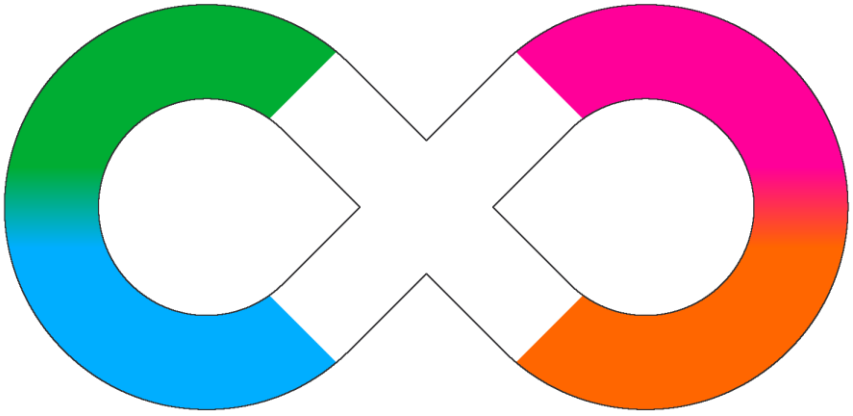
Apple Claims on OHLive using Automation Anywhere



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Introduction

OHLive is the new version of OpenHealth+, Irish Life Health's core system.

Automation Anywhere (AA) is an RPA platform used by Irish Life.

Employees of Apple can avail of day to day treatments at the Apple Wellness Centre, the cost of which is directly claimed from ILH by the healthcare provider, rather than the typical model of the customer paying the provider and claiming back from ILH at a later date. This necessitates the claims to be logged in OHLive as hospital claims, and generates manual work worth approx. €250k in outsourcing costs annually.

This document describes the feasibility of automating this process using Automation Anywhere, and what problems need to be solved and what process changes would be required to do so.

Source Excel Data

The source data Excel workbooks generally contain quite good quality data. However, there are a few issues worth discussing.

Different Formats

There are a number of different formats in use. (Two were provided as samples for this exercise.) This is not a major issue in and of itself, however maintaining these different formats requires more development work up front, and potentially more maintenance in future. If they can be standardised without significant effort, then this is recommended.

Sample 1

Member Name	Irish Life No.	Date of Treatment	Location of Treatment	Treatment Provider	Provider Number	Treatment Provided	Cost of Treatment
John Doe	VIVG123456	10-Aug-18	Cork	Joe Bloggs	4561237	Doctor Visit	25

Sample 2

Member name	Policy No	Location of treatment	Date of treatment	Treatment Provided	Treatment Provider	Provider Number	Cost Of treatment	Number of Glo Visits	Total cost of Glo's
Jane Doe	VIVG 123457	Apple Hollyhill Cork	02/08/2018	Root Planning x 2	Joe Bloggs		140.00	1	25.00

Mandatory Data

In order to process a claim from end to end, the following data would need to be mandatory. Items in bold are different to how they are currently provided.

Field	Description / Notes
Member Name	If this can be provided in the format “LastName, FirstName”, this will make it easier to select the appropriate member on the policy in OHLive. Work arounds are possible here, though they may not be as reliable.
Policy Number	Primary lookup for logging a claim
Treatment Date	A standard date format would help here, but isn’t essential
Treatment Provided	This needs to be something that can be mapped to one of the Apple procedure codes in OHLive. It should be a fixed list, and not free text. The simplest and most robust solution here would be to make this the same as the Benefit code/description.
Treatment Provider Number	This isn’t currently provided in Sample 2, even though the column is there.
Amount Claimed	Amount being claimed
Member Number	This is not currently provided. In OHLive, this appears to only be required in order to differentiate between two people on the same policy with the same name. If this exception case does not need to be handled in an automated way, then this can be ignored.

Accessing the data using Automation Anywhere

Automation Anywhere has a built-in Excel connector; however it may be easiest to access the data via SQL using an OLE connection against the spreadsheet. In particular, this approach trivialises logging multiple lines in the spreadsheet against a single invoice.

