Redbush
An E-Commerce Platform
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Who Am I?

• Experienced security architect (20 years)
• Currently Work with Eleanor Loughlin-McHugh at Inidsol

• Designed and worked with many identity schemes including:
  • Yoti uPass
  • Malta eID
  • HBOS and Mastercard PKI
  • ENUM and Telnic
  • Symbian
  • Inter Clear
A Walkthrough of the Redbush System

• A Brief History
• Why Redbush?
• What is Redbush?

• An Example of a Redbush User
• The User Redbush Dashboard
• A Technical View of Redbush

• Business Cases
• Extending Redbush
History of Redbush

• Originally designed as a new secure OS in 2006
• Was Never implemented!

• Recently evolved on further design into an e-commerce platform

• Note: This is research and still yet to be implemented. Be aware!

• We plan to open source this system, allowing us to show this to you!
Why Redbush?

• E-Commerce currently all about the Customer filling in forms
• No memory of previous form filling
• No memory of previous transactions with the Business

• Redbush aims to make e-commerce more convenient for Customers
• Ease the invisible pains for the Customer
• Remove the repetition of form-filling
• Remember the forgettable attributes for them
What is Redbush?

• A Currency – a store of Redbush Pounds
• A Ledger – a ledger of all transactions
• A Database – a list of data items which need not be secure
• A Vault – a list of secure items

• Optional Items:
  • Dashboard – web view of your Redbush
  • Identity – your identity
  • Bank – a place to provide the financial currency

• Works with multiple devices
• Shards data in “the cloud” over multiple public clouds
What is Redbush?
An Example of a Redbush User

Cloud Space
Ledger Space
Database Space
Vault Space

Device 2

Amazon Account Login
Paypal Account Login
Tesco Account Login,
Tesco Clubcard Points

C L
D V

Previous Transactions
Amazon - £4.50
Paypal - £3.99
Tesco - £1.24
Ellie - R 3.21

Credit Card Number + CVV
Amazon Password
Paypal Password
Tesco Password
Tesco Clubcard Number

C L
D V

Other Devices

Device 1

Device 3
User Redbush Dashboard

- Multiple Devices
- Database of public information
- Ledger of receipts
- Vault of private information
- Local Currency
A Technical View of Redbush
Identity in Redbush

Any Interoperable identity system can be used to prove the User is who they say they are. Some of these include:

- MultaMe
- Yoti uPass
- Semitel
- UK Verify
- IRMA
Redbush Bank (aka SimpleBank)

- **Exchange 1**
  - **Banks**
  - **Alt Coins**
  - **Floating Exchange Reserve**
  - **Central Bank**

- **Exchange 2**
  - **Floating Issued Value**
  - **Publish Capitalisation**

- **Exchange N**
  - **Paywall (i.e., PP Charge)**
  - **User Wallet**
  - **Direct Transactions**
  - **Bills and Coins are linked somehow to the central bank**

- **Central Bank**
  - **Reserve**
  - **Bills**
  - **Coins**

- **Buy**, **Loan**, **Sell**
  - **Take Commission**
  - **User Wallet**

- **£», $», €», Rm»**

- **Combos of fixed base cost and % commission on top of a floating exchange rate**
Business Cases

• Buying from a Redbush-Enabled Web Site
• Buying with Insufficient Funds
• Group Membership with Redbush
• Performing Micropayments with Redbush
• Buying a Car in a Supermarket
• Simplifying Border Control
Case 1: Buying from a Redbush-Enabled Web Site

1. Create a Shop Account
2. Choose Items
3. Supply Delivery Address
4. Enter Credit Card
5. Receive Receipt
Case 1: Simplifying Buying with Redbush

[ Name, Billing Address, Delivery Address, Shopping List, Credit Card, Expected Cost ] => OK? => Receipt or Reject
Case 2: Buying with Insufficient Funds

shopkeeper first checks for vouching by mother

seeing all OK, shopkeeper sells the chocolate

child gets chocolate!
Case 2: Buying with Redbush with Insufficient Funds

• There are three choices with Redbush:
  • Vouching from another User
    • Another User is willing to lend them the money to complete the transaction
  • Vouching from the Bank
    • The Bank decides whether it will loan the User the money for the transaction
  • Seller trusts the User to pay in the future
    • Seller creates a tab where the User pays at a later date
Case 3: Mysupermarket.co.uk with Redbush

• All transactions are recorded in the Redbush Ledger for future proof
Case 4: Professional Group Membership

- A User pays to join the group for professional qualification
- User may take an exam to get the membership certificate
- User pays for annual membership subscription
- User receives “career progression” points by attending meetings

Problems
- Verifying who is the member
- Checking who takes the exam
- Verifying identity on meeting attendance
- Tracking “career progression” points
Case 5: Group Membership with Redbush

- User pays to join the group, providing Name/Address
- User takes exam, showing identity, to get the membership certificate, storing the certificate in the Redbush Vault
- User pays for annual membership subscription with Redbush Currency
- User receives "career progression" points for attending meetings, updated in their Redbush Vault

- All transactions are recorded in the Redbush Ledger for future proof
Case 6: Micropayments...

