CLAIMS

What is claimed is:

1. A method for transmitting early data transmission EDT data, wherein the method is executed by a terminal device, and the method comprises:

selecting a PUSCH resource from target physical uplink shared channel PUSCH resource(s), wherein the target PUSCH resource is a PUSCH resource used for Msg A transmission in a 2-step random access procedure; and

transmitting EDT data by using the selected PUSCH resource;

wherein the target PUSCH resource comprises:

a PUSCH resource that meets a transmission requirement and that is closest to a target time domain location, wherein the target time domain location comprises a start time for a transmission requirement of the EDT data; or

a PUSCH resource that meets a transmission requirement within a target time window; or

a PUSCH resource that meets a transmission requirement within a range of N configuration parameters, wherein N is an integer greater than 1; or

M PUSCH resources that meet a transmission requirement, wherein M is an integer greater than 1.

2. The method according to claim 1, wherein the N configuration parameters comprise:

N time domain locations, wherein a PUSCH resource that meets the transmission requirement is present in at least one of the N time domain locations; or

N time domain locations, wherein a PUSCH resource that meets the transmission requirement is present at all the N time domain locations.

3. The method according to any one of claims 1 to 2, wherein the target PUSCH resource is provided in plurality, and the selecting a PUSCH resource from target physical uplink shared channel PUSCH resource(s) comprises:

selecting a smallest-sized PUSCH resource from the target PUSCH resources; or

selecting a largest-sized PUSCH resource from the target PUSCH resources; or

randomly selecting a PUSCH resource from the target PUSCH resources; or

selecting a PUSCH resource from the target PUSCH resources based on a preset weight.

4. The method according to claim 3, wherein

if there are a plurality of smallest-sized PUSCH resources, the selecting a smallest-sized PUSCH resource from the target PUSCH resources further comprises: randomly selecting one PUSCH resource from the plurality of smallest-sized PUSCH resources; or

if there are a plurality of largest-sized PUSCH resources, the selecting a largest-sized PUSCH resource from the target PUSCH resources further comprises: randomly selecting one PUSCH resource from the plurality of largest-sized PUSCH resources.

5. The method according to claim 1 or 2, wherein the selecting a PUSCH resource from target physical uplink shared channel PUSCH resource(s) comprises:

in a case that the terminal device belongs to a preset type, if the target PUSCH resources comprise a plurality of smallest-sized PUSCH resources, randomly selecting one PUSCH resource from the plurality of smallest-sized PUSCH resources; or if the target PUSCH resources comprise one smallest-sized PUSCH resource, directly selecting the smallest-sized PUSCH resource; or

in a case that the terminal device does not belong to a preset type, randomly selecting the PUSCH resource from the target PUSCH resources.

6. The method according to claim 1 or 2, wherein the selecting a PUSCH resource from target physical uplink shared channel PUSCH resource(s) comprises:

in a case that a path loss of the terminal device meets a threshold or an uplink power meets a preset condition, if the target PUSCH resources comprise a plurality of smallest-sized PUSCH resources, randomly selecting one PUSCH resource from the plurality of smallest-sized PUSCH resources; or if the target PUSCH resources

comprise one smallest-sized PUSCH resource, directly selecting the smallest-sized PUSCH resource; or

in a case that a path loss of the terminal device does not meet a threshold condition or an uplink power does not meet a preset condition, randomly selecting the PUSCH resource from the target PUSCH resources.

7. The method according to claim 1 or 2, wherein the selecting a PUSCH resource from target physical uplink shared channel PUSCH resource(s) comprises:

in a case that the terminal device reattempts to transmit the EDT data after power ramp, if the target PUSCH resources comprise a plurality of smallest-sized PUSCH resources, randomly selecting one PUSCH resource from the plurality of smallest-sized PUSCH resources; or if the target PUSCH resources comprise one smallest-sized PUSCH resource, directly selecting the smallest-sized PUSCH resource; or

in a case that the terminal device reattempts to transmit the EDT data not after power ramp, randomly selecting the PUSCH resource from the target PUSCH resources.

8. The method according to claim 1 or 2, wherein the selecting a PUSCH resource from target physical uplink shared channel PUSCH resource(s) comprises:

in a case that the terminal device has a capacity headroom or a power headroom, randomly selecting the PUSCH resource from the target PUSCH resources.

9. The method according to claim 1 or 2, wherein the selecting a PUSCH resource from target physical uplink shared channel PUSCH resource(s) comprises:

in a case that the terminal device has a capacity headroom or a power headroom, if the target PUSCH resources comprise a plurality of largest-sized PUSCH resources, randomly selecting one PUSCH resource from the plurality of largest-sized PUSCH resources; or if the target PUSCH resources comprise one largest-sized PUSCH resource, directly selecting the largest-sized PUSCH resource; or

in a case that the terminal device does not have any capacity headroom or power headroom, randomly selecting the PUSCH resource from the target PUSCH resources.

10. The method according to claim 1, wherein the selecting a PUSCH resource from target physical uplink shared channel PUSCH resources comprises: selecting the PUSCH resource from the target PUSCH resources based on at least one of the following:

a size of data that the target PUSCH resource is able to accommodate;

the number of repeated transmissions; and

a transmission parameter.

11. The method according to claim 1, wherein the method further comprises:

if no PUSCH resource that meets a transmission requirement is selected from the target PUSCH resources, initiating a 2-step random access procedure, wherein the EDT data is not transmitted in the 2-step random access procedure.

12. The method according to claim 1, wherein the selecting a PUSCH resource from target physical uplink shared channel PUSCH resource(s) comprises: selecting the PUSCH resource from the target PUSCH resource(s) in a case that at least one of the following conditions is satisfied:

being in an idle state or an inactive state;

being in a connected state, with no appropriate uplink dedicated resource for transmitting the EDT data;

quality of service of a service reaching a preset threshold;

a size of arrived service data meeting a transmission requirement of a PUSCH for Msg A transmission;

a type of the terminal device being a preset type; and

service arrival meeting a preset condition.

13. A terminal device, comprising:

a resource selection module, configured to select a PUSCH resource from target physical uplink shared channel PUSCH resource(s), wherein the target PUSCH resource is a PUSCH resource used for Msg A transmission in a 2-step random access procedure; and

a transmission module, configured to transmit EDT data by using the selected PUSCH resource;

wherein the target PUSCH resource comprises:

a PUSCH resource that meets a transmission requirement and that is closest to a target time domain location, wherein the target time domain location comprises a start time for a transmission requirement of the EDT data; or

a PUSCH resource that meets a transmission requirement within a target time window; or

a PUSCH resource that meets a transmission requirement within a range of N configuration parameters, wherein N is an integer greater than 1; or

M PUSCH resources that meet a transmission requirement, wherein M is an integer greater than 1.

14. A terminal device, comprising: a memory, a processor, and a computer program stored in the memory and capable of running on the processor, wherein when the computer program is executed by the processor, the steps of the method for transmitting EDT data according to any one of claims 1 to 12 are implemented.

15. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and when the computer program is executed by a processor, the steps of the method for transmitting EDT data according to any one of claims 1 to 12 are implemented.