The OLE connection string for an Excel sheet looks something like the below:

```
Provider=Microsoft.ACE.OLEDB.12.0;Data Source='<<path_to_file>>';Extended
Properties='Excel 12.0 Xml;HDR=YES';
```

Selecting the data for invoice headers looks something like this:

```
SELECT s.[Policy Number]
     , s.[Member Number]
     , s.[Member name]
     , s.[Treatment Date]
     , s.[Treatment Provider Number]
     , SUM( s.[Amount Claimed] ) AS [Amount Claimed]
  FROM [Sheet1$] s
GROUP BY s.[Policy Number]
       , s.[Member Number]
       , s.[Member name]
       , s.[Treatment Date]
       , s.[Treatment Provider Number]
```

Selecting the invoice detail for each row in the invoice header looks something like:

```
SELECT s.[Date of Treatment]
     , s.[Treatment Provided]
     , s.[Amount Claimed]
  FROM [Sheet1$] s
 WHERE s.[Policy Number] = $PolicyNumber$
   AND s.[Member Number] = $MemberNumber$
   AND s.[Treatment Date] = $TreatmentDate$
   AND s.[Treatment Provider Number] = $TreatmentProviderNumber$
```

Mapping Treatment Provided to OHLive Procedure Codes

One of the trickier parts of this process is determining which Procedure Code to use. There are a number of complicating factors:

- Many treatments can map to a single procedure code
- Extra Packages - a single treatment can map to multiple procedure codes (only some of which the claimant may be entitled to)
- The same treatment can have different claim entitlements depending on which code it is mapped to, and many entitlements have usage limits

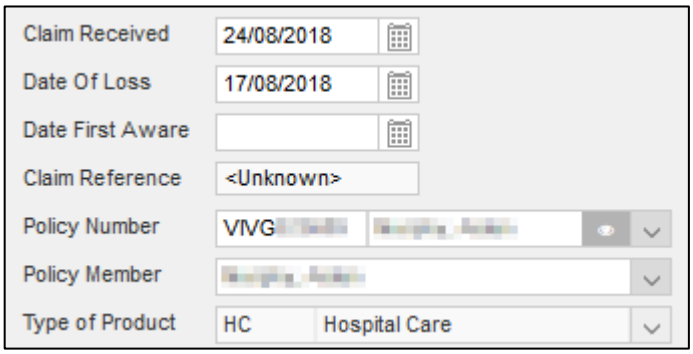
For the purposes of this document, it is assumed that the Treatment Provided field from the source Excel contains or can be mapped to the Benefit Code.

From there, it is possible to build a mapping table that looks like the one in the Appendix 1. This mapping needs to be stored somewhere. If there is a natural home for it in OHLive, it should be stored there; if not, it can be stored in Excel. The Priority column represents the order in which a procedure code should be selected for any given benefit code.

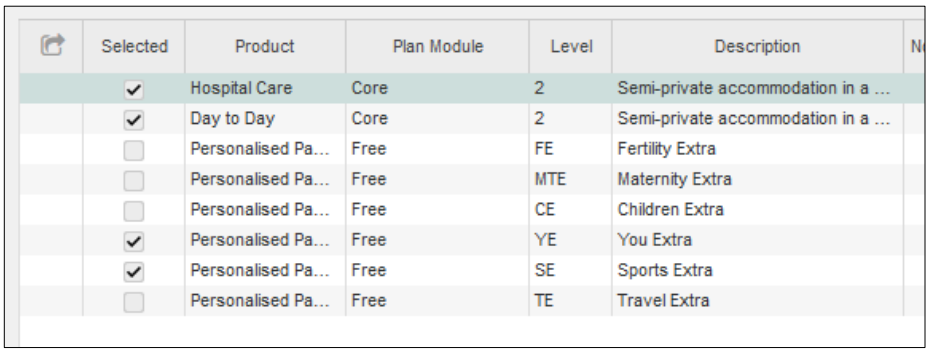
This mapping table directly solves the issue of many treatments mapping to a single procedure code, but we still need to solve cases where a single treatment can map to more than one procedure code.

