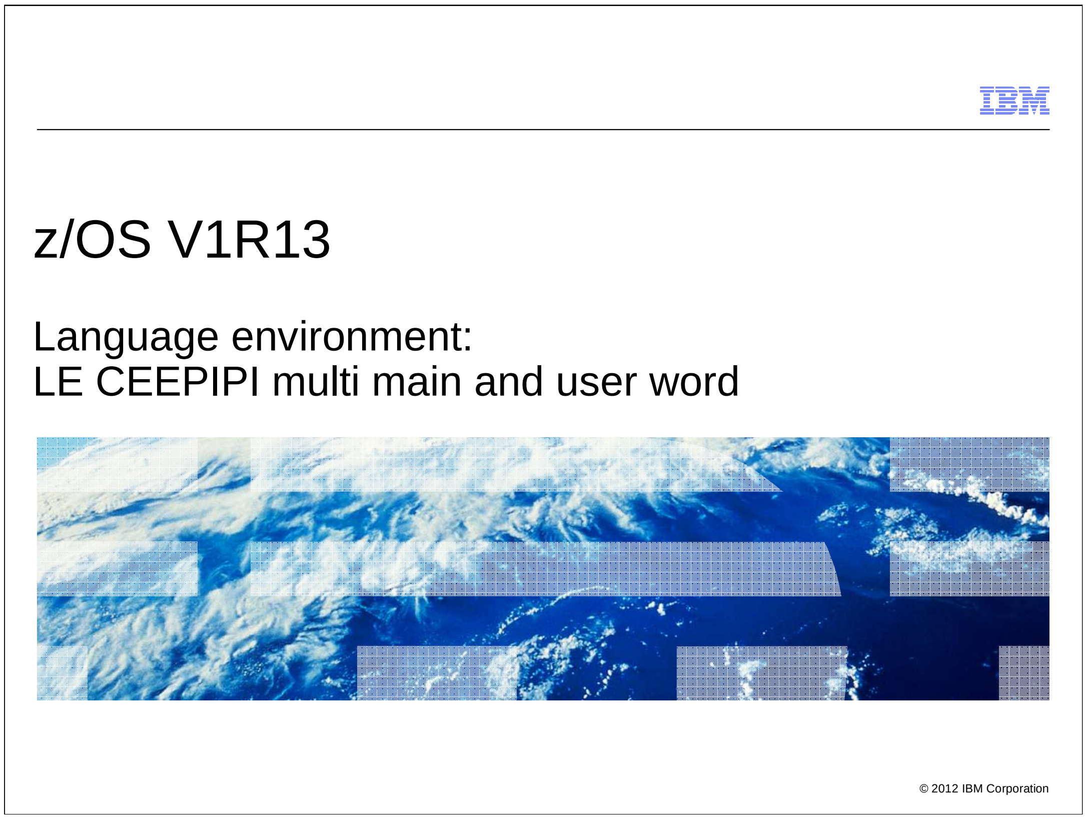
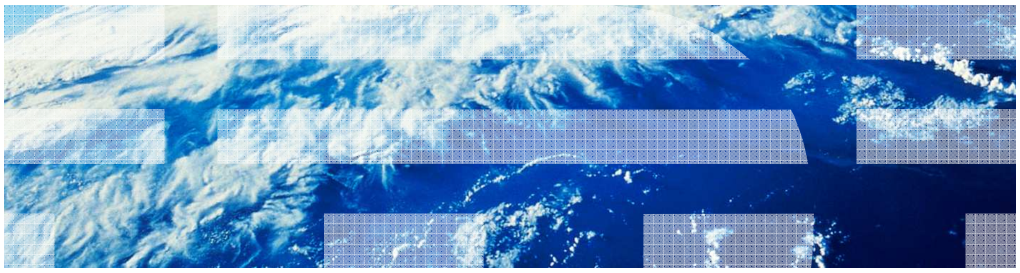


