": "carbin01",
6   "pos": [0, 2, 0],
7   "rot": [0, 90, 0],
8   "scl": [0.1, 0.2, 0, 2]
9 }
```

Euler Angles

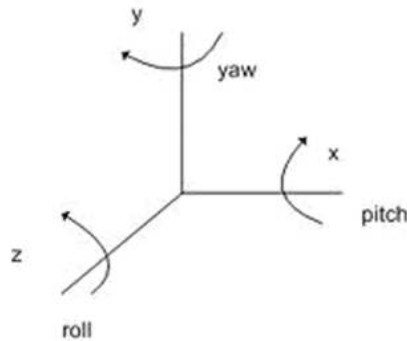


Fig. 2.1: Fig 1. Euler angles is essentially rotation against axis x,y and z while y is the vertical axis.

CreatePlacementFromChildren

Create object from model.

Note: name conversion for object created by this method is {object uid}_{model name}

Table 2.8: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
childNameList	Yes	Array of object names to be created from model
toBuffer	No	uffer name which objects is saved to

Example

```
1 {
2   "cmd": "CreatePlacementFromChildren",
3   "uid": "silo",
4   "childNameList": ["Window_01", "Window_02"],
5   "toBuffer": "window"
6 }
```

GetObjectsByCondition

Get objects by search criteria.

Table 2.9: Parameters

Name	Re-quired	Description
condition	Yes	Search criteria
fromBuffer	No	Specify buffer as search scope
under-LevelUid	No	Specify parent object by uid, which will includes all children objects. Parent object must be floor or park.
underLevel-Buffer	No	Specify parent object by buffer, which will includes all children objects. Parent object must be floor or park.
toBuffer	No	Save search results to buffer

Example

```

1 {
2     "cmd": "GetObjectsByCondition",
3
4     //"_default_" condition always equals to true
5     //"condition": "_default_",
6
7     //search object by id or uid
8     //"condition": {"OBJECT":"4"},
9
10    //search object by classId
11    //"condition": {"CLASSID":3},
12
13    //search object by object property
14    //"condition": {"ATTRIBUTE":{"PropertyDict/Sex":"Male"}},
15
16    //AND operator
17    //"condition": {"AND":[{"PropertyDict/sex":"Male"}, {"MoniterData/RealTimeData/Status":"Normal"}]},
18
19    //OR operator
20    //"condition": {"OR":[{"PropertyDict/sex":"Male"}, {"MoniterData/RealTimeData/Status":"Normal"}]},
21
22    //NOT operator, can be used in conjunction with AND or OR
23    //"condition": {"NOT":{"AND":[{"PropertyDict/Sex":"Male"}, {"MoniterData/RealTimeData/Status":"Normal"}]}},
24
25    //write search condition in brief mode
26    //number, which is equivalent to {"CLASSID":3}
27    //"condition": 3,
28
29    //string, which is equivalent to {"OBJECT":"4"}
30    //"condition": "4",
31
32    //key/value pair, which is equivalent to object property, e.g. {"ATTRIBUTE":{"PropertyDict/Sex":"Male"}}
33    "condition": {"PropertyDict/Sex":"Male"},
34
35    "toBuffer": "Man"
36 }
37

```

Show

Set object visibility.

Table 2.10: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
enable	Yes	True or False

Example

```
1 {  
2   "cmd": "Show",  
3   "uid": "silo",  
4   "enable": false  
5 }
```

SetPickEnable

Set whether object can be ‘picked’.

Table 2.11: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
enable	Yes	True or False

```
1 {  
2   "cmd": "SetPickEnable",  
3   "uid": "silo",  
4   "enable": false  
5 }
```

SetPosition

Set object position.

Table 2.12: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
pos	Yes	Coordinate, for instance [0, 0, 0] Note: Coordinate is relative to current floor or park

Example

```

1 {
2   "cmd": "SetPosition",
3   "uid": "silo",
4   "pos": [0, 0, 0]
5 }

```

SetScale

Set object scale.

Table 2.13: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
scale	Yes	scale value, for instance, [2, 2, 2]

Example

```

1 {
2   "cmd": "SetScale",
3   "uid": "silo",
4   "scale": [1, 2, 1]
5 }

```

Sitdown

Place object on the floor.

Table 2.14: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference

Example

```
1 {  
2   "cmd": "Sitdown",  
3   "uid": "chair_01"  
4 }
```

MoveTo

Move object to given position with given speed.

Table 2.15: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
fromPos	No	current position	Start position, relative to current floor or park
pos	Yes	End position, relative to current floor or park	
targetUid	No		End position by object ID
time	No	2	Duration in seconds, use with 'speed' alternatively
speed	No	1	Moving speed in meter per second, use with 'time' alternatively
delay	No		delay in seconds
easeType	No	linear	Start and/or ending mode, click here for list of ease modes
loopType	No	none	Repeat mode can be one of: <ul style="list-style-type: none"> • none: do not repeat • loop: repeat • pingPong: move from start to end , then move from end to start, repeat the process
orientToPath	No		Align with moving direction
autoCreate	No		Create new object and move it
autoCreate/enable	No		Sub parameter of autoCreate, valid if autoCreate is enabled
autoCreate/bundleId	No		Sub parameter of autoCreate specify model ID while create new moving object, Valid if autoCreate is enabled
autoCreate/pos	No		Sub parameter of autoCreate: object position, relative to current floor or park. Valid if autoCreate is enabled
autoCreate/targetUid	No		Sub parameter of autoCreate set coordinate of new object by existing object uid. Valid if autoCreate is enabled
autoCreate/props	No		Sub parameter of autoCreate set properties of new object. Valid if autoCreate is enabled.

Example

```
1 {
2   "cmd": "MoveTo",
3   "uid": "object01",
4   "pos": [1,0,1]
5 }
```

```
1 {
2   "cmd": "MoveTo",
3   "uid": "object01",
4   "pos": [1,0,1],
5   "time": 2.0,
6   "delay": 2.0,
7   "easeType": "easeInOutQuad"
8 }
```

```
1 {
2   "cmd": "MoveTo",
3   "uid": "object01",
4   "pos": [1,0,1],
5   "speed": 2.0,
6   "delay": 2.0,
7   "orientToPath": true,
8   "loopType": "loop",
9   "easeType": "linear",
10  "autoCreate": {
11    "enable": true,
12    "bundleId": "0AF78802F2F64DB2AEF805CB78D57E07",
13    "targetUid": "posObj01",
14    "props": {
15      "Plate": "A001"
16    }
17  }
18 }
```

MovePath

Set Move Path.

Table 2.16: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
pointPath	Yes	A set of positions as moving path, relative to floor or park.	
objectPath	No	A set of object uid as moving path	
time	No	2	Duration in seconds, use with 'speed' alternatively
speed	No	1	Moving speed in meter per second, use with 'time' alternatively
delay	No		delay in seconds
easeType	No	linear	Start and/or ending mode, click here for list of ease modes
loopType	No	none	Repeat mode can be one of: <ul style="list-style-type: none"> • none: do not repeat • loop: repeat • pingPong: move from start to end , then move from end to start, repeat the process
orientToPath	No		Align with moving direction
autoCreate	No		Create new object and move it
autoCreate/enable	No		Sub parameter of autoCreate, valid if autoCreate is enabled
autoCreate/bundleId	No		Sub parameter of autoCreate specify model ID while create new moving object, Valid if autoCreate is enabled
autoCreate/pos	No		Sub parameter of autoCreate: object position, relative to current floor or park. Valid if autoCreate is enabled
autoCreate/targetUid	No		Sub parameter of autoCreate set coordinate of new object by existing object uid. Valid if autoCreate is enabled
autoCreate/props	No		Sub parameter of autoCreate set properties of new object. Valid if autoCreate is enabled.

Example

```
1 {
2   "cmd": "MovePath",
3   "uid": "object01",
4   "pointPath": [[1,0,1], [1,0,0], [12,0,0]]
5 }
```

```
1 {
2   "cmd": "MovePath",
3   "uid": "object01",
4   "objectPath": ["obj01", "obj02", "obj03"],
5   "time": 2.0,
6   "delay": 2.0,
7   "easeType": "easeInOutQuad"
8 }
```

```
1 {
2   "cmd": "MovePath",
3   "uid": "object01",
4   "objectPath": ["obj01", "obj02", "obj03"],
5   "speed": 2.0,
6   "delay": 2.0,
7   "orientToPath": true,
8   "loopType": "loop",
9   "easeType": "linear",
10  "autoCreate": {
11    "enable": true,
12    "bundleId": "0AF78802F2F64DB2AEF805CB78D57E07",
13    "targetUid": "posObj01",
14    "props": {
15      "plate": "A001"
16    }
17  }
18 }
```

Attach

Attach to object.

Table 2.17: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
targetId	No	Set target object by ID
targetUid	No	Set target object by UID
targetFromBuffer	No	Set target object from buffer
pos	No	Offset to target object
rot	No	Rotation relative to target object

Example

```
1 {
2   "cmd": "Attach",
```

```

3  "uid": "eyes",
4  "targetUid": "head",
5  "pos": [0,0.1,0],
6  "rot": [0,90,0]
7  }

```

Detach

Detach from object.

Table 2.18: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference

Example

