How does migration to IBAN format impact payments integrity?

An Experian White Paper
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1. Executive summary

- At the point of writing businesses in the Eurozone are more than 80% of the way through the migration window to SEPA standards while around 30% of credit transfers and 2% of direct debits are now SEPA-compliant.

- Businesses must move to international standards to become SEPA compliant:
  - International Bank Account Numbers (IBAN) – ISO13616
  - Bank Identifier Codes (BIC) – ISO 9362
  - ISO20022 XML payment file format

- Businesses which currently use IBAN-format account numbers have reduced error rates (4.6%) in comparison with those using domestic account numbers (12.7%) however this would still represent a significant increase in failed payments over the 1-2% currently experience by European organisations.

- Migrating existing customer records to the IBAN standard will be a huge challenge given the sheer scale of records which will need to be updated and, as a result, large creditors face significant challenges to migrate and maintain SEPA-compliant mandate information.

- At the same time, many Bank Identifier Codes (BICs) are also invalid or out of date following numerous bank mergers, reorganisations, defunct branches or structural changes.

  Businesses must look to use, leverage and embed data validation within their systems and processes if they are not to incur significant costs as their operating countries move to SEPA.

  Given the limited time to migrate, organisations must start their SEPA programmes now or risk business continuity through non-compliance.
2. Introduction to SEPA and recent news

2.1 Background

As outlined in the Experian whitepaper Counting The Hidden Costs Of SEPA Migration, the Single Euro Payments Area (SEPA) initiative for the European financial infrastructure hinges on the creation of a zone, in which all electronic payments are treated as domestic, removing existing differences between national and pan-European cross-border payments.

SEPA imposes a mandatory duty on Payment Service Providers to switch existing payments systems, in favour of new payment schemes. The project was sponsored by the European Commission, which prompted the formation of the European Payments Council. It is also supported by the European Central Bank.

The project aims to drive down the payments barriers between countries by establishing a set of common standards and processes. But as the legally binding SEPA compliance deadline nears it is clear many are still unprepared for its impact. Treasurers have until February, 2014, to complete a comprehensive payments migration.

Since January 2008, banks and corporate treasuries within Europe have been migrating to SEPA’s new payment instruments at varying rates. But by February 2014, all 17 eurozone countries will be obliged to be on the SEPA framework, not only for cross-border euro payments but also for domestic payments. The rest of Europe has until 2016 to be fully compliant for their euro payments. As a result, banks and businesses throughout the SEPA area, not just the eurozone, now need to invest in back-office technology that supports their migration to SEPA payment instruments.

![SEPA deadlines and timescales](source: European Payments Council)
From February 2014, the bank account information required to process a euro payment across all channels is at the very least an IBAN. The implications mean all euro account details that are currently being held in payments databases will need to be updated into IBAN format because existing account number formats will be obsolete from Feb 2014.

Again from the beginning of February 2014, Payment Service Providers should accept IBAN-only information from their users for national transactions. They are allowed to provide BBAN to IBAN conversion services – using payments experts - but this transitional period is only up until 1st February 2016, after this point Payment Service Providers can accept only instructions that include an IBAN.

In the interbank space the requirement is for IBAN and BIC for all SEPA transactions– when a Payment Service Provider has accepted an IBAN they will need to append the necessary BIC in order for the transaction to be completed.

It is also worth noting that IBANs, although they have been in existence for many years, are still not very familiar and are not very widely recognised - so businesses will need to consider how they update their existing records (their legacy data), without confusing their customers, suppliers and staff.

2.2 News
Since the previous whitepaper the status of SEPA has become clearer with a clear definition of both end-dates and bank responses and the opportunity to provide services. SEPA has remained a key topic at international conferences including EuroFinance, AFP 2012 and Sibos. Many banks have also been running education and planning events for their corporate customers; these have focussed on starting the migration process as soon as possible.

2.2.1 PREG Guidance
In August 2012 the Payments Regulatory Expert Group of the European Payments Council published a document giving guidance for banks on Regulation (EU) No 260/2012. Amongst other useful pieces of advice this clarified the conversion and migration services which banks could provide to their customers.

