



Central Securities Depository
and Registry (CSDR)
with User Empowerment
and Value Added Services (VAS)

WHITE PAPER

'Built in' Functional Limitations in Software Solutions

It is well known that some vendors of software solutions provide products with 'built in' or planned limitations in the architecture or business functionality. The business of selling new additional modules or enhancements to existing products over a short time period significantly increases vendors' revenue; unfortunately, the customer's

cost also increases. These limitations include solutions that are inflexible and do not take into account the inevitable changes in business requirements. Such changes are inevitable and a system that cannot be easily updated or reconfigured to handle the changes will slow down the reaction of the business and increase costs for customers.

CSDR Management Information Systems

Like all businesses, CSDR's business requirements are always changing to meet new demands from their customers, along with the rapidly increasing burden of regulations coming to bear on the finance industry. If a CSDR does not keep competitive or does not maintain compliance with new regulations, it is a real possibility that they will lose business to competition or lose their licence. A typical CSD vendor remains ready to take advantage of these pressures to get more revenue from customers that need to keep their IT infrastructure up to date. Change requests are costly and will inevitably lead to increase in operational costs and lengthy delays in making the changes; furthermore, CSDR operators normally sign long term contracts with suppliers which will result in 'vendor lock-in'. The combination of functional limitations and 'vendor lock-in' will result in increased operational costs for CSDR operators. At Percival we provide our clients with User Empowerment coupled with a flexible solution that avoids built in obsolescence to the maximum extent possible. This approach to software development enables our customers

to have better control over operational costs and to be less dependent on their software vendor.

Lower operational costs and user empowerment are linked to the fact that business requirements for a solution must change over time. When changes are required, the customer submits a change request to the vendor who then provides a cost and time. Change requests can be very expensive, and in addition, could be a 'hidden cost' as a result of 'vendor lock-in'; being locked into a vendor with an aggressive pricing policy may result in a spend over the life of the system that far exceeds the initial cost to go live and expectations for the five-year total cost of ownership.

To keep such costs to a minimum, Percival have architected their CSDR solutions to be highly configurable by the customer. We have anticipated changes to customers' business requirements and information needs by implementing business logic and rules on a changeable and configurable framework.

Other Disadvantages of 'Vendor Lock-In' and Limited Functionality

Apart from the disadvantage of 'vendor lock-in', limitations in functionality, and associated cost increases, there are other disadvantages that come to bear with change requests to your vendor; these are:

- Time wasted explaining to vendor your new requirements before they can make any changes to the CSD

- The vendor's having to schedule the job which will result in lengthy delay before you receive your update

- The vendor's having the right to market this change request and this could have given you a competitive advantage

Advantages of Being Able to Make Your Own Changes

The CSDR operator is in the best position to understand the local business environment and requirements. Being empowered to handle your own change requests will achieve the following for a CSDR:

- Substantial reduction in operational costs leading to increase in profit margin

- Less reliance on vendor

- Operational efficiency in the form of reduced time to market with new features and services

- Increase in knowledge of local staff about CSDR solution and the data stored there

National CSD

Many emerging markets have separate CSD systems for government securities issued at the central bank with a different organisation handling CSD operations for equity and debt Instruments traded on the stock exchange. In some markets there is only a single CSDR handling the needs of government securities and central bank as well as those of the traditional market; others are in the process of planning to merge the post trade processing of all their market instruments into a single CSDR infrastructure. The key benefits are: lower