```

1  {
2    "cmd": "Detach",
3    "uid": "eyes"
4  }

```

AutoRotate

Rotate object

Table 2.19: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
speed	No	180	Rotate speed by degree per second
enable	No	true	Stop auto rotating if set to false

Example

- Start auto rotating

```

1  {
2    "cmd": "AutoRotate",
3    "fromBuffer": "fan"
4  }

```

- Stop auto rotating

```

1  {
2    "cmd": "AutoRotate",
3    "fromBuffer": "fan",
4    "enable": false
5  }

```

Rotate

Rotate object by a given angle.

Table 2.20: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
rot	No		A 3-element array as rotation angle. unit = degree
space	No	self	rotate against world or itself. Can be one of : <ul style="list-style-type: none">• world: rotate against world.• self: rotate as itself.

Example

```
1 {  
2   "cmd": "Rotate",  
3   "fromBuffer": "fan",  
4   "rot": [0, 90, 0],  
5   "space": "self"  
6 }
```

Destroy

Destroy object.

Table 2.21: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference

Example

```
1 {  
2   "cmd": "Destroy",  
3   "fromBuffer": "Trash"  
4 }
```

CreateTimerObject

Create timer object, can be used as data source, *invisible* in UI.

Table 2.22: Parameters

Name	Required	Description
toBuffer	Yes	Buffer to store time object

Example

```

1 {
2   "cmd": "CreateTimerObject",
3   "toBuffer": "timer01"
4 }
```

Properties of timer object

Table 2.23: Properties of current time

Name	Description
YearMonthDay	return string as <code>yyyy.MM.dd</code>
HourMinuteSecond	return string as <code>HH:mm:ss</code>
HourMinuteSecondMillisecond	return string as <code>HH:mm:ss:ffff</code>
YearMonthDayHourMinuteSecond	return string as <code>yyyy.MM.dd HH:mm:ss</code>
Year	Year of YearMonthDayHourMinuteSecond
Month	Month of YearMonthDayHourMinuteSecond
Day	Day of YearMonthDayHourMinuteSecond
Hour	Hour of YearMonthDayHourMinuteSecond
Minute	Minute of YearMonthDayHourMinuteSecond
Second	Second of YearMonthDayHourMinuteSecond
Millisecond	Millisecond of HourMinuteSecondMillisecond
DayOfYear	Day of year
DayOfWeek	Day of week[0-6] while 0 is Sunday

Table 2.24: Properties of total running time

Name	Description
TimerYear	Year of total running time
TimerAllYear	Same as TimerYear
TimerMonth	Month mod year
TimerAllMonth	Total month
TimerDay	Day mod month
TimerAllDay	Total day

2.2.4 Selection

AddToCandidate

Add objects to 'candidate set'.

Note: Candidate set will be reset after scene switch

Table 2.25: **Parameters**

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference

Example

```
1 {  
2   "cmd": "AddToCandidate",  
3   "uids": ["obj01", "obj02"]  
4 }
```

ClearCandidate

Empty candidate set.

Note: Candidate set will be reset after scene switch.

Parameters

No parameters.

Example

```
1 {  
2   "cmd": "ClearCandidate"  
3 }
```

RemoveFromCandidate

Remove objects from candidate set.

Note: Candidate set will be reset after scene switch

Table 2.26: **Parameters**

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference

Example

```

1 {
2   "cmd": "RemoveFromCandidate",
3   "uids": ["obj01", "obj02"]
4 }

```

AddToSelection

Add objects to ‘selection set’ and marked as ‘selected’.

Table 2.27: **Parameters**

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference

Example

```

1 {
2   "cmd": "AddToSelection",
3   "uids": ["obj01", "obj02"]
4 }

```

ClearSelection

Empty selection set and mark all objects as ‘unselected’.

Parameters

No parameters.

Example

```

1 {
2   "cmd": "ClearSelection"
3 }

```

RemoveFromSelection

Remove objects from selection set and mark as ‘unselected’.

Table 2.28: **Parameters**

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference

Example

```
1 {  
2   "cmd": "AddToSelection",  
3   "uids": ["obj01", "obj02"]  
4 }
```

GetSelection

Save objects in selection set to buffer

Table 2.29: Parameters

Name	Required	Description
toBuffer	Yes	Buffer to save object

Example

```
1 {  
2   "cmd": "GetSelection",  
3   "toBuffer": {"ObjectManager": "RunBuffer/selection"}  
4 }
```

LockSelection

Lock selection set, cannot remove or add new object if locked.

Parameters

No parameters.

Example

```
1 {  
2   "cmd": "LockSelection"  
3 }
```

UnlockSelection

UnlockSelection selection set.

Parameters

No parameters.

Example

```

1 {
2   "cmd": "UnlockSelection"
3 }

```

EnableRectangleSelect

Enable bulk selector in UI.

Table 2.30: Parameters

Name	Required	Description
enable	Yes	True or False

Example

```

1 {
2   "cmd": "EnableRectangleSelect",
3   "enable": true
4 }

```

EnalbeCheckRectangleUpdate

Update bulk selection in real-time, recommended value: `false`

Table 2.31: Parameters

Name	Required	Description
enable	Yes	True or False

Example

```

1 {
2   "cmd": "EnalbeCheckRectangleUpdate",
3   "enable": true
4 }

```

LimitRectangleSelectNum

Limit number of selected objects by bulk selector.

Table 2.32: Parameters

Name	Required	Description
num	Yes	maxim number of selected objects by bulk selector

Example

```
1 {
2   "cmd": "LimitRectangleSelectNum",
3   "num": 4
4 }
```

2.2.5 Resource

DownloadBundle

Download model.

Table 2.33: Parameters

Name	Required	Description
bundleId	Yes	Model Id
cmds	No	Callback command after download

Example

- Change object model after download

```
1 {
2   "cmd": "DownloadBundle",
3   "bundleId": "F933B1A524B94050BC7A82B15D2057F5",
4   "cmds": [{
5     "cmd": "ChangePlacementBundle",
6     "uid": "object01",
7     "bundleId": "F933B1A524B94050BC7A82B15D2057F5"
8   }]
9 }
```

ChangePlacementBundle

Change object model.

Note: Model must be downloaded or used in scene.

Table 2.34: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
bundleId	Yes	Model ID

Example

- Change object model

```

1 {
2   "cmd": "ChangePlacementBundle",
3   "uid": "object01",
4   "bundleId": "F933B1A524B94050BC7A82B15D2057F5"
5 }

```

DownloadTexture

Download texture.

Table 2.35: **Parameters**

Name	Required	Description
url	Yes	URL to download texture, can be relative path based on mmd server URL
cmds	Yes	Callback command after download

Example

- Change object texture after download

```

1 {
2   "cmd": "DownloadTexture",
3   "url": "images/selection.png", //URL or relative path based on mmd server URL
4   "cmds": [{
5     "cmd": "ChangePlacementTexture",
6     "uid": "object01",
7     "url": "images/selection.png"
8   }]
9 }

```

ChangePlacementTexture

Change texture of object.

Note: texture must be downloaded or used in scene.

Table 2.36: **Parameters**

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
url	Yes	Texture URL, or relative path based on mmd server URL

Example

- Change texture of object

```
1 {  
2   "cmd": "ChangePlacementTexture",  
3   "uid": "object01",  
4   "url": "images/selection.png"  
5 }
```

2.2.6 Effect

SetTransparency

Set transparency of given object.

Table 2.37: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
trans	Yes	Value range [0–1] <ul style="list-style-type: none">• 1: 100% transparent• 0: No transparency

Example

- Set Object Transparency

```
1 {  
2   "cmd": "SetTransparency",  
3   "uid": "object01",  
4   "trans": 0.25  
5 }
```

SetColor

Set object color.

Table 2.38: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
color	Yes	Color in RGBfor instance, red is [255, 0, 0]
ratio	No	Effect ratio, range from 0 to 1

Example

- Set Object Color

```
1 {  
2   "cmd": "SetColor",  
3   "uid": "object01",
```

```

4   "color": [1, 0, 0],
5   "ratio": 0.75
6 }

```

Fade

Fade effect.

Table 2.39: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
start	Yes		Start transparent value, range [0-1]
end	Yes		End transparent value, range [0-1]
time	No	1	Effect duration in seconds
endAutoRelease	No	true	if resume object status after effect end
enable	No	true	Enable fading effect

Example

- Fading Effect

```

1 {
2   "cmd": "Fade",
3   "uid": "object01",
4   "start": 1.0,
5   "end": 0.0,
6   "time": 1.0,
7   "endAutoRelease": true
8 }

```

- Disable Effect

```

1 {
2   "cmd": "Fade",
3   "uid": "object01",
4   "enable": false
5 }

```

FadeIn

Fade In Effect.

Table 2.40: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
time	Yes	1	Effect duration in seconds.

Example

```
1 {  
2   "cmd": "FadeIn",  
3   "uid": "object01",  
4   "time": 1.0  
5 }
```

FadeOut

Fade Out Effect.

Table 2.41: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
time	Yes	1	Effect duration in seconds.

Example

