

ABSTRACT OF THE DISCLOSURE

A method includes an access device determining an interaction value associated with an interaction. The access device prompts a user operating a user device for a secret. The access device receives the secret. The access device receives an initial communication then a user device certificate comprising a public key from the user device. The access device then verifies the certificate. The access device concatenates at least the secret and an unpredictable number to form a concatenated value. The access device encrypts the concatenated value with the public key, then transmits the encrypted concatenated value. The user device decrypts the encrypted concatenated value with a private key, verifies the unpredictable number, verifies the secret, determines whether or not the interaction is approved, produces an interaction authorization result, and then provides the interaction authorization result to the contactless access device. The access device receives the interaction authorization result.

FIG. 1