



MMI Customization



Outline

- MMI Resource Generator
- MMI Resource Customization
- Resource Customization Tools



Resource Generator

Overview

- A procedure to generate resources (strings, images, and menus) used in MMI.
- User can change resources without changing MMI framework/application object files.
- Easy to maintain different resources for different projects.

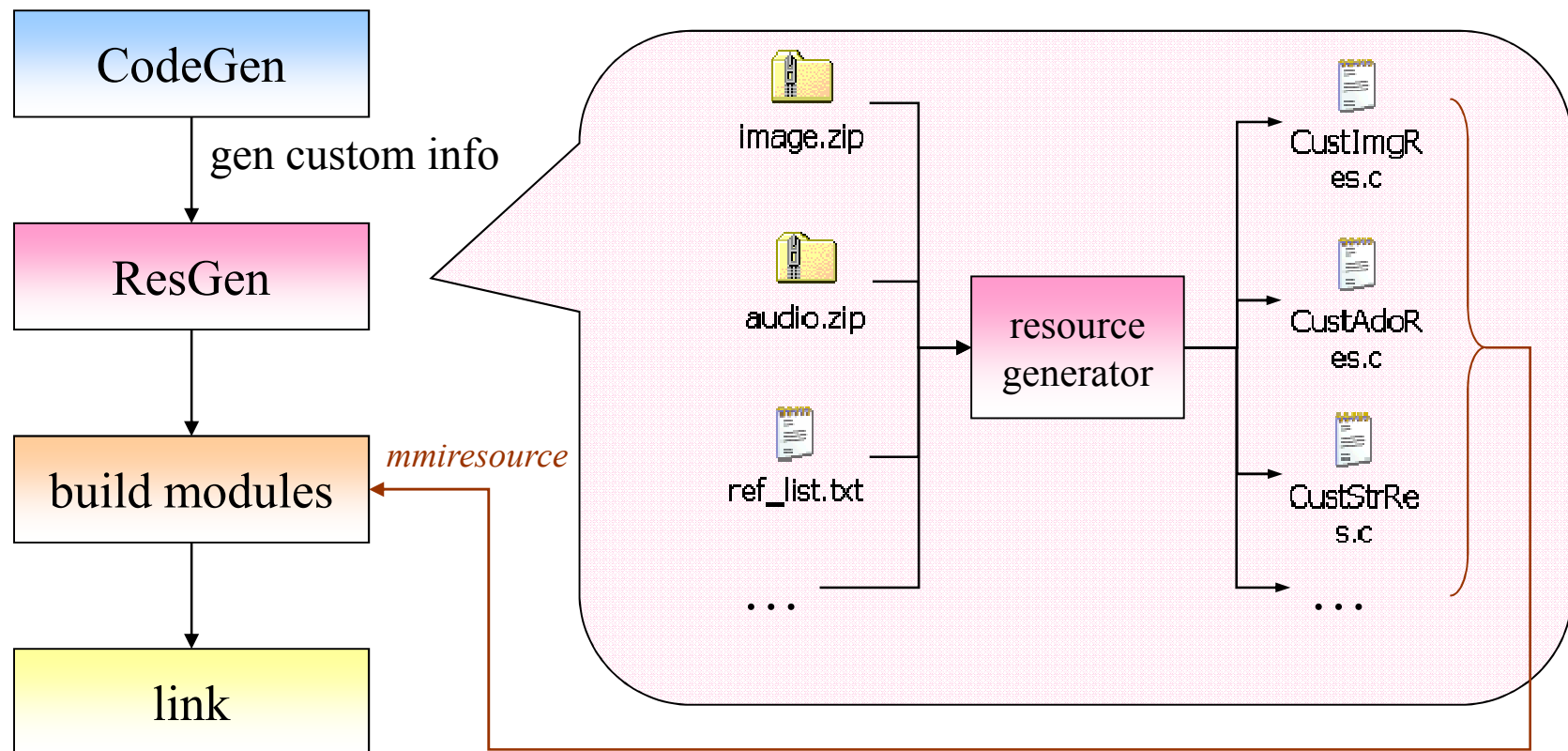
MMI resource overview

- Introduction to MMI resource
 - Menu, Image, String, Audio, Font and Theme



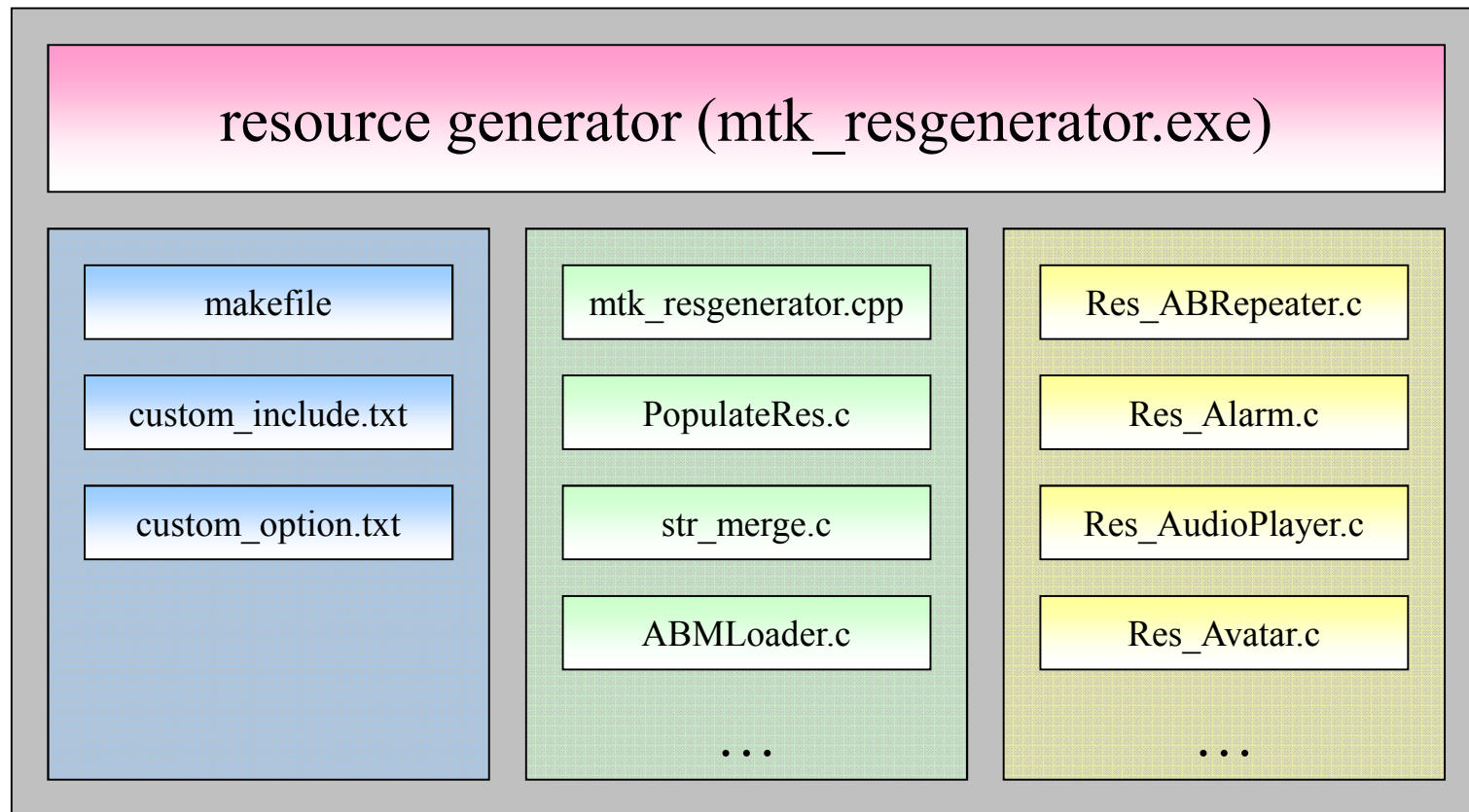
MMI resource overview

- ResGen in build load process



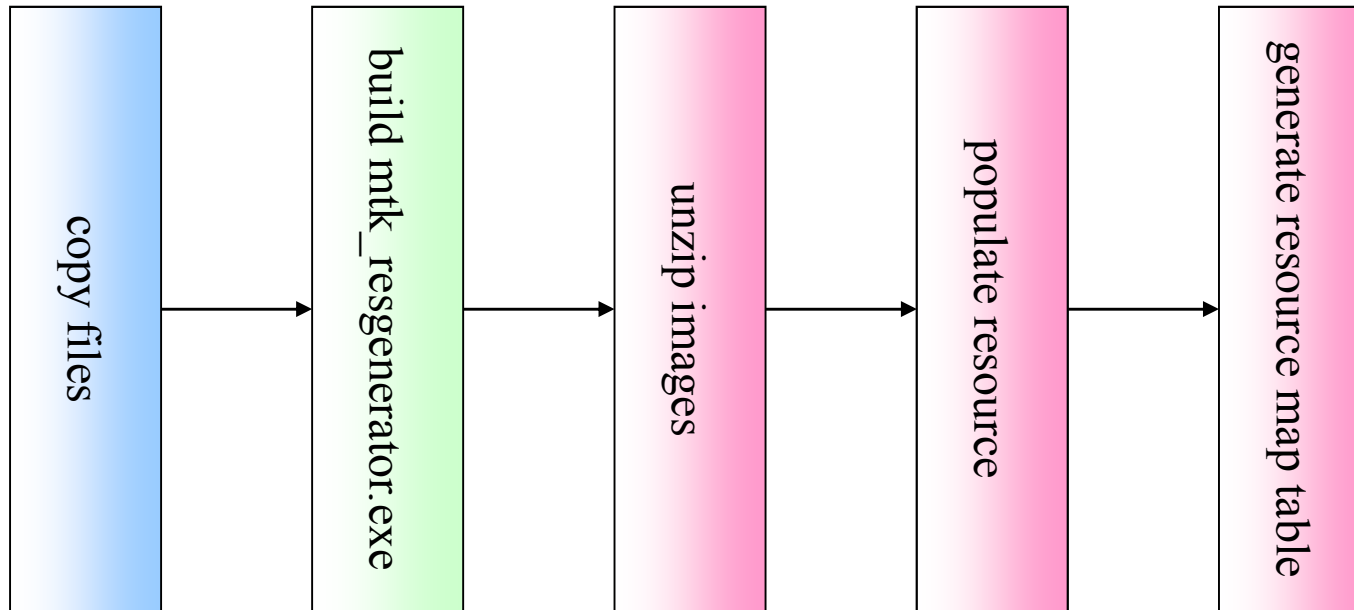
MMI resource generator

- Software architecture