Organisations currently submitting bulk payments files are required to provide their bank with ISO20022 XML files for initiation of SEPA transactions after 1 February 2014. Banks have therefore been keen to understand how they can serve their customers better by accepting old payment file formats, such as CFONB, DTAUS and ClieOp, and convert them to ISO20022. The guidance states:
The payer’s payment service provider (or bank) is responsible for deriving the BIC for the payee’s bank account.

“Accordingly, where it has derived the BIC to go with the IBAN presented by the consumer, if the BIC turns out to be the wrong one, a PSP will be held liable in the event the payment does not successfully reach the payee’s PSP.”

A payer is obliged to provide its payment service provider (or bank) with bulk payment files in ISO20022 format.

“In case a PSU does not provide its PSP with the payment order in the ISO 20022 XML standard, the payment order has to be rejected”

Payers may take advantage of conversion services from payment service providers or other third-parties.

“... PSUs may prefer to utilise conversion services, at least for a temporary period. Such services are likely to be offered by a range of 3rd-party providers, such as ERP providers and software houses. Additionally, some PSPs may offer conversion services - at the request of their PSUs – in order be to meet their clients’ needs in a competitive marketplace.”

Payment service providers must separate conversion from payment initiation.

“In any event, if conversion services are offered by PSPs the current interpretation (in the absence of explicit legal wording in the Regulation) is that this service should be operationally fully independent from all the subsequent payment services offered by the PSP. Consequently, the conversion would practically take place prior to the “receipt” of the payment instruction by the PSP...”

In summary this guidance is a good overview of what a corporate may expect in terms of ISO20022 and IBAN conversion services and should assist them in planning their migration to SEPA.

Accordingly, where it has derived the BIC to go with the IBAN presented by the consumer, if the BIC turns out to be the wrong one, a PSP will be held liable in the event the payment does not successfully reach the payee’s PSP.
2.2.2 Migration progress

The EPC launched the SEPA Credit Transfer scheme in January 2008 and the SEPA Direct Debit scheme in November 2009. The percentage of the elapsed migration window varies between credit transfers and direct debits and also by whether the source country is in the eurozone or not. For Eurozone credit transfers the 80% elapsed milestone was reached on 18th November 2012; the corresponding figure for non-eurozone countries is 30th January 2015.

At the point of writing the September 2012 figures are most recent. These state that the volume of credit transfers in the eurozone migrated to SEPA is 30.3% and the corresponding figure for direct debits is 1.9%.

Whilst the increase in compliance is encouraging for credit transfers, the position for direct debit originators must be concerning, with around 15 months to go and the vast majority of transactions still to be migrated and, in some cases, new mandates sought from both businesses and consumer. It is therefore vital that those organisations collecting via direct debit must immediately examine their processes and plan to comply, using third-party validation of their data and mandate management services where appropriate.
3. Analysis of current payments data

Businesses are concerned about the impact on their current payments data accuracy of moving data for payments to SEPA formats:

- ISO20022 XML
- ISO13616 International Bank Account Number (IBAN)
- ISO9362 Bank Identifier Code (BIC)

Experian provides SEPA Data Conversion services for businesses across Europe, incorporating stringent validation of domestic details. This enables us to highlight exceptions in existing data before converting to the new standard and reduces the likelihood that payments will fail because of bad old data in a new format.

Experian has therefore analysed the data in IBAN (and BIC) format provided by organisations to assess overall correctness of this information, to identify potential problems and to support the business decision of when to migrate to SEPA formats. The results specifically are for the SEPA zone, IBANs for other countries are excluded from the analysis.

For reference, an IBAN is structured like this, the actual content varying country by country:

<table>
<thead>
<tr>
<th>Country code</th>
<th>Bank code</th>
<th>Check digit</th>
<th>Account number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE08 3701 0222 2610 7260 80</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.1 Source data

Data in the analysis comes from 25 scans performed in the year February 2011 to January 2012 for validation of IBAN and BIC data. This period covers the year before the formal confirmation of the end date of the SEPA migration window. Classification of organisations is done according to the Industry Classification Benchmark³.