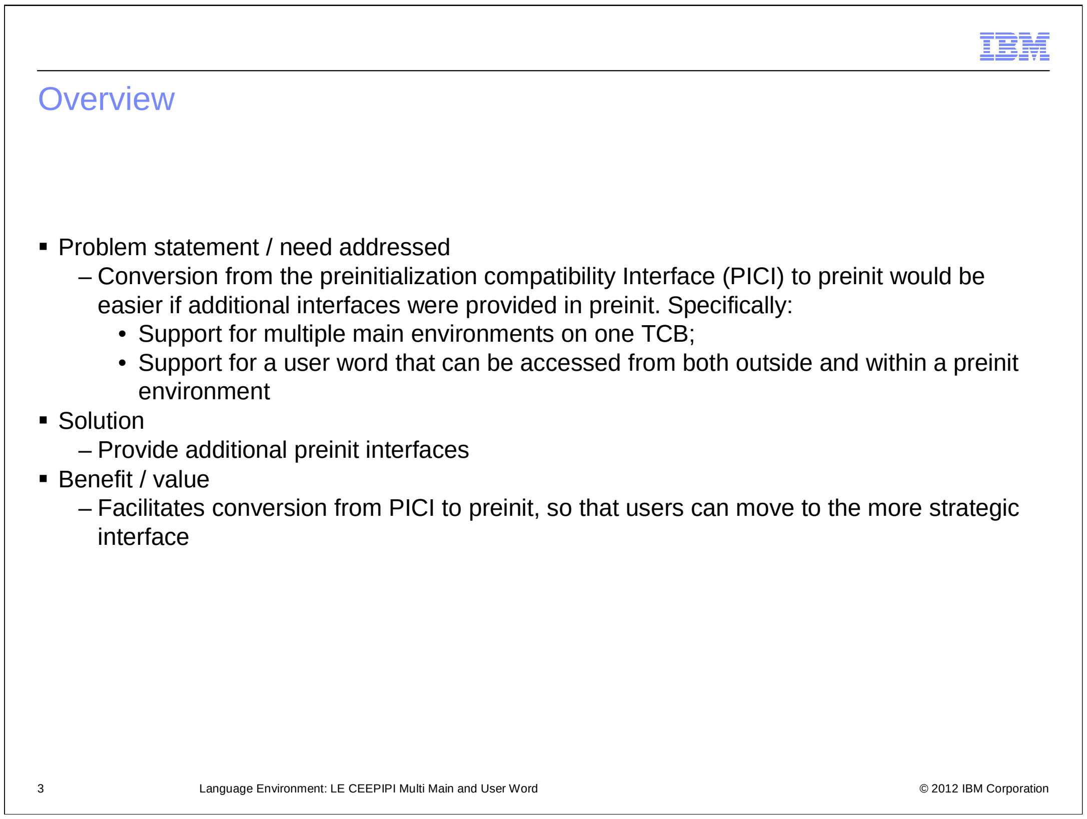
z/OS V1R13

Language environment: LE CEEPIPI multi main and user word



Session objectives

- Describe new CEEPIPI interfaces that support conversions from PICI to CEEPIPI

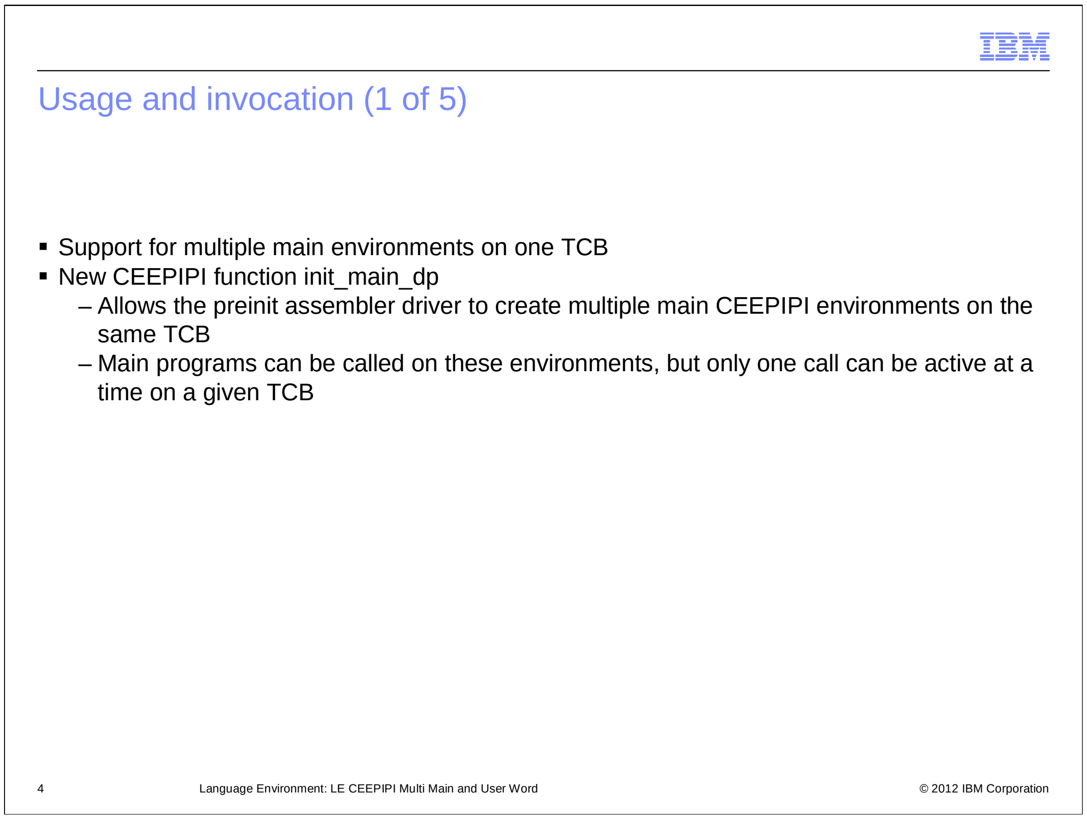


Overview

- Problem statement / need addressed
  - Conversion from the preinitialization compatibility Interface (PICI) to preinit would be easier if additional interfaces were provided in preinit. Specifically:
    - Support for multiple main environments on one TCB;
    - Support for a user word that can be accessed from both outside and within a preinit environment
- Solution
  - Provide additional preinit interfaces
- Benefit / value
  - Facilitates conversion from PICI to preinit, so that users can move to the more strategic interface