```
1 {  
2   "cmd": "FadeOut",  
3   "uid": "object01",  
4   "time": 1.0  
5 }
```

Flash

Flash effect.

Table 2.42: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
start	Yes		Start transparent value
end	Yes		End transparent value
time	No	1	Effect duration in seconds
endAutoRelease	No	true	if resume object status after effect end
enable	No	true	Enable fading effect

Example

- Flash Effect

```
1 {  
2   "cmd": "Flash",  
3   "uid": "object01",  
4   "start": 1.0,  
5   "end": 0.0,  
6   "time": 1.0,
```



```

7   "endAutoRelease":true
8 }

```

- Disable Flash

```

1 {
2   "cmd": "Flash",
3   "uid": "object01",
4   "enable":false
5 }

```

ColorFade

ColorFade effect.

Table 2.43: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
color	Yes		Color used in effect
start	Yes		Color density at the start, value range [0–1]
end	Yes		Color density at the end, value range [0–1]
time	No	1	Effect duration in seconds
endAutoRelease	No	true	if resume object status after effect end
enable	No	true	Enable fading effect

Example

- Change object to red in one second

```

1 {
2   "cmd": "ColorFade",
3   "uid": "object01",
4   "color": [1,0,0],
5   "start":0.0,
6   "end":1.0,
7   "time":1.0,
8   "endAutoRelease":false
9 }

```

- Disable Effect

```

1 {
2   "cmd": "ColorFade",
3   "uid": "object01",
4   "enable":false
5 }

```

2.2.7 UI

ShowPanel

Show or hide setting panel.

Table 2.44: Parameters

Name	Required	Description
panel	Yes	Name of the panel, can be one of: <ul style="list-style-type: none">• viewPointPanel Viewpoint Panel• fuctionListPanel Function List Panel• switch3dPanel 2D-3D Switch Panel• effectPanel Effect Panel• screenShotPanel ScreenShot Panel• levelPanel Floor Panel
enable	Yes	Show or hide panel

Example

```
1 {
2   "cmd": "ShowPanel",
3   "panel": "viewPointPanel",
4   "enable": false
5 }
```

CreatePlacemarkTemplate

Create new UI panel.

Table 2.45: Parameters

Name	Required	Description
template	Yes	Panel settings, see below sample code for details

Example

```
1 {
2   "cmd": "CreatePlacemarkTemplate",
3   "template": {
4     "name": "Template Example",
5
6     //panel size
7     "bgWidth": 243,
8     "bgHeight": 149,
9
10    //position of panel axis
11    "horizontalAlignment": "LEFT",    // horizontal position, can be one of LEFT CENTER RIGHT
12    "verticalAlignment": "TOP",      // vertical position, can be one of TOP CENTER BOTTOM
13  }
```

```

14 //controls included in panel
15 "showMapping": {
16     "Background": {
17         //parameters
18         "type": "image",
19         "sortOrder": 0,
20         "drawPos": [0, 0],
21         "drawSize": [ 243, 149 ],
22
23         //control axis position
24         "horizontalAlignment": "LEFT",    //horizontal position, can be one of LEFT CENTER RIGHT
25         "horizontalAlignmentOffset": 0,    //horizontal offset
26         "verticalAlignment": "TOP",    //vertical position, can be one of TOP CENTER BOTTOM
27         "verticalAlignmentOffset": 0,    //vertical offset
28
29         //private parameters
30         "image": "userimage/4815/CustomTexture/20151023824126.png",
31         "color": [0,0,1],    //color settings may mix with image
32
33         //data source settings
34         "getMethod": "objectPropertyMapping",
35         "propertyPath": "MonitorData/RealTimeData/status",
36         "objectPropertyMapping": {
37             "_default_": "userimage/4815/CustomTexture/1.png",    //image location
38             "alarms": { "color": [1,0.2,0.2] },    //change color
39             "error": {    //change color and texture at the same time
40                 "image": "userimage/4815/CustomTexture/3.png",
41                 "color": [1,0,0]
42             }
43         }
44     },
45     "name": {
46         //parameters
47         "type": "text",
48         "sortOrder": 1,
49         "drawPos": [0, 0],
50         "drawSize": [243, 39],
51
52         //axis position
53         "horizontalAlignment": "LEFT",    //horizontal position, can be one of LEFT CENTER RIGHT
54         "horizontalAlignmentOffset": 0,    //horizontal offset
55         "verticalAlignment": "TOP",    //vertical position, can be one of TOP CENTER BOTTOM
56         "verticalAlignmentOffset": 0,    //vertical offset
57
58         //private parameters
59         "fontFamily": "Arial",    //font family
60         "fontSize": 14,
61         "fontColor": [1,1,1,1],
62         "fontStyle": "Bold",
63         "fontShadow": false,
64         "fontShadowThickness": 2,
65         "fontShadowColour": [0,0,0],
66         "fontShadowOffset": [2, 2],
67         "fontOutline": true,
68         "fontOutlineThickness": 2,
69         "horizontalOverflow": false,
70         "verticalOverflow": true,
71         "fontOutlineColour": [0,0,0],

```

```

72         "horizontalTextAlignment": "CENTER",
73         "verticalTextAlignment": "CENTER",
74         "horizontalWriterAlignment": "TOP",
75         "verticalWriterAlignment": "LEFT",
76
77         //data source
78         "getMethod": "objectProperty",
79         "propertyPath": "UserID"
80     },
81     "status": {
82         //control parameters
83         "type": "text",
84         "sortOrder": 1,
85         "drawPos": [26,80],
86         "drawSize": [50,30],
87
88         //control private paramters, list only common ones
89         "fontSize": 14,
90         "fontColor": [1,1,1,1],
91
92         //data source
93         "getMethod": "objectPropertyMapping",
94         "propertyPath": "MonitorDatas/RealTimeData/status",
95         "objectPropertyMapping": {
96             "_default_": {"text": "Normal", "fontColor": [0,1,0]},
97             "false": {"text": "Error", "fontColor": [1,0,0]}
98         }
99     },
100     "progressBar": {
101         //parameters
102         "type": "progressBar",
103         "sortOrder": 1,
104         "drawPos": [74, 40],
105         "drawSize": [128, 20],
106
107         //axis position
108         "horizontalAlignment": "LEFT", //horizontal position, can be one of LEFT CENTER RIGHT
109         "horizontalAlignmentOffset": 0, //horizontal offset
110         "verticalAlignment": "TOP", //vertical position, can be one of TOP CENTER BOTTOM
111         "verticalAlignmentOffset": 0, //vertical offset
112
113         //private parameters
114         "fillDir": "right", // "up" "down" "left" "right"
115         "barImage": "uGUI/ProgressBar/img_0",
116         "min": 20,
117         "max": 30,
118         "color": [0.513,0.874,0.552,1],
119         "styleConfig": {
120             "0.25": [0.36,0.58,0.16],
121             "0.50": [1,0.83,0.4],
122             "0.75": [1,0.4,0],
123             "0.90": [1,0.15,0.15]
124         },
125     },
126
127     //data source
128     "getMethod": "objectProperty",
129     "propertyPath": "MonitorDatas/RealTimeData/humidity"

```

```

130 },
131 "pieChart": {
132     //parameters
133     "type": "progressPie",
134     "sortOrder": 1,
135     "drawPos": [99,90],
136     "drawSize": [50,50],
137
138     //axis position
139     "horizontalAlignment": "LEFT",    //horizontal position, can be one of LEFT CENTER RIGHT
140     "horizontalAlignmentOffset": 0,    //horizontal offset
141     "verticalAlignment": "TOP",    //vertical position, can be one of TOP CENTER BOTTOM
142     "verticalAlignmentOffset": 0,    //vertical offset
143
144     //private parameters
145     "openAngle": "360",
146     "fillDirClockwise": true,    //clockwise
147     "ringImage": "uGUI/ProgressBar/img_3",    //image path
148     "rotation": 0,
149     "min": 20,
150     "max": 30,
151     "color": [0.513,0.874,0.552,1],
152     "styleConfig": {
153         "0.25": [0.36,0.58,0.16],
154         "0.50": [1,0.83,0.4],
155         "0.75": [1,0.4,0],
156         "0.90": [1,0.15,0.15]
157     },
158
159     //data source
160     "getMethod": "objectProperty",
161     "propertyPath": "MonitorDatas/RealTimeData/humidity"
162 },
163
164 "ringChart": {
165     //parameters
166     "type": "progressRing",
167     "sortOrder": 1,
168     "drawPos": [149,90],
169     "drawSize": [50,50],
170
171     //axis
172     "verticalAlignment": "CENTER",
173     "verticalAlignmentOffset": 0,
174     "horizontalAlignment": "CENTER",
175     "horizontalAlignmentOffset": 0,
176
177     //private control
178     "openAngle": "360",
179     "fillDirClockwise": false,    // counter clockwise
180     "ringImage": "uGUI/ProgressBar/img_2",    //image path
181     "rotation": 0,
182     "min": 20,
183     "max": 30,
184     "color": [0.513,0.874,0.552,1],
185     "styleConfig": {
186         "0.25": [0.36,0.58,0.16],
187         "0.50": [1,0.83,0.4],

```