MMI resource generator

- ResGen process: m resgen





MMI Resource Customization

MMI Resource Customization

- How to Modify Resource
- Image Formats
- Enhanced-NFB (E-NFB) Resource
- Multiple-Bin Architecture (MBA)
- Operator Customization
- Customize Font Database

How to Modify Resource

- String
 - ADD_APPLICATION_STRING2(stringId,string,display)
- Image
 - ADD_APPLICATION_IMAGE2(ImageId,ImgFileName,display)
- MenuItem
 - ADD_APPLICATION_MENUITEM(args)
nMenuItemId, nParentId, nNumofMenuItem, nHideFlag, nMovable,
nDispAttribute, nStrId, nImageId, *nOrderMenuItemId

Define String ID and Image ID

- String ID

```
typedef enum
```

```
{
```

```
SCR_ID_MSG_MAIN_MENU = MESSAGES_BASE + 1,
```

```
.....
```

```
} MESSAGES_STRING_ENUMS;
```

- Image ID

```
typedef enum
```

```
{
```

```
IMG_SMS_COMMON_NOIMAGE = MESSAGES_BASE + 1,
```

```
.....
```

```
} MESSAGES_IMAGE_ENUMS;
```

Application ID Range

- Define in MMIDataType.h

```
RESOURCE_BASE_RANGE(MAIN_MENU,        600),  
RESOURCE_BASE_RANGE(PHONE_BOOK,      1200),  
RESOURCE_BASE_RANGE(SHORTCUTS,        50),  
RESOURCE_BASE_RANGE(FUN_GAMES,        300),  
RESOURCE_BASE_RANGE(STATUS_ICONS,     300),  
RESOURCE_BASE_RANGE(SERVICES,          100),  
RESOURCE_BASE_RANGE(INFO_NUM,          100),  
RESOURCE_BASE_RANGE(DATA_ACCOUNT,     200),  
RESOURCE_BASE_RANGE(ORGANIZER,         100),  
RESOURCE_BASE_RANGE(TO_DO_LIST,       100),
```