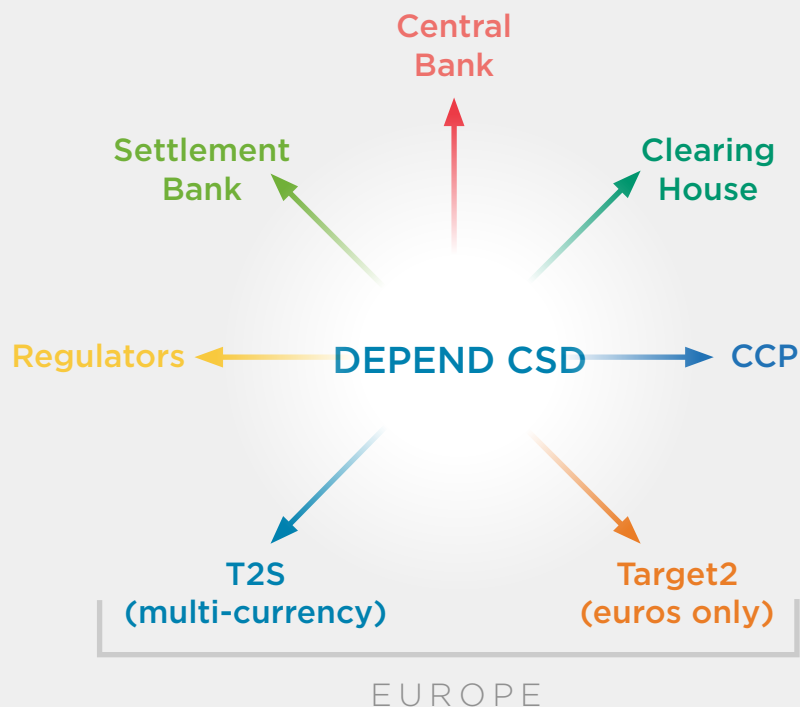
operating costs for the central market operators; higher efficiency; lower fee structures; and better centralised management of collateral in the country. The Percival DEPEND solution can combine into one infrastructure both central bank and equity CSDR functionalities.

DEPEND national CSD is live at:

- Malta Stock Exchange

- Trinidad and Tobago Central Depository

Traditional SERVICES of a CSD



As shown in the diagram above a CSDR (or CSD) will carry out the following traditional functions:

• Clearing

The process of updating the accounts in the CSD of the trading parties and arranging for the transfer of money and securities. There are 2 types of clearing: bi-lateral clearing through a clearing house and central clearing through a CCP

• Settlement

The actual exchange of money and securities between the parties of a trade on the settlement date. This exchange of cash against securities will involve settlement banks and a central bank

• Regulatory Reporting

All transactions are reported to the Capital Market Authority or Regulatory Authority on a periodic basis

• Target2 (T2S)

The new settlement engine for the European market offering centralised (DVP) settlement in central bank money (euros). Malta Stock Exchange using DEPEND went live with T2S in June 2015

Value Added Services (VAS) of a CSDR

A CSD operator could improve operational efficiency, reduce operational costs, increase revenue streams, and also benefit from economies of scale. VAS would enable CSD operators to maximise the benefits of their investment, and what is more, CSD operators are facing competitive pressure as their core services become increasingly commoditised. DEPEND could enable a CSDR operator to create these commodities and increase revenue streams from a flexible CSD solution. In Europe, for example, this pressure will intensify

with T2S; this will force more CSDs to move more upstream in the value chain and develop new capabilities in asset servicing. This pressure will also force them to maximise their own operational efficiency and minimise risks and costs. Furthermore, a CSD operator must pay attention to the needs of the user community or participants to whom they provide services. These users also want to reduce costs, minimise risk, and at the same time receive excellent service levels from their CSD operator.

Opportunities with User Empowerment and VAS

A CSD like any other data-centric business is 'data rich but information poor', and data in a CSD is useless until some logic in the form of a software program or solution is applied to the data. For example, "analyse account holders by region and currency". It is the users of information who are in the best position to extract information from data in a CSD. Given that information requirements are always changing because of changes in the business environment, at Percival we enable our users to extract information from DEPEND's database