```

188         "0.75": [1,0.4,0],
189         "0.90": [1,0.15,0.15]
190     },
191
192     //data source
193     "getMethod": "objectProperty",
194     "propertyPath": "MonitorDatas/RealTimeData/humidity",
195 },
196 "DisplyValue": {
197     //parameters
198     "type": "text",
199     "sortOrder": 2,
200     "drawPos": [74,65],
201     "drawSize": [128,20],
202
203     //data source
204     "getMethod": "objectProperty",
205     "propertyPath": "MonitorDatas/RealTimeData/humidity"
206 },
207 "Button": {
208     //parameters
209     "type": "button",
210     "sortOrder": 1,
211     "drawPos": [194,98],
212     "drawSize": [35,22],
213
214     //private parameters
215     "fontSize": 12,
216     "fontColor": [0.235,0.792,0.501,1],
217     "title":"Details",
218     "normalColor": [0.3,0.5,0.3,0],
219     "highlightedColor": [1,1,1],
220     "pressedColor": [0.6,0.5,0.2,0],
221
222     "cmds":[
223         { "cmd":"OpenUrl", "uid":{"objectManager":"Runbuffer/Button1"} }
224     ],
225     "cmdsImmediate":false
226 },
227 "SwitchButton": {
228     //parameters
229     "type": "toggle",
230     "sortOrder": 1,
231     "drawPos": [194,98],
232     "drawSize": [35,22],
233
234     //private parameters
235     "images":["http://www.3momoda.com/images/add_01.png","images/add_02.png","images/add_03.png"],
236     "fontSize": 12,
237     "fontColor": [0.235,0.792,0.501,1],
238     "title":"Open",
239     "checked":true,
240     "setCheckedExe":false,    //if run command while checked
241
242     "checkCmds":[
243         { "cmd":"SetPlacemarkProperty","uid":"obj01" ,"templateName":"Template" ,"widgetName":"SwitchButton"}
244     ],
245     "unCheckCmds":[

```

```

246         { "cmd": "SetPlacemarkProperty", "uid": "obj01" , "templateName": "Template" , "widget": "Temperature" },
247     ],
248     "cmdsImmediate": false
249 }
250 }
251 }
252 }

```

CopyPlacemarkTemplate

Create new control by clone existing one.

Table 2.46: Parameters

Name	Required	Description
originName	Yes	The control panel to be cloned
newName	Yes	Name of new control panel

Example

```

1 {
2     "cmd": "CopyPlacemarkTemplate",
3     "originName": "Temperatureplacemark",
4     "newName": "Powerplacemark"
5 }

```

DestroyPlacemarkTemplate

Delete Control.

Table 2.47: Parameters

Name	Required	Description
name	Yes	Name of Control to be deleted.

Example

```

1 {
2     "cmd": "DestroyPlacemarkTemplate",
3     "name": "Temperatureplacemark"
4 }

```

SetPlacemarkTemplateConfig

Modify Control configuration.

Note: this command will not modify look and feel of the control, to change control look and feel, please use command 'SetPlacemarkProperty'.

Table 2.48: Parameters

Name	Required	Description
name	Yes	Name of Control to be deleted.
path	Yes	List of properties to be modified, seperated by '/'
config	Yes	Target value

Example

```
1 {  
2   "cmd": "SetPlacemarkTemplateConfig",  
3   "name": "MonitoringPanel",  
4   "path": "ProgressBar2/styleConfig",  
5   "config": {  
6     "0.25": [0.36, 0.58, 0.16],  
7     "0.50": [1, 0.83, 0.4],  
8     "0.75": [1, 0.4, 0],  
9     "0.90": [1, 0.15, 0.15]  
10  }  
11 }
```

CreatePlacemark

Placemark Creator.

Table 2.49: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
templateName	Yes		Name of the placemark template
placemarkId	No		Name of the placemark Note: if placemark is created on the surface of object, placemarkId can be ignored. system will generate placemakrkId automatically using name conversion: {Object uid}_{Template Name}
type	No	Screen	coordinate type of UI, can of one of: <ul style="list-style-type: none"> ScreenPlacemark is created under screen coordinate, so it will not change during camera zoom in/zoom out PlanePlacemark is created under 3D coordinate, so it could changes sizes with movement of camera
scale	No	[0.2,0.2,0.2]	placemark scale, used to control sizes of placemark
presetPos	No		placemark position. if placemark type is 'Plane', use (x,y,z) as coordinate, if placemark type is 'screen' use (x,y) as coordinate. Note: if 'presetPos' is not specified, and placemark is created against object, the placemark is located on the top of the object by default.
posFromBuffer	No		Same as presetPosset place-
2.2. API Reference			mark position by bu37
layoutOffset	No		offset from target object, if placemark type is 'Plane', use (x,y,z) as coordinate, if

Example

- Create a monitoring panel to an object without placemarkId

```
1 {
2   "cmd": "CreatePlacemark",
3   "uid": "senser01",
4   "type": "Plane",
5   "templateName": "T&H Template",
6   "layoutOffset": [0, 1, 0],
7   "scale": [0.1, 0.1, 0.1]
8 }
```

- Create monitoring panel to multiple objects

```
1 {
2   "cmd": "CreatePlacemark",
3   "fromBuffer": "allSenser",
4   "type": "Screen",
5   "templateName": "T&H Panel",
6   "layoutOffset": [0, 50],
7   "countPerFrame": 5
8 }
```

- Create 2D placemark with multiple data source

```
1 {
2   "cmd": "CreatePlacemark",
3   "placemarkId": "Monitor01",
4   "type": "Screen",
5   "templateName": "MonitorPanel",
6   "presetPos": [0.5, 50],
7   "additiveDataObjects": {
8     "ds1": "obj01" , //object id or uid
9     "ds2": {"ObjectManager": "RunBuffer/obj02"} //use buffer as data source
10  }
11 }
```

DestroyPlacemark

Destroy Placemark.

Table 2.50: Parameters

Name	Re-quired	Description
<i>Object Reference</i>	Yes	Object Reference
place-markId	No	placemarkId
template-Name	No	If no placemarkId is specified while placemark is created, use {object uid}_{template name} as placemarkIdso templateName is need to delete placemark

Example

- use object id and template name to destroy placemark

```

1 {
2   "cmd": "DestroyPlacemark",
3   "uid": "obj01",
4   "templateName": "T&H Panel"
5 }

```

- use templateName to bulk delete placemark

```

1 {
2   "cmd": "DestroyPlacemark",
3   "fromBuffer": "allSenser",
4   "templateName": "T&H Panel Template"
5 }

```

- use placemarkId to delete placemark

```

1 {
2   "cmd": "DestroyPlacemark",
3   "placemarkId": "TH01"
4 }

```

GetLastClickedButtonPlacemarkHost

Similar to GetLastEventObj and GetLastMonitorRespondObjclick on placemark will return object reference.

Table 2.51: Parameters

Name	Required	Description
toBuffer	Yes	buffer which store the object

Example

```

1 {
2   "cmd": "GetLastClickedButtonPlacemarkHost",
3   "toBuffer": "lastPlacemarkHost"
4 }

```

SetPlacemarkProperty

Modify property of existing placemark.

Table 2.52: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
placemarkId	No	Must specify placemarkId if placemark is created with placemarkId
templateName	No	TemplateName, note that if placemark is created without placemarkId, system will use {object_uid}_{template name} as placemarkId
widgetName	Yes	Control name
property	Yes	Control property name
value	Yes	<p>“Value to be modified.</p> <hr/> <p>Note: system use strong type internally. String, number or boolean can be used as normal, for other data type, the name of data type need to be specified. for instance, vector3color should be wrote as:</p> <ul style="list-style-type: none"> • {Vector3:[1,0,0]} • {Vector2:[1,0]} • {Color:[1,0,0,1]} <hr/> <p>“</p>

Example

- String, number or boolean used as normal

```

1 {
2   "cmd": "SetPlacemarkProperty",
3   "uid": "obj01",
4   "templateName": "T&H Panel",
5   "widgetName": "Status",
6   "property": "text",
7   "value": "Normal"
8 }
```

- Specify data type if data type is vector3color, etc.