3 Language Environment: LE CEEPIPI Multi Main and User Word © 2012 IBM Corporation

Preinitialization Compatibility Interface (PICI) is an older form of Preinit that is supported but no longer being enhanced. Users that would like to take advantage of newer functionality need to change their assembler programs to use the Preinit interfaces.



Usage and invocation (1 of 5)

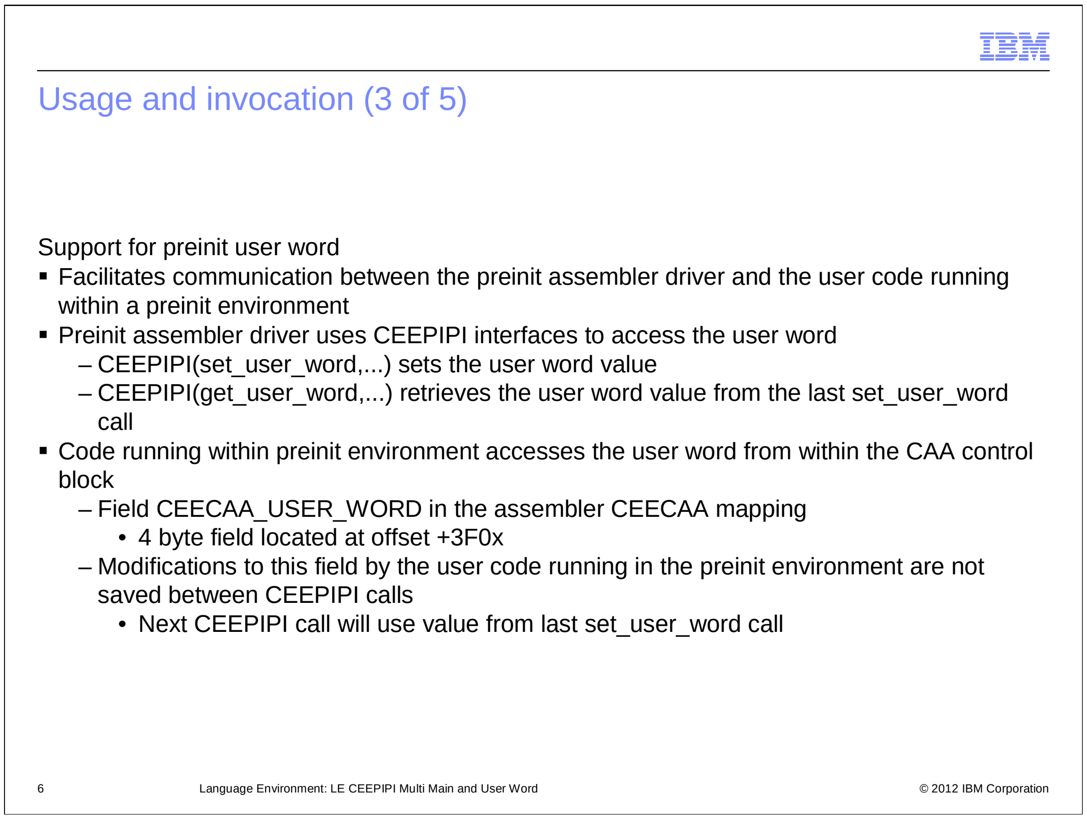
- Support for multiple main environments on one TCB
- New CEEPIPI function init_main_dp
  - Allows the preinit assembler driver to create multiple main CEEPIPI environments on the same TCB
  - Main programs can be called on these environments, but only one call can be active at a time on a given TCB

