

Smart Material Changer

'Amber

Version: 1.9

Introduction

- It's based on script configuration instead of notecard. Faster loading/transfer speed, edits freely.
- Kernel and product functions are separated. Can support menu, HUD form, local and remote control.
- Easy to extend and no bound.
- Intelligent matching rules.

Ps: Notecard is not used for configuration because it loads too slow, so fucking slow, so fucking fucking ... slow.

Script list

Sender (KERNEL)

Script	description
SMC.KERNEL	Kernel, Material Manager, Memory.
.SMC	Configuration for KERNEL.

Client (loader)

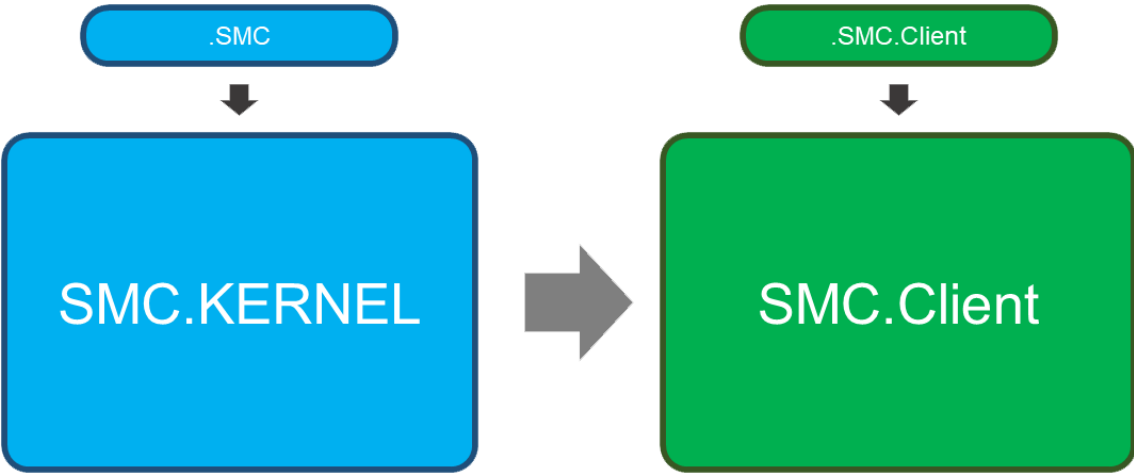
Script	description
SMC.Client	Material matching applicator. Place it into the object which material needs to be replaced. Get messages from Kernel
.SMC.Client	Configuration for SMC.Client

Others

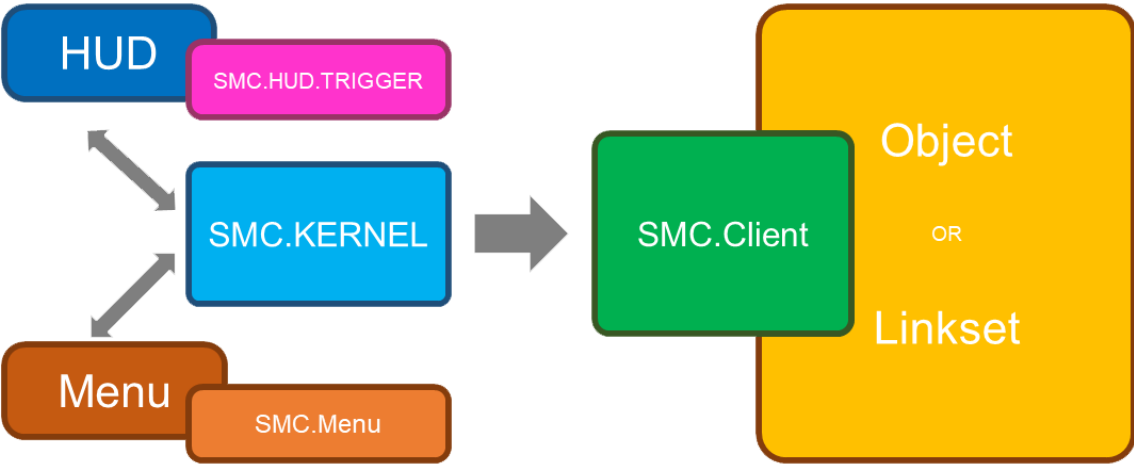
Script	description
SMC.HUD.TRIGGER	For HUD, Replace Linkset material in PART.SET format with description of the Prim
SMC.Menu	Replace material by clicking on the pop-up menu and selecting PART and SET.
.SMC.Menu	Configuration for SMC.Menu

