

Minimum Viable Product Development Plan
Of
Blockchain Based Dynamic Multi-Dimension Identification Technology

THEKEY Project, December 2017, Beijing, China

Background

1. As more and more services and socialization has shifted from the Real World to the Internet World, identifying each other digitally has become a prominent theme. Development of identity verification (“IDV”) technology is one of the most significant trends, and this critically impacts the digital economy. However, none of the existing online IDV technology addresses the two fundamental requirements, mainly that the result generated from online IDV should be undeniable and unalterable.
2. THEKEY Project is now developing a second-generation IDV solution for internet via BDMI technology. BDMI stands for Blockchain based Dynamic Multi-Dimension Identification technology. Such a solution perfectly echoes the main requirements for identifying each other on the digital world, which is the key for migrating people from the real world to the internet world. Along with the development of a second-generation IDV solution, facilitated by a token sale, THEKEY Project team will also develop THEKEY Ecosystem for providing IDV services (the "Ecosystem"). The THEKEY Ecosystem will consist of 3 components, namely, participants (validator, service provider and individual user), smart contracts and TKY Tokens. The objectives of setting up THEKEY ecosystem are, 1) to develop a healthy environment where PII (Personally Identifiable Information) can be properly used and protected, and 2) to financially incentive the participants of the Ecosystem.
3. To generate “undeniable” IDV results, BDMI embraces the following six elements, which need to work together *simultaneously*:
 - a) Unique biometrics data serves as the base of BDMI.
 - b) The key data of BDMI used for IDV, including biometrics data, are all validated in advance by the relevant government authorities.
 - c) The data of BDMI used for IDV are comprehensive enough to meet the different requirements of various clients.
 - d) To ensure the reliability of BDMI, cross checking is always carried out during IDV between the government validated ID data and behavior/scene data of the same user.
 - e) To ensure solidity of BDMI, BDMI always uses the data which are updated to the moment when IDV is executed to capture the latest changes, if any.
 - f) Once an IDV is completed, the result will be properly documented for audit so that personal credit of the user can be evaluated and calculated.

Code publishing and auditing plan

	Time	Remarks
Prototype of DMI	December 30 th , 2017	Code published on December 30 th 2017, and followed with AMA on Reddit on January 4 th 2018.
Testnet of BDMI		
● Code publishing	June 30 th , 2018	Code published on June 30 th 2018
● Code auditing	July 30 th 2018	Code published will be audited by a World leading code auditing firm which will be appointed at later stage.
● Project evaluation	August 30 th 2018	Middle Term Project Evaluation will be conducted by the Evaluation Panel composed of the representatives from regulatory agencies, hospitals, drug stores, the world leading KOLs of the industry and the world leading academic institutions, witnessed by the representatives of THEKEY community.

Prototype of DMI

1. Using mobile social insurance pay of THEKEY as an example, the prototype of DMI (Dynamic Multi Dimension Identification Technology) is to clearly demonstrate the technical feasibility of generating “undeniable” IDV result through the DMI technology.
2. Code publishing of the prototype of DMI is mainly to demonstrate the six elements of the technology, which constitute the foundation of an “undeniable” IDV service. The six elements applied are as follows,
 - a) Unique human face data serves as the base of online IDV.
 - b) The government validated face recognition data is used as the reference.
 - c) Medical record of the user is used to meet the demands of claim processing automation of the healthcare insurance agency.
 - d) To ensure the reliability of IDV, cross check is always carried out during IDV between the government validated ID data and behavior and scene data of the same user.
 - e) To ensure solidity of the IDV result, THEKEY always uses the data which are updated to the moment when IDV is executed to capture the latest change, if any.

- f) Once an IDV is completed, the result will be properly documented for audit against the criteria of anti-fraud, abuse and waste policies of the healthcare insurance agencies.

3. The business process of DMI prototype is as indicated hereunder,

	Description	Remarks
1	Hospital triggers off IDV request	
2	User accepts the IDV request through user face recognition over THEKEY APP.	
3	Comparison is carried out between the face data submitted and the authenticated one of the same user stored in the healthcare insurance agency.	
4	Cross checking is carried out between government ID data, behavior data as well as scene data.	
5	Dynamic data check is carried out against the relevant database.	<ul style="list-style-type: none"> ● Fatality database. ● Inmates database. ● Wanted list of legal enforcement agencies.
6	User related medical record data is imported once the user's ID is confirmed.	
7	Claim Processing Automation	
8	Data audit against anti-fraud, abuse and waste policy of healthcare insurance agency.	