Usage and invocation (2 of 5)

Support for multiple main environments on one TCB...

```
CALL CEEPIPI(init_main_dp,ceexptbl_addr,service_rtns,token)
```

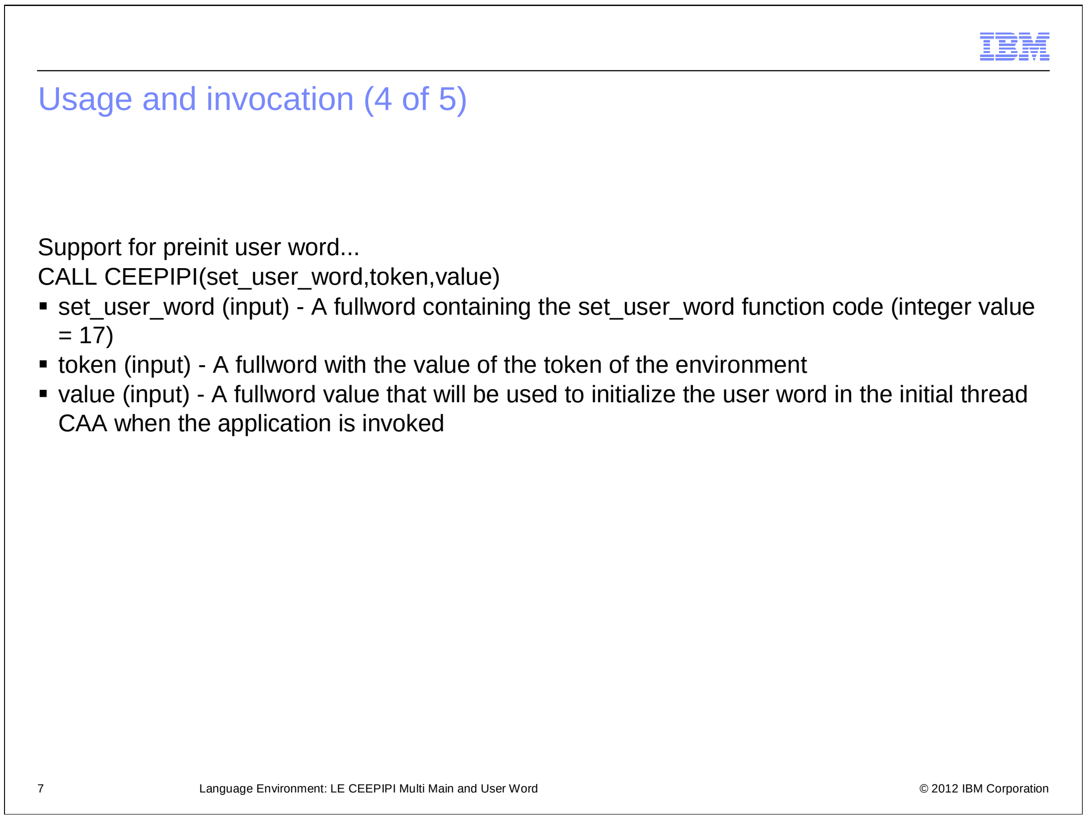
- init_main_dp (input) - A fullword containing the init_main_dp function code (integer value = 19).
- ceexptbl_addr (input) - A fullword containing the address of the PreInit table to be used during initialization of the new environment.
- service_rtns (input) - A fullword containing the address of the service routine vector or 0, if there is no service routine vector.
- token (output) - A fullword containing a unique value used to represent the environment.