Schema

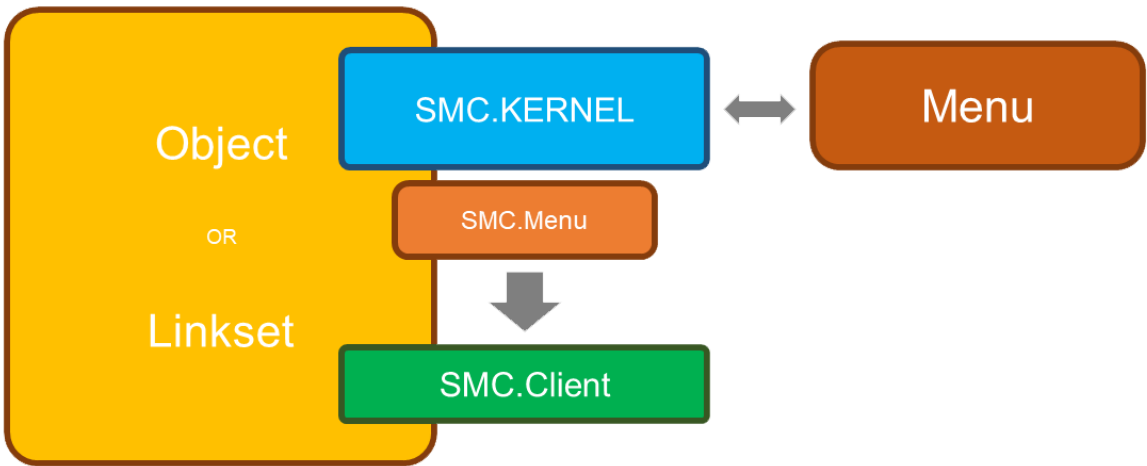
Scripting relationships



Remote



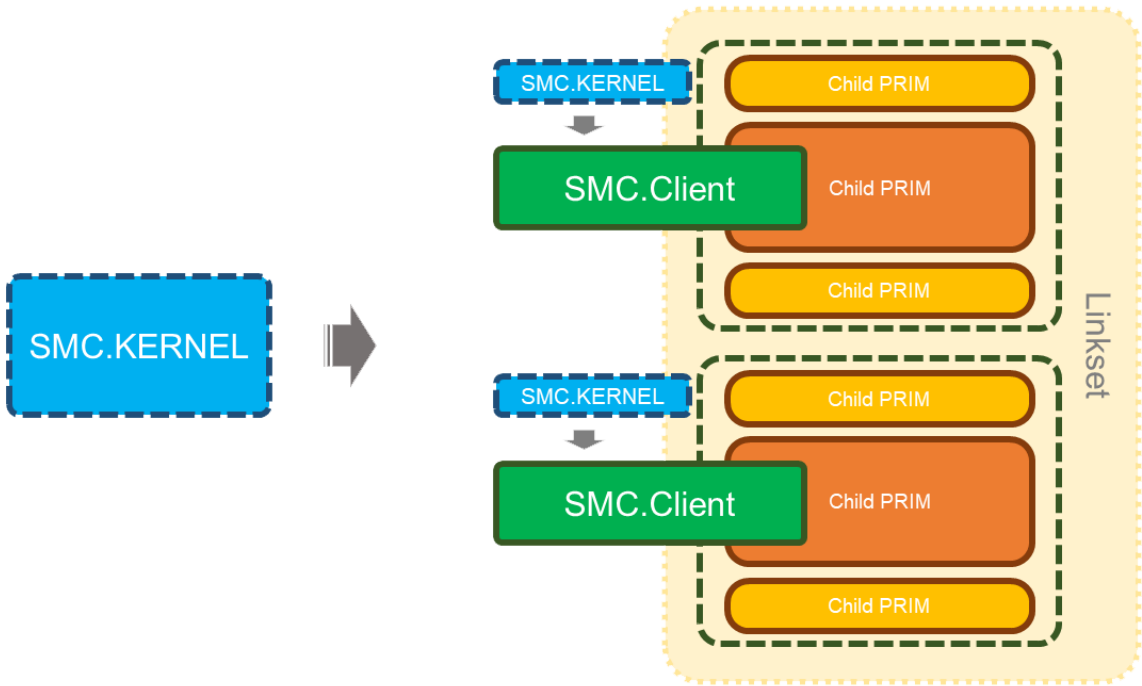
Local



Remote/Local

Multiple deployment

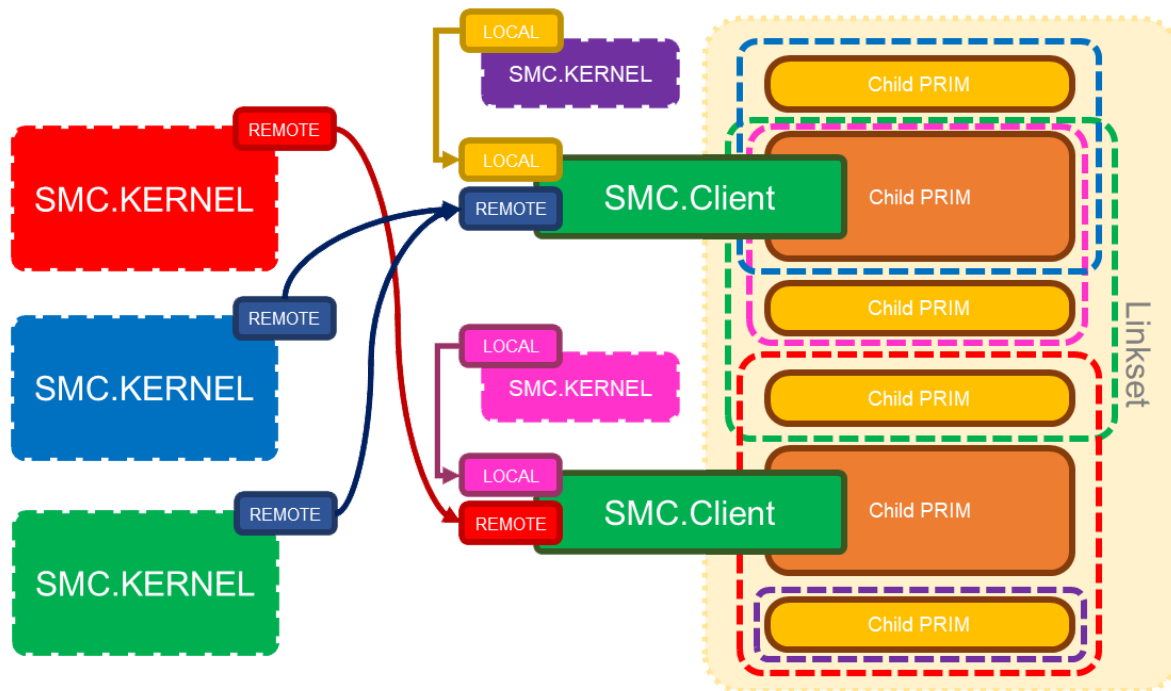
- Multiple SMC.Clients can be placed in different prims in the same linkset, and they can work for their own parts, controlled by one or more SMC.KERNELs.
- Multiple sets of SMC.KERNEL + SMC.Client can be placed in different prims in the same linkset to control multiple sets of rules with by local.



Remote/Local cross

Multiple deployment and cross control

- Use **REMOTE**, **LOCAL** for pairing between **SMC.KERNEL** and **SMC.Client**, Allow one-to-many, many-to-one, many-to-many.
- Multiple **KERNEL** control ranges are allowed to intersect, e.g., controlling mapping and color.



User guide

Common applications

Menu application

Click on the object, linkmessage, or gesture to bring up the menu and choose to replace the material.

- Prepare a target object to be replaced material, such as perm, mesh, or linkset.
- Put in scripts
 - **SMC.KERNEL**
 - **.SMC**
 - **SMC.Client**
 - **.SMC.Client**
 - **SMC.Menu**
 - **.SMC.Menu**
- Edit configuration information in **.SMC**, **.SMC.Client**, **.SMC.Menu**.
- Change the name or description of the Prim.
- (Recommended) **.SMC.Client**, **.SMC.Menu** You can delete it after saving it, or putting it into an object.
- (Recommended) input **/finalise** in local chat, fix the **KERNEL** configuration, then you can delete **.SMC**.
- Click the object to use.

The "LOCAL" in .SMC and .SMC.Client must be the same.

HUD application

Material change via HUD communication with target object, remote control.