```

1 {
2   "cmd": "SetPlacemarkProperty",
3   "uid": "obj01",
4   "templateName": "T&H Panel",
5   "widgetName": "Progressbar2",
6   "property": "Color",
7   "value": { "Color": [1,0,0] }
8 }
```

CreateLayerPanel

A build-in, easy to use, multi-function Panel provided by system.

Table 2.53: Parameters

Name	Required	Description
config	Yes	config
presetPos	No	Position, use (x,y) as coordinate Note: default position is on top of object.
posFromBuffer	No	Same as presetPos position from buffer
turnWhenNegative	No	Apply to (x,y) coordinate <ul style="list-style-type: none"> if <code>turnWhenNegative=true</code> coordinate is calculated as opposite, for instance, [-0.1, -100] point to position with right 10%, 100 pixels below if <code>turnWhenNegative=false</code> coordinate is located outside the screen. for instance, [-0.1, -100] point to position left -10%, up -100 pixels

Example

```

1 {
2   "cmd": "CreateLayerPanel",
3   "presetPos": [-100, 0.5],
4   "turnWhenNegative": true,
5   "config": {
6     //set panel size
7     "bgWidth": 150,
8     "bgHeight": 330,
9
10    //function groups
11    "groups": [
12      {
13        "name": "basic function",
14        "icon": "userimage/3534/CustomTexture/20150708325991.png", //icon path
15        "textConfig": { //set text
16          "fontFamily": "Arial",
17          "fontSize": 18,
18          "drawSize": [100, 38],
19          "verticalTextAlignment": "CENTER",
20          "fontColor": [1, 1, 1, 1]
21        },
22
23        //multiable functions inside one function group
24        "items": [
25          {
26            "name": "warehouse_index",
27            "textConfig": {
28              "fontFamily": "Arial",

```

```
29         "fontSize": 14,  
30         "fontColor": [0,0,0,1]  
31     },  
32     "initCmds":[ //run command after creation  
33         { "cmd":"ChangeLayerPanelItems","items":["warehouse_index"],"state":true  
34     },  
35     "checkCmds":[ //run command if checked  
36         { "cmd":"ChangeLayerPanelItems","items":["TemperatureControl","humidityC  
37         { "cmd":"CreatePlacemark", "fromBuffer":{"ObjectManager": "RunBuffer/war  
38     },  
39     "unCheckCmds":[ //run command if unchecked  
40         { "cmd":"DestroyPlacemark", "fromBuffer":{"ObjectManager": "RunBuffer/war  
41     ]  
42     },  
43     {  
44         "name":"temperature monitoring",  
45         //.....  
46     },  
47     //.....  
48     ]  
49     },  
50     {  
51         "name":"advance settings",  
52         //.....  
53     },  
54     //.....  
55     ]  
56     }  
57 }
```

DestroyLayerPanel

Destroy Layer Panel.

Parameters

No parameters.

Example

```
1 {  
2     "cmd": "DestroyLayerPanel"  
3 }
```

ChangeLayerPanelItems

Check or uncheck panel item.

Table 2.54: Parameters

Name	Required	Description
items	Yes	Set check status by array
state	Yes	true means check, false means uncheck

Example

```

1 {
2   "cmd": "ChangeLayerPanelItems",
3   "items": ["Temperature Monitoring", "Power Monitoring"],
4   "state": true
5 }
```

ShowLayerPanel

Show or hide Panel.

Table 2.55: Parameters

Name	Required	Description
enable	Yes	Panel name

Example

```

1 {
2   "cmd": "ChangeLayerPanelItems",
3   "items": ["temperature monitoring", "power monitoring"],
4   "enable": true
5 }
```

ShowHideLayerPanel

Show or hide panel.

Parameters

No parameters.

Example

```

1 {
2   "cmd": "ShowHideLayerPanel"
3 }
```

ShowPropListPanel

A build-in, easy to use ‘object property panel’, can be also used to config function buttons.

Table 2.56: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
config	Yes	Panel position, use (x,y) as coordinate. Note: Default position is on top of object.
posFromBuffer	No	Same as presetPosset position from buffer
turnWhenNegative	No	Apply to (x,y) coordinate <ul style="list-style-type: none"> if <code>turnWhenNegative=true</code> coordinate is calculated as opposite, for instance, [-0.1, -100] point to position with right 10%, 100 pixels below if <code>turnWhenNegative=false</code> coordinate is located outside the screen. for instance, [-0.1, -100] point to position left -10%, up -100 pixels

Example

```

1  {
2      "cmd": "ShowPropListPanel",
3      "fromBuffer":{"ObjectManager": "RunBuffer/lastEventObj"},
4      "presetPos":[100, 0.5],
5      "turnWhenNegative":true,
6      "config":{
7          "initCmds":[ //run command after creation
8              { "cmd":"CopyBuffer", "fromBuffer":{"ObjectManager":"RunBuffer/lastEventObj"}, "toBuffer":
9              { "cmd":"ChangePropListPanelItems", "items":["basicInfo"], "state":true, "exeCommands":t
10         ],
11         "items":[
12             {
13                 "name":"basicInfo",
14                 "normalColor":[0.415,0.839,0.462,1],//color on normal status
15                 "highlightedColor":[0.337,0.666,0.372,1], //color on mouse over
16                 "pressedColor":[0.415,0.839,0.462,1], //color on mouse click
17                 "clickCmds":[
18                     { "cmd": "ChangePropListPanelItems", "items":["warehouseInfo","alarmInfo"], "stat
19                     { "cmd": "GetValue", "fromBuffer":{"ObjectManager":"RunBuffer/curShowPanelObj"},
20                     { "cmd": "SetPropListPanelKeyValue", "valueBuffer":{"ObjectManager":"RunBuffer/p
21                 ]
22             },
23         {

```



```

24         "name": "Warehouse Info",
25         "clickCmds": [
26             { "cmd": "ChangePropListPanelItems", "items": ["basicInfo", "alarmInfo"], "state": true },
27             { "cmd": "GetValue", "fromBuffer": {"ObjectManager": "RunBuffer/curShowPanelObj"}, "valueBuffer": {"ObjectManager": "RunBuffer/warehouseInfo"} },
28             { "cmd": "SetPropListPanelKeyValue", "valueBuffer": {"ObjectManager": "RunBuffer/warehouseInfo"} }
29         ],
30     },
31     {
32         "name": "alarmInfo",
33         "clickCmds": [
34             { "cmd": "ChangePropListPanelItems", "items": ["basicInfo", "warehouseInfo"], "state": true },
35             { "cmd": "GetValue", "fromBuffer": {"ObjectManager": "RunBuffer/curShowPanelObj"}, "valueBuffer": {"ObjectManager": "RunBuffer/warehouseInfo"} },
36             { "cmd": "SetPropListPanelKeyValue", "valueBuffer": {"ObjectManager": "RunBuffer/warehouseInfo"} }
37         ],
38     },
39     {
40         "name": "Barcode",
41         "clickCmds": [
42             { "cmd": "GetValue", "fromBuffer": {"ObjectManager": "RunBuffer/curShowPanelObj"}, "valueBuffer": {"ObjectManager": "RunBuffer/warehouseInfo"} },
43             { "cmd": "UrlWindow", "urlBuffer": {"ObjectManager": "RunBuffer/barcode_url"}, "title": "Barcode" }
44         ],
45     }
46 ]
47 }
48 }

```

HidePropListPanel

Hide property list panel.

Parameters

No parameters.

Example

```

1 {
2     "cmd": "HidePropListPanel"
3 }

```

ChangePropListPanelItems

Change panel button status.

Table 2.57: Parameters

Name	Required	Description
items	Yes	Array to set button status in bulk
state	Yes	true means clicked, false means unclicked
exeCommands	No	Run command while state changed to clicked

Example

```
1 {  
2   "cmd": "ChangePropListPanelItems",  
3   "items": ["warehouseInfo", "alarmInfo"],  
4   "state": false,  
5   "exeCommands": false  
6 }
```

SetPropListPanelKeyValue

Show object property on panel.

Table 2.58: Parameters

Name	Required	Description
valueBuffer	Yes	Buffer name
names	No	Get data from buffer by order of name array

Example

```
1 {  
2   "cmd": "SetPropListPanelKeyValue",  
3   "valueBuffer": {"ObjectManager": "RunBuffer/panelData"},  
4   "names": ["Temperature", "Fire", "InsectControl"]  
5 }
```

2.2.8 Camera

SwitchCameraTo3D

Viewpoint switch between 3D and 2D.

Note: Same as 3D/2D switch button in control panel

Table 2.59: Parameters

Name	Required	Default	Description
enable	No	true	If true, switch to 3D, if false, switch to 2D

CameraFitToSelection

Fit to selected object, if no object is selected, fit to current layer.

Parameters

No parameters.

Example

```

1 {
2   "cmd": "CameraFitToSelection"
3 }

```

SetOrbitCameraParam

Camera parameters setting.

Table 2.60: Parameters

Name	Re- quired	Default	Description
heightLimit	No	[0, 1500]	Height limit setting, take two array as input, first array as minimum height, second array as maxium height.
zoomLimit	No	[0.1, 1000]	Limits on back and froths moving through mouse wheel. take one array as input, first element in array sets closest distance to viewpoint, second viewpoint sets farthest distance from viewpoint.
farClipDistance	No	change with height attribute	Far clip distance setting, for animation effects only
nearClipDistance	No	change with height attribute	Near clip distance setting, for animation effects only
smooth	No	true	Flying camera in smooth mode, if set to false, camera will fly straight.

Example

```

1 {
2   "cmd": "SetOrbitCameraParam",
3   "heightLimit": [0, 5500],
4   "zoomLimit": [0, 15500],
5   "farClipDistance": 5000,
6   "nearClipDistance": 0.2,
7   "smooth": true
8 }

```

CameraFlyToBest

Fly to optimized viewpoint of given object.

Note: Only accept one object as input

Table 2.61: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes	Object Reference	
time	No	2	Fly time, in seconds
offset	No	[0, 0, 0]	Optimized viewpoint plus offset as camera location. Note: Offset is calculated in world coordinate.

Example