- **Media**
  - The ability to pay a few cents to read a newspaper article without ads or watch a television show without commercials.

- **Art**
  - The ability to pay small amounts to artists. For example, an art community with a button that allows for an instant payment to support an artist you like.

- **Messaging**
  - Micropayments have been proposed as a means of preventing spam messages. For example, if it cost R0.01 to send a message, this would get expensive fast if you're sending millions of messages.

- **Virtual Items**
  - Small payments for virtual items in games, apps and social media.

- **Software**
  - A pay-as-you-go model for software services with no upfront or recurring fees.

- **Donations**
  - The ability to make small donations to charity. This might lead to a model whereby people donate on a daily basis to things they want to support as opposed to making a few donations a year. Such micropayments could be automatically aggregated to produce manageable tax receipts.
Case 7: Performing Micropayments with Redbush

Here, we show Redbush usage spending £0.50.

1. Perform e-commerce with Redbush currency.
2. Choose item(s) and Checkout for £0.50
3. Choose to pay with the Redbush Virtual Credit Card.
4. If validated by the E-Commerce seller, the device queries the Redbush Bank for the current exchange rate.
5. The amount is converted into Redbush Pounds using the current Redbush Bank exchange rate (similar to UK£ to EUR).
6. A small transaction fee is taken by the Redbush Bank for performing this.
7. Then, the amount is deducted from the local Redbush Currency.

- As we have the Redbush Bank, this is no different then spending larger amounts.
- All transactions are recorded in the Redbush Ledger for future proof
Case 8: Buying a Car in a Supermarket

• Why not?
• Pay with Redbush Currency
• Perform identity transaction with supermarket where Customer provides Driving License, etc.
• Can conform with current car purchase requirements
• All transactions are recorded in the Redbush Ledger for future proof of purchase
Case 9: Simplifying Passenger Flight with Redbush

• Typically a Flight Booking consists of:
  1. Buying flight online
  2. Online check-in

Then at airport:

• Getting on a Plane:
  3. Luggage Check (Optional) - Check PP and Boarding Pass and ask luggage (security) questions
  4. Check Boarding Pass Physically at Departure Gates
  5. Physical Security for Metal Objects and show Boarding Pass
  6. Passport Check
  7. Boarding Pass to check any shopping done in airport (for duty-free limits)
  8. Passport & Boarding Check at Gate
  9. Boarding Pass Check at Plane

• Getting off a Plane:
  10. Passport Check
  11. Luggage Collection

• We cannot change Steps 5-10 as they are used by airports for boarding security.
Case 9: Simplifying Passenger Flight with Redbush (2)

We can:

• Use Redbush for each User/Password for each Airline Booking Portal.
• For flight buying and online checking, there is no idea of familiarity here. So, let us introduce a way of showing the User is doing so. This allows for loyalty points, insurance, bundled selling, etc.
• Previous flight history can be stored in the Redbush Ledger.
• Redbush simplified travel with multiple flights with multiple airlines
• It facilitates family use (with multiple children) travelling
• For airports, we can also use Redbush to prove we have our luggage

• Also, with IATA interaction, we could make this all SO much easier for you!
Extending Redbush...

**Userspace Container**
- Ledger
- Database
- Currency
- Vault
- Web Browser
- Mail Client
- Other User Applications

**Kernel Drivers**
- Agora
- Interoperable
- TCP/IP or UDP/IP or HTTPS/HTPC

**Identity**
- Bring Your Own Identity

**Internet**

**Bank**
- Peered Across Agora Network

**Program Library**
Conclusions from this Research...

• Given identity and currency flexibility, we can make E-Commerce work for Customers

• We can perform complex problems without changing how it works ...and do them better too!

• This platform highlights the value in:
  • Preparation
  • Transaction
  • Post Tidy-Up

• Gives Customers simple control of their E-Commerce business
Questions....

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