Usage and invocation (3 of 5)

Support for preinit user word

- Facilitates communication between the preinit assembler driver and the user code running within a preinit environment
- Preinit assembler driver uses CEEPIPI interfaces to access the user word
  - CEEPIPI(set_user_word,...) sets the user word value
  - CEEPIPI(get_user_word,...) retrieves the user word value from the last set_user_word call
- Code running within preinit environment accesses the user word from within the CAA control block
  - Field CEECAA_USER_WORD in the assembler CEECAA mapping
    - 4 byte field located at offset +3F0x
  - Modifications to this field by the user code running in the preinit environment are not saved between CEEPIPI calls
    - Next CEEPIPI call will use value from last set_user_word call



Usage and invocation (4 of 5)

Support for preinit user word...

CALL CEEPIPI(set_user_word,token,value)

- set_user_word (input) - A fullword containing the set_user_word function code (integer value = 17)
- token (input) - A fullword with the value of the token of the environment
- value (input) - A fullword value that will be used to initialize the user word in the initial thread CAA when the application is invoked

7 Language Environment: LE CEEPIPI Multi Main and User Word © 2012 IBM Corporation

Usage Notes:

•This value will be saved away in an area associated with the passed-in environment token. It will be copied into the CAA for the initial thread when the next call_main/ _sub/ _sub_addr/ _sub_addr_nochk/ _sub_addr_nochk2 function is done to start an application. The application can then examine or update this user word in the CAA (CEECAA_USER_WORD). When the application ends, the final value in CEECAA_USER_WORD is not copied back into the area associated with the environment token. When the next application is started using call_main/_sub etc. function, the user word value last established by (set_user_word) will be used again.

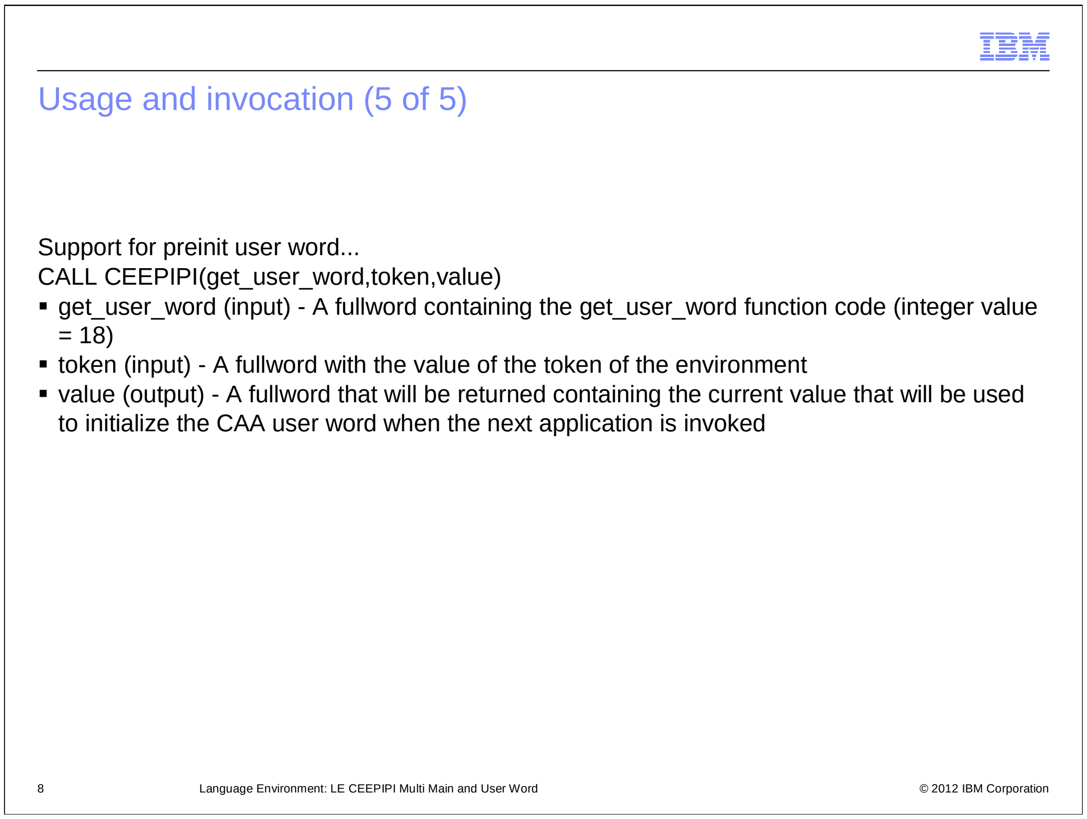
•The user word associated with the environment token is initialized to 0 when (init_main), (init_sub), or (init_sub_dp) is done. The CAA for the initial process thread will be initialized with 0 if no (set_user_word) function call has been done before the application is started.