- Prepare an object as the HUD.
- Put in script
 - SMC.KERNEL
 - .SMC
 - (options) **SMC.HUD.TRIGGER**, A sample HUD Button Click Trigger.
 - Write the defined PART and SET in the description of the HUD's buttons. Separated each by ".", such as **PartA.Style1**. The SET must be set, and the PART can be omitted. If without PART, such as: **.Style1**, the script will replace all the PART with **Style1**.
 - You can develop the trigger script for HUD, for more functions, such as slider and color picker.
- Edit configuration information in **.SMC**
- (Recommended) input **/finalise** in local chat, fix the KERNEL configuration, then you can delete **.SMC**.
- Prepare another target object to be replaced material, such as perm, mesh, or linkset.
- Put in script
 - SMC.Client
 - .SMC.Client
- (Recommended) Edit configuration in **.SMC.Client**, you can delete it after saving or putting into object.
- Rename the prim of linkset.
- Click the HUD to use.

The "REMOTE" in .SMC and .SMC.Client must be the same.

Remote Menu

Another type of remote control, base on menus instead of HUDs.

- Prepare an object that can trigger the menu
- put in scripts
 - SMC.KERNEL
 - .SMC
 - SMC.Menu
 - .SMC.Menu
- edit configuration in .SMC and .SMC.Menu
- (Recommended) **.SMC.Menu** You can delete it after saving it, or putting it into an object.
- (Recommended) input **/finalise** in local chat, fix the KERNEL configuration, then you can delete **.SMC**.
- Prepare another target object to be replaced material, such as perm, mesh, or linkset.
- Put in script
 - SMC.Client
 - .SMC.Client
- (Recommended) Edit configuration in **.SMC.Client**, you can delete it after saving or putting into object.
- Rename the prim of linkset.
- Click the HUD to use.

The "REMOTE" in .SMC and .SMC.Client must be the same.

Scenario example

A suit with HUD

- Put SMC.KERNEL into the HUD.
 - SMC.HUD.TRIGGER is optional. And it's flexible to write if you know about LSL script.
- Put SMC.Client into the suit.
- Make sure the same REMOTE in both SMC.KERNEL and SMC.Client.

A suit, with menu pops up when click on the collar

- Put SMC.KERNEL、SMC.Client、SMC.Menu into the suit.
 - You can put these scripts in ROOT or collar. That depends on where you want the menu pops up by click.
- Make sure the same LOCAL in both SMC.KERNEL and SMC.Client.

A house, with control pad. And the house and pad is linked. Menu pops up when click on.

- Put SMC.KERNEL、SMC.Client into any PRIM of the house. Set the same LOCAL for both.
- Put the SMC.Menu into the control pad, and turn on the TOUCH.

A house, with control pad. And the house and pad isn't linked. Menu pops up when click on.

- Put SMC.Client into any PRIM of the house.
- Put SMC.KERNEL、SMC.Menu into the control pad and turn on the TOUCH.
- Make sure the same REMOTE in both SMC.KERNEL and SMC.Client.

A house with 2 control pads. One is linked to the house. Another one is in your inventory, works as HUD.

- Put SMC.Client、SMC.KERNEL、SMC.Menu into any PRIM of the house, and turn on the TOUCH.
- Put SMC.KERNEL、SMC.Menu into the linked control pad, and turn on the TOUCH.
- Put SMC.KERNEL、SMC.Menu into the portable control pad HUD.
- Make sure the same LOCAL in both SMC.Client and SMC.KERNEL.
- Make sure the same REMOTE in all the SMC.KERNEL and SMC.Client.

Attention! **SMC.HUD.TRIGGER** only works with independent **PRIM** buttons **HUD**. It depends on different name and description. It will not work with only one **PRIM**, since it **can not** recognize the touch position (**ST/UV**). If need such function, you could write your own script.