Define Menuitem ID

- Define in GlobalMenuItems.h

```
enum GLOBALMENUITEMSID
{
    IDLE_SCREEN_MENU_ID=1,
    MAIN_MENU_MESSAGES_MENUID,
    MAIN_MENU_FUNANDGAMES_MENUID,
    MAIN_MENU_PHONEBOOK_MENUID,

    .....

    //Add All Menus defines above MAX_MENU_ITEMS_VALUE Only
    MAX_MENU_ITEMS_VALUE
};
```

An Res_XXX.c Example


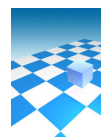

```
#include "MMI_features.h" // add if you use any compile options in MMI_features.h
#include "StdC.h"
#include "CustomCfg.h"
...
void PopulateXXX(void)
{
    ADD_APPLICATION_STRING2(...);
    ADD_APPLICATION_IMAGE2(...);
    ADD_APPLICATION_MENUITEM(...);
    ...
}
#endif
```

MMI Resource Customization

- Image Formats
 - For rich UI display, we use different image types in different ways
 - Colorful and vivid
 - Performance
 - ROM size


MMI Resource Customization

■ Image Formats (1 / 3)

Format	Source	Characteristic	Where
PBM / BMP	xxx.PBM / xxx.BMP	True color Transparency No compression Fast	Status icon Title icon 
JPG	xxx.JPG	True color Great compression (lossy) Fast	Full screen wallpaper 
GIF	xxx.GIF	256 colors Transparency Animation Good compression Slow / Fast	Animation Multimedia skin 



MMI Resource Customization

- Image Formats (2 / 3)

Format	Source	Characteristic	Where
PNG	xxx.PNG		Currently not used
ABM (07A~)	xxx.PBM xxx.BMP xxx.PNG	True color Transparency / alpha chanel Normal compression Fast	Small icon Full screen wallpaper 

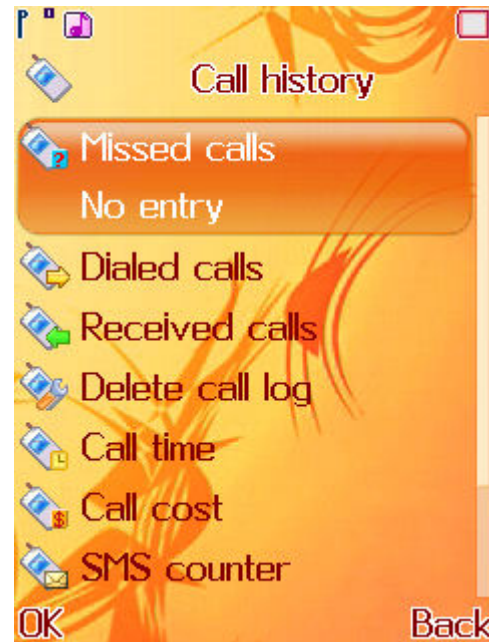
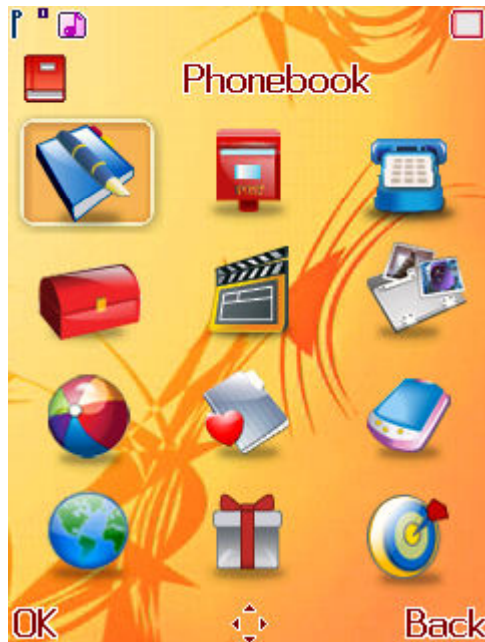
MMI Resource Customization

■ Image Formats (3 / 3)