•The user word in all CAAs other than the initial thread CAA is set to 0.

•When fork() is done, the user word in the CAA for the new process will inherit whatever value is in the CAA at the time fork() is done.

•The use of the CAA user word is not supported in the Assembler User Exit Routine (CEEBXITA and related modules), or in the CEEPIPI service routines specified in the service routine vector.

•Any user code that runs on a CEEPIPI environment before the first call_main/_sub etc. request will see zero in the CAA_USER_WORD. Examples of this code include static constructors run for programs that get loaded when a CEEPIPI environment is initialized. Any changes to the CAA_USER_WORD made by this code will be overlaid when the next call_main/_sub etc. is done for that environment.



Usage and invocation (5 of 5)

Support for preinit user word...
CALL CEEPIPI(get_user_word,token,value)

- get_user_word (input) - A fullword containing the get_user_word function code (integer value = 18)
- token (input) - A fullword with the value of the token of the environment
- value (output) - A fullword that will be returned containing the current value that will be used to initialize the CAA user word when the next application is invoked

Usage Notes:

•This value will be saved away in an area associated with the passed-in environment token. It will be copied into the CAA for the initial thread when the next call_main/ _sub/ _sub_addr/ _sub_addr_nochk/ _sub_addr_nochk2 function is done to start an application. The application can then examine or update this user word in the CAA (CEECAA_USER_WORD). When the application ends, the final value in CEECAA_USER_WORD is not copied back into the area associated with the environment token. When the next application is started using call_main/_sub etc. function, the user word value last established by (set_user_word) will be used again.

•The user word associated with the environment token is initialized to 0 when (init_main), (init_sub), or (init_sub_dp) is done. The CAA for the initial process thread will be initialized with 0 if no (set_user_word) function call has been done before the application is started.

•The user word in all CAAs other than the initial thread CAA is set to 0.