Extra Packages

Firstly, we need to determine what products (if any) over and above the standard are on the policy that apply to the member. This is easily accessible from the claim header screen.



From there, we can launch the policy member screen for that member, and get the list of additional packages.



Selected	Product	Plan Module	Level	Description
☑	Hospital Care	Core	2	Semi-private accommodation in a ...
☑	Day to Day	Core	2	Semi-private accommodation in a ...
☐	Personalised Pa...	Free	FE	Fertility Extra
☐	Personalised Pa...	Free	MTE	Maternity Extra
☐	Personalised Pa...	Free	CE	Children Extra
☑	Personalised Pa...	Free	YE	You Extra
☑	Personalised Pa...	Free	SE	Sports Extra
☐	Personalised Pa...	Free	TE	Travel Extra

With the list of additional packages available to that customer, we now have to pick the appropriate procedure code. This can be accomplished with a SQL query similar to the one below.

```
SELECT Procedure_Code
     , Benefit_Code
     , Benefit_Category_Code
     , Amount
  FROM (
    SELECT Procedure_Code
         , Benefit_Code
         , Benefit_Category_Code
         , Amount
         , Priority
         , MAX( Priority ) OVER (PARTITION BY Benefit_Code) AS Highest_Priority
      FROM procedure_code_map
     WHERE Benefit_Desc = $TreatmentProvided$
       AND (     Product = 'D2D'
             OR (Product = 'CE' AND $ChildExtra$ = 1)
             OR (Product = 'FE' AND $FertilityExtra$ = 1)
             OR (Product = 'SE' AND $SportsExtra$ = 1)
             OR (Product = 'TE' AND $TravelExtra$ = 1)
             OR (Product = 'YE' AND $YouExtra$ = 1)
           )
)
 WHERE Priority = Highest_Priority
```

Alternative Solution

One alternative solution to the problem is to devolve it to the treatment provider. In this scenario, the treatment provider determines the most appropriate procedure and benefit code, and sends this in the file they provide to Irish Life Heath.

While this greatly reduces the technical complexity of the overall solution, the business feasibility is unknown.

Usage Limits

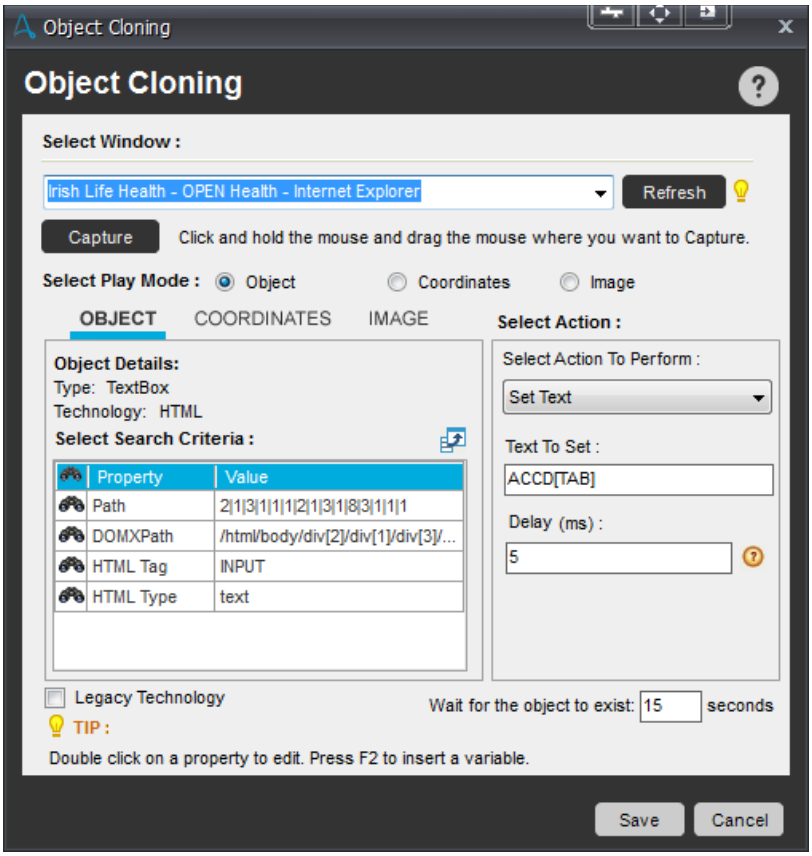
Correctly applying usage limits is probably the most difficult piece of this process to implement. The possible options with this requirement are:

- Implement the limits natively in OHLive, such that the system prevents the logging of a claim that would breach the limits (Feasibility or cost of this option is unknown.)
- Create a report from OHLive that contains the remaining unused treatments for each procedure code for each policy (potentially using Enquiry Builder?), and integrate it into the mapping algorithm
- Store the number of remaining unused treatments for each procedure code for each policy outside the system (either in a spreadsheet or some other database), and integrate it into the mapping algorithm. The bot would need to decrement this each time a claim is made.
- Choose not to implement the limits, and rely on the savings in processing time outweighing any overpayments to customers

What is certain is that the existing process of manually storing this information on a note in the member's record is not workable using a bot.

Interaction of AA and OHLive

Although OHLive is a web application, due to its heavy use of events for validation and on-the-fly data retrieval, AA interacts much better using the functionality typically used for desktop applications (Object Cloning).



Used in this way, AA is predominantly using XPath to find elements in the page. By default, it uses an absolute XPath reference, such as in the above example:

```
/html/body/div[2]/div[1]/div[3]/div[1]/div[1]/div[1]/div[2]/div[1]/div[1]/div[1]/div[8]/span[1]/span[1]/span[1]/input[1]
```

However, since OHLive has good element tagging, it's possible to also select the same element with a more generic (and more human-readable) selector, such as:

```
//div[data-member-caption='Type of Claim']//input[class='owl-lookup-code']
```

These more generic selectors are not generated by AA, however, and would need to be written by a developer (though they follow a few common patterns).

The delay of 5ms allows keypress events to fire appropriately, with negligible impact on runtime. The addition of the [TAB] keypress allows loss of focus events to fire appropriately.

Overall, in tests carried out, Automation Anywhere was reliably able to interact with OHLive without difficulty.

Conclusion

While there are a number of difficulties to be overcome in order to automate the process, none are insurmountable, and most should be reasonably straight-forward.

Automation Anywhere and OHLive appear to interoperate quite well, and there were no issues encountered in testing that raised any concerns about being able to build the process in AA.

With only some minor changes, the required source data is already being provided by the providers.

The most difficult part of the process will be implementing policy usage limits. However, it's worth noting that the difficulties here are not limitations of AA, but rather a reflection of the complexity of the requirement. Several options are possible here, but a decision must be taken on which option to choose.