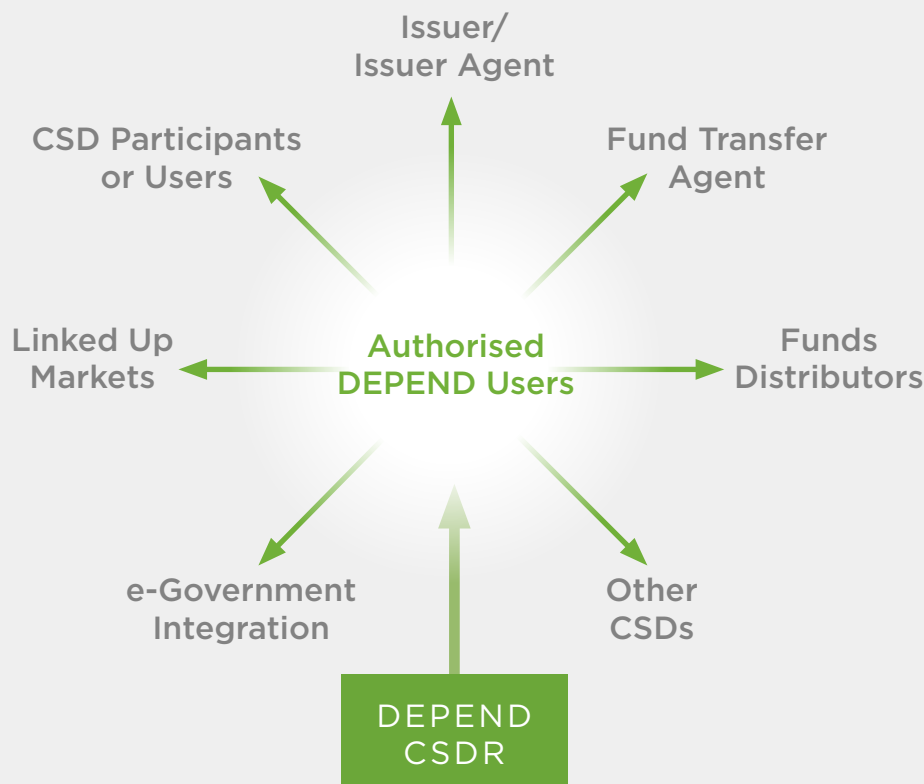
using standard SQL. In addition, with a flexible configuration our users are able to extract additional information from a CSD based on their local requirements. An example of user empowerment is the possibility to extract marketing information from the CSD database to enable more sales of securities. This example illustrates that DEPEND CSDR gives the ability to make changes to information requirements without recourse to a vendor, and thereby have better control over operating costs.

Additional Revenue Streams (VAS)

CSDRs could generate additional revenue streams in competition with their own participants or the CSDR could provide the information to their participants from their database and charge a fee. Examples of VAS:

- Provide a service to facilitate cross-border transactions by domestic investors
- Information on beneficial owners registered in nominee accounts
- Shareholder analysis
- Investor targeting

VAS to CSD Participants or User Community



DEPEND CSDR and Authorised Users

DEPEND CSDR can authorise CSD participants or users to access the data in real time to produce all types of analyses and information for their customers, and to generate additional revenue. For example, in the diagram above, Issuer/ Issuer Agent could access information on corporate events, number of allocations and activations, etc. Whilst custodians and brokers could provide information on confirmations of settled transactions, and investor services on

securities lending and borrowing, fails management and collateral management services. In general, it is possible for a CSDR participant working with a DEPEND CSDR to extract all of that information from the data held and managed centrally by Percival's CSDR solution, DEPEND. Our solution can also interact and exchange settlement instructions and confirmations with other CSDs to support seamless settlement in handling cross-border transactions.

DEPEND CSDR and e-Government Integration

Many governments provide or are planning to provide e-Government services in their financial market infrastructures, and by using DEPEND CSDR it is possible to provide the following investor services in real time:

- Portfolio Status

- Information on Corporate Actions

- Account Movements

- Statistics

- Securities Reports

- Investor Blockage

- Company Information and Documents

- Electronic Voting

- Company Announcements

- Electronic Proxy



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