Configure

.SMC

Configuration	Type	Value	Default	description
LOCAL	integer	-2147483648 ~ 2147483647 (0 无效)	0	Local communication channels, mostly used in menu format
REMOTE	integer	-10000 ~ 10000	0	Remote Communication Channel Offset (Note: This is private channel offset, not the exact channel) , mostly used in HUD format
CACHE	integer	0/1	0	Resource buffer(UUID).If there are a lot of reused images in the configuration, we recommend turning this. It could save much RAM

Configuration	Type	Value	Default	description
RANGE	integer	0/1/2/3	0	Control distance, 0:10m, 1:20m, 2:100m, 3:all region
LINES	list			Detailed writing rules will be described below

LINES

PART

Part/Target/Picker

- PART is one or many targets (prim & face), which material could be changed.It's also like a picker.
- There must be **4 parameters** after the PART.

```
list LINES = [
  PART, "{name}", {matching type}, "{matching text}", {face(es)}
];
```

Parameters	Type	Value	description
name	string	any	In a set of LINES configurations, it's not repeatable. This is one of the keys to change material. It will also work as option in local menu format
matching type	integer	table below	Describe the type of match
matching text	string/integer	Name or description for matching, to define with parameter 2	
face(es)	string/integer	Which face of the target PRIM. Then number of PRIM(0-7). It could transfer string such as "0267". It will match mutiple face. And no need to follow the order, but can not be repetitive. You can also use ALL_SIDES(-1),and no more face then, since ALL_SIDES include every face	

Matching type

Constant	Value	description
FULL	0	Match full text of the PRIM name
PREFIX	1	Match the prefix of the PRIM name

Constant	Value	description
SUFFIX	2	Match the suffix of the PRIM name
SMART	3	Intelligent matching of PRIM names (temporarily unavailable)
CONST	4	In the manner of constants in SL. The matching text could be: LINK_SET, LINK_ALL_CHILDREN, LINK_ALL_OTHERS, LINK_ROOT, LINK_THIS
DFULL	10	Match full text of the PRIM description
DPREFIX	11	Match the prefix of the PRIM description
DSUFFIX	12	Match the suffix of the PRIM description
DSMART	13	Intelligent matching of PRIM description (temporarily unavailable)

Examples

Match the **3,4** faces of PRIM with named **"A"**.

```
list LINES = [  
  PART, "Part A", FULL, "A", "34"  
];
```

Match **ALL** faces of the PRIM with prefix named **Rect**.

```
list LINES = [  
  PART, "All part starting with Rect", PREFIX, "Rect", ALL_SIDES  
];
```

Match the **0** face of the PRIM with suffix named **3**.

```
list LINES = [  
  PART, "All part ending with 3", SUFFIX, "3", 0  
];
```

Match the **1, 2, 5** faces of the **"PRIMs other than the one where the script in"**.

```
list LINES = [  
  PART, "All others", CONST, LINK_ALL_OTHERS, "125"  
];
```

Match **ALL** faces of the PRIM with **description suffix "top"**.

```
list LINES = [  
  PART, "TOP", DSUFFIX, "top", ALL_SIDES  
];
```



```
];
```

SET

Color/Theme/Material scheme

- SET is a material scheme, and free to configure.
- The definition of SET cannot be independent. **It must be behind a part.**
- There are many properties in a SET. The amounts of properties parameters are different.

```
list LINES = [  
    PART, ...,  
    SET, {property}, ..., {property}, ..., {property}, ...  
];
```

Properties

Refer to [PRIM_TEXTURE](#)

Properties	Number	Corresponding Properties	Descriptions	Number of parameters	Value	Remark
D	0	PRIM_TEXTURE	Diffuse reflection mapping	1	"{UUID}"	Only change the map, others are inherited
DP	1	PRIM_TEXTURE	Diffuse reflection mapping (detail)	4	"{UUID}", {repeats}, {position}, {rotation}	Set all properties related to diffuse reflection
N	2	PRIM_NORMAL	Normal mapping	1	"{UUID}"	Only change the map, others are inherited
NP	3	PRIM_NORMAL	Normal mapping (detail)	4	"{UUID}", {repeats}, {position}, {rotation}	Set all properties related to normal mapping
S	4	PRIM_SPECULAR	Specular mapping	1	"{UUID}"	Only change the map, others are inherited

Properties	Number	Corresponding Properties	Descriptions	Number of parameters	Value	Remark
SP	5	PRIM_SPECULAR	Specular mapping (detail)	7	"{UUID}", {repeats}, {position}, {rotation}, {reflective color}, {glossiness}, {environment}	Set all properties related to gloss
C	6	PRIM_COLOR	Color	1	{Color}	Color and alpha can be set separately
A	7	PRIM_COLOR	Alpha	1	{Alpha}	Color and alpha can be set separately
G	8	PRIM_GLOW	Glow	1	{Glow}	Light like a bulb
F	9	PRIM_FULLBRIGHT	Full bright	1	{TRUE/FALSE}	Turn on or off
B	10	PRIM_BUMP_SHINY	Normal and specular	2	{Level}, {Mode}	SL basic normal and specular
T	11	PRIM_TEXGEN	Mapping mode	1	{Mode}	Default/Plane
M	12	PRIM_ALPHA_MODE	Alpha mode	2	{Mode}, {Mask cutoff}	The 2nd parameter can not be omit, whether or not with the mask