Appendix 1 – Procedure Code Mapping Table

Procedure Code	Procedure Desc	Benefit Code	Benefit Desc	Benefit Category Code	Benefit Category	Amount Claimable	Product	Priority[1]
AP01-D2D	Acupuncture	ACU	Acupuncture	ALT	Alternative Practitioner	25	D2D	1
AP10C-FE	Nutritionist, Dietician or Acupuncturist	ACU	Acupuncture	ALT	Alternative Practitioner	25	FE	2
AP04-YE	Dietician or Nutritionist	DIE	Dietician	ALT	Alternative Practitioner	30	YE	3
AP04-D2D	Dietician	DIE	Dietician	ALT	Alternative Practitioner	25	D2D	1
AP10C-FE	Nutritionist, Dietician or Acupuncturist	DIE	Dietician	ALT	Alternative Practitioner	25	FE	2
AP07-D2D	Massage Therapist	MSG	Massage Therapist	ALT	Alternative Practitioner	25	D2D	1
AP04-YE	Dietician or Nutritionist	NTC	Nutritionist	ALT	Alternative Practitioner	30	YE	3
AP10C-FE	Nutritionist, Dietician or Acupuncturist	NTC	Nutritionist	ALT	Alternative Practitioner	25	FE	2
AP10-D2D	Nutritionist	NTC	Nutritionist	ALT	Alternative Practitioner	25	D2D	1
AP11- SE	Personal trainer/Sports Massage	PSN	Personal trainer	ALT	Alternative Practitioner	30	SE	2
AP11-D2D	Personal trainer	PSN	Personal trainer	ALT	Alternative Practitioner	25	D2D	1
AP12-D2D	Physical therapist	PYO	Physical therapist	ALT	Alternative Practitioner	25	D2D	1
AP13-SE	Physiotherapy visits	PHS	Physiotherapy visits	ALT	Alternative Practitioner	30	SE	2
AP13-D2D	Physiotherapy visits	PHS	Physiotherapy visits	ALT	Alternative Practitioner	25	D2D	1
AP16-D2D	Reflexology	RFY	Reflexology	ALT	Alternative Practitioner	25	D2D	1
AP11- SE	Personal trainer/Sports Massage	MSG	Sports Massage	ALT	Alternative Practitioner	30	SE	1
AP19-D2D	Chiropodist	CHT	Chiropodist	ALT	Alternative Practitioner	25	D2D	1
AP25- D2D	Clinical Psychologist	CPS	Clinical Psychologist	ALT	Alternative Practitioner	25	D2D	1
AP24- D2D	Homeopath	HOM	Homeopath	ALT	Alternative Practitioner	25	D2D	1
AP20-D2D	Occupational Therapist	OCT	Occupational Therapist	ALT	Alternative Practitioner	25	D2D	1
AP21-D2D	Orthoptist	OPT	Orthoptist	ALT	Alternative Practitioner	25	D2D	1
AP22-D2D	Osteopath	OST	Osteopath	ALT	Alternative Practitioner	25	D2D	1
AP17-D2D	Podiatrist	POD	Podiatrist	ALT	Alternative Practitioner	25	D2D	1

[1] Higher numbers mean higher priority. This is a best guess at the correct ranking – it should not be assumed to be correct.

Procedure Code	Procedure Desc	Benefit Code	Benefit Desc	Benefit Category Code	Benefit Category	Amount Claimable	Product	Priority[1]
AP23-D2D	Reiki	RKI	Reiki	ALT	Alternative Practitioner	25	D2D	1
AP18- CE	Speech Therapist	SPL	Speech Therapist	ALT	Alternative Practitioner	30	CE	2
AP18-D2D	Speech Therapist	SPL	Speech Therapist	ALT	Alternative Practitioner	25	D2D	1
AP03-D2D	Dental & Optical	DEN	Dental	CON	Dental / Oral Surgery	25	D2D	1
AP03-D2D	Dental & Optical	OPT	Optical	CON	Dental / Oral Surgery	25	D2D	1
AP02-D2D	Emergency Dental Care	EME	Emergency Dental Care	CON	Dental / Oral Surgery	350	D2D	1
AP05-D2D	GP visit	GPC	GP visit	GPF	General Practitioner	25	D2D	1
AP-06D2D	Health screening & allergy testing	HSC	Health screening & allergy testing	GPF	General Practitioner	200	D2D	1
AP08-CE	Meningitis B/ Chicken Pox Vaccines	VAC	Meningitis B/ Chicken Pox Vaccines	GPF	General Practitioner	50	CE	1
AP09-D2D	Nurse visit	NUR	Nurse visit	GPF	General Practitioner	13	D2D	1
AP14- SE	SADS Screen	SAD	SADS Screen	GPF	General Practitioner	75	SE	2
AP14-CE	SADS Screen	SAD	SADS Screen	GPF	General Practitioner	50	CE	1
AP15-D2D	Travel Vaccines	TRV	Travel Vaccines	GPF	General Practitioner	50	D2D	1
AP15-TE	Travel Vaccines	TRV	Travel Vaccines	GPF	General Practitioner	50	TE	2