Format	Source	Characteristic	Where
PBM / BMP SEQUENCE	interval.txt 0.PBM / 0.BMP 1.PBM / 1.BMP ...	Animation	Fairly used (status icon) 
JPG SEQUENCE	interval.txt 0.JPG 1.JPG ...	Animation	Hardly used
ABM SEQUENCE (07A~)	interval.txt 0.PNG 1.PNG ...	Animation True color Transparency / alpha channel Large ROM size	Pop-up animation 

MMI Resource Customization

- Benefits of ABM

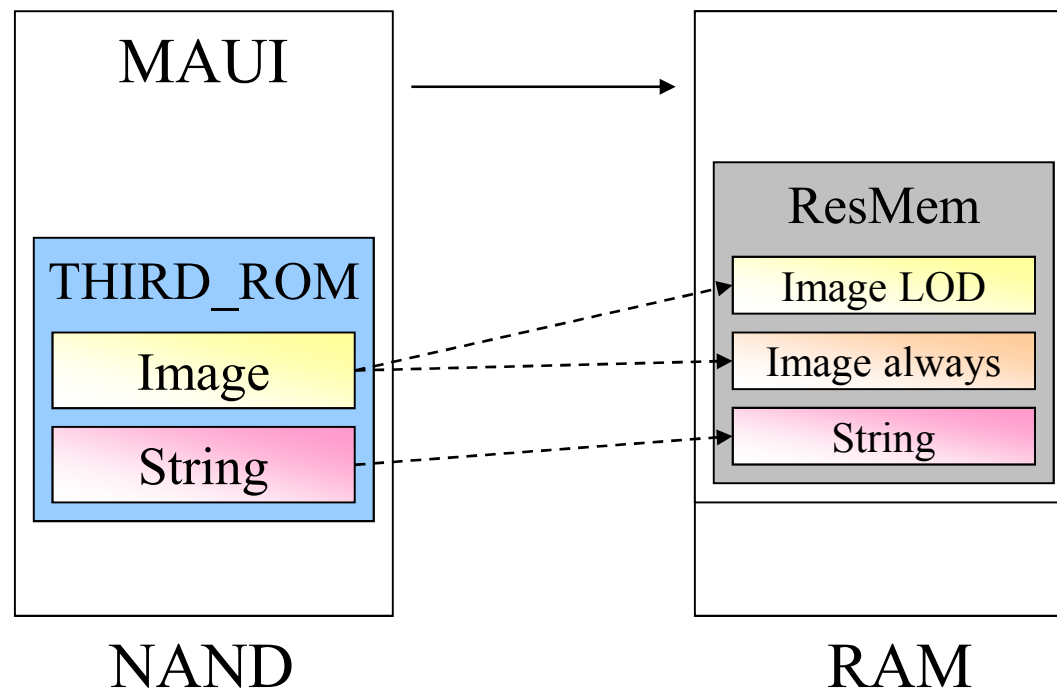


MMI Resource Customization

- Enhanced-NFB (E-NFB) Resource
 - For NFB project, MMI resource has large memory consumption
 - Save RAM size
 - Performance

MMI Resource Customization

- Enhanced-NFB (E-NFB) Resource

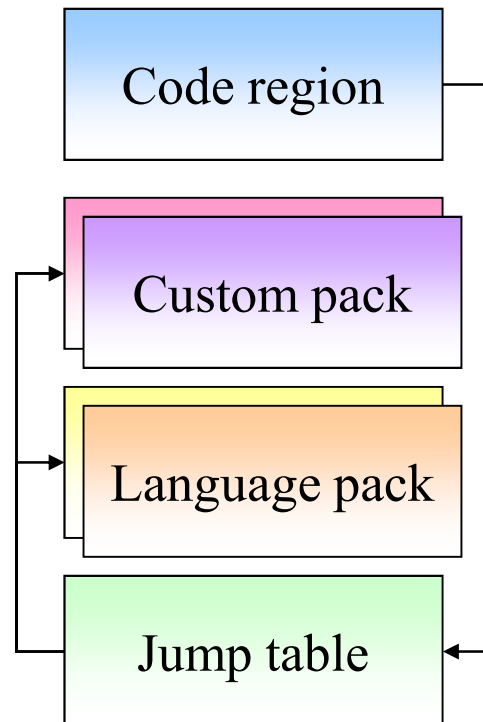


MMI Resource Customization

- Multiple-Bin Architecture (MBA)
 - For global launch customers, we have to combine different MMI resources for the same software architecture
 - separate resource bin from code region
 - easy to replace resource