```
1 {  
2   "cmd": "CameraFlyToBest",  
3   "uid": "object01",  
4   "time": 3,  
5   "offset": [0.0, 1.0, 0.0] //move up another 1 meter.  
6 }
```

CameraFitToBest

Move camera to optimized viewpoint of given object, no flying process.

Note: Only accept one object as input

Table 2.62: Parameters

Name	Required	Default	Description
<i>Object Reference</i>	Yes	Object Reference	
time	No	2	Fly time, in seconds
offset	No	[0, 0, 0]	Optimized viewpoint plus offset as camera location. Note: Offset is calculated in world coordinate.

Example

```
1 {  
2   "cmd": "CameraFitToBest",  
3   "uid": "object01",  
4   "time": 3,  
5   "offset": [0.0, 1.0, 0.0] //move up another 1 meter.  
6 }
```

2.2.9 Common Object Interface

GetValue

Get object properties and save to buffer, Object properties can be access:

- IDunique ID generated by system
- UserIDuser input ID
- Nameobject name set by user
- BundleIdmodel ID
- PropertyDictuser-defined properties, can be access by path such as "PropertyDict/ObjectType", will access all user-defined properties if no path is given
- MonitorData/RealTimeData: monitoring data, save as PropertyDict, can be access by path, will access all monitoring properties if no path is given

Table 2.63: Parameters

Name	Re-quired	Description
<i>Object Reference</i>	Yes	Object Reference
path	Yes	property path, for instance, PropertyDict/ObjectTypecan also be used to access user-define property
toBuffer	Yes	Buffer to save result

Example

- Get user-define value of a object

```

1 {
2   "cmd": "GetValue",
3   "uid": "obj01"
4   "path": "PropertyDict/ObjectType",
5   "toBuffer": "resultBuffer"
6 }
```

- Get one monitoring data

```

1 {
2   "cmd": "GetValue",
3   "uid": "obj01"
4   "path": "MonitorData/RealTimeData/Temperature",
5   "toBuffer": "resultBuffer"
6 }
```

- Get all monitoring data

```

1 {
2   "cmd": "GetValue",
3   "uid": "obj01"
4   "path": "MonitorData/RealTimeData",
5   "toBuffer": "resultBuffer"
6 }
```

SetValue

Set object property.

Table 2.64: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
path	Yes	Property path, for instance, PropertyDict/ObjectType can also be used to access user-define property
value	Yes	<div>Value to be assign to property</div> <div>Note: System use strong type internally. String, number or boolean can be used as normal, for other data type, the name of data type need to be specified. For instance, vector3color should be wrote as<ul style="list-style-type: none">• {'Vector3': [1, 0, 0]}• {'Vector2': [1, 0]}• {'Color': [1, 0, 0, 1]}</div>

Example

- Set Object Name

```
1 {  
2   "cmd": "SetValue",  
3   "uid": "obj01",  
4   "path": "Name",  
5   "value": "Camera01"  
6 }
```

CallMethod

Call Object Method. Object Method List:

- **Object in Scene**
 - showif visible
 - GetCenterget object center
- **Timer Object**
 - resetreset timer
 - setStartTimeset timer start time [2015, 8, 12, 16, 15, 22, 0]

- setPeriodset timer run duration [0,0,0,30,0]
- startstart timer
- pausepause timer
- setSpeedset timer run speed

Table 2.65: Parameters

Name	Re-quired	Description
<i>Object Reference</i>	Yes	Object Reference
path	Yes	property path, for instance, PropertyDict/ObjectTypecan also be used to access user-define property
toBuffer	Yes	Buffer to save result

Example

- Show method, same as CmdShow command

```

1 {
2   "cmd": "CallMethod",
3   "uid": "obj01",
4   "path": "show",
5   "params": false
6 }
```

- Get object center and save to buffer

```

1 {
2   "cmd": "CallMethod",
3   "uid": "obj01",
4   "path": "GetCenter",
5   "toBuffer": {"ObjectManager": "RunBuffer/curObjectCenter"}
6 }
```

- Set timer start time

```

1 {
2   "cmd": "CallMethod",
3   "uid": "timer01",
4   "path": "setStartTtime",
5   "params": [2015,8,11,13,55,23,0]
6 }
```

2.2.10 Deploy Object

Deploy

Specify model set available in current environment.

Table 2.66: Parameters

Name	Required	Description	
enable	No	true	If true, enable, if false, disable
item	No		Array of model IDs

Example

- Deploy Model

```
1 {
2   "cmd": "Deploy",
3   "items": [
4     "614AC0466F4E48B792CC83A5B99AF4FC",
5     "F933B1A524B94050BC7A82B15D2057F5",
6   ]
7 }
```

- Disable

```
1 {
2   "cmd": "Deploy",
3   "enable": false
4 }
```

SetDragPlacementParamInDeploy

Effect setting during drag and drop.

Table 2.67: Parameters

Name	Required	Description
absorbPlacement	No	If object being drag can be attached by target object automatically.
absorbNormal	No	If object being drag align to normal line of target object automatically.
absorbPivot	No	If object being drag align to axis line of target object automatically.

Example

```
1 {
2   "cmd": "SetDragPlacementParamInDeploy",
3   "absorbPlacement": true,
4   "absorbNormal": false,
5   "absorbPivot": true
6 }
```

GetDeployObjects

Get deploy objects and save to buffer.

Table 2.68: Parameters

Name	Required	Description
toBuffer	Yes	Buffer to store objects

Example

```

1 {
2   "cmd": "GetDeployObjects",
3   "toBuffer": { "ObjectManager": "RunBuffer/deployObjects" }
4 }

```

GetDeployToJson

Get deploy objects and save to buffer in JSON format.

Table 2.69: Parameters

Name	Required	Description
toBuffer	Yes	Buffer to store objects

Example

```

1 {
2   "cmd": "GetDeployToJson",
3   "toBuffer": { "ObjectManager": "RunBuffer/deployObjects" }
4 }

```

SetDeployFromJson

Deploy objects from JSON

Table 2.70: Parameters

Name	Required	Description
json	Yes	JSON data

Example

```

1 {
2   "cmd": "SetDeployFromJson",
3   "json": {
4     "2345223": {
5       "bundle": "3268DD250B694147B0BDB37FA390BF96",
6       "floor": "floor01",
7       "pos": "0.22 0.33 1.34", //position
8       "rot": "0 0 0", //rotation
9       "scl": "1 1 1", //scale
10      "properties": {
11        "UserID": "Camera01",

```

```
12         "PropertyDict":{
13             "Operator":"wxz"
14         }
15     }
16 }
17 }
18 }
```

ClearDeployObjects

Get deploy objects and save to buffer in JSON format.

Table 2.71: Parameters

Name	Re-quired	De-fault	Description
de- stroy- Objects	Yes	true	Clear objects in scene, if true, will clear objects both in Deploy module and scene, if false, only clear objects in Deploy module, and keep objects in scene.

Example

```
1 {
2     "cmd": "ClearDeployObjects"
3 }
```

2.2.11 Event

RegEvent

Event Register.

Note: Use id or uid for object reference

Table 2.72: Parameters

Name	Re-quired	De-fault	Description
id	No		Object id
uid	No		Object uid(UserID)
condi-tion	No		Trigger condition
event	Yes		Trigger event, to avoid conflict, use / to separate callbacks, for instance, AddToSelection/callback1 see Event List
prior-ity	No	50	Event with higher priority will be trigger first
cmds	Yes		Callback commands

Example

```

1 {
2     "cmd": "RegEvent",
3
4     //"_default_" means always trigger
5     //"condition": "_default_",
6
7     //register by object id or uid
8     //"condition": {"OBJECT":"4"},
9
10    //register by classId
11    //"condition": {"CLASSID":3},
12
13    //register by object properties
14    //"condition": {"ATTRIBUTE":{"PropertyDict/sex":"male"}},
15
16    //AND operator
17    //"condition": {"AND":[{"PropertyDict/sex":"male"}, {"MoniterData/RealTimeData/status":"normal"}]},
18
19    //OR operator
20    //"condition": {"OR":[{"PropertyDict/sex":"male"}, {"MoniterData/RealTimeData/status":"normal"}]},
21
22    //NOT operator
23    //"condition": {"NOT":{"AND":[{"PropertyDict/sex":"male"}, {"MoniterData/RealTimeData/status":"normal"}]}},
24
25    //condition shortcuts
26    //a numbersame as {"CLASSID":3}
27    //"condition": 3,
28
29    //a string, means id or uid same as {"OBJECT":"4"}
30    //"condition": "4",
31
32    //a key/value pair means object properties, same as {"ATTRIBUTE":{"PropertyDict/sex":"male"}}
33    "condition": {"PropertyDict/sex":"male"},
34
35
36
37    "event": "AddToSelection/callback1",
38    "priority": 50,
39    "cmds": [
40        { "cmd": "GetLastEventObj", "toBuffer": {"ObjectManager": "RunBuffer/lastEventObj"} },
41        { "cmd": "ChangePlacementBundle", "fromBuffer": {"ObjectManager": "RunBuffer/lastEventObj"} }
42    ]

```

43

```
}
```

UnregEvent

Unregister Event.

Table 2.73: Parameters

Name	Required	Description
id	No	Object id
uid	No	Object uid(UserID)
condition	No	Trigger condition
event	Yes	Same as event parameter in <i>RegEvent</i> Note: if no callback is specified, all callbacks under this event will be un-registered.

Example