4. The code of the following eight modules of DMI prototype will be made available for public review,

	Description	Remarks
1	IDV engine module	
2	Face recognition module	Face recognition technology is provided by third party, not from THEKEY
3	ADP code of the face recognition module	No testing data is provided
4	Data cross checking module	
5	Dynamic ID data checking module	\\
6	Individual Patient Data import module	
7	Claim Processing Automation module	<ul style="list-style-type: none"> ● MTS engine module. ● CPA engine module.
8	Data audit module.	<ul style="list-style-type: none"> ● BI engine module.

5. Deliverables:

- a) Description of DMI prototype promulgated on December 25th, 2017.

- b) Code published on December 30th 2017.
- c) AMA on Reddit on January 4th 2018.
- d) Code will be constantly updated afterwards.

Prototype of BDMI

1. Still using mobile social insurance pay of THEKEY as an example, the prototype of BDMI (Blockchain based Dynamic Multi Dimension Identification Technology) is to clearly demonstrate technical feasibility of BDMI which aims to generate “undeniable” IDV result in a highly decentralized community through the technology.
2. Code publishing of the prototype of BDMI is mainly to demonstrate three elements of THEKEY ecosystem, on which the IDV solution of THEKEY works together with DMI in a highly decentralized community. The three elements to be demonstrated are as follows,
 - a) Participants of THEKEY ecosystem, including,
 - THEKEY, as well as telecommunications companies as the validators.
 - User, and
 - Service Provider, including hospitals, clinics and drug stores.
 - b) Smart contract. The smart contract plays a very important role in THEKEY ecosystem which directly serves the purposes of, 1) developing a healthy environment where PII can be properly used and protected at the same time, and 2) financially incentivizing all the participants in the Ecosystem. In code publishing of BDMI prototype, the following five functions need to be demonstrated,
 - Personal identifiable information protection,
 - National confidential information protection,
 - Compliance with other applicable laws and regulations;
 - Smart KYC check, and
 - Smart pay.
 - c) Token circulation. Token circulation will also be tested and demonstrated in the code publishing as follows,
 - Automatic token transfer from hospital to THEKEY;
 - Automatic token transfer from User to THEKEY, and
 - Automatic token transfer from THEKEY to other Validators.

3. The business process of BDMI prototype is as indicated below. Four out of eleven elements of business process are different from the DMI prototype, as highlighted in yellow color below.

	Description	Remarks
1	Hospital triggers off an IDV request	
2	User accepts the IDV request with user face recognition over THEKEY APP and signs off the smart contract between THEKEY, hospital and other validators in the ecosystem including healthcare insurance agency and utility company.	
3	IDV request is checked against the built-in industry KYC policy.	
4	Comparison is carried out between face data submitted and the authenticated face data of the same user by and stored in the healthcare insurance agency.	
5	Cross checking is carried out between government ID data, behavior data as well as scene data.	
6	Dynamic data check is carried out against the relevant database.	<ul style="list-style-type: none"> ● Fatality database. ● Inmates database. ● Wanted list of legal enforcement agencies.
7	User related medical record data is imported once the user's ID is confirmed.	
8	Claim Processing Automation	
9	The result of CPA will be stamped in forms of approval on blockchain as attestation so that the hospital who initiated the IDV is able to receive the money for the medical bill.	
10	The smart contract is settled after IDV service is delivered.	
11	Data audit against the criteria of anti-fraud, abuse and waste policy of healthcare insurance agency.	

4. The code of the following eight modules of BDMI prototype will be made available for public review. Two out of eight modules are different from DMI prototype as highlighted in yellow color below,

	Description	Remarks
1	IDV engine module	

	Description	Remarks
2	Smart contract module	<ul style="list-style-type: none"> ● Authorization center. ● Data security center. ● Smart pay
3	Code of data cross checking module	
4	Dynamic ID data checking module	
5	Individual Patient Data import module	
6	Claim Processing Automation module	<ul style="list-style-type: none"> ● MTS engine module. ● CPA engine module.
7	Attestation approval module.	
8	Data audit module.	<ul style="list-style-type: none"> ● BI engine module.

5. Deliverables:

- a) Description of BDMI prototype promulgated on December 25th, 2017.
- b) Code published on June 30th 2017.
- c) AMA on Reddit on July 6th 2018.
- d) Code will be constantly updated after June 30th 2018.

6. Code promulgated will be audited by a world leading code auditing firm and Code Audit Report will be released before July 30th 2018.

7. Project middle-term evaluation.

- a) The Evaluation Penal will be composed of regulatory agencies, hospitals, drug stores, and the world leading Key Opinion Leaders in both the relevant industry and academic areas.
- b) The evaluation will be consisted of presentation and field visit, witnessed by the representatives of THEKEY community.
- c) The Evaluation Report of THEKEY Project will be released before August 30th 2018.