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3. BIC required for SEPA payments until February 2014 for Eurozone countries or November 2016 for non-Eurozone countries

³The Industry Classification Benchmark (ICB) is a definitive system categorizing over 70,000 companies and 75,000 securities worldwide, http://www.icbenchmark.com
The breakdown of records by industry type is given here. Interestingly, for the period in question, food producers made the greatest demands on the service; while this is not statistically significant, it does highlight that different industries appear to address the data challenge at different times.

In addition, the country-by-country breakdown, as expected, has the larger economies towards the higher end of the distribution.
3.2 Validation process

For this research, the IBAN data was checked not only at the ISO13616 standard level, but also at the country format and domestic level, including validating bank and branch codes where applicable and using the integrity checks provided by check digits. Every IBAN was therefore analysed and check-digits validated, which might indicate a mis-transcription, for compliance with the international and national format, before being split into the domestic account number, the Basic Bank Account Number – or BBAN. The domestic account number was then validated against local rules, for example the 130 check digit rules in Germany and the local branch directories.

An overview of the process is given below.

![Image of the data conversion process for SEPA (IBAN) data]

Figure 1 IBAN validation and enrichment process

The Bank Identifier Code or BIC was also checked against BICs valid for that branch and, as part of the service for customers, the BIC used for general payments routing was also returned.

The domestic validation was undertaken in exactly the same manner as for the previous whitepaper and the process is reproduced below.
3.3 Results

The results of the validation are given below. Where few IBANs are available for an individual country, the resulting data point is excluded from national comparisons. The results specifically are for the SEPA zone, IBANs for other countries are excluded from the analysis.

3.3.1 Overall error rate for IBANs

The analysis conducted indicated that 95.2% of data provided in IBAN format was correct, that is to say it met both ISO13616 and domestic rules on formatting, content and integrity. Whilst this is not a guarantee that the account is active, it is the best indicator of confidence in the absence of a complete database of all accounts.

4.6% of accounts were in the IBAN format but were invalid either in original format (the account was incorrectly formatted before IBAN formation), content (the bank and/or branch codes were no longer valid) or integrity (the IBAN or national check digits indicated an invalid account). The remaining 0.2% of bank account data were not in IBAN format, in some cases containing the name of the bank or branch or other narrative text.
3.3.2 Types of error

Analysing the data according to the source of the error yielded useful information on where businesses should focus their efforts and gave some prediction of the forward-looking error rates.

The analysis divided errors into 4 types for consistency with the previous analysis:

**IBAN:** Errors related to the IBAN standard including check-digit failure, national country code format errors

**Format:** problems caused by invalid formatting prior to IBAN formation – these are likely to be caused by a simplistic process not including validation

**Content:** issues of out-of-date or invalid bank and branch codes contained within the national part of the IBAN

**Integrity:** issues related to the integrity of the national part of the IBAN.

As previously seen in the last whitepaper covering the results from validation of domestic account numbers, the most common error is related to out-of-date or invalid bank/branch codes. This indicates that over time, even in IBAN format, the underlying domestic data ages and, as branches close, merge or are transferred, this causes the IBAN to become invalid. In some cases where the bank identifier is included in the IBAN, such as happens in the Netherlands, mergers or transfers can cause this information to become invalid.

The second most common error of formatting relates to invalid domestic formatting and suggests that the BBAN was translated to the IBAN format without validation of the domestic details, although there may be other possible reasons for this error. Simply converting invalid domestic data to IBAN format will perpetuate the error in the system. From the research around half of these errors, 0.5% of the whole dataset and 3% of German account numbers, relate to missing sub-account numbers (Unterkontonummern) in German accounts. In this case the domestic details may be stored without the last two digits if they are both zero. Simple conversion fails to spot this and creates a reference to an invalid account.