```
1 {  
2   "cmd": "UnregEvent",  
3   "condition": {  
4     "PropertyDict/sex": "male"  
5   },  
6   "event": "AddToSelection/callback1"  
7 }
```

GetLastEventObj

Get object associated with event and save to buffer.

Table 2.74: Parameters

Name	Required	Description
toBuffer	Yes	Target buffer Note: object is save to {'ObjectManager': 'RunBuffer/lastEvent'} by system automatically

Example

```

1 {
2   "cmd": "GetLastEventObj",
3   "toBuffer": {
4     "ObjectManager": "RunBuffer/lastEventObj"
5   }
6 }

```

RegIgnoreEvent

Suppress events.

Table 2.75: Parameters

Name	Required	Description
condition	Yes	Same as condition parameter in RegEvent
event	Yes	Same as event parameter in RegEvent Note: if no callback is specified, all callbacks under this event will be suppressed.

Example

```

1 {
2   "cmd": "RegIgnoreEvent",
3   "condition": "_default_", //suppress all AddToSelection events
4   "event": "AddToSelection"
5 }

```

UnregIgnoreEvent

Resume suppress events.

Table 2.76: Parameters

Name	Required	Description
condition	Yes	Same as condition parameter in RegEvent
event	Yes	Same as event parameter in RegEvent Note: if no callback is specified, all callbacks under this event will be suppressed.

Example

```
1 {
2   "cmd": "UnregIgnoreEvent",
3   "condition": "_default_",
4   "event": "AddToSelection"
5 }
```

2.2.12 Monitor

SetMonitorRespond

Set response to MonitorDatas/RealTimeData.

Table 2.77: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
config	Yes	<div>Response is based on properties of MonitorDatas/RealTimeData.</div> <div>Note:<ol style="list-style-type: none">Support configure response on multiable propertiesSupports multiable response to single property.Value of property can be string or number. if property value are all numbers, system will sort those numbers and trigger command with equal or less than numbers.If property value are all strings, use ‘_default_’ to run command if data is NOT in value set.Use GetLastMonitorRespondObj to get current object in callback, or use buffer: {‘ObjectManager’:’RunBuffer/last’} to get current object</div>

Example

```
1 {
2   "cmd": "SetMonitorRespond",
3   "fromBuffer":{"ObjectManager": "RunBuffer/Grain"},
4   "config":{
5     "GrainCatelog":{" //get value from "MonitorDatas/RealTimeData/GrainCatelog"
6       "Corn":[" //run command if value is "Corn"
```

```
7         {"cmd": "GetLastMonitorRespondObj", "toBuffer":"monitorRespondObj"}, //run command
8         {"cmd": "ChangePlacementTexture", "fromBuffer":"monitorRespondObj", "url": "images/co
9     },
10    "Wheat":[ //run command if value is "Wheat"
11        {"cmd": "GetLastMonitorRespondObj", "toBuffer":"monitorRespondObj"}, //run command
12        {"cmd": "ChangePlacementTexture", "fromBuffer":"monitorRespondObj", "url": "images/w
13    ]
14    },
15    "GrainStorage":{ //get value from "MonitorDatas/RealTimeData/GrainStorage"
16        "10":[{"cmd":"SetScale", "fromBuffer":"lastMonitorRespondObj", "scale":[1,0.1,1] } ], //
17        "30":[{"cmd":"SetScale", "fromBuffer":"lastMonitorRespondObj", "scale":[1,0.3,1] } ], //
18        "50":[{"cmd":"SetScale", "fromBuffer":"lastMonitorRespondObj", "scale":[1,0.5,1] } ], //
19        "80":[{"cmd":"SetScale", "fromBuffer":"lastMonitorRespondObj", "scale":[1,0.8,1] } ], //
20        "100":[{"cmd":"SetScale", "fromBuffer":"lastMonitorRespondObj", "scale":[1,1,1] } ] //r
21    },
22    "GrainStatus":{ //get value from "MonitorDatas/RealTimeData/GrainStatus"
23        "InsectHazzard":[{"cmd":"ColorFlash", "fromBuffer":"lastMonitorRespondObj", "color":
24        "Decay":[{"cmd":"ColorFlash", "fromBuffer":"lastMonitorRespondObj", "color":[0,0,1] ,
25        "_default_":[{"cmd":"ColorFlash", "fromBuffer":"lastMonitorRespondObj", "enable":fal
26    }
27    }
28 }
```

GetLastMonitorRespondObj

Get current object.

Table 2.78: Parameters

Name	Required	Description
toBuffer	Yes	Buffer name

Example

```
1 {
2     "cmd": "GetLastMonitorRespondObj",
3     "toBuffer":"monitorRespondObj"
4 }
```

2.2.13 Snapshot

Snapshot

Get and save snapshot.

Table 2.79: **Parameters**

Name	Required	Description
name	Yes	Name of snapshot
isSaveToServer	No	If save snapshot to server
isShowIn3D	No	If show snapshot in menu
jsonToBuffer	No	Save snapshot to buffer in json format

Example

- Set a snapshot

```
1 {  
2   "cmd": "Snapshot",  
3   "name": "my workspace",  
4   "isSaveToServer": true,  
5   "isShowIn3D": false  
6 }
```

- Get snapshot data and save to buffer

```
1 {  
2   "cmd": "Snapshot",  
3   "name": "name",  
4   "jsonToBuffer": "SnapshotBuffer"  
5 }
```

SnapshotRecoverByName

Recover snapshot by name.

Table 2.80: **Parameters**

Name	Required	Description
name	Yes	Snapshot name

Example

```
1 {  
2   "cmd": "SnapshotRecoverByName",  
3   "name": "my workspace"  
4 }
```

SnapshotRecoverByJson

Recover snapshot by name.

Table 2.81: Parameters

Name	Required	Description
json	Yes	json data

Example

```

1 {
2   "cmd": "SnapshotRecoverByJson",
3   "name": "my workspace"
4 }
```

PlaySnapshotAnimByName

Recover snapshot by name.

Table 2.82: Parameters

Name	Required	Description
name	Yes	Name of animation

Example

```

1 {
2   "cmd": "PlaySnapshotAnimByName",
3   "name": "check01"
4 }
```

PlaySnapshotAnimByName

Stop snapshot animation.

Parameters

No Parameters.

Example

```

1 {
2   "cmd": "StopSnapshotAnim"
3 }
```

2.2.14 Web**OpenUrl**

Open webpage, same as run javascript function window.open, only valid in browser.

Table 2.83: Parameters

Name	Re-quired	Description
url	No	URL to be open
url-Buffer	No	Get URL from urlBuffer
param	No	Same as parameters used in javascript function window.open for instance height=100, width=400, toolbar =no, menubar=no, scrollbars=no, resizable=no, location=no, status=no

Example

```
1 {  
2   "cmd": "OpenUrl",  
3   "url": "http://www.3dmomoda.com",  
4   "param": "height=100, width=400, toolbar =no, menubar=no, scrollbars=no, resizable=no, location=no",  
5 }
```

```
1 {  
2   "cmd": "OpenUrl",  
3   "urlBuffer": "url",  
4   "param": "height=100, width=400, toolbar =no, menubar=no, scrollbars=no, resizable=no, location=no",  
5 }
```

UrlWindow

Open browser window with given URL, only valid in browser.

Table 2.84: Parameters

Name	Required	Description
url	No	URL to be open
urlBuffer	No	Get URL from urlBuffer
title	No	Window title
titleBuffer	No	Get window title from buffer
width	No	Window width
height	No	Window height

Example

```
1 {  
2   "cmd": "UrlWindow",  
3   "urlBuffer": "url",  
4   "title": "message",  
5   "width": 512,  
6   "height": 512  
7 }
```

HtmlWindow

Open browser windows and display given html, only valid in browser.

Table 2.85: **Parameters**

Name	Required	Description
html	No	Data in html format
htmlBuffer	No	Get html data from urlBuffer
title	No	Window title
titleBuffer	No	Get window title from buffer
width	No	Window width
height	No	Window height

Example

- Display HTML

```

1 {
2   "cmd": "HtmlWindow",
3   "html": "<ol><li>dog</li><li>cat</li><li>bird</li></ol>",
4   "title": "Catalog",
5   "width": 512,
6   "height": 512
7 }
```

- Display HTML from buffer

```

1 {
2   "cmd": "HtmlWindow",
3   "htmlBuffer": {"ObjectManager": "RunBuffer/htmlContent"},
4   "title": "Catalog",
5   "width": 512,
6   "height": 512
7 }
```

HideWindow

Close window opened by UrlWindow or HtmlWindow, only valid in browser.

Parameters

No Parameters.

Example