If the value is given as an empty string, it means no replacement (use the current value)

Examples

Change the diffuse reflection mapping, normal mapping with details, alpha and glow.

```
list LINES = [
  PART, ...,
  SET, "name_1", D, "{uuid}", NP, "{uuid}", <1.0, 1.0, 0.0>, <0.0, 0.0, 0.0>, 0.0,
```

```
A, 0.6, G, 0.02
]
```

Change color, full bright mode, and clean the specular mapping.

```
list LINES = [
  PART, ...,
  SET, "name_2", C, <1.0, 0.0, 0.0>, F, TRUE, S, NULL_KEY
]
```

Change the positon and rotation of diffuse reflection mapping. And keep the map and repeats.

```
list LINES = [
  PART, ...,
  SET, "name_3", DP, "", "", <0.125, 0.4, 0.0>, 135.65
]
```

.SMC.Client

Configurations	Type	Values	Default	Description
LOCAL	integer	-2147483648 ~ 2147483647 (0 not valid)	0	Local communication channels, mostly used in menu format
REMOTE	integer	-10000 ~ 10000	0	Remote communication channel offset (Note: This is private channel offset, not the exact channel), mostly used in HUD format
DEBOUNCE	float	≥ 0.0	0.0	Anti-shake period, any changes in this period will be accumulated until there is no operation to change the material and start to work after this period, to avoid the efficiency bottleneck caused by frequent switching
CACHE	integer	0 / 1	0	Selector caching, use cache for more efficient matching speed. Note: when this option is turned on, you can't do link and unlink operation on the object, or it will be error

.SMC.Menu

Configurations	Type	Values	Default	Description
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Configurations	Type	Values	Default	Description
TOUCH	integer	0 / 1	0	Whether the popup menu can be triggered by clicking on it
OWNER_ONLY	integer	0 / 1	0	Whether the user must be the owner
MENU_POPUP_CHANNEL_LOCAL	integer	-2147483648 ~ 2147483647 (0 not valid)	0	Trigger menu popups locally
MENU_BACK_TRIGGER_CHANNEL_LOCAL	integer	-2147483648 ~ 2147483647 (0 无效)	0	Callbacks to return to the previous menu level
SETS	integer	0 / 1	0	Set options, add an item "[SETS]" to the PART list and enter the Set List menu
SETS_ON_TOP	integer	0 / 1	0	The top menu PART list has been replaced with a set list
PARTS	integer	0 / 1	0	If the SETS_ON_TOP is turned on, Add an item "[PART]" to the Set menu to still allow changing by parts
SETS_LIST	integer	0 / 1	0	See below

SETS_LIST

Formats

```
list SETS_LIST = [  
    "{Set name}", "{PART}.{SET}",  
    ...  
];  
  
list SETS_LIST = [  
    "{Set name}", ".{SET}",  
    ...  
];  
  
list SETS_LIST = [  
    "{Set name}", ".{SET_A},{SET_B},{PART1}.{SET_C},...",  
    ...  
];
```

Examples

```
list SETS_LIST = [
  "BLACK", ".BLACK"
];
```

```
list SETS_LIST = [
  "BLACK&RED", ".BLACK,.RED"
];
```

```
list SETS_LIST = [
  "BLACK&TOP_RED", ".BLACK,TOP.RED"
];
```

```
list SETS_LIST = [
  "BTM_B&T_R", "BOTTOM.BLACK,TOP.RED"
];
```

SMC.KERNEL Local Interface

The message string separator is "◆"

```
l1DumpList2String([...], "◆")
```

Submit

-643323390

Apply a predefined property to a predefined part and support custom append and override

```
l1MessageLinked(LINK_SET, -643323390, "{PART}◆{SET}[◆{DATA...}]", "");
```

- PART and SET must be defined in the configuration, and SET must belong to PART for this commit to work.
- The DATA part is an append or override attribute, written as in SET, optional parameters.