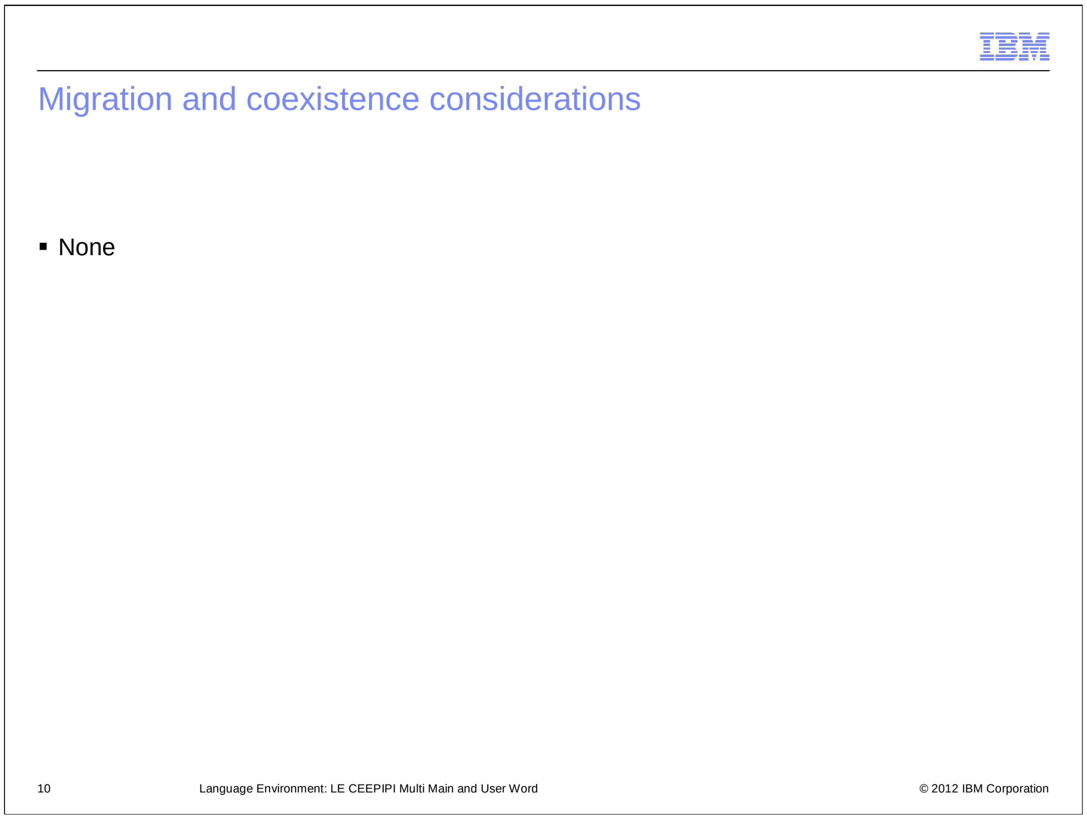
•When fork() is done, the user word in the CAA for the new process will inherit whatever value is in the CAA at the time fork() is done.

•The use of the CAA user word is not supported in the Assembler User Exit Routine (CEEBXITA and related modules), or in the CEEPIPI service routines specified in the service routine vector.

•Any user code that runs on a CEEPIPI environment before the first call_main/_sub etc. request will see zero in the CAA_USER_WORD. Examples of this code include static constructors run for programs that get loaded when a CEEPIPI environment is initialized. Any changes to the CAA_USER_WORD made by this code will be overlaid when the next call_main/_sub etc. is done for that environment.

Interactions and dependencies

- Software dependencies
  – None
- Hardware dependencies
  – None
- Exploiters
  – None