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4 Counting the hidden cost of SEPA whitepaper – April 2012
http://www.experian.co.uk/payments/campaigns/winning-with-sepa-wth-experian.html
The third-most common problem is the issue of account numbers breaching the IBAN standard and national format. These errors tend to be caused by user unfamiliarity with their IBAN and lack of simple validation within business applications. The low rate of error suggests that many systems do implement simple validation routines; these should be applied wherever data are being entered.

Finally, although integrity appears to be least common error condition, issues of IBAN structure will and those content or format may prevent the identification of integrity errors and arguable integrity errors occur wherever there is a content error.

### 3.3.3 Bank Identifier Codes

Until 1 February 2016 a BIC is required for all cross-border and some domestic payments in euro. If we compare a payment to a letter, the IBAN or domestic account number is the street address and the BIC is effectively the postcode. The BIC guarantees delivery to the sorting office but not the physical address. On its own, the BIC can only rarely route a payment to the correct destination but in almost all cases a BIC can be derived from the IBAN.

It is therefore essential that businesses are correctly collecting and validating BIC information alongside IBAN data, especially if they are considering centralising their euro transactions to a single payments or collections factory.

For each account number in IBAN format, the BIC supplied was checked against those registered for that bank or branch. A match was recorded even if the most appropriate BIC was not used as banks can typically route the payment correctly and, when IBAN-only payments become a reality, they must provide this information to ensure correct addressing.

<table>
<thead>
<tr>
<th>Valid BIC</th>
<th>Missing BIC</th>
<th>Unmatched BIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>55.3%</td>
<td>1.0%</td>
<td>43.7%</td>
</tr>
</tbody>
</table>

The match rate against any BIC recorded for the bank or branch was 55.3%, with 1.0% of data not having data in this field. This leaves a concerning 43.7% of records with invalid or out-of-date BIC information which could cause problems. In some cases this was due to wholesale transformations, for example the acquisition of ABN Amro by the Royal Bank of Scotland and consequent change to BICs in the Netherlands from ABNANL2A to RBOSNL2A, but in many cases the BICs were completely unrelated.
3.3.4 Comparison with accuracy of domestic account numbers

As part of the analysis we also compared the error rates with those reported for the same period in the previous whitepaper.

The good news is that IBANs have a lower but still significant error rate than domestic account numbers, so businesses that can move across to IBAN format sooner, convert their data, change their processes and systems and validate new IBANs going forward will not see their investment wasted.

Overall the IBAN format allows errors within domestic data but still requires updating as branches and bank systems change.
4. Conclusions

Vast regional differences were highlighted. Predictably, the state-by-state distribution of records was heavily weighted towards the SEPA-zone’s largest economies - with France, Germany and Italy making up more than half the sample.

Despite disproportionate sampling favouring the biggest domestic markets, most countries were represented. Data from the UK was also included as it is part of the SEPA zone and uses IBAN for euro domestic and cross-border payments.

The high level figures were quite encouraging for businesses which have already migrated their payments data to the IBAN format. It emerged the vast majority (95.2%) of IBAN account numbers were correct, with around 4.6% being faulty in IBAN format and 0.2% of records containing unrelated data, such as the name of the branch or the BIC.

Businesses, typically, don’t see this level of error with their payments suggesting they may not yet be using IBANs, or that a faulty IBAN could be fixed by the bank, typically the receiving bank, possibly through a manual, exception process.

More concerning was the volume of BICs, which failed to match those recorded for the branch or bank. They are used to route the payment to the destination bank and as part of the process may be mapped to a specific BIC for the payment mechanism in use - for example SEPA versus TARGET2 payments.

In some cases it was clear that the BIC had not been updated since the IBAN had been captured, although the bank had clearly altered its processes and changed addresses. This is especially concerning where payment services are provided by a third-party bank which may change over time and where banks merge and changed their codes.

It was clear that, as with the problems in domestic data, issues of out-of-date or plainly wrong bank codes dominated the error conditions.

Formatting problems generally arose through incorrect account number standardisation as part of the IBAN formation process.

More than half (55%) of accounts presented had a correct BIC. The BIC was missing in 1% of records - but it did not match any BIC in use for that bank or branch in almost 44% of cases.