MMI Resource Customization

- **Multiple-Bin Architecture (MBA)**

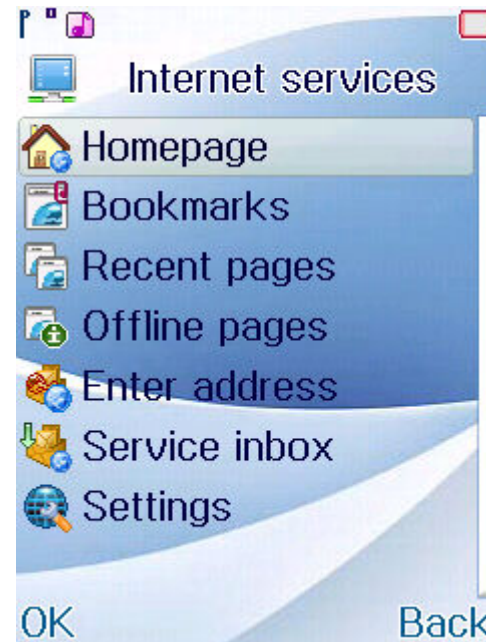
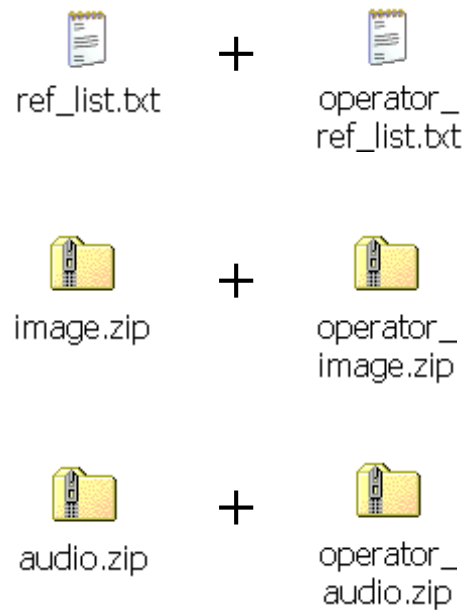


MMI Resource Customization

- Operator Customization
 - For different operator requirement, we have to apply specific resource for UI display
 - Use the least effort to apply / maintain the operator resource (image / string / audio)
 - Avoid impacts on our regular project

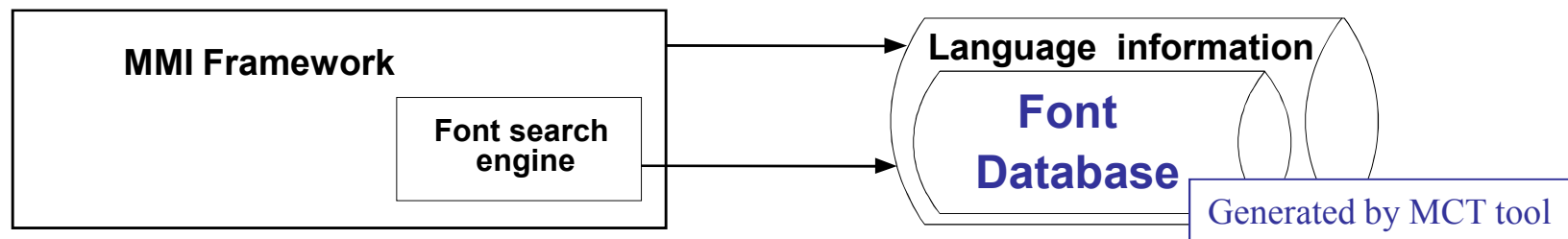
MMI Resource Customization

- Operator Customization



MMI Resource Customization

- Customize Font Database in MCT Tool
 - Font Customize Tool
 - This tool helps you to generate the multiple language font data.
 - Font Viewer
 - This tool helps you to manage font database (bdf files)
 - Font Split
 - This tool helps to down-size a large font file into small one.
 - Font Merge
 - This tool helps to merge two small font file into the big one.
- Note:
 - The font data file(xxx.bdf) shall comply with **BDF version 2.1**
 - Height of font is fixed, and **Width** of font can be variable.





Q & A

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