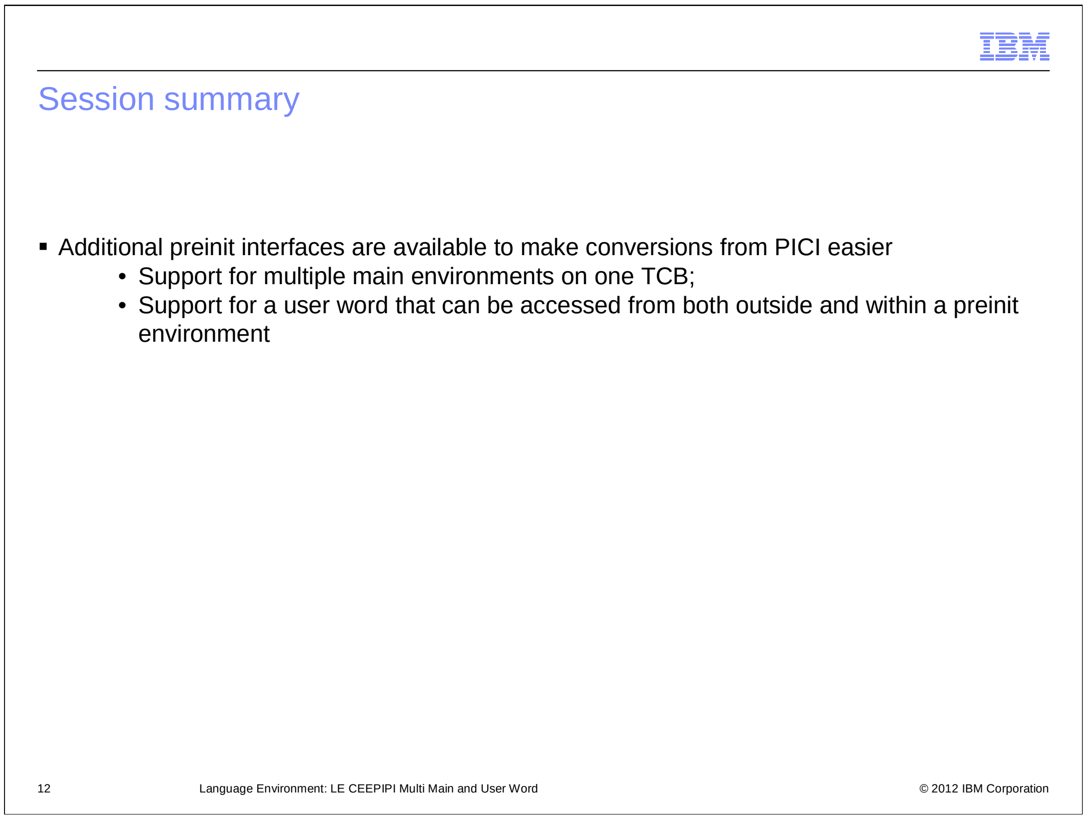


Migration and coexistence considerations

- None

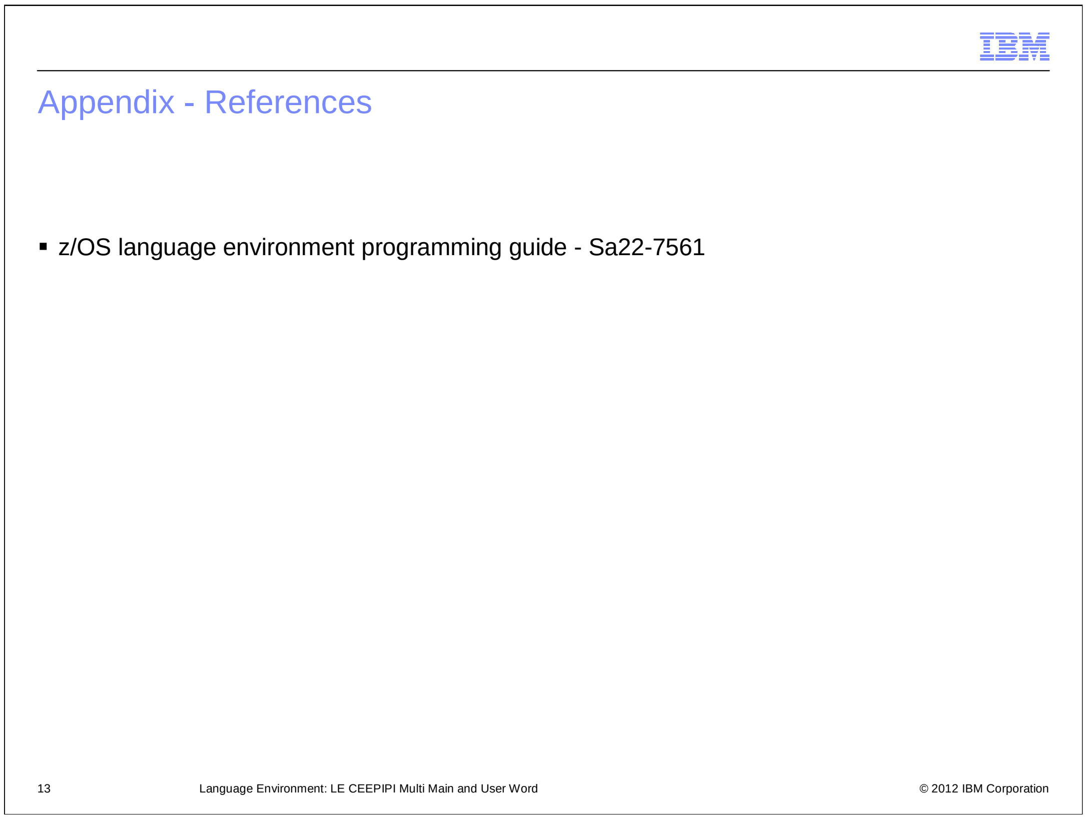
Installation

- None



Session summary

- Additional preinit interfaces are available to make conversions from PICI easier
  - Support for multiple main environments on one TCB;
  - Support for a user word that can be accessed from both outside and within a preinit environment



Appendix - References

- z/OS language environment programming guide - Sa22-7561

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