This could be pinned on a number of reasons:

• BICs do change over time, for example some accounts previously at ABN Amro in the Netherlands have switched to the BIC of the RBS Group, but in many cases these will not have been updated in supplier or customer records.

• Although BICs are no longer required in the long term, the likelihood is that in the short term the data may be inaccurate - despite the SEPA deadline looming.

• Correct BICs also vary on a country by country basis with Romania surprisingly topping the table. But it’s clear that no country has 100% accuracy.
The good news is that IBANs have a lower, but still significant, error rate when compared to domestic account numbers, so businesses which can move across to IBAN format sooner, convert their data, change processes and systems to validate new IBANs from here on, will not see their investment wasted.

Whilst the IBAN standard is clear, it does not guard against changes within the domestic account structure it conveys. Simple issues such as branch closure, bank merger and account transfer cause the related IBAN to become invalid and the straightforward validation of the IBAN check-digit cannot pick up these more subtle issues. In addition changes to the associated Bank Identifier Code (BIC) mean that payments may be redirected to the wrong bank unless maintained; this is one reason why the European Commission wanted to move SEPA to IBAN-only payments as soon as possible; this leaves banks with the headache of deriving a BIC from the IBAN presented by the customer.

While validation of the IBAN format and check-digit may be simple to implement, certainly for a small number of countries, it results in errors within existing data being perpetuated and the potential creation of new ongoing IBAN errors related to the format and integrity.

Specific issues in Germany around sub-account numbers can also cause problems. As with domestic data, problems continue to exist around closed, merged and incorrect bank branches and have led to invalid IBANs.

Some country formats such as UK, NL, included a four letter bank identifier such as ABNA. When mergers have taken place in the past, in some cases the IBAN was updated to the new bank and in some cases it has been retained. For example, in the UK the IBAN for a Royal Bank of Scotland Group, NatWest accounts contain NWBK not RBOS.

Keeping BIC information up to date also appeared to pose a significant challenge with examples such as the changes to BICs for ABN Amro customers in the Netherlands not seeming to have been made to corporate databases.

In the previous analysis, we attempted to put a cost per record on domestic data and repeated the calculation for IBAN. It emerged that the average cost of a record in a database was €2.25 for every account number held in IBAN. This is of the same order of cost associated with contacting every accountholder.

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**Changes to the associated Bank Identifier Code (BIC)**

mean that payments may be redirected to the wrong bank unless maintained; this is one reason why the European Commission wanted to move SEPA to IBAN-only payments as soon as possible.
5. Recommendations

Businesses need to ensure they are ready for the end date. Failure to do so could significantly affect their ability to continue making and receiving payments. Organisations need confidence that they can continue doing business at minimal cost and risk using the correct bank account formats.

1. Separating the good transactions from the bad as early as possible is clearly critical in order to quickly resolve costly problems. Crucially, Experian is able to flag up problems early thanks to its unique internal policy of ensuring an IBAN is returned only when a domestic account number is confirmed as 'not invalid'.

2. First, performing a full validation is vital - not just the IBAN and domestic formats. Identifying format errors alone simply misses the largest cause of problems. It’s important to identify all the conditions which may affect payments information so find a provider that can check for all the errors and warnings that might exist in the domestic data.

3. Choose a supplier that uses multiple data providers and can correlate the data, identifying corrections early and providing confidence in the validation in use. National databases are good for local branches and international directories good for banking institutions. Importantly, using good sources of BIC information which tie to branch data, is important.

4. Finally, to minimise the time to validate and convert you should choose a solution which uses automation where possible but can build in consultancy expertise where necessary to assist in fixing current data.

5. The SEPA finish line is now in sight following formal ratification of the end date. There’s no cost to early and rapid adoption of SEPA. It clearly has enormous benefits to any key players in the integrated payments market – and it offers a timely opportunity to permanently eliminate long-standing costs linked to running legacy systems.

6. Knowledge and technical partners exist across the Continent – but it’s worth noting there are limited resources available so businesses with greater volumes or more complicated processes should look to migrate as soon as possible; this is the only risk mitigation which appears to be successful on this project.
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