Examples

```
// Most commonly used (using predefined configuration LINES)
llMessageLinked(LINK_SET, -643323390, "TOP♦BLACK", "");
// with customized properties
llMessageLinked(LINK_SET, -643323390, "TOP♦BLACK♦6♦<1.0, 0.0,
0.0>♦9♦TRUE♦4♦ee509dfd-0974-6fb5-3eea-2504fa13ef4c", "");
// Easy style
llMessageLinked(LINK_SET, -643323390, llDumpList2String(["TOP", "BLACK", 6, <1.0,
0.0, 0.0>, 9, TRUE, 4, "ee509dfd-0974-6fb5-3eea-2504fa13ef4c"], "♦"), "");
// It is recommended to use constants, which can be written as
llMessageLinked(LINK_SET, -643323390, llDumpList2String(["TOP", "BLACK", C, <1.0,
0.0, 0.0>, F, TRUE, S, "ee509dfd-0974-6fb5-3eea-2504fa13ef4c"], "♦"), "");
```

* Batch mode

```
llMessageLinked(LINK_SET, -643323390, "♦{SET}", "");
```

- If with no PART, the full match mode will be triggered at this point, and all PARTs containing the SET will be automatically found, and work together.
- The DATA appended at this moment, will be applied to all relevant PARTs.

Examples

```
// In the defined PART, such as TOP, MIDDLE and BOTTOM.
// If there is BLACK in TOP and MIDDLE, those will be found automatically and BLACK
will be applied.
// The same with carrying out TOP♦BLACK and MIDDLE♦BLACK
llMessageLinked(LINK_SET, -643323390, "♦BLACK", "");
```

-643323392

Apply a customized set of attributes to predefined parts

```
llMessageLinked(LINK_SET, -643323392, "{PART}♦{DATA...}", "");
```

- PART must have been defined in the configuration for this commit to work.
- The writing style of DATA, such as properties in SET, is different with those above for the custom properties of PART.

Examples

```
llMessageLinked(LINK_SET, -643323392, "TOP♦6♦<1.0, 0.0, 0.0>♦9♦TRUE♦4♦ee509dfd-
0974-6fb5-3eea-2504fa13ef4c", "");
// Easy style
llMessageLinked(LINK_SET, -643323392, llDumpList2String(["TOP", 6, <1.0, 0.0, 0.0>,
9, TRUE, 4, "ee509dfd-0974-6fb5-3eea-2504fa13ef4c"], "♦"), "");
```

```
// It is recommended to use constants, which can be written as
llMessageLinked(LINK_SET, -643323392, llDumpList2String(["TOP", C, <1.0, 0.0, 0.0>,
F, TRUE, S, "ee509dfd-0974-6fb5-3eea-2504fa13ef4c"], "◆"), "");
```

-643323393

Apply a set of custom properties to a customized part.

```
llMessageLinked(LINK_SET, -643323393, "{DATA...}", "");
```

- DATA must be with the full PART + SET contents.
- No need to follow the configuration, this is a completely independent selection + properties rule.

Examples

```
llMessageLinked(LINK_SET, -643323393, "2◆top◆0123◆6◆<1.0, 0.0,
0.0>◆9◆TRUE◆4◆ee509dfd-0974-6fb5-3eea-2504fa13ef4c", "");
// Easy style
llMessageLinked(LINK_SET, -643323393, llDumpList2String([2, "top", "0123", 6, <1.0,
0.0, 0.0>, 9, TRUE, 4, "ee509dfd-0974-6fb5-3eea-2504fa13ef4c"], "◆"), "");
// It is recommended to use constants, which can be written as
llMessageLinked(LINK_SET, -643323393, llDumpList2String([SUFFIX, "top", "0123", C,
<1.0, 0.0, 0.0>, F, TRUE, S, "ee509dfd-0974-6fb5-3eea-2504fa13ef4c"], "◆"), "");
```

Request(pull back)

-643323410

Request PART List

```
llMessageLinked(LINK_SET, -643323410, "", id);
```

KERNEL callback: **-643323411**

```
llMessageLinked({SENDER}, -643323411, "{PART1}◆{PART2}◆....", id);
```

-643323420

Request SET List

```
llMessageLinked(LINK_SET, -643323420, "{SET}", id);
```

KERNEL callback: **-643323411**

```
llMessageLinked({SENDER}, -643323421, "{SET1}◆{SET2}◆....", id);
```

* Special thanks to my darling **Amber0089**