```

1 {
2   "cmd": "HideWindow"
3 }
```

ExecuteHtmlInterface

Open browser windows and display given html, only valid in browser.

Table 2.86: Parameters

Name	Required	Description
interfaceName	No	javascript method name
fromBuffer	No	Set buffer content(object only) to javascript method Note: <ol style="list-style-type: none"> 1. Data structure pass to javascript method <pre> 1 { 2 'ID': 'J17gKNmUeUeSXpDzPH 3 'UserID': '100007001', // 4 'Name': 'Box002', //Objec 5 'ParentObjectUserID': 'fl 6 'ParentObjectID': '144', 7 'Position': '-21.263 2.35 8 'LocalPosition': '-22.944 9 'BoundingBoxMax': '-21.163 2 10 'BoundingBoxMin': '-21.363 2 11 'BundleId': 'B723E9E1B279 12 'BundleSize': '1.000 1.00 13 'BundleVersion': '1.000 1 14 'BundleTitleEn': 'Univers 15 'BundleTitle': 'Universal 16 'PropertyDict': {'ObjectT 17 'MonitorDatas/RealTimeDa 18 }</pre> 2. Use exArguments to pass additional values
exArguments	No	Additional arguments in array

Example

```

1 ///////////////////////////////////////////////////////////////////
2 //Pass object from buffer to javascript method
3 ///////////////////////////////////////////////////////////////////
4
5 //define method in javascript
6 var keeper = {};
7 keeper.getSelectedObjs = function(objs){
8     objs = mmd.jsonTools.parseJSON(objs);
9     for(var i = 0 ; i < objs.length; i++){
10         .....
11     }
12 }
13
14 //call method
15 {
16     "cmd": "ExecuteHtmlInterface",

```

```

17     "interfaceName": "keeper.getSelectedObjs",
18     "fromBuffer":{"ObjectManager":"RunBuffer/selection"}
19 }
20
21 ///////////////////////////////////////////////////////////////////
22 //Pass object from buffer to javascript method with additional arguments
23 ///////////////////////////////////////////////////////////////////
24
25 //define javascript method
26 var keeper = {};
27 keeper.setColorByType = function( objs, objType, color ){
28     objs = mmd.jsonTools.parseJSON(objs);
29     var uids = [];
30     for(var i = 0 ; i < objs.length; i++){
31         var obj = objs[i];
32         if(obj["PropertyDict"]["ObjectType"] == objType){
33             uids.push(obj["UserID"]);
34         }
35     };
36     var cmds = [
37         { "cmd":"SetColor", "uids":uids, "color":color}
38     ];
39     var cmdsStr = mmd.jsonTools.toJSON(cmds);
40     mmd.RunCommand( cmdsStr, true);
41 }
42
43 //call method
44 {
45     "cmd": "ExecuteHtmlInterface",
46     "interfaceName": "keeper.setColorByType",
47     "fromBuffer":{"ObjectManager":"RunBuffer/objs"},
48     "exArguments":[ "100box", [1,0,0]]
49 }
50
51 ///////////////////////////////////////////////////////////////////
52 //Pass arguments without object data
53 ///////////////////////////////////////////////////////////////////
54
55 //define javascript method
56 var saveLog = function( text, sync ){
57     .....
58 }
59
60 //call method
61 {
62     "cmd": "ExecuteHtmlInterface",
63     "interfaceName": "saveLog",
64     "exArguments":[ "scene is open", false]
65 }

```

2.2.15 Logic

RegTimer

Timer register.

Table 2.87: **Parameters**

Name	Required	Description
name	Yes	Name of timer
time	No	Timeout in seconds
loop	No	If loop
cmds	No	Command to be executed at timeout

Example

- Set a snapshot

```
1 {
2   "cmd": "RegTimer",
3   "name": "ExplodeWhenTimeout",
4   "loop": false,
5   "cmds": [
6     { "cmd": "CreatePlacement", "uid" : "Explode", "bundleId": "C2F0A5FB249A4F4C9D7A46E4876E2F4C",
7   ]
8 }
```

UnregTimer

Unregister timer.

Parameters

No Parameters.

Example

```
1 {
2   "cmd": "UnregTimer",
3   "name": "ExplodeWhenTimeout"
4 }
```

CheckBoolean

Pass boolean value from buffer, then run command depends on boolean value.

Table 2.88: **Parameters**

Name	Required	Description
fromBuffer	Yes	Buffer to get boolean value
trueCmds	No	Command to run if <code>true</code>
falseCmds	No	Command to run if <code>false</code>

Example

```

1 {
2   "cmd": "CheckBoolean",
3   "fromBuffer": "resultBuffer",
4   "trueCmds": [
5     { "cmd": "SetColor", "uid": "obj01", "color": [1,0,0] }
6   ],
7   "falseCmds": [
8     { "cmd": "SetColor", "uid": "obj01", "color": [0,1,0] }
9   ]
10 }

```

2.2.16 Command Panel

ClearCmdPanel

Clear command panel.

Parameters

No Parameters.

Example

```

1 {
2   "cmd": "ClearCmdPanel"
3 }

```

AddToCmdPanel

Add command to command panel.

Table 2.89: Parameters

Name	Required	Description
cmds	Yes	Command or command array to be added to panel
execute	No	If run command after add

Example

```

1 {
2   "cmd": "AddToCmdPanel",
3   "cmds": [
4     { "cmd": "clearSelection" }
5   ],
6   "execute": false
7 }

```

RemoveFromCmdPanel

Remove command from command panel.

Note: Command name must be identical.

Table 2.90: **Parameters**

Name	Required	Description
cmds	Yes	Command or command array to be removed from panel

Example

```
1 {  
2   "cmd": "RemoveFromCmdPanel",  
3   "cmds": [  
4     { "cmd": "clearSelection" }  
5   ]  
6 }
```

2.2.17 Calculation

CalculateObjectsCenter

Calculate objects center.

Table 2.91: **Parameters**

Name	Required	Default	Description
<i>Object Reference</i>	Yes		Object Reference
offset	No	[0, 0, 0]	Offset to calculated result
toBuffer	Yes		Buffer to save result

Example

```
1 {  
2   "cmd": "CalculateObjectsCenter",  
3   "fromBuffer": "selected objects",  
4   "toBuffer": "center_location"  
5 }
```

CalculateWorldToViewport

Given world coordinate, calculate 3D viewpoint coordinate. Note, 3D viewpoint coordinate is different from screen coordinate.

Table 2.92: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference
pos	No	Position in world coordinate.
fromBuffer	No	Buffer of world coordinate
toBuffer	Yes	Save calculate result to buffer

Example

```

1 {
2   "cmd": "CalculateWorldToViewport",
3   "pos": [89,3,45],
4   "toBuffer": "2DCord"
5 }
```

2.2.18 Scene Level

ChangeObjectLevel

Change scene level to given object.

Note: only supports one object as input.

Table 2.93: Parameters

Name	Required	Description
<i>Object Reference</i>	Yes	Object Reference

Example

```

1 {
2   "cmd": "ChangeObjectLevel",
3   "uid": "first floor"
4 }
```

GetCurrentObjectLevel

Get current level of given object.

Note: only supports one object as input.

Table 2.94: **Parameters**

Name	Required	Description
toBuffer	Yes	Buffer to store command result.

Example

```
1 {  
2   "cmd": "GetCurrentObjectLevel",  
3   "toBuffer": "currentLevel"  
4 }
```

GetCurrentObjectLevelClass

Get class name of current level.

Note: only supports one object as input.

Table 2.95: **Parameters**

Name	Required	Description
toBuffer	Yes	Buffer to store command result.

Example

```
1 {  
2   "cmd": "GetCurrentObjectLevelClass",  
3   "toBuffer": "currentLevelClass"  
4 }
```

GetCurrentObjectLevelClassId

Get ClassId of current level, note: classId is a number.

Table 2.96: **Parameters**

Name	Required	Description
toBuffer	Yes	Buffer to store command result.

Example

```
1 {  
2   "cmd": "GetCurrentObjectLevelClassId",  
3   "toBuffer": "currentLevelClassId"  
4 }
```

SetExpandFloorPlanHeight

Set floor distance while expanded.

Table 2.97: Parameters

Name	Required	Description
height	Yes	Floor distance in meters.

Example

```
1 {  
2   "cmd": "SetExpandFloorPlanHeight",  
3   "height": 3  
4 }
```

2.3 Misc. Reference

2.3.1 Ease Mode List

- easeInQuad
- easeOutQuad
- easeInOutQuad
- easeInCubic
- easeOutCubic
- easeInOutCubic
- easeInQuart
- easeOutQuart
- easeInOutQuart
- easeInQuint
- easeOutQuint
- easeInOutQuint
- easeInSine
- easeOutSine
- easeInOutSine
- easeInExpo
- easeOutExpo
- easeInOutExpo
- easeInCirc
- easeOutCirc
- easeInOutCirc
- linear

- spring
- easeInBounce
- easeOutBounce
- easeInOutBounce
- easeInBack
- easeOutBack
- easeInOutBack
- easeInElastic
- easeOutElastic
- easeInOutElastic
- punch

2.3.2 Event List

MouseEvents

- ClickObject
- DbClickObject
- RightClickObject
- RightDbClickObject
- LeftClickObject
- LeftDbClickObject
- RightClick
- LeftClick
- RightDbClick
- LeftDbClick
- OnMouseEnterObject
- OnMouseLeaveObject
- OnMouseEnterPlacemark
- OnMouseLeavePlacemark

SelectionEvents

- ChangedSelection
- AddToSelection
- RemoveFromSelection
- RemoveLastFromSelection

ObjectLifeCycleEvents

- CreateObject
- CreateObjectMoveTo
- DestroyObject
- CreateDeployObject
- DeployObjects

LayerChangeEvents