Ubiquitous E-Money Interoperability

The use of e-money around the world is growing at an impressive rate. E-money payment services are much more convenient than physical cash and less onerous and cheaper to use than owning a bank account. Prepaid card or mobile phone based payment services are inclusive and in many places have provided access to the financial services to people who had been deprived of such access previously.

For all its success, e-money is not growing as fast and not as uniformly as might be expected. The mobile industry body GSMA finds that the vast majority of around 300 mobile deployments across the world have failed. Launching a new payment service is a tricky business and there are many reasons for the failures: challenges and cost of building an agent network, inability to balance the growth of the various types of participants such as merchants, agents and the end users, lack of clear initial use cases to bootstrap the system, and many others.

As individual e-money payment systems achieve a relative maturity in some markets, the next barrier to growth is increasingly lack of interoperability among the systems. E-money systems operating in walled silos reduce adoption and make it inconvenient for the users limiting them to a single silo or forcing them to subscribe to multiple services. The silos also force each operator to develop their own agent network rather than having access to all of them. Lack of interoperability causes friction and inefficiencies, consuming resources which could be used in a more productive manner. The situation is similar to credit cards prior to the MasterCard and Visa networks or mobile voice services prior to ubiquitous roaming agreements.

Government regulators and the pubic increasingly demand interoperability of e-money services and many interoperability efforts are under way. The efforts are challenging and often achieve only partial success. The most common causes of failure of interoperability efforts can be summarized in the following categories:

1. Lack of trust among the operators. E-money operators have visibility and control over their own operations but have no such control over the operations of others. In an interoperable scheme, operators therefore assume risks over which they have no control and cannot effectively mitigate.
2. Lack of transparency to regulatory bodies. Individual e-money schemes are difficult to supervise and regulate. The issue grows exponentially when multiple schemes are interoperating because of the multiplicative nature of the risk and complexity introduced by interoperability.
3. Bi-lateral interconnectivity. Many early interoperability solutions were just expedients connecting individual operators one by one. This approach works for a very small number of operators but does not scale as the number of operators exceeds a handful.
4. Difficulty of settlement and reconciliation. Reconciliation and settlement across multiple e-money systems is very difficult, prone to errors and is a source of risk to the e-money service providers.
5. Lack of a technical standard. E-money interoperability is a relatively new challenge and there are no generally accepted standards. Consequently, many interoperability

schemes re-invent the solution over and over again increasing cost and technical risk of failure, security breaches and similar.

6. Use of banking technologies. In some instances existing banking interconnect switches and networks have been used to effect e-wallet interoperability. However, e-money payments are different in nature. They are often micro-payments and the existing banking system solutions do not map well to the low-value, high-volume and desired low-cost of e-money payments.
7. Use of inappropriate technologies. E-money interoperability is a relatively new challenge and so unproven technical solutions are being attempted. Some of those new technologies are appropriate for storage of immutable public records, deeds, land ownership and similar. They are not appropriate for private, fast and secure payment transactions.

To address the above challenges and to enable more efficient interoperability between e-money services, eCurrency introduced the Monarch E-Money Interoperability Switch. The eCurrency Monarch E-Money Interoperability Switch ensures the following essential characteristics of the interconnected payment ecosystem:

1. It establishes a common unit of account across all the operators. Rather than using e-money tokens with various risk profiles depending on the fiscal and commercial strength of the individual operators, a common, secure unit of account is being exchanged across the entire interoperable system reducing the risk of fraud, security breaches and commercial viability of the various operators.
2. It enhances security of each e-money scheme. The operators do not have to build bi-lateral trust in the security and propriety of their competitor's operations, but rather can rely on the central authority to ensure security of the monetary instrument.
3. It interconnects the operators in a hub-and-spoke manner. The operators do not need to perform bi-lateral integrations with every partner creating a complex web of many connections. Instead, each operator integrates only once, greatly reducing the cost and time to market.
4. It bridges the account-based money of the banking system with the wallet-based value circulating in the e-money systems. Through the core banking system integration, the value of the escrow accounts is always matched with the total value of the e-money wallets. The conversion between account money and the e-wallet value is always clear and direct and removes the risk associated with violations of escrow account rules.
5. It makes interoperable transactions visible to the supervising authority in real time. Many risks related to inability to effectively supervise a complex, interoperable financial system disappear. The information is available in real-time removing the need for costly, multi-party audits and *a posteriori* investigations in cases of suspicious activities.

6. It provides a common standards-based API. The common technical standard provided by the API reduces the cost of integration and reduces the technology failure risks for the entire ecosystem.
7. It performs instant settlement of interoperable transactions. Liquidity injected into the Monarch Switch by commercial banks is used to settle the transactions in real time shifting counterparty risk away from the public and the e-money operators onto commercial banks where such risks are better understood and can be managed more effectively.

The eCurrency approach to interoperability takes a holistic view of the entire value chain with the objective of establishing a secure, fast, reliable and properly supervised e-money ecosystem for all e-money operators and participating commercial banks. The Monarch switch, with its more efficient interoperability, further stimulates the adoption and usage of e-money, making acceptance of e-money as universal as cash.

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